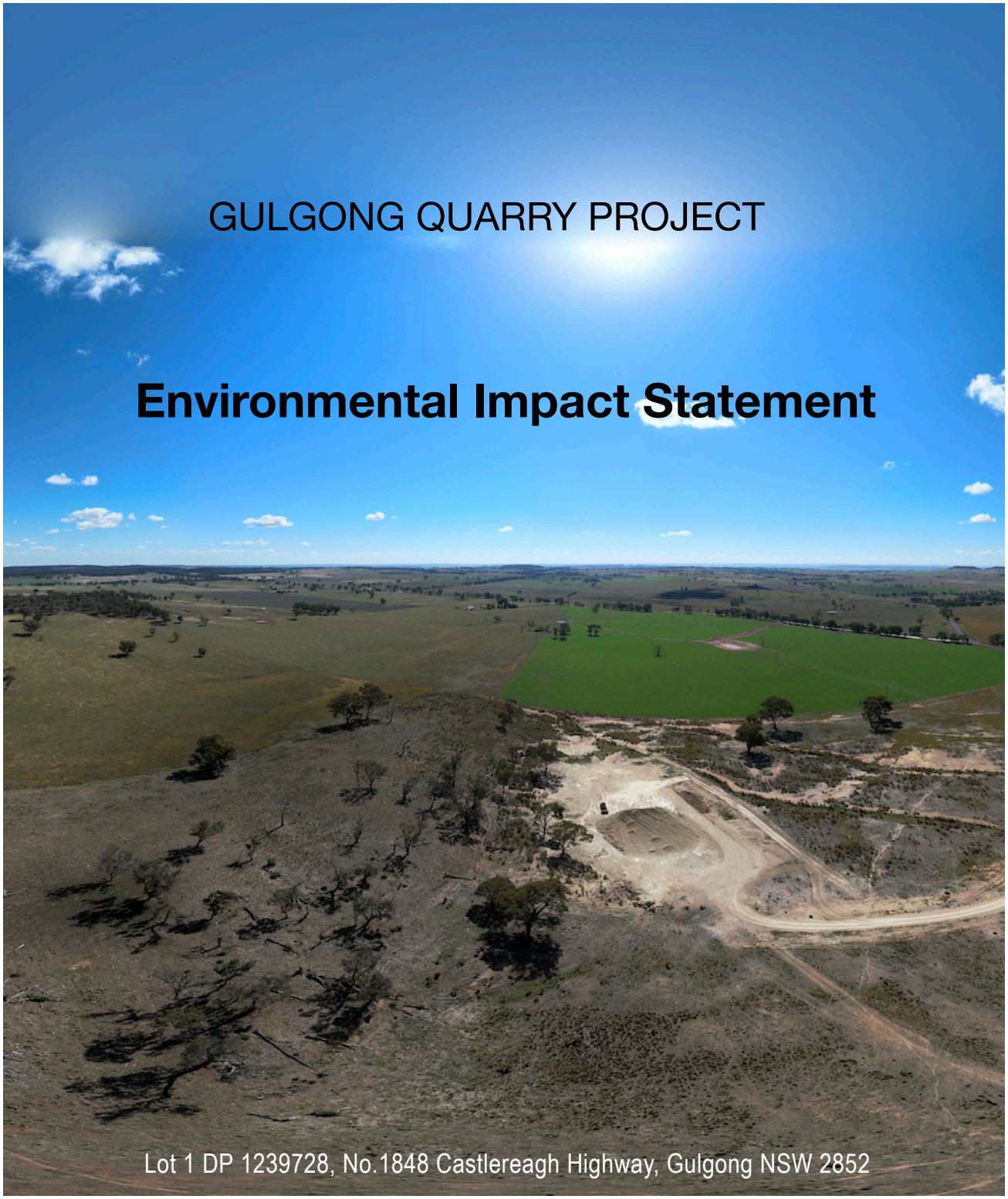
GULGONG QUARRY PROJECT

Environmental Impact Statement



Lot 1 DP 1239728, No.1848 Castlereagh Highway, Gulgong NSW 2852

Prepared by:

Outline Planning Consultants
Town Planning | Environmental Assessment

Telephone: (02) 9262 3511
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On behalf of:

Hamish and Sally Drury
Talinga Pastoral Company
'Talinga', No.1848 Castlereagh Highway
GULGONG NSW 2852

September 2024

[**Cover page:** Drone photograph of the project site viewed from the south, looking north-west.]

EIS DECLARATION

EIS prepared by:

Name:
Qualifications: Bachelor of Town Planning (UNSW)
Member Planning Institute of Australia (PIA)

Address: Outline Planning Consultants Pty Ltd
ABN: 34 003 473 112
432 Carool Road, CAROOL NSW 2486

in respect of: Gulgong Quarry Project

Development Application

Applicant name: Hamish and Sally Drury Talinga Pastoral Company
Applicant address: c/- Outline Planning Consultants Pty Ltd
432 Carool Road, CAROOL NSW 2486

Land to be developed: Pt. Lot 1 DP 1239728, No.1848 Castlereagh Highway Gulgong NSW 2852

Environmental Impact Statement

An Environmental Impact Statement (EIS) is attached.

Pursuant to clause 190(3) of the *Environmental Planning & Assessment Regulation 2021*, and to the best of my knowledge, I declare that this Environmental Impact Statement:

- Has been prepared in accordance with this Regulation.
- Contains all available information that is relevant to the environmental assessment of the development to which the statement relates.
- The information contained in the statement is not false or misleading.

Name: Gary William Peacock, Director,
Outline Planning Consultants Pty Limited

Date: September 2024

Signature:

ACKNOWLEDGEMENT

We respect and honour Aboriginal and Torres Strait Islander Elders past, present and future. We acknowledge the stories, traditions and living cultures of Aboriginal and Torres Strait Islander peoples on this land.

CONTENTS

Executive Summary

Overview

The owners, Hamish and Sally Drury, seek development consent for a quarry on Lot 1 in Deposited Plan (DP) 1239728 (project site, site, proposed quarry), which forms a part of a larger rural holding known as 'Talinga', No.1848 Castlereagh Highway Gulgong NSW 2852 (refer ***Figure 0.1****). The site of the proposed quarry is located approximately 21.5km by road to the north of the township of Gulgong in the Mid Western Regional Council local government area.*

An elevated stony hill on the site is currently used as a borrow pit for supplying hard rock for farm-related purposes. The owners propose to establish a quarry on the site to extract up to 350,000 tonnes per annum of quarry material within a quarry footprint of 7.34ha and a total resource of about 4.6 million tonnes. The internal access route to the quarry connects directly with the Castlereagh Highway. Refer ***Figure 0.2****.*

It is proposed that the hard rock resource found on this elevated hill be quarried and used as a road base or select fill primarily to service nearby infrastructure projects undertaken within the Central-West Orana Renewable Energy Zone (CWO-REZ), and in particular:

- *EnergyCo's extensive, 1km wide CWO-REZ transmission, generation, firming and storage project on a large corridor of land located within approximately 3.1km to the north of the project site.*
- *Acciona's Orana Wind Farm project, involving 92 wind turbines located as close as 2km to the project site. The wind turbines are proposed to be connected to the above CWO-REZ transmission line.*

Refer ***Figure 0.3****.*

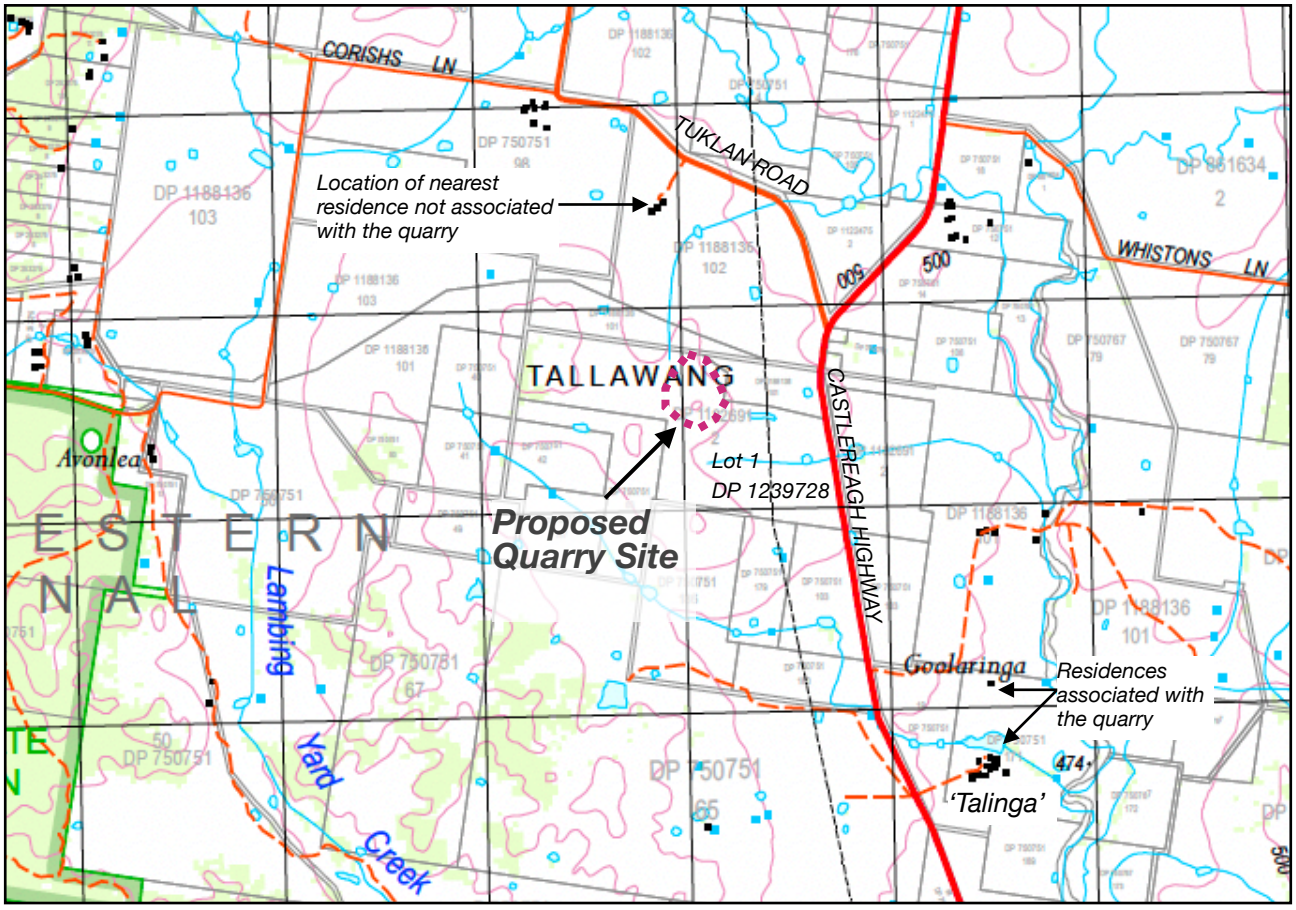


FIGURE 0.1: Location of Proposed Quarry- shown with broken purple edging (approx.)

(Map Base Source: SIX Maps Dunedoo 1:25,000 Topographic map 8733-N, 1km grid, 20m contour interval)

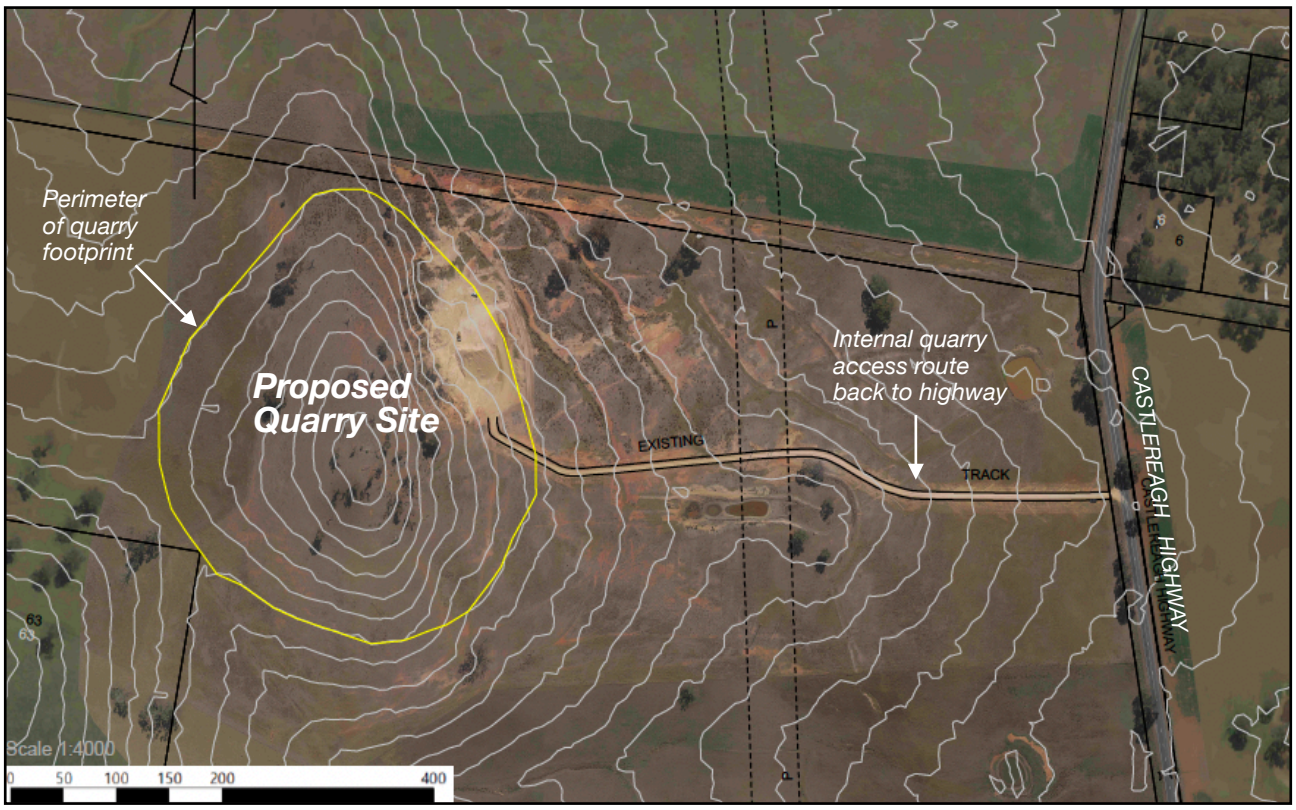


FIGURE 0.2: Location of Proposed Quarry- shown with yellow edging

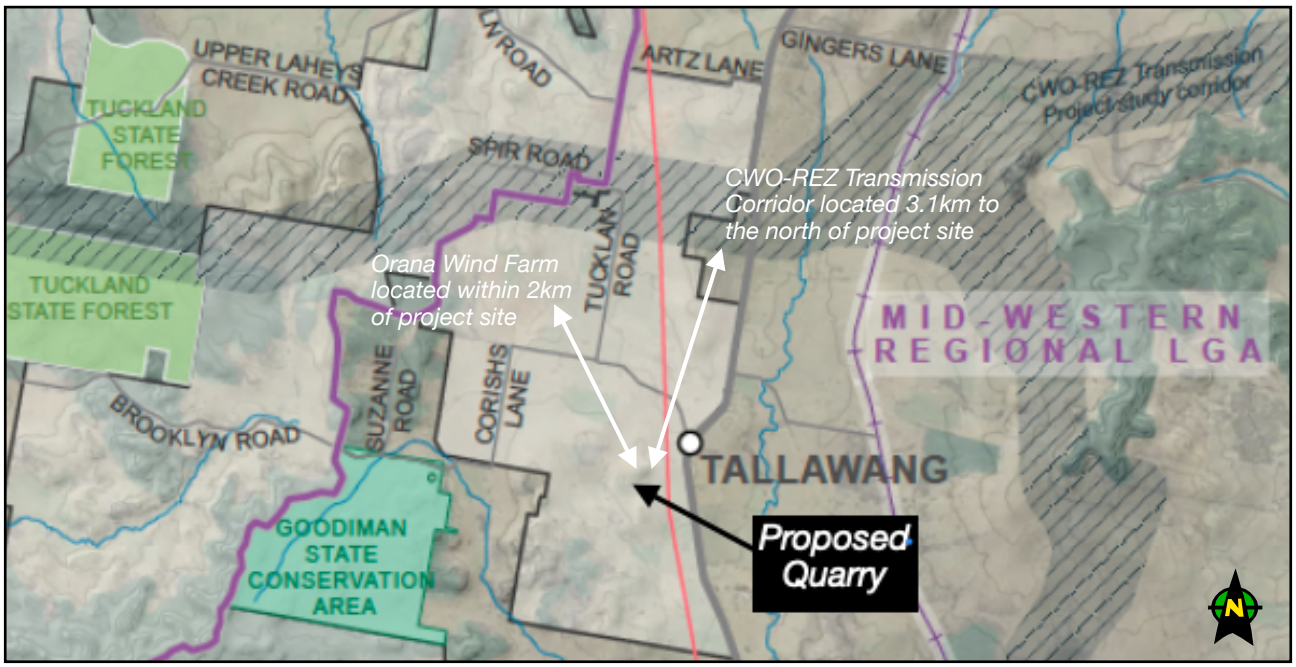
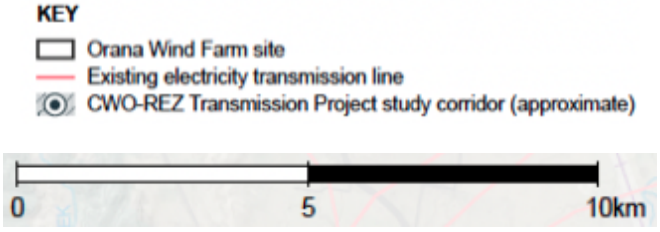


FIGURE 0.3: Proposed quarry site in relation to Central-West Orana Renewable Energy Zone (CWO-REZ) projects

(Source: Ramboll Orana Wind Farm Scoping Report March 2023)



▪ *Planning Approvals Process and this EIS*

The proposed quarry project is 'designated development' under s.4.10 of the Environmental Planning and Assessment Act 1979 (EP&A Act), requiring the preparation of an Environmental Impact Statement (EIS) as it triggers three (3) of the criteria listed in clause 26 'Extractive Industries' of Schedule 3 of the Environmental Planning and Assessment Regulation 2021 (EP&A Regulation 2021)- namely: more than 30,000 cubic metres (about 63,000 tonnes) of quarry product is to be extracted per annum; has a slope (in one small part) over 18 degrees slope (32.5% slope); and involves an area of more than 2 hectares (ha). These three triggers are highlighted in bold in the following extract from Schedule 3 of the EP&A Regulation 2021:

"26 Extractive industries

(1) Extractive industries (being industries that obtain extractive materials by methods including excavating, dredging, tunnelling or quarrying or that store, stockpile or process extractive materials by methods including washing, crushing, sawing or separating)—

***(a) that obtain or process for sale, or reuse, more than 30,000 cubic metres of extractive material per year,** or*

***(b) that disturb or will disturb a total surface area of more than 2 hectares of land** by—*

(i) clearing or excavating, or

(ii) constructing dams, ponds, drains, roads or conveyors, or

(iii) storing or depositing overburden, extractive material or tailings, or

(c) that are located—

(i) in or within 40 metres of a natural waterbody, wetland or an environmentally sensitive area, or(ii) within 200 metres of a coastline, or

(iii) in an area of contaminated soil or acid sulphate soil, or

*(iv) **on land that slopes at more than 18 degrees to the horizontal**, or*

(v) if involving blasting, within 1,000 metres of a residential zone or within 500 metres of a dwelling not associated with the development, or

(vi) within 500 metres of the site of another extractive industry that has operated during the last 5 years."

[NOTE 1:The proposed quarry lies near a drainage line, however, because it has neither a permanent watercourse without either a defined bed or bank it is not considered to be a "natural waterbody" for the purposes of the Water Management Act 2000. As such, the provisions of the sub-clause 19(1)(c)(i) above do not apply.

NOTE 2: No part of the proposed quarry development, including internal access back to the highway is either identified by other government agencies as an environmentally sensitive area or like term, nor is it mapped as being either of Medium or High Biodiversity Sensitivity or conservation zone under the provisions of Mid-Western Regional Local Environmental Plan 2012 (LEP). The nearest High Biodiversity Sensitivity land under the provisions of the LEP is located on the western part of Lot 1 DP 1239728 approximately 480 metres away. As such, the provisions of the sub-clause 19(1)(c)(i) above do not apply.

NOTE 3: The nearest residential zone, zoned R5 Large Lot Residential, is located approximately 2.7km to the west of the site. The nearest residential land to the south is R5 zoned land, located approximately 3.5km away. The distance to the nearest residence, located to the north, is approximately 788 metres away. As such, the provisions of the sub-clause 19(1)(c)(v) above do not apply.

NOTE 4: A small section only of the site, being a part of the stony hill facing towards the highway, has slopes in excess of 18 degrees (about 32.5% slope). Never the less, and regardless of size, it triggers the provisions of sub-clause 19(1)(c)(iv) above.]

Given that extraction of more than 30,000 tonnes per year of quarry resource is proposed to be extracted, and pursuant to s.4.46 of the EP&A Act, an 'integrated development' approval is required from the NSW Environment Protection Authority (EPA). Once consent is obtained, the quarry will require the issue of an Environment Protection Licence (EPL).

The proposed quarry development is regionally significant development under Schedule 7 of the State Environmental Planning Policy (Planning Systems) 2021. The Western Regional Planning Panel is thus the consent authority under Section 4.5 of the EP&A Act. The proposed designated development is not State significant development as the project involves extraction of less than 500,000 tonnes per annum; a resource of less than 5 million tonnes; and is not located within an environmentally sensitive area of State significance.

In accordance with the provisions of Section 4.12(8) of the EP&A Act the EIS responds to and addresses the NSW Department of Planning, Housing and Infrastructure Secretary's Environmental Assessment Requirements (SEARs) EAR 1894, issued on 5 June 2024, included in ***Appendix A*** *of this EIS, and provides details including the following:*

- *Details of the proposed quarry development.*
- *Assessment of potential environmental impacts of the proposed quarry development.*
- *Justification for the proposed quarry development.*
- *Measures proposed to mitigate any adverse impacts on the environment.*

Under the provisions of the Mid-Western Regional Local Environmental Plan (LEP) 2012 the project site is wholly zoned RU1 Primary Production. "Extractive industries" as defined, are a use permissible with the consent of Council. Significantly, the project site is not zoned for conservation or similar purposes.

▪ The Proposed Quarry Project

The major features of the quarry development proposal (the Gulgong Quarry Project) include the following:

- *A quarry resource estimated at 4.67 million tonnes (Mt).*
- *A maximum rate of extraction of 350,000 tonnes per annum (pa).*
- *Establishment of a quarry footprint and progressive deepening of quarry, in order to maximise winning of the quarry resource, at the same time as minimise acoustic and visual impacts.*
- *The total quarry, including the land proposed for lateral extension, will have an area of approximately 7.34ha.*

Table 0.1 presents a summary of the indicative key Project components. Refer also to ***Figures 0.4- 0.8*** *and* ***Appendix B****.*

Table 0.1:Key quarry project components

Quarry component	Summary description
Extraction method	*Bulldozer or excavator used to remove weathered rock, with drill and blast used for unweathered rock.*
Quarry resource	*Weathered and unweathered phyllite and meta-siltstone.*
Disturbance area	*Total quarry area approximately 7.34ha, using existing internal access road back to the highway.*
Processing	*Crushing and screening of quarry resource on a campaign basis. Mobile plant and equipment to be brought to the site when required.*
Annual extraction rate	*Up to 350,000 tonnes per annum.*
Transport	*Access to the quarry from Castlereagh Highway from existing access point.* *A mix of truck and dog combination (33 tonnes +), with larger and smaller trucks used where road weight limits may apply. It is anticipated that the quarry will generate an average of 35 loaded trucks per day, generating up to 60 loaded quarry trucks per day.*
Waste management	*Minimal waste materials are anticipated to be generated.*
Hours of operation	*Limited to 7.00am to 6.00pm Monday to Saturday. Hours of blasting are to be restricted to 9.00am to 3.00pm Monday to Friday.*
Total recoverable resource and project life	*Preliminary estimates indicate that the total quarry resource is estimated to be approximately 4.67 million tonnes (Mt). Quarry life is estimated to be 25-30 years, dependent on the eventual rate of extraction and market demand for the resource, with an additional 2 years required to complete rehabilitation of the site after quarrying is completed.*
Workforce	*Up to 4 employees working on site + contractors (eg. blasting contractor, machinery servicing contractors, refuelers).*
Key environmental issues	*Impacts relating to noise, blasting impacts, visual impacts, rehabilitation and traffic.*

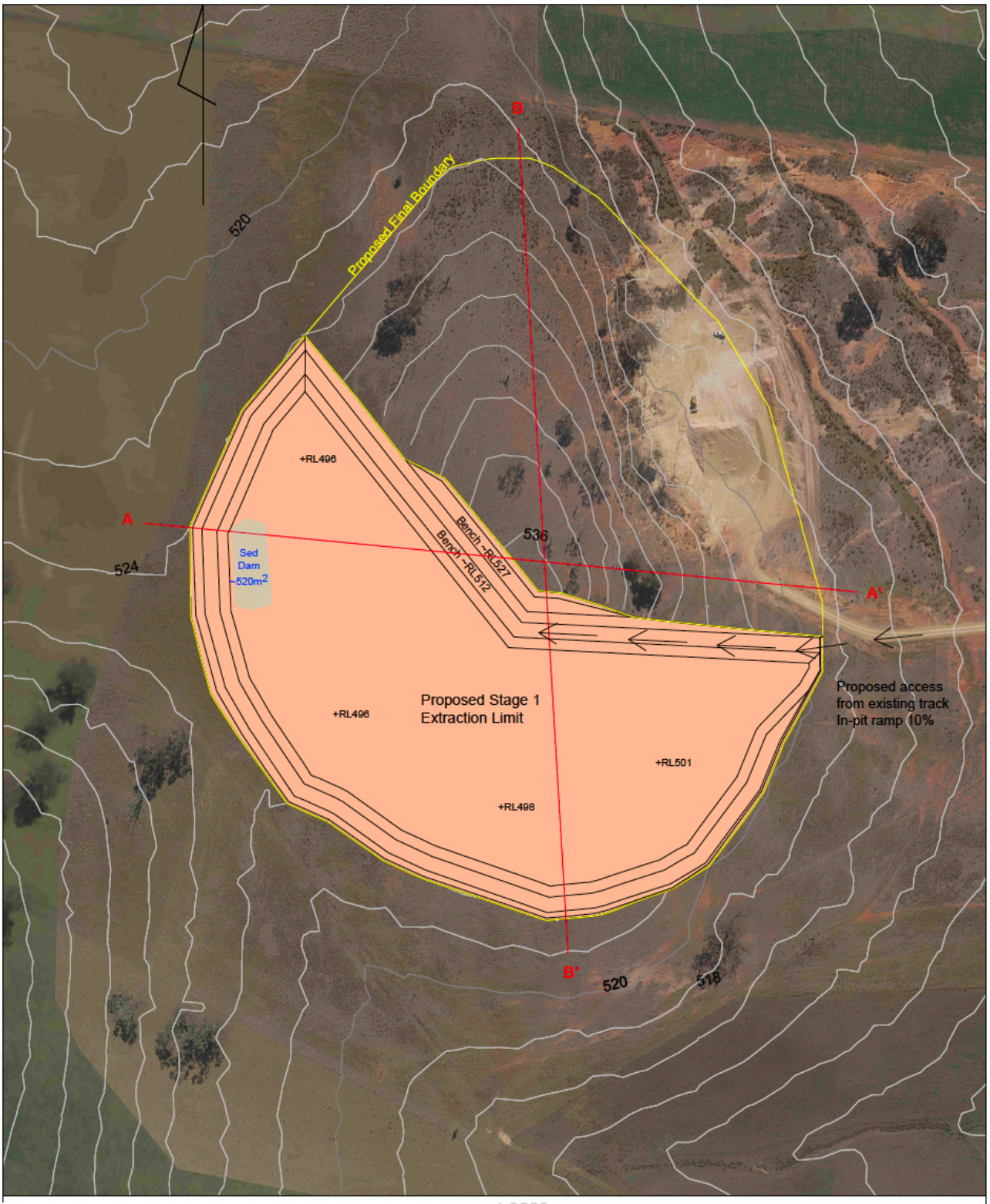


FIGURE 0.4: Proposed Quarry Stage 1

Drawn by: A Richards	Date: 06/09/2024
Approved by:	Date:
Date of Survey: unknown	
Project: Gulgong Quarry Conceptual Design	

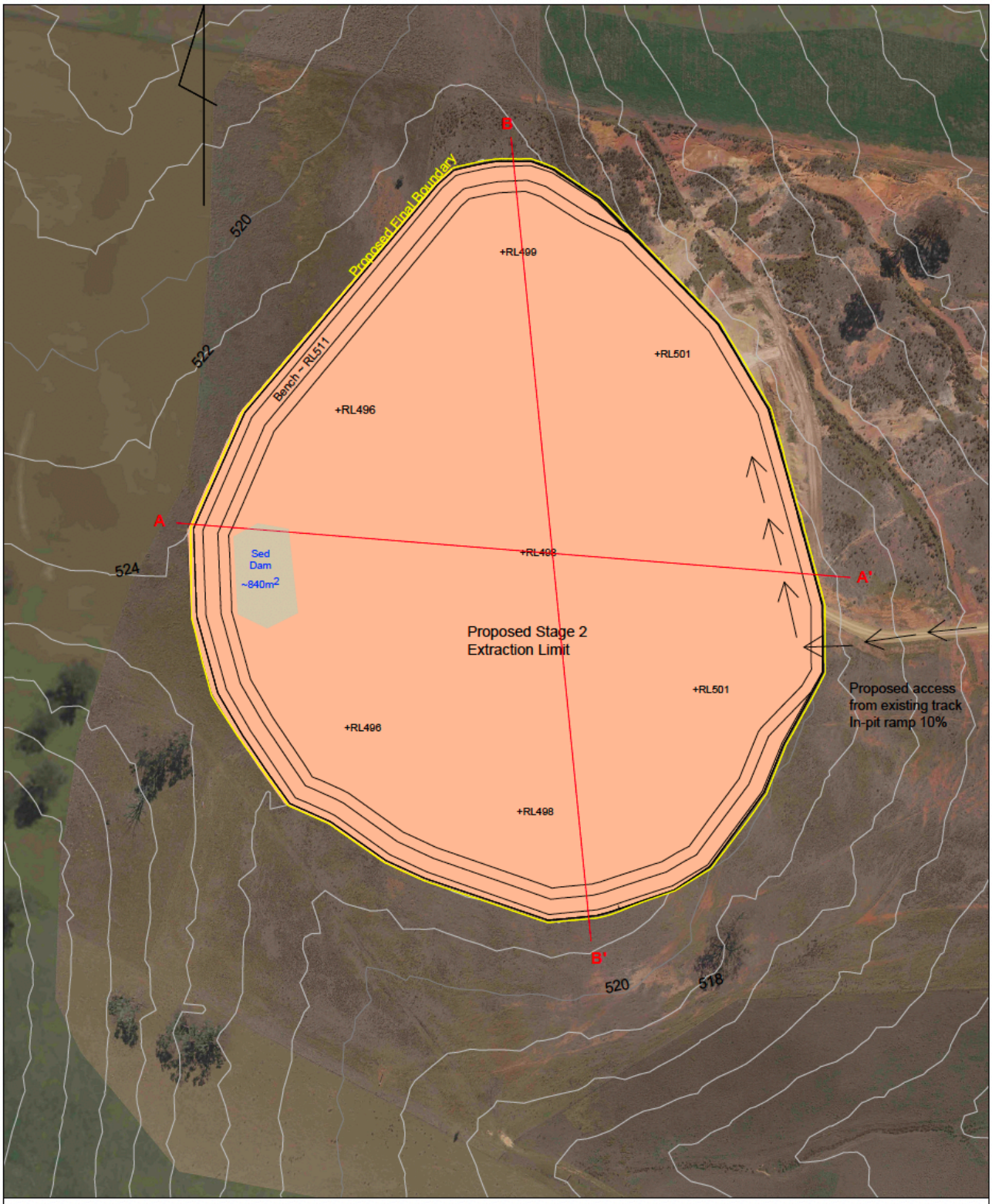


FIGURE 0.5: Proposed Quarry Stage 2

Drawn by: A Richards	Date: 06/09/2024
Approved by:	Date:
Date of Survey: unknown	
Project: Gulgong Quarry Conceptual Design	

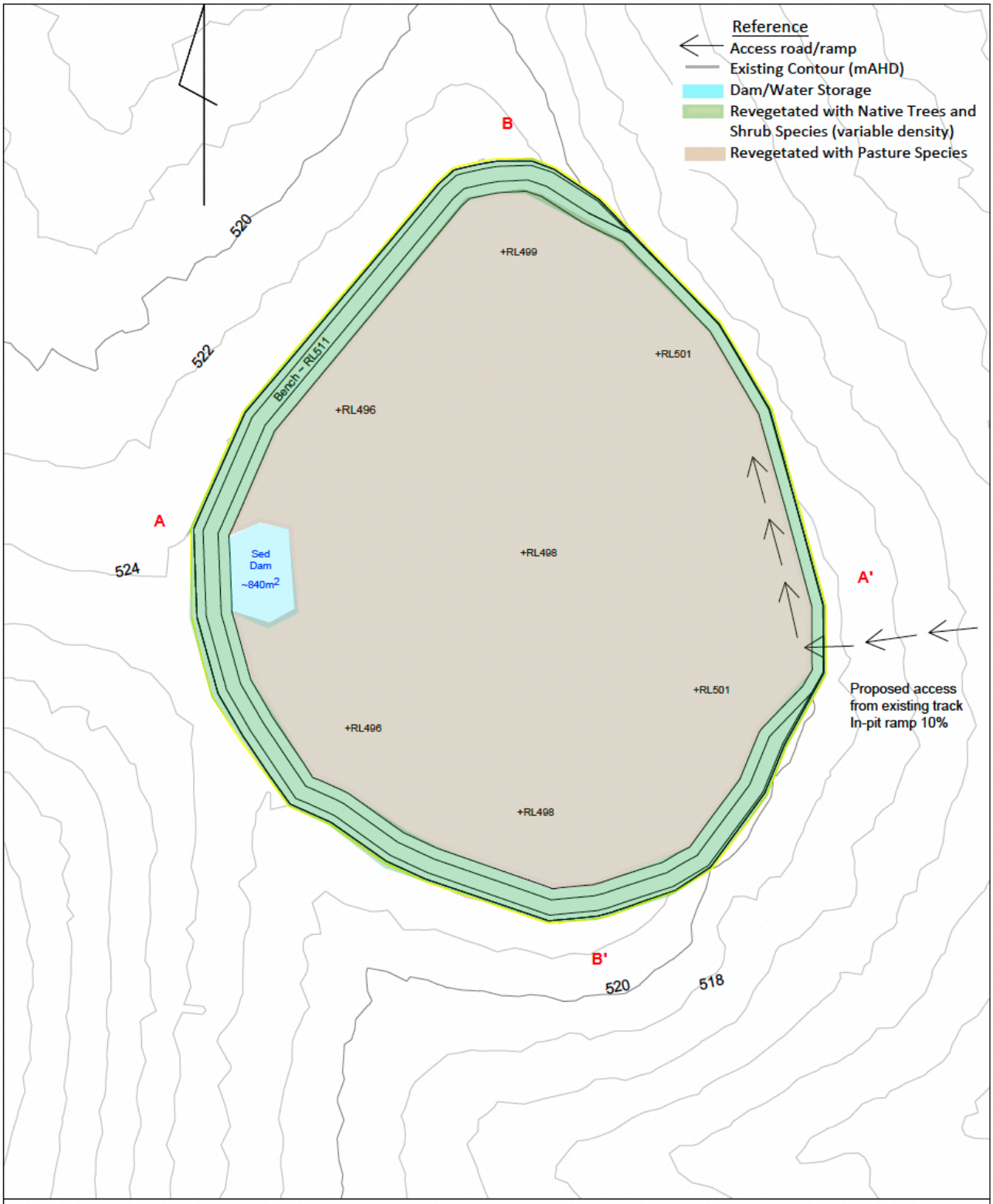
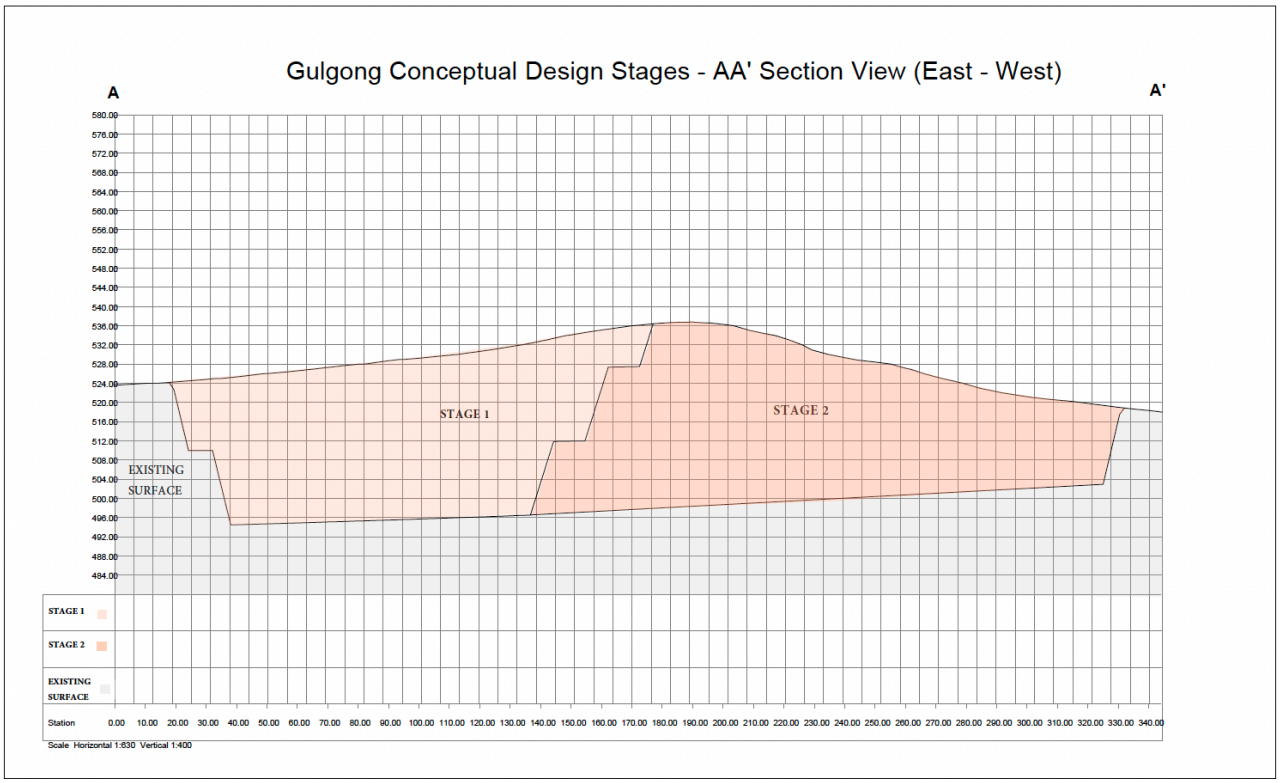


FIGURE 0.6: Proposed Quarry Rehabilitation Stage 3

Drawn by:	A Richards	Date: 18/09/2024	
Approved by:		Date:	
Date of Survey: unknown			
Project: Gulgong Quarry Conceptual Design			



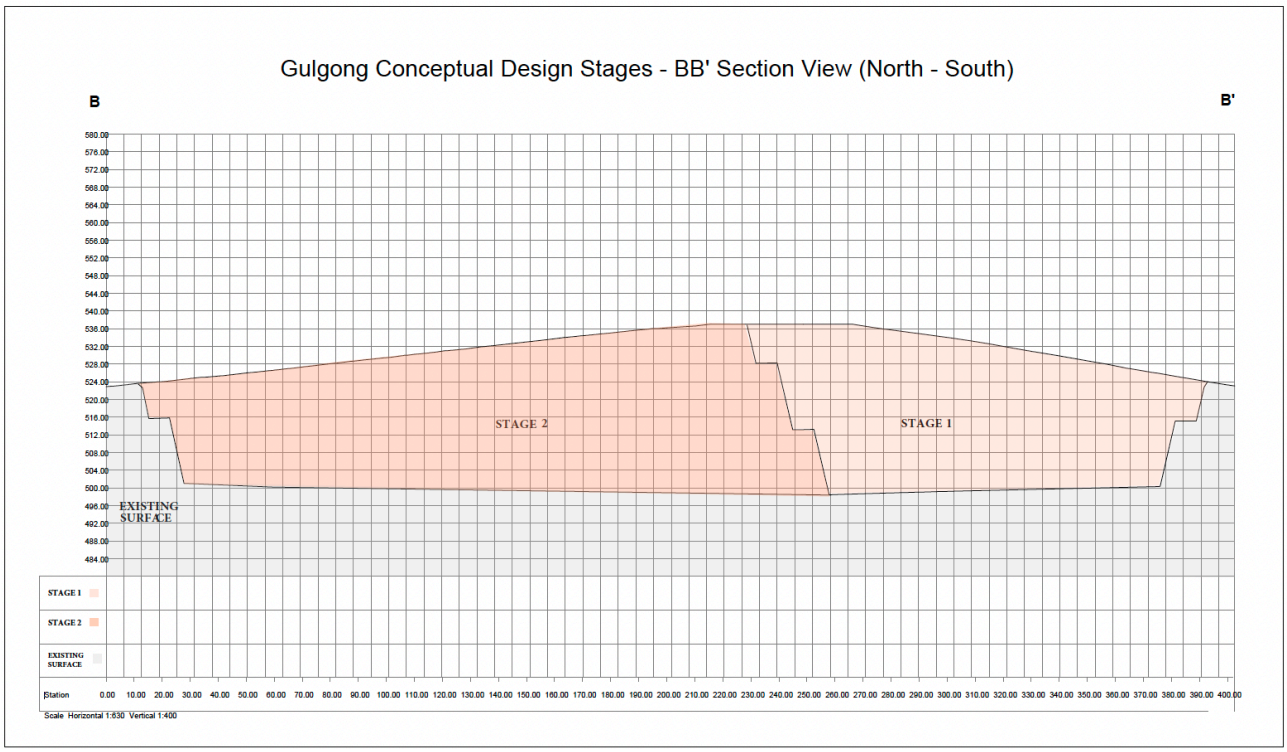


FIGURE 0.7: Proposed Quarry Sections

▪ Suitability of the Site for the Proposed Quarry Project

The Project Site is considered to be most suitable for the Gulgong Quarry project for a number of reasons, including:

- *The proposed quarry is strategically placed in terms of its proximity to Central-West Orana Renewable Energy Zone (CWO-REZ) projects, including: EnergyCo's extensive, 1km wide CWO-REZ project (approximately 3.1km to the north of the project site); and Acciona's Orana Wind Farm project (as close as 2km to the project site). Truck traffic serving these projects does not need to travel through any townships or villages.*
- *The land is a stony outcrop with shallow soils with low agricultural value, underlain by weathered and unweathered phyllite and meta-siltstone suited to road making purposes to service the above infrastructure projects.*
- *The project site has an appropriate (RU1) zoning, which permits 'extractive industries' (as defined).*
- *The land is largely cleared land, characterised by a stony knoll with shallow soils and low agricultural suitability.*
- *Good road access is available to the highway for heavy vehicles to potential customers and nearby infrastructure projects.*
- *The quarry is reasonably buffered from nearby dwellings not associated with the quarry.*
- *Limited views will be possible of the proposed quarry from any rural residences or from the highway.*

Based on the above factors, the project site is considered the most suitable location for the project.

▪ Mitigation Measures and Impact Assessment

Various specialist firms have been engaged to undertake comprehensive technical assessments of the potential impacts associated with the quarry project, including noise and ecological assessments. These technical assessments, summarised in the body of this EIS document and provided in full in the appendices to this EIS, have recommended suitable mitigation measures to avoid or mitigate identified impacts. The following sub-sections provide an overview of the main findings of these technical assessments and other assessments, however, to gain a proper understanding of the project and identified impacts, the detailed assessments should be read in their entirety. The EIS contains an outline of the mitigation measures proposed that will form the basis of an overall quarry management plan, to be prepared following the grant of consent.

Noise and Blasting

The objective of the Gulgong Quarry project is to avoid the quarry being a source of nuisance noise and blasting impacts to surrounding residential receptors. In this regard it is relevant to note that:

- *The project site is located in a sparsely populated rural area and is reasonably buffered from neighbouring residences not associated with the quarry.*
- *In the interests of protecting neighbourhood amenity, the quarry is to be operated during daytime periods only.*
- *The staging of the quarry has been designed such that topographic barriers are utilised to further reduce acoustic impacts.*
- *All quarrying processing will be undertaken within a quarry pit, located below natural ground level. This design precaution should reduce the impact of quarry noise significantly.*
- *The internal quarry haul route will be maintained in a good condition to prevent corrugations which can contribute to truck noise. The access will be sealed in part, nearest the highway intersection, to further reduce quarry truck noise.*

The noise assessment by Vipac Engineers and Scientists predict that noise levels generated by the quarry or by quarry traffic will comply with the relevant noise criteria at the nearest residences for all quarry operations during neutral and adverse weather conditions. The blasting assessment by Vipac Engineers and Scientists predict that the proposed blasting would comply with the relevant EPA air blast overpressure and ground vibration criteria at the closest residences to the Project Site. Refer ***Appendix C*** *for details.*

Traffic

It is proposed that a maximum of up to 60 loaded trucks per day would transport quarry products from the Gulgong Quarry project back to Castlereagh Highway via an existing internal access route. The intersection of the internal quarry access with the Castlereagh Highway is proposed to be upgraded, with the internal quarry access to be sealed in part, nearest the highway intersection.

The traffic impact assessment by Streetwise has determined that the proposed volumes of heavy truck traffic volume attributable to the proposed quarry would not significantly impact on existing road safety and performance. Refer ***Appendix D*** *for details.*

Landscape and Visual Impacts

The site of the proposed quarry, including internal haul route, is not within an area identified as possessing any visual sensitivity or landscape value (source: Mid-Western Regional Local Environmental Plan 2012 Flood Planning Map Active Street Frontages Map Visually Sensitive Land Maps, Mid-Western Regional Local Environmental Plan 2012 Heritage Map- Sheet HER_005). The quarry will not be visually intrusive to nearest neighbours or when viewed from the highway.

- *The quarry has been designed such that views into the working quarry will not be possible from either the nearest residence to the north or from the highway. The active quarry face is proposed to be progressively worked behind a topographic barrier until such time as sufficient depth is achieved.*
- *The overall visual impact will be of a gradual reduction in the height of the main knoll over time and removal of an existing quarry working face: an overall beneficial visual impact. Other than this visual impact, no other adverse visual or landscape impacts on neighbours are anticipated.*
- *Visual impacts are assessed to be minimal and satisfactory.*

Soil and Water Resources

The soils of the site have been mapped as comprising a part of the Tucklan Soil Landscape (tk). The project site is currently used for dry-land cropping and improved pasture, with the stony knoll used as native pasture- the latter having very limited agricultural productive potential- refer ***Appendix E*** *for details. Most of the quarry lies outside of an area designated as groundwater vulnerable (source: Mid-Western Regional Local Environmental Plan 2012 Groundwater Vulnerability Map- Sheet GRV_005), however, a small part of the western portion of the quarry is so identified. Drilling undertaken on site did not detect groundwater. The proposed floor of the quarry is located well above known groundwater levels in the near vicinity-refer* ***Appendix F*** *for details. The sediment basin system has sufficient capacity to meet future on-site water needs- refer* ***Appendix G*** *for details.*

A centre-piece of the soil and water management strategy for the proposed quarry is the diversion of 'clean' water around the quarry and the collection and retention of all runoff from disturbed quarry working areas to within the active parts of the quarry footprint, ensuring that run-off does not contaminate off-site areas or waterways. Coupled with this, the quarry operator will implement the following measures:

- *The use of appropriate soil stripping, handling and stockpiling procedures.*
- *All drainage from within the active quarry area and disturbed lands will be directed to the sediment basin system within the quarry, with the potential to be then re-used for quarry-related purposes such as dust suppression.*
- *The effectiveness of these sediment control measures is to be continuously monitored by the quarry operator and improvements made where necessary.*

The proposed quarry development has been designed, sited and will be managed to avoid any significant adverse stormwater, groundwater, erosion and sedimentation, or water quality impacts. It is not proposed to extract water from any watercourse or groundwater. Because stormwater emanating from disturbed lands within the quarry can be wholly contained within the quarry footprint there is a remote likelihood of any off-site impacts, in particular in terms of:

- *Water quality and flows within any downstream watercourse.*
- *Aquatic and riparian species, habitats and ecosystems.*
- *The stability of the bed and banks of the watercourses downstream.*

Notwithstanding the fact the site forms a part of an identified, broad-brush Biophysical Strategic Agricultural Land (BSAL) area, the quarry site itself is a stony outcrop with shallow soils and very severe limitations and low suitability for agriculture, other than for grazing. Moreover, the dry-land grazing agricultural pursuits currently being carried out on the land surrounding the proposed quarry can continue without any land use conflict.

The footprint of the proposed quarry will occupy approximately 7.34ha, or 0.6% of the 1,191ha 'Talinga' rural holding. The project will not impose or affect the ongoing use of adjoining agricultural land or the 'Talinga' rural landholding, with the quarry floor returned to agricultural use after quarrying is completed, equivalent to 0.55% of the 'Talinga' farm holding. The assessment reasonably identifies potential agricultural land use impacts as Low.

Air Quality

*Various dust abatement measures are proposed to be implemented on site to abate dust nuisance. The results of the modelling by Vipac Engineers and Scientists (**Appendix H**) show that the TSP and dust deposition predictions comply with the relevant criteria and averaging periods at all sensitive receptors modelled. The annual average PM10 and PM2.5 predictions also comply with criteria and the 24 hour average PM10 and PM2.5 predictions. Based on the technical assessment undertaken, Vipac conclude that air quality should not be a constraint to the proposed quarry development.*

Contamination

The project site is not listed as a a potential asbestos source (loose-fill asbestos insulation only), nor has the site possess any acid sulfate soils potential, nor is it registered as significantly contaminated land or any similar affectation within the meaning of section 59 (2) of the Contaminated Land Management Act 1997.

*The Stage 1 contamination assessment by Ballpark Environmental finds that the project site presents an acceptable low level of risk for site contamination and is suitable for its proposed use as a quarry. Refer **Appendix I** for details.*

Bushfire

*According to a NSW Rural Fire Service website search the project site is not identified as being bushfire prone land- refer **Appendix J** for details. Notwithstanding this fact, various fire management measures are proposed on site in the case of a fire event, including but not limited to the following:*

- *Extinguishers to be kept on all mobile plant and site vehicles. The extinguishers are to be serviced regularly.*
- *Access to the quarry to be maintained in a serviceable condition, to enable access by RFS fire fighting vehicles.*
- *No explosives kept on site.*
- *All mobile equipment to be fitted with spark arresting mufflers.*
- *Retention of water run-off from the quarry in the sediment basin, suitable for use in fighting fires.*

Heritage

The Project Site has not been identified as containing any significance in terms of Aboriginal or European heritage values. A search of the Heritage NSW administered AHIMS database returned no results for Aboriginal sites within the near vicinity of the proposed quarry. The nearest AHIMS sites are located to the east of the highway, generally proximate to the north-south creek system that runs parallel to the highway within the farming property owned by Hamish and Sally Drury.

- *A survey by OzArk Environment and Heritage, involving the participation of the local Aboriginal community representatives, found three Aboriginal items or relics of heritage significance outside of the proposed quarry area , away from the internal access route back to the highway. Refer **Appendix K** for details.*
- *Provided that suitable mitigation measures are put in place, it has been assessed that the proposal would not adversely impact on items of Aboriginal or European-heritage significance or cultural values.*
- *In the unlikely event that previously unknown Aboriginal object(s) and/or sites are discovered during works associated with the quarry, work must stop, and an appropriately qualified archaeologist be contacted to access the nature, extent and significance of the identified sites, in consultation with Aboriginal stakeholders.*

Flora and Fauna

All of the land proposed for quarry-related purposes was lawfully cleared prior to 1990. Most of the proposed quarry site is cleared or disturbed land and classified as Category 1 (Exempt land) for the purposes of the the Local Land Services Act 2013 (LLS Act). The site of the proposed quarry, including the proposed haul route back to the highway, is not zoned for conservation purposes, nor has it been identified in the LEP as having any terrestrial habitat or riparian values or biodiversity sensitivity (source: Mid-Western Regional Local Environmental Plan 2012 Sensitivity Biodiversity Map BIO_005))

No threatened flora species were recorded and therefore impacts to threatened flora or fauna species are not anticipated. Refer to ***Appendix L*** *for details.*

Social and Economic

The proposed quarry project will provide sufficient volumes of road base material to service currently approved and proposed infrastructure projects, including EnergyCo's extensive, 1km wide CWO-REZ project and Acciona's Orana Wind Farm project.

Moreover, the wider region is already facing pressure for the reliable supply of road base material in line with already committed infrastructure projects. These pressures are set to continue, with limited opportunities for new or existing local quarries being approved in a timely manner to meet these increased demands.

Assuming the safeguards and controls nominated to manage impacts on other environmental aspects are adopted the overall impact on local amenity is anticipated to be satisfactory. The proposed quarry has been designed to minimise the social and economic cost on adjoining land owners, local and regional communities.

Quarries stimulate local communities through investment and by providing jobs. Positive economic impacts include the provision of much-needed road base to local infrastructure project, a long-term contribution to the local economy through support of local businesses and services and increased employment opportunities.

▪ *Conclusion*

The Mid-Western Regional Council area is about to enter an era of major investments and employment arising from the NSW State Government's commitment to accelerate the roll-out of renewable energy projects in NSW: a transformation of NSW's energy landscape. The recent approval of EnergyCo's Central West Orana Renewable Energy Zone (CWO-REZ) transmission project paves the way for the construction of essential transmission infrastructure to connect large-scale, wind, solar and energy storage projects in the Mid-Western Regional Council area, generating up to $20 billion in private investment and about 1,800-5,000 jobs during peak construction.

Less appreciated is the fact that all of these major projects will be reliant on sourcing a reliable, proximate source of road making and other quarry products to service these major projects.

In this regard the site of the Gulgong Quarry project is strategically located in terms of its close proximity to, and ability to service currently approved or proposed nearby infrastructure projects within the CWO-REZ zone. It proposes safe and adequate access suitable for the project. The project provides for the supply of much-needed quarry product to these projects, thus ensuring employment opportunities and maintaining stimulus to the economy of the Mid-Wester Regional Council area. The consequences of not proceeding with the Project also weigh heavily in favour of proceeding with the project.

This EIS has been prepared in accordance with the provisions of the EP&A Act and addresses the SEARs, as well as all relevant environmental issues raised by government and others. Moreover, the Gulgong Quarry Project accords with the principles of Ecologically Sustainable Development.

The land the subject of the Gulgong Quarry project is mostly cleared and disturbed land, and has no likely significant environmental constraints to the development. The project site is well removed from residential areas in a relatively remote rural location.

The potential environmental, social and economic impacts, both direct and cumulative, have been identified and thoroughly assessed as part of this EIS. The proposed quarry development has been designed to avoid and minimise adverse environmental, social and economic impacts and is anticipated to result in satisfactory environmental impacts in accordance with the jurisdictional requirements of s.4.15(1) of the EP&A Act.

As a result, it is concluded that the environmental and community impacts associated with the Gulgong Quarry Project are deemed to be acceptably low, and the project benefits outweigh any project negatives. Overall, this EIS concludes that the Gulgong Quarry Project is in the public interest and is not predicted to cause significant environmental impacts or pose significant environmental risks.

Consequently, the proposed quarry development is considered to be in the public interest, and should be approved, subject to appropriate conditions of consent.

The Project is classified as regionally significant development pursuant to the provisions of Schedule 6 of the State Environmental Planning Policy (Planning Systems) 2021 and the Western Regional Planning Panel (WRPP) is the consent authority for this proposed quarry development.

1. Introduction

1.1 Overview of Project, Objectives

The quarry development the subject of this Environmental Impact Statement (EIS) comprises a part of Lot 1 DP 1239728, No.1848 Castlereagh Highway Gulgong NSW 2852. This lot, in turn forms a part of a much larger rural holding known as 'Talinga', owned by Hamish and Sally Drury and the Talinga Pastoral Company. The site of the proposed quarry is located approximately 21.5km by road to the north of the township of Gulgong in the Mid Western Regional Council local government area. Refer to **Figure 0.1** and **Figure 1.1** showing the project site in its regional setting.

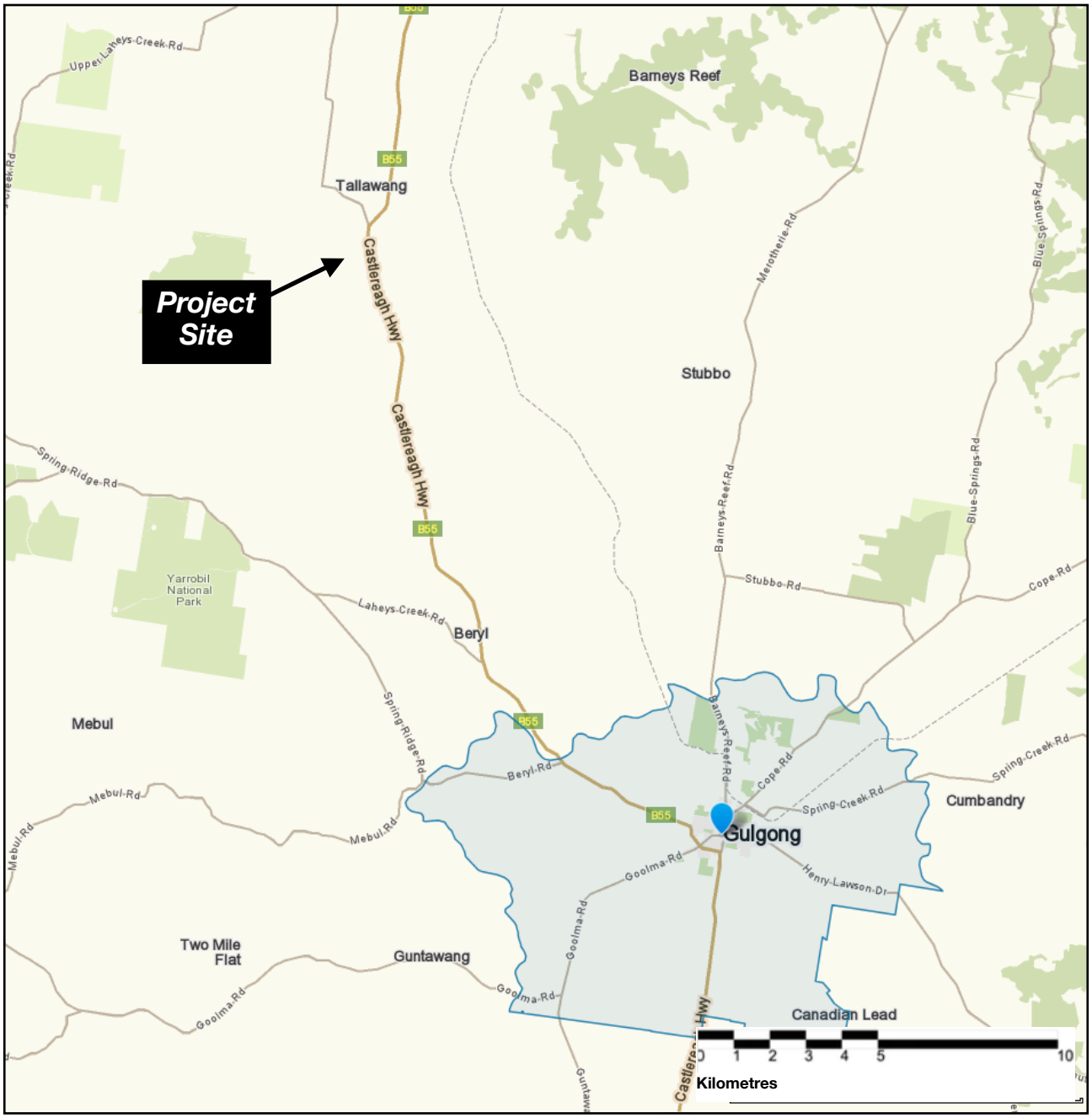


FIGURE 1.1: Project Site- regional setting

(Map Base Source: Whereis online mapping)

The principal objectives for the Gulgong Quarry project may be summarised as follows:

- The establishment of a quarry on the site to extract and to process up to 350,000 tonnes per annum of quarry material within a quarry footprint of 7.34ha and a total resource of about 4.6 million tonnes.
- The proposed quarry will principally serve the various state significant Renewable Energy Zone (CWO-REZ) projects, including: EnergyCo's extensive, 1km wide CWO-REZ project located approximately 3.1km to the north, and Acciona's Orana Wind Farm project, located as close as 2km to the north.
- In serving these nearby projects quarry truck traffic on the highway will be minimised.
- Optimisation of a valuable quarry resource, utilising existing access.
- Provide fit for purpose, safe and compliant quarry operation undertaken in an environmentally responsible manner and to create a safe, stable landform, capable of being effectively rehabilitated.
- To ensure that the quarry, once completed, is rehabilitated back to agricultural use.
- To effectively manage and to mitigate noise, dust and blasting impacts associated with quarrying.

1.2 Background to the Project

The owners have extracted surface rock from the eastern flanks of the elevated knoll in the past, applied to various rural access tracks running through the 'Talinga' rural holding- refer Photograph 1.1. The elevated knoll and flanks contain shallow, stony soils unsuited to agriculture other than dry-land grazing by stock. However, it is the relative stoniness and shallow soils that makes it well suited to quarrying. Upon more recent geological drilling of this rocky outcrop the owners are now aware that the land is underlain by an extensive quarry resource suitable for road making purposes.

PHOTOGRAPH 1.1: Existing sandstone borrow pit adjoining the stony hill- proposed to be developed for a hard rock quarry. View looking north-west.

(April 2024 photograph)

1.3 EIS Project Team

The preparation of this EIS was undertaken and managed by Gary Peacock who holds a Bachelor of Town Planning (UNSW), is a registered member of Planning Institute of Australia, and is a principal and director of Outline Planning Consultants Pty Ltd.

Table 1.2: EIS Project Team

Specialist area of expertise	*Name of consulting firm*	*Names of specialist personnel*
Details of the proposed quarry project, including design, operational aspects	*Outline Planning Consultants, Hamish and Sally Drury*	*Abbey Richards and Gary Peacock*
Roads and traffic assessment	*Streetwise*	*Andy Davis Traffic Engineer* *Craig Nethery Senior Engineer*
Stormwater, Drainage	*Martens & Associates and Outline Planning Consultants*	*Terry Harvey, project engineer, and Gary Peacock*
Ecology, Rehabilitation	*Bower Ecology*	*Steve Jarman*
Air quality, greenhouse gas impacts	*Vipac*	*Dr Stephen Thomas*
Noise impacts	*Vipac*	*Jackson Yu and Patrick Drake*
Contamination	*Ballpark Environmental*	*Andrew Ballard*
Geotechnical	*Douglas Partners*	*Troy McClelland*
Surveying	*ORyan Geospatial*	*David Ryan*
Aboriginal heritage	*OzArk Heritage & Environment*	*Dr Jodie Benton,Principal Archaeologist & Stephanie Rusden Senior Archaeologist*

Outline Planning Consultants Pty Ltd has relied upon the adequacy and accuracy of the other assessments and advice contained in the following reports, plans, and other information prepared by the following specialist consultant teams provided below, and should be read in conjunction with the above table.

Except where otherwise indicated, the remaining parts of the EIS were prepared by Outline Planning Consultants.

1.4 Restrictions and Covenants

No restrictions or covenants apply to the Project Site.

1.5 Content of this EIS

This EIS complies with the Planning Secretary's Environmental Assessment Requirements (SEARs) EAR 1722 issued on 5 June 2024, as required under the provisions of Section 4.12(8) of the *Environmental Planning and Assessment Act 1979* (EP&A Act) and Part 8 Division 5 of the *Environmental Planning and Assessment Regulation 2021* (EP&A Regulation 2021), as summarised in the accompanying Table 1.3.

Table 1.3: Compliance with issued SEARs (EAR 1894)

EAR 1894 EIS Requirement	Where addressed in this EIS
General requirements including: • Executive Summary • Comprehensive description of the quarry development. • Conclusion, justification of quarry project. • Signed declaration from the author of the EIS, certifying that the information contained within the document is neither false nor misleading	Executive summary Section 3 Section 2.7, 8 Refer to EIS page 6
Consultation required	Section 6 + Appendices O & P
Noise, blasting & vibration impacts	Sections 3.5, 4.2 & 7.3.10 + Appendix C
Air quality impacts	Sections 3.5, 4.2 & 7.3.9 + Appendix H
Water	Sections 2.2.3, 3.5, 4.2 & 7.3.7 + Appendices F & G
Biodiversity	Sections 4.2 & 7.3.11 + Appendix L
Heritage	Sections 2.2.4, 4.2 & 7.3.3 + Appendix K
Traffic & Transport	Sections 3.5, 4.2 & 7.3.12+ Appendix D
Land resources	Sections 2.2, 4.2 & 7.3.1 + Appendices E & N
Waste	Sections 3.9, 4.2 & 7.3.5
Hazards	Sections 2.2, 4.2, 7.3.2 & 7.3.4 + Appendices I & J
Visual	Sections 2.2, 4.2 & 7.3.6
Social & economic	Sections 2.3 & 7.3.8
Rehabilitation	Sections 3.11, 4.2 & 7.3
Relevant, State, regional and local planning instruments, guidelines, policies	Sections 5 & 7.2

1.6 EIS Report Structure

The purpose of this EIS is to enable consideration of the implications of the proposed Gulgong Quarry project. The EIS has been prepared in accordance with the EP&A Act and the EP&A Regulation 2021. An overview of the layout of this EIS is provided below:

Executive Summary: Provides a brief overview of the proposed quarry development and the EIS.

Section 1: Introduces the Gulgong Quarry Project, provides a background to the project and project objectives, the EIS project team, and the EIS report structure.

Section 2: Outlines the strategic context for the quarry project and key strategic issues that are relevant to the assessment of the Gulgong Quarry project, including justification of the project, proximity of the site to major REZ infrastructure projects, relevant plans that establish the regional or local land use planning context for the project, the site and surrounds considered in the context of key risks or hazards for the project and cumulative impacts potential.

Section 3: Provides details of the Gulgong Quarry Project, including plans for the proposed quarry operation. This part of the EIS also includes details of quarry management measures proposed-to be incorporated into a quarry management plan once consent is issued-along with alternatives to the Project.

Section 4: Provides a full description of the measures to mitigate adverse effects of the Gulgong Quarry Project.

Section 5: Outlines the statutory planning context for the Gulgong Quarry Project, the applicability of planning and environment legislation and approvals that must be obtained.

Section 6: Summarises the findings of the community engagement that was carried out for the Gulgong Quarry Project during the preparation of the EIS.

Section 7: Provides an assessment of the likely impact on the environment of the Gulgong Quarry Project.

Section 8: Provides a justification and evaluation for the Gulgong Quarry Project as a whole, having regard to the economic, environmental and social impacts of the project and the principles of ecologically sustainable development.

The appendices to the EIS present the following additional information including:

- The Secretary's Environmental Assessment Requirements (**Appendix A**).
- Quarry project plans (**Appendix B**).
- Noise impact assessment report by Vipac (**Appendix C**).
- Roads and traffic assessment by Streetwise (**Appendix D**).
- Agronomists report (**Appendix E**).
- Groundwater assessment by Martens & Associates (**Appendix F**).
- Water balance report by Martens & Associates (**Appendix G**).
- Air quality impact assessment by Vipac (**Appendix H**).
- Contamination Report by Ballpark Environmental (**Appendix I**).
- RFS website (**Appendix J**).
- Aboriginal heritage assessment by OzArk Environment and Heritage (**Appendix K**).
- Ecological assessment by Bower Ecology (**Appendix L**).
- Essential Energy advice (**Appendix M**).
- Geotechnical assessment by Douglas Partners (**Appendix N**).
- Minutes of pre-lodgement meeting held with Mid-Western Regional Council (**Appendix 0**).
- Newsletter distributed to neighbours (**Appendix P**).

2. Site Features and Context

The following section identifies the key strategic issues that are relevant to the assessment of the Project.

2.1 Overview

The proposed Gulgong Quarry Project is located within the Central West-Orana region, the second largest region in NSW. The Central West-Orana region consists of 19 local government areas, including that of the Mid-Western Regional Council. The nearest population centres to the project site are at Gulgong, Mudgee and Dunedoo. Key land uses in the local and broader Central-West region include agriculture, consisting primarily of sheep and cattle grazing and dry land cropping, with areas of mining, viticulture and production forestry also to be found in the region. Renewable energy development is a growing land use in the area, with multiple renewable energy projects proposed or approved as a result of the declaration of the Central-West Orana Renewable Energy Zone (CWO REZ).

Mid-Western region of NSW is on the cusp of a major resurgence in terms of infrastructure projects being undertaken, employment opportunities and economic prosperity generally, as evidenced by the following statistics, derived from the January 2024 pwc report prepared for Mid-Western Regional Council entitled *Managing the impacts of State Significant Development*:

- As at October 2023, twenty five (25) state significant developments (SSD) projects, as well as Energy Corporation of NSW (EnergyCo's) transmission lines, are currently planned within and around the Mid-Western Regional Local Government Area (MWR LGA). The majority of these SSDs are related to the CWO REZ and are central to the NSW Government's net zero transition to deliver clean, reliable and affordable energy for NSW. Most of these projects are located in the northern part of the Mid-Western Regional Council LGA, near the project site.
- The State's first REZ is located in Central-West Orana region. Occupying approximately 20,000 square kms, the REZ overlaps with a significant proportion of the Mid-Western Regional Local Government Area (LGA). As at September 2023 it is anticipated that the REZ is expected to generate $10 billion in private investment in the REZ region by 2030.
- Together, these projects have a peak workforce requirement of 7,010 workers by 2026. Accounting for workers who may bring spouses and families, the total additional population within the Mid-Western Regional Council would be higher, peaking at 9,906 additional persons in 2026. This is a 40% increase in population in three years.
- The SSD projects alone would generate a huge increase in demand for road making material, in the millions of tonnes. Access to EnergyCo's approved transmission line easements for operational maintenance would be via an extensive system of access tracks, running to and along the transmission line, and existing public and private roads. This would also entail upgrades to local roads and upgraded intersections with the Castlereagh Highway. Access tracks and roads would be used by a range of heavy and light vehicles servicing the EnergyCo project.
- The project site is strategically positioned in terms of its close proximity to and ability to service these SSD projects with road making material, located as it is in the northern part of the Mid-Western Regional Council LGA. In particular, the project site is located approximately 3.1km to the north of EnergyCo's extensive, 1km wide CWO-REZ project, approved on 26 June 2024, and as close as 2km to Acciona's Orana Wind Farm project. Both projects will require huge amounts of road making material to service their developments-refer **Figure 2.1** showing the location of these two CWO-REZ projects and nearness to the site.

The proposed quarry is the only one located in the northern section of the Mid-Western Regional Council proximate to the above SSD projects. It is situated within a sparsely populated rural area, surrounded by a mix of forestry, agriculture, and rural dwellings.

There are limited sources of suitable quality quarry material to meet the forecast demand for road making material for these SSD projects and the proposed quarry is well positioned to cater for this demand given its strategic location close to an arterial road, and the limited alternative supply available to serve these future markets and roads infrastructure projects. The Project would offer the opportunity to optimise the recovery of a valuable, increasingly scarce, quarry resource. Consequently, the Project represents the efficient use of an available extractive material resources.

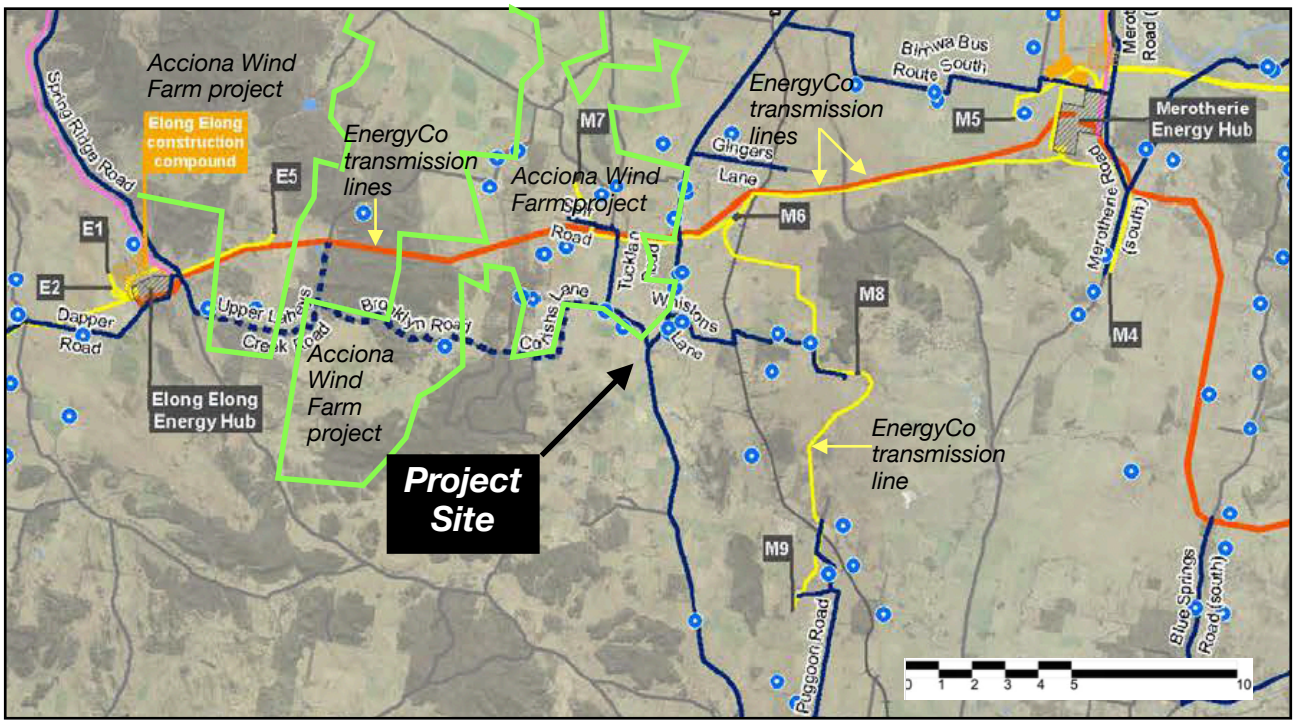


FIGURE 2.1: The proposed quarry is within 3.1km of EnergyCo's extensive, 1km wide CWO-REZ transmission line- coloured yellow and orange-, and as close as 2km to Acciona's Orana Wind Farm project- extent of area coloured lime green

(Map Base Source: Appendix 4 of Ministers approval for EnergyCo project issued 26 June 2024 overlaid with Acciona's Orana Wind Farm project mapping (approx.))

The Gulgong Quarry project will deliver a range of benefits, including but not limited to the following:

- The Project will support the planned future growth of the region, maintain local employment and supply of quarry materials close to existing and future infrastructure projects.
- The Project will enable the obtaining of much-needed road making material without significant detriment to the environment.
- The Project allows for the recovery of a valuable extractive resource.
- The Project will provide employment for quarry workers and contractors.
- While the Project would increase the number of heavy quarry truck traffic using Castlereagh Highway, there is unlikely to be any detrimental impact on road safety or functionality given:
  - The existing relatively low traffic volumes using this arterial road.
  - The reasonably high standard of construction of the road.
  - Modest levels of quarry truck traffic proposed.
  - The short haulages distances required, and in particular, haulages distances required to service EnergyCo's CWO-REZ project, and Acciona's Orana Wind Farm project.
- Little additional clearing of vegetation is proposed. The project has been designed to ensure that noise, air quality and visual impacts on surrounding properties are satisfactorily minimised.

- The project site is to be appropriately rehabilitated once quarrying is completed.
- The quarry is a permissible use in the RU1 zone under the *Mid-Western Regional Local Environmental Plan 2012* and is not zoned for conservation or like purposes.
- The project would generate flow-on economic benefits to the region of direct expenditure generated by wages, contractors fees and the sale of quarry products.

From the above, there are demonstrable benefits associated with the project, and with appropriate conditions of approval, these benefits can be achieved without significant adverse social or environmental impacts.

2.2 Key Features of the Project Site

2.2.1 Locational Context

The proposed quarry site forms a part of Lot 1 in Deposited Plan (DP) 1239728, situated on the western side of the Castlereagh Highway approximately 21.5km by road to the township of Gulgong, in the Mid-Western Regional Council local government area (LGA). It is located approximately 0.2km to the south of the intersection of Castlereagh Highway and Tuklan Road. Lot 1 has an area of approximately 122ha. It is utilised for the grazing of sheep with cultivated lower slopes, with a small borrow pit established on a stony hill providing road base for internal use within the Talinga Pastoral Company farm holding. Refer **Figures 2.2 and 2.3**, as well as Photographs 2.1-2.3. The land surrounding the site is used for grazing and cultivation, with limited grazing in more elevated hilly terrain.

The topography of land within the vicinity of the project site is variable, with ridge lines generally ranging between 400 metres (m) Australian Height Datum (AHD) and 500m AHD. The highest point is located south of the Goodiman State Conservation area at 600m AHD, and the lowest point at Tallawang Creek, to the east, at around 480m AHD or less. The project site drains towards Tallaway Creek. The nearest rural dwellings are illustrated in **Figure 2.2**.

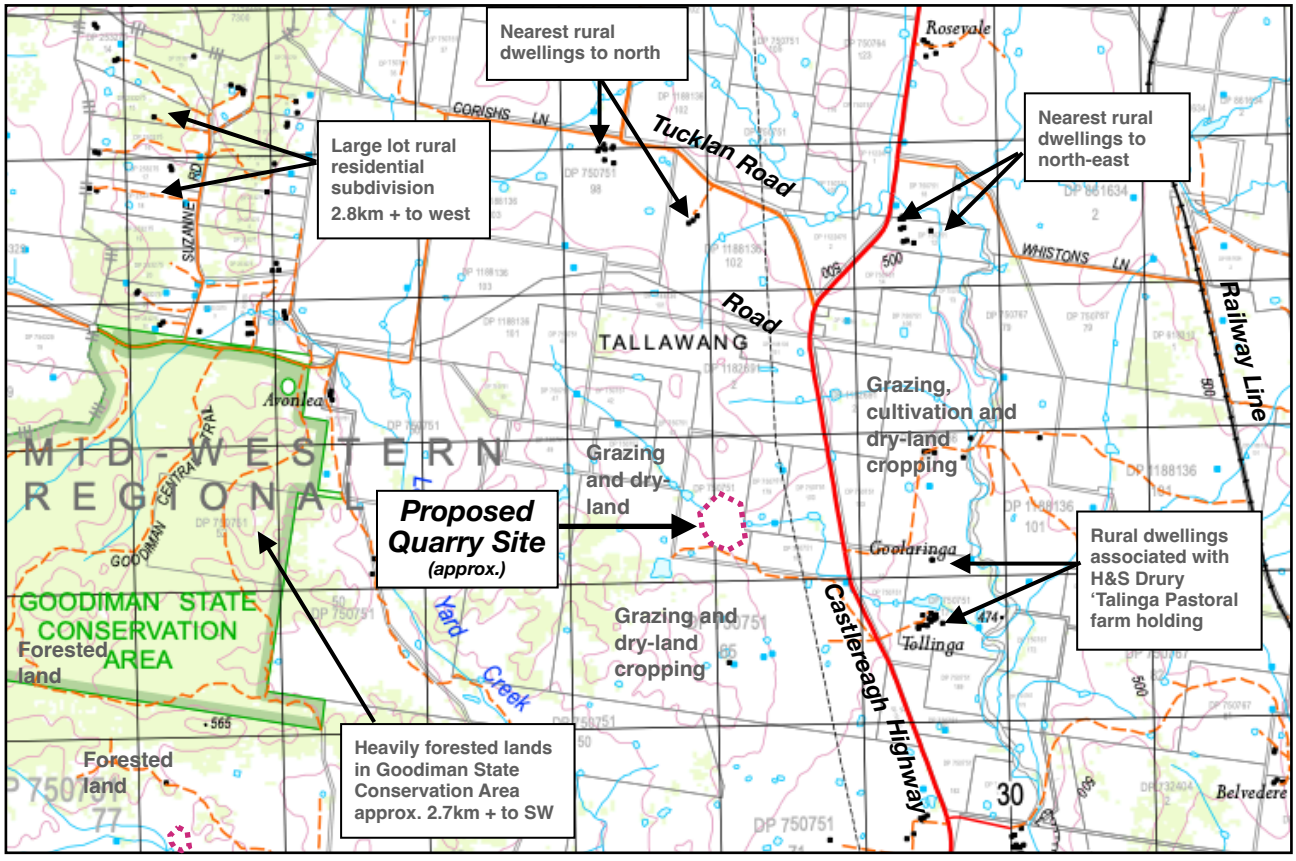


FIGURE 2.2: Local context, land uses

(Source: NSW Spatial Services Dunedoo 1:50,000 topographic map 8733-N 1km grid)

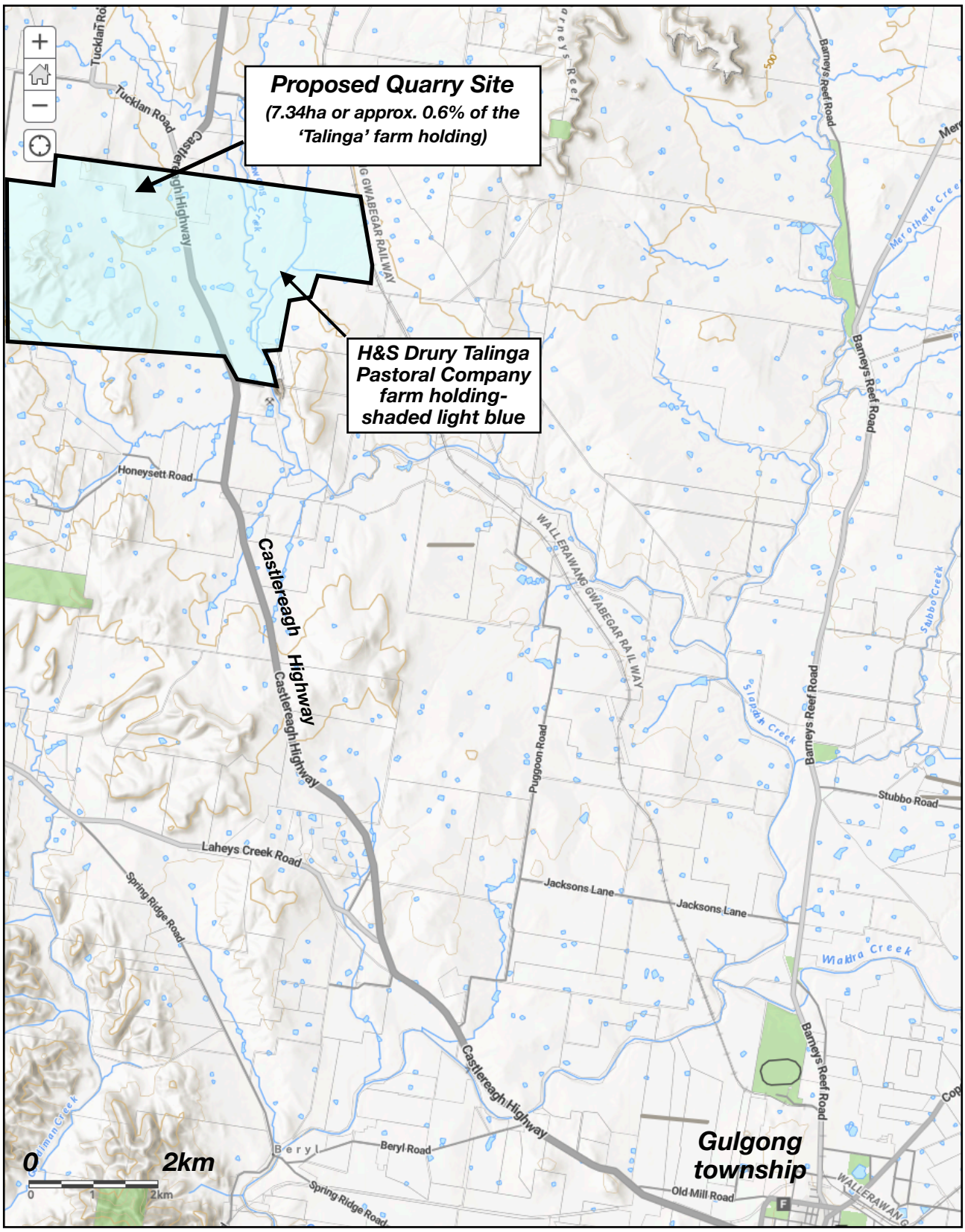


FIGURE 2.3: Regional context: nearest township (Gulgong)

(Source: NSW Government online map viewers)

Lands surrounding the site are generally characterised by medium-sized cropping and pastoral landholdings subject to extensive vegetation clearing associated with historic agricultural land uses. A review of historic photographs shows that the project site was cleared prior to 1990.

The proposed quarry site comprises under 0.6% of a larger 'Talinga' rural holding, having an area of 1,191ha, owned by Hamish and Sally Drury at No.1848 Castlereagh Highway, at Tallawang, near Gulgong NSW 2852 (project site, site)- refer **Figure 2.3**. The property has two residences, known as 'Talinga' (or 'Tollinga') and 'Goolaringa', the two nearest dwellings to the proposed quarry to the south. The propertyis intensively used cultivation and for the grazing of sheep- most cultivation and improved pasture confined to the lower-lying alluvial areas situated on the property, principally to the east of the highway, with dry-land grazing in the more elevated hills to the west of the highway. Hamish and Sally Drury also own the rural property know as "Rosemount" the residence on this land holding located approximately 5.5km to the north-east of the proposed quarry. The site is accessed via the Castlereagh Highway to the east.

The site is located in the northern sector of the Mid-Western Regional Council LGA (population 25,713 in 2021 Census). Most of the LGA is agricultural with some mining. Importantly, the site lies within the Central-West Orana Renewable Energy Zone (CWO-REZ), which covers an area of approximately 20,000 square kilometres centred on Dubbo, Dunedoo and Gulgong, on the land of the Wiradjuri, Wailwan and Kamilaroi people.

The largest town in the Mid-Western Regional Council LGA is Mudgee (population 11,457 in Australian Bureau of Statistics 2021 Census), which lies 100km to the north of the project site.

The nearest township to the site is Gulgong (population 2,680 in Australian Bureau of Statistics 2021 Census). The rural locality of Tallawang has a population of 165 (Australian Bureau of Statistics, 2021 Census). The Goodiman State Conservation Area (Community Conservation Area (CCA) Zone 3) is located approximately 2.5km to the WSW of the project site. Refer **Figure 2.2**.

2.2.2 Description of the Project Site

Site Details & Context

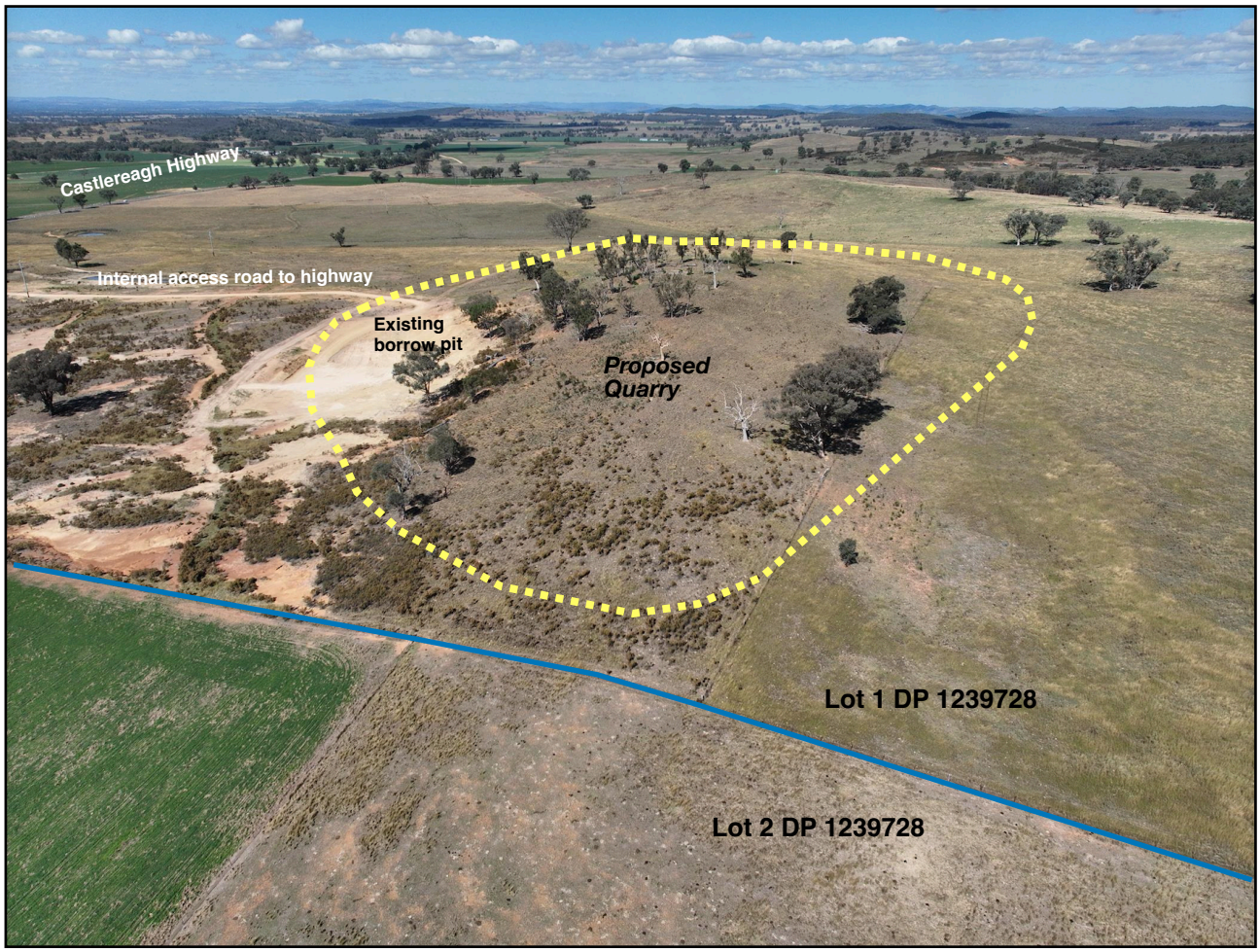
The proposed quarry site is located within Lot 1 in DP 1239728, approximately 500 metres to the west of the Castlereagh Highway. The elevated stony knoll on this allotment, proposed as a quarry, is currently used as a borrow pit for supplying hard rock for farm-related access tracks on the Talinga Pastoral Company rural holding- refer Photograph 1.1 and 2.1.

The topography of the site is generally undulating to moderate, with steeper slopes encountered on the eastern side of the rocky knoll.

Elevations on Lot 1 range from RL550m AHD on the elevated hill at the far western boundary of the lot, to RL538m AHD at the top of the stony knoll proposed for quarrying, to RL 520m at the foot of the knoll to RL490 AHD nearer to the Castlereagh Highway. To the west of the knoll are a series of saddles before the land rises again. The steeper, western portion of Lot 1 is timbered land, with the reminder of Lot 1 comprising cleared land utilised for dry-land grazing. Refer to **Figure 2.4**.

Soils in and around the knoll proposed for a quarry are shallow, rocky soils with a correspondingly low agricultural value. Further away from the knoll soils are sandy with gravel and occasional boulders evident in the A horizon. Land at the base of the hill system have gentler slopes and a higher agricultural value, and are cultivated, with the grazing of sheep being the predominate use. Refer Photograph 2.2.

To the south-east of the proposed quarry is a 1st order watercourse, with no defined bed or bank, that runs in an easterly direction towards the highway. The proposed quarry footprint is more than 40 metres removed from this drainage line. To the north of the proposed quarry there is a 1st order watercourse that drains back to Tuklan Road. Refer Photograph 2.2. Lot 1 has three small dams.



PHOTOGRAPH 2.1: Aerial drone photograph of the stony knoll and immediate surrounds proposed to be developed for a hard rock quarry. Approximate extent of proposed quarry footprint shown with broken yellow line. View looking south from near the northern boundary of Lot 1 (shown with blue line).

(Source: April 2024 aerial photograph by O'Ryan Geospatial)

The elevate knoll, proposed as a quarry, appears when viewed from the highway as a gentling rising topographic feature rising some 20 metres above the surrounding landscape with no visual prominence. Views of the knoll are largely confined to within the immediate locality. Views of the knoll from residences the north-east are generally screened by intervening stands of vegetation, however, the residence located approximately 788m away from the northern perimeter of the proposed quarry has views back toward the knoll. It is noteworthy that the owner of this property has recently commenced extracting rock from their land for farm purposes, close to the knoll.

The nearest residences to the proposed quarry, not associated with the quarry, are as follows:

- Residence on neighbouring Lot 2 DP 1239728, located approximately 788 m to the north.
- Residence on Lot 98 DP 750751, located approximately 1,415 m to the north-west.
- Residence on Lot 12 DP 750751, located approximately 1,345 m to the north-east.
- Residence on Lot 18 DP 750751, located approximately 1,460 m to the north-east.
- Residence on Lot 1 DP 861634, located approximately 1,900 m to the north-east.

Refer **Figure 2.4** and Photograph 2.3.

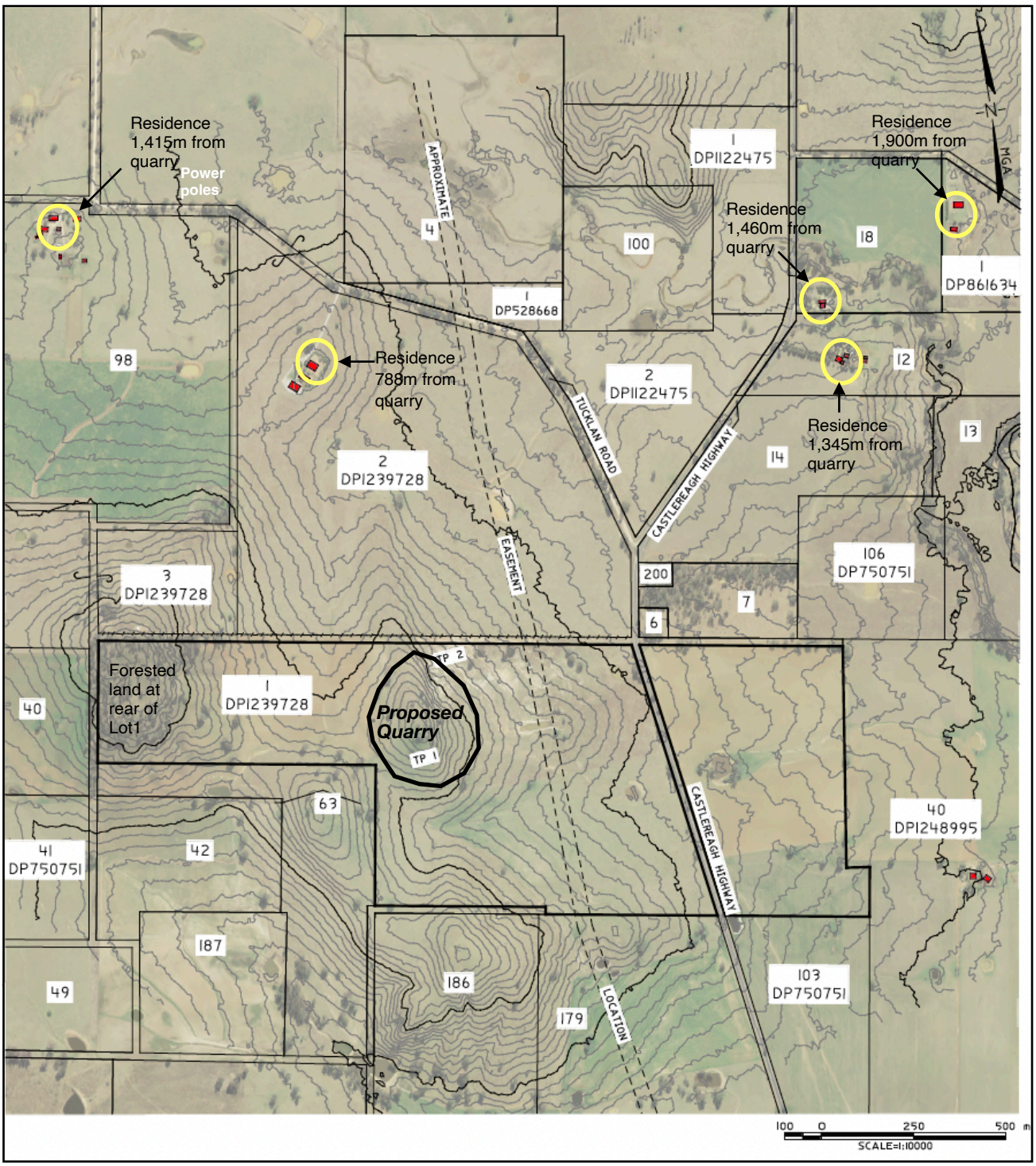


FIGURE 2.4: Project Site and surrounds- nearest residences circled yellow

(Source: April 2024 survey by O'Ryan Geospatial)

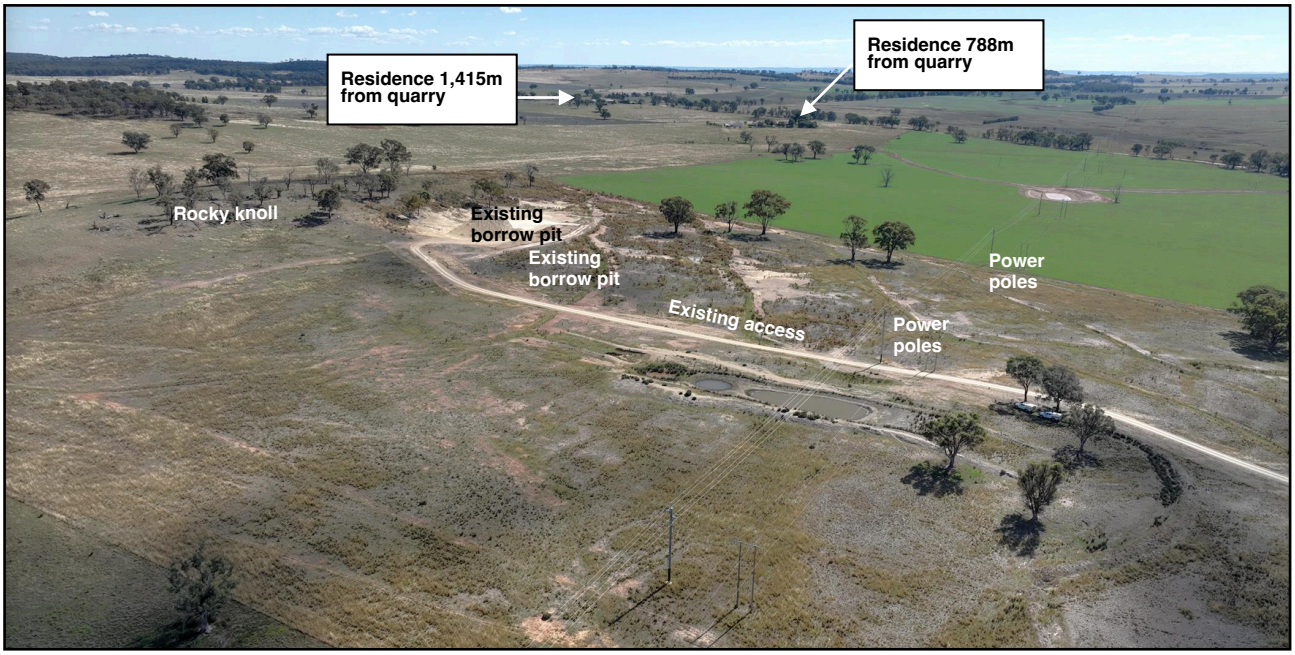
*(NOTE: All of the residences identified above were distributed a newsletter by Hamish and Sally Drury in the period 9-23 September 2024- refer **Appendix P** for copy of newsletter)*

- EASEMENT APPROX 40m WIDE
- PROJECT LOCATION
- CADASTRE
- 1m MINOR CONTOURS
- 10m MAJOR CONTOURS
- BUILDINGS

CONTOURS DRIVED FROM ELVIS NSW STATE LIDAR (7/5/24).
CADASTRE AND IMAGERY DOWNLOADED FROM STATE COLLABORATION PORTAL (7/5/24) NOT SURVEY ACCURATE

PHOTOGRAPH 2.2: View looking south-east from near existing farm borrow pit over grazing land and drainage line back towards highway and to the south over farmland owned by Talinga Pastoral Company

(April 2024 photograph)



PHOTOGRAPH 2.3: View looking north-west from near the highway towards farm borrow pit, the rocky knoll and nearest residences to the north and north-west

(April 2024 aerial photograph by O'Ryan Geospatial))

The major highway in the locality is the Castlereagh Highway (B55), fronting the site. It is understood that Mid-Western Regional Council is the consent authority for any development application and the Roads Authority for the Great Western Highway (s.4.46(3) of the EPA Act). Therefore, Council has the power to issue any approval under the *Roads Act 1993* but requires the concurrence of Transport for NSW (TfNSW) under s.138(2) of the *Roads Act 1993* because the Castlereagh Highway is a classified road. Refer Photograph 2.4**.** Refer to Section 7.4 of the EIS for further details.

133kv power lines run through Lot 1 in a north-south direction, generally parallel to the Castlereagh Highway, and set back approximately 270 metres from the highway- refer **Figure 2.4** and Photograph 2.3.

PHOTOGRAPH 2.4: View looking from near the highway to the west towards farm borrow pit, the rocky knoll, access to the highway and forested hilly lands at the rear of Lot 1

(April 2024 aerial photograph by O'Ryan Geospatial))

In addition to the above, the project site also has the following features:

- The site of the proposed quarry, including the proposed haul route back to the highway, is not mapped as being within an area designated as groundwater vulnerable (source: *Mid-Western Regional Local Environmental Plan 2012 Groundwater Vulnerability Map- Sheet GRV_005*), however, land immediately to the west of the proposed quarry is identified as being groundwater vulnerable.
- The site of the proposed quarry, including the proposed haul route back to the highway, is is not within a conservation area or identified in the LEP as being flood prone or having any visual sensitivity (source: *Mid-Western Regional Local Environmental Plan 2012 Flood Planning Map Active Street Frontages Map Visually Sensitive Land Maps*).
- The site of the proposed quarry, including the proposed haul route back to the highway, does not contain an item of the environmental heritage or landscape value (source: *Mid-Western Regional Local Environmental Plan 2012 Heritage Map- Sheet HER_005*). No archaeological sites or artefacts on land proposed for quarry purposes. Refer to OzArk assessment in **Appendix K**.
- The site of the proposed quarry, including the proposed haul route back to the highway, is not identified as containing land identified as being of biodiversity sensitivity (source: *Mid-Western Regional Local Environmental Plan 2012 Sensitivity Biodiversity Map BIO_005)*). However, the vegetated hill at the western periphery of Lot 1 DP 1239728 is identified as being of "High Biodiversity Sensitivity".
- Lot 1 DP 1239728 is not affected by any road widening or road realignment proposals.
- Lot 1 DP 1239728 is not within a drinking water catchment.
- Lot 1 DP 1239728 is not affected by any policy relating to landslip hazard or is affected by mine subsidence.
- Lot 1 DP 1239728 has no acid sulphate soils potential.
- Lot 1 DP 1239728 is not listed as a a potential asbestos source (loose-fill asbestos insulation only), nor is the land registered as significantly contaminated land or any similar affectation within the meaning of section 59 (2) of the *Contaminated Land Management Act 1997*.
- The site of the proposed quarry, including the proposed haul route back to the highway, is not within a designated bushfire zone (source: NSW Rural Fire Service website search-refer **Appendix J**).
- Lot 1 DP 1239728 is not located in the vicinity of any competing extractive industry.
- Due to the rockiness of the hill the subject of the proposed quarry, it has very limited agricultural productive potential. This is notwithstanding the fact that the site forms a part of a much broader area mapped as Biophysical Strategic Agricultural Land (BSAL).

2.2.3 Project Site Geology and Soils

Geology and the Extractive Resource

The proposed quarry site lies over the boundary of two geological units, which are mapped to be separated by a faulted boundary, namely:

- Geology of the Ludlow Tannabutta Group (Stratigraphic Unit Sta), also known as the Dungeree Volcanics (Stad_f), shown underlying much of the proposed quarry site. The rock types found within this geological unit comprise shale, slate, quartz and felsic volcanic rich sandstone that have been affected by past volcanism.
- Geology of the Late Odovician mudstones of the Tucklan Formation (Ocat) located to the west. The rock types found within this geological unit comprise dark mudstone, basalt to latite boulder conglomerate or breccia, lithic sandstone, basalt, andesite, dolerite, latite, limestone and rare chert.

East of the highway are Holocene Alluvial valley deposits- refer **Figure 2.5**.

Core drilling and preliminary geotechnical investigations was undertaken by Douglas Partners between 4 to 15 April 2024. This involved drilling at two boreholes to depths ranging from 13.54 m to 15.55 m. sampling from an existing stockpile of excavated material and laboratory testing of selected samples. The details of the field work are presented in the report by Douglas Partners in **Appendix N**.

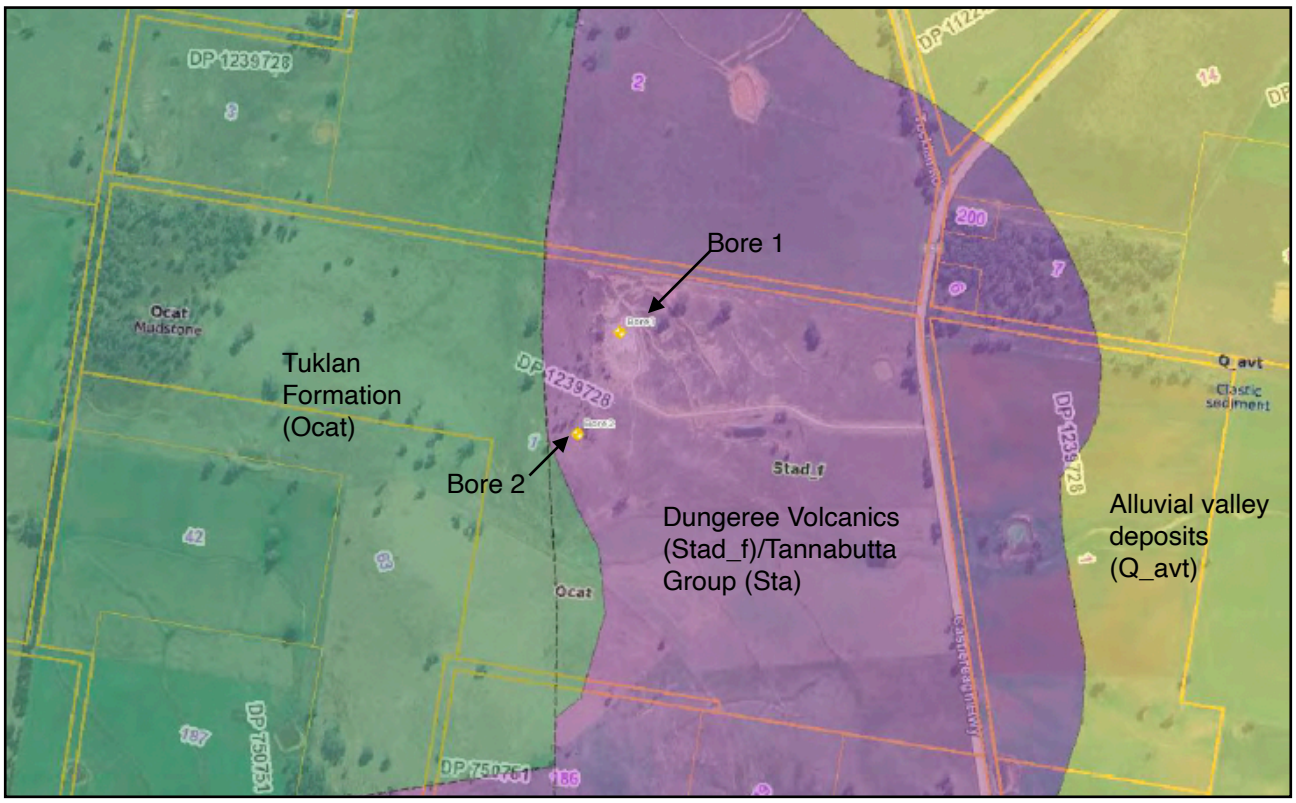


FIGURE 2.5: NSW Seamless Geology map covering the site, with approximate borehole locations shown

(Source: NSW Seamless Geology map, Douglas Partners 4 June 2024. Refer Appendix N)

PHOTOGRAPHS 2.5 & 2.6: Core drilling by Douglas partners in and around the proposed quarry site reveals a quarry resource close to the ground surface

(Source: April 2024 photography by Hamish Drury)

The core drilling by Douglas Partners (**Appendix N**) revealed the following:

- Bore 1: Existing farm borrow pit. Typically medium and medium to high strength, highly fractured phyllite (a metamorphic rock). Refer **Figure 2.5** and **Figure 2.7**.
- Bore 2: On the southern end of the elevated knoll. Shallow, silty dark brown gravelly sandy soil overlying typically medium to high and high strength, moderately fractured meta-siltstone.Refer **Figure 2.5** and **Figure 2.7.**

The results of the laboratory testing undertaken found the rock to be capable of meeting the material specification (TfNSW, 2022) for 'select' quality materials or fill. Douglas Partners also consider that that quarry material would also be suitable for general fill, and that consideration may also be given to the use of the material in unsealed access roads, subject to confirmation of the specification for such material and designer's approval.

Soils, Agricultural Values

The soils of the proposed quarry site and surrounds has been mapped as comprising a part of the Tucklan Soil Landscape (tk). It is noteworthy that the Biophysical Strategic Agricultural Land (BSAL) mapping for the locality follows the extent of the lands broadly mapped as comprising the Tuklan Soil Landscape-refer **Figure 2.6**.

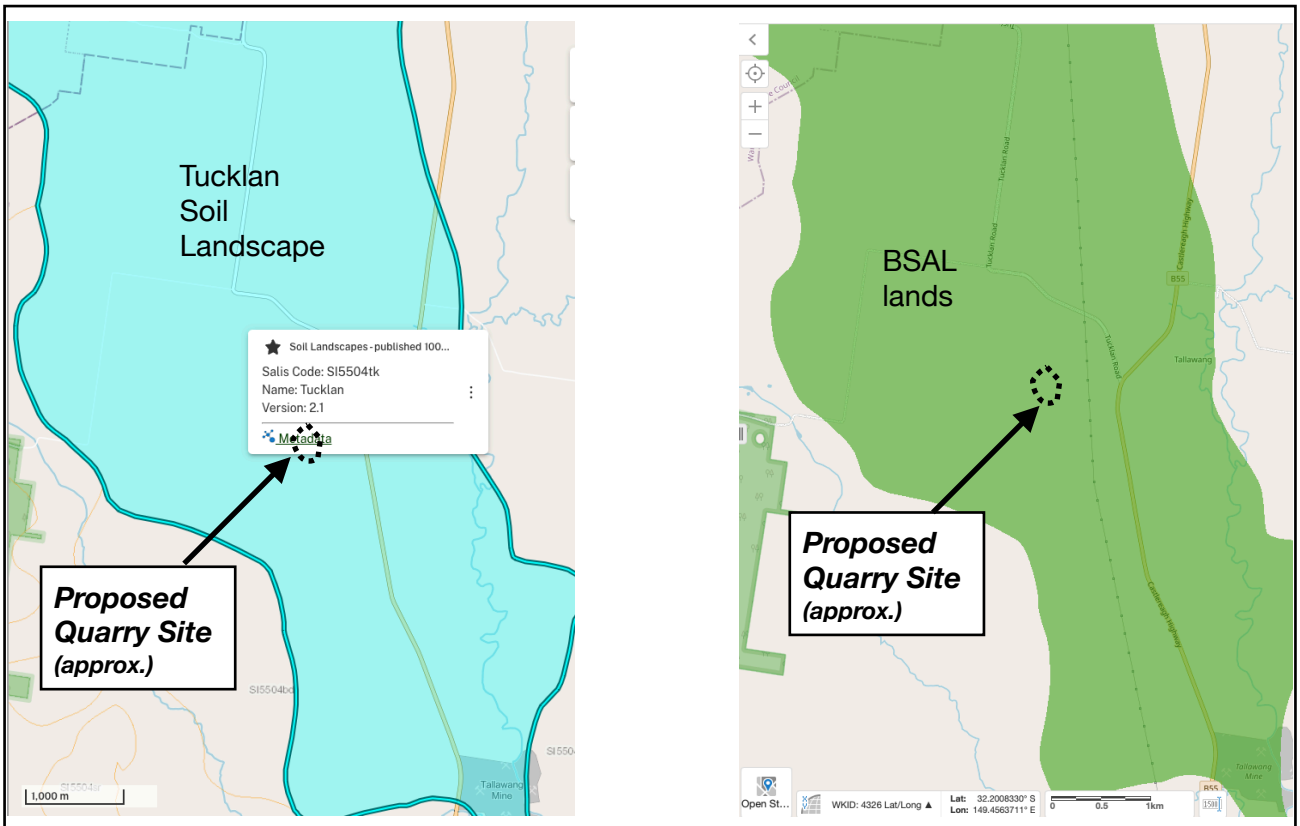


FIGURE 2.6: NSW Government mapping of Tucklan Soil Landscape (left hand graphic-coloured blue) and Biophysical Strategic Agricultural Land (BSAL) lands (right hand graphic-coloured green) are almost identical

(Source: NSW Government SEED online mapping and eSpade online mapping))

This broad-brush approach to mapping does not reflect soils, elevation or slopes found or slopes actually encountered on site-more in common with the Burrendong Soil landscape than the Tuklan Soil Landscape, the former comprising elevated, hilly lands to the south of Lot 1, generally above 500-520 metres, not mapped as either being within the Tucklan Soil landscape or identified as BSAL lands. However, BSAL mapping does not account for the fact that elevated, hilly country in excess of RL 500-520m extends well into Lot 1- the topography of Lot 1 ranging from RL550m AHD on the elevated hill at the far western boundary of the lot, to RL 538m AHD at the top of the stony knoll proposed for quarrying, to below RL520m AHD to the outside perimeter of the proposed quarry footprint. **Figure 2.7** shows the location of the test pits with **Figures 2.8-213** showing the soils encountered by test pit location.

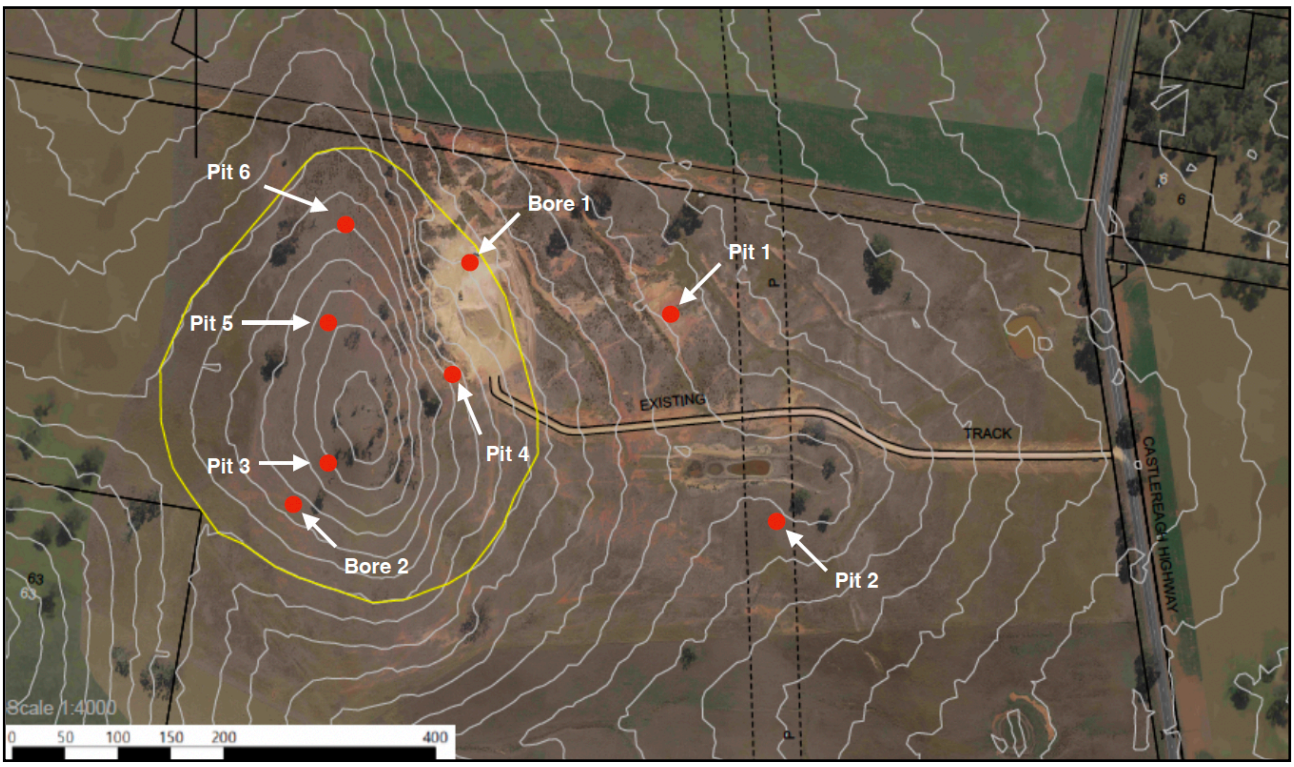


FIGURE 2.7: Location of test pits and drilling sites. Quarry footprint edged yellow

(Source: July 2024 test pit excavations)

FIGURE 2.8: Test Pit 1- to the east of proposed extraction area

Shallow greyish-yellow sandy soil with rock fragments over rock at 100-250mm. Very gravelly.

FIGURE 2.9: Test Pit 2- to the east of proposed extraction area

Shallow reddish-brown sandy loam soil with rock fragments over rock at 100mm. Very gravelly.

FIGURE 2.10: Test Pit 3- near top of knoll, within proposed extraction area

Shallow brown loam soil with rock fragments over rock at 50-80mm. Very rocky.

FIGURE 2.11: Test Pit 4- on eastern side of knoll, within proposed extraction area

Very shallow yellow-brown sandy loam soil with rock fragments from ground level. Very gravelly/rocky.

FIGURE 2.11: Test Pit 5- near top of knoll, within proposed extraction area

Shallow brown loam soil with rock fragments over rock at 40-70mm. Minimal topsoil. Very rocky.

FIGURE 2.12: Test Pit 6- at northern end of knoll, within proposed extraction area

Shallow brown loam soil with rock fragments at ground level. Minimal topsoil. Very rocky.

***PHOTOGRAPH 2.7:** The hilly, stony country on the 'Talinga' farm holding- including the site of the proposed quarry taking up 0.6% of the area of the 'Talinga' holding - are of Low agricultural worth, in contrast to the High quality agricultural land found at the base of the hill system and within the Tallawang Creek alluvial area- the latter seen under cultivation and use for intensive grazing. Approx. quarry footprint edged with broken yellow line.*

(April 2024 aerial photograph by O'Ryan Geospatial))

The land in the vicinity of the project site is mapped as having a low salinity potential. Land capability is the inherent physical capacity of the land to sustain long-term land-uses and management practices without degradation to soil, land, air and water resources. The Rural Land Capability classification system is used to delineate the various classes of rural land on the basis of the capability of the land to remain stable under particular uses. Land is allocated to one of the eight classes listed below.

- Land Suitable for Regular Cultivation/Cropping :Classes, 1, 2 and 3.
- Land Suitable Mainly for Grazing: Class 4 and 5.
- Land Suitable Mainly for Grazing:Class 6.
- Land Suitable Mainly for Tree Cover: Class 7.
- Land Suitable Unsuitable for Agriculture: Class 8.

The proposed quarry, being located on land with shallow to very shallow, stony soils, has been assessed as comprising Class 5-6 , namely, land with a low rural land capability, with the steeper, eastern face of the knoll comprising Class 7 land. This is a more accurate assessment of the agricultural worth of the land, in preference to reliance on the broad-brush BSAL mapping. This is in marked contrast to the highly productive 'prime' agricultural land found on less elevated land at the base of the hill system and near Tallawang Creek on the 'Talinga' farm holding, illustrated in Photograph 2.7.

Drainage and Groundwater Resources

The site of the proposed quarry sits atop a ridge that drains to the north and to the east, and is located within the Macquarie-Bogan River catchment. All land within this broader water catchment area is governed by the *Water Sharing Plan for the Macquarie Bogan Unregulated Rivers Water Sources 2012* (NSW Government, 2020), which sets out all relevant water sharing, extraction, diversion, and other details as required under the provisions of the *Water Management Act 2000*. One of the key objectives of the above is the protection of aquatic ecosystems and maintenance of water quality.

There are no defined waterfront lands within 40m of the proposed quarry. Tallaway Creek is the closest permanent waterway and is located down gradient to the east approximately 1.5km east of the quarry site. This creek is remote from the proposed quarry site and is located to the east of the Castlereagh Highway. There are two small farm dams located to the east of the proposed quarry site on either side of the gravel access track. These farm dams are understood to be used for stock watering purposes.

The hydrogeology within the site comprises of fractured or fissured extensive aquifer systems with low to moderate productivity.

A review of the Bureau of Meteorology (BoM) Groundwater Dependent Ecosystems Atlas (GDE Atlas) identifies in detail the location of Low to High high potential Groundwater Dependent Ecosystems (GDE's) are in the surrounding locality. Within the locality, the High priority GDE's are generally limited to small patches within remnant vegetation areas and along surface water drainages. The Project Site is mapped as being Low potential GDE- refer **Appendix F** for details.

A search of the NSW Department of Primary Industries – Office of State Water records identified 4 licensed groundwater bore within approximately 2.0km of the site, reviewed to gain an understanding of typical groundwater profiles. Within a 2km radius the bore data reveals:

- Only two of the four bores actually encountered water, despite the fact that drilling extended as deep as 40m below natural ground level, as far down as approximately RL 449m AHD.
- The operating bores are located approximately 650m away from the proposed quarry.
- Notably, all bores were located within 500m-1,000m of Tallaway Creek, with no licensed bores recorded in the more elevated hilly country further removed from the alluvial plain, including the project site. [NOTE: A further 53m deep bore for stock is located on the 'Talinga' farm west of the highway, GW052023, at the base of the hill system near an existing unnamed watercourse. Additional bores are located on the 'Talinga' farm holding near the same watercourse to the east of the highway: GW800589 and GW803913- refer **Figure 2.13**]

The following Table 2.1 and **Appendix F** summarises the above.

Table 2.1: Licensed Groundwater Bores in Locality

Bore ID	Figure 2.13 Bore No.	Distance from proposed quarry (m)	Drilled Depth (m)	Standing Water Level (metres below ground level)
GW044690	*4*	*1,429.1m*	*33.5m*	*No water encountered down to approx. RL 449m AHD*
GW066655	*2*	*1,437.6m*	*38.4m*	*21.3m, water at approx. RL464m AHD*
GW801045	*1*	*1,502.8m*	*45.7m*	*9.1m, water at approx. RL471m AHD*
GW058156	*3*	*1,505.5m*	*40.0m*	*No water encountered down to approx. RL 468m AHD*

(Source: Ballpark Environmental July 2024 Preliminary Site Investigation Proposed Gulgong Quarry – Lot 1 DP1239728, 1848 Castlereagh Highway, Gulgong NSW 2852)

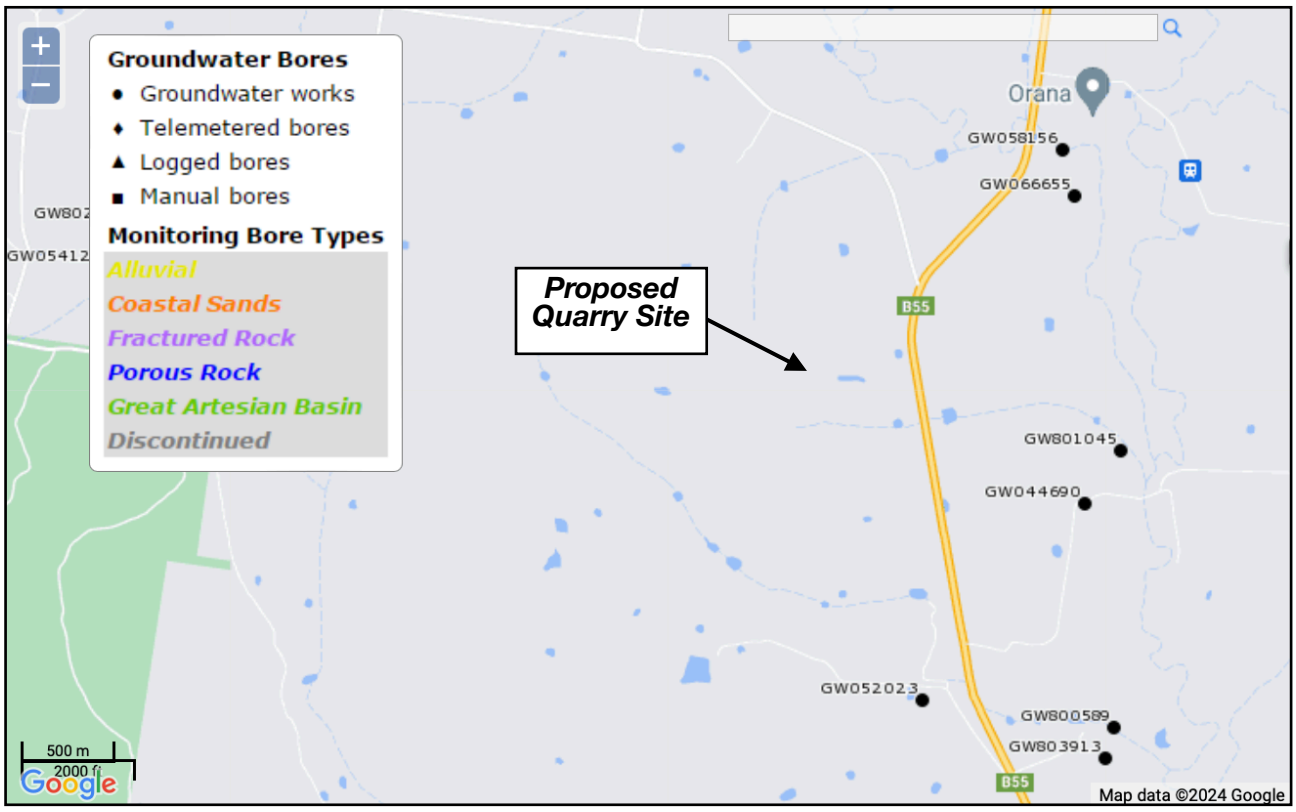


FIGURE 2.13: All licensed groundwater bores in and around the project site are located on near or within the Tallawang Creek floodplain or on other watercourses. There are no licensed groundwater bores in the hilly country in the locality to the west of the highway

(Source: Water NSW Groundwater Bores- All Groundwater Map 1 August 2024)

The lowest part of the proposed quarry will be at RL 497m AHD. From the above, it can be concluded that groundwater is unlikely to be encountered during quarrying of the site.

Climate

Climate and rainfall data have been obtained from the Bureau of Meteorology (BoM) Dunedoo Post Office Station (No. 064009) and Gulgong (No. 062013), the closest weather stations to the project site.

The Central West and Orana regions experience a distinct seasonal and regional variation in temperature, with annual (non-seasonal) mean maximum temperature 24.1⁰C recorded for Dunedoo and to 23.2⁰C for Gulgong, with an annual (non-seasonal) mean minimum temperature of 9.7⁰C to 9.6⁰C, respectively. The mean annual rainfall is 618.9mm for Dunedoo and 653.2mm at Gulgong and (BoM, July 2024), and annual average pan evaporation rates between 1,600–1,800mm per annum. The months of November to March are generally wetter with Autumn and Winter experiencing dryer conditions with less rainfall totals. The accompanying **Figure 2.14** provides mean rainfall data for Gulgong.

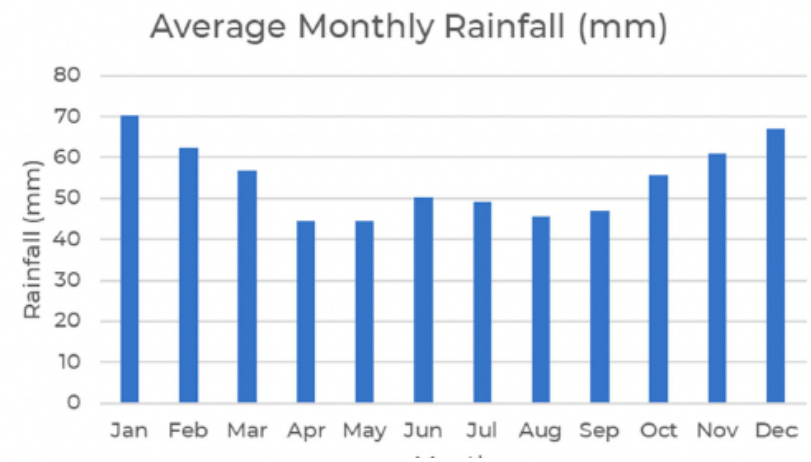


FIGURE 2.14: Average annual rainfall Gulgong

(Source: Ballpark Environmental July 2024)

The Office of Environment & Heritage's *Central West and Orana Climate change snapshot* predicts that:

- The number of hot days above 30°C will increase by a further 5-10 days in the locality, with maximum temperatures projected to increase in the near future (ie. 2020-2039) by 0.4–1.0°C and increase in the far future (ie. 2060-2079) by 1.8 – 2.7°C.
- Minimum temperatures are projected to increase in the near future by 0.5 – 0.9°C and increase in the far future by 1.5 – 2.6°C. The number of cold nights below 2.0°C will decrease by 1-5 nights in the near future.
- Rainfall is projected to decrease in spring by about 5-10% in the locality and is projected to increase in autumn by about 10-20% in the locality.

Winds

The nearest detailed seasonal wind roses available through the Bureau of Meteorology's Gulgong station are presented graphically in **Figure 2.15**. The wind roses reveal that: at 9.00am winds from the North and the South predominate; and at 3.00pm winds from the South-east, South and North predominate.

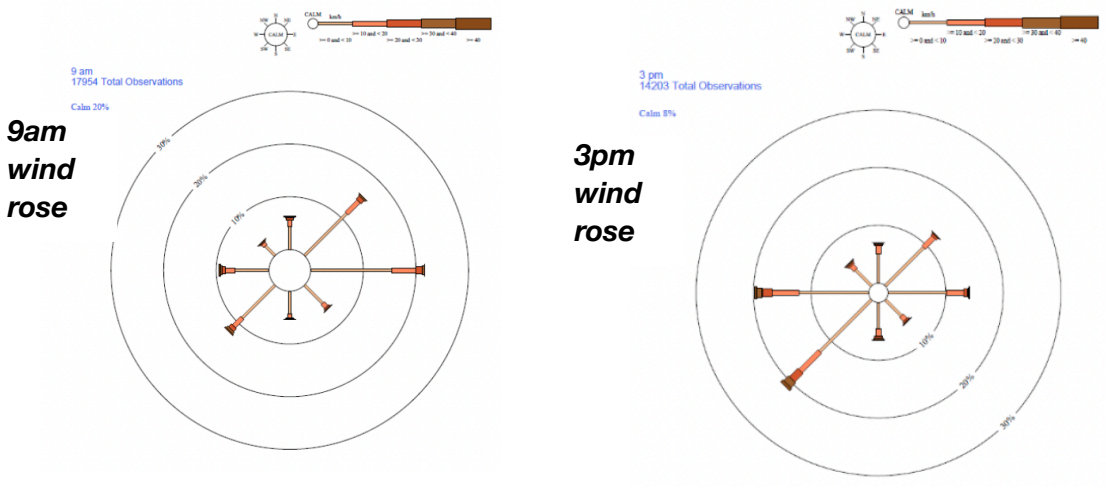


FIGURE 2.15: 9am & 3pm wind roses Gulgong

(Source: Bureau of Meteorology Gulgong station)

Fire risk

The Project Site and surrounds are not identified as comprising bushfire prone land. Refer **Appendix J**.

2.2.4 Archaeology

OzArk Environment & Heritage (OzArk) was engaged by Outline Planning Consultants Pty Ltd on behalf of Sally and Hamish Drury, to prepare an Aboriginal Cultural Heritage Assessment Report (ACHAR) for the proposed hard rock quarry. Refer **Appendix K**. The field survey was undertaken on 12 July 2024 by OzArk Archaeologist, Tenae Robertson, with the assistance of Tammy Peterson, representing Mudgee Local Aboriginal Land Council.

Three previously unrecorded Aboriginal sites were recorded within the study area (Tallawang IF1, Tallawang IF2, and Tallawang IF3). The newly recorded sites are isolated finds consisting of unmodified flakes which are considered to be common based on the known archaeological characteristics of the region. Refer **Figure 2.16** showing the location of these three sites. None are within the area proposed for quarry development. No intangible Aboriginal cultural values specific to the study area were identified through consultation with the Aboriginal community.

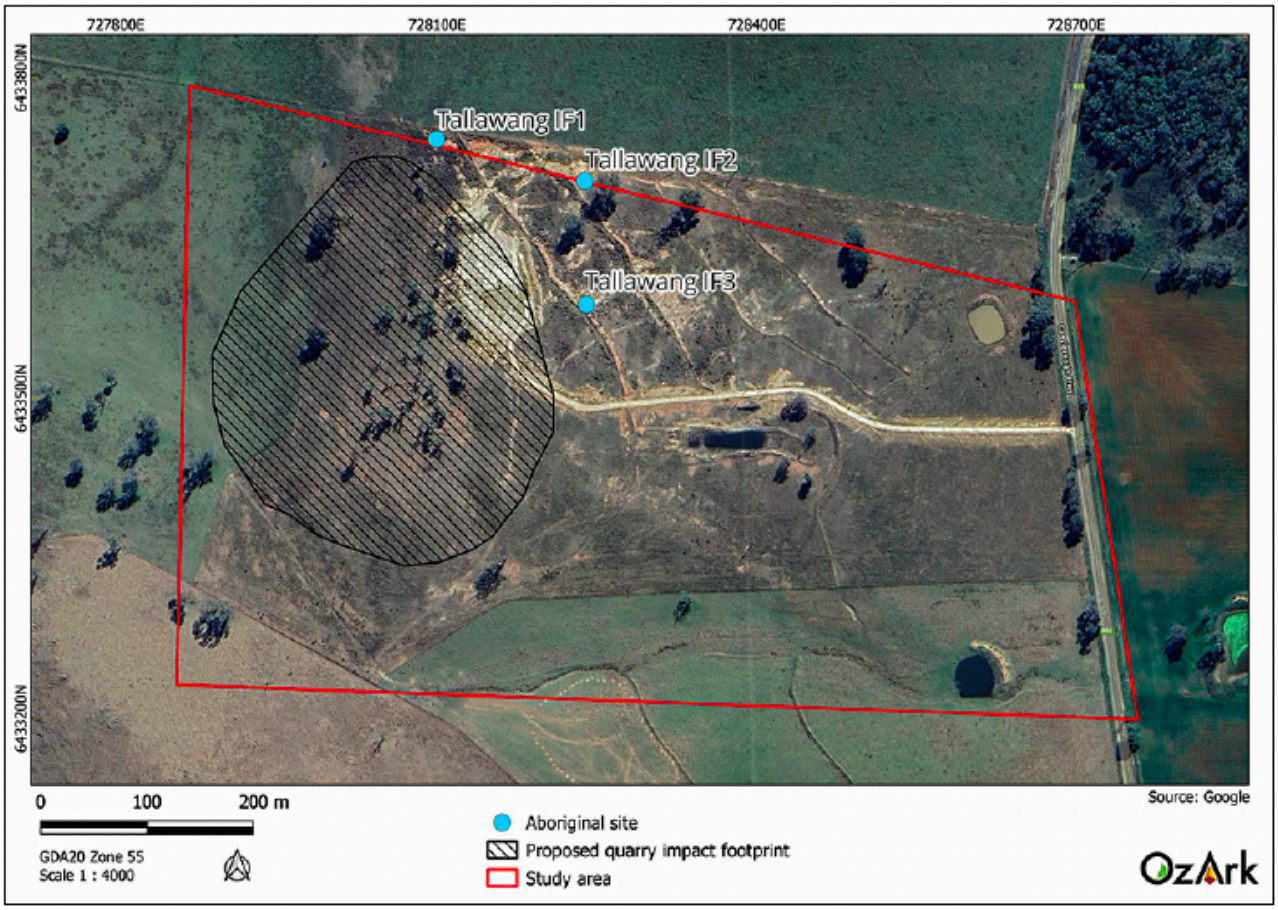


FIGURE 2.16: Location of Aboriginal cultural heritage sites

(Source: OzArk)

The assessment by OzArk concludes that there is a low likelihood that the proposed work will harm Aboriginal cultural heritage items or sites, as long as the management measures are adhered to. If during work, however, Aboriginal artefacts or skeletal material are noted, all work should cease and the procedures should be followed.

2.25 Contamination

Ballpark Environmental Pty Ltd was engaged to undertake a preliminary site investigation (PSI) for potential soil contamination associated with quarrying at this site (**Appendix I**). They found that the site has an acceptable low level of risk of contamination and is suitable for its proposed use as a quarry.

2.3 Key Features of Local and Regional Community

2.3.1 Overview

The key features within the area surrounding the Project Site that could affect or will affected by the Project include the local and regional community, surrounding land uses and land ownership, and surrounding natural features. The site of the proposed quarry is located approximately 21.5km by road to the north of the township of Gulgong (population of 2,680 in 2021 census) in the Mid Western Regional Council local government area (LGA). The site has direct access from an existing internal haul route back to the Castlereagh Highway. The principal population centre in the LGA is Mudgee, with a 2021 Census population of 11,457. Mudgee is located approximately 51km by road to the south of the Project Site.

2.3.2 Population, Employment and Major Projects

The Mid-Western Regional Council LGA had a 2021 population of 25,713 persons (ABS online data 2021 population), experiencing an average annual population growth of 1.1% from the population recorded in 2011. Key demographic statistics for Mid-Western Regional Council LGA are presented in Table 2.2 below.

Table 2.2: Mid-Western Regional Council LGA population demographics

Census 2021 Age Distribution	***Population %***	***NSW %***
Under the age of 20 years	*25.4%*	*23.9%*
Aged 20-54 years	*40.2%*	*46.6%*
Aged over 55 years	*34.4%*	*29.5%*
Economic Output Mid Western Region by top industries	***Economic Output per Annum (2023)***	
TOTAL	*$7.10 Billion 100%*	
Mining	*$0.52 Billion (55.8% of economic output)*	
Construction	*$3.967 Billion (7.3% of economic output)*	
Manufacturing	*$0.47 Billion (6.6% of economic output)*	
Real estate	*$0.36 Billion (5.0% of economic output)*	
Agriculture	*$0.31 Billion (4.4% of economic output)*	
Health Care	*$0.19 Billion (2.7% of economic output)*	
Census 2021 Participation in Work Force	***Population %***	***NSW %***
In the labour force	*57.1%*	*58.7%*
Not in the labour force	*34.5%*	*35.5%*

(Sources: ABS 2021 census data, Mid-Western Regional Council REMPLAN Economic Profile March 2023)

The above data indicates that:

- The Mid-Western Regional Council LGA has a slightly higher proportion of its population below 20 years of age when compared to the NSW data and a higher proportion of its population above 55 years of age when compared to the NSW data.
- Mining is by far the dominant industry in the LGA, with agriculture accounting for only 4.4% of economic output.

- Workforce participation rates are comparable with the broader NSW level. [NOTE: The workforce required for the proposed quarry project is relatively small, being 4 FTE employees, who would include mostly quarry equipment operators. These workers could potentially be drawn from the existing agricultural, mining or construction workforce in the LGA who would possess appropriate skills and experience.]

The NSW Department of Planning and Environment projects that the permanent population will grow by a further 4,203 persons by 2041, representing a growth 0.8% per annum, to reach a population of almost 30,000 persons.

However, a PwC report prepared on behalf of Mid-Western Regional Council dated January 2024 predicts that the total estimated additional population could peak at 9,906 persons by 2026 comprising of about 7,000 additional workers involved in construction jobs as well as spouses and families, as a result of the slated State Significant Development (SSD) projects- in the main being related to energy projects (pwc January 2024). NSW Government forecasts, however, indicate that the various energy projects will support around 5,000 jobs during peak construction (source: NSW Government press release for EnegyCo transmission project June 2024). pwc forecast that the population would then stabilise later after the various SSD projects are completed.

The proposed quarry development is located in close proximity to numerous major infrastructure projects, existing or proposed, lying within the Central West Orana Renewable Energy Zone (CWO REZ)- refer Table 2.3 and **Figure 2.17**.

Table 2.3: CWO-REZ projects near the Project Site

Project	*Stage reached*	*Likely construction, operation*
EnergyCo transmission line project	*Development consent issued 26 June 2024*	*Contracts to be issued in 2nd half of 2024, with construction from late 2024. Initial operation by 2028 (source: EnergyCo website 31 July 2024).*
Tallawang Solar Farm, south of project site	*SSD application currently being assessed.*	*If approved, construction unlikely to commence until 2025, with operation after 2027.*
Stubbo Solar Farm, east of project site	*Development consent issued 29 June 2021*	*Construction commenced 2024, with 50% of the solar panels installed by June 2024. Operation likely by 2025.*
Orana Wind Farm	*EIS yet to be lodged in support of project.*	*If approved, construction unlikely to commence until-2027, with operation after 2029.*
Barneys Reef Wind Farm, to the NE of project site	*EIS yet to be lodged in support of project. Application withdrawn.*	*If approved, construction unlikely to commence until 2027 (or later), with operation after 2029.*
Birriwa Wind Farm, to the NE of project site	*Development consent issued 16 August 2024.*	*Construction unlikely to commence until late 2026 or early 2027, with operation around 2029.*
Mavis Solar Farm, north of Gulgong	*EIS yet to be lodged in support of project.*	*If approved, construction unlikely to commence until 2027, with operation after 2029.*
Beryl Battery Energy Storage System	*EIS lodged in support of project. Currently on exhibition.*	*If approved, construction unlikely to commence until 2026-2027, with operation after 2028-2029.*
Bellambi Heights Battery Energy Storage System	*Development consent issued 2 May 2024*	*Targeted construction date early 2025, with likely operation by 2026.*
Mayfair Solar Farm	*EIS yet to be lodged in support of project.*	*If approved, construction unlikely to commence until 2027, with operation after 2029.*
Narragamba Solar Farm	*EIS yet to be lodged in support of project.*	*If approved, construction unlikely to commence until 2027-28, with operation after 2029.*
Beryl Solar Farm	*Development consent issued 27 January 2017. Modification application currently being assessed.*	*Constructed.*

(Sources: NSW Major Projects Planning Portal 31 July 2024-26 September 2024 and websites of individual energy projects viewed between 31 July 2024 and 12 September 2024)

Projects associated with the CWO-REZ are predicted to be the main driver of economic and employment growth in the short to medium term. In particular the Project Site is proximate to:

- EnergyCo's extensive, 1km wide CWO-REZ transmission, generation, firming and storage project on a large corridor of land located within approximately 3.1km to the north of the project site.
- Acciona's Orana Wind Farm project, involving 92 wind turbines located as close as 2km to the project site. The wind turbines are proposed to be connected to the above CWO-REZ transmission line.
- Tallawang Solar Farm, situated on land approximately 7km to the south of the project site.

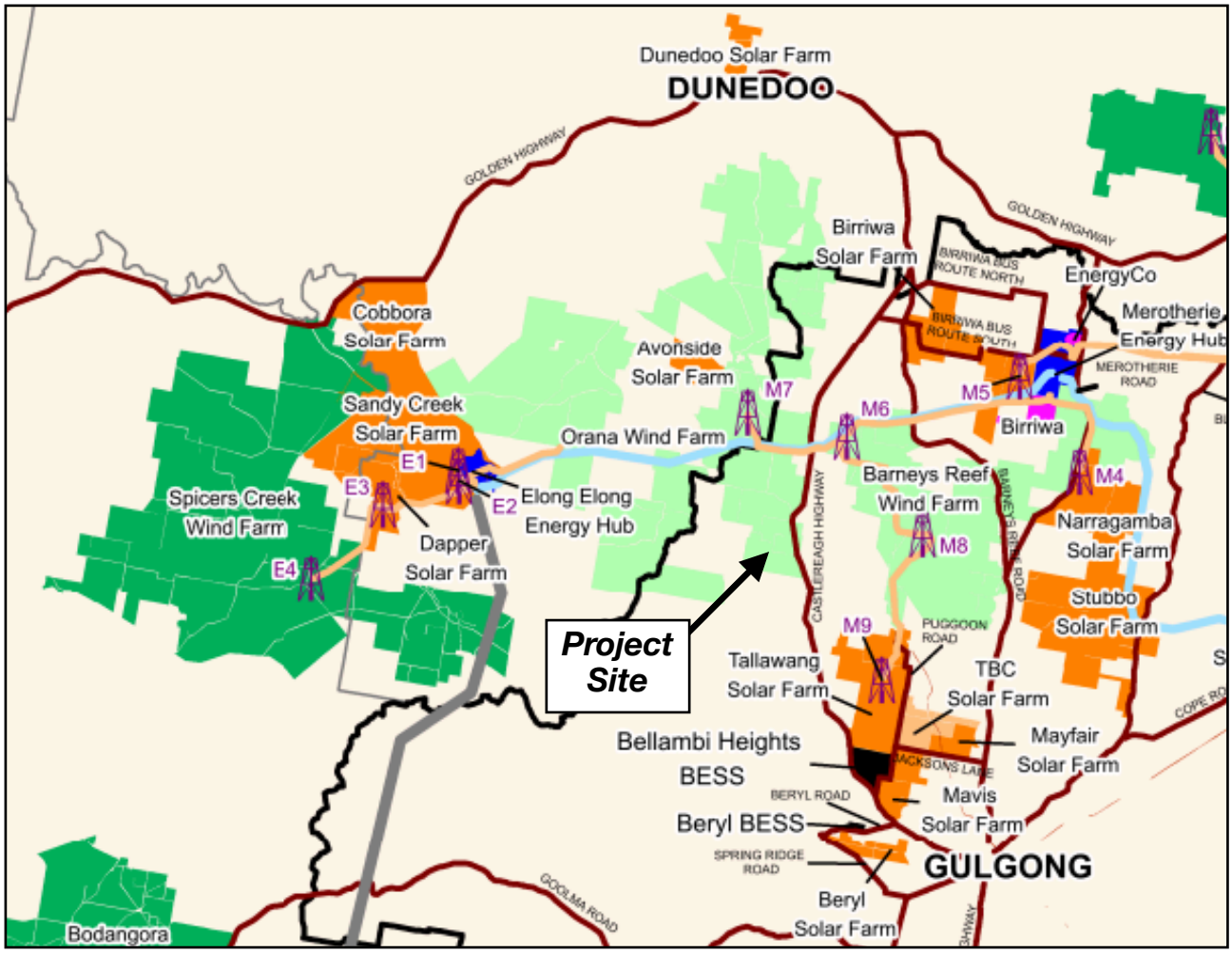


FIGURE 2.17: The proposed Gulgong Quarry site is strategically located in the northern part of the Mid-Western Regional Council area, proximate to renewable energy State Significant Development projects

(Source: excerpt Mid-Western Regional Council online map July 2024 'Proposed State Significant Development')

Outline Planning Consultants are of the view that the PwC predictions of construction timelines for the CWO REZ projects are overly optimistic, and more conservative project construction timelines are warranted. Few of the approved energy (CWO REZ) projects have proceeded to date. This is likely to change with the Ministerial approval of Energy Corporation of NSW(EnergyCo)'s transmission line project, issued on 26 June 2024. It is the first REZ in Australia to achieve this critical step, paving the way for the construction of essential transmission infrastructure to connect large-scale solar, wind and energy storage projects to the electricity grid. This approval of the EnergyCo project should be the catalyst for many of these SSD projects to now proceed, acting as a driver for up to $20 billion in private investment in solar, wind and energy storage projects,.

2.4 Key Site Features and the Quarry Project

The key features of the Project Site and surrounds are summarised in the accompanying Table 2.4.

Table 2.4: Key features potentially affected by quarry project

Key Feature/ Issue	Matters to consider	Management response
LGA	*The proposed quarry is located within the Mid-Western Regional LGA.*	▸ *The proposed quarry footprint is zoned RU1 Primary production under the Mid-Western Regional Local Environmental Plan 2012 (LEP).* ▸ *Regard to be had for other projects, including quarries, within the LGA.*
Proximity to neighbouring residences	▸ *Need for noise, dust and blasting levels to not exceed relevant criteria.* ▸ *Nearest residence not associated with quarry is 0.788km away.* ▸ *The quarry is visually shielded and/or screened from other neighbouring residences either by intervening topography and/or forested lands.*	▸ *The quarry proposed to operate only during daylight hours, with monitoring of blasting.* ▸ *Dust controls to be implemented.* ▸ *Acceptable noise/blasting levels at nearest residence not associated with quarry.* ▸ *No adverse visual impacts likely.*
Land use, agriculture	▸ *The proposed quarry and surrounds have been modified by historical land use practices and past disturbances associated with lawful land clearing and low intensity livestock grazing.* ▸ *The proposed quarry site comprises rocky, shallow soils with low agricultural suitability.* ▸ *No evidence of contamination.* ▸ *The project site and surrounds have been identified as being biophysical strategic agricultural land (BSAL), despite the stony, shallow soils encountered here.*	▸ *Need to ensure that no land use conflicts arise.* ▸ *Regard to be had for the fact that the land has a low agricultural suitability-low impact on agriculture.* ▸ *Quarrying unlikely to encounter groundwater.* ▸ *The neighbour to the north has also established a hard rock extraction pit near the site of the proposed quarry.* ▸ *The proposed quarry development comprises approximately 0.6% of the 1,191ha 'Talinga' farm holding, with the quarry floor to be returned to agricultural use after rehabilitation, with the addition of a water source for livestock. No impacts on 'prime' agricultural land within the farm holding.*
Proximity to CWO-REZ infrastructure projects	▸ *The proposed quarry is located service within close proximity to nearby infrastructure projects undertaken within the Central-West Orana Renewable Energy Zone (CWO-REZ), and in particular EnergyCo's CWO-REZ transmission project, located within about 3.1km of the project site and Acciona's Orana Wind Farm project, within about 2km to the project site.*	▸ *The nearness to to many of the Central-West Orana Renewable Energy Zone (CWO-REZ) projects means shorter haulage distances and reduced truck traffic impacts on the highway.* ▸ *Quarry truck traffic servicing these major infrastructure projects need not have to travel through either Gulgong or Mudgee.*
Soil management	▸ *High erosion hazard.* ▸ *Land proposed for quarry expansion is largely cleared.* ▸ *Need to store soil for future rehabilitation.* ▸ *Need to protect downstream water quality and aquatic environments.*	▸ *Appropriate soil erosion controls are proposed, including use of sediment basins to capture 'dirty' water and all runoff from within the quarry.* ▸ *Diversion of 'clean' water around the quarry where possible.* ▸ *Appropriate stripping and stockpiling controls and procedures required to maximise the value for stored soil used in rehabilitation of the site.*
Biodiversity	▸ *The proposed quarry is mainly cleared with a small area of trees to be cleared.* ▸ *The Project Site is mapped as being Low potential Groundwater Dependent Ecosystems.*	*Acceptable ecological impacts are predicted.*

Key Feature/ Issue	Matters to consider cont.	Management response cont.
Stormwater, Drainage	▸ *The quarry does not lie within 40 metres of any "waterfront land" for the purposes of the Water Management Act 2000. However, the proposed quarry would cover in part two 1st order drainage lines, found near the top of the ridge.* ▸ *Not within a drinking water catchment.* ▸ *Likely increase in hot days and decrease in winter rainfall as a result of climate change.* ▸ *No licensed groundwater bores within the near vicinity of the project site- all operating bores to be found near Tallawang Creek or other watercourses, with the nearest operating bore situated approx. 650m away.*	▸ *Appropriate stormwater controls are proposed. Further details under heading 'soil management' (above)* ▸ *Aim to store on-site water as provided for in 'Blue Book' to accommodate water needs during drier years brought on by climate change.* ▸ *Minimal risk of encountering groundwater on the project site.* ▸ *Sediment basin to be converted to a water source for livestock after quarrying is completed.*
Rehabilitation	*Progressive rehabilitation required.*	*Progressive rehabilitation of the quarry as new floor levels are achieved.*
Air quality, greenhouse gas impacts	▸ *Dust management required.* ▸ *Emissions to be reduced wherever possible.*	▸ *Given the close proximity of the quarry site to major renewable energy infrastructure projects, emissions will be minimised as a result of short transportation distances for quarry products to end users.* ▸ *Due to the rocky nature of the site and minimal topsoil/overburden encountered, emissions required in removing topsoil and overburden will be minimised.* ▸ *Dust management measures to be implemented including covering of loads, regular watering of haul route, regular watering of stockpiles, water to suppress dust generated by processing plant.* ▸ *Use of fit for purpose plant and equipment and operate and maintain in accordance with manufacturer's instructions. Regularly servicing of vehicles, plant and equipment such that exhaust systems and fuel consumption comply with manufacturers' specifications.* ▸ *Emissions from transport vehicles and on site machinery to comply with the relevant Australian Standards.*
Noise and blasting impacts	▸ *Noise and blast levels to be maintained below relevant limits.* ▸ *Proposed quarry is sited adjacent to an operating sawmill and a local council quarry.*	▸ *Operations limited to daylight hours.* ▸ *Acceptable impacts predicted.* ▸ *Quarry design ensures that quarry to be topographically shielded from nearest residences.* ▸ *Regular monitoring proposed.*
Aboriginal heritage	*Minimal potential for Aboriginal sites within proposed extraction area. Refer to OzArk Environment and heritage report in* ***Appendix K***	*Unexpected finds protocols to be adopted.*
Bushfire	▸ *The land is not bushfire prone. Refer to screen snap from RFS website in* ***Appendix J****.*	▸ *Emergency management and evacuation procedures to be implemented.* ▸ *Fire extinguishers on all plant and equipment.* ▸ *Rural Fire Service (RFS) vehicle access is capable of being provided to the site.*
Transport	*Increase in quarry truck traffic predicted on local roads.*	*Satisfactory access to the quarry from Castlereagh Highway.*

▪ 2.5 Cumulative Impacts

Cumulative impacts arising from the the Project are addressed in the relevant impact assessments provided in Section 7 of this EIS document and in the technical reports contained in the appendices.

In summary, the cumulative impacts arising from the Project is considered to be acceptable having regard for key environmental factors identified in the preceding sub section 2.4. These environmental factors includes soil and water management, noise and blasting, traffic, biodiversity, archaeology, air quality, and visual impact.

It is noted that the Project Site is already cleared, and as a result, cumulative ecological impacts are anticipated to be acceptable.

▪ 2.6 Agreements

No voluntary planning agreement has been entered into with the local council regarding the future use of the Project Site associated with the proposed quarry.

▪ 2.7 Alternatives to the Project

There are a number of alternative ways of developing the quarry resource on the Project Site, however, the current proposal is considered to be the most efficient and environmentally acceptable. Section 192(1)(c) of the *Environmental Planning and Assessment Regulation 2021* requires that an analysis is undertaken of any feasible alternatives to carrying out the proposed development, including the consequences of not carrying out the development. A further consideration of alternatives to the Project is provided below. The key, feasible alternatives to the Project considered were as follows:

- To not proceed with the Project.
- To rely on other quarry projects to service longer term needs for the supply of road base to service roads and allied projects.
- To quarry from a heavily vegetated, rocky knoll at the rear of the site- refer Photograph 2.4. This alternative has been ruled out on the basis of perceived adverse ecological and amenity impacts.

2.7.1 Consequences of Not Proceeding with the Project

The ‘do nothing’ option will have significant implications for the quarry to supply essential construction materials to the region and to meet the product demand/needs of current and projected renewable energy infrastructure projects.If demand for road-making materials is not able to be met using the resources within the project site, other quarries- or even more new quarries- a new quarry-may be required within the region to meet future market demands for this quarry product.

However, the current site has many strategic benefits which will reduce direct environmental impacts, not the least of which is its close proximity to the renewable energy projects, approved and proposed.

If the Project does not proceed, while there would be reduced environmental impacts, there would be likely significant adverse socio-economic implications including but not limited to the following:

- Inability of the numerous renewable energy infrastructure projects in the northern part of the Mid-Western Regional Council to be provided with a significant, proximate source of much-needed road making material.
- Sterilisation of a valuable quarry resource.
- Potential shortages of raw materials for essential NSW infrastructure and associated development projects in and around the northern part of the Mid-Western Regional Council and the region generally.
- Reliance on other quarries further to the south, which may have amenity impacts in terms of quarry truck traffic having to travel through the urban centres of Gulgong and/or Mudgee.

2.7.2 Alternative Quarry Sites

The only other quarries known to be operating in the LGA or near region are the following:

- Boral Quarries, Spring Ridge Road, located approximately 9km west of Gulgong and about 49 km to the south of the project site. Production limit of 100,000 tonnes per annum applies in accordance with a March 2018 modification of DA121/87. Access to Castlereagh Highway via Beryl Road. Basalt rock resource.
- Mudgee Dolomite & Lime, located at Buckaroo, approximately 6km north-west of Mudgee built up area and about 53 km to the south of the project site. No known production limit. Lime/dolomite resource.
- Kandos/Carwell Quarry, 329-331 Quarry Road, Carwell, located approximately 5km to the west of the Kandos Village and about 102 km to the east of the project site. Consent granted to allow processing of waste rock on site up to 250,000 tonnes per annum per DA0010/2020.
- Bylong Quarry, located at 8346 Bylong Valley Way, at Bylong, located approximately 82km to the east of Gulgong and about 103 km to the south-east of the project site. Consent to allow the extraction of up to 199,000 tonnes of quarry product per annum.

The location of the above quarries are illustrated in **Figure 2.18**. It confirms the strategic location of the project sit in terms of proximity to and servicing of the numerous renewable energy infrastructure projects located in the northern parts of the Mid-Western Regional Council LGA. In the past quarry products have been produced by the Ulan Stone quarry at Ulan, however, it is understood that the quarry is currently not operating.A development application has been lodged with Mid western Regional Council in 2023 for a sand and gravel pit at t39 Razorback Road, Running Stream, located about 74km to the south of Mudgee and about 122km to the south of the project site. Consent is sought to allow the extraction of up to 200,000 tonnes of quarry product per annum.Quarry operations and site rehabilitation were completed in late 2020 at ARDG's Glenroy Quarry Project located on the rural property 'Glenroy' at Pyramul, approximately 35 kilometres south of Mudgee. This quarry was established to service the adjacent Crudine Ridge Wind Farm Project, primarily for the roadworks upgrade to Aarons Pass Road.

▪ 2.8 Concluding Summary

The matters canvassed in this EIS provide strategic support for the Project, as outlined below.

- The project Site is strategically positioned in terms of its proximity to the the numerous renewable energy infrastructure projects located in the northern part of the Mid-Western Regional Council LGA.
- Related to the above, being located in a highly accessible location, with direct frontage to Castlereagh Highway, provides significant benefits to both the quarry operator in terms of ease of accessibility to these infrastructure projects. These benefits relate to, but are not limited to, delivered cost, supply chain certainty, just-in-time supply with associated working capital benefits, and the maintenance of a competitive supply base, whilst minimising their carbon footprint associated with raw material freight from more distant quarries.
- Approval of the Project would optimise the potential to extract a proven quarry resource from the Project Site with minimal environmental impact. Moreover, the Project would provide economies of scale for the quarry operator.
- Opportunities for employment at the quarry, with more expenditure-induced indirect jobs. The local and regional community would provide both the markets for the quarry's products and the workforce, suppliers and services required to operate the quarry.
- The Project Site is well situated in that it is shielded from view from most sections of Castlereagh Highway and neighbouring residences (save for the nearest residence to the north. Moreover, the project site is not prone to flooding, landslips, mine subsidence or hazards. The Project is unlikely to have a significant impact on local and/or regional surface water or groundwater quantity or quality.
- Safeguards have been incorporated into project design to either eliminate, or reduce to acceptable levels, any likely environmental impacts. In particular, noise, blasting, water quality and dust impacts will be effectively controlled. Applying the safeguards proposed, the proposed quarry can be conducted within acceptable environmental parameters.

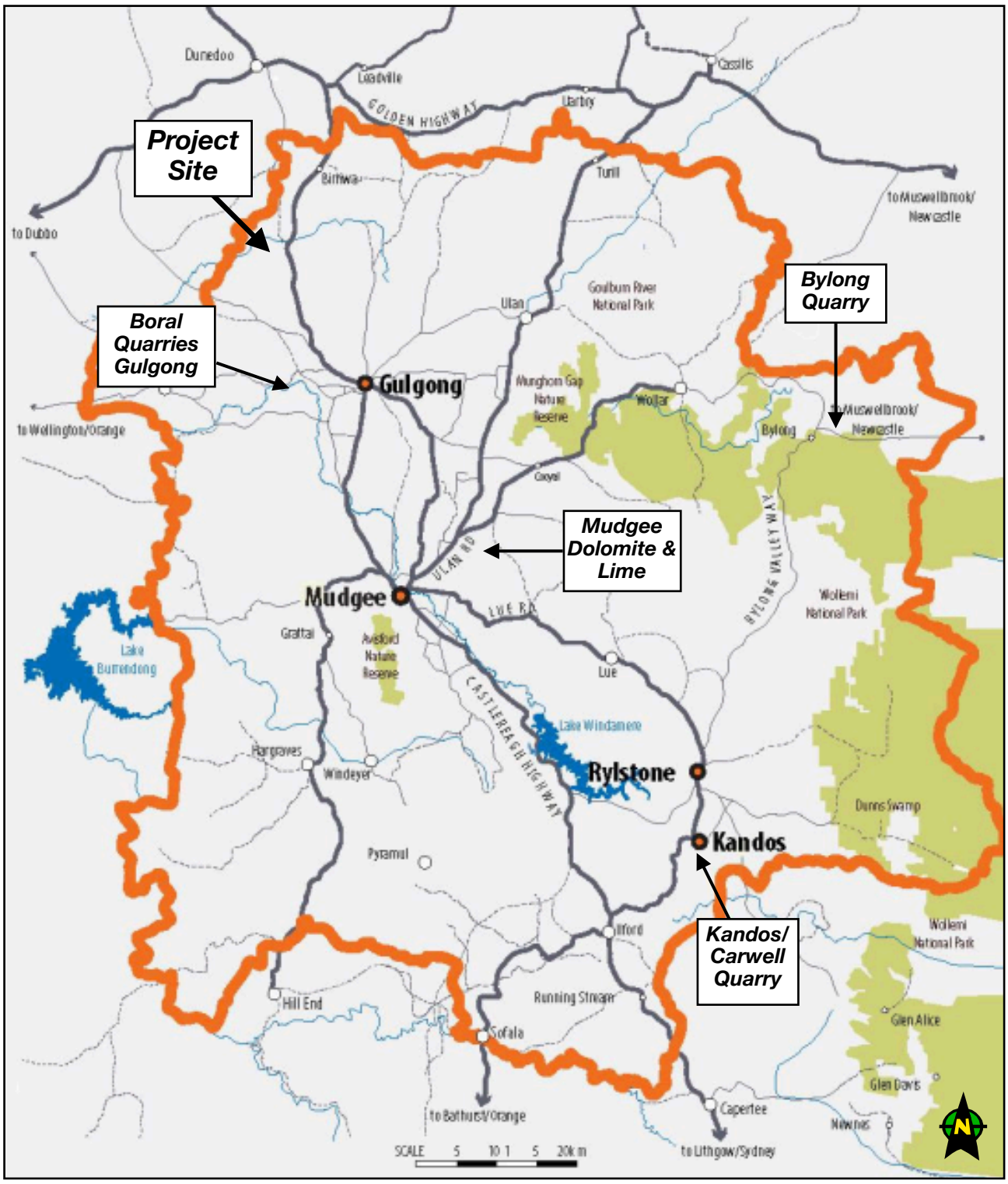


FIGURE 2.18: Location of other quarries in the Mid Western Region LGA. The project site is strategically positioned in terms of proximity to and potential to provide quarry product to the numerous renewable energy infrastructure projects located in the northern part of the Mid-Western Regional Council LGA

(Map base source: gln Mid-Western Regional Contributions Plan 2019)

3.Project Description

3.1 Introduction

This section of the EIS provides a comprehensive and consolidated description of the Gulgong Quarry Project for which development consent is being sought. If approved, the applicant will be required to carry out the Project in accordance with the project description in the EIS, the mitigation measures and the conditions of consent. Consequently, the project description, the mitigation measures and the conditions of consent for the project will become the primary reference point for checking compliance if the project proceeds. In the case of quarry developments, it is important to note that due to inevitable variations in market demand over time and changes in technologies, there will be commensurate variations in the rates of extraction/production, quarry truck traffic, blasting and sequencing of the quarry operation in any one year. These are changes that can be absorbed by any consent, without the need for amendments or modifications to the development consent if the quarry project is approved. Refer Section 3.4.5 for further details.

3.2 Project Overview

It is proposed to use 7.34 hectares (ha) of the site as an extraction area for a quarry, with a maximum rate of extraction of up to 350,000 tonnes per annum. Based on geotechnical investigations and detailed design, it is estimated that a resource of approximately 4.67 million tonnes (Mt) will be extracted from the proposed quarry pit. Refer **Figure 2.1** and **Appendix B**. The principal objective of the proposed development is to achieve depth of quarrying at establishment, thus minimising acoustic and visual impacts.

The Gulgong Quarry Project will service, in the main, nearby Central-West Orana Renewable Energy Zone (CWO-REZ) projects, including EnergyCo's transmission line infrastructure project, with a range of road construction and allied quarry materials. Table 3.1 presents a summary of the key Project components.

Table 3.1: Key quarry project components

Quarry component	Summary description
Extraction Method	*Bulldozer or excavator used to remove weathered rock and topsoil for rehabilitation, with drill and blast used for unweathered rock.*
Resource	*Approx.4.67 million tonnes (Mt) of weathered and unweathered phyllite and meta-siltstone.*
Disturbance area	*Working quarry area approximately 7.34ha, 7.52ha-7.776ha including the haul route corridor, with extraction of up to about 38 metres in depth. Quarry affects approx. 0.6% of 'Talinga' farm holding, with 0.55% returned to agricultural use at project completion.*
Processing	*Crushing and screening of unweathered and weathered phyllite and meta-siltstone material. Processing plant to be located in the floor of the quarry.*
Rate of extraction	*Up to 350,000 tonnes of quarry resource extracted per annum for 25-30 years with an additional 2 years to carry out rehabilitation of the site after quarrying is completed.*
Transport	*Access to the quarry from Castlereagh Highway, with upgrading of highway intersection proposed. It is anticipated that the quarry may generate up to 60 loaded quarry trucks per (week) day.*
Water management	*All stormwater in the quarry floor and active quarry areas is directed to the sediment basin located in the base of the quarry.*
Hours of operation	*Limited to 7.00am to 6.00pm Monday to Saturday. Hours of blasting are to be restricted to 9.00am to 3.00pm Monday to Friday.*
Workforce	*Up to 6 employees working on site + contractors (eg. blasting contractor, machinery servicing contractors, refuelers).*
Key environmental issues	*Impacts relating to noise and blasting impacts, soil and water management, visual impacts, rehabilitation and traffic.*

It is proposed to establish amenities on site once the quarry pit of is sufficient size, including a small demountable site office including staff amenities. Initially, front-end loaders with calibrated scales will be used for loading and weighing of the hard rock resource won from the site into road trucks. It is anticipated that once production significantly increases a weigh-bridge may be installed. Any fuels stored on site will be contained within self-bunded fuel tanks. Chemical storage may include a bunded lockable container for oils and lubricants for minor servicing. All chemical and fuel storage areas will be compliant with relevant Australian Standards. A sediment basin, coupled with silt raps where required, will be established within the proposed quarry footprint, to be used as a supply of water for dust mitigation. Upon completion of quarrying, the quarry will be rehabilitated to a suitable landform for continuing rural activities.

Key components of the proposed quarry operation are standard for the industry and will include the following:

- Clearing of land ahead of extraction.
- Ripping of weathered rock and blasting of unweathered (hard) quarry rock.
- Loose rock is then transported from the active quarry face to the processing plant within the quarry pit, where it is then crushed and screened, before being transported off-site.
- Transport of material from the quarry site via the internal quarry access route back to the Castlereagh Highway, before being transported to nearby infrastructure projects. Two passing bays are proposed along the length of the internal haul route.
- The intersection with the Castlereagh Highway will be upgraded to a suitable standard- refer **Appendix B** for concept design details.
- Stockpiles and storage areas to be within the approved quarry area. During the initial stage of quarry formation any overburden will be stored on the existing farm borrow pit before ultimate transfer to within the quarry.

3.3 Project Area

Figure 3.1 illustrates the extent of the proposed quarry extraction area footprint.

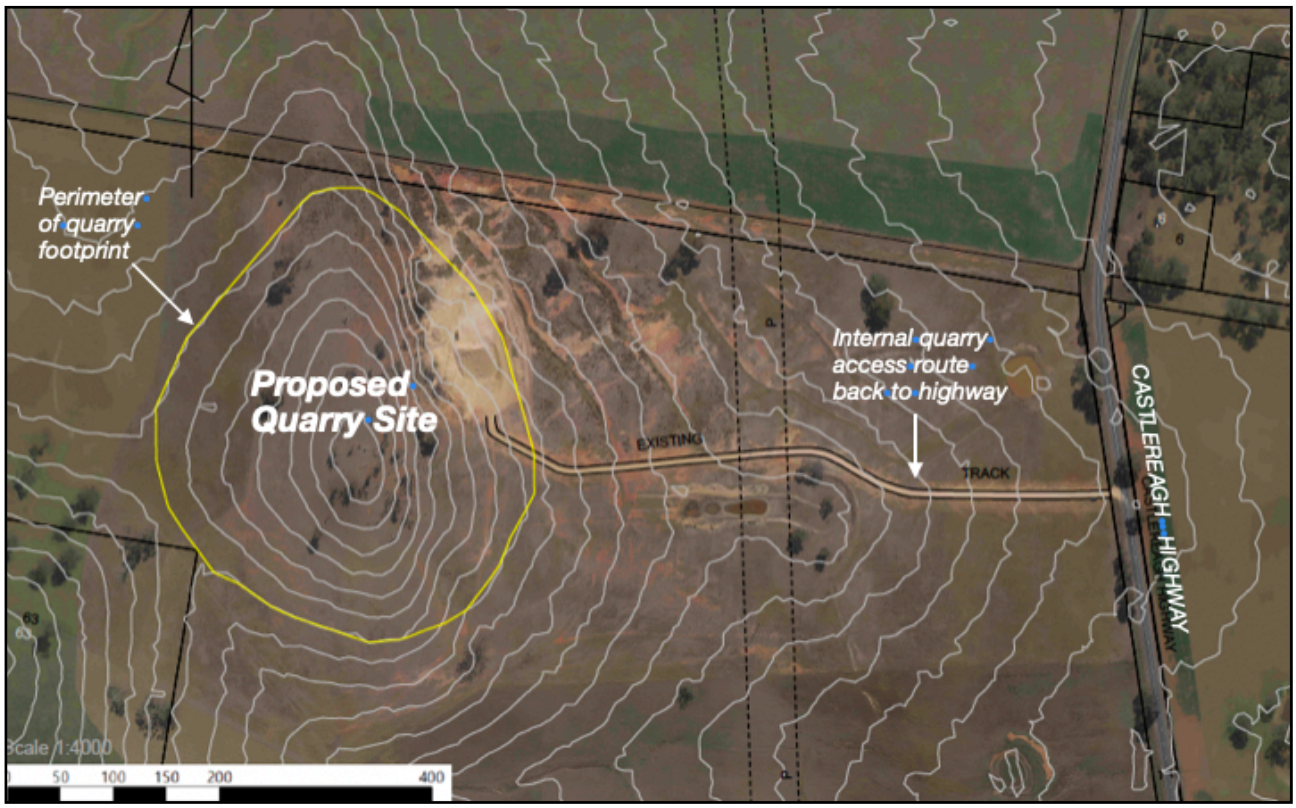


FIGURE 3.1: Location of Proposed Gulgong Quarry Project- edge of quarry footprint shown with yellow edging

The Project Area, including the proposed quarry but excluding the internal access route, comprises an area of approximately 7.34ha. The internal access route, having a width of approximately 3-4 metres, a length of approximately 500 metres with two passing bays of approximate area 360m^2, has area of between approximately 0.186ha-0.236ha. The proposed quarry development forms a part of the 'Talinga' rural holding, which has a total area of 1,191ha. Including the haul route, the quarry development has a total area of between 7.52ha-7.776ha, equivalent to just over 0.6% of the total farm holding. About 6.54ha of this area will be returned to agricultural use at project completion.

The eastern boundary of the proposed quarry extends from the top of the elevated knoll down to about RL 517m AHD, with the western boundary generally coinciding with RL 524m AHD. The southern boundary of the proposed quarry footprint extends to the middle of a saddle between two low knolls, between RLs 520m-524m AHD. Most-but not all- of the existing farm extraction area is included in the proposed quarry footprint. The boundary of the adjoining rural property to the north is located approximately 37m to the north of the proposed quarry footprint.

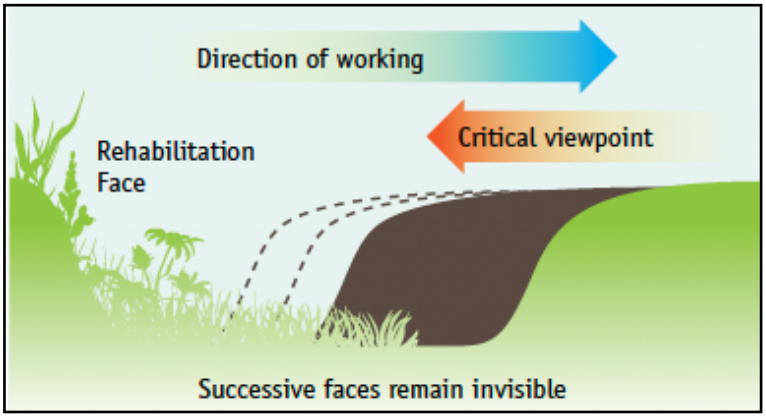
▪ 3.4 Quarry Layout and Design

3.4.1 Introduction

In order to appropriately manage visual and acoustic impacts, it is proposed to adopt a direction of the quarry working so that the working face is shielded from the most critical views at all times, at the same time achieve a suitable depth of quarrying from establishment. Topographic features are to be relied on in the initial stages of quarrying in order to achieve acceptable visual impacts, the concept for this approach to quarrying illustrated in accompanying **Figure 3.2**.

FIGURE 3.2: Design concept to be applied to Gulgong Quarry in order to reduce noise and visual impacts

(Source: Victoria Department of primary Industries Earth Resources (2010) Code of Practice for Small Quarries Figure 5- Designing Pit Development to Minimise Visual Impact "Recommended")



In this regard, it is proposed to stage the quarry as follows:

- **Stage 1: Area 4.98ha**. Retain the steeper part of the elevated knoll and carry out quarrying behind this feature, while achieving a satisfactory depth of quarrying. Quarrying commences in the southern section of the site to achieve a quarry depth of between 21m-31m below natural ground level. Quarrying proceeds behind existing topography, working progressively to the north-west from the southern end of the pit.
- **Stage 2: Area 7.34ha**. Stage 2 of the quarry development is planned to involve a progressive lateral extension of the quarrying operation towards the east and north-east. Quarrying will be undertaken relying on the existing quarry floor level established at Stage 1. Quarry benches no longer in use would be decommissioned and rehabilitated progressively. With a suitable depth achieved the remainder of eh elevated knoll is removed.
- **Stage 3: Rehabilitation**. About 6.54ha of the working quarry area will be returned to agricultural use at project completion.

The accompanying **Figures 3.3** and **3.4** illustrates the two proposed working stages of the project, including location of key components including sediment basins and internal roads. Quarry quarry processing areas, overburden stockpile areas and areas housing offices and amenities buildings will move as the quarry is progressively developed- refer **Appendix B** for further details. **Figures 3.5 and 3.6** are sections illustrating the various stages of the quarry. **Figure 3.8** illustrates the rehabilitated site following completion of quarrying. [NOTE: The design for the proposed quarry stages is to be regarded as indicative only.]

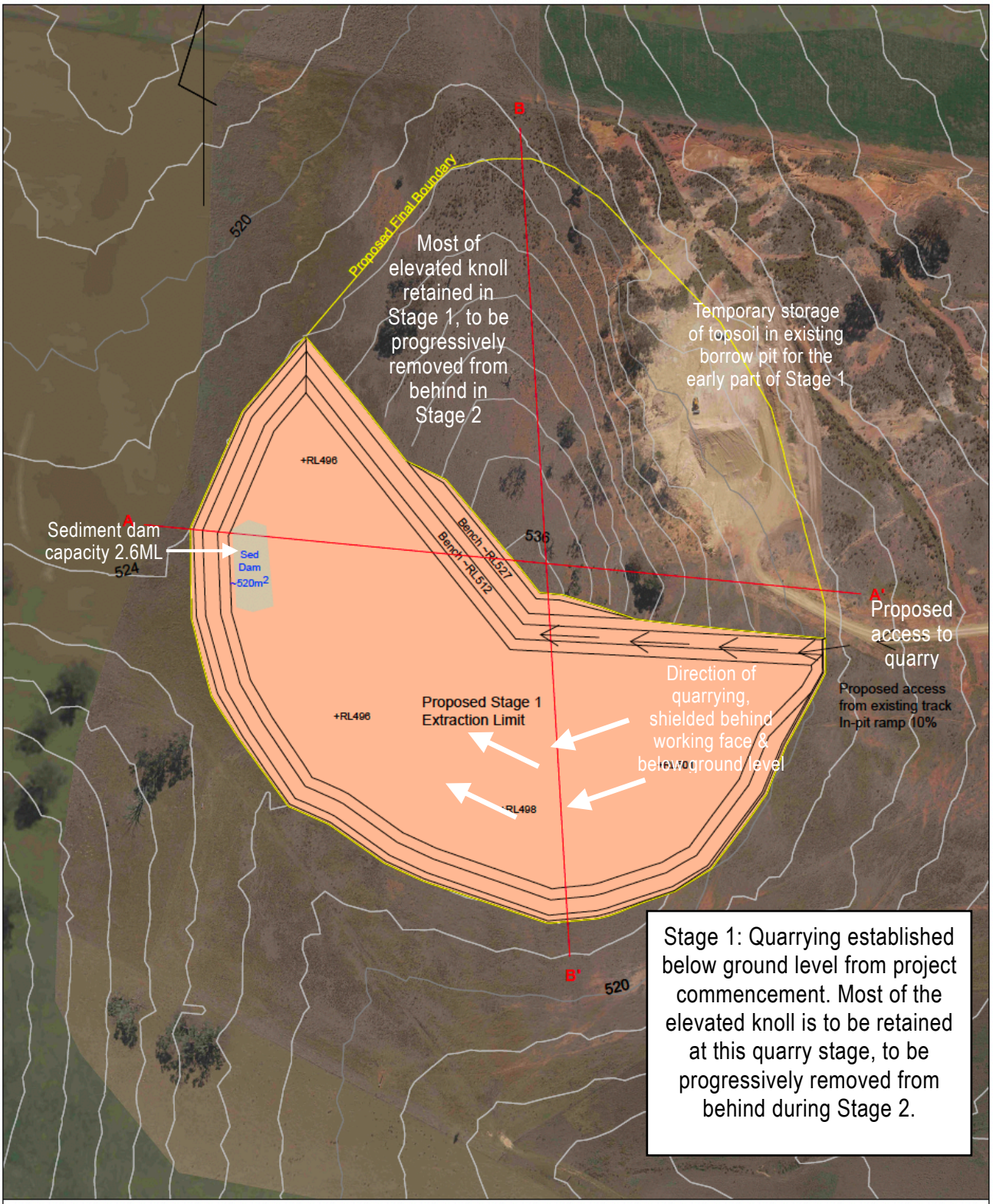


FIGURE 3.3: Proposed Quarry Stage 1

Drawn by: A Richards	Date: 06/09/2024
Approved by:	Date:
Date of Survey: unknown	
Project: Gulgong Quarry Conceptual Design	

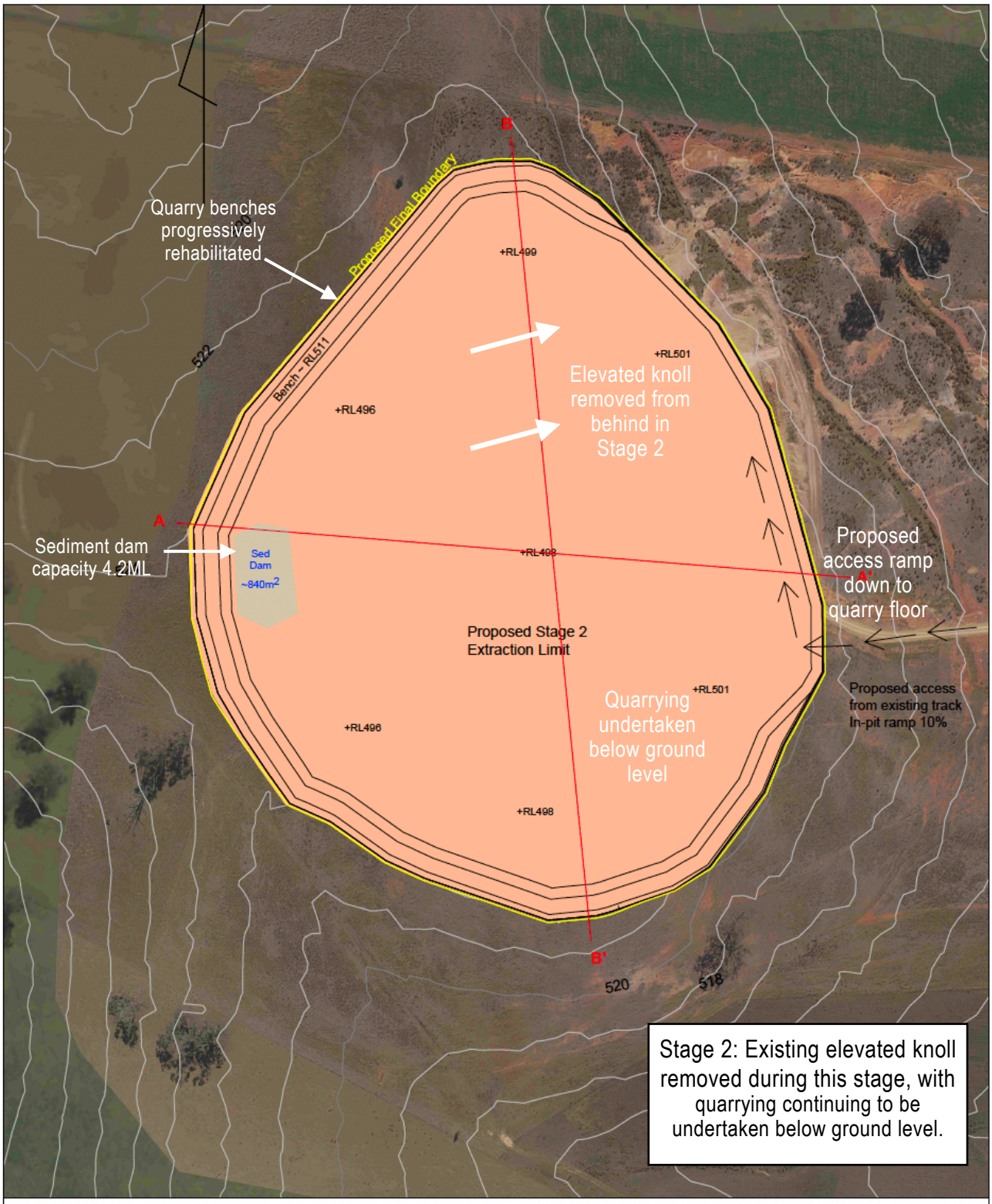
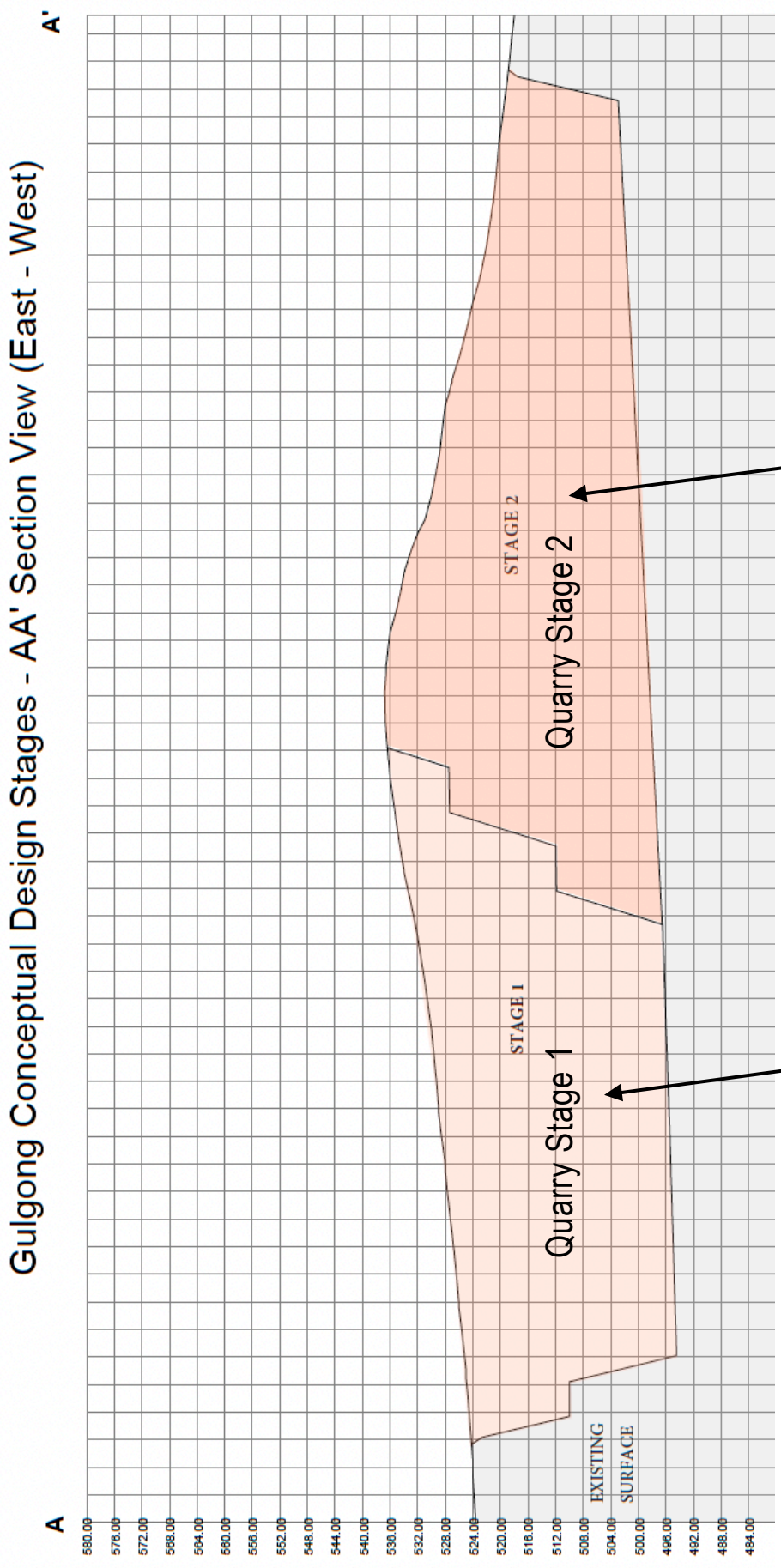


FIGURE 3.4: Proposed Quarry Stage 2

Drawn by:	A Richards	Date: 06/09/2024	
Approved by:		Date:	
Date of Survey: unknown			
Project: Gulgong Quarry Conceptual Design			



Stage 2: Existing elevated knoll removed during this stage, with quarrying continuing to be undertaken below ground level. Progressive deepening of the quarry floor down to RL496mAHD, with a larger sediment basin provided.

Stage 1: Quarrying established below ground level from project commencement. Most of the elevated knoll is to be retained at this quarry stage, to be progressively removed from behind during Stage 2.

FIGURE 3.5: Proposed Quarry Section A-A'

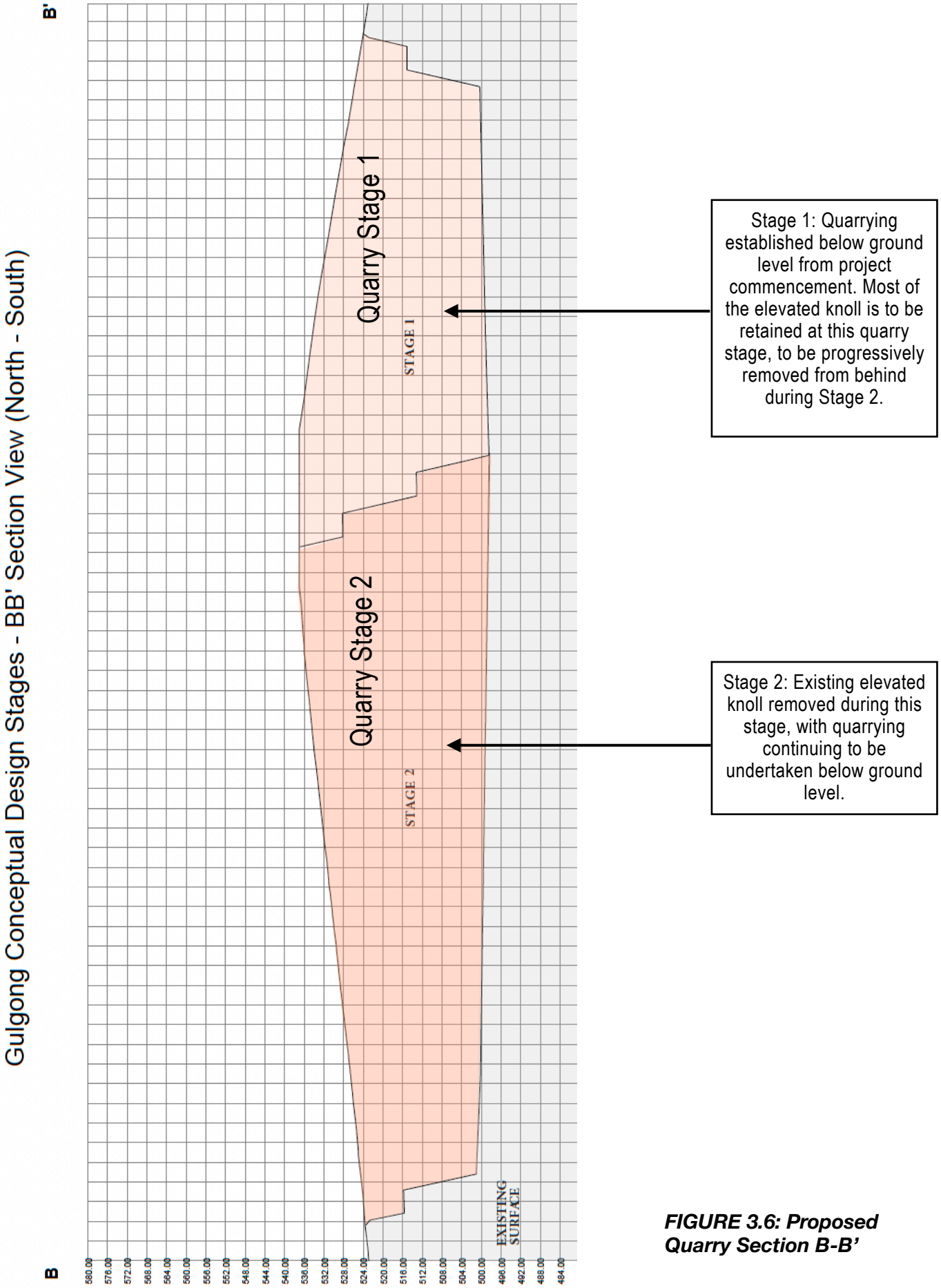


FIGURE 3.6: Proposed Quarry Section B-B'

3.4.2 Quarry Buildings

It is proposed to establish amenities on site once the quarry pit of is sufficient size, including a small demountable site office including staff amenities (kitchen, toilets, training room). Refer to accompanying photographs typical amenities buildings.

PHOTOGRAPH 3.1: Typical quarry office

PHOTOGRAPH 3.2: Typical quarry lunch room, kitchen with adjoining toilets

The floor area and dimensions of these typical buildings is summarised in Table 3.1 below and **Appendix B**.

Table 3.2: Dimensions and floor Area of Typical Quarry Buildings

Building	Dimensions (Length x Width x Height)	Floor Area
Office	*10m x 5m x 2.9m high.*	*50 sq. m floor area.*
Training Room/ Storage	*10m x 3m x 2.4m high.*	*30 sq. m floor area.*
Kitchen, lunchroom & toilets	*8m x 5.5m x 2.4m high*	*29 sq. m floor area.*

It is proposed that a pump-out sewage system be used to service the relocated facilities However, in the event that a septic system is subsequently proposed to be installed, it is proposed that as a part of the s.4.55 modification application process an additional consent condition would be inserted, requiring the proponent to obtain the necessary approval pursuant to the provisions of sections 68 and 68A of the *Local Government Act 1993* prior to the installation of any on-site sewage management facility proposed- also a requirement of clause 2.14(2)(a) of *State Environmental Planning Policy (Resources and Energy) 2021*.

It is envisaged that quarry sheds may be added at a later date, however, these can be facilitated under the Exempt Development provisions of *State Environmental Planning Policy (Resources and Energy) 2021*.

3.4.3 Weighing of Quarry Product

The weighing of loads leaving the site is a fundamental part of any successful, operational quarry project. The weighing scales give an accurate overall load readings and accurate axle loads for each quarry truck at the same time, which provides greater driver safety and eliminates axle overloading. Initially, front-end loaders with calibrated scales will be used for loading and weighing of the hard rock resource won from the site into road trucks. This method of record keeping has been successfully employed at Sheridans Hard Rock Quarry, at Hernani, and at Dorrigo Quarry.

It is anticipated that once production significantly increases a quarry weigh-bridge may be installed. A weigh-bridge of the type commonly used in quarries of this scale have dimensions of 28m x 3.5m with a concrete deck- refer to Photograph 3.3 showing a typical weigh-bridge. The design of a typical quarry weigh-bridge is illustrated in the accompanying **Figure 3.7**. If utilised, the weigh bridge would be installed within 100m of the site entry from the highway, on the northern side of the internal access route.

PHOTOGRAPH 3.3: Typical quarry weigh-bridge

(Source: Australian Weighing Equipment)

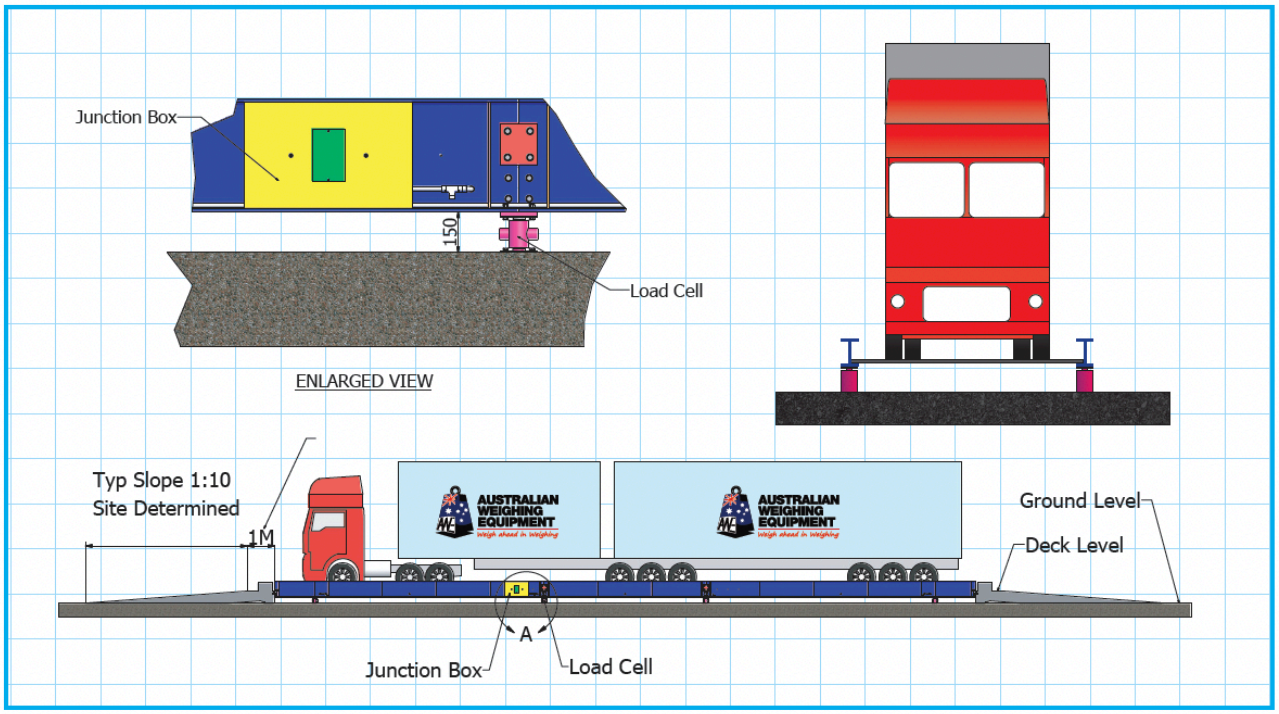


FIGURE 3.7: Typical quarry weigh-bridge: technical details

(Source: Australian Weighing Equipment)

3.4.4 Stockpiling of Quarry Products

Crushed quarry product would be transferred by conveyors to various stockpiles, created according to the size and grade of quarry product, within the quarry footprint.

3.4.5 Internal Roads

The existing internal access route from the quarry back to the highway will be widened and two passing bays added. A section of approximate length 100 metres will be sealed, near the highway intersection, with a rumble grid also installed.

The alignment of the internal access route will be re-aligned approximately 2 metres to the south in the vicinity of the power poles located on site, in order to satisfy Essential Energy safety requirements as advised- refer Photograph 3.4 and **Appendix M**. An access ramp will be provided down to the quarry floor, with gradient generally no more than 10%.

PHOTOGRAPH 3.4: The existing internal quarry haul route will be widened with the route re-aligned 2 metres to the south in the vicinity of the existing power poles that traverse the site. View from near highway entry looking west towards the elevated knoll

3.4.6 Flexible Elements to Quarry Operation

Quarry developments undergo changes over time commensurate with changes in demand for quarry products, sequencing of development and changes in technologies. This subsection outlines the components of the Project that are likely to be subject to changes or refinements throughout the Project life without causing any substantial changes in environmental impacts or need for any further consent or modification approval under Section 4.55 of the EP&A Act. These flexible components include but would not be limited to the following:

- The construction, maintenance and use of car parking facilities in quarries are Exempt Development in accordance with clause 2.13(3)(b) of *State Environmental Planning Policy (Resources and Energy) 2021*. In any case, there is more than sufficient parking space to be provided on the site for workers, contractors and visitors.
- The location of quarry buildings, fuel storage, plant and equipment, silt traps and bunds, when and where employed on the site, would be shifted periodically, depending on the staging of the quarry sequence and project needs. The plant and equipment utilised on site will be progressively upgraded or refurbished over the life of the quarry to undertake the same tasks with similar or (most likely) reduced levels of noise or dust generation.

- Introduction of sheds. If demand for quarry product is sufficiently high, there is logic in providing for storage sheds or sheds used for workshops, on site. The location of any sheds and buildings, if erected, would be shifted periodically, depending on the staging of the quarry sequence and project needs. It is relevant to note that under the provisions of clause 2.13(f) of *State Environmental Planning Policy (Resources and Energy) 2021* sheds required for a quarry are Exempt Development provided that the following requirements are satisfied:
  - "*(i) the shed is set back at least 100 metres from any public road and at least 200 metres from any dwelling that is not associated with the mine, petroleum production facility or extractive industry, and*
  - *(ii) the shed does not cover an area of more than 300 square metres, and*
  - *(iii) the shed is not more than 10 metres high, and*
  - *(iv) any spillage from chemicals or fuel stored in the shed will be caught by an appropriate and adequately sized bund, and*
  - *(v) the shed is located on land that has been lawfully cleared of vegetation, and*
  - *(vi) the shed meets the relevant deemed-to-satisfy provisions of the Building Code of Australia*,"
- Larger sheds of up to 500 square metres are permitted as Exempt Development under clause 2.14(2)(b) of of *State Environmental Planning Policy (Resources and Energy) 2021* provided that the land is not within an environmentally sensitive area of State significance (NOTE: the Project Site is not so designated). Similarly, clause 2.14(2)(a) of of *State Environmental Planning Policy (Resources and Energy) 2021* provides that the construction, maintenance and use of toilet and shower facilities are also *Exempt Development* provided that they meet ss 68 and 68A of the *Local Government Act 1993*. Refer to Section 4 for details as to what constitutes "an environmentally sensitive area of State significance".
- Provision for wheel-wash facilities in the quarry. Clause 2.13(h) of *State Environmental Planning Policy (Resources and Energy) 2021* provides that construction, maintenance and use of wheel or vehicle wash facilities in a quarry are Exempt Development provided that the following requirements are satisfied:
  - "*(i) waste water is treated and reused on site or disposed of at an approved waste management facility, and*
  - *(ii) the wheel or vehicle wash facilities are located on land that has been lawfully cleared of vegetation,*"
- Provision for the water storage tanks in the quarry. Clause 2.13(i) of *State Environmental Planning Policy (Resources and Energy) 2021* provides that construction, maintenance and use of water storage tanks in a quarry are Exempt Development provided that the following requirements are satisfied:
  - "*(i) the storage tank capacity does not exceed 100,000 litres, and*
  - *(ii) the storage tank is located on land that has been lawfully cleared of vegetation.*"
- Related to the above, the quarry may also utilise smaller sumps within the active extraction area to collect sediment and runoff, prior to discharge to the main sediment basins. The precise location of these sumps will change as the shape of the quarry changes and develops, and would be determined by the quarry operator as needs arise.Internal haul road locations.
- Throughout the life of the Project life, the internal haul roads within the active quarry footprint will be periodically relocated in order to satisfy the requirement for safe access to quarry plant and equipment and the active quarry working face.
- Any boom gates or security booths or fencing that may be subsequently installed are Exempt Development for the purposes of clause 2.13(3)(a)(i) of *State Environmental Planning Policy (Resources and Energy) 2021*.
- Overburden emplacement. During the life of the Project overburden will be moved to various locations in order to enable safe access to the quarry resource, to enable the site to be properly drained, and to enable subsequent rehabilitation. The placement of overburden (including soil) is an activity that would rely upon areas being available at the time when the overburden is being removed. Minor variations may be necessary to accommodate the overburden extracted throughout the Project life.
- Extraction sequencing and staging. Minor changes will inevitably be made to the areas being worked over time, given changes in demand for quarry product, however, such changes would still be in accordance with the overall quarry concept proposed.

3.4.7 Services

The current site is not connected to any mains power or reticulated water or sewage services. The extraction operations proposed to be carried out within the Project Site would operate with limited services. No potable water supply is available to the site. Water for human use will be supplied and transported to the site on an individual basis. All communications within the Project Area would be undertaken with mobile phones and VHF radios as there are no fixed telephone lines within the Project Area. Once the quarry is established it is intended that power/telecommunications will be connected to the site, in consultation with the relevant providers. All mobile plant and equipment within the Project Site would be diesel powered, with power for the operation of the office/amenities block and other minor ancillary needs produced, in the interim, by diesel-fueled generators.

The annual water requirement for dust suppression on the internal gravel access route would be approximately 1ML for all stages of the project. The annual water requirement for the processing of quarry material and dust suppression for stockpiles and immediate surrounds would be just under 1ML at maximum production, with spare sediment basin capacity to accommodate much greater volumes of water use. The bulk of this water would be initially drawn from the sediment basin at the southern end of the project, and from external sources until such time as the sediment basin has sufficient capacity. It is estimated that the sediment basin system should be capable of meeting the current and projected annual quantity of water required for the Project-refer Section 7.3.4 and **Appendix G** for details.

3.4.8 Identification of Quarry Operational Area

The boundary of the area proposed for quarrying activities ('quarry footprint') is to be clearly marked out on-site, with durable pegs or other markers prior to commencement of quarry operations. The identification marks will remain in place for the life of the quarry. The quarry operator will be made aware of the boundary markers and the limits of the quarry operational area.

▪ 3.5 Land Uses and Activities

3.5.1 Land Uses Within the Project Area

The existing and proposed land uses within the Project Site may be summarised as follows:

- Extraction of the quarry resource from within the designated quarry footprint, including processing of hard rock won from the quarry and product stockpiling.
- Despatch of quarry product from the Project Site via an existing haul route back to the Castlereagh Highway.

3.5.2 Extraction Method

The general procedure for extracting material from an active pit at the proposed Gulgong Quarry Project will comprise the following activities:

- Install erosion and sediment control works, including diversion drains and catch drains.
- Strip and stockpile the topsoil/overburden for use in future rehabilitation works. All vegetation removed ahead of extraction would be mulched or retained as logs or branches for rehabilitation purposes. The stripped topsoil and subsoil would be removed on a campaign basis in advance of extraction operations commencing.
- Remove the overburden (i.e. decomposed rock) with an excavator, dozer or front-end loader (the better quality overburden will be processed for use as road base, with the lower quality overburden being stockpiled for use in rehabilitation works or sold as fill material).
- Remove loose rock with an excavator or dozer, and transport to the processing plant for crushing and screening.
- Carry out a drill and blast program for the remaining hard rock. Transport the blasted rock to the processing plant for crushing and screening.
- Stockpile the various processed quarry products until trucked off site.

3.5.3 Blast Management

The winning of overburden and hard rock will be on an as-needs basis, and will be achieved by excavation and blasting, the latter generally comprising:

- Blasting to be undertaken by a licensed blasting contractor who are responsible for drilling, blasting and the delivery of bulk explosives to the quarry on a campaign basis.
- Blast holes will be drilled into the in-situ rock with a hydraulic drill. This entails the drilling of a pattern of regularly spaced holes using a hydraulic drill rig fitted with dust suppression equipment- refer to Photograph 3.5 showing a typical drill rig at work at a quarry. The blast contractor will provide details of:
  - Layout of the blast, including the drilling pattern and depth.
  - Drilling procedure.
  - Explosives type, quantity, firing method, procedures for loading and charging of each drilled hole.
  - Detonation sequence and effective mass per day (ie. Maximum Instantaneous Charge: MIC) 'powder factor'.
  - Procedures in the event of a misfire including actions to be taken.
- Post blast assessment and inspection.
- Approved explosives will be placed down the blast holes and holes appropriately filled with stemming, to minimise the potential for fly rock and maximise the efficiency of each blast and quality of rock produced.
- The explosives will be detonated, fragmenting the in-situ rock. All blasts will be undertaken in order to comply with the EPA's vibration and overpressure requirements- refer Table 3.3.
- Blasting at the premises will be limited to 1 blast on each day on which blasting is permitted.
- To minimise vibration and noise impacts, blasting will be restricted to between the hours of 9.00 am to 3.00 pm, Monday to Friday. Where a blast failure has occurred or there are compelling safety reasons, permission is sought for the EPA to permit a blast to occur outside the above mentioned hours.

PHOTOGRAPH 3.5: Typical drill rig in the process of drilling holes for blasting at a quarry

(Source: Photograph taken Sheridans Hard Rock Quarry, Hernani, on the Dorrigo Plateau 2022.

Explosives will not be stored onsite. Explosives used in blasting on site will be brought onto the site by the blasting contractor during the preparation of each blast. Explosives will not be stored on site and will be brought onto the site by the blasting contractor during the preparation for each blast. The quarry has been designed to ensure acceptable blasting impacts. Blasting will be strictly controlled and monitored in order to achieve compliant levels of ground vibration and airblast overpressure at the nearest rural dwellings.

Table 3.3: EPA Quarry Blasting Limits

Noise/Blasting item	***Principal Standard (Limit) Nearest Residence***	***Maximum Level Permitted Nearest Residence***
Airblast Overpressure	*Airblast overpressure of 115 dBL (Lin Peak). This level may be exceeded on up to 5% of the total number of blasts over a period of 12 months*	*Airblast overpressure should not exceed 120 dBL (Lin Peak) at any time*
Ground Vibration	*Ground vibration level of 5 mm/s peak particle velocity (PPV).This level may be exceeded on up to 5% of the total number of blasts over a period of 12 months*	*Vibration should not exceed 10 mm/s peak particle velocity (PPV) at any time*

Records are to be maintained for each blast at the quarry, to assist in the planning and implementation of future blasts and provide documentation in case of incident or complaint. Records of each blast will be made available to the quarry operator, with the results then provided to the EPA and Council on an annual basis, including details of:

- Location of the monitoring location- preferably near the nearest residence to the north.
- Environmental conditions at the time of the blast (eg rain, wind, thunderstorms, low cloud cover). Blasts will not be undertaken under dry, windy conditions where there is a higher risk of dust being generated during a blast event. Blasts will be postponed to a time with more favourable weather conditions. It is standard practice for weather forecast monitoring to be undertaken prior to each blast.
- Measurements taken from the blast equipment and/or monitoring equipment (ie. vibration and overpressure), confirming that the EPA's vibration and overpressure limits have been complied with.
- Results of the blast taken (including video) detailing bench behaviour, incidence of flyrock (if any), and blasted material volume result.
- Incidents or complaints, record of response.
- Based on the above, proposed modification to the blast plan for future blasts.

In terms of risk control measures involved in blasting on site, the following would apply:

- Security arrangements are necessary to meet the requirement to ensure the safety of employees, the public near the site and surrounding properties. In this regard, it is proposed that security arrangements would be in place, enabling access to authorised persons only during any blast event. The site would remain secure until the shot firer is satisfied the area is safe after the blast event.
- The blasting proposed is sufficiently buffered from the Castlereagh Highway (approx. 560m away) and from power poles (approx.200m away).
- Warning systems will be applied eg. sirens.
- No explosives are stored on site.
- Trained and licensed shot firers and blast personnel only are to be employed on site. Blast holes are to be inspected prior to each blast event, to ensure that drilling and stemming of holes has been completed in accordance with the blast design for that intended blast event.
- Use of tools by the blast contractor to test blast eg model blast pattern technology tool. The blast contractor will calculate the quantity of explosives, stemming and capping required for each blast at the quarry site.
- Maintaining safe blasting procedures and use of reliable products, competent people and reliable contractors in undertaking each blast. This will reduce the risk of excessive blast fumes, dust, and vibration/overpressure being generated.

3.5.4 Rate of Extraction of Quarry Resource

It is proposed that the rate of extraction (and not production) undertaken at the Project Site would be up to a maximum of 350,000 tonnes per annum from a resource totaling approximately 4.6 million tonnes. [NOTE: "extraction" means taking the material out of the ground per Pain J in *Hy-Tec Industries (Queensland) Pty Ltd v Tweed Shire Council* [2019] NSWLEC 175]. Importantly, the quarry may not be operated continuously, but on a campaign basis only when there is a major infrastructure project that needs to be supplied with product from this quarry. At a maximum of 60 loaded trucks per day carrying loads of 32 tonnes would mean that up to 1,920 tonnes of quarry product could be exported from the site on any one day, or 9,600 tonnes per (5 day) week. With larger trucks, up to 11,400 tonnes could be transported off-site in any given week.

3.5.5 Processing of Quarry Material

Quarrying, as an extractive industry, includes processing of the extracted material by crushing and grinding. Quarry rock won from the active quarry area is transferred to adjacent mobile crushing and screening plant that will follow the active working quarry face for processing. The rock material drilled and tested by Douglas Partners (refer **Appendix N**) indicates that the rock would be suitable as road base, including 'Select' quality material, as referenced by Transport for NSW (August 2022) *Select material for Earthworks Specification D&C 3071*), or as general fill. A lesser level of processing is required for this type of quarry product compared to, say, product rock required for concrete or asphalt.

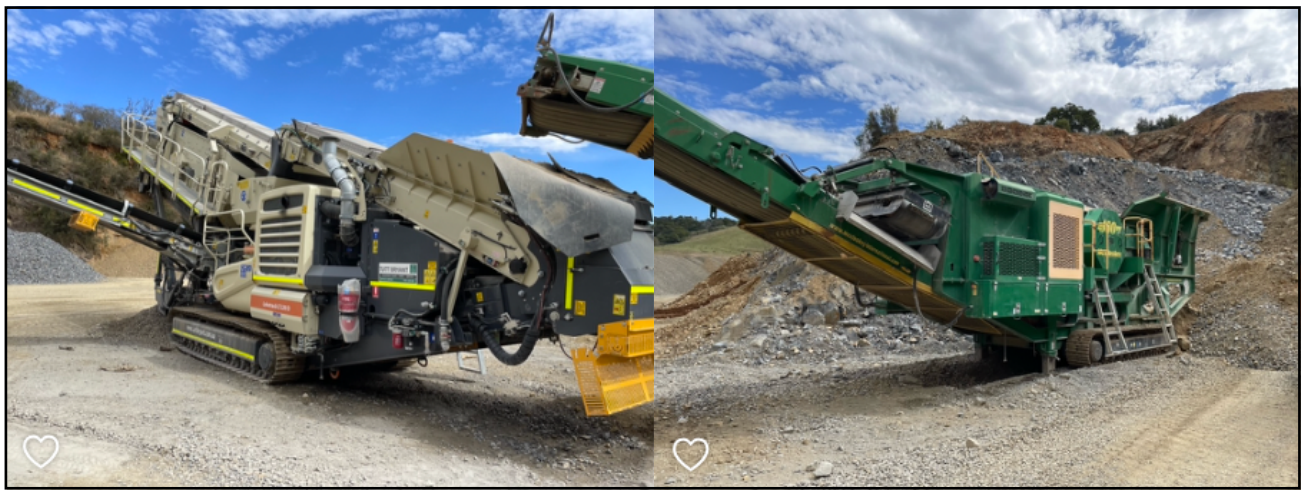
The process typically starts when the rocks won from blasting of quarry rock is initially crushed by a mobile (primary) jaw crusher consisting of a heavy metal plate which moves backwards and forwards against a fixed plate (these are the "jaws"). The primary crusher is fed via a chute and vibrating feeder. The base of the feeder is made of steel "grizzly" bars and it is here that the first screening operation is actually done. Fine material and dust produced by the blast, along with any remaining subsoil or weathered rock from the top of the quarry face, drops through the bars onto a separate conveyor belt and onto a stockpile. The remaining product from the jaw crusher is then transferred to a cone crusher, a secondary crusher. Rock crushed at the primary crusher is then typically fed in at the top of the secondary crusher and crushed product falls out from the bottom of the cone. Each stage of crushing produces progressively smaller sized stones.

In order to produce a usable end-product, the crushed quarry rock has to be screened into various size categories. Screening is carried out at various stages in the crushing process. Screens are basically box frames into which sheets of screen meshes of the required apertures are inserted, clamped and tensioned. Screens are usually "multi-deck", that is, two or more screen meshes are stacked vertically within the screen frame. The following are typical plant and machinery components of the proposed quarry operation:

- Mobile jaw crusher crusher (eg. a Metso LT125/Kleeman MC110/McCloskey J50 or equivalent) with a scalping screen/radial stacker attached to jaw crusherRock screens are vitally important to any company that deals with the crushing of quarry product. Screens assist in separating crushed quarry rock to various sizes to meet the customer's specifications for road base and fill.
- Mobile cone crusher, similar to Metso LT220D/Findlay 1540RS(or equivalent), with built in screens/ conveyors.
- CAT D8 Dozer and a 38/50T Kobelco excavator/Doosan DX225LC 23 (or equivalents). NOTE: Not used at the same time.
- CAT 740/Terex TA400 Articulated Dump Truck (or equivalent).
- CAT 972/950 Front End Loader (or equivalent)
- Return conveyors to cone crusher and screens for reprocessing of oversized material, if required.

Refer also to photographs of the above typical quarry plant and machinery on the accompanying page.

The crushed quarry rock will then be transferred by conveyor into various quarry stockpiles. The stockpiles of processed quarry product would be established around each crushing plant before being transported off-site by heavy transport. Refer to accompanying Photograph 3.6 showing typical excavator, crusher and conveyors at a quarry working face- at Sheridans Hard Rock Quarry, near Dorrigo.

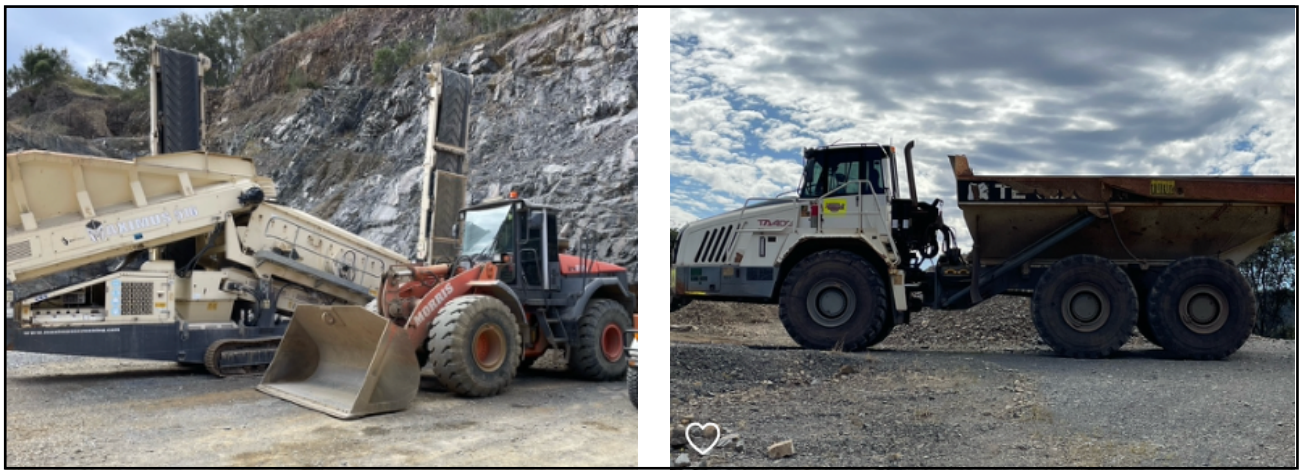


PHOTOGRAPHS 3.6 & 3.7: Typical mobile cone crusher (on left), with mobile jaw crusher nearest the quarry working face (on right)

(Source: Photographs taken Sheridans Hard RockQuarry, near Dorrigo, August 2022)

PHOTOGRAPHS 3.8 & 3.9: Typical quarry excavator (on left) and front-end loader (on right)

(Source: Photographs taken Sheridans Hard RockQuarry, near Dorrigo, August 2022)



PHOTOGRAPHS 3.10 & 3.11: Typical quarry quarry screen and front-end loader (on left) and articulated quarry dump truck (on right)

During the life of the quarry, the components of the crushing and screening plant will need replacing on an ongoing basis, as the components come to the end of their operational life with equivalent new or second-hand models. Typical plant used at the quarry include front-end loaders, excavators/bulldozer and wheel-loaders, and service trucks including water cart.

All practical measures will be used to silence construction equipment, particularly in instances where extended hours of operation are required. No operations are proposed on Sundays or public holidays. Standard construction noise mitigation treatments involving operational management techniques and regular equipment maintenance will be employed to control the extent of the noise impacts around the processing plant site at the quarry pit level. All plant and equipment is to be maintained and operated in a proper and efficient condition and manner.

3.5.6 Drainage and Sediment Capture

The drainage and sediment capture systems to be employed will prevent erosion, as well as ensuring that run-off does not contaminate offsite areas or downstream waterways.

The stormwater system has been designed to ensure that 95th percentile 5-day rainfall event (50.7mm) are captured by the quarry sediment basin system. The proposed sediment basin, will capture stormwater from the active quarry area- refer **Figures 3.3-3.5**. The water captured from the quarry sediment basin will be re-used for quarry-related purposes such as dust suppression. The size of sediment basin for each stage complies with Blue Book requirements and water balance for average, dry and wet years- refer Martens & Associates water balance report in **Appendix G**. Refer Photograph 3.12 showing a typical quarry sediment basin.The minimum proposed sediment basin volumes proposed for each quarry stage are as follows:

- Stage 1: 2,600 cubic metres (2.6ML).
- Stages 2 and 3: 4,200 cubic metres (4.2ML).

PHOTOGRAPH 3.12: Typical quarry sediment basin

(Source: Photograph taken Dorrigo Quarry, August 2022).

The effectiveness of these sediment control measures is proposed to be continuously monitored by the quarry operator and improvements made where necessary, with the following applied:

- Erosion and sediment control structures to be inspected regularly, or after any major rainfall event, to assess their success in preventing erosion, identify signs of potential erosion and retained sediment basin capacity.
- The erosion and sediment control structures to be cleaned of accumulated sediment material (or extended or replaced) as soon as approximately 30% capacity is lost due to the accumulated material such that the specified capacities are maintained. The sediment basins are to be treated, if required, to reduce the Total Suspended Solids level to the licensed concentration limit before being discharged to the environment. Treatment can be with gypsum or any other material that has been approved by the EPA.
- When required, a flocculent will be added to sediment basin to increase the efficiency of sediment settlement.
- Section 120 of the POEO Act and any applicable EPL must be complied with at all times.
- The concentration of a pollutant discharged at the discharge point must not exceed the concentration limits as set down in any issued EPL. In this regard, the likelihood any overflow from the sediment basin is most unlikely, given the capacity of the sediment basin system and depth of the quarry proposed.

3.5.7 Dust Management

Dust can be generated by a variety of different activities that are carried out at the quarry site including: drilling; rock breaking; crushing; extraction; trucks; machinery and blasting. Measures proposed to reduce dust nuisance include:

- Use of water sprays on processing plant and materials stockpiles, as required. The quarry can draw water from the existing sediment basin, once established.
- A water tanker may be regularly used to spray water on working areas during dry and windy weather conditions.
- Quarry trucks leaving the site to the public road system are to have covered loads, with tailgates effectively sealed. All vehicles on site are to be confined to designated roads with a signposted speed limit
- Potentially dusty activities not to be carried out when weather conditions give rise to potential offsite dust emissions. Blasting will be restricted if windy conditions are likely to carry visible dust emissions beyond the quarry boundary.
- Miscellaneous dust sources such as spillages from trucks and silt are to be regularly cleaned up.
- Proper maintenance and tuning of the vehicles and equipment also assists in avoiding any off-site effects.
- Completed extraction areas will be stabilised and revegetated as soon as practical after completion.

3.5.8 Transport of Quarry Product

The Project Site would be accessed from Castlereagh Highway via an existing internal site access road traversing Lot 1 to the proposed quarry. The Project seeks consent to allow up to 60 loaded trucks per day leaving the Project Site with quarry products. Transportation of quarry products is typically by truck and trailer ('truck and dog') style vehicles to service markets, with larger and smaller trucks also likely to be in use. A typical truck and dog consist of 3 axle truck and 3 axle dog (trailer) and can carry a load of up to 42 tonnes. Refer to Photograph 3.13 illustrating a typical truck and dog configuration.To make drivers more aware of heavy vehicles in the area and to improve road safety around the quarry access W5 – 22 (B size) signs are to be erected at 150m on approach to each side of the quarry access.

All processed quarry products destined for despatch from the proposed quarry would be sourced from the various product stockpiles within the quarry site. The stockpiled material would be weighed and loaded onto haulage vehicles prior to existing the site from the existing haul road that runs from the Project Site to the Castlereagh Highway. The gradient of internal haul roads is very important to the braking capabilities of the plant and vehicles using it. In this regard all internal quarry ramping within the quarry pit will be generally below 10% gradient, capable of safely accommodating a quarry haulage vehicle, with suitable edge protection and drainage provided. Internal haul roads are to be regularly maintained so that they do not develop bumps, ruts or potholes which may make control of vehicles difficult.

PHOTOGRAPH 3.13 : Typical "truck and dog" haulage vehicle. Similar haulage vehicles are to be employed at the proposed quarry

(Source: MacKellar Excavations Marys Mount Quarry)

Once loaded, all haulage vehicles would be required to cover the load prior to exiting the Project Site. Within the quarry site plant and vehicles are be operated and driven safely at a speed not exceeding 30km/hour. Traffic signage will be employed accordingly.

The project site is strategically positioned in terms of its close proximity to and ability to service nearby SSD projects with road making material, located as it is in the northern part of the Mid-Western Regional Council LGA. In particular, the project site is located approximately 3.1km to the north of EnergyCo's extensive, 1km wide CWO-REZ project, approved on 26 June 2024, and as close as 2km to Acciona's Orana Wind Farm project. Both projects will require huge amounts of road making material to service their developments. In order to service these infrastructure projects, trucks leaving the Project Site would enter the Castlereagh Highway before utilising the local road system running off the highway, planned to accommodate access to these infrastructure projects.

The rate of transportation in any one year would be dependent on demand for quarry product and the rates of extraction.

It is proposed to rely on the existing internal access route from the Castlereagh Highway to the operating quarry, with upgrades in the form of widening, sealing of about 100m of the road, re-alignment to achieve a safe setback form the power poles that run though Lot 1. Any upgrading of the internal access and haul road will be completed using standard road building equipment, including excavators, loaders, graders and dump trucks.

The quarry pit floor is to be maintained in a suitable condition to enable the transfer of crushed quarry product between the mobile crushing and screening plant within the active extraction area and product stockpiles on the quarry site. These would be formed by bulldozer, gravelled where necessary, and regularly watered to minimise dust potential. As the active extraction area moves and any temporary access roads become redundant, they will be either removed or covered with suitable material as part of progressive landform creation or rehabilitation program.

In the interests of driver safety a Driver Code of Conduct would also apply.

3.5.10 Quarry Benching and Finished Quarry Face

The final overall slope proposed for quarry batters will be approximately 51 degree slope with benches angled at 70 degrees- a design outcome that generally satisfies current quarry design 'best practice' in the document entitled *Guidelines for Open Pit Slope Design* (CSIRO 2009) promoted by NSW Trade & Investment- Mine Safety. The stability of the quarry and surround areas would continue to be monitored during the project, to ensure a safe work environment.

It is proposed to construct minimum 7.5m wide benches with a maximum quarry face height of up to15m. The cut slopes and particularly the proposed access ramp should be regularly inspected by authorised quarry personnel for signs of movement during operation and in the event of adverse weather (say daily rainfall totals exceeding 40 mm). The quarry benches will be rehabilitated on a progressive, ongoing basis to ensure the early establishment of vegetation once quarrying is completed.

▪ 3.6 Hours of Operation of Quarry, Life of Quarry

The accompanying Table 3.3 sets out the proposed hours of operation for activities planned for the Project.

Table 3.4: Proposed Hours of Operation

Activity	*Monday to Friday*	*Saturday*	*Sunday, Public Holidays*
Extraction, Processing of Quarry Product	*7.00am to 6.00pm Monday to Friday*	*7.00am to 6.00pm on Saturdays*	*Nil*
Blasting	*9.00am to 3.00pm*	*Nil*	*Nil*
Maintenance, Administration	*6.00am to 6.00pm*	*6.00am to 4.00pm*	*Nil*

The quarry will not operate outside these times, except under exceptional circumstances, where the supply of quarry product for emergency purposes , for example, the delivery of quarry products needed for emergencies like flood prevention and/or repairs to local or regional or state roads or other infrastructure and the like.

It should be noted that the 350,000 tonnes per annum extraction rate is a maximum only, set in order to accommodate demand for quarry product during a peak year only. For the purposes of the overall project, an operational quarry life of at least 25-30 years is assumed, based on a more modest average of 185,000-155,000 tonnes per annum, with an additional 2 years required to provide for a period of maintenance following the completion of rehabilitation activities at the quarry. If lower rates of extraction are achieved a longer quarry life would result.

▪ 3.7 Management of the Quarry

The quarry operator, will be responsible for all activities on-site and managing all other site personnel. It will be their responsibility to ensure all environmental measures are in place and are being managed according to the development consent, once issued. Responsibilities will include, but are not limited to, the following:

- Comply with the requirements of the development consent, once issued, as well as any EPL conditions.
- Implement controls for on-going management of the quarry in accordance with the above.
- Manage quarry pit works on a daily and longer terms basis, with oversight of production, onsite water and soil management, stockpile management, blast management, disposal of materials, and rehabilitation.
- Develop and maintain environmental performance of the quarry operation. This includes ensuring that site safety protocols are in place and development or implementation of control plans for hazards, including incident management.
- Ensure proper training and oversight of quarry staff and monitor performance of contractors.
- Undertake appropriate updates, reviews and audits of the quarry operation to measure progress and to ensure compliance with the relevant conditions of consents imposed by Mid-Western Regional Council and the requirements of the NSW EPA. Includes the lodgement of annual reports and attendance at site inspections.
- Managing customer or community complaints, and work with local residents if major issues arise, to ensure that an adequate response is given when environmental issues are raised.
- Respond to environmental incidents and arrange remedial measures to overcome the incident.

▪ 3.8 Employment, Training of Employees

At full production, the Gulgong Quarry Project will employ up to 6 full-time employees, the workforce largely drawn from the local community. The above workforce does not include truck drivers employed by contractors, suppliers and other sub contractors periodically engaged by the quarry eg. blasting contractors. The *Work Health and Safety (Mines and Petroleum Sites) Regulation 2022* (NSW) provides a framework to protect the health, safety and welfare of all workers and others in relation to NSW workplaces and work activities, including this quarry. SafeWork NSW is the WHS regulator for the state, administering acts and regulations related to WHS, including the Work Health and Safety Act 2011, *Dangerous Goods (Road and Rail Transport) Act 2008*, and the *Explosives Act 2003*. All health and safety measures to be applied will be in accordance with the NSW Resource Regulator guide *Health and Safety at Quarries* dated November 2018. The quarry operator will have the responsibility of inducting each person in the relevant quarry work procedures before commencing work at the quarry including but not limited to the following:

- Roles and responsibilities. All employees will be required to act responsibly and not cause or allow anything to occur that may harm the environment (such as fuel spills,, uncontrolled dirty water runoff, or excessive noise).
- Environmental incident management, emergency response plans and reporting procedures. All employees will be required to notify management of any incident or accident that may potentially harm the environment or human health.

Re-training may be required should there be any significant changes to quarry procedures, or if any non-compliance with existing procedures is noted by site inspection, monitoring, or by a regulatory authority or public complaint.

▪ 3.9 Waste Management

The only general waste products which will be generated at the quarry are waste oil, unserviceable machinery parts, and site office and lunch room wastes (e.g. paper, plastic, food scraps). Waste disposal will comprise:

- The waste oil will be taken to an oil recycler.
- Waste metal will be sold to a scrap metal merchant.
- All other general waste materials will be taken to Council's landfill for disposal.

Separation of recyclable materials (e.g. paper, glass, plastics) will be carried out wherever possible. It will be the responsibility of the quarry operator and contractors to take responsibility for the disposal of any waste that they create on site. If a site office and lunch room is established on site, a recycling bin and general waste bin will be provided to allow the separation of recyclable wastes. The different waste streams shall be appropriately separated and disposed at Council's landfill site. Sanitary facilities for the lunch room and toilet facilities will be provided in accordance with the *Building Code of Australia*.

▪ 3.10 Emergencies and Hazards Management

Significant events at the quarry that may threaten the environment or public health include excessive rainfall, fire, fuel spillage on the access road, blasting mishap, unauthorised access or major truck accident. Other potential occurrences such as power failure, pump failure or spillage within the quarry would be unlikely to present a threat to the environment or public health as the effects would be contained within the quarry, allowing rectification to be planned and implemented in a co-ordinated manner.

Should a major pollution incident occur affecting the external environment, the EPA will be advised by telephone as soon as possible and provided with written details as required. The following measures are to be taken to minimise the risks arising from the above types of emergencies:

- Fuel spill. All fuel to be stored within bunded areas. Fuel trucks will visit the site as required for refuelling purposes. In the event of a spillage:
  - Spilt fuel is to be collected where practicable.
  - The EPA to be contacted in the event of a major pollution incident details.
  - Should a significant amount of loose material be contaminated with spilt fuel it is to be collected and disposed of at a licensed landfill facility.

- Excessive rainfall. The quarry pit has been designed to be capable of retaining runoff from all rainfall events within the pit. While excess water may flood some low-lying parts of the quarry and be a hindrance to operations it will not be an emergency situation. The excess will be flocculated if necessary. If a decision is subsequently made to discharge this water into the drainage system to the east all water quality criteria, contained in the relevant EPL, must first be met. When excessive rainfall is experienced, causing flooding of the quarry pit, the following mitigation measures are proposed:
  - Cease quarrying in flood-affected sections of the quarry.
  - Check drainage and sediment control devices for integrity and make any urgent repairs.
  - Relocate mobile machinery and moveable plant to higher ground, where required.
  - Clean affected areas after the event and check the sediment load within the sediment dam.
  - Flocculate the sediment basin, if required, using gypsum to minimise suspended sediment.
- Blasting mishap: Precautions are in place to prevent any incident occurring during blasting (refer section 3.5.3).
- Unauthorised access: Access to the quarry site is through gates that are to be locked after hours. The quarry itself is not visually prominently from any public viewing location and the threat of unauthorised access is slight.
- Major truck accident: Potential vehicle accidents on the site include collisions. Should a vehicle be involved in a major accident on the premises, staff will initially attend to the needs of any injured personnel. If there is a spill of fuel, emergency response procedures will be initiated as described above. Should there be a spill of extracted material, steps will be taken to recover the material as far as practicable. The Police will be notified where necessary.
- Need for 4.5m clearance from overhead power lines, in accordance with advice from Essential Energy dated 10 July 2023- refer **Appendix M**. This will mean that the existing internal access track will need to be moved 2m further away from the power lines.

3.11 Fire Management

The Project Site is not identified as forming a part of any bushfire prone landscape. Provided the following measures are applied, as outlined below, the fire risk on the site can be managed to an satisfactory degree. Refer also to Section 4 and Section 7.3.10 for further details. Proposed fire management measures proposed include:

- Fire fighting equipment to be stored at the quarry site, with extinguishers to be kept on all mobile plant and site vehicles. The extinguishers are to be serviced regularly.
- Access to the quarry to enable access by RFS fire fighting vehicles.
- No explosives kept on site.
- All mobile equipment fitted with spark arresting mufflers.
- Retention of water run-off from the quarry in the sediment basins, suitable for use in fighting fires.
- The company's work instructions include emergency response and evacuation procedures including:
  - Responsibilities of personnel.
  - Rural Fire Service contact details.
  - Regular visual check and testing of equipment.
  - Staff training for fire emergencies, including training in fire awareness and basic fire fighting procedures.

3.12 Site Security

A locked farm gate is currently provided to prevent entry to the Project Site by unauthorised persons. This measure will be ongoing. Further site security and fencing will comprise:

- The working quarry site will be fenced, to keep farm animals from straying into the quarry.
- Security lighting of the quarry office area and immediate surrounds.
- Appropriate signage to be provided at the entry to the quarry, advising of:

- The need for all visitors to report to the office.
- The need for all visitors to comply with property policies as well as applicable workplace health and safety legislation.
- Prohibition on access without permission and without obtaining notification of any hazards on the quarry site.
- Need for protective clothing/hearing/eye protection in the quarry area.

3.13 Energy Requirements

As the site is not currently connected to mains electricity only one form of energy is likely to be used on the site-at least in the foreseeable future: diesel fuel. The total amount of fuel which will be used by the trucks which will be hauling material from the site will largely depend on the delivery destinations. It is anticipated that much of the material produced from the quarry will be used, at least in the next 10-15 years or so, to service the Central-West Orana Renewable Energy Zone (CWO-REZ) projects, including: EnergyCo's extensive, 1km wide CWO-REZ project (approximately 3.1km to the north of the project site); and Acciona's Orana Wind Farm project (as close as 2km to the project site).

The amount of fuel used will be a function of the distance travelled. To service the above projects, and conservatively assuming an average round trip of, say, 10 kilometres, fuel requirements for loading and transporting will be approximately 150 litres of diesel fuel per thousand (1,000) tonnes of material transported. At a maximum annual extraction/production rate of 350,000 tonnes of material per annum, total fuel usage for loading and transporting quarry products from the quarry is estimated at 52,500 litres of diesel fuel. More distance projects will require a correspondingly greater fuel usage. Fuel will also be required for plant used on site. Fuel requirements have been assumed to be approximately 500 litres of diesel fuel per thousand (1,000) tonnes of material extracted. At a maximum annual production of 350,000 tonnes of material, total fuel usage for plant used on site is estimated at 175,000 litres of diesel fuel. These estimates are maxima only.

The proposed quarry does not sterilise any known potential source of oil or gas.

3.14 Rehabilitation

3.14.1 Overview

Quarrying is a temporary land use, and quarrying is expected to cease extraction at some point in the future. The closure of the quarry operation typically occurs when the resource is exhausted, and provides opportunities for land disturbed by quarrying to be rehabilitated. The proposed Gulgong Quarry Project provides a preliminary rehabilitation plan, in concept form, the measures to be employed on-site to enable the re-establishment of vegetation and treatment of final excavated surfaces. Progressive rehabilitation of extraction areas is proposed by rehabilitating slopes from the top of the cut face to the bottom.

Quarry benches will be capped with a layer of overburden and topsoil, and planted with native species characteristic of vegetation within the surrounding landscape. The quarry pit will be filled to the extent possible using overburden and other material from on-site sources. On completion of quarrying the site is to be rehabilitated to form a free draining and sustainable landform as consistent as possible with surrounding landforms. The quarry floor will be reshaped to enable future use for grazing, with the sediment basin retained as a source of drinking water for stock. The total quarry floor area to be rehabilitated and returned to agricultural use is approximately 6.54ha (or 0.55% of the 'Talinga' farm holding), with approximately 0.8ha (or 0.06% of the 'Talinga' farm holding) comprising rehabilitated quarry benches.

Once completed, the aim will be to rehabilitate the quarry site to a stable condition. The relevant guidelines note that the primary aim of the closure and rehabilitation phase of a quarry is to minimise long-term erosion through effective revegetation (source: *Managing Urban Stormwater: Soils and Construction, Volume 2E Mines and Quarries* (DECC, 2008). Refer to **Figure 3.8** for details of the rehabilitation proposed and final land use and **Figure 3.9** showing an example of a rehabilitated quarry profile.

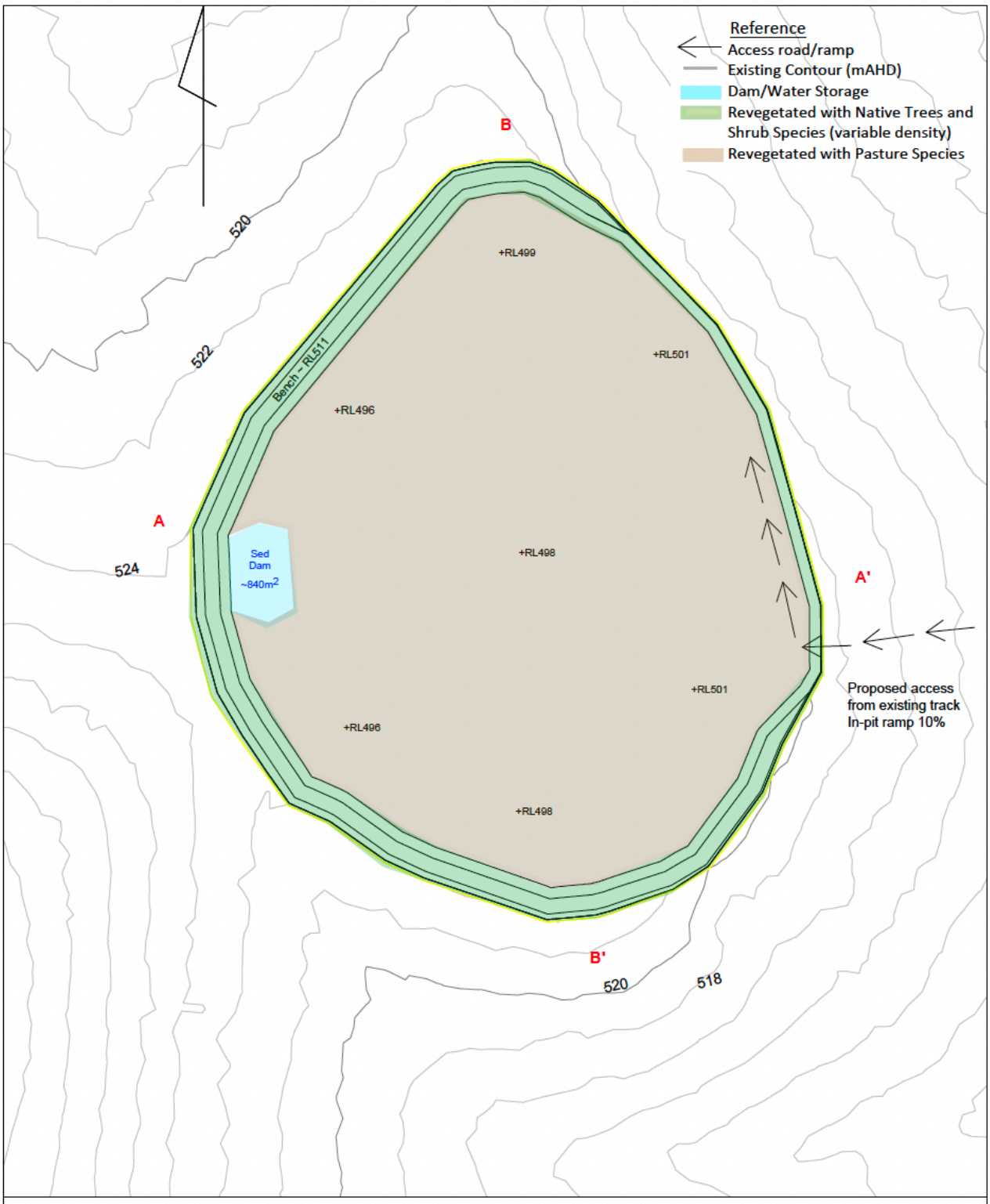


FIGURE 3.8: Proposed rehabilitation of the Gulgong Quarry Project Site

Drawn by: A Richards	Date: 18/09/2024
Approved by:	Date:
Date of Survey: unknown	
Project: Gulgong Quarry Conceptual Design	

The key components of the rehabilitation process proposed are as follows:

- Removal of all structures, equipment and other materials associated with quarrying from the existing works area, with appropriate erosion and sedimentation control measures.
- Earthworks and landscaping to shape the final worked quarry area. The benches of the active quarry area will be filled to the extent possible using overburden and other material. On completion of quarrying the site is to be rehabilitated to form a free draining and sustainable landform as consistent as possible with surrounding landforms.
- The rehabilitated landform to be covered with topsoil and other material and revegetated using native species on the quarry benches and introduced pasture species on the quarry floor.
- The access road from Castlereagh Highway to the Project Site to be retained for future agricultural use.

When completed, the quarry will be a large excavation into the side of the hill, to be left in a healthy, rehabilitated and safe condition, with quarry benches rehabilitated with native vegetation and the quarry floor returned to agriculture and providing a source of water for livestock. The progressive rehabilitation measures, together with final works, will ensure that both regrowth and safety measures have been correctly carried out. The stability of the quarry and surrounding areas would continue to be monitored during the project, to ensure a safe work environment. The timing of rehabilitation works will be dependent on the rate of resource extraction and the final levels of the base of the quarry floor.

The key project rehabilitation completion criteria to be applied to the project site are summarised in the accompanying table.

Table 3.5: Project rehabilitation completion criteria

Feature	*Rehabilitation completion criteria*
Decommissioning	*All quarry plant and equipment and other infrastructure will be decommissioned and removed*
Landform	*Achieve a stable landform, with no erosion, free of any hazardous materials associated with past use of site as a quarry*
Soil	*Topsoil or a suitable alternative has been spread uniformly over the identified rehabilitation surfaces.*
Water	*Sediment basin retained for erosion control and as a water supply for stock. No runoff to pose a threat to downstream water quality*
Revegetation, control of feral pests	*Progressive revegetation of quarry benches as quarrying proceeds on the site. Weed control measures to be implemented. Control of feral pests to be undertaken by landowner*
Bushfire hazard	*Appropriate bushfire hazard controls to be implemented*
Ongoing public safety	*Appropriate mechanisms to be established to control access and manage public safety post-closure*

3.14.2 Final Quarry End Use, Rehabilitation

The final site end use of the bottom section (floor/void) of the quarry will be as grassed pasture with the sediment basin retained as a water supply for stock- refer **Figure 3.8**. The final landforms within the quarried areas will consist of battered slopes leading to a basin at the base of the rehabilitated quarry pit. Quarry benches (approx. area 0.8ha) will be battered and capped with a layer of overburden and topsoil, and planted with native species- refer **Figure 3.9**.

The rehabilitated quarry pit and pit edges will require ongoing rehabilitation management and maintenance to ensure that the desired vegetation cover is achieved. Equipment and infrastructure that are not required as part of the intended final land use will then be removed from the site.

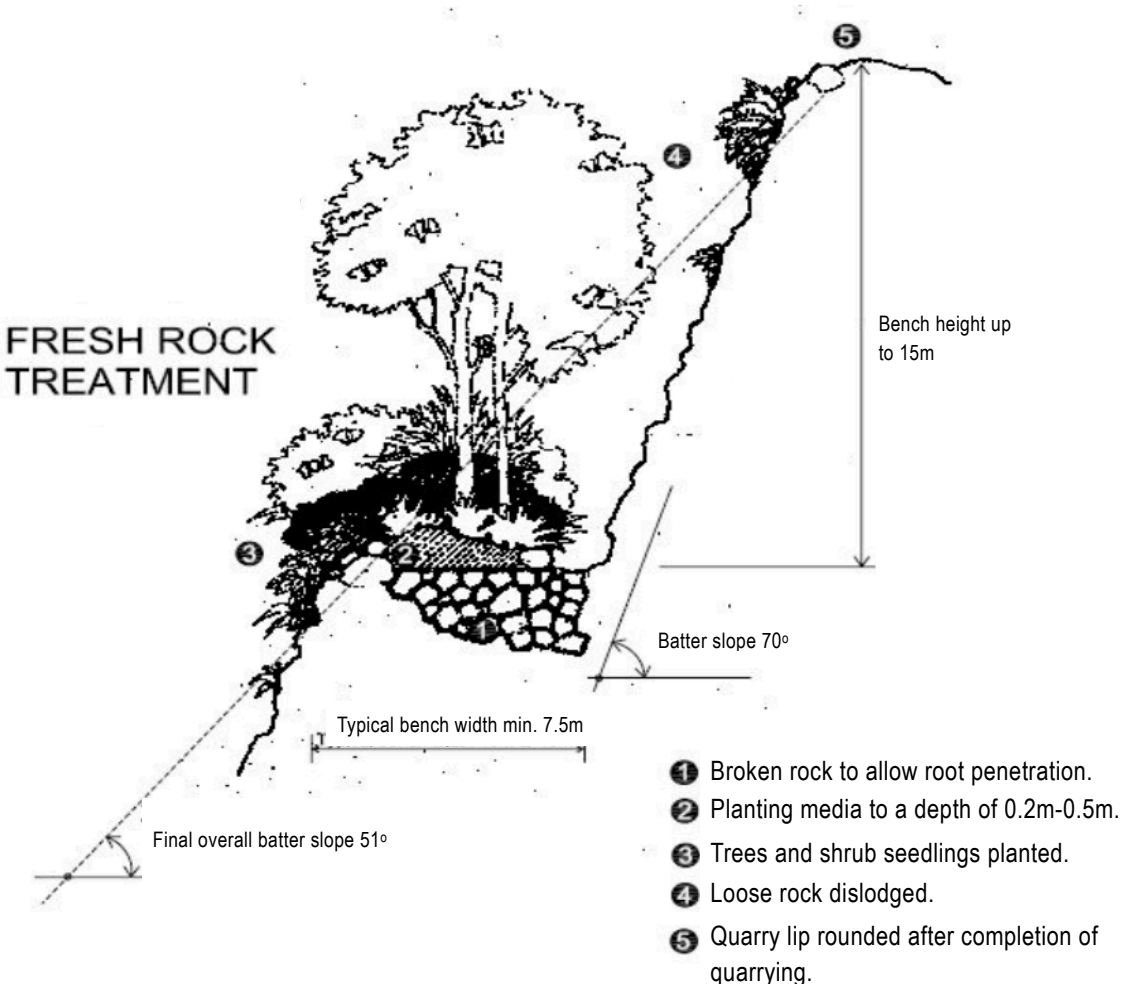


FIGURE 3.9: Typical rehabilitated quarry bench proposed

(source: after NSW Trade & Investment- Mine Safety (2009) Guidelines for Open Pit Slope Design)

The quarry void, to be retained following extraction, will be a significant alteration to the original landform of the quarry site. The floor of the quarry will be returned to agricultural use, including providing a source of water for livestock. It will have an area of approximately 6.54ha.

Revegetated areas should be carefully managed for at least two years after the initial rehabilitation works, with intensive management over the first few months. This is to promote rapid vegetation growth and development, and address any problems arising with vegetation establishment. (source: *Managing Urban Stormwater: Soils and Construction, Volume 2E Mines and Quarries* (DECC, 2008). When completed, the quarry will be left in a healthy, rehabilitated and safe condition.

The rehabilitation measures proposed, together with final works, will ensure that both regrowth and safety measures have been correctly carried out. The final land surfaces will be reshaped to stable landforms. There will be progressive rehabilitation of quarry benches during the progressive development of the quarry.

- Ripping of soil will assist in rapid tree growth through deep root growth and enhanced soil water infiltration.All areas proposed for replanting with native flora will be deep ripped to an approximate depth of 400– 500 mm, undertaken around the contour of the land at right angles to water flow.
- Direct seeding of native plant seeds is the preferred method of rehabilitating final completed slopes.
- To encourage tree growth and to control weeds an appropriate seed mix is required-the native tree and shrub seed mix sown at a total combined rate of approximately 6.3 kg/ha. Seed will be broadcast evenly onto

prepared batter slopes. Care will be taken to ensure it will not be buried. Seeding will be conducted in late spring and early autumn giving superior results due to higher ground temperatures. Species which could be used for revegetation (dependent upon seed availability) are listed below in the accompanying Table 3.5. The species identified are typical of those found in PCT 1121: Round-leaved Gum tall open forest of the eastern New England Tableland Bioregion vegetation community.

- A mixture of native trees, shrubs and grasses endemic to the area will be sown onto the majority of the reshaped quarry pit benches following site preparation. The species list to be used in rehabilitating the final, completed quarry is consistent with the existing species found on site (refer to ecological assessment by Bower Ecology- refer **Appendix L**) and will encourage integration with the surrounding habitat. Endemic species are preferred because they will be suited to the pre-existing conditions and should achieve higher rates of success at establishment.

Topsoil and overburden material for revegetation and stabilisation of batters within the quarry is to be sourced from soil stored on-site which will have been stockpiled as part of the initial clearing and soil removal process. Topsoil and overburden will be used across the site for the stabilisation of final, end-use benches and revegetation areas. The removal of topsoil and overburden will occur predominately during site establishment and early phases of quarry operations at the pit.

Soil-based material are intended for quarry rehabilitation purposes will be temporarily stockpiled within the quarry footprint area until they can be reused at the site. Because of the small amount of overburden and the nature of the resource it is not expected that large quantities of topsoil or overburden will be generated. Overburden would constitute excavated natural material and can be deposited or re-used on-site. Until required for use in the permanent rehabilitation works, the stockpiles will be:

- Shaped into a low mound up to 1 metre in height (topsoil) or 3.0 metres (overburden), as it becomes available.
- Track-rolled with a dozer or excavator to prevent wind and water erosion.
- After the steps above, sown within 14 days of placement (topsoil) or 28 days (overburden) with a seed / fertiliser mix.

Filter fences will be placed downslope of the topsoil and overburden stockpiles, as part of the erosion and sediment control works.

Topsoil and overburden stockpiles are proposed to be located away from trafficked areas and from drainage lines within the active quarry area.

Stockpiles will be placed in areas so as to avoid impediment of natural localised drainage lines and minimise the likelihood of water ponding against the stockpile. Stockpiles to be kept longer than six months will be sown with a suitable cover crop to minimise soil erosion and invasion of weed species. Any stockpiles that have evidence of any weeds will be treated prior to the use in rehabilitation, principally by way of scalping.

3.14.3 Maintenance of Rehabilitated Areas

The rehabilitated quarry areas will be maintained by site personnel engaged by the quarry operator or owners until vegetation is well established. Regular inspections shall be carried out to monitor the progress of rehabilitation and identify areas that require maintenance. This maintenance activities will include soil erosion control, control of noxious and environmental weeds, fencing repairs for access control, feral pest control, and bushfire hazard management.

3.14.4 Weed Control

Declared plants, environmental weeds and animal pests are to be controlled in accordance with best practice land management practices. At eh end of quarrying operations all declared weed spaces will be eradicated. The quarry operator is responsible for the control or eradication of noxious weeds in and around the quarry site.

The Talinga Pastoral Company, as landowner, is familiar with noxious weeds in the area and regularly inspects the site for the presence of noxious weeds. Weed control measures are employed at regular intervals or as required as a regular part of farm maintenance. Weed regrowth is controlled through suitable spray such as Round-up. Stockpiles of topsoil will be established for progressive rehabilitation works, and checked regularly for weeds. Stored stockpiles, where created, are to be suitably seeded or grassed for stabilisation until such time as they are required.

3.14.5 Summary: Rehabilitation

Table 3.7 outlines the steps to be undertaken to minimise the risks arising from rehabilitation, both during and after quarrying the site.

Table 3.7: Quarry rehabilitation practices & mitigation measures

Rehabilitation issue	*Proposed rehabilitation practice/mitigation measure*
Vegetation treatment	*Once quarrying is complete, revegetate quarry floor with open grassland, suitable for grazing purposes, with the sediment basin to be used as a source of water for livestock. Vegetate quarry benches during the life of the quarry. Supplementary watering of newly planted areas undertaken when required.*
Weed control, stabilisation works	*Remove weeds and/or prevent from spreading. Use earthmoving equipment to progressively shape and trim all workings to the stable profile, including bunds.*
Access to the site	*Access to the site to be restricted, to prevent the unauthorised deposition of material.*
Maintain basins/dams after quarrying is completed	*Once quarrying is completed on site, the sediment basin system in the quarry pit will be retained, to aid in erosion control, but also for watering of stock and as a water source in regeneration of vegetation in all proposed rehabilitated areas.*
Monitoring, corrective action	*Regular visual monitoring of fencing, inspection of planted/rehabilitated areas will be undertaken by the quarry operator/owner to determine the need for maintenance works (fertilising, weed control, erosion repair or control works, thinning of plants, pruning) and replacement of failed plantings.* *Regular visual monitoring of fencing, inspection of planted/rehabilitated areas will be undertaken by the quarry operator/owner to determine the need for maintenance works (fertilising, weed control, erosion repair or control works, thinning of plants, pruning) and replacement of failed plantings.*

▪ 3.15 Monitoring and Recording

3.15.1 Monitoring records

The results of any monitoring required as a condition of consent or EPL are to be recorded and retained including:

- Monitoring of blasting.
- Monitoring of discharges from any licensed discharge point, where required.
- Monitoring of extraction and production, as well as truck numbers- refer Section 3.15.4 below.

All records required to be kept by the quarry operator will be:

- In a legible form, or in a form that can readily be reduced to a legible form.
- Kept for at least 4 years after the monitoring or event to which they relate took place.

3.15.2 Responsible contact person

The name and contact details for the person with the responsibility and authority to respond to Council, authorised government departments and/or members of the public with respect to management of quarry operations, compliance with this consent and any complaints, will be provided to Council, prior to commencement of quarry operations.

3.15.3 Annual reporting

An annual report of quarry operations must be completed and a copy of the report provided to Council within 1 month of each 12 months operation of the quarry. The annual report is to contain details of compliance with the conditions of the consent issued, together with a description of quarry operations undertaken during the 12 month period.

3.15.4 Records of extraction and volumes of material leaving the site

The quarry operator will be responsible for:

- Recording the volume/tonnage of rock won from the quarry by blasting.
- Recording the amount of processed quarry material leaving the site and the number of loaded vehicles.

The above records are to be provided with the annual report referred to in Section 3.15.2 above.

3.15.5 Recording of pollution complaints

The quarry operator will keep a legible record of all complaints made to the owner, operator or any employee or agent of the operator in relation to pollution arising from any activity applicable to the quarry operation, including details of the following:

- Date and time of the complaint.
- The method by which the complaint was made.
- Personal details of the complainant which were provided by the complainant or, if no such details were provided, a note to that effect.
- The nature of the complaint.
- Action taken by the quarry operator in relation to the complaint, including any follow-up contact with the complainant.
- If no action was taken by the licensee, the reasons why no action was taken.

The quarry operator will operate during its operating hours a telephone complaints line for the purpose of receiving any complaints from members of the public in relation to activities associated with the quarry, including truck traffic.

4. Mitigation Measures

4.1 Introduction

Section 192(1)(e) of the *Environmental Planning and Assessment Regulation 2021* (EP&A Regulation 2021) requires:

> "*(e) a compilation, in a **single section** of the environmental impact statement, of the measures referred to in paragraph (d)(iv)*". [our emphasis in **bold**]

Section 192(1)(d)(iv) of the EP&A Regulation 2021 requires:

> "*(iv) a full description of the measures to mitigate adverse effects of the development, activity or infrastructure on the environment*."

In accordance with the above requirements of the EP&A Regulation 2021, the following section comprises details of the measures proposed to mitigate the adverse effects of the Gulgong Quarry Project. These measures will be incorporated into and form a part of an overall quarry management plan, once consent has been granted.

4.2 Mitigation Measures Proposed

The following Table 4.1 provides details of the mitigation measures proposed for the Gulgong Quarry Project.

Table 4.1: Mitigation measures proposed

Environmental Issue	*Potential environmental impact*	*Mitigation measures proposed quarry*
Hazards and risk, including fire, slope failure	*Fires, fuel/ chemical leaks and spills, landslides.*	▸ *Fire extinguishers are in all site vehicles and mobile equipment. The extinguishers are to be serviced regularly.* ▸ *When in operation, the maintenance of a water truck suitable for fire fighting at the site.* ▸ *Any chemical and fuels stored in bunded areas, located and designed to prevent potential fire hazards, as required by AS1940-1993- The Storage and Handling of Flammable and Combustible Liquids.* ▸ *All oil/fuel spills to be immediately cleaned up and the spilled material disposed of in a proper manner.* ▸ *RFS vehicle access is capable of being provided to the site.* ▸ *Retention of water run-off from the quarry in the sediment basin system- an additional source of water for fire fighting purposes.* ▸ *Regular cleaning of litter on site.* ▸ *All mobile equipment fitted with spark arresting mufflers.* ▸ *Employees are to be trained in fire awareness and instructed in basic fire fighting procedures.* ▸ *Protocols to be followed if major traffic accident occurs.* ▸ *As excavation of the quarry progresses, additional investigation and assessment be undertaken to inform any alterations to the proposed layout design and slope stability.*
Management of waste	*Generation of waste during operation of the quarry.*	▸ *Collect recyclable material (waste oil, metal, glass, and plastic) for collection by Council or appropriate recycling contractor. Dispose of non-recyclable domestic waste via council collection service.* ▸ *No building, plant and machinery, or putrescible wastes to be disposed of on site. Inert waste materials to be collected and removed from this site for recycling or to an appropriate licensed waste facility.* ▸ *Unexpected finds protocols to be established.*

Environmental Issue cont.	Potential environmental impact cont.	Mitigation measures proposed: expanded quarry cont.
Air quality	*Generation of dust during operation of the quarry.*	▸ *All activities to be be managed in accordance with the Protection of the Environment Operations Act (1997) and EPL, once approved.* ▸ *Sufficient water to be stored on site for dust suppression activities.* ▸ *Locating the quarry processing plant within the the active quarry area at depth reduces the exposure to winds and reduces dust potential.* ▸ *All loads leaving the site are covered, with tailgates effectively sealed, to minimise dust and debris.* ▸ *Maintain a high level of repair and servicing for all quarry trucks.* ▸ *All trafficable areas to be well maintained, at a reasonable grade and free of loose dust generating material.* ▸ *Internal haul route to be sealed near the highway intersection, to further reduce dust.* ▸ *Regular use of water carts as required on the unsealed sections of the internal quarry haul route.* ▸ *Signposted speed limit of. 30km/hour to be strictly maintained. Training of quarry personnel, including any subcontractors, for awareness of dust minimising practices.* ▸ *Quarry plant and equipment to be cleaned frequently, with the turning off all vehicles and plant when not in use, where practicable.* ▸ *Miscellaneous dust sources such as spillages from trucks and silt from sediment controls are to be regularly cleaned up.* ▸ *Regular inspections for excessive visible dust generation will be undertaken and appropriate controls will be implemented when such events occur.* ▸ *Monitoring and reporting of dust complaints. A complaint management system will be used to ensures that complaints are recorded, investigated and responded to within a reasonable timeframe.*
Soil and water	*Need to control sedimentation and erosion, stormwater.*	▸ *All activities to be be managed in accordance with the Protection of the Environment Operations Act (1997) and EPL, once approved.* ▸ *All stormwater from within the quarry (ie. 'dirty' water) is to be contained in the quarry sediment basin which lies at the base of the active quarry pit area, designed in accordance with 'Blue Book'.* ▸ *Clean' water to be diverted away from areas of disturbance, thus minimising impacts on existing drainage areas outside of the active quarry area and avoiding contamination.* ▸ *All disturbed areas such as excavations, processing areas, haulage routes, stockpile area and other disturbed areas will be treated with a water spray or suitable dust suppressant as required.* ▸ *Containing all runoff within the quarry area also reduces the quantity of water flowing downstream during flood periods.* ▸ *Unlikely need for groundwater monitoring. [NOTE: Groundwater unlikely to be encountered- refer Martens & Associates groundwater assessment in Appendix F]* ▸ *Appropriate stripping and stockpiling controls and procedures required to maximise the value for stored soil used in rehabilitation of the site. Vegetation clearing and topsoil stripping will be staged to minimise disturbance of the quarry footprint until areas are required by the operation.* ▸ *Runoff will be managed in the facility by ensuring that the stormwater management system is monitored and maintained.* ▸ *Prepare Pollution Incident Response Management Plan for the quarry.* ▸ *Concentration of a pollutant discharges must not exceed the concentrations limits specified.* ▸ *Soil and water management plan to be implemented for the quarry as part of overall quarry management plan.*

Environmental Issue cont.	Potential environmental impact cont.	Mitigation measures proposed: expanded quarry cont.
Noise and vibration	*Noise and vibration from construction vehicles and works.*	▸ *Noise emissions from the quarry, when measured at the nearest sensitive receptor, will not exceed the applicable noise level limits - confirmed by Vipac in Appendix C.* ▸ *Quarrying restricted to 7.00 am and 6.00 pm Monday to Friday, Saturdays: 7.00am to 1.00pm. No work will be undertaken on Sundays or Public Holidays. Council may permit access and operation outside of these periods for emergency purposes.* ▸ *Noise levels are predicted to comply with applicable amenity criteria at nearest sensitive receptors- refer Appendix C for details.* ▸ *Quarry plant and equipment are located within the quarry pit, suitably buffered from nearby sensitive receptors.* ▸ *Maintain the internal quarry haul roads in good condition to prevent corrugations which can contribute to truck road noise.* ▸ *No compression braking beyond the quarry gate is permitted, a requirement of the proposed Driver Code of Conduct for the quarry.* ▸ *Limits on quarry trucks numbers permitted to enter and leave the quarry each working day ie. maximum of 60 loaded trucks per day.* ▸ *Plant and equipment will be regularly maintained and serviced, to minimise the potential for excessive noise impacts. All machinery to meet current guideline noise levels, including haulage vehicles. Regular upgrading to quieter plant and equipment.* ▸ *All blasts to be monitored in order to show compliance with the following criteria: airblast overpressure from any blast shall not exceed 120 dBL at the nearest residence and 95% of all blasts over a 12 month period shall not exceed 115 dBL at the residence; and ground vibration from any blast shall not exceed 10 mm/s at the nearest residence and 95% of all blasts over a 12 month period shall not exceed 5 mm/second at this residence.* ▸ *The detonation of blasts will be restricted to between the hours of 9.00 am to 3.00 pm, Monday to Friday. No blasting will be undertaken outside of these hours.[NOTE: preparation for blasting, including drilling, is allowed outside of these time restrictions].* ▸ *Blasting at the premises is limited to 1 blast each day on which blasting is permitted.* ▸ *All blasts shall be monitored and the results included in the annual quarry report to be provided to both Council and the NSW EPA.* ▸ *A register of noise/blasting complaints shall be maintained. If noise complaints occur, they will be registered, investigated and responded to in a timely manner to ensure issues are not repeated.*
Traffic and transport	*Heavy truck traffic on roads, road safety.*	▸ *Restriction of 60 loaded trucks per day to apply.* ▸ *Driver Code of Practice to apply, to be prepared as a condition of consent, aimed at ensuring the safety of employees, contractors, and the general public in and around the project site.* ▸ *A low (max.30km/hour) speed limit to be applied to waste haulage vehicles on quarry site. This measure also minimises potential risks to fauna on site.* ▸ *All trucks hauling quarry product on public roads are to be fitted with a dust cover, and such dust cover shall be utilised to cover the load during haulage.* ▸ *All quarry truck movements within the site will be restricted to designated routes marked out by appropriate signage.* ▸ *Condition of internal quarry haul road to be regularly maintained, to ensure a satisfactory road surface. Existing intersection with Castlereagh Highway is to be suitably upgraded in accordance with TfNSW requirements, with W5-22(B size) signs erected 150m on highway approach to either side of the quarry access.*

Environmental Issue cont.	Potential environmental impact cont.	Mitigation measures proposed: expanded quarry cont.
Rehabilitation	*Achieving a satisfactory rehabilitation of the quarry, once completed*	▸ *When completed, the quarry will be a large excavation into the ground. It is both desirable and necessary that it be left in a healthy, rehabilitated and safe condition.* ▸ *Appropriate stripping and stockpiling controls and procedures proposed to maximise the value for stored soil/overburden used in rehabilitation of the site.* ▸ *The final land surfaces will be reshaped to stable landforms. This will involve reworking the existing quarry face and extraction pit to achieve regularly shaped slopes which are structurally stable.* ▸ *The rehabilitated areas will be maintained by site personnel until the vegetation is well established. The floor of the quarry to be grassed, and the sediment basin retained for stock watering needs. Use of indigenous trees and shrubs wherever appropriate in rehabilitated quarry benches. Supplementary watering of newly planted areas when required.* ▸ *Regular inspections shall be carried out to monitor the progress of rehabilitation and identify areas that require maintenance. This maintenance activities will include soil erosion control, control of noxious and environmental weeds, fencing repairs for access control, feral pest control, and bushfire hazard management.*
Biodiversity	*Clearing of trees and impact on habitats.*	▸ *No tree clearing outside of approved quarry footprint- all works to be undertaken within approved quarry void.* ▸ *Limits on truck speeds limits potential for conflict with fauna.* ▸ *No groundwater dependent ecosystems affected by quarry.* ▸ *Rehabilitation of the quarry benches with native vegetation at project completion.* ▸ *Prior to the clearing trees on site, an inspection shall be made of all trees to be removed for signs of wildlife. Trees containing wildlife are to be retained until vacated.*
Cultural heritage	*Impact on archaeological sites potential.*	▸ *Existing artefacts to be suitably protected, as recommended by OzArk- refer to Appendix K for details.* ▸ *In the event that previously unknown Aboriginal object(s) and/or sites are discovered during the proposed activity, work must stop, and an appropriately qualified archaeologist be contacted to access the nature, extent and significance of the identified sites.* ▸ *In the unlikely event that human remains are discovered, all activities must stop, the affected area cordoned-off and NSW Police and the Heritage NSW (formerly the Department of Planning and Environment [DPE] which replaced the Office of Environment and Heritage [OEH]) Environment Line must be contacted on 1315 55 or (02) 9995 5555.*
Community	*Complaints management.*	▸ *The quarry operator to be responsible for receiving comments and complaints from local residents, owners and government authorities.* ▸ *A register of complaints shall be established at the commencement of quarrying activities within the extension area and maintained for the life of the quarry. The register shall record details of the complaint, contact information and action taken to address the complaint.*
Visual	*Views of the quarry.*	*No special measures are required to ameliorate visual impacts associated with quarrying the site, as no significant visual impacts arise.*
Annual return	*Annual reporting requirements.*	*An annual report to be submitted to Mid-Western Regional Council, containing a statement of compliance with conditions of approval and monitoring/complaints summary.*

Environmental Issue cont.	Potential environmental impact cont.	Mitigation measures proposed: expanded quarry cont.
Greenhouse gas management	*Quarries contribute to carbon emissions through the use of heavy machinery, transportation of materials, and energy-intensive stone processing. These activities release greenhouse gases.* *It is noteworthy, however, that most of the quarry product exported from the site will be used in nearby renewable energy projects.*	▸ *Reduced Scope 1 and 2 emissions by servicing, in the main, proximate renewable energy projects, extracting optimal quarry product and by regular monitoring of the quarry, to optimise quarry management and planning for each quarry stage.* ▸ *Use of fit for purpose plant and equipment and operate and maintain in accordance with manufacturer's instructions. Regularly servicing of vehicles, plant and equipment such that exhaust systems and fuel consumption comply with manufacturers' specifications. Emissions from transport vehicles and on site machinery to comply with the relevant Australian Standards.* ▸ *Use of efficient crushing and processing plant technology, wherever possible. Eliminating unnecessary idling and unproductive use of plant and equipment.* ▸ *Use of driver and operator training in relation to efficient operation of vehicles, plant and equipment.* ▸ *Operate and maintain air conditioning systems in accordance with manufacturer's instructions and Guide to Best Practice Maintenance & Operation of HVAC Systems for Energy Efficiency (Council of Australian Governments National Strategy on Energy Efficiency January 2012).* ▸ *Wherever practicable, source materials from local suppliers, to minimise traveling time and fuel use.* ▸ *Ensure product stockpiles and overburden/topsoil are stockpiled efficiently around the site to ensure that onsite re-use can occur with the minimum of fuel consumption.* ▸ *Due to the rocky nature of the site and minimal topsoil/overburden encountered, emissions required in removing topsoil and overburden will be minimised.* ▸ *Loading haul trucks to the correct payload.* ▸ *Optimisation of incline / decline of internal quarry access roads within the project site to reduce transport distances for vehicles entering or exiting the project site.* ▸ *Given the close proximity of the quarry site to major renewable energy infrastructure projects, emissions will be minimised as a result of short transportation distances for quarry products to end users.*
Emergencies	*Emergency response to events or incidents that my threaten the environment or public health*	*A quarry management plan, dealing with pollution and incident responses and an emergency responses, will be prepared for the Project, covering the following measures:* ▸ *Containment of any fuel spills or leaks. The EPA to be contacted in the event of a major pollution incident.Any contamination arising from fuel spills to be collected and disposed of at a licensed landfill.* ▸ *Off-site discharges.* ▸ *Inundation of the quarry during major storm events or floods including relocation of plant, checking of drainage controls and condition of sediment basin.* ▸ *Fires.* ▸ *Blasting mishaps- considered most unlikely.* ▸ *Excessive generation of dust within the quarry and/or internal quarry haul route.* ▸ *Unauthorised access.* ▸ *Protocols to be implemented in the event of a major truck accident.* ▸ *Training and induction protocols. Induction will be provided to all staff and subcontractors outlining their responsibilities in the event of an emergency or incident.* ▸ *Notification requirements and timeframes to applicable authorities in the event of an emergency or incident.* ▸ *Review regimes of the quarry management plan. Regular reviews and updates will be made for the quarry management plan as required.*

5. Statutory & Strategic Policy Context

The following section identifies relevant local, State and Commonwealth planning and environment legislation and discusses the application of these planning provisions relevant to the Gulgong Quarry Project.

5.1 Environmental Planning & Assessment Act 1979

5.1.1 Overview, approvals process

The NSW *Environmental Planning and Assessment Act 1979* (EP&A Act) governs planning and the assessment of development projects in New South Wales, including quarry projects. This planning legislation is administered by Department of Planning & Environment and by local councils.

5.1.2 Regionally Significant Development: EIS Required

This Environmental Impact Statement (EIS) has been prepared by Outline Planning Consultants Pty Ltd to accompany a Development Application (DA) for a hard rock quarry at on Lot 1 in Deposited Plan (DP) 1239728 (project site, site, proposed quarry), which forms a part of a larger rural holding known as 'Talinga', No.1848 Castlereagh Highway Gulgong NSW 2852. This EIS provides the information and environmental assessment necessary to help understand the quarry project and its likely environmental consequences, and to assist in the assessment and determination of this project application.

The need for an Environmental Impact Statement (EIS) is triggered by clause 26 of Schedule 3 of EP&A Regulation 2021. Section 4.12(8) of the EP&A Act requires that development application for designated development is to be accompanied by an EIS prepared by or on behalf of the applicant in the form prescribed by the regulations.

The Project is classified as regionally significant development pursuant to the provisions of Schedule 6 of the *State Environmental Planning Policy (Planning Systems) 2021* and not State significant development. Consequently, the Western Regional Planning Panel (WRPP) is the consent authority for this proposed quarry development. The Project is not State significant development as it involves: a quarry operation extracting less than 500,000 tonnes per annum; a resource of less than 5 million tonnes); and the fact that the land on which the quarry Project is to be undertaken does not comprise an 'environmentally sensitive areas' referred to in clause 7(1)(c) of Schedule 1 of State significance (as defined in s.2.2 of *State Environmental Planning Policy (Planning Systems) 2021)* , and in particular:

- No part of the Project Site is reserved as an aquatic reserve under the NSW *Fisheries Management Act, 1994* or a declared Ramsar wetland within the meaning of the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999*.
- No part of the Project Site is identified as being of high Aboriginal cultural significance or terrestrial biodiversity or riparian significance under the *Mid-Western Regional Local Environmental Plan 2012* (LEP).
- No part of the Project Site is reserved as a state conservation area under the *National Parks and Wildlife Act,1974*.
- The site is not listed on the State Heritage Register under the *Heritage Act, 1977*.
- No part of the Project Site is reserved or dedicated under the *Crown Lands Act, 1989* for the preservation of flora, fauna, geological formations or for other environmental protection purposes.
- No part of the Project Site is declared as critical habitat under the NSW *Threatened Species Conservation Act,1995* or *Fisheries Management Act, 1994*.

The EIS responds to the Planning Secretary's Environmental Assessment Requirements (SEARS) for this project, issued on 5 June 2024 (EAR 1894), included in **Appendix A** of this EIS. In accordance with the issued SEARs, this EIS provides an assessment of the environmental impacts of the proposed quarry development and sets out the mitigation and management measures, along any potential impacts arising from the proposed development.

The land which is the subject of the development application, proposed for a proposed quarry development (the Project Site, or Site) lies within an area administered by Mid-Western Regional Council.

5.1.3 Integrated Development Checklist

Under the provisions of the EP&A Act, approvals may need to be obtained from other government agencies, in addition to obtaining a development consent, known as an 'integrated development' approval, pursuant to s.4.46 of the EP&A Act. Relevant approvals required under the provisions of the integrated development provisions of the EP&A Act are summarised in Table 5.1 below.

Table 5.1: Integrated Development Checklist for Project

Approval Authority	Law Requiring Approval	Applicability
Dept Environment & Conservation (Environment Protection Authority (EPA))	*ss.43(a), 47 & 55 Protection of the Environment Operations Act 1997*	***Applicable**. An environment protection licence (EPL) will be required once development consent is granted to the proposed quarry.*
Dept Climate Change, Energy, the Environment and Water	*Approval required under s.58 Heritage Act 1977*	*Not Applicable. No Heritage Order applies.*
Dept Transport & Roads (Transport for NSW-TfNSW), Mid-Western Regional Council	*s.138 Roads Act 1993- works over or on public roads, including connection to a classified road*	*Not Applicable. Need for upgrading of the existing intersection with the Castlereagh Highway, however, Mid-Western Regional Council is the relevant Roads Authority, with concurrence required from Transport for NSW (TfNSW). Refer also to Note below.*
Dept Climate Change, Energy, the Environment and Water	*s.90 of National Parks & Wildlife Act 1974*	*Not Applicable. No potential for Aboriginal sites being affected, following on site investigations.*
Dept Primary Industries (NSW Fisheries)	*Permits required under s. 144, 201, 205 and 219 of Fisheries Management Act 1994*	*Not Applicable. No marine impacts proposed as per the relevant sections of this Act.*
Dept Regional NSW (Resources Regulator)	*Improvements under s.15 of Mine Subsidence Compensation Act 1961*	*Not Applicable*
Dept Regional NSW (Resources Regulator)	*Grant of mining lease under ss. 63 & 64 Mining Act 1992*	*Not Applicable.*
Dept Regional NSW	*s. 9 Petroleum (Onshore) Act 1991*	*Not Applicable.*
Dept Police & Emergency Services (Rural Fire Service)	*s.100B of the Rural Fires Act 1997*	*Not Applicable. Although the land is bushfire prone no s.100B authorisation is required.*
Dept Industry-Water (Resources Regulator)	*Ss 89,90 & 91 of Water Management Act 2000*	*Not Applicable. No license required given that development proposed lies more than 40 metres from 'waterfront land'. No anticipated groundwater impacts likely. No bores required.*

***NOTES TO TABLE 5.1**:*
Section 4.46(3) of the EP&A Act provides that developments which also require consent under Section 138 of the Roads Act 1993 are not integrated development if the council is both the development consent authority under the EP&A Act and the relevant Roads Authority providing consent under the Roads Act- as is the case here. In general, the Roads Act provides that a Local Council is the Roads Authority for all the roads within its local government area except freeways.

Where a development is integrated development, s.4.47(3) of the EP&A Act gives the consent authority power under that Act to impose any conditions that an approval body could impose as a condition of its approval.Even though there is a very wide power to impose conditions, the power of a determining authority to impose any condition nominated by the other government agencies is limited to only those conditions that fairly and reasonably relate to the proposed development and are for a purpose related to the relevant powers of that particular agency under the integrated development provisions of the EP&A Act.

Section 4.47(2) of the EP&A Act requires, inter alia, that before granting development consent to an application for consent to carry out the development that is 'integrated development' for the purposes of the Act, the consent authority must obtain from each relevant approval body the General Terms of any Approval (GTA) proposed to be granted in relation to the development.

Given that extraction of more than 30,000 tonnes per year of quarry resource is proposed to be extracted in any one year an 'integrated development' approval is required from the NSW Environmental Protection Authority (EPA) under the *Protection of the Environment Operations Act 1997*.

The granting of development consent under the EP&A Act for the application to allow for the proposed quarry development does not exhaust the approvals process necessary for the commencement of a proposed operations. The above Acts and the EP&A Act (under which this DA is to be determined) are interlocking, parallel schemes of regulation. The interlocking nature of the scheme is even more evident when the EP&A Act is considered, in particular concerning integrated development (which applies here). The scheme envisages that the requirements of the EP&A Act would need to be first obtained: *Newcastle & Hunter Valley Speleological Society Inc v Upper Hunter Shire Council and Stoneco Pty Limited (No2)* [2010] NSWLEC 104 per Preston CJ, and more recently by the NSW Court of Appeal in *Hunter Industrial Rental Equipment Pty Ltd v Dungog Shire Council* [2019] NSWCA 147 decision dated 20 June 2019.

5.1.4 Consistency with Objects of EP&A Act

The Gulgong Quarry Project is considered to be consistent with the objects of the EP&A Act, as summarised in the following Table 5.2.

Table 5.2: Checklist of the Project against objects of EP&A Act 1979

Objects	***Compliance of the Project***
"(a) to promote the social and economic welfare of the community and a better environment by the proper management, development and conservation of the State's natural and other resources,"	*The Project seeks to maximise the safe and economic recovery of the valuable quarry resource known to underlay the site.* *The project will promote social and economic benefits to the local and regional economy, in particular the needs for road making material for nearby renewable energy projects (REZs), creating further local job opportunities, at the same time as minimising impacts on the natural environment, fuel usage by quarry tuck traffic and local amenity.*
"(b) to facilitate ecologically sustainable development by integrating relevant economic, environmental and social considerations in decision-making about environmental planning and assessment,"	*The design of the quarry project achieves satisfactory traffic, water quality, bushfire, air quality, noise and quarry impacts generally, incorporating design features to reduce the potential for adverse impacts. Additional safeguards and mitigation measures have been proposed to minimise potential impacts during the operation of the Project.All of the above are considered to be consistent with the objectives of ecologically sustainable development.*
"(c) to promote the orderly and economic use and development of land,"	*The quarry project promotes the orderly and economic use of a site known to be underlain by a hard rock resource.*
"(d) to promote the delivery and maintenance of affordable housing,"	*Not applicable to this project.*
"(e) to protect the environment, including the conservation of threatened and other species of native animals and plants, ecological communities and their habitats,"	*The land proposed for the expansion of the quarry is already cleared land, with no threatened species likely to be affected by the Project. It has been sited and designed to minimise the impacts to the environment, with appropriate mitigation and management measures proposed.*
"(f) to promote the sustainable management of built and cultural heritage (including Aboriginal cultural heritage),"	*The site has no heritage listing. Following an extensive consultation with indigenous groups and site survey as a part of the now-approved quarry, the only Aboriginal items found on Lot 1 are located outside of the proposed quarry footprint or internal haul route. Appropriate measures are proposed to protect these sites.*

Objects cont.	Compliance of the Project cont.
"(g) to promote good design and amenity of the built environment,"	*Not applicable to this project, given that it is in a rural area.*
"(h) to promote the proper construction and maintenance of buildings, including the protection of the health and safety of their occupants,"	*Not applicable to this project, given that it is for the purpose of a quarry project.*
"to promote the sharing of responsibility for environmental planning between the different levels of government in the State, and"	*Noted. Once approved, the monitoring of the quarry will be the shared responsibility of both Mid-Western Regional Council (regarding the conditions of consent generally) and the EPA (regarding the operation of 'scheduled activities' under any license issued under the Protection of the Environment Operations Act, 1997).*
"(j) to provide increased opportunity for public involvement and participation in environmental planning and assessment."	*The EIS has been prepared following discussions with local and state government and others, in accordance with the requirements of the issued SEARS.*

Based on the above assessment the proposed quarry development is considered to be consistent with the objects of the EP&A Act.

5.1.5 Section 4.15 matters

Section 4.15 of the EP&A Act requires that a variety of matters be taken into consideration when determining a development application.

A checklist of these matters and where they have been addressed in the EIS is outlined in the accompanying Table 5.3.

Table 5.3: Section 4.15 Checklist

Matters for Consideration s.4.15	Relevant EIS Section
(a) The provisions of: **Any environmental planning instrument**	*Refer to Section 5.2 & Section 7.2 of this EIS.*
Any proposed planning instrument	*Not applicable.*
Any development control plan	*The applicable development control plan is the Mid-Western Regional Development Control Plan 2013. Refer Section 5.3 and Section 7.2 of this EIS.*
Any planning agreement or draft planning agreement that has been entered into	*No planning agreements have been entered into under s.7.4 of the EP&A Act for this quarry project.*
The regulations (to the extent that they prescribe matters for the purposes of this paragraph)	*Refer to Sections 1.4 ,5.1 and 7.2 of this EIS.*
Any coastal zone management plan	*Not applicable.*
(b) The likely impacts of that development, including environmental impacts on both the natural and built environments, and social and economic impacts in the locality	*Refer EIS Section 7.3 in conjunction with Section 3 and Section 4 of this EIS- the latter containing details of mitigation measures proposed.*
(c) The suitability of the site for the development	*The project site is suitable for the proposed quarry project. Considered further in this EIS report. Refer also to Section 7.4 of the EIS.*
(d) Any submissions made in accordance with this Act or the regulations	*Comments to be received during the EIS exhibition process.Refer Section 7.5 of this EIS.*
(e) The public interest	*Refer Section 7.6 of this EIS.*

▪ 5.2 Environmental Planning Instruments etc.

5.2.1 Mid-Western Regional LEP 2012

The *Mid-Western Regional Local Environmental Plan 2012* (LEP) is the comprehensive environmental planning instrument applying to the quarry site. The Project Site is zoned RU1 Primary Production, with "Extractive industries" as defined, a use permissible with the consent of Council in this zone- refer **Figure 5.1** illustrating the zoning of land in and around the proposed quarry site. All land within 2km of the site is similarly zoned.

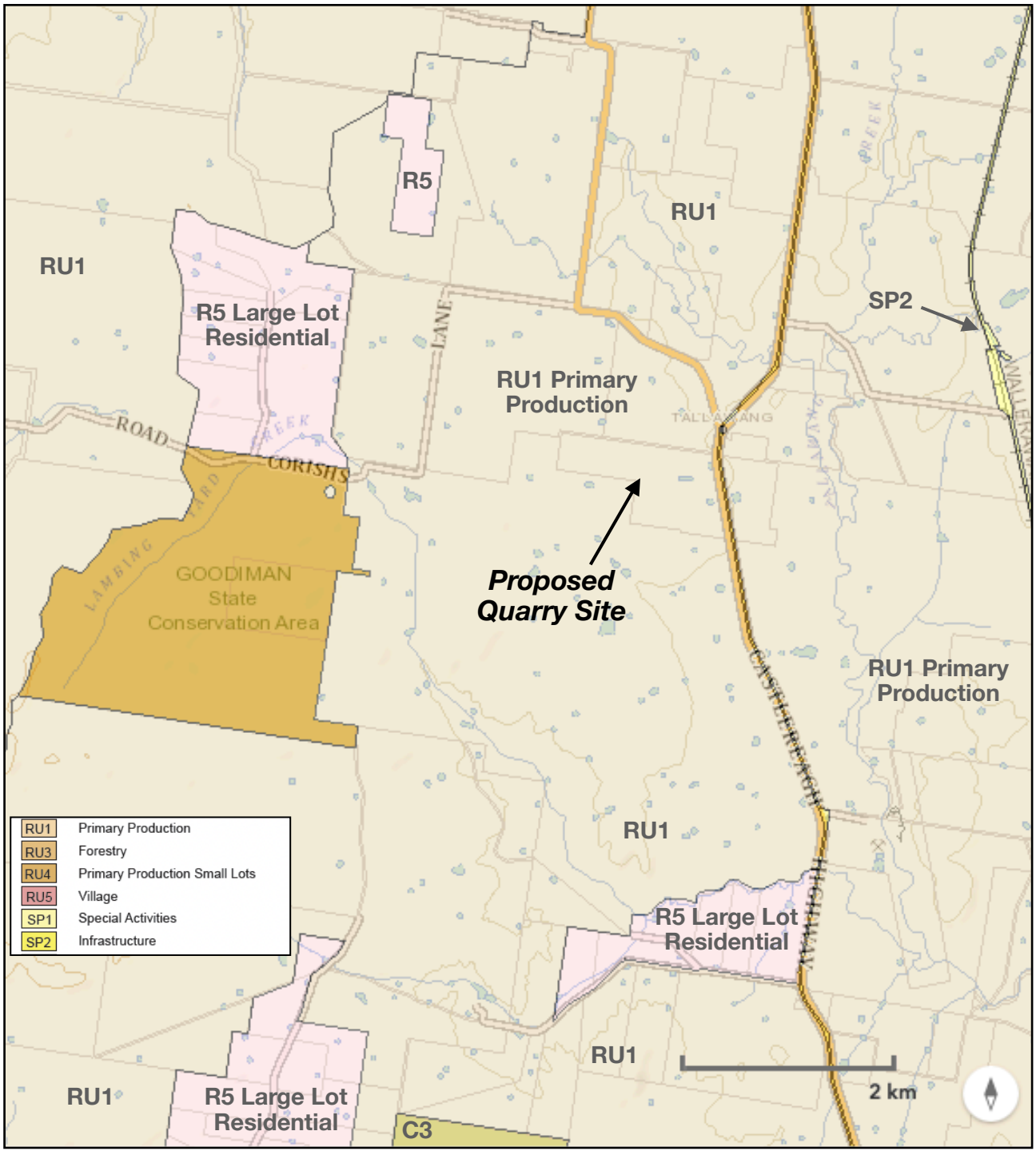


FIGURE 5.1: Zoning of the site and surrounds

(Source: NSW Government ePlanning Spatial Viewer online mapping)

The objectives of the zone are a relevant consideration when considering the merits of a development application, as highlighted by the NSW Land and Environment Court in *Codling v Central Coast Council* [2019] NSWLEC 1158 at [84] as follows:

> *"84. It is clear from the terms of clause 2.3(2) that there is no requirement for development within the zone to comply with, or to achieve, each of the objectives of the zone. Nevertheless, the clause requires that the consent authority "have regard to" those objectives. They are therefore a mandatory consideration in the assessment process and a proposed development ought not be antipathetic to those objectives."*

The compliance of the quarry project with the objectives of the RU1 Primary Production zone are set out in Table 5.4.

Table 5.4: Compliance of the Gulgong Quarry Project with RU1 Zone Objectives

RU1 Zone Objectives	***Compliance***
"To encourage sustainable primary industry production by maintaining and enhancing the natural resource base"	*Quarries form an important part of the resource base of any local area. Local and regional infrastructure projects- in particular those located within the nearby Central-West Orana Renewable Energy Zone (CWO-REZ)- require readily accessible road making material- hence the need for the proposed quarry.*
"To encourage diversity in primary industry enterprises and systems appropriate for the area"	*Not applicable to the project*
"To minimise the fragmentation and alienation of resource lands"	*The proposed quarry development does not involve the fragmentation and alienation of resource lands.*
"To minimise conflict between land uses within this zone and land uses within adjoining zones"	*The quarry is located in a sparsely populated rural area, well buffered from rural dwellings with direct access to a regional arterial road system. These features, together with the design of the quarry, will assist in minimising conflict with neighbouring land uses.*
"To maintain the visual amenity and landscape quality of Mid-Western Regional by preserving the area's open rural landscapes and environmentaland cultural heritage values."	*The quarry is located within a landscape of moderate visual sensitivity on a knoll that is not visually prominent, generally shielded from view from most nearby residences , with glimpses only when viewed from near the entry to the site from the Castlereagh Highway. It has been designed to minimise adverse visual impacts and avoids any lands with cultural heritage values- known archaeological sites being located outside of the proposed quarry footprint.*
"To promote the unique rural character of Mid-Western Regional and facilitate a variety of tourist land uses."	*Not applicable to the project*

The LEP mapping indicates that proposed quarry site is free from the following planning or environmental constraints:

- Conservation area or flood prone or having any visual sensitivity (source: *Mid-Western Regional Local Environmental Plan 2012 Flood Planning Map Active Street Frontages Map Visually Sensitive Land Maps*).
- Items of the environmental heritage or landscape value (source: *Mid-Western Regional Local Environmental Plan 2012 Heritage Map- Sheet HER_005*).
- Biodiversity sensitivity (source: *Mid-Western Regional Local Environmental Plan 2012 Sensitivity Biodiversity Map BIO_005)*). However, the vegetated hill at the western periphery of Lot 1 DP 1239728 is identified as being of "High Biodiversity Sensitivity"- well removed from the proposed quarry.
- Visually sensitive land. The only land so designated is near Mudgee, identified as "Visually Sensitive Land" on the LEP's *Visually Sensitive Land Map*.

Clause 6.4 of the LEP refers to lands mapped as being "Groundwater vulnerable". Most of the proposed quarry footprint lies outside of the lands mapped in the LEP as being Groundwater Vulnerable (source: *Mid-Western Regional Local Environmental Plan 2012 Groundwater Vulnerability Map- Sheet GRV_005*), however, a small section, on the western side of the proposed quarry, falls within the area mapped as being groundwater vulnerable.

The forested land on Lot 1 to the west of the proposed quarry is identified as comprising land of "High Biodiversity Sensitivity", however, no part of the proposed quarry, including the internal access route back to the highway, is so identified. The project is not anticipated to have any adverse impacts on biodiversity values- refer Section 7.3 for further details in this regard and **Appendix L**.

No part of the site is identified as being bushfire prone land, nor is any part of the site identified as falling within any designated drinking water catchment. In any case, the quarry has been designed such that all design stormwater flows are wholly contained within the proposed quarry footprint.

The following Table 5.5 summarises the compliance of the proposed quarry development with other relevant provisions of the Mid-Western Regional LEP 2012.

Table 5.5: Compliance with other relevant provisions of Mid-Western Regional LEP 2012

Other LEP provisions	*Compliance*
Clauses 3.1- 4.5	*Not applicable. No rural housing or subdivision or boundary changes proposed*
Clause 4.6	*No exceptions to development standards sought*
Clauses 5.1- 5.9AA	*Not applicable.*
Clause 5.10 Heritage conservation	*Three Aboriginal objects found on land outside of the proposed quarry development area.*
Clauses 5.11-5.20	*Not applicable.*
Clause 5.21 Flood planning	*The site is not mapped as being flood prone land.*
Clauses 5.22-5.25	*Not applicable.*
Clause 6.1 Salinity	*Not applicable. The site has a low potential for salinity, based on regional soil landscape mapping. The proposed quarry development will not contribute to salinity.*
Clauses 6.2-6.3	*Not applicable.*
Clause 6.4 Groundwater vulnerability	*Only a small part of the proposed quarry extraction area falls within an areas mapped as being groundwater vulnerable.The assessment by Martens & Associates, consulting engineers, confirms that the proposed quarry floor is unlikely to intersect with known groundwater. Refer Appendix F.*
Clause 6.5 Terrestrial biodiversity	*Not applicable. The proposed quarry footprint and internal quarry haul route are not identified as "Moderate Biodiversity Sensitivity" or "High Biodiversity Sensitivity" on the LEP Sensitivity Biodiversity Map.*
Clauses 6.6-6.8	*Not applicable.*
Clause 6.9 Essential services	*The proposed development complies in that suitable road access is provided, with stormwater runoff from quarrying activities proposed to be captured and contained within the quarry footprint.*
Clauses 6.10-6.16	*Not applicable.*

Clause 5.10 of the LEP relates to heritage conservation. The objectives of clause 5.10(1) are as follows:

"*(a) to conserve the environmental heritage of Mid-Western Regional,*

(b) to conserve the heritage significance of heritage items and heritage conservation areas, including associated fabric, settings and views,

(c) to conserve archaeological sites,

(d) to conserve Aboriginal objects and Aboriginal places of heritage significance."

Sub-clauses (c) and (d) are relevant in that three Aboriginal archaeological objects were found during a site survey by OzArk and Aboriginal representatives, located on that part of Lot 1 outside of the proposed quarry footprint and outside lands forming a part of the internal access route linking the quarry to the highway. Refer **Appendix K** and Section 7.3 for further details, and Section 4 for a summary of mitigation measures proposed in regard to these finds.

Clause 6.4 of the LEP relates to groundwater vulnerability. The objectives of clause 6.4(1) are as follows:

"(a) to maintain the hydrological functions of key groundwater systems,

(b) to protect vulnerable groundwater resources from depletion and contamination as a result of development."

Section 7.3 of this EIS and **Appendix F** provide an assessment of likely groundwater impacts, together with management and mitigation measures proposed.

Section 7.3 of this EIS and **Appendix L** provide an assessment of likely biodiversity impacts, together with management and mitigation measures proposed.

5.2.2 Mid-Western Regional Development Control Plan 2013

In addition to the LEP, the provisions of *Mid Western Regional Development Control Plan 2013* (DCP) also applies to the Project Site. The purpose and status of development control plans are set down in s.3.42 of the EP&A Act:

"3.42 Purpose and status of development control plans (cf previous s 74BA)

(1) The principal purpose of a development control plan is to provide guidance on the following matters to the persons proposing to carry out development to which this Part applies and to the consent authority for any such development—

(a) giving effect to the aims of any environmental planning instrument that applies to the development,

(b) facilitating development that is permissible under any such instrument,

(c) achieving the objectives of land zones under any such instrument."

In *Hillcrest Rose Bay Pty Ltd v Woollahra Municipal Council* [2021] NSWLEC 1662 dated 28 October 2021 the Land and Environment Court made it clear that where a development control plan contains relevant provisions— and those provisions set standards with respect to an aspect of the development — the consent authority "*is not to require more onerous standards with respect to that aspect of the development*".

The aims of the DCP are set down in Section 1.2 of the DCP, namely:

"• *Implement and support the objectives of the Local Environmental Plan (Mid-Western Regional LEP 2012);*
- *Define development standards that deliver the outcomes desired by the community and Council;*
- *Provide clear and concise development guidelines for various forms of development;*
- *Encourage innovation in design and development by not over-specifying development controls;*
- *Expedite development approvals by providing clear direction of Council's intent and criteria; and*
- *Provide certainty of development outcomes for developers and the community.*"

It is noteworthy, however, that the DCP does not contain any provisions relating specifically to extractive industry developments.

Section 5.1 of the DCP relates to car parking requirements however quarries are not specifically mentioned. It provides that car parking for "Other uses" (ie. quarries) will be assessed individually having regard to expected traffic generated.

Section 5.4 of the DCP is most pertinent: Environmental Controls.

The compliance of the proposed quarry with Section 5.4 of the DCP is summarised in the following Table 5.6.

Table 5.6: Compliance of the Gulgong Quarry Project with DCP Section 5.4

Relevant Clause of DCP Section 5.4	***Applicability to quarry proposal***
Protection of Aboriginal Archaeological Items	*An on-site archaeological assessment has been undertaken as part of the EIS assessment process. Three (3) Aboriginal archaeological objects were identified in proximity to- but not within- the proposed quarry development site. Refer* ***Appendix K*** *and Section 7.3 for further details, as well as Section 4 for a summary of mitigation measures proposed in regard to these finds.*
Bushfire Management	*The site of the proposed quarry is not designated as being bushfire prone land. Various bushfire management strategies are proposed.*
Riparian and drainage line Environments	*The proposed development seeks to maintain runoff within the confines of the quarry pit.The proposed development does not require a water use approval, water management work approval or activity approval under the Water Management Act 2000.*
Pollution and Waste Management	*All waste or pollution runoff potentially generated by the proposed quarry operation is to be contained within the active quarry pit, with no downstream and/ or off-site impacts. The quarry will be designed to have sufficient water storage to meet the demands for water generated by quarry uses.*
Threatened Species and Vegetation Management	*An ecological assessment has been undertaken as part of the EIS assessment process. It finds that satisfactory ecological impacts will ensue as a result of the proposed quarry development. Refer* ***Appendix L*** *and Section 7.3 for further details, as well as Section 4 for a summary of biodiversity mitigation measures proposed.*

5.2.3 State Environmental Planning Policy (Resources and Energy) 2021

State Environmental Planning Policy (Mining, Petroleum Production and Extractive Industries) 2007 was repealed on 1 March 2022 and has been incorporated into a new *State Environmental Planning Policy (Resources and Energy) 2021* as Chapter 2, Parts 2.1-2.5. This state environmental planning policy (SEPP) aims for the sustainable operation and management of mineral, petroleum and extractive material resources. Extractive industries are permissible with consent under this SEPP, the SEPP allowing extractive industries on any land where agriculture is permissible. This SEPP requires that determining authorities consider the following when assessing any application for such development including:

- The compatibility with surrounding land uses. The Project contains a raft of mitigation measures that aim to ensure that the impacts of associated with the proposed quarry development can be satisfactorily mitigated.
- The efficiency of resource recovery. The Project seeks to secure access to a proven quarry resource that is strategically placed in terms of its proximity to Central-West Orana Renewable Energy Zone (CWO-REZ) projects, including: EnergyCo's extensive, 1km wide CWO-REZ project (approximately 3.1km to the north of the project site); and Acciona's Orana Wind Farm project (as close as 2km to the project site).
- The rehabilitation of the land will occur in once quarrying is completed within each of the various quarry benches.
- To encourage ecologically sustainable development through the environmental assessment, and sustainable management of extractive material resources. The Project satisfies this objective. The Project contains numerous measures that, taken as a whole, will assist in ensuring that this outcome is achieved.

An assessment of the compatibility of the proposed quarry with the provisions of this SEPP are considered in the following Table 5.7.

Table 5.7: Compliance of the Gulgong Quarry Project with SEPP (Resources and Energy) 2021

Relevant clause in SEPP	***Applicability to quarry proposal***
Clause 2.9 - Permissibility	*Extractive industries are permissible on the Project Site.*
SEPP Clause 2.17 - ***(a) consider:*** ***(i) the existing uses and approved uses in the vicinity, and*** ***(ii) potential for significant impact on the preferred uses of land in the vicinity of the development, and*** ***(iii) compatibility with any existing, approved or likely preferred uses***	▸ *The quarry is reasonably well buffered from surrounding rural dwellings and agricultural uses, with satisfactory impacts anticipated. Refer Section 2 of the EIS, which outlines the environmental setting and surrounding rural land uses.* ▸ *The land proposed for quarrying comprises generally stony land with shallow topsoil and low land capability and agricultural suitability. The impact of the proposed quarry on agriculture will be satisfactorily low. The remainder of the rural holding owned by Talinga Pastoral Company can continue to be used for agricultural pursuits.* ▸ *Careful site selection and design of the quarry ensures that the quarry operation can achieve a satisfactory degree of compatibility with surrounding land uses. The proposed quarry has been located to minimise visual dust, and noise impacts on adjacent sensitive uses, in order to reduce the potential for environmental nuisance. Moreover, the proposed quarry is reasonably set back from existing rural residences in the neighbourhood.* ▸ *Section 7.3 of this EIS provides an assessment of the potential environmental impacts of the proposal and outlines the measures that will be implemented to minimise those potential environmental impacts.*
(b) public benefits of the development and the land uses referred to in paragraph (a) (i) and (ii) ***(c) measures proposed by the applicant to avoid or minimise any incompatibility, as referred to in paragraph (a)(iii)***	▸ *Various specialist assessments have been undertaken regarding the potential impacts from the development on adjoining land uses and habitats. These studies conclude that acceptable impacts will ensue.* ▸ *The project will promote social and economic benefits to the local and regional economy, in particular the needs for road making material for nearby renewable energy projects (REZs), creating further local job opportunities, at the same time as minimising impacts on the natural environment and local amenity.*
Clause 2.19-Compatibility with mining, petroleum production or extractive industry	***Not applicable*** *as the proposed quarry is not proximate to any existing mine, petroleum production facility or extractive industry.*
Clause 2.20 ***(a) Impacts on water resources*** ***(b) Impacts on threatened species, biodiversity avoided or minimised to the greatest extent possible*** ***(c) Greenhouse gas emissions are minimised***	▸ *The quarry has been designed to ensure that there is sufficient water to carry out the quarrying operations, including the requirements for sedimentation and erosion control, as well as dust suppression.* ▸ *There is no proposal to pump water from any nearby watercourse.* ▸ *The potential for intercepting groundwater is minimal. Moreover, the proposed quarry will not be reliant on any groundwater for quarry-related purposes.* ▸ *The quarry is proximate to numerous REZ projects, resulting in short haul distances for quarry truck traffic and minimisation of greenhouse gases.*
Clause 2.21 -Resource recovery	*The proposed quarry will enable the optimisation of extraction from a known quarry resource.*
Clause 2.22 - ***transport***	▸ *Transportation of quarry product will be along the internal quarry haul route back to the Castlereagh Highway.* ▸ *The traffic assessment by Streetwise (refer* ***Appendix D****) finds that the proposed access arrangements, including proposed upgraded intersection treatment at the highway, will be satisfactory.*
Clause 2.23 - ***Rehabilitation***	*Quarrying, once completed, will require rehabilitation. A rehabilitation plan has been prepared in support of the Project- refer EIS Section 3.14 for details.*

State Environmental Planning Policy (Resources and Energy) 2021 overrides the provision of local environmental plan (LEP) generally (s.2.6). Additionally, it overrides any such provisions of an LEP that may require the consent authority to be: "*satisfied as to certain matters specified in the plan, development for that purpose may be carried out on that land with development consent without the consent authority having to be satisfied as to those specified matters*." (s.2.10(2)).

The Project thus complies with relevant provisions of *State Environmental Planning Policy (Resources and Energy) 2021*.

5.2.3 State Environmental Planning Policy (Primary Production) 2021

State Environmental Planning Policy (Primary Production) 2021 has the following objects:

"*(a) to identify State significant agricultural land and to provide for the carrying out of development on that land,*

(b) to provide for the protection of agricultural land—

(i) that is of State or regional agricultural significance, and

(ii) that may be subject to demand for uses that are not compatible with agriculture, and

(iii) *if the protection will result in a public benefit*."

Land is State significant agricultural land if it is listed in Schedule 1 of the SEPP. Schedule 1 is blank.

In terms of he proposed quarry development and impact on agriculture the following factors are relevant:

- The SEPP does not set down any requirements for extractive industries.
- Notwithstanding the fact that the SEPP does not define or make reference to any map identifying State significant agricultural land, the Project Site forms a part of land mapped as Biophysical Strategic Agricultural Land (BSAL). However, the BSAL mapping is broad-brush in nature, and does not reflect localised variations in the quality of agricultural land.
- The dominant agricultural use of the site and surrounding area is primarily for grazing with some cropping.
- The site assessment finds that the soils encountered on the project site are rocky, shallow soils with a low land capability and low agricultural worth, not suited to cultivation and suitable only for dry-land grazing.
- The quarry development forms a part of the 'Talinga' rural holding, which has a total area of 1,191ha. Including the haul route, the total quarry development has a total area of 7.52ha, equivalent to just over 0.6% of the total farm holding. Such a small development footprint proposed on land of low value agricultural land will not result in any significant impact on agriculture. Moreover, 6.54ha of this land is to be returned to agricultural use at the rehabilitation stage. There is no public benefit in not allowing the project to proceed.
- The site is located within a rural landscape where these is good natural separation between land uses and where uses such as extractive industries are permissible and reasonably expected. The site adjoins a major transport infrastructure and the quality of the rock resource on the site also means that the site is highly favourable for quarrying activity, in particular to service the nearby renewable energy zone (REZ) projects.
- As has been shown to be the case with many other quarries approved and operating in New South Wales where agriculture has been undertaken concurrently with quarrying, the proposed quarry would not be incompatible with the ongoing use of the 'Talinga' farm holding for agriculture.
- Related to the above, it is noteworthy that the owner of the adjoining rural property to the north has recently commenced extracting rock from their property, from a site located immediately to the north of and adjoining the existing extraction area/borrow pit currently used by Talinga Pastoral Company.
- Potential impacts arising on agriculture could result from noise dust, vibration, and water. These potential impacts have been considered in detail within the EIS and satisfactorily addressed in the technical assessments and in EIS Section 7.3. Accordingly, it is considered that the proposed quarry development provides adequate mitigation measures to reduce or resolve impacts to surrounding nearby land uses, including agriculture.
- The potential conflict with nearby agricultural uses is considered to be low and can be mitigated as outlined in the technical assessments. Accordingly, it is considered that there will be no land use conflict arising from the proposal on nearby agricultural land uses.
- The site is proposed to be rehabilitated, providing for a protected shelter for livestock, with a source of water.

5.2.5 Compliance with Other State Environmental Planning Policies

The accompanying Table 5.8 provides a summary of the compliance of the Project with other, relevant State environmental planning policies.

Table 5.8: Compliance of the Project with State Environmental Planning Policies (SEPPs)

Relevant SEPP	Summary of SEPP provisions	Compliance: Project
State Environmental Planning Policy (Transport and Infrastructure) 2021	*The SEPP provides a planning regime for the assessment of traffic generating development across NSW- principally that having a frontage to a classified road.*	▸ *Pursuant to s.2.118, the site has frontage to Castlereagh Highway which is identified as a classified road.* ▸ *An upgraded intersection is proposed.* ▸ *The traffic assessment by Streetwise (refer to **Appendix D**) finds that the safety, efficiency and ongoing operation of Castlereagh Highway will not be adversely affected by the proposed quarry development.* ▸ *Given that the proposed internal quarry route is under an electricity transmission easement Council is required to give notice to the relevant electricity supply authority in accordance with s.2.48(2) of the SEPP.*
State Environmental Planning Policy (Resilience and Hazards) 2021	▸ *Requires specified matters to be considered for proposals that are 'potentially hazardous' or 'potentially offensive' as defined in the policy.* ▸ *Pursuant to s 4.6 of the Resilience and Hazards SEPP a consent authority must consider contamination and remediation prior to the determination of a development application.* ▸ *Planning controls for the remediation of contaminated land.*	▸ *The proposed quarry development is not considered to be potentially hazardous or offensive, as the only hazardous materials to be stored at the quarry will be restricted to diesel fuel and hydrocarbon products. Any fuel storage will be self-bunded and in full conformance to the Australian Standard AS1940-2017. No explosives will be kept on site- to be provided by blasting specialists for each blast event. Moreover, extractive industries are not defined as such in the LEP.* ▸ *Blasting and processing of quarry products to be undertaken in accordance with EPA blasting criteria.* ▸ *Given the historical use of the site and surrounds for the grazing of livestock, any contamination is most unlikely and no site remediation required, thus satisfying the requirements of Ch 4, s.4.6(1) of the SEPP. Refer also to Stage 1 contamination assessment by Ballpark Environmental for further details, in **Appendix I**)* ▸ *Quarry stormwater will be treated within the quarry site.* ▸ *Quarry truck traffic can use the existing haul route without giving rise to any safety or similar concerns.* ▸ *The Project Site is not on land identified by EPA records under the Contaminated Land Management Act 1997.* ▸ *Proposed safe handling, transport and storage of Dangerous Goods, including spill prevention and clean up requirements.*
State Environmental Planning Policy (Biodiversity and Conservation) 2021	▸ *Encourages the conservation and management of natural vegetation areas.* ▸ *Assessment of any likely impact on koalas or koala habitat must be assessed.*	▸ *Theproject will result in quarrying over cleared land previously used for grazing, with the removal of a few remaining trees.* ▸ *The Project will not result in the clearing of native vegetation that exceeds the biodiversity offsets scheme threshold pursuant to the Biodiversity Conservation Act 2016.* ▸ *The project site is not core koala habitat for the purposes of the SEPP nor is it within proximity to core koala habitat.* ▸ *Refer Section 7.3.5 for details.*
State Environmental Planning Policy (Planning Systems) 2021	*Defines certain developments that are projects of state or regional significance.*	*The project is of a type that triggers the relevant criteria for Regionally significant development, requiring the consent of the Northern Region Planning Panel. The project is not State significant development.*

The Project thus complies with the relevant provisions of the State environmental planning policies cited above.

5.2.5 Compliance with Central West and Orana Regional Plan 2041

The *Central West and Orana Regional Plan 2041* (REP) contains generalised objectives, strategies and "Collaboration Activity" statements, as well as strategic and local planning strategies for LGAs including Mid-Western Regional Council. The plan is not meant to be detailed land use plan, but rather, it provides an overarching framework to guide subsequent and more detailed rezonings/draft LEPs, development proposals and infrastructure funding decisions. The REP contains various objectives under various headings, the most relevant considered in the accompanying Table 5.9.

Table 5.9: Compliance of the Project with Central West and Orana Regional Plan 2041

Relevant objective in REP	*Applicability to quarry proposal*
Objective 2: Support the State's transition to Net Zero by 2050 and deliver the Central–West Orana Renewable Energy Zone	*The proposed quarry is strategically placed to provide much-needed road making material to many of the projects that are located within the Central–West Orana Renewable Energy Zone (CWO-REZ) projects, and in particular:* ▸ *EnergyCo's extensive, 1km wide CWO-REZ project (approximately 3.1km to the north of the project site, approved on 26 June 2024; and* ▸ *Acciona's Orana Wind Farm project (as close as 2km to the project site).*
Objective 3: Sustainably manage extractive resource land and grow the critical minerals sector	▸ *The proposed quarry will benefit from its close proximity to the CWO-REZ projects.* ▸ *All other quarries operating in the Mid-Western Regional Council area are located to the south. In order to service the CWO-REZ projects quarry truck traffic from these quarries will have to travel through the townships of Gulgong and/or Mudgee. The proposed quarry does not require any quarry truck traffic to travel through these townships in order to service these infrastructure projects.* ▸ *The proposed quarry will meet any expected shortfalls in the supply of much-needed road making material to support these huge CWO-REZ infrastructure projects. The demand for road making material is expected to be in the millions of tonnes. This demand cannot be met solely by existing quarries in the region- hence the need for the proposed Gulgong Quarry project.* ▸ *The proposed quarry aligns with industry best standards, at the same time as contributing to a secure critical extractive industry sector and protecting the region's environmental values and productive agricultural land.*
Objective 5: Identify, protect and connect important environmental assets	▸ *The specialist ecological assessment have found that the site has no ecological values of significance.*
Objective 7:Plan for resilient places and communities	▸ *The site is not subject to flooding, nor does it comprise bushfire prone land or High Environmental Value Land.* ▸ *Appropriate and safe quarry work practices and management measures are proposed.*
Objective 8: Secure resilient regional water resources	▸ *The quarry has been designed to ensure that it will not intersect with local groundwater.*
Objective 9: Ensure site selection and design embraces and respects the region's landscapes, character and cultural heritage	▸ *The quarry has been designed to ensure that visual impacts are minimised, with minimal impact on local character.* ▸ *The proposed quarry will achieve satisfactory noise and air quality impacts.* ▸ *No Aboriginal items have been found within the area proposed for the quarry development. Various mitigation strategies are proposed to protect sites or relics.*
Objective 19:Protect agricultural production values and promote agricultural innovation, sustainability and value-add opportunities	▸ *The site assessment finds that the soils encountered on the project site are rocky, shallow soils with a low land capability and low agricultural worth, not suited to cultivation and suitable only for dry-land grazing.* ▸ *Just over 7ha of land is proposed for quarrying on the 1,191ha 'Talinga' farm holding- or just over 0.5% of the total farm holding. This will not result in any significant impact on agriculture.*

Having regard for the above, it is concluded that the Project complies with the broad objectives of this regional plan.

5.2.6 Compliance with Mid-Western Region Community Plan

The *Towards 2040 Mid-Western Region Community Plan* was adopted by Council in June 2024. The plan represents an opportunity to create and foster community-based goals, values and aspirations in the LGA. The compliance of the proposed quarry project with the most relevant parts of this community plan are considered in the accompanying Table 5.9.

Table 5.9: Compliance of the Project with Mid Western Region Community Plan

Relevant objective in REP	*Applicability to quarry proposal*
Theme 1: Looking after our community	*The proposed quarry complies, and in particular:* ▸ *Quarry truck traffic will be focussed in the short-medium term on servicing the renewable energy projects in the northern part of the LGA, thus avoiding the need for truck traffic having to travel through Gulgong or Mudgee (Goal 2: Vibrant towns and villages).*
Theme 2: Protecting our Natural Environment	▸ *The proposed quarry protects biodiversity and natural heritage (Goal 1.1).* ▸ *The proposed quarry minimises the impact of quarrying on the land (Goal 1.2). The proposed quarry achieves this outcome by taking up only just over 0.6% of the total 'Talinga' farm holding.* ▸ *The control invasive plant and animal species (Goal 1.4) is one of the features of the quarry management regime proposed- refer EIS Section 3.14.4.* ▸ *The proposed quarry introduces sustainable water management practices in order to maintain water quantity and quality (Goals 2.1 and 2.2).*
Theme 3: Building a Strong Local Economy	▸ *The proposed quarry development is a new industry that supports the new renewable energy projects in the northern part of the LGA (Goal 1.1).* ▸ *The quarry project will contribute to the local economy by providing direct and indirect employment opportunities. The quarry project will also provide much-needed road making material for current and future renewable energy projects in the northern part of the LGA- which are projected to increase. The improvements in infrastructure will consequently enable the transition to renewable energy outcomes in NSW and thereby improving long-term social and economic outcomes.(Goals 2.3, 3.1)*
Theme 4: Connecting our Region	▸ *The proposed quarry development is located close to numerous renewable energy infrastructure projects. As such, quarry truck traffic need only utilise limited stretches of the Castlereagh Highway to provide processed quarry products to these projects (Goal 1.1).* ▸ *The intersection of the internal quarry haul route with the highway will be upgraded, promoting safer roads (Goal 1.1).*

5.2.7 Compliance with Mid-Western Regional Comprehensive Land Use Strategy

The proposed quarry development complies with most relevant parts of the *Mid-Western Regional Comprehensive Land Use Strategy* in particular in terms of:

- Protection of environmentally sensitive areas.
- Appropriate groundwater and surface water management.
- Protection of views of visually prominent features (which this site is not). The proposed quarry is designed to avoid being visually obtrusive.
- Protection of Aboriginal heritage.
- The extractive resource at the site is well known, having been used as a borrow pit by both existing and previous land owners and by the local council since the 1980s. The resource requires protection and management so as not to be affected by incompatible uses (p.61 of strategy).

▪ 5.3 Applicable Legislation and Other Guidelines

5.3.1 Protection of the Environment Operations Act 1997

The granting of development consent under the *Environmental Planning and Assessment Act 1979* (EP&A Act) to enable development of the proposed quarry will not exhaust the approvals process necessary for the expansion of quarrying operations on the project site.

The *Protection of the Environment Operations Act, 1997* (POEO Act) requires licensing for industries, like quarries, once consent has been obtained, for extractive industries that extract in excess of 30,000 tonnes per annum. The approved quarry, once consent is issued, would be classified as scheduled activity, requiring the issue of an Environment Protection Licence (EPL) for an extractive activity to crush, grind or separate or extract, process or store under the provisions of Section 55 of the POEO Act.

ss7 (1) and 50 (2) of the POEO Act make it clear that it and the EP&A Act-under which this DA is to be determined- are interlocking, parallel schemes of regulation. The interlocking nature of the scheme is even more evident when the EP&A Act is considered, in particular Division 5 of Part 4 concerning integrated development (which applies here). The scheme envisages that a development consent will need to be first obtained under the EP&A Act prior to any EPL being issued: *Newcastle & Hunter Valley Speleological Society Inc v Upper Hunter Shire Council and Stoneco Pty Limited (No2)* [2010] NSWLEC 104 per Preston CJ, and more recently by the NSW Court of Appeal in *Hunter Industrial Rental Equipment Pty Ltd v Dungog Shire Council* [2019] NSWCA 147 decision dated 20 June 2019 in the matter of a quarry operation at Martins Creek, in the Hunter Valley region of NSW) which at [166] and [177] states, inter alia:

> *"166. Land usage is subject to a range of statutory controls which, in broad terms, operate cumulatively. Thus, for the purposes of the operations carried out at Martins Creek, the appellants needed development consent under the Planning Act and also a licence under the Protection of the Environment Operations Act 1997 (NSW) (the 1997 Act)….*
>
> *177. The evident purpose of s 50, and indeed s 58(6) of the [Protection of the Environment Operations Act 1997: "the 1997 Act"], is to ensure that the [EP&A Act] and the 1997 Act operate in tandem and do not result in conflicting permissions. Thus, if consent is required under the [EP&A Act], and has not been obtained, the EPA cannot grant a licence under the 1997 Act."*

Moreover, and related to [177] above, an EPL cannot be lawfully issued if it is inconsistent with the issued development consent per the decision of Justice Pain in *Hy-Tec Industries (Queensland) Pty Ltd v Tweed Shire Council* [2019] NSWLEC 175 dated 14 November 2019.

5.3.2 Water Management Act

The *Water Management Act 2000* (WM Act) provides formal means for the protection and enhancement of the environmental qualities of waterways and their in-stream uses as well as to provide for the protection of catchment conditions. It also governs the issue of new water licences and the trade of water licences and allocations for those water sources (rivers, lakes and groundwater) in NSW where water sharing plans have commenced. The object of this Act is to provide for the sustainable and integrated management of the water sources of the State for the benefit of both present and future generations.

The WM Act regulates the use of land where there may be interference with groundwater or where it involves works within 40m of of a watercourse: termed 'waterfront land'. In this regard, the Project is located more than 40 metres away from any watercourse that falls under the definition of 'waterfront land'.. Any proposed extractive industry development within 40m of 'waterfront land' triggers the need for an 'integrated development' approval under the EP&A Act.

Schedule 1 of the *Water Management (General) Regulation 2018* (WM Regulation) identifies classes of dam which are exempt from licensing requirements, including dams used to contain sediment or to control erosion, which includes quarry sediment basins, that are located on a minor stream.

Based on the NSW Department of Water & Energy document *Farm Dams – Do you need a licence* (2008): "*Minor streams are defined by the Strahler stream ordering method as 1st and 2nd order streams that do not have permanent river flow*"- a different definition than 'waterfront land', the term relied on for the purposes of determining if an application is for 'integrated development' or not. In terms of groundwater, and on the basis of existing Water NSW groundwater bore data, it is unlikely that future excavation on the site will encounter groundwater (refer to Section 2.2.3 for details). As the quarry appears to be well above known groundwater levels, groundwater is not likely to be encountered on site, nor is it to be relied upon as a water source at the quarry.

The aim of the WM Act is to provide for the sustainable and integrated management of the water sources of NSW for the benefit of both present and future generations and defines rules for management of surface water and groundwater in NSW. The *Water Act 1912* and the WM Act contain provisions for the licensing of water capture and use. If any dams are proposed as part of the water management, consideration must be given to whether the dams need to be licensed.

Under the WM Act landowners have access to water, termed as 'harvestable rights'. Harvestable rights orders made by the Minister under Section 54 of the WM Act give a landholder the right to capture 10% of the average regional rainwater runoff on the land by means of a dam or dams having not more than the total capacity calculated in accordance with Schedule 1 of the orders, providing such structures are located on minor streams only (i.e. first and second order streams- as is the case here at the Project Site). This water can, in most cases, be used for any purpose. Utilising the Water NSW *Maximum Harvestable Rights Calculator*, the 'Talinga' farm holding, having an area of1,191ha, has a maximum harvestable dam capacity of 59.55ML(megalitres). It is understood that this allocation is yet to be fully utilised on the 'Talinga' land holding.

Part 2 of Schedule 4 of the *Water Management (General) Regulation 2018* provides exemptions for water storage structures in accordance with a harvestable rights order. Schedule 1(1) and 1(3) of the *Water Management (General) Regulation 2018* provides exemptions for water storage structures as follows:

> "*1. Dams solely for the control or prevention of soil erosion— (a) from which no water is reticulated (unless, if the dam is fenced off for erosion control purposes, to a stock drinking trough in an adjoining paddock) or pumped, and (b) the structural size of which is the minimum necessary to fulfil the erosion control function, and (c) that are located on a minor stream.*
>
> *……*
>
> *3. Dams solely for the capture, containment and recirculation of drainage and/or effluent, consistent with the best management practice or required by a public authority (other than Landcom or the Superannuation Administration Corporation or any of their subsidiaries) to prevent the contamination of a water source, that are located on a minor stream*."

The proposed quarry sits at the top of a drainage line in the saddle of a hill. There is no restriction on the use of water from dams that comply with this provision, which includes dams used for the purposes of extractive industries (ie.quarries). These provisions are applicable to any erosion and sediment control basins constructed to control runoff until such time as the vegetation has established to the point when sediment runoff is minimal.

In this regard the 'dirty' water management system proposed includes the collection, management and distribution of water from within the active extraction area, runoff from overburden emplacement areas, and management of water affected by activities associated with the handling and processing of quarry products, as well as allied operational uses. The water in these areas would be classed as 'dirty' water. 'Dirty' water includes runoff from disturbed areas and those areas to be rehabilitated. The 'dirty' water management system includes a series of catch drains and sediment dams located to capture and manage runoff from disturbed areas.

All sediment basins associated with the Project will be constructed and operated for the purposes of sediment control, involving the impoundment of 'dirty' water, and are therefore excluded from the requirements of the harvestable rights order and do not require licensing under the WM Act.'Clean' water management measures proposed includes diversion drains, catch drains, and clean water catch dams around the perimeter of the proposed quarry operational area.

5.3.3 Biodiversity Conservation Act 2016

The *Biodiversity Conservation Act 2016* (BC Act), passed by NSW Parliament in November 2016 and came into effect on 25 August 2017. The BC Act repealed the *Threatened Species Conservation Act 1995*, the *Native Vegetation Act 2003*, *Nature Conservation Act 2001* and part 6 of the *NPWS Act 1974*. The matters relating to the listing of threatened species, threatened ecological communities, key threatening processes. biodiversity impact assessment, offsetting and related offences are now contained within the BC Act. A precondition to the grant of development consent under the EP&A Act is found in s 7.16(2) of the of the BC Act. This provides:

> "*The consent authority must refuse to grant consent under Part 4 of the Environmental Planning and Assessment Act 1979, in the case of an application for development consent to which this Division applies (other than for State significant development), if it is of the opinion that the proposed development is likely to have serious and irreversible impacts on biodiversity values*."

The NSW Department of Planning & Environment has published criteria to assist in the application of the principles in cl 6.7 of the *Biodiversity Conservation Regulation 2017* (BC Regulation), in the form of the *Guidance to assist a decision-maker to determine a serious and irreversible impact* (September 2019)(Guidance document). Entities that meet the criteria under one or more of the principles in clause 6.7 of the BC Regulation are identified as entities at risk of a serious and irreversible impact (SAII) in the Threatened Biodiversity Data Collection housed in BioNet and displayed on the Department website. In section 3, the Guidance document provides a framework for decision-makers to take into account the scale of an impact and the potential for avoidance and mitigation within the context of the principles in cl 6.7 of the BC Regulation and the supporting criteria.

Recent judgements in the Land and Environment appear to have widened the understanding of what is to be regarded as a serious and irreversible impact (SAII) on biodiversity values for the purposes of the BC Act: *IRM Property Group (No. 2) Pty Ltd v Blacktown City Council* [2021] NSWLEC 1306: *Tomasic v Port Stephens Council* [2021] NSWLEC 56: and *Planners North v Ballina Shire Council* [2021] NSWLEC 120- the latter two decisions being that of Preston CJ. Refer Section 7.3.5 of this EIS for a more detailed consideration and assessment.

5.3.4 Rural Fires Act 1997

Bush fire prone land is recorded on maps prepared by local councils and certified by the Commissioner of the NSW Rural Fire Service (RFS). Section 100B of the *Rural Fires Act 1997* requires that a bush fire safety authority is required from the Commissioner for uses including residential development or 'special fire protection purpose' including schools, child care centres and seniors housing. No such authority is required to be issued for an extractive industry. Under the EP&A Act, development on bush fire prone land must generally meet the requirements of the RFS document entitled *Planning for Bush Fire Protection* unless the consent authority has consulted with RFS. However, there are no specific requirements set down in this document relating to extractive industries or facilities associated with this use.

The Project Site is not mapped by the RFS as comprising bushfire prone land- refer to RFS advice in **Appendix J**. In any case, various measures are to be proposed to effectively control any fire threat at the quarry including but not limited to the following:

- Fire fighting equipment to be stored at the quarry site. Includes fire extinguishers. Fire extinguishers are to be provided in all mobile equipment. The extinguishers are to be serviced regularly.
- Any fuel storage facilities, if used, will be located and designed to prevent potential fire hazards, as required by *AS1940-1993- The Storage and Handling of Flammable and Combustible Liquids*. Any fuel storage areas to be bunded.
- Work instructions to employees to include emergency response procedures, applicable during a fire emergency.

5.3.5 Contaminated Land Management Act 1997

The NSW *Contaminated Land Management Act 1997* is administered by the EPA. It establishes a process where the significant contamination of land is investigated and, where appropriate, remediated. The Project Site is not identified as 'contaminated' under this Act- refer to the Contamination Report in **Appendix I** for further details.

5.3.6 Mining Act 2011,Work Health and Safety (Mines & Petroleum Sites) Act 2013

Quarry rock, stone or gravel is not defined as a "mineral" for the purposes of the *Mining Act 2011* , and is therefore not regulated by this legislation. However, under the provisions of the *Work Health and Safety (Mines & Petroleum Sites) Act 2013* quarry rock, stone or gravel is defined as a "mineral" and is thus covered by this Act and *Work Health and Safety (Mines and Petroleum Sites) Regulation 2022*. Accordingly, work health and safety practices at the proposed quarry and other quarries in New South Wales are regulated by the NSW Mines Regulator (currently called the NSW Natural Resources Access Regulator).

The NSW Natural Resources Access Regulator has released health and safety guidelines for the operation of quarries in NSW, in the document entitled *Health and safety at quarries* ,dated November 2018. It is proposed that these guidelines will be adhered to, once the proposed quarry is approved.

5.3.7 Local land Services Act 2013

In 2017, the NSW Government introduced amendments to the *Local Land Services Act 2013* (LLS Act) and the new Biodiversity Conservation Act 2016 (BC Act), designed to ensure a balanced approach to land management and biodiversity conservation in NSW. The LLS Act focuses on providing flexibility to landholders in rural land management through a risk-based Land Management Framework, while the BC Act aims to increase biodiversity conservation through investment in private land conservation, native plants and animals and biodiversity offsets.

Under the LLS Act Land Management Framework rural land in NSW is categorised into three main categories:

- Category 1 (Exempt land). Exempt land is land where native vegetation can be cleared without approval from Local Land Services. Exempt land includes land cleared of native vegetation as at 1 January 1990 or lawfully cleared after 1 January 1990, low conservation grasslands, or land containing only low conservation ground cover (not being grasslands). A review of past aerial photography (refer **Appendix I**) confirms that the site was cleared of virtually all native vegetation prior to 1 January 1990.
- Category 2 (Regulated land). Regulated land includes land not cleared as of January 1990, grasslands that are neither low nor high conservation grasslands. Vulnerable regulated land, being a sub-category of Category 2, includes steep or highly erodible land and land susceptible to erosion. Sensitive regulated land includes high conservation grasslands and critically endangered ecological communities. Pursuant to s.60J(2) of the LLS Act when considering these criteria, native vegetation that comprises grasslands or other non-woody vegetation is taken to have been cleared if the native vegetation was significantly disturbed or modified.
- Excluded land is land where the *Land Management (Native Vegetation) Code 2018* and allowable activities do not apply.

There are different native vegetation management options for each category. Clearing of native vegetation on Category 1-Exempt land does not require assessment (Biodiversity Assessment Method (BAM) Department of Planning Industry & Environment 2020, Subsection 1.5.1(d.)). In practice, this means impact assessment relating to vegetation integrity and habitat suitability are not required on Category 1-Exempt land, and biodiversity credits (offsets) are not generated in the BAM Calculator. However, proponents are still required to carry out a test of significance for all local development proposals that do not exceed the Scheme threshold (including those on Category 1-Exempt land).

The BAM needs to be applied to any part of the subject land that is not Category 1–Exempt land. This land has to be assessed and scored to see if a score of more than 15 is achieved, the trigger for an offset to apply , namely, where the PCT is representative of an endangered ecological community (EEC) or a critically endangered ecological community (CEEC).

The Land Management Framework is supported by draft *Native Vegetation Regulatory Map* (NVR map) which maps the various categories of land. The NVR Map is published on the department's website, accessed on the SEED portal- refer to **Figure 5.2**.

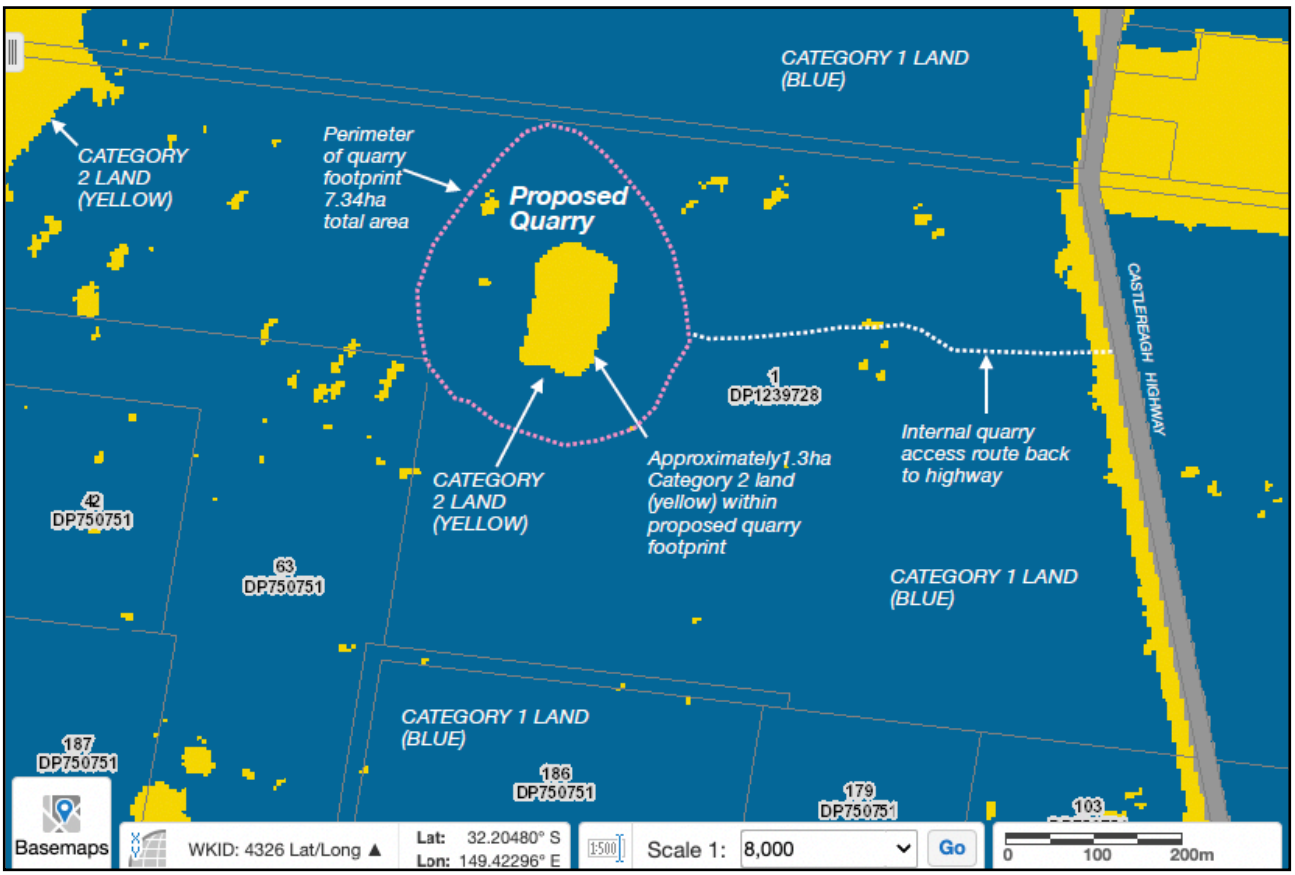


FIGURE 5.2: Draft Native Vegetation Regulatory Map-the proposed quarry site and surrounds. Blue colour is Category 1- Exempt land. Yellow colour is Category 2-Regulated land.

(Source: NSW Government SEED online mapping)

5.3.8 Commonwealth Environment Protection and Biodiversity Conservation Act 1999 (EBPC Act)

The EPBC Act regulates actions that could lead to significant impacts to Matters of National Environmental Significance (MNES). Relevant MNES includes threatened and migratory species, and threatened ecological communities. Under the EPBC Act, proponents are required to 'refer' the project to the Commonwealth Department of Agriculture, Water and the Environment (DAWE) if the project is likely to result in significant impacts to MNES. If upon review of the referral documentation, DAWE assess the project as a 'non-controlled action' no further assessment under the EPBC Act is required. Alternatively, if DAWE assess the project to be a 'controlled action', they will outline what further assessment will be required. Refer Section 7.3.5 of this EIS for a more detailed consideration and assessment.

5.3.9 Biosecurity Act 2015

The primary objective of the Biosecurity Act 2015 is:"to provide a framework for the prevention, elimination and minimisation of biosecurity risks posed by biosecurity matter, dealing with biosecurity matter, carriers and potential carriers, and other activities that involve biosecurity matter, carriers or potential carriers". The quarry operator and land owner are under a statutory obligation to comply with the general biosecurity duties under the Biosecurity Act through management of on-site weeds and pests. Prior to project commencement, a weed management procedure would be developed as part of any quarry management plan for the proposed quarry, to prevent and minimise the spread of weeds, including management protocols.

5.3.10 Dark Sky Planning Guideline

The *Dark Sky Planning Guideline* is a matter for consideration for all development under the EP&A Act before development consent is granted within the local government areas of Coonamble, Dubbo, Gilgandra and Warrumbungle. It does not apply to the Mid-Western LGA.

5.3.11 Crown Lands Act

The *Crown Lands Act 1989* provides for the administration and management of Crown land in NSW. Crown land may not be occupied, used, sold, leased, dedicated, reserved, or otherwise dealt with unless authorised by this Act or the NSW *Crown Land (Continued Tenured) Act 1989*.

A number of Crown roads have been identified near the proposed quarry, including a Crown road that runs along the northern boundary of Lot 1 DP 1239728.

6.Community Engagement

6.1 Overview

The Project Site is located within a sparsely populated rural area north of Gulgong township. As a consequence, the number of rural residences in the near vicinity is comparatively small, with only one rural residence within 1km of the Project Site. Moreover, the Project Site is reasonably buffered from neighbouring residences with views towards the proposed quarry either obscured by intervening topography or screened by intervening vegetated lands. The proposed quarry site is set well back from the highway, with fleeting glimpses only possible from this road.

The SEARS issued by the Department of Planning, Housing and Infrastructure (EAR 1894) requires that: "*In preparing the EIS, you should consult the relevant local, State and Commonwealth government authorities, infrastructure and service providers and and any surrounding landowners that may be impacted by the development.*" The SEARS does not nominate those parties that need to be consulted. The project team, including Hamish and Sally Drury, has carried out consultation with various stakeholders and in particular:

- EnergyCo, who have recently (June 2024) obtained Ministerial approval to proceed with an extensive transmission line project within the Central-West Orana Renewable Energy Zone (CWO-REZ), located approximately 3.1km away from the Project Site).
- Mid-Western Regional Council. Refer **Appendix O** for details.
- Transport for NSW (TfNSW) Parkes office.
- Essential Energy, given that an electricity transmission line traverses the Project Site.
- Neighbouring landowners. Refer **Appendix P** for details of the newsletter distributed to nearest neighbours to the north by Hamish and Sally Drury between 9-23 September 2024.
- Local Aboriginal community, as part of a Aboriginal consultation process.

Details of the consultation carried out by the project team are set out in the following sections. It describes the consultation process and the issues raised, and response to these issues. Where amendments have not been made to address an issue, a short explanation is provided.

6.2 Consultation Undertaken

Outline Planning Consultants Pty Ltd initially consulted with the t Department of Planning, Housing and Infrastructure as required under Clause 3 of Schedule 2 of the EP&A Regulation to obtain the Planning Secretary's Environmental Assessment Requirements (SEARs) for the Project. This consultation involved providing the Department with a Scoping Report, dated April 2024, introducing the Project and providing an overview of the Project, its environmental setting, strategic and statutory context and proposed community engagement.

The Department circulated the Scoping Report to Mid-Western Regional Council and to various State Government agencies seeking their requirements relating to respective issues to be addressed in the EIS for the Project. The Secretary's requirements were forwarded to Outline Planning Consultants Pty Ltd on 5 June 2024, including advice from the EPA and from Mid-Western Regional Council, with later advice from Transport for NSW (TfNSW) received on 11 June 2024.

Outline Planning Consultants Pty Ltd and specialist consultants engaged to undertaken various assessments for the EIS subsequently followed up with a number of the State Government agencies seeking further comments or clarification relating to the Project.

The accompanying Table 6.1 lists all agencies and other organisations consulted, either as a part of the SEARs process or subsequent t the issue of the SEARS.

Table 6.1: Consultation process and outcomes

Government agency or party consulted	Consultation and outcomes
Mid Western Regional Council (Council)	*This EIS has been prepared in accordance with SEARS comments received from Council. Council provided input into the preparation of the EIS through a SEARS submission, followed up by a face to face pre-lodgement meeting with Council town planning and engineering officers on 2 July 2024. Follow up advice was also provided by Council's Engineering Department regarding the past use of the quarry by Council. Refer to* ***Appendix O*** *for details of matters discussed.*
Transport for NSW (TfNSW)	*This EIS has been prepared in accordance with SEARS comments received from TfNSW. The EIS addresses all issues raised by TfNSW in their SEARS advice supplemented by further follow up advice obtained from various TfNSW officers at the Parkes office of TfNSW. There has been further email and telephone communications between the parties.*
Aboriginal Community	*The SEARS required preparation of an Aboriginal Cultural Heritage Assessment Report (ACHAR), prepared by OzArk Environment and Heritage in accordance with relevant policy and guidelines. Responses were received by representatives of Wellington Valley Wiradjuri Aboriginal Corporation, Girragirra Murun and Warrabinga Native Title Claimants, with the on site investigations undertaken with Tammy Peterson representing Mudgee Local Aboriginal Land Council (LALC). Refer* ***Appendix K****.*
EnergyCo	*Hamish and Sally Drury have had numerous discussions with representatives of EnergyCo since their project was approved in June 2024.*
Essential Energy	*Essential Energy provided advice regarding setbacks required from the electricity transmission lines which traverse the Project Site. Refer* ***Appendix M****.*
Neighbouring owners and occupiers of land	*In August 2024 a Fact Sheet about the proposed quarry was circulated by Hamish and Sally Drury to neighbouring residences within 2km of the Project Site by way of letter-boxing. Refer to* ***Appendix P*** *for a copy of the newsletter that was distributed during that time period.The owner of the nearest residence (who also owns the residence to the west of this residence) was emailed a copy of the newsletter on 23 September 2024.*

6.3 Proposed Future Consultation

The owners, Hamish and Sally Drury, and the quarry operator will maintain a proactive approach to ongoing engagement, in particular with near neighbours, once the Gulgong Quarry Project is approved. This will include the following:

- Direct contact with its fence-line neighbours to the north at a frequency agreed upon with that neighbour, including an invitation for a site visit to view the proposed activities operating within the quarry.
- Direct contact with other surrounding rural property owners when approached or at a frequency that is otherwise reasonably requested by the property owner.
- Notification of blast events to nearest residences.
- Receiving and responding to any complaints. The quarry operator will keep a legible record of all complaints made to the operator or any employee or agent of the operator in relation to pollution arising from any activity applicable to the quarry operation

Under the provisions of the EP&A Act the development application and accompanying EIS will be placed on public exhibition for comment. During the exhibition period, anyone may make a written submission on the quarry project. Relevant Government agencies will also be notified for comment and, in the case of the EPA, for General Terms of Approval. The proponent will respond to any submissions received by Mid Western Regional Council during the public exhibition period, which may include follow up consultation with interested parties.

7. Environmental Assessment

7.1 Overview

The identification and prioritisation of environmental issues associated with the proposed Gulgong Quarry Project has enabled the impact assessment contained in the EIS to focus on key impacts and environmental mitigation strategies. Details of all quarry mitigation measures are contained in Sections 3, 4 and 7 of the EIS report and comprise a fundamental part of the quarry development proposed: *per* the decision of Preston CJ in *Newcastle & Hunter Valley Speleological Society Inc v Upper Hunter Shire Council and Stoneco Pty Limited* [2010] NSWLEC 48 at [83]. They are to be be read in conjunction with the following assessment.

The *Environmental Planning and Assessment Act 1979* (EP&A Act) and *Environmental Planning and Assessment Regulation 2021* (EP&A Regulation 2021) form the statutory framework for planning approval and environmental assessment in NSW. The identification of approval pathways and assessment requirements are set out in environmental planning instruments (EPIs) that may be made under Division 3.3 (State environmental planning policies) or Division 3.4 (local environmental plans) of the EP&A Act.

7.1.1 Compliance with Section 4.15 of EP&A Act

Section s 4.15(1)(a) of the EP&A Act mandates consideration of those planning instruments that 'apply to the land to which the development application relates'. The engagement of a particular planning instrument will often be a matter that goes to any consent authority's power to determine a development application, however, it is ultimately up to the consent authority to determine what planning instrument is engaged for any particular DA: *Ross v Lane* [2022] NSWCA 235. Where the finding of a particular fact engages the power to determine a DA, that fact is often called a "jurisdictional fact", considered further in the following.

Section 4.15(1) of the EP&A Act applies to the determination of this development application. It requires an assessment of the impact of various planning and environmental issues engaged for consideration by s 4.15. In this regard Section 4.15(1) provides:

> *"(1) In determining a development application, a consent authority is to take into consideration such of the following matters as are of relevance to the development the subject of the development application:*
>
> *(a) the provisions of:*
>
> *(i) any environmental planning instrument, and*
>
> *(ii) any proposed instrument that is or has been the subject of public consultation under this Act and that has been notified to the consent authority (unless the Planning Secretary has notified the consent authority that the making of the proposed instrument has been deferred indefinitely or has not been approved), and*
>
> *(iii) any development control plan, and*
>
> *(iiia) any planning agreement that has been entered into under section 7.4, or any draft planning agreement that a developer has offered to enter into under section 7.4, and*
>
> *(iv) the regulations (to the extent that they prescribe matters for the purposes of this paragraph),*
>
> *(v) Repealed*
>
> *that apply to the land to which the development application relates,*
>
> *(b) the likely impacts of that development, including environmental impacts on both the natural and built environments, and social and economic impacts in the locality,*
>
> *(c) the suitability of the site for the development,*
>
> *(d) any submissions made in accordance with this Act or the regulations,*
>
> *(e) the public interest."*

A summary of the overall compliance of the quarry development with the preceding s.4.15 matters for consideration is set out in the accompanying Table 7.1.

Table 7.1: Compliance of Gulgong Quarry Project with Relevant Section 4.15 Matters (Summary)

Relevant matters for consideration s.4.15	Compliance of Proposed Quarry Development
(a)(i) The provisions of: Any environmental planning instrument	*The quarry development is permitted by Mid Western Regional Local Environmental Plan (LEP) 2012 and is also permissible with consent under State Environmental Planning Policy (Resources and Energy) 2021. It also complies with the provisions of applicable SEPPs. Refer Section 5.2 and Sections 7.1-7.3 of this EIS for details.*
(a)(iii) Any development control plan	*The proposed development is generally consistent with the Mid Western Regional Development Control Plan. [NOTE: There are no provisions within this DCP that specifically apply to extractive industries.] Refer Section 5.2.2 for details.*
(a)(iv) The regulations	*The details required to accompany this development application under s.24 of the EP&A Regulation 2021 are contained in this EIS report, accompanying specialist reports, and application form.*
(b) Likely impacts	▸ *The Project optimises the quarry operation and enables full economic recovery of the quarry resource, enabling the servicing of roads and infrastructure projects and providing employment for workers -positive social and economic impacts.* ▸ *The quarry management and mitigation measures proposed will minimise impacts on neighbouring receivers, in particular in terms of noise, air quality and visual impact.* ▸ *The truck numbers/volumes proposed can be satisfactorily accommodated by the internal quarry haul route, the (upgraded) highway intersection, and Castlereagh Highway.* ▸ *There will be no likely adverse impacts on the environment or agriculture. Almost all of the proposed quarry site has stony, shallow soils with limited agricultural suitability.* ▸ *The land here is cleared, with no ecological or habitat significance.* ▸ *The site of the proposed quarry has not been identified as containing any significance in terms of Aboriginal or European heritage values.* ▸ *With the exception of the nearest residence to the north-west, the quarry will not be visible from any nearby residences with fleeting views from a short stretch of the Castlereagh Highway. Visual impacts are considered to be Nil to Low.* ▸ *Stormwater flows can be satisfactorily accommodated with the quarry footprint. All drainage from within the active quarry area will be directed to the sediment basin system, to be then re-used for dust suppression and processing of quarry rock.* ▸ *Acceptable air quality impacts are predicted. A raft of dust abatement measures are to be implemented on site.* ▸ *Acceptable noise and blasting impacts are predicted. Noise levels generated by the quarry or by quarry traffic will comply with the relevant noise criteria.*
(c) Suitability of the site	*The Project Site has been used in the past by landowners and the local council as a borrow pit for extractive purposes. The site is suitable for continued quarrying activities. The land the subject of the proposed quarry development is mostly cleared and disturbed land. The project site is well removed from residential areas in a relatively remote rural location. It has safe and adequate access arrangements.*
(e) Public interest	▸ *The Project is considered to be in the public interest as it has positive social and economic outcomes, and has satisfactory environmental impacts.* ▸ *The proposal would contribute to the economy locally and through employment generation and the provision of materials for roads and other infrastructure projects in the region, in particular renewable energy projects associated with the Central-West Orana Renewable Energy Zone (CWO-REZ), and in particular EnergyCo's transmission line project, within 3.1km of the site, and Acciona's Orana Wind Farm project, located as close as 2km to the project site.*

7.1.2 Compliance with ESD Principles

The Project complies with the objects of the *Environmental Planning and Assessment Act 1979* (EP&A Act)- refer to Section 5.1.4 of this EIS for further details. In addition to the above, the objects of the EP&A Act at s.1.3 include (b) "*the facilitation of ecologically sustainable development*" (ESD). ESD is defined in s 4 of the EP&A Act by reference to the definition in s 6(2) of the *Protection of the Environment Administration Act 1991* (NSW). The accompanying Table 7.2 shows that the proposed quarry development satisfies the principles of ecologically sustainable development.

Table 7.2: Compliance of the Gulgong Quarry Project with ESD principles

ESD Principle	What the Principle provides	How the Project is consistent with the relevant ESD Principle
The Precautionary Principle	*Considers any threat of serious and irreversible environmental damage and uncertainty.*	*After a full evaluation of the project, as considered in this EIS, it is concluded that the proposed quarry can operate within acceptable noise, blasting, air quality, soil, water, environmental, archaeological, traffic and visual criteria. No serious or irreversible environmental damage results from the Project, nor does does it give rise to any uncertainty in terms of what is proposed, likely impacts, or relationship to adjoining development: (Oates v Northern Beaches Council [2021] NSWLEC 1684 at [29].*
The Integration Principle	*The decision-making processes should effectively integrate both long-term and short-term economic, environmental and social considerations.*	*Quarry management measures have been proposed that will ensure that acceptable impacts will ensue in both the short-term and the long-terms. Quarries tend to be a long-term user of land, providing much-needed quarry products to communities for generations. During the operation of the quarry, employment benefits will arise in terms of workers at the quarry itself and in the broader community. The projects that the quarry development will serve-and in particular the renewable energy projects nearby- will benefit all members of the community, as well as future generations. In the longer term the quarry will be progressively rehabilitated and returned to agricultural use, including as a source of water for livestock.*
Intergenerational Equity principle	*The present generation should ensure that the health, diversity and productivity of the environment is maintained or enhanced for the benefit of future generations.*	*The proposed quarry development will provide benefits for future generations by providing a secure source of road making material close to committed renewable energy projects nearby in the short-medium term. The environmental management measures that are contained in the currently approved quarry plan of management have been developed to minimise the impact of the project on the environment and community to the extent reasonably practicable.The proposed lateral extension of the quarry was also designed such that elements of the existing environment available to this generation, including the natural environment, water and local biodiversity, as well as archaeological artefacts, would continue to be available to future generations.*
Biological Diversity Principle	*Conservation of biological diversity and ecological integrity.*	*The Project Site is cleared land with no ecological values of note. As such, there is anticipated to be no additional adverse impacts on the surrounding biological environment arising from the proposed quarry.*
Valuation & Pricing of Environmental Resources Principle	*Improved valuation, pricing and incentive mechanisms as well as environmental factors.*	*Satisfied in that the Project seeks to fully utilise a known quarry resource. The Project optimises the valuation and pricing of the resource with minimal impact by maximising its efficient extraction. Moreover, the proposed quarry site has limited value to agriculture.*

▪ 7.2 Section 4.15(1)(a): Planning Instruments, DCPs, Regulations etc.

7.2.1 Background and Overview

In this case, the principal environmental planning instruments that are responsible for shaping the proposed Gulgong Quarry Project and in facilitating approval of the proposed quarry development include:

- *Mid Western Regional Local Environmental Plan (LEP) 2012* which permits 'extractive industries', as defined, in the RU1 zone. Relevantly, the Project Site is not located within any conservation zone. The project complies with applicable zone objectives: NSW Land & Environment Court in *Codling v Central Coast Council* [2019] NSWLEC 1158 at [84], referred to in *Ingenia Communities Pty Ltd v Mid-Coast Council* [2021] NSWLEC 1131 at [34]:

  "84. It is clear from the terms of cl 2.3(2) that there is no requirement for development within the zone to comply with, or to achieve, each of the objectives of the zone. Nevertheless, the clause requires that the consent authority "have regard to" those objectives. They are therefore a mandatory consideration in the assessment process and a proposed development ought not be antipathetic to those objectives).

- Various state environmental planning policies (SEPPs), and in particular, *State Environmental Planning Policy (Resources and Energy) 2021*. The project is consistent with all relevant SEPPs assessed in this EIS.

It is also noteworthy that the provisions of the state environmental planning policy relevant to the proposed quarry development prevail to the extent of any inconsistency with any other environmental planning instrument. In this regard s.2.6 of *State Environmental Planning Policy (Resources and Energy) 2021* states:

> *"(1) Subject to subsection (2), if this Chapter is inconsistent with any other environmental planning instrument, whether made before or after this Chapter, this Chapter prevails to the extent of the inconsistency."* [NOTE 1: Sub clause (2) does not apply in this case. NOTE 2. As confirmed by Sheahan J in *Bella Ikea Ryde Pty Ltd v City of Ryde Council (No 2)* [2018] NSWLEC 204 in a decision dated 17 December 2018.]

The Project complies with the above relevant environmental planning controls and guidelines, including the provisions of the EP&A Regulation 2021. Refer also Section 5 of the EIS. No applicable proposed instrument applies to the Project or to the Project Site- refer Section 5.2.6 of the EIS.

7.2.3 Any Development Control Plan (s.4.15(1)(a)(iii))

In addition to the provisions of the LEP the provisions of *Mid-Western Development Control Plan 2013* (DCP) also applies. The purpose and status of development control plans are set down in s.3.42 of the EP&A Act:

> *"3.42 Purpose and status of development control plans(cf previous s 74BA)*
>
> *(1) The principal purpose of a development control plan is to provide guidance on the following matters to the persons proposing to carry out development to which this Part applies and to the consent authority for any such development—*
>
> *(a) giving effect to the aims of any environmental planning instrument that applies to the development,*
>
> *(b) facilitating development that is permissible under any such instrument,*
>
> *(c) achieving the objectives of land zones under any such instrument."*

Section 4.15(3A) of the EP&A Act requires consent authorities to consider the provisions of any development control plan when determining any DA. It makes clear that if a development control plan sets standards with respect to an aspect of the development and the development application complies with those standards, then the consent authority is not to require more onerous standards with respect to that aspect of the development. These standards have been addressed in Table 5.3 of this town planning assessment report.

It is noteworthy that the DCP does not contain any provisions relating to quarry developments *per se.* The quarry complies with the general objectives of the DCP, summarised in Table 5.6 in Section 5.2.2.of the EIS.

7.2.4 Any Planning Agreement (s.4.15(1)(a)(iiia))

No planning agreement has ben entered into with regard to the operation of the proposed quarry development.

7.2.5 "The Regulations" (s.4.15(1)(a)(iv)): NSW Environmental Planning & Assessment Regulation 2021

The term "the Regulations" refers to the *Environmental Planning & Assessment Regulation 2021* (EP&A Regulation 2021), which commenced on 1 March 2022. The proposed quarry operation is identified as 'designated development' in accordance with clause 26 of Schedule 3 of the EP&A Regulation 2021. As such, the application must be accompanied by an EIS. The application has been processed in accordance with the requirements of the regulations relating to Designated Development. As the proposal is also recognised as 'Integrated Development', as one approval is required, from the EPA. Clauses 190 and 192 of the EP&A Regulation 2021 relate to the form and content of an EIS, respectively. These requirements, and where they are addressed in this EIS, are set out in the accompanying Table 7.3 and Table 7.4.

Table 7.3: Compliance with clause 190 of EP&A Regulation 2021: Form of an EIS

An environmental impact statement must contain the following information	*Where contained in the EIS*
(2)(a) the name, address and professional qualifications of the person who prepared the statement,	*Certification page.*
(b) the name and address of the responsible person	*Certification page.*
(c) the address of the land	*Cover page and Certification page, as well as Executive Summary.*
(d) a description of the development, activity or infrastructure	*Executive Summary and Section 3.*
(e) an assessment by the person by whom the statement is prepared of the environmental impact of the development, activity or infrastructure	*Sections 2, 3, 4 and 7.*
(3) EIS declaration	*Certification page.*

Table 7.4: Compliance with clause192 of EP&A Regulation 2021: Content of an EIS

An environmental impact statement must also include each of the following	*Where contained in the EIS*
(1)(a) a summary of the environmental impact statement	*Executive Summary.*
(b) a statement of the objectives of the development, activity or infrastructure	*Section 3.1.*
(c) an analysis of any feasible alternatives	*Section 2.7.*
(d) an analysis of the development, including-	
(i) Description of the development	*Executive Summary and Section 3.*
(ii) General description of the environment likely to be affected or significantly affected by the development	*Sections 2 and 7.*
(iii) Likely impact on the environment	*Sections 3,4 and 7.*
(iv) Full description of mitigation measures	*Sections 3, 4 and 7.*
(v) A list of approvals that must be obtained	*Section 5.*
(e) a compilation (in a single section of the environmental impact statement) of the measures referred to in item (d)(iv)	*Section 4.*
(f) Reasons justifying the carrying out of the development	*Executive Summary, and Section 8.*

The above tables show that the requirements of clauses 190 and 192 of the EP&A Regulation 2021 have been satisfied.

▪ 7.3 Section 4.15(1)(b): Likely Impacts

In determining a development application a consent authority is required to consider the likely impacts of that development, including social impacts in the locality, at s 4.15(1)(b) of the EP&A Act, which requires consideration of the following matters:

> *"(b) the likely impacts of that development, including environmental impacts on both the natural and built environments, and social and economic impacts in the locality,"*

Quarrying inevitably involves clearing of land and excavation and removal of resource material. As such, the focus for any impact assessment will be on impact minimisation (*Gunlake Quarries Pty Limited v The Minister for Planning* [2022] NSWLEC 1570). The NSW Land and Environment Court has found that the description of the development the subject of the development application is not just restricted to the nature, extent and other features of the development but can also include ameliorative measures to prevent, mitigate, remedy or offset impacts of the development. However, in order to be able to be considered in answering the inquiry of likely impact, the ameliorative measures proposed are to be considered as part of the development application: *per* Preston CJ in *Newcastle & Hunter Valley Speleological Society Inc v Upper Hunter Shire Council and Stoneco Pty Limited* [2010] NSWLEC 48 at [83]. In the same judgement the Chief Judge also found that:"*likely" means "a real chance or possibility" and "significantly" means "important", "notable", "weighty" or "more than ordinary"*" at [84]. Similarly, the Court has determined that "the likely impacts of that development" should not be interpreted narrowly; they encompass not just the direct and immediate impacts of a proposed development on the site where construction will occur but also off- site impacts (*Ballina Shire Council v Palm Lake Works Pty Ltd* [2020] NSWLEC 41 at [6] per Preston CJ).

Mitigating factors

Following the above, the mitigation measures proposed form a functional part of the proposed Gulgong Quarry project. These measures are described in Section 3 of the EIS and summarised in Section 4. In addition to the above, the following mitigating factors need to be also recognised as part of any assessment of the Project:

- Rehabilitation of the quarry is proposed following the cessation of quarrying. Appropriate techniques and measures will be applied to ensure that appropriate species of grasses, trees and shrubs are planted out.
- Limited views are possible of the proposed quarry from the highway, with only one nearby rural residence having a clear, uninterrupted view of one side of the elevated knoll proposed for quarrying. It is proposed to quarry at depth, with the working quarry face located behind a topographic barrier, thus minimising acoustic and visual impacts.
- The proposed site of the quarry has been found to possess no archaeological artefacts.
- The Project Site forms a part of a region identified by a broad-brush BSAL agricultural land designation. However, the land proposed for quarrying comprises stony, shallow soils of limited agricultural worth.
- The proposed quarry footprint is almost completely cleared, and is not a part of any threatened ecological community under the NSW *Biodiversity Conservation Act 2016* (BC Act) or Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) or groundwater dependent ecosystem. A referral under the EPBC Act is not required.
- The Project Site is not subject to landslip hazard, or subsidence or acid sulphate soils.
- Due to its elevated position and geology, the proposed quarry operation is unlikely to intersect with local groundwater.
- The Project Site is flood-free.
- The Project Site enjoys the benefit of an existing internal road which connects directly with the Castlereagh Highway. The existing intersection with the highway will be upgraded in order that it can safely and efficiently accommodate the quarry truck traffic volumes proposed.
- The Project Site is sufficiently buffered from sensitive receivers in a relatively remote rural location.

Having regard for the above, any environmental impacts arising from the project can be adequately assessed and managed through the imposition of appropriate conditions of approval, per the findings of the NSW Land and Environment Court in *Dellara Pty Ltd v Minister for Planning and Penrith City Council* [2012] NSWLEC 1186 at [160].

Key impacts to be assessed

The key impacts addressed in the this sub-section of the EIS focus on the following, in no particular order but addressing all matters raised in the issued SEARs:

- **Land resources**. Potential impacts on soils and land capability (including potential erosion and land contamination, agricultural worth) and proposed mitigation, management and remedial measures.
- **Noise**. Noise impacts on sensitive receivers, including monitoring and mitigation strategies to be adopted.
- **Blasting**. Blasting impacts on sensitive receivers, including monitoring and mitigation strategies to be adopted.
- **Air quality**. Air quality impacts on the surrounding area and measures to mitigate potential impacts.
- **Water**. Control of stormwater leaving the project site, impact on groundwater, and prevention of erosion.
- **Biodiversity**. Consideration of impacts on biodiversity values.
- **Heritage**. Consideration of heritage impacts of the Project.
- **Traffic and transport**. Consideration of existing and proposed traffic flows on the surrounding road network.
- **Waste**. Waste streams generated by the project and mitigation measures proposed.
- **Hazards and risk** including an assessment of the likely risks to public safety, paying particular attention to potential bushfire risks and the transport, storage, handling and use of any hazardous or dangerous goods.
- **Visual**. Consideration of visual impacts of the Project on surrounding properties and from Armidale Road.
- **Social and economic**. Likely social and economic impacts of the Project, including the significance of the resource and costs and benefits of the Project.
- **Rehabilitation**. Consideration of the rehabilitation measures proposed, justification of the final landform, and rehabilitation strategy.

7.3.1 Land Resources

Contamination Potential

Pursuant to s.4.6 of *State Environmental Planning Policy (Resilience and Hazards) 2021* a consent authority must consider contamination and remediation prior to the determination of a development application.

Ballpark Environmental Pty Ltd was commissioned to undertake Stage 1 contamination investigation ('PSI'-refer **Appendix I** in relation to the proposed Gulgong Quarry project, the results satisfying the relevant precondition under *State Environmental Planning Policy (Resilience and Hazards) 2021* *per* Preston CJ *Moorebank Recyclers Pty Ltd v Benedict Industries Pty Ltd* [2015] NSWLEC 40 and Dickson C in *Lippmann Partnership Pty Ltd v Canterbury – Bankstown Council* [2017] NSWLEC 1601 dated 9 February 2017 at paras [31-43].

The results of the Ballpark Environmental site investigation is summarised in the following:

- A review of historical photographs suggests the use of this site as a borrow pit has occurred since circa 1964.
- No buildings or other structures were constructed on this site and therefore it is unlikely that waste building materials, including asbestos, are present on this site.
- Observations made during the site walkover by Ballpark Environmental found that previous poor waste disposal practices have resulted in the partial burial of inert waste, including scrap metal machine parts, on the northeast margins of the borrow pit.
- A review of prepared for this PSI found no areas of environmental concern have been identified on this site.

Ballpark Environmental concluded as follows:

> "*In consideration of the results from this PSI we conclude that this site on part of Lot 1 DP1239728, 1848 Castlereagh Highway, Gulgong, has an acceptable low level of risk for site contamination and is suitable for its proposed industrial use as a quarry. The site is assessed to be suitable for its proposed industrial use, in accordance with Chapter 4 of the Resilience and Hazards SEPP (2021).*"

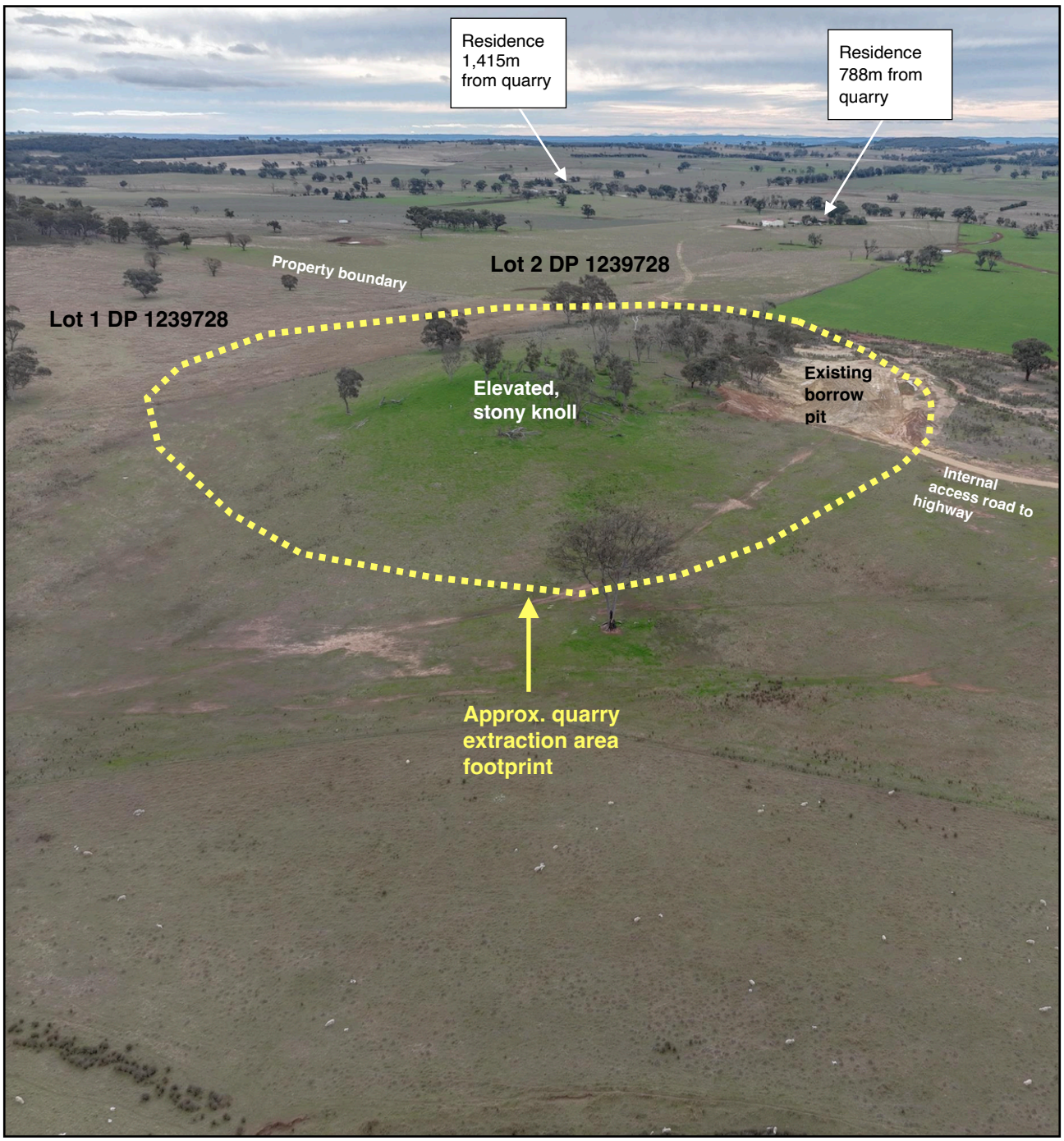
In summary, based on the preliminary site investigation undertaken by Ballpark Environmental, the Project Site is not affected by contamination and does not require remediation prior to the development being carried out. Consequently, the requirements of *State Environmental Planning Policy (Resilience and Hazards) 2021* Ch 4, s.4.6(1) have been satisfied. The Project Site has been assessed by Ballpark Environmental to be suitable for the use intended, namely, as an extractive industry.

Impact on Agriculture

The following Table 7.5 summarises the potential impact of the proposed quarry development on agriculture and land resources generally.

Table 7.5: Impacts of the Quarry Project on Land Resources & Agriculture

Issue	Consideration of impacts
Zoning requirements	*The provisions of State Environmental Planning Policy (Resources and Energy) 2021 and Mid Western Regional Local Environmental Plan 2012 permits quarries in the RU1 Primary Production zone. The land use table in the RU1 zone makes it plain that uses other than pure agriculture may occur in the RU 1 zone, including extractive industries. The proposal complies with the LEP and relevant zone objectives.*
Land use conflict potential	▸ *Quarrying has already been established on this site for many decades. There is already a quarry operating on the site, used by Council and the landowners since circa 1964.* ▸ *The proposed quarry is located in a sparsely populated rural area, with acceptable noise, vibration and visual impacts.*
Land capability and agricultural worth	▸ *The hill containing the extractive resource comprises land with a very limited agricultural value. The proposed quarry area and haul route do not comprise, nor are they proximate to or likely to have any impact on high value agricultural land.* ▸ *The footprint of the proposed quarry will occupy approximately 7.34ha, or 0.6% of the 1,191ha 'Talinga' rural holding. The project will not impose or affect the ongoing use of adjoining agricultural land or the 'Talinga' rural landholding, with the quarry floor returned to agricultural use after quarrying is completed- equivalent to 0.55% of the 'Talinga' holding. The assessment reasonably identifies potential agricultural land use impacts as Low.*
Rehabilitation	*A satisfactory rehabilitation strategy has been devised, including requirements for planting, weed management, monitoring and remedial action.*
Bush fire risk	*The vegetated land surrounding the quarry has not been identified as being bush fire prone. Various mitigation measures are proposed to address fire hazards within the proposed quarry development.*
Water	▸ *Groundwater is unlikely to be affected by the quarry.* ▸ *All stormwater to be contained within the proposed quarry pit and quarry infrastructure areas, with no resultant downstream impacts likely.*
Traffic and livestock	*No Travelling stock Routes affected by the proposed development. Low traffic speeds to be observed along the internal quarry haul route.*
Weed management	*Weed management measures have been proposed as a part of the management regime for the quarry development.*
Consultation	*Consultation with government agencies and local residents has formed a part of this EIS preparation process.*
Quarry management	▸ *A range of quarry management management measures are proposed.* ▸ *A quarry management plan is recommended to be implemented, to ensure that the quarry is operated in the future in accordance with 'best practice' quarry management measures. The basis for the quarry management plan is summarised in this EIS document.*



PHOTOGRAPH 7.1: Aerial drone photograph of the stony knoll and immediate surrounds proposed to be developed for a hard rock quarry: area 7.34ha, equivalent to 0.6% of the Talinga' farm holding, with 0.55% returned to agricultural use on completion of quarrying. Approximate extent of proposed quarry footprint shown with broken yellow line. View looking north from near the southern edge of the proposed quarry. Nearest residences to the north-west are also identified.

(Source: April 2024 aerial photograph by O'Ryan Geospatial)

To put the matter in context, the land the subject of this proposed quarry development comprises land with a low land capability and low agricultural value. The soils are shallow and rocky with the extractive resource found at or near the surface.

Because of these features the site has significant limitations to agriculture generally and is unsuited to cropping, limited grazing being the optimal use of the land here. However, it is these features that makes the project site so suited to that of a hard rock quarry. The footprint of the proposed quarry will occupy approximately 7.34ha, or 0.6% of the 'Talinga' rural holding. Following rehabilitation, approximately 6ha would be returned to grazing land- a loss of only about 0.8ha of land, or about 0.06% of 'Talinga' land holding-with the additional benefit of having a dam for livestock water needs also provided. The project is anticipated to have minimal impact on existing agricultural activities, with the project expected to coexist with the surrounding agricultural land uses in the locality or on site, thus satisfying the 'compatibility' test set down in *Project Venture Developments v Pittwater Council* [2005] NSWLEC 191.

Impact on Landform, Geology, Soils

The following factors are relevant:

- A part of the site has been used as a source of extractive material by both the landowners and by the local council over many decades, altering both the topography and lithology of the land. A review of historical aerial imagery suggests that the quarry borrow pit has been used on an ad hoc basis since circa 1964.
- No watercourses or dams are located on the proposed quarry site, with no impacts likely given that all stormwater from quarrying will be retained within the proposed quarry pit. The existing haul route from the quarry will be largely retained, with sealing of the first 100m nearest the highway, to reduce dust and sediment risk. The drainage and sediment capture systems to be employed will prevent erosion, as well as ensuring that run-off does not contaminate offsite areas or downstream waterways.
- A review of soils found within and adjoining he proposed quarry show that it has signifiant limitations to agriculture and possesses limited land capability related to the physical attributes of the soil, topography, presence of stone throughout the A horizon and shallow depth to bedrock/rock.
- It is proposed that quarrying will proceed at depth from Stage 1, establishing a quarry floor well below natural ground level. Stage 1 commences in the southern section of the site, working progressively to the north-west from the southern end of the pit. Stage 2 will continue with the same depth of extraction until the existing elevated knoll is progressively removed. At all times quarrying will be undertaken working at depth and always behind a topographic barrier.
- To minimise disturbance, topsoil will be stripped prior to quarrying in stages and stockpiled separately for later reuse in rehabilitation of the quarry pit. Extraction of the hard rock resource found on the site is proposed to be undertaken in stages, in order to minimise the area of disturbance at any one time
- Erosion and sediment controls will be implemented in accordance with *Managing Urban Stormwater Soils and Construction – Volume 2e Mines and quarries* (Landcom, 2004).
- The geological report by Douglas Partners predicts that the hard rock resource found underlying the site has the potential for use a s a road base or select fill.A copy of this report is provided in **Appendix N**.

Impact on Land Use

The site is zoned RU1 Primary Production under Mid Western Regional Local Environmental Plan (LEP) 2012, as is the surrounding area. Extractive industries are permissible with consent for the RU1 zone, and as such the proposed quarry project is consistent with intended land use of the area.

The site has been lawfully cleared due to historical agricultural land uses, with scattered paddock trees remaining. Extraction of the hard rock resource is proposed to be undertaken in stages in order to minimise the area of disturbance at any one time.The existing borrow pit has been in continuous use by landowners and the local council since circa 1964. The site and surrounding land is used for agriculture. As explained above, the quarry project would only impact land with a low suitability for agriculture, affecting about 0.6% of the 'Talinga' rural holding. Approximately 5.5% will be returned to agricultural use following completion of quarrying and rehabilitation of the site.

As such, the quarry project is not expected to impact the ability to use the project site for agricultural activities in the future. Due to the topography and soils, the project site is primarily suited to limited grazing, not to any form of intensive agriculture such as cropping- the latter land use confined to the base of the hill system and alluvial areas found on the 'Talinga' farm holding. Refer Photograph 2.7.

In short, it is concluded that the quarry project proposed will have minimal impact on adjacent existing agricultural activities, given that the quarry is capable of achieving acceptable blast, noise, visual, traffic and air quality impacts.

7.3.2 Blasting and Vibration

Overview

Vipac Engineers and Scientists Ltd (Vipac) was commissioned to conduct a blast impact assessment of the proposed Gulgong Quarry project- refer **Appendix C**.

Ground vibration and airblast overpressure are two common environmental effects of blasting that can cause human discomfort.

The quarry is proposed to operate from 7:00 am to 6:00 pm Monday to Friday, and from 7:00 am to 1:00 pm on Saturdays. Blasting would only occur between the hours of 9:00am and 3:00pm Monday to Friday.

Blasting Overpressure and Ground Vibration Standards

Blasting is to be undertaken within accepted ground vibration and air blast overpressure requirements. The Australian and New Zealand Environment Conservation Council (ANZECC) provides the following guidelines to minimise the annoyance due to blasting overpressure and ground vibration.

Vibration criteria are also determined in accordance with the NSW *Assessing Vibration: A Technical Guideline* (2006) and EPA guidelines. Refer Section 3.5.3 and 4 of the EIS for further details of blasting protocols and mitigation measures proposed, to be integrated into an overall quarry management plan once the quarry project is consented to.

The EPA standards for blast ground vibration and airblast overpressure at quarries has been provided in Table 3.3, but for convenience has been reproduced in the accompanying Table 7.6.

Table 7.6: EPA Quarry Blasting Limits

Noise/Blasting item	*Principal Standard (Limit) Nearest Residence*	*Maximum Level Permitted Nearest Residence*
Airblast Overpressure	*Airblast overpressure of 115 dBL (Lin Peak). This level may be exceeded on up to 5% of the total number of blasts over a period of 12 months*	*Airblast overpressure should not exceed 120 dBL (Lin Peak) at any time*
Ground Vibration	*Ground vibration level of 5 mm/s peak particle velocity (PPV).This level may be exceeded on up to 5% of the total number of blasts over a period of 12 months*	*Vibration should not exceed 10 mm/s peak particle velocity (PPV) at any time*

Summary of Findings: Blasting

From the above assessment by Vipac it can be concluded that blasting activities associated with the proposed quarry can be safely completed within EPA blast vibration and overpressure limits without damage to surrounding structures or nearby sensitive receivers provided that monitoring is conducted on all blasting operations.

It is an EPA requirement for monitoring of all future blasting operations, to ensure compliance is achieved at the closest receptors.

7.3.3 Cultural Heritage

An Aboriginal Cultural Heritage Assessment Report (ACHAR) was undertaken by OzArk Environment and Heritage in accordance with the SEARs requirements- refer **Appendix K**.A field survey was undertaken on 12 July 2024 by OzArk Archaeologist, Tenae Robertson, with a representative of the Mudgee Local Aboriginal Land Council. Three previously unrecorded Aboriginal sites were recorded:

- Two of which are manufactured from quartz (Tallawang IF1 and Tallawang IF3).
- One manufactured from mudstone (Tallawang IF2).

Refer to accompanying photographs of the Aboriginal artefacts found, all located outside of the areas proposed for quarrying and quarry-related purposes.

Quartz flake at Tallawang 1

Mudstone flake at Tallawang 2

Quartz flake at Tallawang 3

PHOTOGRAPHS 7.2-7.4: Aboriginal artefacts found all outside of proposed quarry footprint.

The recorded artefacts were all recorded in areas where the land had been severely affected by erosion which had resulted in deep gullying along drainages running-off from the hill crest, and larger washout erosions. The newly recorded sites are isolated finds consisting of unmodified flakes which are considered to be common based on the known archaeological characteristics of the region. No intangible Aboriginal cultural values specific to the study area have been identified through consultation with the Aboriginal community. As each of the recorded Aboriginal sites occur outside of the proposed quarry impact footprint, there are no identified impacts which may cause harm to the recorded Aboriginal sites at this time. However, their proximity to the proposed works means that they may be vulnerable to inadvertent harm, and the project should take into consideration the location of the known Aboriginal sites and avoid harm to the objects. The findings and recommendations of the OzArk ACHARS are as follows:

1. *" The proposed work may proceed at the study area without further archaeological investigation.*
2. *Contractors should be provided with the locations of 36-2-0631 (Tallawang IF1), 36-2-0632 (Tallawang IF2), and 36-2-0633 (Tallawang IF3). Each site should be marked on all plans as no-go areas. Should the parameters of the proposal extend beyond the assessed areas, then further archaeological assessment may be required.*
3. *Temporary fencing should be placed around 36-2-0631 (Tallawang IF1), 36-2-0632 (Tallawang IF2), and 36-2-0633 (Tallawang IF3) including a five metre buffer to ensure that the Aboriginal objects are not inadvertently harmed during the proposed work activities (see **Section 9.2**).*
4. *All land and ground disturbance activities must be confined to within the study area, as this will eliminate the risk of harm to Aboriginal objects that may be outside the study area.*
5. *This assessment has concluded that there is a low likelihood that the proposed work will harm Aboriginal cultural heritage items or sites, as long as the management measures are adhered to. If during work, however, Aboriginal artefacts or skeletal material are noted, all work should cease and the procedures in the Unanticipated Finds Protocol (Appendix 3) and the Unanticipated Skeletal Remains Protocol (Appendix 4) should be followed.*
6. *Inductions for work crews should include a cultural heritage awareness procedure to ensure they recognise Aboriginal artefacts."*

The above recommendations above form part of the mitigation strategies proposed for this project.

7.3.4 Hazard and Risk Potential

Overview

The risks associated with the proposed Gulgong Quarry project have been considered in this EIS having regard for the nature of the proposed quarry development, the mitigation strategies that form a part of the Project, and certainty in the likely impacts arising (*Weal v Bathurst City Council & Anor* [2000] NSWCA 88).

The mitigation measures proposed for the project are considered to be practical, feasible and reasonable from a cost, planning and design perspective, and form a fundamental part of this Project. It is important to note that a zero risk precautionary standard is inappropriate. Instead, precautionary measures should be taken to avert the anticipated threat of environmental damage, but they should be proportionate- per Preston J in the NSW Land & Environment Court case *Telstra Corporation Ltd v Hornsby Shire Council* [2006] NSWLEC 33.

The SEARs requires the following risks to be considered as a part of the EIS assessment:

> "*Hazards – including an assessment of the likely risks to public safety, paying particular attention to potential bushfire risks and the transport, storage, handling and use of any hazardous or dangerous goods.*"

The risk rating matrix commonly used is illustrated in accompanying Table 7.7, being a modified version of Standards Australia *HB 203-2006* Table 4(C) and *HB 89-2013*. The Risk Level for each activity, relevant to construction activities listed in the Planning Secretary's SEARS advice is then rated as Low (L), Moderate (M), High (H) or Extreme (E). It is similar to, but not the same as, the risk ranking matrix used by the DPI in its *Land Use Conflict Assessment Guide*.

Table 7.7: Risk Rating Matrix

(Source: modified after Standards Australia HB 203-2006 Table 4(C) and HB 89-2013)

Matrix	**Consequences (C)**				
Likelihood (L)	**1** Insignificant	**2** Minor	**3** Moderate	**4** Major	**5** Catastrophic
A (Almost Certain)	H	H	E	E	E
B (Likely)	M	H	H	E	E
C (Possible)	L	M	H	E	E
D (Unlikely)	L	L	M	H	E
E (Rare)	L	L	M	H	H

LEGEND RISK LEVEL

E	***Extreme***- *Immediate action required.This level of risk likely to preclude any development proceeding*
H	***High***- *In-depth assessment required.Ultimately, may result in development not proceeding*
M	***Moderate***- *Management responsibility (specified).Unlikely to preclude development*
L	***Low***- *Routine management required only. Unlikely to have significant impacts*

This section of the EIS provides a preliminary assessment of the hazards, risk and health aspects of the proposed quarry in accordance with the issued SEARs, as well as with relevant legislation and guidelines. The risks have been assessed having regard for the specific nature of the proposed quarry operations proposed on the Project Site for the quarry project, and after incorporating the mitigation measures as described in the EIS document.

Through the implementation of the various proposed management and mitigation measures a residual (ie. mitigated) risk rating for the project has been derived. In most cases the potential environmental impacts have been reduced significantly, and in all cases to an acceptable level (ie. Low to Moderate-Low). The accompanying Table 7.8. illustrates residual risk remaining, after these mitigation measures have been implemented .

- Explosives and blasting: Possible (category D likelihood, Moderate consequence, Category B risk).
- Instability of quarry working faces /benches (category D likelihood, Moderate consequence, Category B-C risk).
- Transportation of dangerous goods and hazardous materials, impact on roads (category D likelihood, Moderate consequence, Category B risk).
- Storage of dangerous goods and hazardous materials on site (category D likelihood, Moderate consequence, Category C risk).

- Contamination of the site, existing or proposed (category D-E likelihood, Minor consequence, Category C risk).
- Natural hazards, like bushfire risk (category E likelihood, Minor consequence, Category C risk).
- Nearness to utlities, like power lines (category E likelihood, Moderate consequence, Category C risk).
- Unauthorised access to the quarry (category E likelihood, Minor consequence, Category C risk).

Table 7.8: Potential Hazardous or Offensive Risks of Quarry project

Risk Item	Assessment	Risk level
Explosives and blasting, noise, flyrock impacts	▸ *No explosives kept on site- to be provided by blasting specialists for each blast event. Quarry sufficiently removed from highway- no sentries required.* ▸ *Blasting at the quarry is conducted by a licensed blast contractor and each blast monitored in accordance with EPA guidelines for blast vibration and overpressure. Appropriate stemming and blast planning to be employed, to prevent flyrock and excessive air blast overpressure. Notification of surrounding landowners/occupiers within 2 km of the quarry pit prior to blast events.* ▸ *Having regard for the above, and the limited number of surrounding residences proximate to the project site, the safety and management procedures proposed, the risk to public safety and amenity from blasting and quarry noise will be minimal. No potentially offensive noise generated.*	*MOD-LOW*
Quarry stability	▸ *The overall slope proposed for the quarry batters will be approximately 51 degree slope with benches angled at 70 degrees- a design outcome that satisfies current quarry design 'best practice'.* ▸ *Stability of the quarry and surround areas would be monitored during the project, to ensure a safe work environment.*	*MOD-LOW*
Transportation of hazardous/ dangerous goods, roads impacts	▸ *All explosives to be transported by experienced blasting contractors in accordance with AS 2187.2-2006 "Explosives - Storage, Transport and Use".* ▸ *Intersection with Castlereagh Highway to be upgraded to TfSW requirements, to ensure traffic safety and efficiency. A low (max.30km/hour) speed limit to be applied to waste haulage vehicles on quarry site.*	*MOD-LOW*
Storage of dangerous goods	▸ *The only hazardous materials to be stored at the quarry will be restricted to diesel fuel and hydrocarbon products. Any fuel storage will be self-bunded and in full conformance to the Australian Standard AS1940-2017.*	*LOW*
Contamination	▸ *The project site has an acceptable low level of risk for site contamination and is suitable for its proposed use as a quarry.* ▸ *The likelihood of contamination resulting from the proposed quarry operations is considered extremely low as the proposed quarrying will remove naturally occurring rock from site only, without introducing any new material.*	*LOW*
Bushfires, flooding, drainage	▸ *The project site is not identified by the RFS as comprising bushfire prone land. The Project would not alter the bushfire risk of the proposed quarry site.* ▸ *A raft of fire safety measures are proposed- refer to EIS Sections 3.11 and 4 for details. Access to be provided to RFS fire vehicles in the event of a bushfire.* ▸ *The project site is free from flooding, with appropriate surface water management measures proposed.*	*LOW*
Utlities	▸ *In accordance with safety advice from Essential Energy, a small section of the internal haul route will be moved by a further 2 metres away from the power lines that traverse the site.*	*LOW*
Unauthorised access	▸ *The quarry site is protected by fencing and a locked gate on the eastern boundary, effectively limiting unauthorised, out-of-hours public access.*	*LOW*

Matters relating to characterisation as a potentially hazardous or offensive industry or occupational health and safety are dealt with under the following separate sub-headings.

Potentially Hazardous or Offensive Industry

State Environmental Planning Policy (Resilience and Hazards) 2021 consolidates and repeals the provisions of SEPP 33 – Hazardous and Offensive Development- the latter no longer referred to in the SEPP, nor is *Hazardous and Offensive Development Application Guidelines: Applying SEPP 33 (Hazardous and Offensive Development Guideline – SEPP 33* specifically referred to in the SEPP.

State Environmental Planning Policy (Resilience and Hazards) 2021 aims to achieve a number of outcomes, including but not limited to the following:

- Amend the definitions of hazardous and offensive industries where used in environmental planning instruments.
- Renders ineffective a provision of any environmental planning instrument that prohibits development for the purpose of a storage facility on the ground that the facility is hazardous or offensive if it is not a hazardous or offensive storage establishment as defined in this Policy. NOTE: The Mid-Western LEP 2012 prohibits "storage facilities" in the RU1 zone, however "extractive industries" are a permissible use in the RU1 zone. Any storage facility proposed within the quarry is ancillary to, and subservient to, the dominant use of an extractive industry.
- To ensure that in determining whether a development is a hazardous or offensive industry, any measures proposed to be employed to reduce the impact of the development are taken into account.

The above SEPP defines potentially hazardous and potentially offensive industries as follows:

> "***potentially hazardous industry*** *means a development for the purposes of any industry which, if the development were to operate without employing any measures (including, for example, isolation from existing or likely future development on other land) to reduce or minimise its impact in the locality or on the existing or likely future development on other land, would pose a significant risk in relation to the locality—*
>
> *(a) to human health, life or property, or*
>
> *(b) to the biophysical environment,*
>
> *and includes a hazardous industry and a hazardous storage establishment.*
>
> ***potentially offensive industry*** *means a development for the purposes of an industry which, if the development were to operate without employing any measures (including, for example, isolation from existing or likely future development on other land) to reduce or minimise its impact in the locality or on the existing or likely future development on other land, would emit a polluting discharge (including for example, noise) in a manner which would have a significant adverse impact in the locality or on the existing or likely future development on other land, and includes an offensive industry and an offensive storage establishment."*

The Guidelines for this SEPP state that "*the key consideration in the assessment of a potentially offensive industry is that the consent authority is satisfied there are adequate safeguards to ensure emissions from a facility can be controlled to a level at which they are not significant*."

It is considered that the project will not be hazardous or offensive to the surrounding area as:

- Management practices on the site during operation will ensure that there is no build up or emission of hazardous material on or from the site, as required by the Guidelines. The operator of the site will implement measures to limit any potential hazardous impact.
- All explosives and detonators will not be stored on the development site. Contractors, when attending the site during blasting, will bring all explosives and equipment required. Therefore, there is no permanent onsite storage, handling and management procedures required for explosives. The drill and blast contractor is responsible for storage and transport of explosives in accordance with statutory requirements.
- The blasting quarry rock is to be carried out in accordance with EPA blast vibration and overpressure criteria.
- The proposed quarry, including quarrying, processing of quarry rock and transport of quarried material off site is not considered to be offensive as it is to be carried out within relevant EPA noise limits.

- An “extractive industry” is not identified as being potentially hazardous or potentially offensive in the Mid-Western LEP 2012.
- The only hazardous materials to be stored at the quarry will be restricted to diesel fuel and hydrocarbon products. Any fuel storage will be self-bunded and in full conformance to the Australian Standard AS1940-2017 including appropriate separation distances from buildings or other storages of other combustible liquids.
- The storage and transport of hazardous materials is not considered to be hazardous, and a Low risk has been determined accordingly- refer Table 7.7.
- Specialist blasting contractors to be employed, who will prepare a drill and blast plan for each blast, to ensure safe practices and procedures for blasting operations, including the minimisation of flyrock hazard risk, the safety and minimisation of impact on on-site workforce, quarry plant and the environment, and compliance with applicable legislation. An exclusion zone to be provided for each blast.
- Based on the findings of this EIS, the project will not result in significant adverse impacts on the biophysical environment in the project locality, or on the existing or likely future development on other land.

Occupational health and safety

Responsible legislative compliance is fundamental to maintaining a safe workplace at any quarry. Under the provisions of the *Work Health and Safety (Mines & Petroleum Sites) Act 2013* quarry rock, stone or gravel is defined as a “mineral” and is thus covered by this Act and *Work Health and Safety (Mines and Petroleum Sites) Regulation 2022*.

All work health and safety practices at the proposed quarry- and other quarries in New South Wales- are regulated by the NSW Mines Regulator (currently called the NSW Natural Resources Access Regulator).

The operator will be the person responsible for ensuring that the quarry operations are run in a proper and safe manner.

The NSW Natural Resources Access Regulator has released health and safety guidelines for the operation of quarries in NSW, in the document entitled *Health and safety at quarries* ,dated November 2018. A work health and safety plan would be developed for the quarry, once approved,, addressing worker safety, hazard identification and risk management. This plan would cover matters including site safety procedures, contact details for all emergency services in the area, fire fighting procedures, personal protective equipment requirements, incident management and first aid procedures. All site employees, contractors and visitors will be educated on emergency response procedures required to be followed as a part of any site induction. Environmental hazard reporting will be promoted and encouraged amongst the workforce. Identified hazards will be entered into the incident reporting database with agreed controls and timeframes for completion and signed off by a Site Supervisor. A site-specific Pollution Incident Response Management Plan (PIRMP) will be implemented at the quarry, once approved.

Summary: Hazards and Risks

In view of the generally Low hazard risk of the development and the implementation of mitigation measures proposed (refer also to Section 4), the risk hazards or offensive impacts will be adequately minimised. The proposed quarry development is therefore not likely to pose any significant risk to neighbouring land uses or the environment generally. Therefore, the proposed quarry project is not considered a potentially hazardous or offensive development.

7.3.5 Waste

The quarry operator undertakes to take the corrective actions recommended by Ballpark Environmental. It is also noted that if quarrying is approved the environment protection license to be issued for extractive activities will include enforceable conditions prohibiting the disposal of any waste generated by the quarry operations on this site. All waste would be managed in accordance with the requirements of the *Waste Avoidance and Resource Recovery Act 2001*, the POEO Act, and the *Waste Classification Guidelines* (NSW EPA, 2014) and the principles of the waste management hierarchy. The quarry operator will be responsible for collecting recyclable material (waste oil, metal, glass, and plastic) for collection by Council or appropriate recycling contractor. Any non-recyclable domestic waste will be disposed of via the local council collection service.

7.3.6 Visual Impact

Overview: Landscape Character

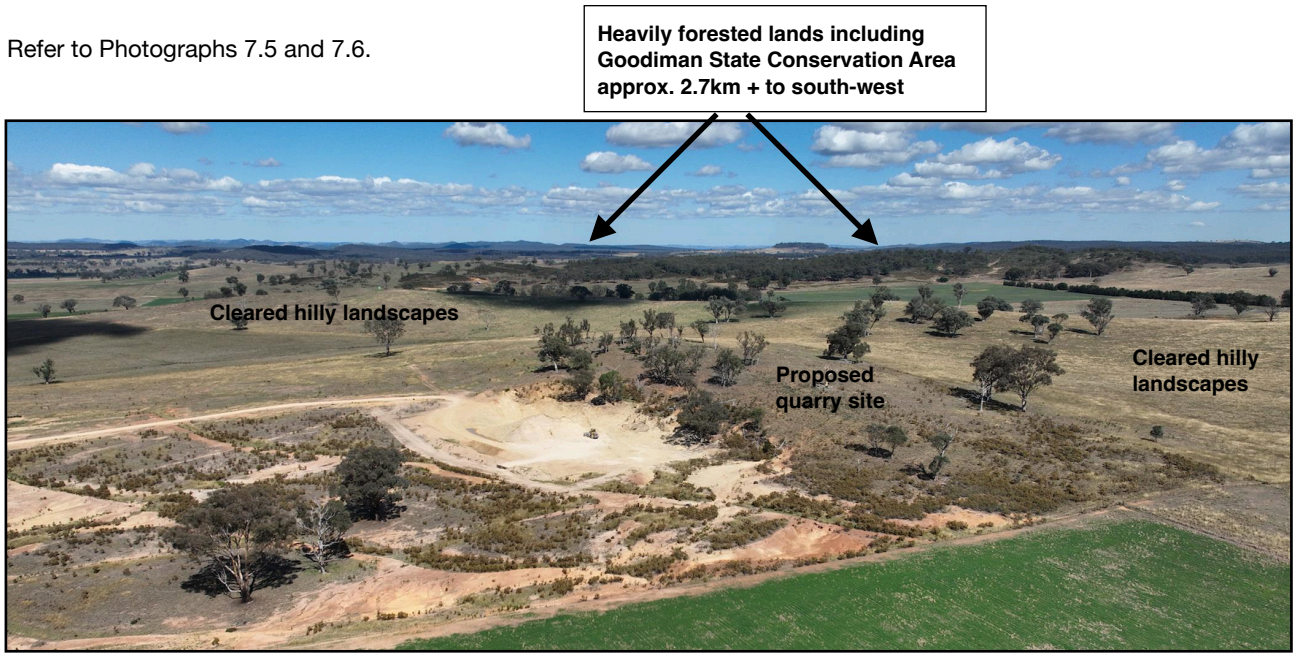
The landscape character and visual significance of land needs to be considered in the context of a range of factors, including landscape features, visual prominence and context in the overall landscape. The general visual character of land is established through an assessment of its topographic characteristics, land use and settlement pattern, ability to be viewed by others and vegetation cover.

Typically, quarries can have a visible impact on the landscape, if located in an exposed position. In this case, however, the proposed quarry is visually shielded or obscured from view from all but the neighbouring residence to the north-west by intervening topography and/or forested lands. Glimpses of the existing quarry on the eastern side of the elevated knoll are possible from Castlereagh Highway. It is also noted that the site of the proposed quarry, including internal haul route, is not within an area identified as possessing any visual sensitivity or landscape value (source: Mid-Western Regional Local Environmental Plan 2012 Flood Planning Map Active Street Frontages Map Visually Sensitive Land Maps, Mid-Western Regional Local Environmental Plan 2012 Heritage Map- Sheet HER_005).

Landscapes found within the near vicinity of the proposed quarry site predominantly comprises:

- Cleared, modified pastures used for Intensive agricultural production activities, including cropping and intensive grazing, found at the base of a hill system that runs parallel to the Castlereagh Highway and including broader alluvial landscapes closer to Tallawang Creek. Scattered patches of vegetation are visible along river and creek lines and dense roadside vegetation can be observed along stretches of the Castlereagh Highway to the immediate north and south of the project site. Considered to be of High scenic quality.
- Low hills, in the main cleared to accommodate agricultural activity in the form of lower intensity grazing of livestock- considered to have a Low- Moderate Scenic Quality. The project site forms a part of this landscape.
- Adjoining the above cleared hilly areas are remnant woodlands and undulating hillsides which adjoin more densely vegetated lands including surrounding National Parks and Conservation areas- the latter considered to be of High scenic quality, the former of Moderate scenic quality.

Refer to Photographs 7.5 and 7.6.



PHOTOGRAPH 7.5: The site of the proposed quarry is a low elevated knoll forming a part of cleared hilly lands used for low intensity grazing of livestock of Low-Moderate scenic quality and sensitivity. The hilly lands are backed by more densely vegetated lands- seen in the background. View from north-east looking south-west. The eastern side of the knoll is already being worked as a quarry.

(Source: April 2024 aerial photograph by O'Ryan Geospatial)

PHOTOGRAPH 7.6: Undulating to flat landscapes used for intensive agriculture are generally located to the east of the project site- in background. The site of the proposed quarry is a low elevated knoll forming a part of cleared hilly lands used for low intensity grazing of livestock- in foreground. View from south looking north and east.

(Source: July 2024 aerial photograph by O'Ryan Geospatial)

Visual Assessment Criteria and Landscape Setting

The aim of the landscape and visual impact assessment is to identify, evaluate and predict potential key visual impacts arising from the proposed quarry development. The assessment of visual impact combines sensitivity with predicted magnitude of change to establish the significance of residual landscape and visual effects. The visual quality of a site can be assessed in terms of the relative scenic quality of that landscape and the degree of visual prominence.

Scenic quality is determined by classifying the natural landscape features into three classes on the basis of their variety. These are as follows:

High Scenic Quality - Distinctive Variety

Moderate Scenic Quality - Common Variety

Low Scenic Quality - Minimal Variety

The method of classification is based on the assumption that scenic quality increases as relief and topographic ruggedness increases, vegetation become more diverse, natural and agricultural landscapes increase and altered landscapes decrease.

- Landscapes with a High Scenic Quality includes landform or land cover of outstanding, unusual, distinctive or diverse character eg. the intensively cropped agricultural land in the locality- refer Photograph 2.7.
- Moderate Scenic Quality landscapes includes landform or land cover which tend to be common throughout the region and are not outstanding in visual quality.
- Landscapes with a Low Scenic Quality include those areas with features of minimal diversity or variety and includes all areas not found under the other classes.

The west-facing side of the elevated knoll on the Project Site is considered to have a Low Scenic Quality, based on the fact that it is a relatively low hill that is obscured from view from all but one rural dwelling- and the view from this dwelling is oblique, and screened by intervening vegetation. The east-facing side of the elevated knoll is considered to have a Low- Moderate Scenic Quality, based on the fact that it presents as a relatively low hill backed by more visually dominant, more elevated forested lands in the near distance, with only glimpses possible from the highway when a short distance away (within less than 1km) screened in large measure by intervening topography and vegetation outside of the immediate viewing range.

Landscape sensitivity relates to the nature of the landscape itself, its scenic qualities, and sensitivity to change. Visual sensitivity is the ability of the landscape to be seen by others and and sensitivity to change. The landscape and visual sensitivity criteria are summarised in the accompanying Table 7.9.

Table 7.9: Landscape and visual sensitivity factors considered

Sensitivity Class	Landscape Sensitivity Criteria	Visual Sensitivity Criteria
High	*Landscape characteristics or features with little or no capacity to absorb change without fundamentally altering their present character* *Landscape designated for its international or national landscape value* *Outstanding example in the area of well cared for landscape or set of features.*	*Dwellings with views orientated towards the proposed development.* *Users of outdoor recreational facilities, on recognised national cycling or walking routes or in national designated landscapes*
High-Medium	*Landscape characteristics or features with a low capacity to absorb change without fundamentally altering their present character* *Landscape designated for regional or county-wide landscape value where the characteristics or qualities that provided the basis for their designation are apparent. Good example in the area of reasonably well cared for landscape or set of features*	*Road users in nationally designated landscapes or on recognised scenic routes, likely to be travelling to enjoy the view.* *Users of outdoor recreational facilities, in locally designated landscapes or on local recreational routes that are well publicised in guide books*
Medium	*Landscape characteristics or features with moderate capacity to absorb change without fundamentally altering their present character Landscape designated for its local landscape value or a regional designated landscape where the characteristics and qualities that led to the designation of the area are less apparent or are partially eroded or an undesignated landscape which may be valued locally – for example an important open space* *An example of a landscape or a set of features which is neutral or mixed character*	*Dwellings with oblique views of the proposed development.* *Users of primary transport road network, orientated towards the development, likely to be travelling for other purposes than just the view.*
Medium-Low	*Landscape characteristics or features which are reasonably tolerant of change without determent to their present character. No designation present or of little local value. An example of an un-stimulating landscape or set of features*	*Primary transport road network users likely to be travelling to work with oblique views of the development or users of minor road network.* *People engaged in active outdoor sports or recreation and less likely to focus on the view.*
Low	*Landscape characteristics or features which are tolerant of change without determent to their present character No designation present or of low local value. An example of monotonous unattractive visually conflicting or degraded landscape or set of features*	*Road users on minor access roads travelling for other purposes than just the view.* *People engaged in work activities indoors, with limited opportunity for views of the development.*

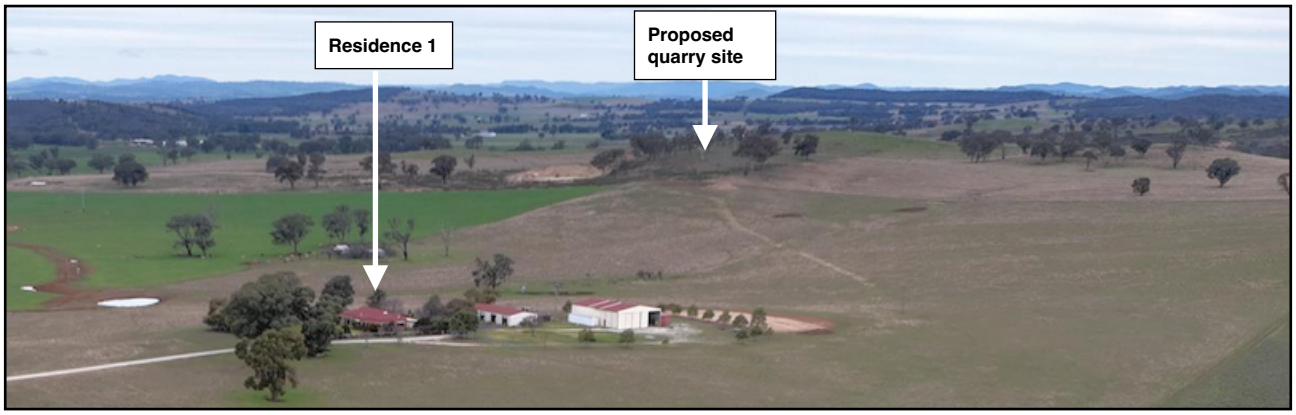
Given the characteristics of the proposed quarry site it is concluded that:

- The eastern side of the elevated knoll, visible from the highway, and northern and western side of the knoll, capable of being viewed from the nearest residence (located 788m to the north-west) are is of Medium-Low landscape and visual sensitivity, is reasonably tolerant to change.
- The western sides of the elevated knoll, not visible from either the highway of from the nearest residence, are of Low landscape and visual sensitivity, tolerant to change.

Views of the Project Site

As a basic visual assessment principal, any type of development in the landscape will become less perceptible the greater the distance that the viewer is removed from the development. A site located approximately 2km or less from a viewer is considered close enough to allow identification of significant detail. Any positions within this range with open uninterrupted views of a development would generally receive the greatest visual impacts. The visibility of the project site from nearby rural residences and from the highway (refer **Figure 7.1**) is as follows:

- Residence 1:The northern and western sides of the project site are visible from the the nearest residence, located 788m to the north-west.
- Residence 2: The project site is not visible from the residence located approximately 1,415m to the north-west- views being obscured by the ridge on which Residence 1 sits.
- Residence 3: Views of the project site from this residence, located approximately 1,345m to the north-east, are screened and/or obscured by intervening vegetation stands.
- Residence 4: Views of the project site from this residence, located approximately 1,460m to the north-east, are obscured by intervening vegetation.
- Residence 5: Views of the project site from this residence, located approximately 1,900m to the north-east, are obscured by intervening vegetation and topography.
- Views from highway traveling north. Views of the eastern side of he elevated knoll only visible from about 660m away, screened by stands of trees along the highway for the first 500m after that. Brief uninterrupted glimpse only of elevated knoll possible when directly opposite- a minor view only. Similarly, uninterrupted glimpses only of the knoll are possible when traveling south when the viewer is almost directly opposite.



PHOTOGRAPH 7.7: Views of the northern and western sides of the elevated knoll are possible from Residence 1, located 788m away to the north-west. Some localised screening by vegetation in an around this dwelling.

(Source: July 2024 aerial photograph by O'Ryan Geospatial)

PHOTOGRAPH 7.8: Views of the elevated knoll are screened by intervening vegetation from Residences 3, 4 and 5.

(Source: July 2024 aerial photograph by O'Ryan Geospatial)

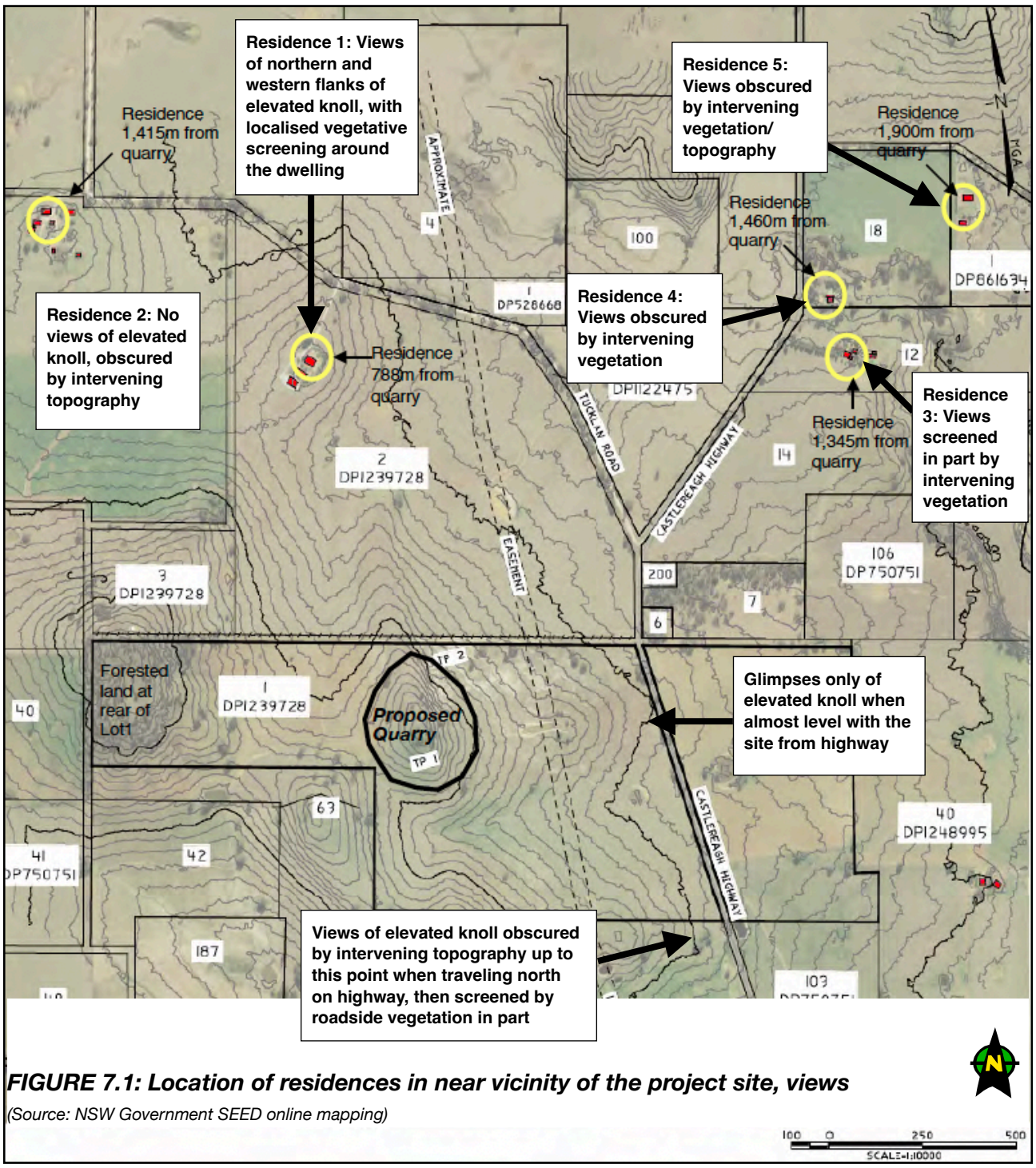


FIGURE 7.1: Location of residences in near vicinity of the project site, views

(Source: NSW Government SEED online mapping)

Visual Assessment Planning Principles

The NSW Land and Environment Court has established planning principles relating to visual impact assessment. This includes planning principles relating to the assessment of view impacts, as per the judgements contained in *Tenacity Consulting v Warringah* [2004] NSWLEC 140 (*Tenacity*) and *Rose Bay Marina Pty Limited v Woollahra Municipal Council and anor [2013]* NSWLEC 1046. These two key Court cases are considered in the following. *Tenacity* sets out the planning principle for considering the acceptability of the impact of a proposed development on the views enjoyed from private property in the vicinity of the development.

PHOTOGRAPH 7.9: View of the elevated knoll, the site of the proposed quarry, are possible from Residence 1, located 788m away to the north-west. Some localised screening by vegetation in an around this dwelling. The knoll presents as a low rise landform of no visual prominence. Proposal involves quarrying being undertaken behind a topographic barrier, and progressive lowering of hill below ground level, with no quarrying visible. Assessed LOW visual impact.

PHOTOGRAPH 7.10: View of the elevated knoll viewed from near Tuklan Road/Castlereagh Highway intersection. The knoll presents as a low rise landform of minor visual prominence. Proposal involves quarrying being undertaken behind a topographic barrier, and progressive lowering of hill below ground level, with no quarrying visible. Assessed LOW visual impact.

In this regard the proposed quarry development does not block views considered further in the following. The visual impact assessment framework adopted here is broadly consistent with (but not identical to) the matters raised for consideration in *Tenacity*.

The steps that the Court has set down for determining the acceptability of the impact of a development on views are summarised in the following Table 7.10.

Table 7.10: View Impact Assessment

Visual Assessment Steps/ Considerations	Relevance to Proposed Quarry Development
Step 1: identify the nature and scope of the existing views, including: ➢ *Nature and extent of obstruction of view (by the development).* ➢ *Elements of the view, important elements within the view.* ➢ *Whether the change in view is temporary or permanent*	*The elevated knoll proposed for the quarry project is a low topographic feature in the overall landscape, of no visual prominence. The existing quarry workings are able to be viewed from the highway.* *Views of the elevated knoll are shielded from view from all residences in the immediate locality by intervening trees and/or topography- with the exception of the nearest residence to the north-west (788m from quarry) and residence to the north-east (1,345m from quarry).* *Views from both of these rural residences is screened in part by vegetation surrounding each dwelling (in the case of the nearest residence 788m from quarry) or by intervening vegetation (in the case of the nearest residence to the north-east, located 1,345m from quarry. Refer Photographs 7.7- 7.9.* *From the nearest residence to the north-west glimpses are also possible of the recent excavation work undertaken by this northern neighbour to extract hard rock found near the common boundary, proximate to the elevated knoll.* *No views are being blocked by the proposed quarry development.* *The quarry design allows for quarrying to commence in the south-east corner of the site at depth. This work should not be visible from the nearest residence to the north-west. The quarry design provides for the removal of a currently exposed quarry working face.* *However, the temporary stockpiling of topsoil/overburden on the existing borrow pit will be visible- but only for a short time until sufficient depth of quarrying is achieved in Stage 1. In summary, quarrying will not be visible from any nearby residence.* *Occasional views possible of quarry truck traffic entering and leaving the site.* *The later stages of the quarry involve quarrying to continue at depth, out of sight from any nearby residence, progressively removing the knoll from behind. The loss of the knoll will be a gradual visual impact.* *The site will be revegetated once quarrying is completed. The landform will be altered in that the elevated knoll will have been removed and replaced with a lower topography, all be it once that will be vegetated.*
Step 2: identify the locations from which the potentially interrupted view is enjoyed.	*Refer to the above*
Step 3: Identify extent of the obstruction at each relevant location.	*No obstructed views. Impacts considered to be acceptable.*
Step 4:identify the intensity of public use of those locations where that enjoyment will be obscured, in whole or in part, by the proposed private development.	*No obscuring of views from Castlereagh Highway or other public places—considered acceptable.*
Step 5: the importance of the view to be assessed.	*Low/Moderate scenic quality and landscape sensitivity.*

The visual impact assessment criteria are set down in accompanying table 7.10.

Table 7.10: Visual Impact Assessment Criteria

Visual Impact	Significance of visual and landscape impact
Low	*The development would cause very minor changes to the existing view or landscape. Development would either not be visible or barely visible, with minor changes in the shape of the overall topographic panorama evident. Small area only affected, with no significant adverse impact on overall visual character. Impacts capable of being mitigated or offset by beneficial impacts.*
Moderate	*The development would cause minor changes to the existing view or landscape. Noticeable change to a significant proportion of the landscape, affecting some key characteristics and the experience of the landscape, and introduction of some uncharacteristic elements. Moderate impact on visual character. Impacts typically capable of mitigation in part or whole.*
High	*The changes to the landscape and/or views would result in extensive, noticeable change and introduction of many incongruous elements into the landscape. Development highly visible within a direct line of sight from nearby residences and nearby public viewing places, typically within 1km from operations. Visual impacts not capable of being mitigated, with impacts more than likely being more permanent in nature.*

It is also relevant to note that the visual impacts associated with nearby renewable energy projects, including EnergyCo's recently approved transmission line project, will be significant. In contrast, the visual impact of the proposed quarry project will be very small relative to these projects. The visual impact of these projects will transform the character of the rural areas so affected- not the case with the proposed quarry project.

Based on the above, quarrying within the pit would not be visible from any nearby residence, being effectively shielded from view. The eastern side of the knoll is set well back from the highway, with the view of this landform feature appreciated by motorists and their passengers for only a fleeting moment when near the site. As such, it is concluded that the Project would have a negligible-Low impact on the visual amenity of people living in or traveling through the landscape, or of the surrounding area, based on the visual impact assessment criteria set down in Table 7.10, in particular having regard for the following. The proposed removal of the elevated knoll would be a noticeable change, however:

- The elevated knoll is an unremarkable landform feature of no visual prominence, with a Low-Moderate visual quality and landscape sensitivity, and is not a key element of the landscape.
- The proposed quarry site is not identified in the Council LEP or DCP as forming a part of any significant landscape. Related to this point, there is no obligation for all of the land in the RU1 zoned area to be only rolling fields of green. The range of other permissible uses allowed in this zone make that plain. Moreover, the eastern side of the elevated knoll has been used for the purposes of quarrying for many decades.
- Relative to the renewable energy projects approved or proposed vin the locality, a small area of land is proposed to be quarried, with a Low visual impact. The proposed quarry, confined to only a small area with limited visibility from nearby residences has a Low visual impact only.
- The removal of the knoll will be a gradual, rather than an abrupt visual impact. As well, there will be a small change only to the overall topographic panorama, with no significant adverse impact on overall visual character.
- All quarrying is proposed to be undertaken at depth and working behind the topography, shielded from view- refer **Figure 3.2**. No views will be possible from any local vantage point of the working quarry face or quarry pit. As such, the overarching landscape character of the locality will not be materially altered due to the majority of disturbance occurring below existing ground level.
- The proposed progressive rehabilitation of the quarry benches with vegetation will soften the visual impact associated with the loss of the elevated knoll.

In summary, the visual impact of the proposed quarry is considered to be acceptable having regard to the planning, physical and visual context of the site and the quarry development proposed. No further mitigation measures are considered required in order to further reduce the visual impact of the Project.

7.3.7 Water

Overview

Martens and Associates, engineers and hydrologists, was engaged by Outline Planning Consultants Pty Ltd to prepare a Water Management Report for the site of the proposed Gulgong Quarry project, as well as an assessment of hydrology, as a component of an Environmental Impact Statement (EIS), to address the Secretary's Environmental Assessment Requirements (SEARs) for the proposed quarry operation. Refer also to **Appendices F** and **G**.

The key features of the project that have the potential to impact upon water resources include:

- The proposed quarry operations including drilling and blasting, excavation, transport and processing and haulage of material off site.
- Progressive deepening of the quarry down to RL496m AHD, with an additional 5m of depth provided at the sediment basin.
- The requirement for water at the quarry for processing of material and dust suppression. In this regard it is noted that quarrying will be undertaken at depth, relatively sheltered from winds. Moreover, the first 100m length of the internal access road from the highway will be sealed, to reduce dust potential and reduce the need for water for dust suppression.
- Construction of additional infrastructure including sediment basin.
- Progressive rehabilitation of disturbed areas.

Final Landform

Following completion of quarrying activities the processing and stockpiling areas will be backfilled with stockpiled overburden and topsoil and revegetated for agricultural use. The final landform of the processing and stockpiling areas will be shaped to slow runoff and allow vegetation to establish to create a stable vegetated surface that produces clean runoff. The dirty water catchment drains and sediment drains will be maintained on the site until the site revegetation has fully established and no quarry ('dirty') water runoff is occurring. The final landform of the quarry infrastructure area will be shaped to create a free draining surface, with the sediment basin maintained as a source of water for stock. The main pit area will retain its final form, with some backfilling.

Capture of Quarry Runoff within Quarry

In accordance with 'best practice' stormwater management in quarries, the stormwater runoff from within the quarry pit ('dirty' water) will be collected and conveyed to the sediment basin located within the quarry pit. From time to time small silt traps may also be utilised to trap silt and sediment in localised parts of the quarry.

The dirty water catchment drains and sediment basin system have been designed to convey and store flows in accordance with *Managing Urban Stormwater- Soils and Construction-Volume 2E Mines and Quarries* (DECC, 2008, Landcom 2004) and *NSW MUSIC Modelling Guidelines* (2015) for the various stages of the quarry development, as calculated by Martens and Associates- refer **Appendix G**.

The catchment sizes draining to the sediment basin are:

- 4.98ha for Stage 1. Minimum sediment basin size of 2.6ML.
- 7.34ha for Stages 2 and 3. Minimum sediment basin size of 4.2ML.

The sediment basin will be constructed prior to the commencement of Stage 1 quarry operations. It will be expanded before each subsequent stage, as per the proposed size for each stage of the project. This approach ensures that all contaminated water generated onsite is effectively collected and treated. Water collected in the sediment basin will be used for process water and dust suppression on the haul road.

Consistent with Section 6.1 of *Managing Urban Stormwater- Soils and Construction-Volume 2E Mines and Quarries* (DECC, 2008, Landcom 2004) the following design parameters were adopted for the purposes of calculating sediment basin sizing:

- Type D soil classification.
- Soil hydrologic group D.
- Erodibility (K-factor) of 0.05.
- Volumetric runoff coefficient of 0.74.
- A 95th percentile 5-day design criteria was adopted (50.7mm).

The required sediment basin volume was determined as:

V = settling zone + sediment storage zone

Sediment Basin Calculations: Stage 1

The storage requirements for the sediment basin in each of the proposed quarry stages was calculated in accordance with the equation provided in Section 6.3.4(i) of *Managing Urban Stormwater- Soils and Construction-Volume 2E Mines and Quarries* using the adopted default parameters. The capacity of the sediment storage zone was calculated as 50% of the settling zone volume. The calculations for the sediment basin for Stages 1, 2 and 3 are detailed in Table 7.11.

Table 7.11: Sediment Basin Volume Calculations for Each Quarry Stage

Quarry stage	Calculation item	Formula and calculation	Result
Stage 1	*Settling Zone*	*10 x Cv x A x R = 10 x 0.74 x 4.98 x 50.7*	*1,868 m^3*
	Storage Zone	*50% of Settling Zone*	*934 m^3*
	Total Sediment Basin Volume	*Settling Zone + Storage Zone*	*2,803 m^3 2,900 m^3 (rounded up)*
Stages 2 & 3	*Settling Zone*	*10 x Cv x A x R = 10 x 0.74 x 7.34 x 50.7*	*2,754 m^3*
	Storage Zone	*50% of Settling Zone*	*1,377 m^3*
	Total Sediment Basin Volume	*Settling Zone + Storage Zone*	*4,131 m^3 4,200 m^3 (rounded up)*

(Source: Martens & Associates water balance assessment 2024)

Water Balance Assessment

A water balance model was employed by Martens and Associates to assess the overall water cycle for the quarry operations, considering the following components:

- Site Water Demand: Consideration of quarry operational water demands.
- Site Water Supply: Assessment of site water supply (surface water runoff).
- Site Water Balance: The balance of supply and demand is assessed based on a range of climatic conditions to determine the need for additional supply or to detail the excess water released to the environment.

Utilising climate data sourced from the Bureau of Meteorology (BoM) weather station located at Dunedoo (Station No. 64009) the water balance assesses the likely adequacy of site water assessing the following rainfall scenarios:

- 'Average' year: recorded rainfall 622.7 mm.
- 'Dry' year: recorded rainfall 389.8 mm.
- 'Wet' year: recorded rainfall 886.8 mm.

The site water balance for the proposed quarry at Stage 1-3 is summarised in Table 7.12.

Table 7.12: Quarry Water Balance Results (ML)- Non-Potable water

Rainfall Year	Catchment Runoff	Basin Evaporation	Production Water	Dust Suppression	Non-Potable Water Balance (ML)
Stage 1 Quarry					
Average	24.46	-1.36	10.00	0.9	12.2 (surplus)
Dry	15.03	-1.36	10.00	0.9	2.77 (surplus)
Wet	35.75	-1.36	10.00	0.9	23.49 (surplus)
Stage 2 & 3 Quarry					
Average	36.06	-1.97	10.00	0.9	23.19 (surplus)
Dry	22.16	-1.97	10.00	0.9	9.29 (surplus)
Wet	52.69	-1.97	10.00	0.9	39.82 (surplus)

(Source: Martens & Associates water balance assessment 2024)

The calculated sediment basins for each stage have been modelled to assess water supply adequacy. The water balance assessment (for each stage) demonstrates that for all modelled years (average, dry and wet) the site shall generate, capture and store sufficient runoff to provide for all non potable water demands (10.9 ML/year).

A potable water deficit is estimated at 50 kL(0.05ML)/year based on site staff requirements which can be provided via collected roof water and/or tanker delivery.

Erosion & Sediment Controls

The volume of sediment-laden stormwater runoff will be satisfactorily minimised by implementing the following erosion controls (per *Managing Urban Stormwater: Soils and Construction Volume 2E Mines and Quarries*:

- Minimise the area of exposed soils.
- Stabilise exposed areas.
- Reduce erosive effect of stormwater. The proposed water management system is to be operated as a closed system. All runoff from within the quarry is to be directed to the stormwater sumps/basins proposed, located in the upper and lower portions of the quarry. Sedimentation basin capacities have been designed to comply with those required by the 'Blue Book'. Water captured within the sedimentation basins may be immediately re-used for dust suppression within the quarry.
- Manage unsealed roads. Unsealed sections will be watered in order tor reduce dust nuisance.
- Protection of quarry product stockpiles from upslope stormwater flows. In order to protect stockpiles a suitable stormwater flow diversion system will be established immediately up-slope of any dedicated quarry stockpile area.
- Site exit controls. Site exit points will have appropriate controls such as shaker ramps to prevent off-site transport of suspended solids.
- 'Clean' water to be diverted where practicable around the working quarry area.
- Maintenance. All structures for erosion control will be maintained on a regular basis, and will be repaired as necessary. Sediment accumulation within the sedimentation zones is to be regularly assessed. Where sediment accumulation fills the specified sediment storage zone sediment is to be removed from that basin.

Groundwater

The hydrogeology within the site comprises of fractured or fissured extensive aquifer systems with low to moderate productivity. This has much to do with the geology of the site and surrounds. A number of faults occur in and around the site-refer to **Figure 7.2**. Notably, all groundwater bores in the locality are located within those areas mapped as containing Quaternary alluvial deposits (Qa), with no bores located elsewhere- refer Table 7.13, and **Figures 7.2-7.3**.

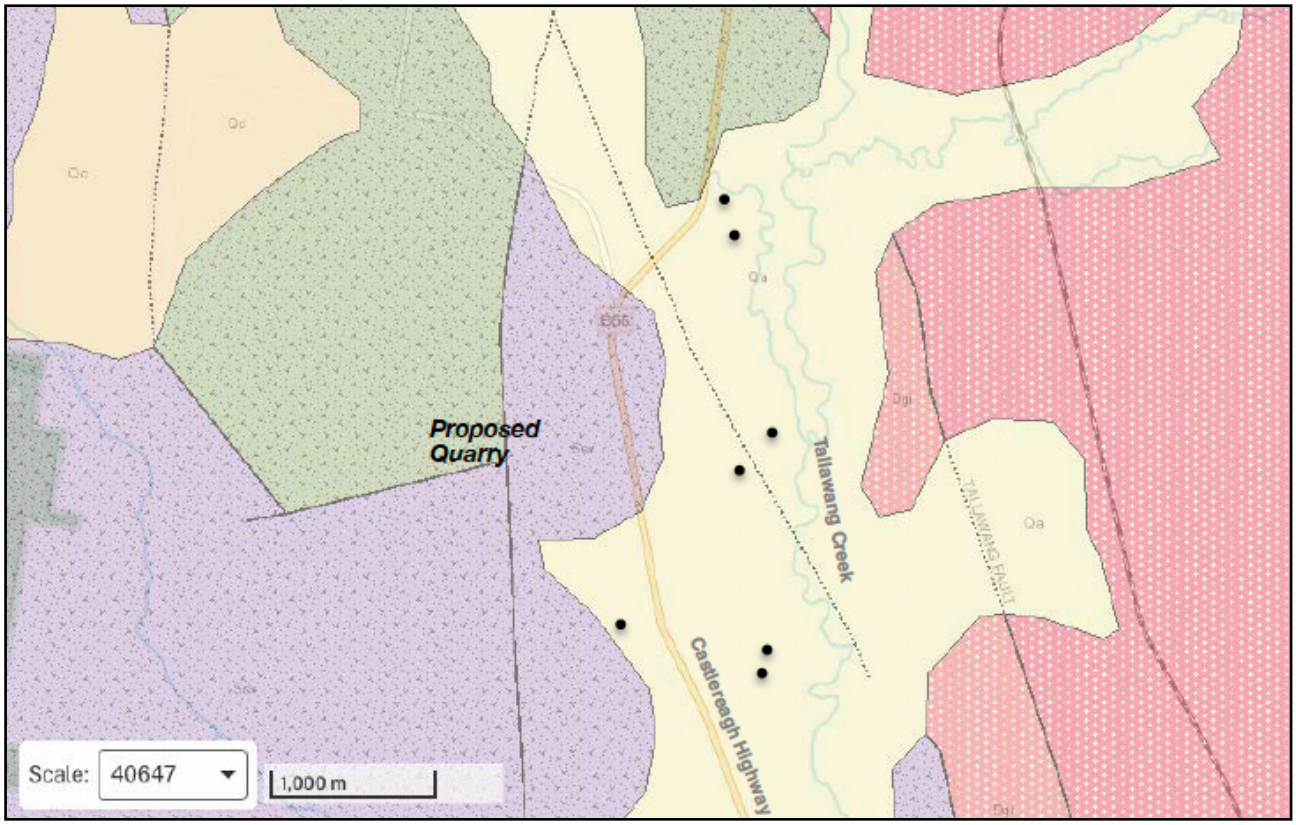


FIGURE 7.2: the site comprises of fractured or fissured extensive aquifer systems, reflected in the numerous faults occurring in the locality. The black dots represent licensed groundwater bores- all of which confined only to areas mapped as being Quaternary alluvial deposits (Qa).

(Source: NSW SEED mapping 2 August 2024)

Table 7.13: Licensed Groundwater Bores in Locality

Bore ID	Figure 2.13 Bore No.	Distance from proposed quarry (m)	Drilled Depth (m)	Standing Water Level (metres below ground level)
GW044690	4	1,429.1m	33.5m	No water encountered down to approx. RL 449m AHD
GW066655	2	1,437.6m	38.4m	21.3m, water at approx. RL464m AHD
GW801045	1	1,502.8m	45.7m	9.1m, water at approx. RL471m AHD
GW058156	3	1,505.5m	40.0m	No water encountered down to approx. RL 468m AHD

(Source: Ballpark Environmental July 2024 Preliminary Site Investigation Proposed Gulgong Quarry – Lot 1 DP1239728, 1848 Castlereagh Highway, Gulgong NSW 2852)

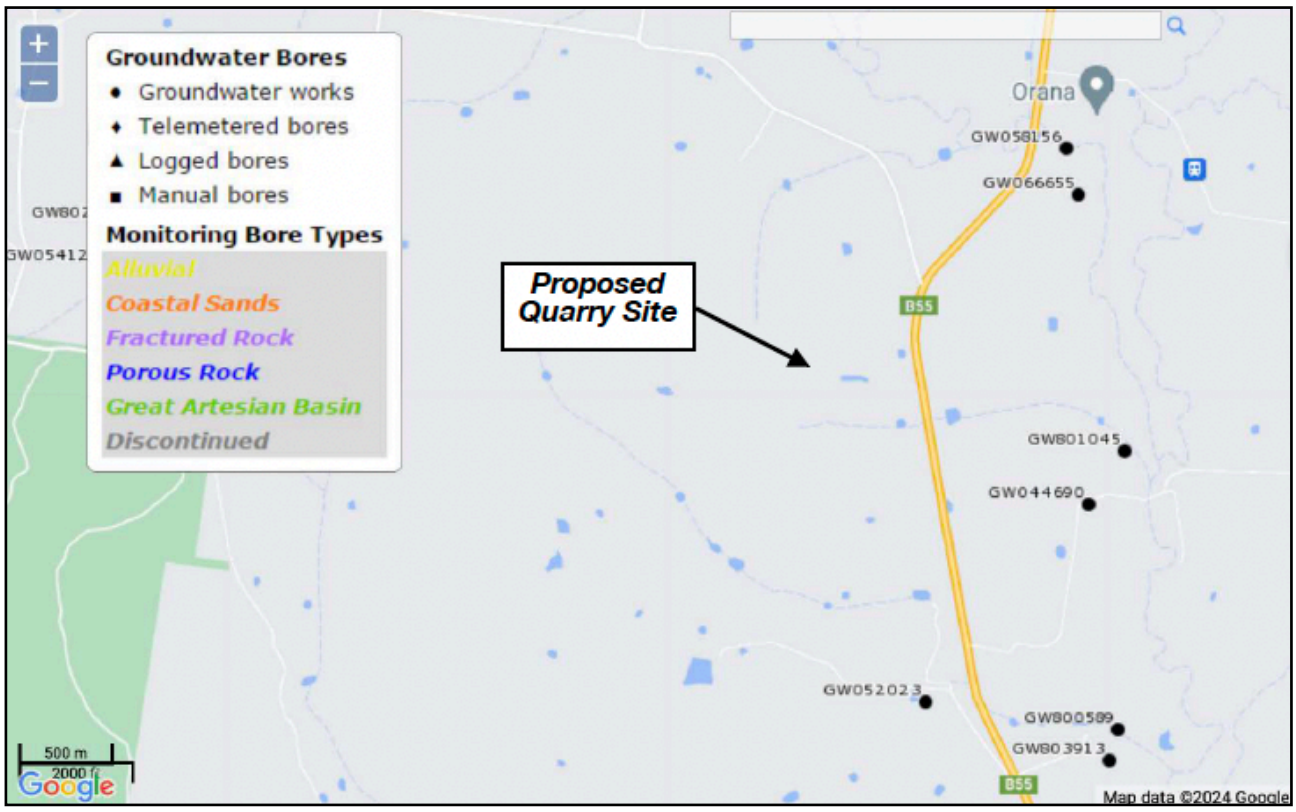


FIGURE 7.3: All licensed groundwater bores in and around the project site are located near or within the Tallawang Creek floodplain or on other watercourses. There are no licensed groundwater bores in the hilly country in the locality to the west of the highway

(Source: Water NSW Groundwater Bores- All Groundwater Map 1 August 2024)

A review of the Bureau of Meteorology (BoM) Groundwater Dependent Ecosystems Atlas (GDE Atlas) identifies in detail the location of Low to High high potential Groundwater Dependent Ecosystems (GDEs) are in the surrounding locality. Within the locality, the High priority GDEs are generally limited to small patches within remnant vegetation areas and along surface water drainages. The Project Site is mapped as being Low potential GDE.

In terms of potential for groundwater impacts arising from the proposed quarry development Martens and Associates conclude:

> "*Given the proposed depth of quarry excavation, topography and licensed groundwater bore information, there is not evidence that confirms that the proposed quarrying work will intercept permanent groundwater. Further, the elevation and location of mapped potential GDEs are such that the proposed development is not likely to have any significant affect on the mapped potential GDEs. Further site specific data may be developed through the installation of appropriate site groundwater bores and monitoring*."

Surface and Groundwater Impacts

In regard to potential surface water and groundwater impacts:

- The proposed development was assessed against the NSW Farm Dams Policy and Harvestable Rights Order. As the proposed water management system captures, contains and recirculates drainage and/or effluent that conforms to best management practice and prevents the contamination of downstream watercourses the proposed sediment basins are exempt from the Harvestable Rights calculation.
- The water balance shows that the quarry can be operated without exceeding water requirements.
- There are no direct downstream water users from the proposed development site. The site is sufficiently set back from any 'waterfront land' for the purposes of the *Water Management Act 2000*.

- All stormwater runoff within the quarry will be contained within the quarry void. The quarry is not directly linked to any drainage lines and hence any the development will not impact any downstream water users. Utilising the water management strategies outlined in the EIS the proposed development can be operated with no adverse impact on water quality.
- Satisfactory erosion and sediment control measures are proposed.
- Satisfactory cumulative impacts are predicted.
- Given the proposed depth of quarry excavation, topography and licensed groundwater bore information, there is not evidence that confirms that the proposed quarrying work will intercept permanent groundwater.
- Given the elevation and location of mapped potential Groundwater Dependent Ecosystems (GDEs) are such that the proposed development is not likely to have any significant affect on the mapped potential GDEs.

7.3.8 Social and Economic

The SEARs for the EIS required an assessment of the likely social and economic impacts of the proposed Gulgong Quarry project.

Economic Impacts: Overview

Quarries need to be close to markets to support building and infrastructure; processed quarry stone being an essential component used in the construction of airports, industrial developments, roads, railways, homes, schools, hospitals and shopping centres and-in particular in this case- to major renewable energy infrastructure projects. In this regard the proposed development will have direct access to the Castlereagh Highway and nearby projects.

As such, quarries underpin the country's ongoing development and maintenance of essential infrastructure, and play a vital role in Australia's economy.

> *"Australian quarries support our vital building and construction industries which generate over $200 billion in revenue each year and directly employ more than one million Australians. The building and construction industry demands more than 200 million tonnes of construction aggregates each year to meet the need for our homes, workplaces, public buildings and roads. As well as providing these essential materials, quarries stimulate local communities through investment and by providing jobs. In fact, the quarry industry creates over 10,000 jobs directly and supports another 80,000 indirectly, often in rural and regional locations*." (Cement Concrete & Aggregates Australia website April 2022)

One of the most visible economic impacts of any quarrying operation on a community is the employment that it generates. Another economic impact is the industries and projects that are reliant on the the supply of processed quarry material to service their project. Employment is generated through the creation of jobs and economic within the quarry itself: direct employment.

Economic Impacts : Quarry

At peak production the Project will generate up to 4 full-time jobs on-site, generating wages of approximately $0.5 million per annum, with flow-on jobs in industries reliant on the quarry, as well as truck drivers employed by other contractors, suppliers and other sub contractors periodically engaged by the quarry, for example, blasting contractors. In short, the Project would provide direct economic activity, including jobs, to the local area economy, and indirect economic activity to the local area via both wage and non-wage expenditure.

The Project would provide major economic benefits in the form of annual operating income of between $6 million and $7 million at full production (ex pit value only), plus income from freighting the quarry product to end users. The continued operation of the quarry is likely to produce additional indirect effects to other local industries, potentially generating up to 12 more jobs locally, and assuming a multiplier of 150%, commonly applied to quarry projects, the potential to generate upwards of an additional $10.5 million of economic output in associated industries within NSW.

Economic Impacts: Servicing Central-West Orana Renewable Energy Zone (CWO-REZ) Projects

It is proposed that the quarry project will supply road base and other quarry products to the numerous renewable energy projects approved or proposed within the Central-West Orana Renewable Energy Zone (CWO-REZ). This an economic impact that goes well beyond the value of quarry production or quarry wages, best highlighted in the Department of Planning Housing and Infrastructure *State Significant Infrastructure Assessment Report (SSI 48323210)* dated June 2024:

> *"The Central-West Orana REZ Transmission project is critical for energy security and reliability in NSW as it would connect the NEM with electricity generating projects proposed in the CWO REZ and would play an essential role in supporting the transition from a long-standing reliance on coal-fired power stations to a reliance on renewable energy.*
>
> *It would also deliver significant economic benefits to NSW including a capital investment of $3.2 billion and creation of up to 1,800 construction jobs….*
>
> *The project is a critical component of the Electricity Infrastructure Roadmap, which is the NSW Government's 20-year plan to ensuring sufficient electricity transfer capacity is available to support the transition of the NEM and is critical to the successful operation of the CWO REZ."*

Central-West Orana REZ Transmission project	*$3.2 Billion* *capital investment*	*1,800-5,000* *construction jobs*

[NOTE: The value of these projects has been variously valued at $2 Billion to $3.2 Billion and with construction jobs ranging from 1,800 to 5,000 (or more) jobs]

This major renewable energy infrastructure project will be reliant on a reliable source of quarry products for road making and allied uses. The proposed quarry is the closest quarry to this project, with other benefits including the following:

- Potentially lower costs in building the roads and other materials required in the construction of this renewable energy project.
- Shorter haulage distances and less (costly) damage to local and regional roads, as well as resultant lower costs of maintaining local and regional roads.
- There are few quarries in the Mid Western Regional LGA capable of supplying the required volumes of processed quarry material to these renewable energy projects.
- Lower freight costs for supplying road making material to this project.
- Faster turn-around times for the supply of materials required for the construction of roads associated with this major renewable energy infrastructure project.

The predicted socio-economic impacts of the Project are therefore positive for the local region as well as for NSW generally.

The proposed quarry will provide additional reserves for the continued use of high quality hard rock resources for local and regional markets, including major infrastructure projects in the surrounding region. The quarry project will support long term economic prosperity in the locality by optimising the use of land and resources at a site known to have a proven quarry resource. The proposed development will operate as a quarry for the extraction and processing of hard rock for use in a wide of uses including but not limited to road base and as select fill. The proposed development will enable a continuation of revenues for the public sector by way of taxes, duties and excise and through payments for various government services. The State Government receives revenue from vehicle and quarry registrations, road and fuel tax.

The proposed quarry project is an economic opportunity which does not conflict with recreation or tourism or agriculture or rural amenity or environmental values.

Social Impacts : Gulgong Quarry Project

Poorly designed and/or excessively large-scale quarry projects can present long term social challenges like changing the character and amenity of a local area and way of life, impacts on health, safety, noise, dust, vibration and overpressure, quarry truck traffic impacting on local roads, and loss of agricultural jobs and agricultural way of life. Nevertheless, with careful planning and management, it is possible to minimise these effects. The proposed quarry, however, is modest in scale minimises these adverse social impacts, as set out in the following Table 7.13.

Table 7.13: Social Impact Assessment of Proposed Quarry

Issue	Likely impact with mitigation	Relevance to Proposed Quarry Development
Visual amenity (surroundings)	*LOW*	*The proposal has been designed to minimise visual amenity impacts.* ▸ *Screened views possible from only two residences.* ▸ *Quarrying at depth, out of sight from any nearby residence, progressively removing the knoll from behind. Loss of the knoll will be a gradual visual impact.* ▸ *The site will be revegetated once quarrying is completed.*
Noise amenity/ health (way of life)	*LOW*	*The assessment by Vipac shows noise emissions, including truck traffic noise, are expected to comply with EPA guidelines at the nearby sensitive receptors therefore minimising the possibility of any health impacts to the community.*
Air quality/ health (surroundings)	*MOD-LOW*	*The assessment by Vipac shows air quality/dust emissions are expected to comply with EPA guidelines at the nearby sensitive receptors therefore minimising the possibility of any health impacts to the community. Occasional dust my be visible but mitigated by measures proposed in this EIS.*
Blasting (way of life)	*MOD-LOW*	*The assessment by Vipac shows vibration and overpressure are unlikely to impact on nearby sensitive receptors in terms of meeting EPA requirements. Blasting will be noticeable, but infrequent.*
Quarry truck traffic	*MOD-LOW*	▸ *The proposal will utilise public roads for transportation, with acceptable capacities and impacts likely.* ▸ *Reduced haulage distances and use of roads in providing nearby renewable energy infrastructure projects with road making material, without truck traffic having to travel through the local townships of Gulgong or Mudgee.* ▸ *The proposal will not impact on access to neighbouring properties.*
Agricultural use of land (way of life)	*LOW*	▸ *No likely adverse impacts on either agriculture on neighbouring lands or the 'Talinga' farm holding. The project affects 0.6% of the 'Talinga' farm holding, with 0.55% returned to agriculture at completion of quarrying.* ▸ *No loss of agricultural jobs arise from the project.*
Heritage/ cultural	*LOW*	*The assessment shows the proposal protects the existing sites of cultural heritage by avoiding them.The proposal will implement the unexpected finds procedure.*
Safety, hazards	*LOW*	*The proposed quarry development has been assessed as not increasing safety risk, on or off-site.*

In addition to the above, the following measures will be implemented as part of the Project to reduce social impacts or to enhance the benefits:

- The quarry operator will communicate with nearby residents within a 2 km radius of the quarry who are not already registered to advise them of blasting notification procedures.
- The quarry operator will give a priority to hiring locals and purchasing goods and services from the local area where feasible and where practical, thereby enhancing potential direct economic benefits to employees and contractors, as well as to the local and regional areas through expenditure in the local area.
- Maintain liaison with local emergency services, in particular with the Rural Fire Service, to ensure that any accessibility impacts are identified and communicated early and consistently.
- The proposed quarry will operate in a location with suitable setbacks and buffers to prevent adverse amenity effects.

Cumulative Impacts

There are several concurrent development projects intended to operate in and around the area of social influence. These projects may contribute cumulative impacts in addition to those of the proposed quarry project.

A summary of nearby SSD and SSI projects as identified through the NSW DPIE (2024) Major Projects website in is given in Section 2.3.2 of this EIS. Few of these projects have been approved, let alone constructed. No new quarry projects have been approved in Mid Western Region LGA. As such, cumulative impacts are restricted to those most likely to proceed immediately, in particular EnergyCo's transmission line project. The Project aims to service these projects, once under construction, with road making material and select fill. The cumulative impacts arising are likely to include the following:

- Providing the roads and other materials required in the construction of this renewable energy projects will ensure that the projects can proceed, thus ensuring employment opportunities for workers on these projects, but also employment and economic opportunities for local businesses and suppliers.
- Improvements to local and regional roads.
- Maintenance of liaison with renewable energy project providers to ensure that any accessibility impacts are identified and communicated early and consistently.
- To a lesser extent, the proposed renewable energy projects have the potential to create new opportunities for retail and and other businesses opening, as well as schools and other social infrastructure. The proposed quarry will also increase local demand for supplies and contractors engaged in supplying quarries with the goods and services required.

7.3.9 Air Quality

Dust Generation Sources

By their very nature, quarries have the potential to generate dust and minor exhaust emissions and in particular:

- Total Suspended Particles (TSP), particulate matter.Particulate matter up to 50 microns in size.
- PM10-Particulate matter less than 10 microns in size.
- PM2.5-Particulate matter less than 2.5 microns in size.
- Dust deposition- deposited matter that falls out of the atmosphere.

Crushing and screening of the quarry resource, once won from the working quarry face, can also be a significant source of dust. Provided that dust is adequately controlled, the potential for any nuisance at any nearby residences can be minimised to a satisfactory degree, as is the case with the proposed quarry development.

The overall objective of the proposed quarry dust management regime will be to achieve acceptable air quality standards through the control of dust movement offsite and within the quarry. Such management measures are to form a part of any final quarry management plan, once the Project is approved.

Quarry activities at the site which have the potential to impact on air quality of the locality include the following:

- Removal of topsoil and overburden, extraction of rock from the quarry face and transportation of rock to the processing plant and away from the site. This includes the operation of plant including earthmoving machinery, digging equipment, loading, and dumping vehicles, haul trucks within the quarry and along the internal quarry haul route.
- Quarry crushing and screening operations, including the depositing of rock into primary and secondary crushers, openings at bins and chutes, quarry screening operations, material transfer points, and movement of crushed rock along conveyors.
- Dust generated by wind blowing over conveyors, stockpiles and disturbed areas, as well as during drilling and blasting operations including drilling of holes, stemming, and blasting activities.
- Dust generated by stockpiles, the loading and transport of quarry product.

Wind Roses TAPM-CALMET derived dataset

Vipac Engineers and Scientists Ltd was commissioned by Outline Planning Consultants Pty Ltd to conduct an air quality impact assessment for the proposed Gulgong Quarry project.

The assessment evaluated the potential impacts of air pollutants generated. A three dimensional meteorological field was required for the air dispersion modelling that includes a wind field generator accounting for slope flows, terrain effects and terrain blocking effects.

The Air Pollution Model, or TAPM, is a three-dimensional meteorological and air pollution model developed by the CSIRO Division of Atmospheric Research and can be used as a precursor to CALMET which produces fields of wind components, air temperature, relative humidity, mixing height and other micro-meteorological variables for each hour of the modelling period.

The TAPM-CALMET derived dataset for 12 continuous months of hourly data from the year 2023 and approximately centred at the proposed quarry project has been used to provide further information on the local meteorological influences. The wind roses from the TAPM-CALMET derived dataset for the project site for the year 2023 are presented in **Figure 7.4** and **Figure 7.5**.

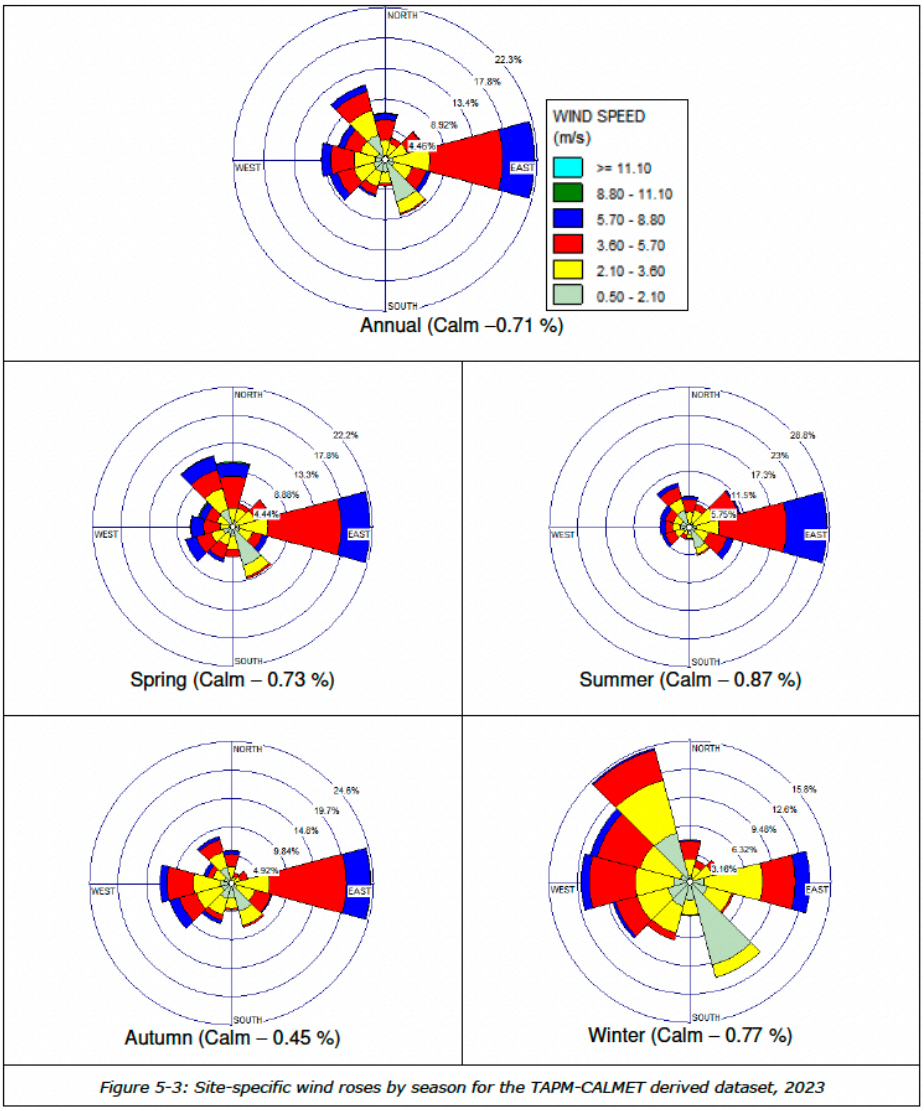


Figure 5-3: Site-specific wind roses by season for the TAPM-CALMET derived dataset, 2023

FIGURE 7.4: Site specific wind roses for the project site TAPM-CAMET 2023

(Source: Vipac 2024)

As shown in the figures, the annual wind patterns indicate that easterly winds are dominant during all seasons except winter. During the winter season, wind directions are variable, with winds from the northwest being dominant, along with prevalent westerly and easterly winds. Overall, winds from the south are infrequent which is likely indicative of the influences on wind flow from the elevated terrain in this direction.

Figure 7.3 shows the wind roses for the time of day during the year for 2023 for the modelled data at a site as close as possible to the Gulgong BoM Station site. It can be seen that easterly winds are dominant at both times with some westerly and north-westerly influences also apparent. These wind patterns are generally consistent with those shown for the long term measured data at the Gulgong BoM Station.

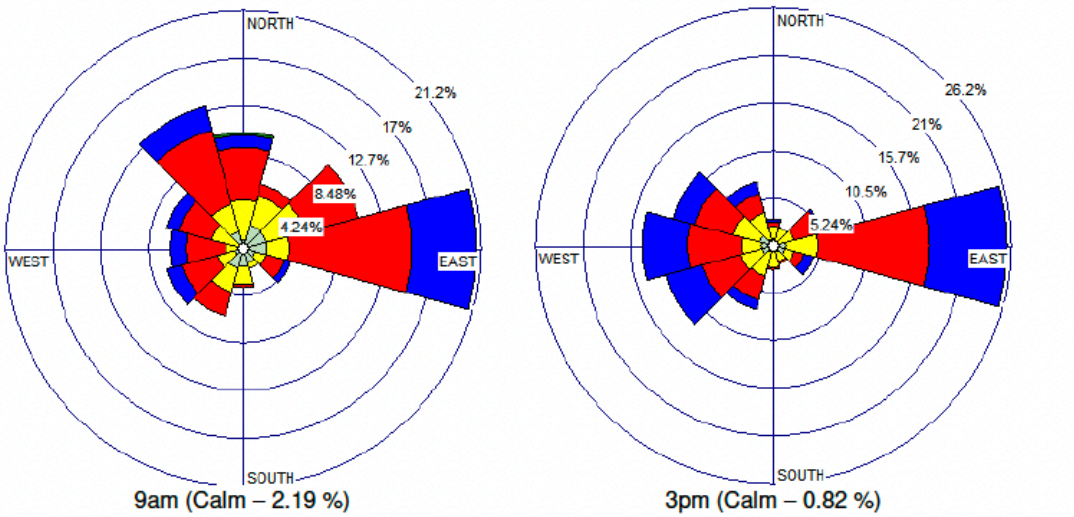


Figure 5-4: Gulgong site wind roses by time of day for the TAPM-CALMET derived dataset, 2023

FIGURE 7.5: Gulgong wind roses TAPM-CAMET 2023

(Source: Vipac 2024)

Existing Air Quality

Gulgong Quarry is situated within a sparsely populated rural area. Background dust levels are therefore expected to be primarily impacted by agricultural activities. The closest monitoring site to the Project site is at Merriwa, approximately 99 km to the east and is considered to provide a generally representative background estimation of the remote rural concentration levels expected for the project site. Of the pollutants of interest, PM_{10} and $PM_{2.5}$ are measured at the Merriwa site. As with all NSW air quality monitoring stations concentration levels of these pollutants were elevated by smoke from bushfires in summer.

The maximum measured 24 hour average $PM_{2.5}$ is already above the relevant criteria of 25 µg/m^3 and the maximum measured 24 hour average PM_{10} is very close to the criteria of 50 µg/m^3. Cumulative impacts are accounted for by adopting the background data which includes elevated concentrations of PM10 and PM2.5. These are therefore considered to be an over-estimation of background pollutant concentrations at the project site. Nevertheless, they are included in the assessment in accordance with the requirements specified in the *Approved Methods for the Modelling and Assessment of Air Pollutants in NSW*.

Refer Table 7.14.

Table 7.14: Assigned Background Air Quality Concentrations

Pollutant	Averaging period	Criteria	Maximum Measurements (in brackets) & Adopted background	Commments
TSP	Annual	90 µg/m^3	35.5 µg/m^3	Conservative assumption
PM10	24 Hour	50 µg/m^3	Varies (49.4 µg/m^3)	EPA Measurement
	Annual	25 µg/m^3	14.2 µg/m^3	
PM2.5	24 Hour	25 µg/m^3	Varies (27.1 µg/m^3)	EPA Measurement
	Annual	8 µg/m^3	4.7 µg/m^3	
Dust Deposition	Monthly Total	2 g/m^2/month	-	
	Monthly Total	4 g/m^2/month	2 g/m^2/month	Conservative assumption

(Source: Vipac 2024*Air Quality Assessment* Table 5-2)

Dust Mitigation Measures

The identification of potential sources of dust/air emission from the quarry site and quarry haul route has facilitated the nomination and design of various practical, effective mitigation measures for the control of dust, including the following:

- Use of water sprays on processing plant and materials stockpiles. A water tanker to be regularly used to spray water on working areas and the internal haul route back, to reduce dust nuisance.
- The first 100m of the internal haul route back to Castlereagh Highway is to be sealed.
- Covering of loads.
- Blasting will be restricted if windy conditions are likely to carry visible dust emissions beyond the quarry boundary, with blasting by sequential firing and using minimum force.
- Proper maintenance and tuning of the vehicles and equipment also assists in avoiding any off-site effects.
- Stabilising and revegetating of topsoil and overburden stockpiles.
- Enforcing a 30km/hour maximum speed limit on haul and access roads to minimise dust generation.
- Maintaining vegetated buffers between operational areas and site boundaries.

Air Quality Impact Assessment

The results of the modelling have shown that the TSP, PM10, PM2.5 and dust deposition predictions comply with the relevant criteria and averaging periods at all sensitive 24 receptors, summarised in the accompanying Table 7.15 and represented in **Figures 7.4-7.9**.

Table 7.15: Summary of Air Quality Predicted Impacts-Project in Isolation

Pollutant	Criteria	Range of Predictions at Nearest 24 Receptors	Compliance
		Operation	
TSP	90 µg/m^3	0.01-0.34 µg/m^3	Yes
PM10	50 µg/m^3	0.91-20.04 µg/m^3	Yes
	25 µg/m^3	0.03-0.45 µg/m^3	Yes
PM2.5	25 µg/m^3	0.19-4.41 µg/m^3	Yes
	8 µg/m^3	0.01-0.09 µg/m^3	Yes
Dust Deposition	2 g/m^2/month	0.002-0.74/m^2/month	Yes

(Source: Vipac 2024*Air Quality Assessment* from Table ES-1)

Table 7.16: Summary of Air Quality Predicted Impacts-Cumulative

Pollutant	Criteria	Range of Predictions at Nearest 24 Receptors	Compliance
		Operation	
TSP	90 $\mu g/m^3$	35.51-35.84$\mu g/m^3$	Yes
PM10	50 $\mu g/m^3$	50.32-69.44$\mu g/m^3$	Yes
	25 $\mu g/m^3$	14.23-14.65 $\mu g/m^3$	Yes
PM2.5	25 $\mu g/m^3$	27.31-31.51 $\mu g/m^3$	Yes
	8 $\mu g/m^3$	4.71-4.79 $\mu g/m^3$	Yes
Dust Deposition	2 g/m^2/month	0.002-0.74/m^2/month	Yes

(Source: Vipac 2024*Air Quality Assessment* from Table ES-1)

As summarised in Table 7.15 and Table 7.16, and **Figures 7.6-7.11**, the results of the modelling have shown that the TSP, PM_{10}, $PM_{2.5}$ and dust deposition predictions comply with the relevant criteria and averaging periods at all sensitive receptors modelled for the Project in isolation.TSP, dust deposition and annual average PM_{10} and $PM_{2.5}$ predictions are also less than criteria for the Project including background at all modelled sensitive receptors. Whilst the 24-hour average PM_{10} and $PM_{2.5}$ predictions are above, the exceedances are driven by the elevated background adopted for the assessment, which are already above or close to the criteria. No additional exceedances of the criteria at these receptors are predicted to occur as a result of the proposed quarry operations and that best management practices will be implemented to minimise emissions as far as is practical.

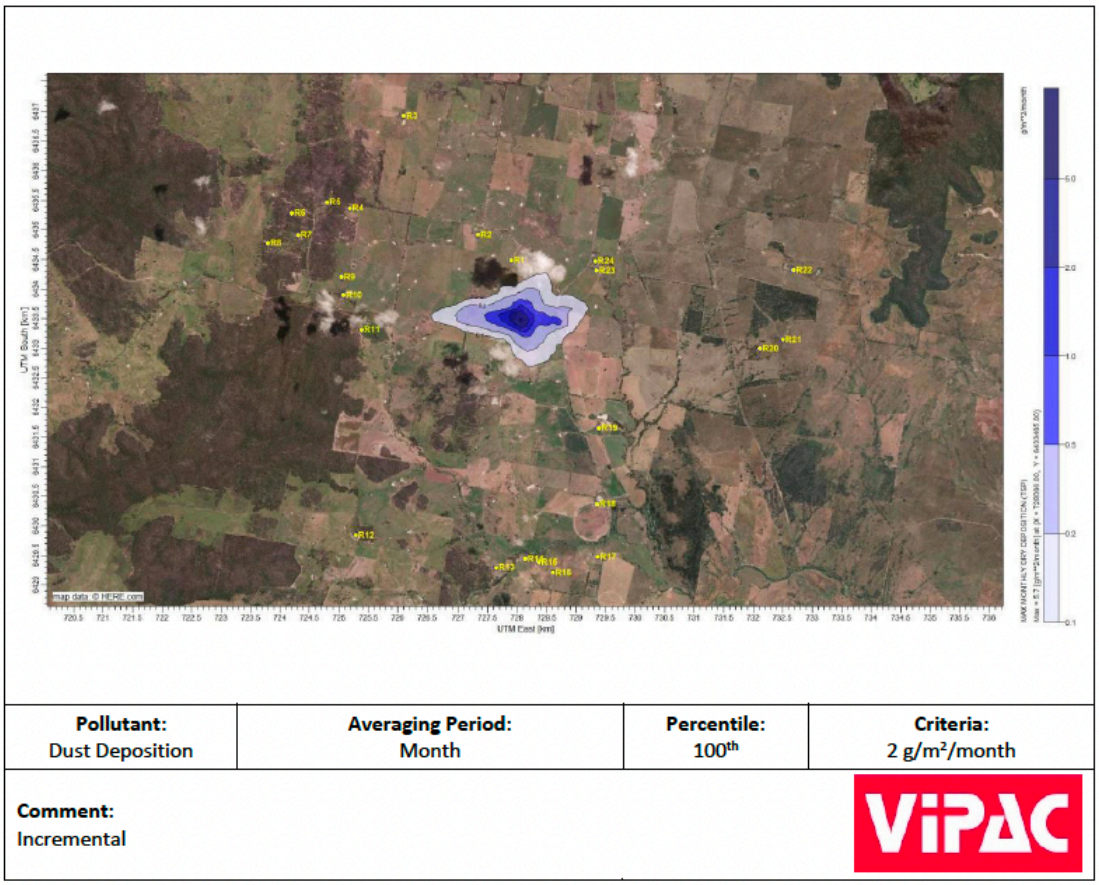
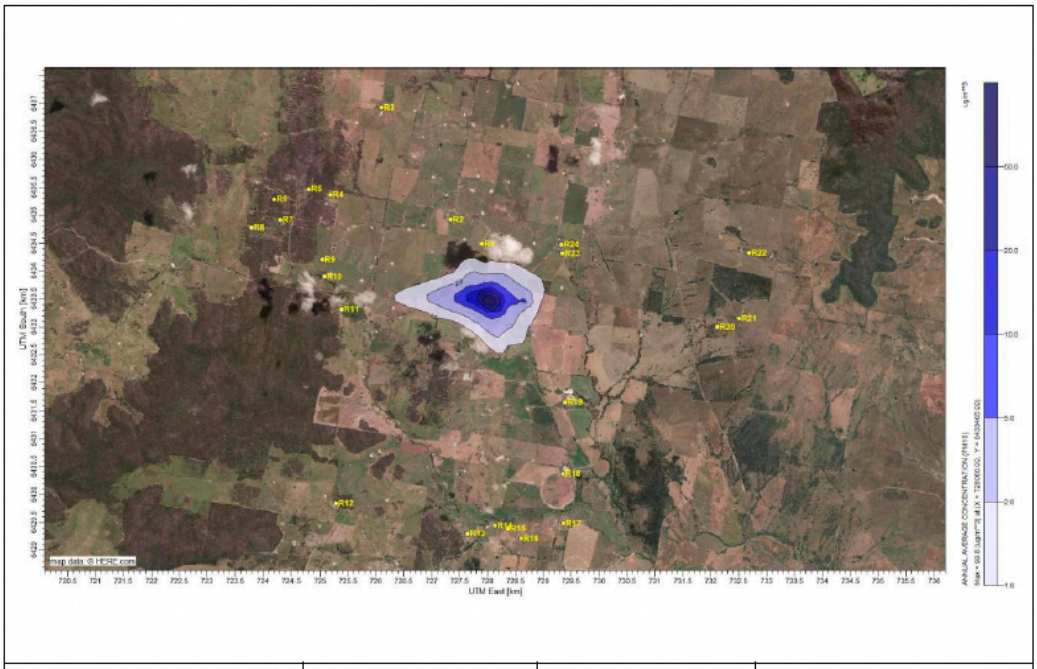


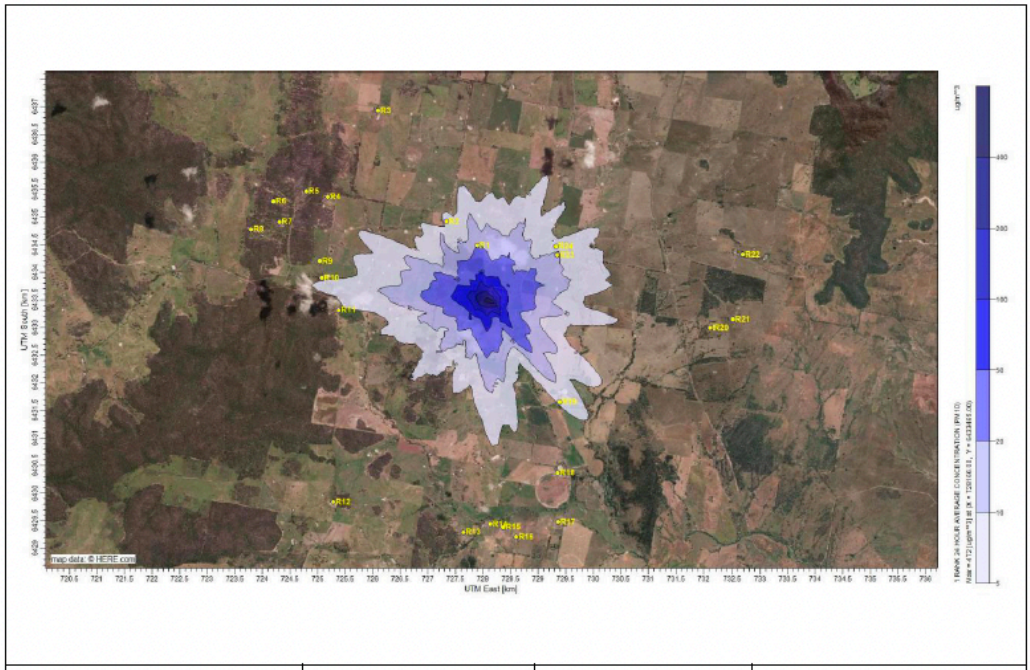
FIGURE 7.6: Predicted Dust Deposition Monthly
(Source: Vipac 2024 Air Quality Assessment)



Pollutant:	Averaging Period:	Percentile:	Criteria:
PM_{10}	Annual	100th	25 µg/m³

Comment:
Incremental

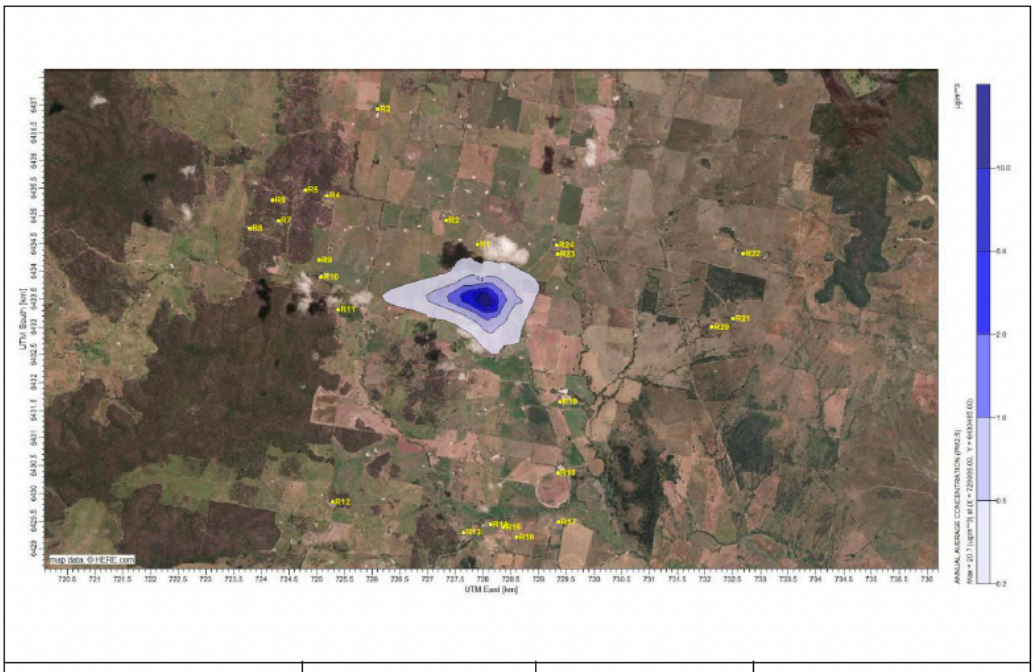
FIGURE 7.7: Predicted PM_{10} ANNUAL
(Source: Vipac 2024 Air Quality Assessment)



Pollutant:	Averaging Period:	Percentile:	Criteria:
PM_{10}	24 Hour	100th	50 µg/m³

Comment:
Incremental

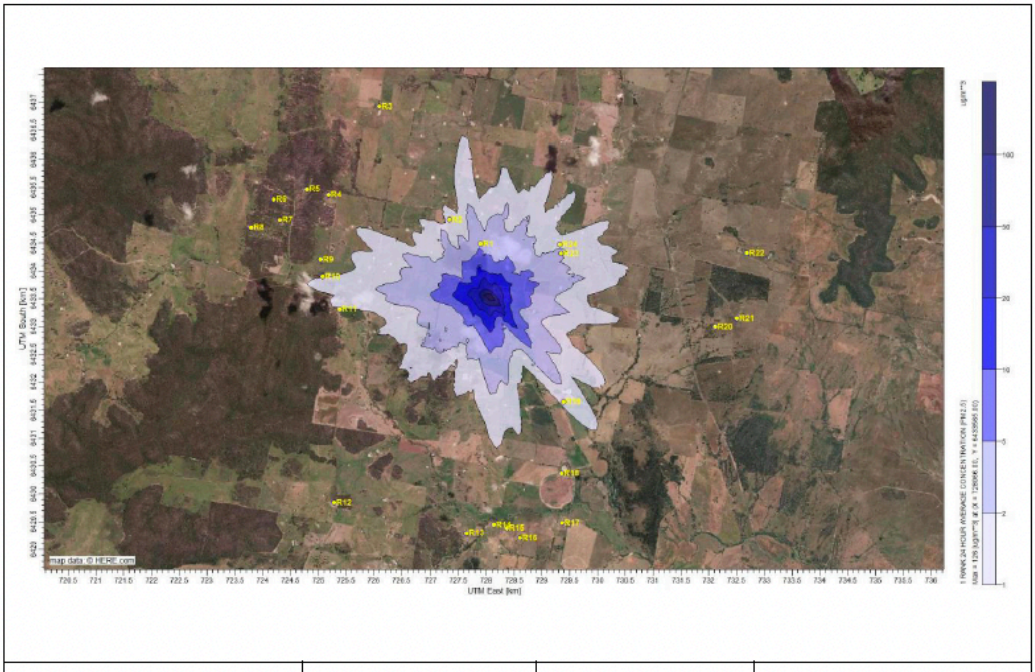
FIGURE 7.8: Predicted PM_{10} 24 HOUR
(Source: Vipac 2024 Air Quality Assessment)



Pollutant:	Averaging Period:	Percentile:	Criteria:
$PM_{2.5}$	Annual	100th	8 µg/m³

Comment:
Incremental

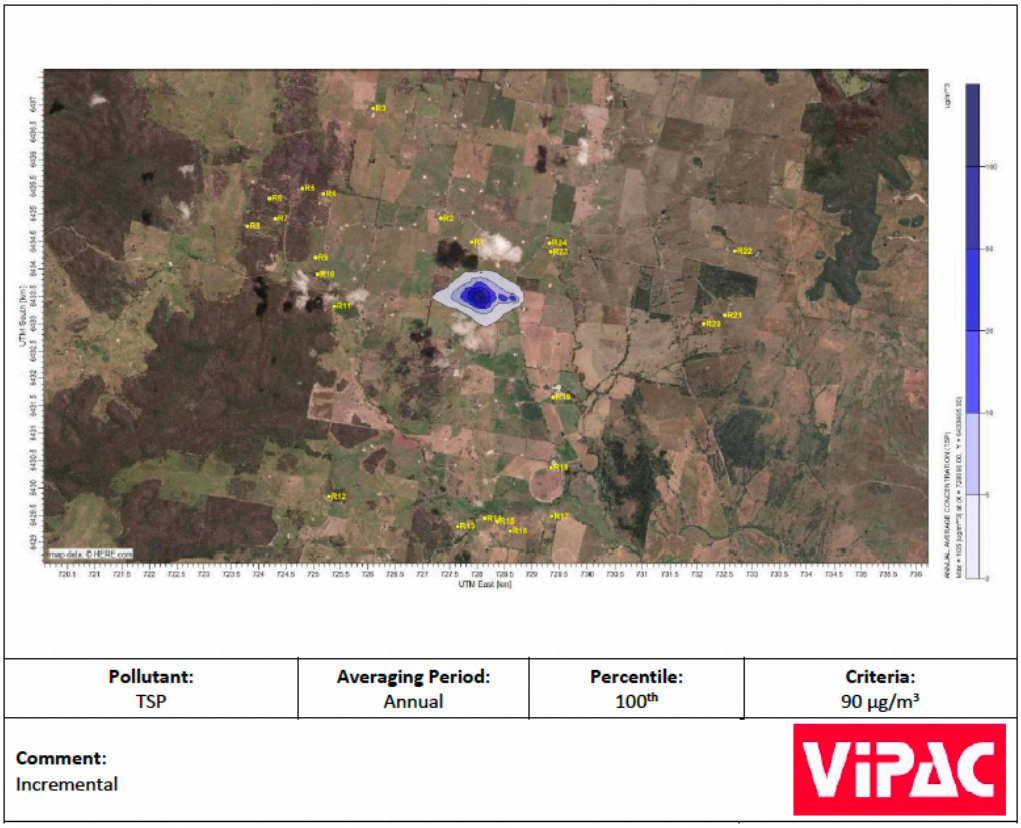
FIGURE 7.9: Predicted $PM_{2.5}$ ANNUAL
(Source: Vipac 2024Air Quality Assessment)



Pollutant:	Averaging Period:	Percentile:	Criteria:
$PM_{2.5}$	24 Hour	100th	25 µg/m³

Comment:
Incremental

FIGURE 7.10: Predicted $PM_{2.5}$ 24 HOUR
(Source: Vipac 2024 Air Quality Assessment)



Pollutant:	Averaging Period:	Percentile:	Criteria:
TSP	Annual	100th	90 µg/m³

Comment:
Incremental

FIGURE 7.11: Predicted TSP ANNUAL
(Source: Vipac 2024 Air Quality Assessment)

In the absence of the elevated background therefore, Vipac anticipate no exceedances of the criteria. As specified in the *Approved Methods for the Modelling and Assessment of Air Pollutants in New South Wales*, under these circumstances no additional assessment is therefore required at these receptors. Emissions controls for dust abatement were included in the assessment. It should also be noted that some of the planned dust control measures are not easily quantifiable but will also still serve to reduce dust emissions. The dispersion modelling study applied by Vipac has taken a conservative approach and have not incorporated the effectiveness of these controls in the development of the emissions inventory. Vipac conclude that air quality should not be a constraint for proposed quarry.

7.3.10 Noise

Overview

Quarries have the potential, if unchecked, to produce significant levels of noise and vibration. As such, mitigation measures are required in order to ensure that the impact of noise on neighbours is appropriately mitigated and managed.

A noise assessment was undertaken by Vipac Engineers and Scientists Ltd to determine potential noise impacts on nearby sensitive receivers from the proposed Gulgong Quarry project- refer **Appendix C** and **Figures 7.12-7.20** for details.

This sub-section of the EIS provides a summary of the findings of the assessment in relation to potential impacts associated with the Project on noise. The proposed equipment for the ongoing quarry operation will utilise existing equipment currently in use on site for the current quarry operation. A maximum of 60 loaded quarry trucks per day is proposed.

Noise Sensitive Receptors (NSR)

The locality is sparsely populated, with the nearest rural residences described in the following- refer **Figure 7.2**:

- R1 - The quarry is approximately 1,415m to the south-east of this rural dwelling not associated with the quarry, situated on Lot 98 on DP750751, No.7 Corishs Lane, tallawang.
- R2 - The quarry is approximately 1,900m to the south-west of this rural dwelling not associated with the quarry, on Lot 1 on DP861634 at No. 40 Whistons Lane, Tallawang.
- R3 - The quarry is approximately 788m to the north of the nearest rural dwelling not associated with the quarry, at No. 117 Tucklan Road, Tallawang.
- R4 - The quarry is approximately1,400m to the NNW of the rural dwelling at 'Talinga', associated with the quarry, at No. 1848 Castlereagh Highway, Tallawang.
- R5 - The quarry is approximately 1,345m to the south-west of this rural dwelling not associated with the quarry, on Lot 1 DP861634 at No. 2152 Castlereagh Highway, Tallawang.
- R6- The quarry is approximately 1,460m to the south-west of this rural dwelling not associated with the quarry, on Lot 1 DP861634 at No. 2162 Castlereagh Highway, Tallawang.

The location of the nearest receptors is illustrated in the accompanying **Figure 7.12**.

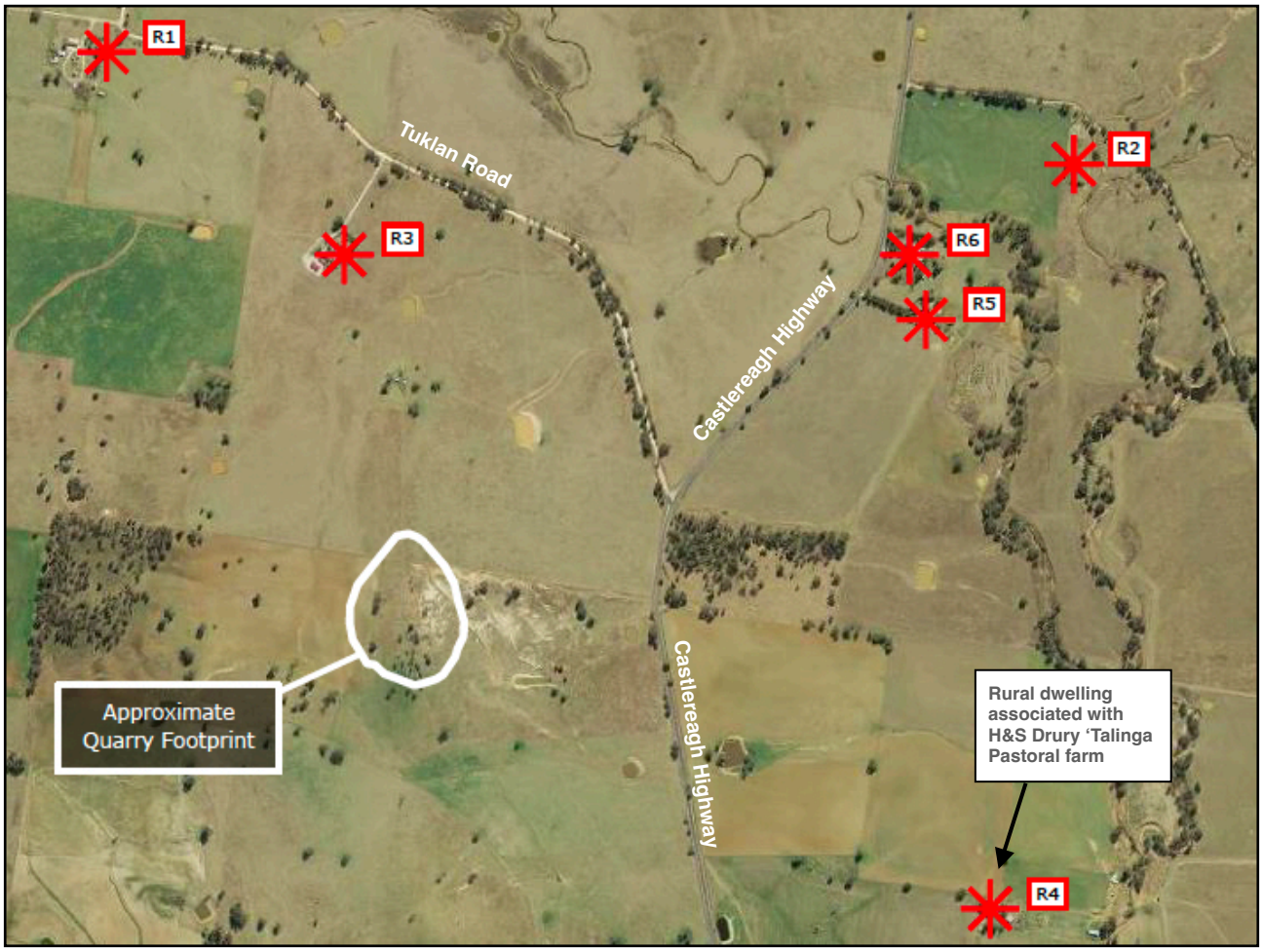


FIGURE 7.12: Map of nearest residential receptors to proposed quarry
(Source: Figure 2-1 Vipac 2024 Noise and Vibration Assessment)

Noise Criteria

The SEARs for this Project required an assessment of the following noise issues:

- The construction and operational noise and off-site transport noise impacts of the development in accordance with the *Interim Construction Noise Guideline* (ICNG), *NSW Noise Policy for Industry 2017* (NPI) and *NSW Road Noise Policy 2011* (RNP) respectively.
- Reasonable and feasible mitigation measures to minimise noise emissions.
- Monitoring and management measures.

The noise criteria applied in the noise assessment by Vipac are determined in accordance with the above.

Quarry development in the initial construction phase will consist of stripping of the (shallow) overburden, blasting of quarry rock, additional internal haul road improvements, the establishment of erosion and sediment controls, and levelling of pads to accommodate quarry plant and equipment required on site. A bulldozer or an excavator-but not both at the same time-will be employed to carry out this work in the construction stage. The following standard hours for construction and operational activities apply, anticipated to last for approximately 6 weeks:

- 7.00am to 6.00pm Monday to Saturday.
- At no time on Sundays or Public Holidays.

The above hours do not apply in the event of direction from police, or other relevant authorities, for safety reasons or

The project specific noise criterion limits the noise that a development can make in accordance with the NSW *Noise Policy for Industry* (NPI) (2017) in order to limit the impact of the development on the existing noise sensitive receptors. The NPI states that where the rating background noise level is found to be less than 35dB(A) for the daytime periods, then it is set to 35dB(A). The amenity criterion is specific to land use and associated activities. It aims to limit continuing increases in noise levels. The maximum ambient noise level for a residential receiver in a rural area should not exceed the acceptable noise levels specified in the following:

- Day (7.00am to 6.00pm): 50dB(A) LAeq.
- Evening (6.00pm to 10.00pm): 45dB(A) LAeq.
- Night (10.00pm-7.00am): 40dB(A) LAeq.

The quarry development proposes to operate between the hours of 7.00am-6.00pm. Therefore, only the Day period has been considered for assessment. The intrusiveness criterion states that the equivalent continuous noise level of the source should not be more than 5 decibels above the rated background level when measured over a 15 minute period. It aims to control intrusive noise impacts in the short term for residences ie. LAeq, 15 minutes to be less than or equal to the Rating Background Level (RBL) + 5 dB.

In this case the RBL was assessed to be 35dB(A), with the Project Specific Noise Level thus being 40dB(A). Refer to accompanying Table 7.17.

Table 7.17: Project Specific Noise levels (dBA)

Receptor	Time of Day	Rating Background level (RBL)	Intrusiveness Criterion	Amenity Criterion	Project Specific Noise Level
All	*Day*	*35*	*40*	*50*	***40***

(Source: Vipac 2024 *Noise and Vibration Impact Assessment* from Table 3-2)

Quarry Noise Impact Assessment: Construction and Operational Noise

Vipac has prepared comprehensive noise impact assessment for the proposed project. Details of the noise modelling approach undertaken by Vipac for the noise assessment are provided in **Appendix C**.

Noise modelling was undertaken using the SoundPLAN 8.2 computational noise modelling software package for two different operational scenarios supplied by Outline Planning Consultants plus the initial quarry construction.

Noise prediction modelling was carried out by Vipac to assess the potential impact associated with the proposed quarry operations at the nearest noise sensitive receptors for the proposed construction and operational scenarios. The predicted noise levels representative of each scenario for both neutral conditions and worst-case conditions during the day period are presented in the accompanying Table 7.18 and Table 7.19. All scenarios are predicted to to comply with relevant noise criteria. These results been reproduced graphically as Noise Contour Maps and are shown in **Figures 7.13-7.20**.

Table 7.18: Predicted Construction Noise levels (dBA)

Receptor	Noise Limit	Predicted Noise level with Dozer ($L_{Aeq\ 15\ minutes}$ dBA)		Predicted Noise level with Excavator ($L_{Aeq\ 15\ minutes}$ dBA)	
		Neutral Weather	Adverse Weather	Neutral Weather	Adverse Weather
R1	40 dBA	24	29	25	31
R2		19	25	20	27
R3		32	37	35	40
R4		22	27	23	29
R5		23	29	26	31
R6		23	29	25	31

(Source: Vipac 2024 *Noise and Vibration Impact Assessment* from Table 5-1)
[NOTES: 1. Receptor R4 is located on the 'Talinga' farm holding ie. associated with the proposed quarry.
2.The excavator and bulldozer will not be operating at the same time and they have been modelled separately].

Table 7.19 contains the predicted noise level from operational Stages 1 and 2 of the proposed Gulgong Quarry. Refer to **Appendix C** for further details.

Table 7.19: Predicted Operational Noise levels (dBA)

Receptor	Noise Limit	Predicted Noise level with Dozer ($L_{Aeq\ 15\ minutes}$ dBA)		Predicted Noise level with Excavator ($L_{Aeq\ 15\ minutes}$ dBA)	
		Neutral Weather	Adverse Weather	Neutral Weather	Adverse Weather
R1	40 dBA	23	29	25	30
R2		19	24	20	26
R3		30	35	32	37
R4		23	28	25	31
R5		21	26	25	31
R6		22	28	24	30

(Source: Vipac 2024 *Noise and Vibration Impact Assessment* from Table 5-1)
[NOTE: Receptor R4 is located on the 'Talinga' farm holding ie. associated with the proposed quarry.]

Noise levels are predicted to comply at all receptors.

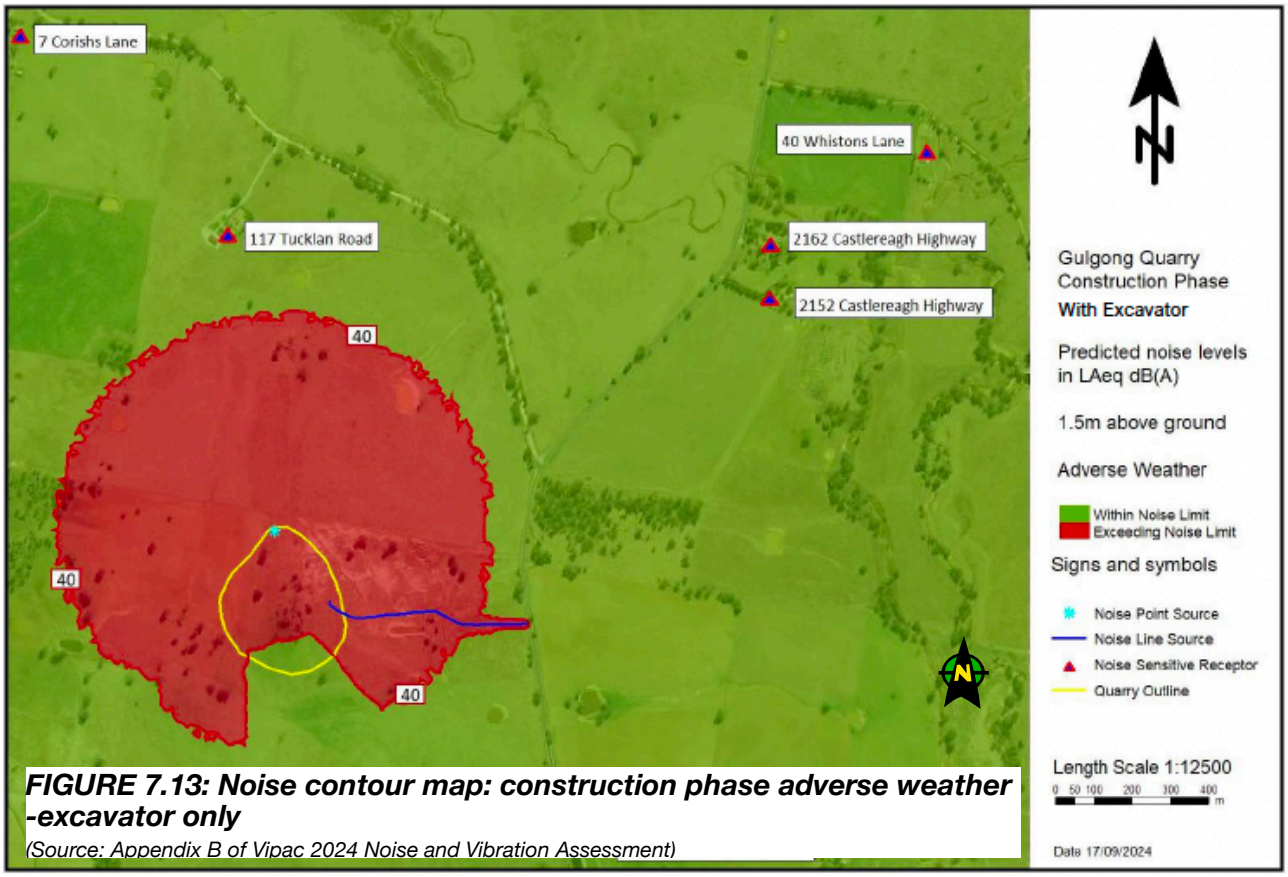


FIGURE 7.13: Noise contour map: construction phase adverse weather -excavator only

(Source: Appendix B of Vipac 2024 Noise and Vibration Assessment)

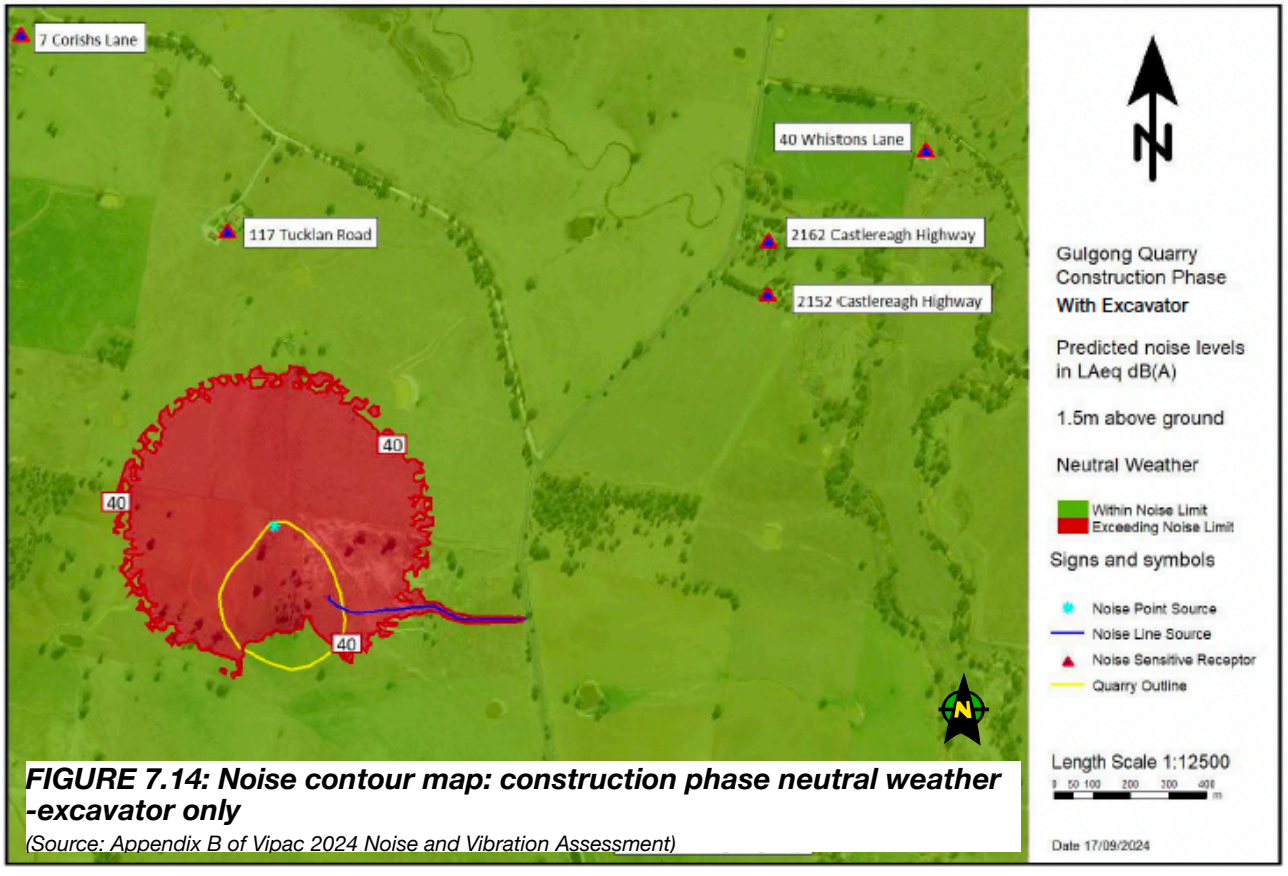


FIGURE 7.14: Noise contour map: construction phase neutral weather -excavator only

(Source: Appendix B of Vipac 2024 Noise and Vibration Assessment)

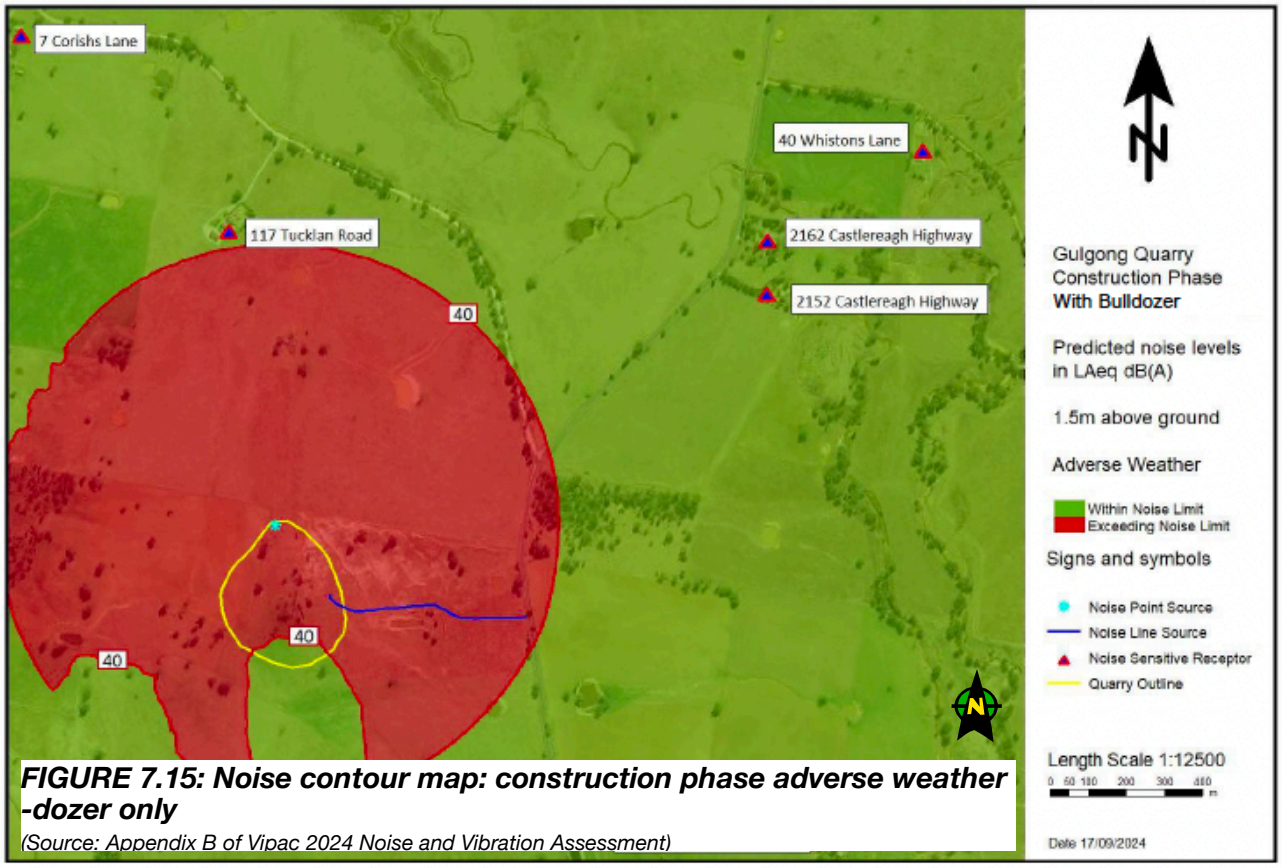


FIGURE 7.15: Noise contour map: construction phase adverse weather -dozer only

(Source: Appendix B of Vipac 2024 Noise and Vibration Assessment)

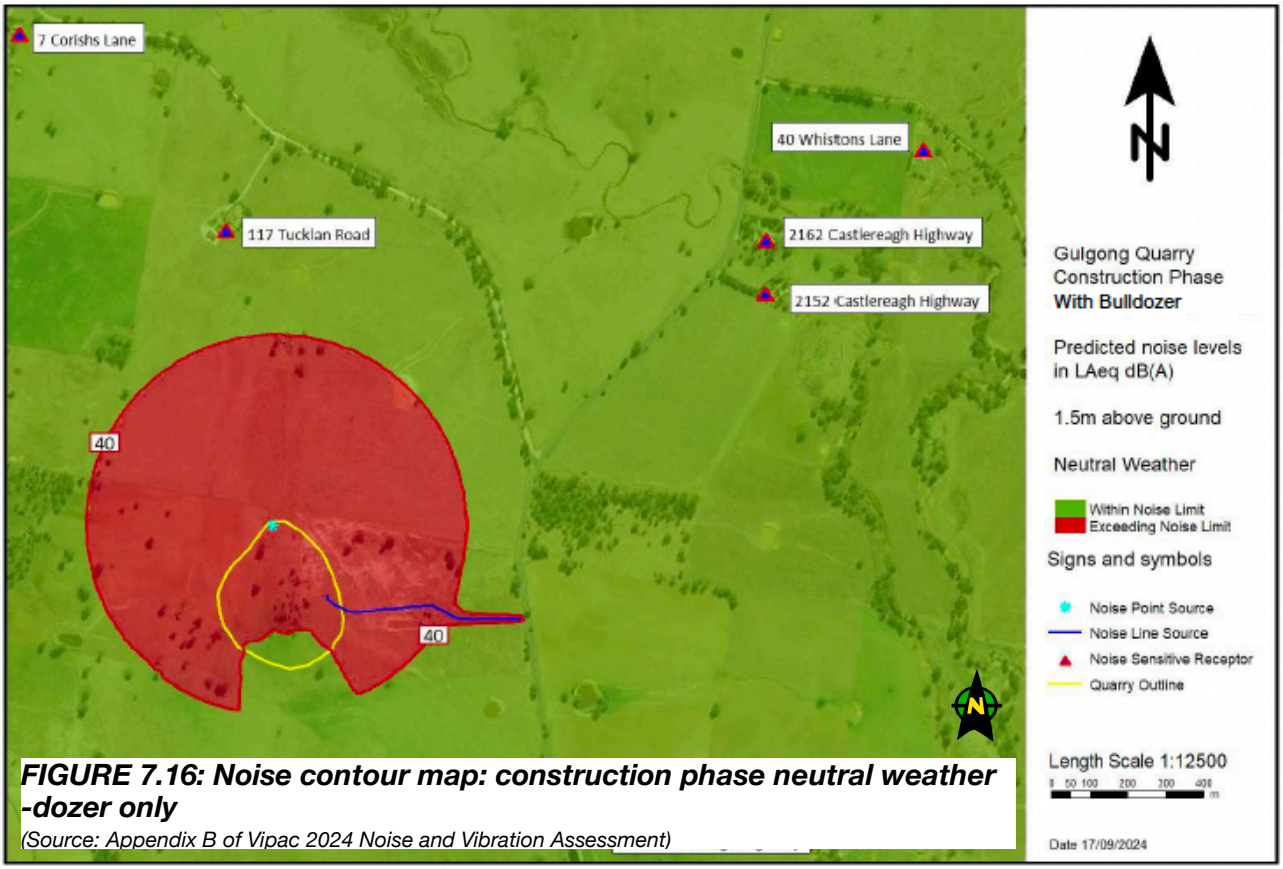


FIGURE 7.16: Noise contour map: construction phase neutral weather -dozer only

(Source: Appendix B of Vipac 2024 Noise and Vibration Assessment)

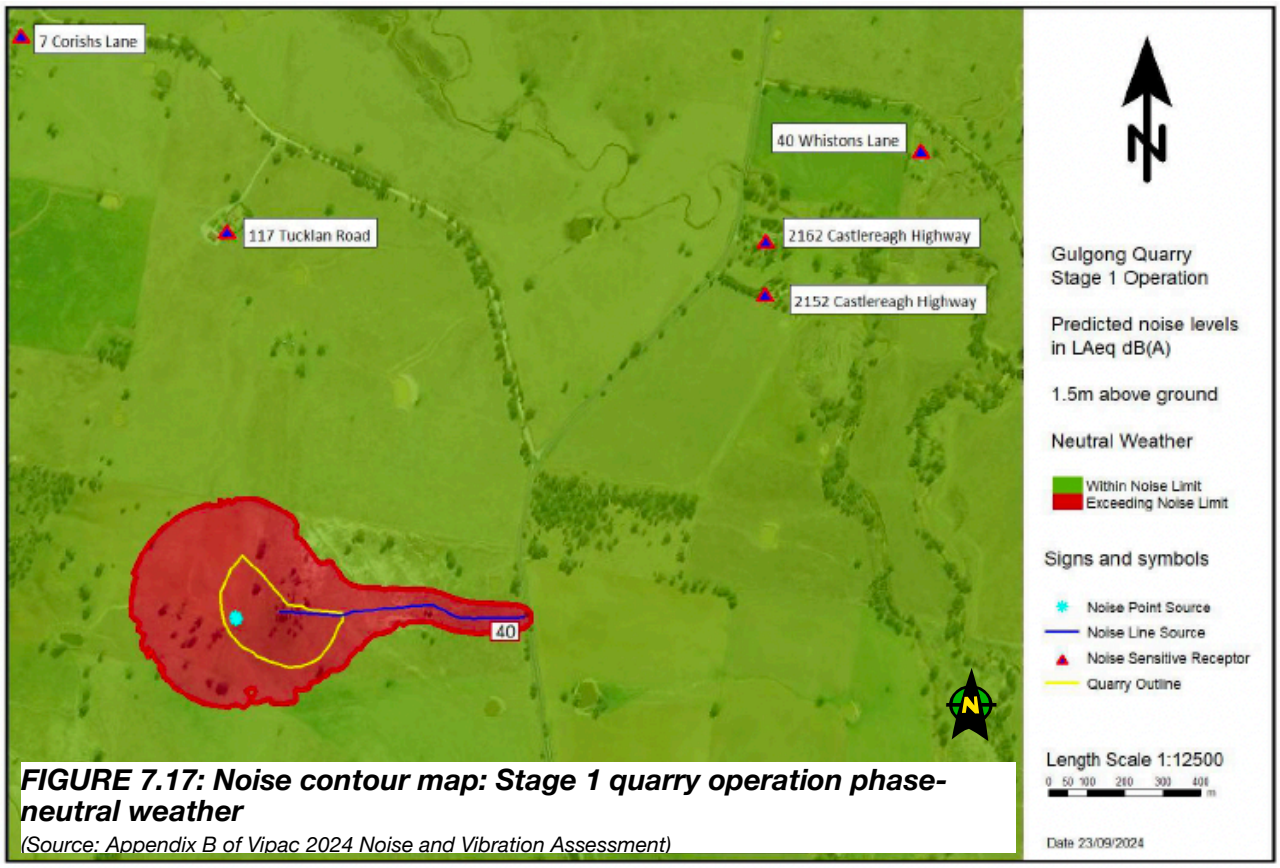


FIGURE 7.17: Noise contour map: Stage 1 quarry operation phase-neutral weather

(Source: Appendix B of Vipac 2024 Noise and Vibration Assessment)

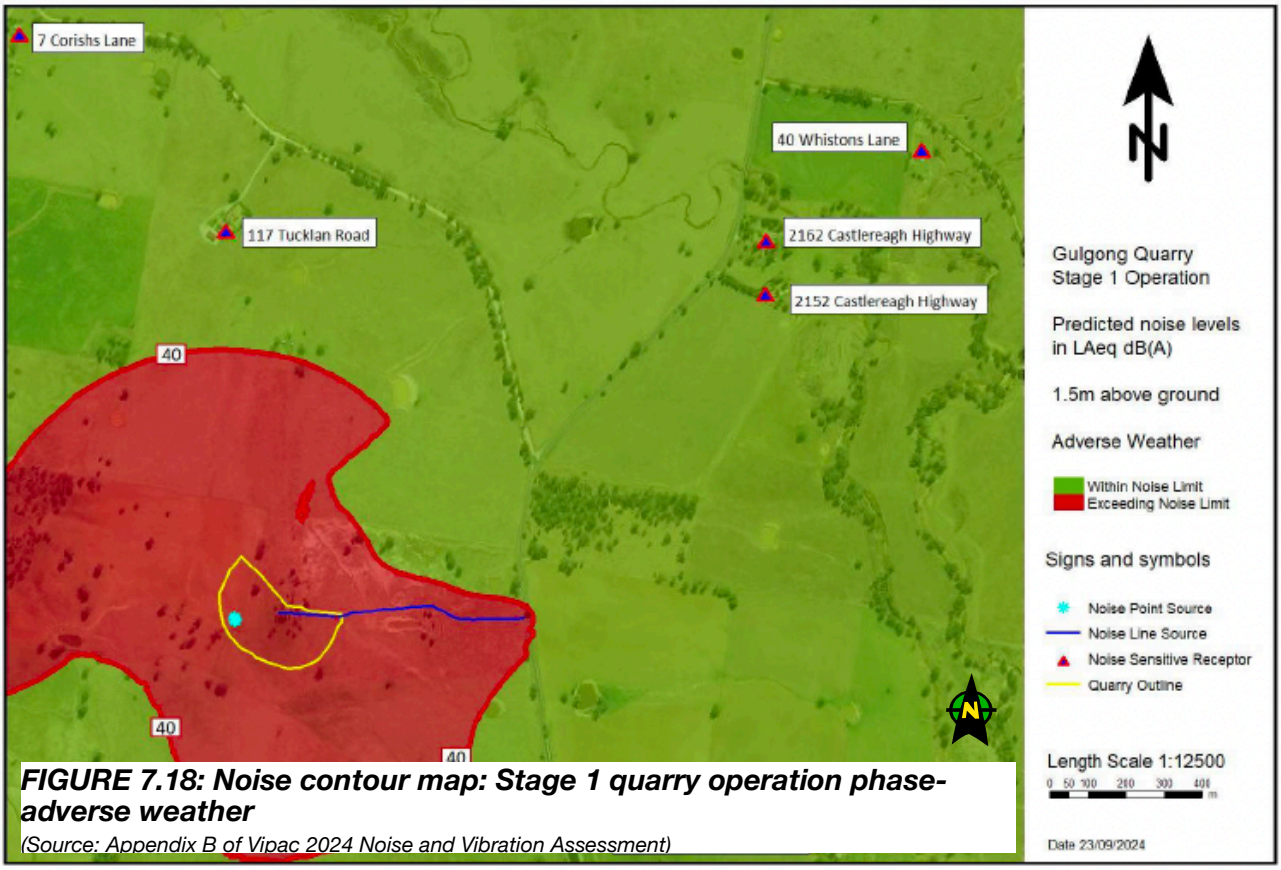


FIGURE 7.18: Noise contour map: Stage 1 quarry operation phase-adverse weather

(Source: Appendix B of Vipac 2024 Noise and Vibration Assessment)

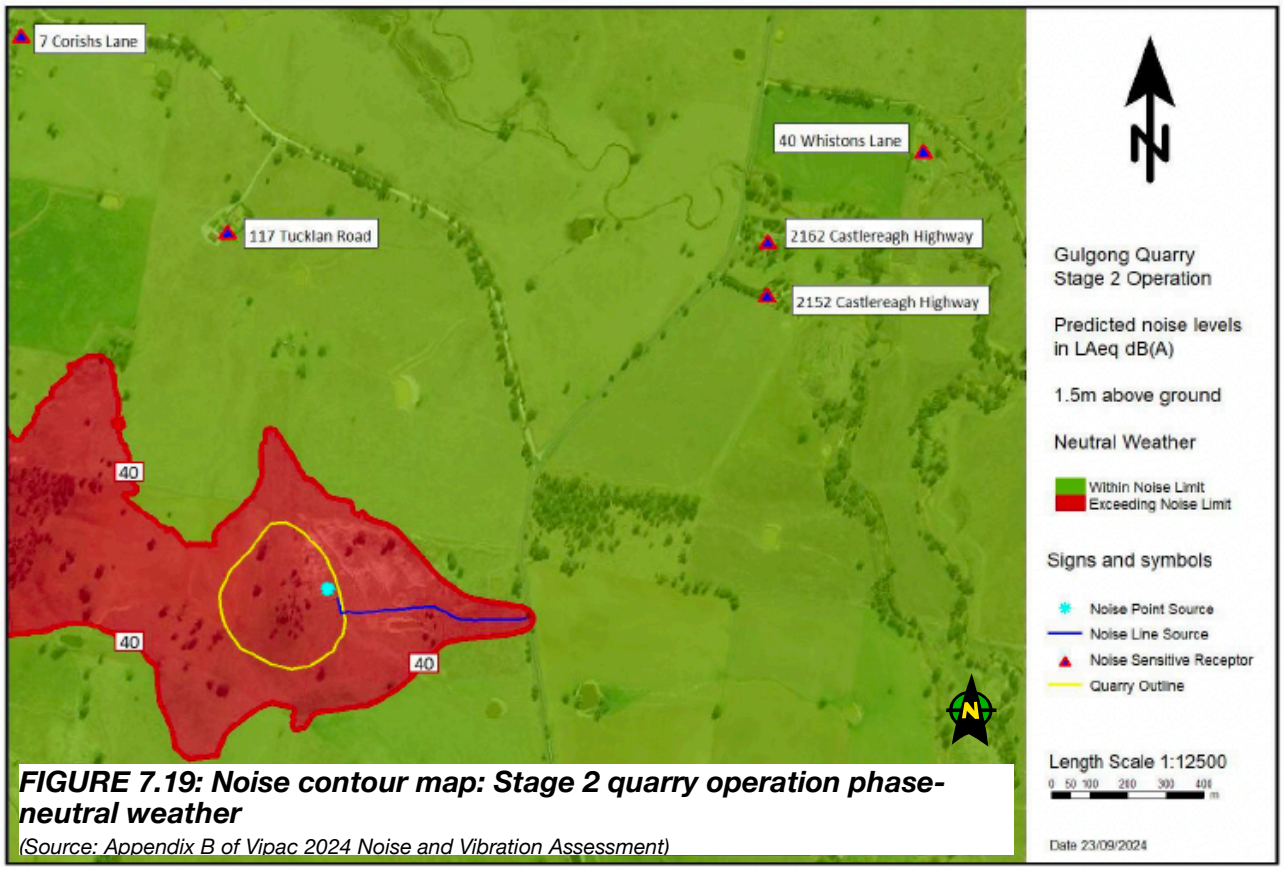


FIGURE 7.19: Noise contour map: Stage 2 quarry operation phase-neutral weather

(Source: Appendix B of Vipac 2024 Noise and Vibration Assessment)

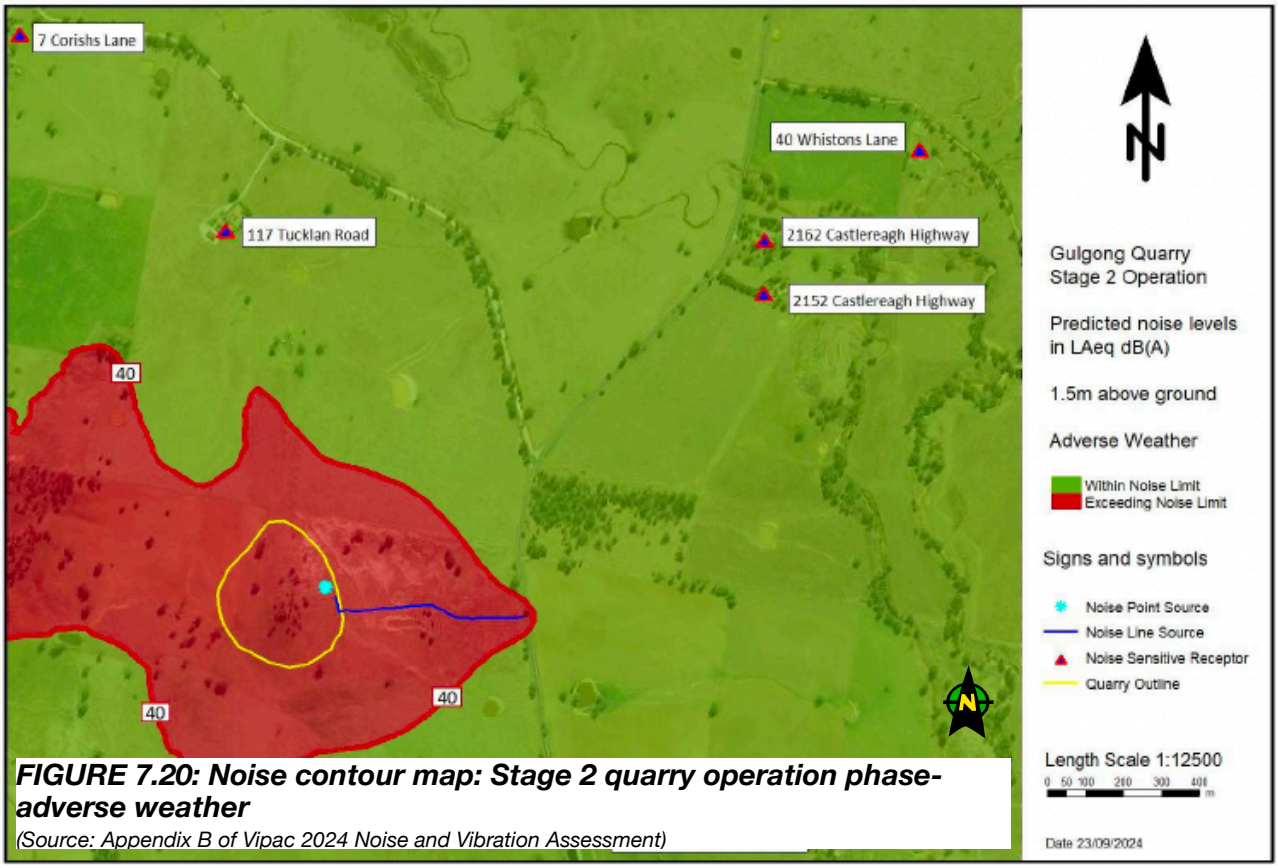


FIGURE 7.20: Noise contour map: Stage 2 quarry operation phase-adverse weather

(Source: Appendix B of Vipac 2024 Noise and Vibration Assessment)

Traffic Noise Impact Assessment

The Calculation of Road Traffic Noise (CoRTN) method of traffic noise prediction has been used, which is a method approved by the EPA. The assessment considers two worst-case scenarios, both assuming all quarry truck movements are on the Castlereagh Highway. This is equal to an additional 120 truck movements per day (i.e. laden and unladen) as a 'worst case'.

Project Site has direct vehicular access to Castlereagh Highway, a sub-arterial road. In accordance with the requirements of the NSW *Road Noise Policy 2011* (RNP) an external (day time) Assessment Criteria/Target Noise Level of 60dB(A) LAeq (15 hour) applies.

Residences experiencing increases in total traffic noise levels of 12 dB or more above existing traffic noise (LAeq (15 hour)) is likely to trigger community reaction, and should also be considered for mitigation.

The Vipac assessment finds that traffic noise generated by the project will comply with the RNP, without the need for mitigation. Vipac have applied *Calculation of Road Traffic Noise* (CoRTN) method to calculate traffic noise associated with the proposed additional quarry truck movements on the existing haul route.

The accompanying Table 7.6 below presents Vipac's traffic noise predictions for existing traffic, alongside future predicted traffic volumes at the nearest residential receptors, based on traffic predictions by Streetwise (**Appendix D**). Road traffic noise monitoring was not conducted as part of this traffic noise assessment, however, it is anticipated that existing traffic noise levels for all other receptors are below the current criteria for both local roads and principal haulage routes. The results predicted by Vipac are therefore intended to provide a conservative indication based on a worst-case scenario of the sole use of heavy vehicles travelling to and from the site. Refer to **Figure 7.21** showing the location of the receptors on the highway that were assessed.

Table 7.20: Predicted Operational Noise levels (dBA)

Receptor	Criteria	Predicted Noise ($L_{Aeq\ 15\ minutes}$ dBA-facade corrected)			
		Predicted Existing Traffic Noise, dB(A)	Predicted Future Traffic Noise, dB(A)	Predicted compliance	Maximum Difference* (Existing v Future) ≤2dB(A)
TR1	60 dBA	50.1	51.4	√ Yes	+1.3
TR2		42.4	43.7	√ Yes	+1.3
TR3		41.1	43.3	√ Yes	+2.2
TR4		51.8	53.4	√ Yes	+1.6
TR5		46.1	49.0	√ Yes	+2.9

(Source: Vipac 2024 *Noise and Vibration Impact Assessment* from Table 6-2 and Streetwise Traffic Impact Assessment report)

It can be seen in Table 7.20 that existing and future traffic noise levels at existing residential receptors are predicted to comply with the criteria without the need for acoustic mitigation.

Given the increase in noise levels between existing and future traffic flow are also well below the relative increase criteria (ie. existing traffic + 12dB), Vipac conclude that the increased traffic from the proposed quarry development is predicted to comply with the relevant road traffic noise criteria.

Vipac conclude that traffic noise associated with the additional quarry truck movements on the Castlereagh Highway are predicted to comply with the criteria without the need for acoustic mitigation measures.

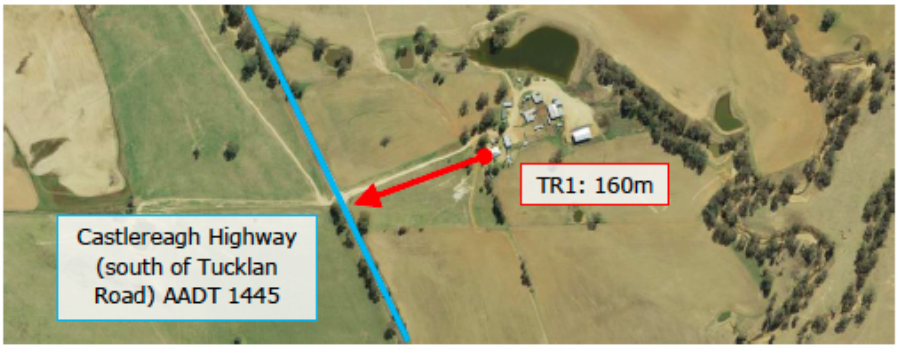
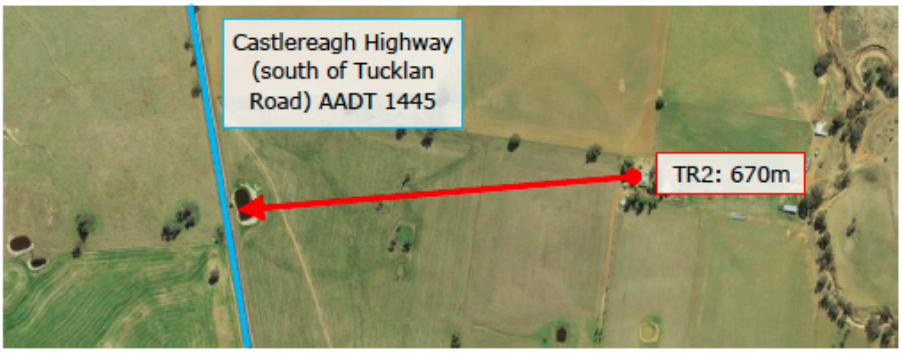
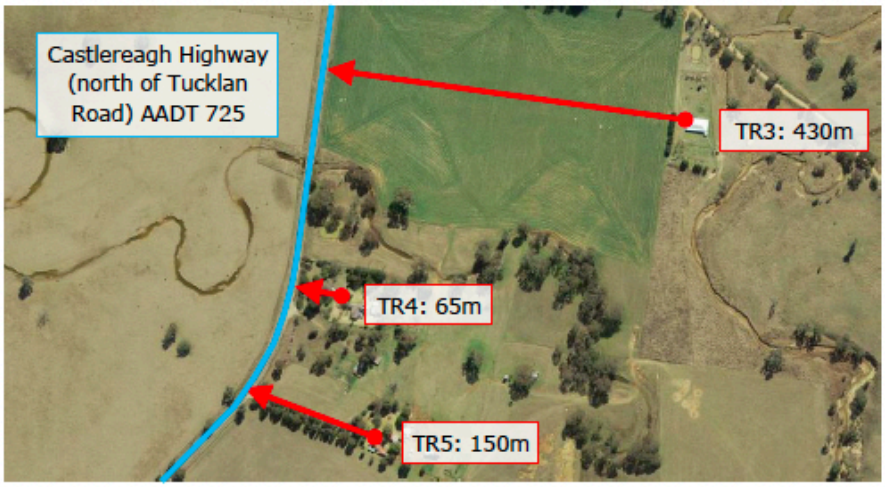
NSR	Distance to Road	Aerial Imagery
TR1: 2058 Castlereagh Highway	160m	
TR2: 1848 Castlereagh Highway (also known as R4)	670m	
TR3: 40 Whistons Lane (also known as R2)	430m	
TR4: 2162 Castlereagh Highway (also known as R6)	65m	
TR5: 2152 Castlereagh Highway (also known as R5)	150m	

FIGURE 7.21: Road traffic noise assessment receptor locations

(Source: Appendix B of Vipac 2024 Noise and Vibration Assessment)

Noise Impact Assessment: Conclusion

On the basis of Vipac's assessment of predicted traffic noise and quarry noise, and subject to the implementation of appropriate noise mitigation measures (refer Section 4.0 of this EIS and **Appendix C**), the operation of Gulgong Quarry is capable of complying with the relevant noise criteria at surrounding sensitive receivers.

7.3.11 Biodiversity

Overview

Quarrying involves impacts which cannot be avoided - quarrying inevitably involves clearing of land and excavation and removal of material. It is noted, however, that a similar deposit of quarry material, located on the site but further to the west, was rejected, inter alia, on environmental grounds. In any case, the focus for assessment of this quarry development will thus be on impacts and, where required, impact minimisation.

A Biodiversity Development Assessment Report (BDAR) has been prepared by Bower Ecology for the Gulgong Quarry project and is provided in **Appendix L**. A BDAR is a comprehensive document required under the *Biodiversity Conservation Act 2016* (the BC Act) that assesses the biodiversity impacts associated with a proposed development. The BDAR is required in order to ensure that a proposed development complies with biodiversity conservation requirements at the same time as identifying measures to avoid, minimise, or offset impacts to areas with vegetation mapped with biodiversity values: *IRM Property Group (No.2) Pty Ltd v Blacktown City Council* [2021] NSWLEC 1306. The concept of avoidance, minimisation and offsets to address impacts to biodiversity values is consistent with a key purpose to maintain a healthy, productive and resilient environments, as provided for in s.1.3(k) of the BC Act.

The BDAR was also prepared with reference to relevant guidelines and policies and the issued SEARs as well as with s.2.20(1)(b) of *State Environmental Planning Policy (Resources and Energy) 2021* which requires the following:

> *"2.20 Natural resource management and environmental management*
> *(1) Before granting consent for development for the purposes of mining, petroleum production or extractive industry, the consent authority must consider whether or not the consent should be issued subject to conditions aimed at ensuring that the development is undertaken in an environmentally responsible manner, including conditions to ensure the following—*
> *……,*
> *(b) that* ***impacts on threatened species and biodiversity, are avoided, or are minimised to the greatest extent practicable****,*
> …… [our emphasis in **bold**]

Under the NSW BC Act a proposed development (as assessed under Part 4 of the EP&A Act) is required to be assessed via the NSW Biodiversity Offset Scheme (BOS) when specific entry requirements are triggered. If the BOS is triggered a development agreement (DA) is required to be accompanied by a BDAR prepared in accordance with the Biodiversity Assessment Method (BAM). The outcomes of the assessment of these thresholds for the Project is as below.

It is noteworthy that the Project Site is not mapped on the NSW Government's online Biodiversity Values Map- refer **Figure 7.22**. Additionally, no areas of outstanding biodiversity values (AOBV) overlay the project site. Both the *Biodiversity Conservation Act 2016* and *Biodiversity Conservation Regulation 2017* apply to the Project Site.

As the proposed development proposes to clear 1.54 ha of native vegetation (greater than the applicable 1 ha trigger) and based on the native area clearing thresholds BOS will be triggered. more than 1ha of clearing offsets or Biodiversity Development Assessment Report (BDAR) are required.

In accordance with s.11 of the *State Environmental Planning Policy (Biodiversity and Conservation) 2021* the Bower Ecology ecological assessment also considers the potential for impact on the Koala. The assessment finds that the proposed quarry development will not have any impact on koalas or koala habitat. The Bower Ecology ecological assessment provides a summary of the potential impacts to threatened flora and fauna species from the Project, along with vegetation communities and potential habitat across the entire Project Site.

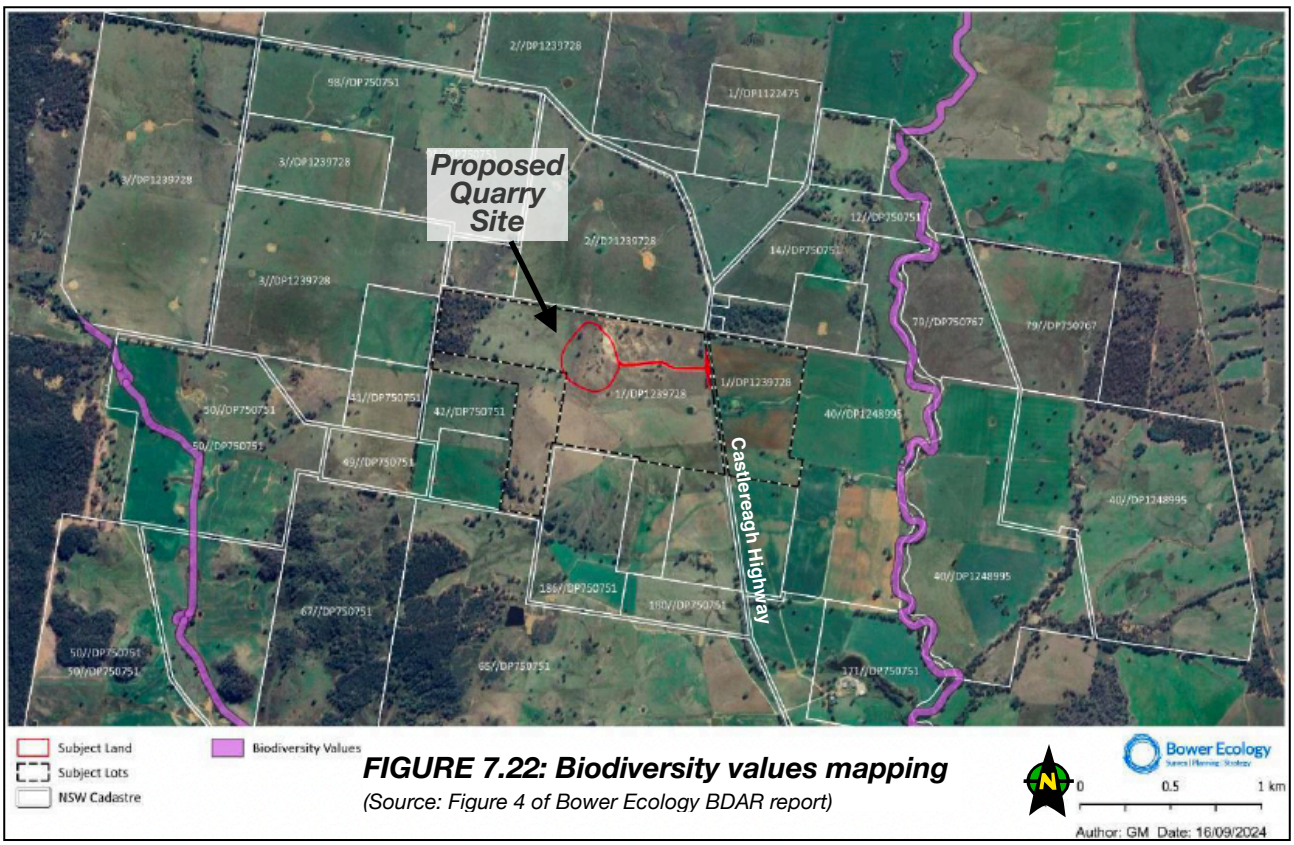


FIGURE 7.22: Biodiversity values mapping
(Source: Figure 4 of Bower Ecology BDAR report)

The *Local land Services Act 2013* was developed in order to develop a balanced approach to assessing biodiversity within designated for rural land management practices such as agriculture and grazing. The NSW Department of Planning Housing and Infrastructure has released the draft Native Vegetation Regulatory (NVR) map while the statewide NVR map is being updated by the department. For the purpose of this BDAR, the Draft LLS mapping is accepted- refer to **Figure 7.23**. Section 6.8 of the BC Act requires that the biodiversity assessment method is to exclude the assessment of the impacts of any clearing of native vegetation and loss of habitat on category 1-exempt land (within the meaning of Part 5A of the *Local Land Services Act 2013*, other than any impacts prescribed by the regulations under Section 6.3 of BC Act.

As per the draft NVR mapping, the proposed quarry site and access contains both Category 1 - exempt land and Category 2 – regulated land.

Category 1 - exempt land is defined as:

- Land that was cleared of native vegetation as at 1 January 1990, and
- Land that contains low conservation value grasslands.

Category 2 – regulated land is defined as:

- Land that was cleared of native vegetation as at 1 January 1990, and
- Land that contains grasslands that are not low conservation value grasslands.

Notwithstanding the acceptance of the NVR mapping, site surveys by Bower Ecology confirm the extent of Category 1 land, that is:

- Prior to clearing the majority of the area impacted by the proposed quarry did not constitute a Critically Endangered Ecological Community.
- It is clear from a review of historical aerial photography that the land was lawfully cleared of vegetation prior to 1990, and since it was cleared it has been used for intensive grazing.

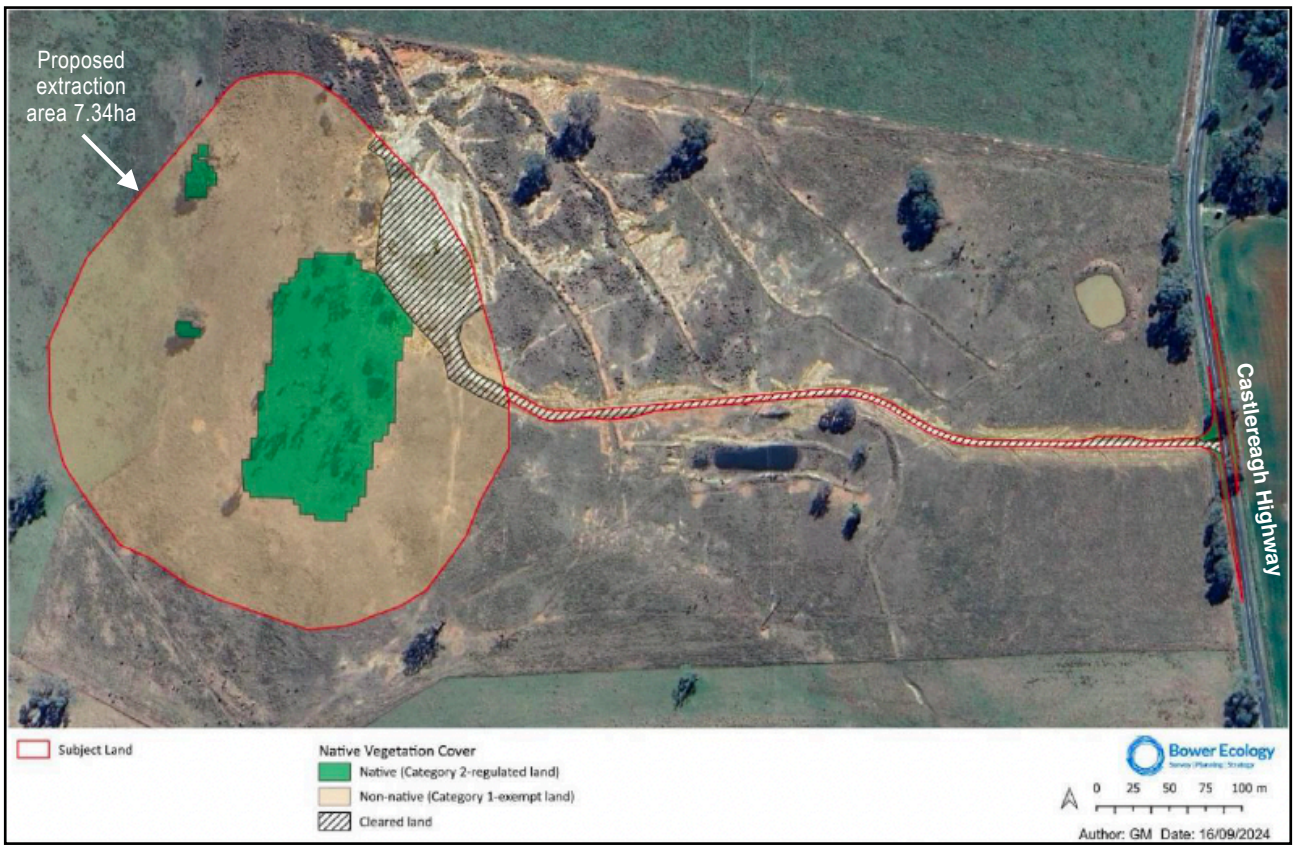


FIGURE 7.23: Native vegetation within the proposed quarry area
(Source: Figure 12 of Bower Ecology BDAR report)

Based on the site investigations by Bower Ecology it is concluded that the project site does not contain any feed tree species as listed in Schedule 1 of *State Environmental Planning Policy (Biodiversity and Conservation) 2021* and therefore the subject land does not contain 'potential koala habitat' or 'core koala habitat' under this SEPP.

The subject land did contain some 'koala use trees'[3] (e.g. *Eucalyptus blakelyi* and *Eucalyptus albens*), however, due to highly fragmented nature of suitable habitat, the species is considered unlikely to rely on the habitat within the subject land Nonetheless, koalas may occasionally traverse the subject land or use trees within the subject land for foraging habitat.

Vegetation

The project site has been historically cleared for agricultural purposes and is still currently utilised for such purposes. Historical aerial imagery has outlined that historical clearing has been conducted within the subject site as early as 1964. It has been extensively grazed by sheep and cattle resulting in degraded ecological health. In addition, the site contains an access track, fencing and constructed dams used for farming, along with the existing borrow pit.

Bower Ecology conducted the field surveys from 19-23 August 2024 to verify and update the vegetation extent and Plant Community Type (PCT) mapping. The vegetation within the Category 2 land areas of the subject land was ground-truthed to examine and verify known mapping of the condition and extent of different plant communities.

The Bower Ecology site surveys identified scattered canopy trees, including a small patch of canopy individuals within the central portion of the proposed quarry site. A large patch of dense vegetation was also observed to the west of the proposed quarry, located approximately 620 metres directly west of the proposed quarry. Refer **Figure 7.24**.

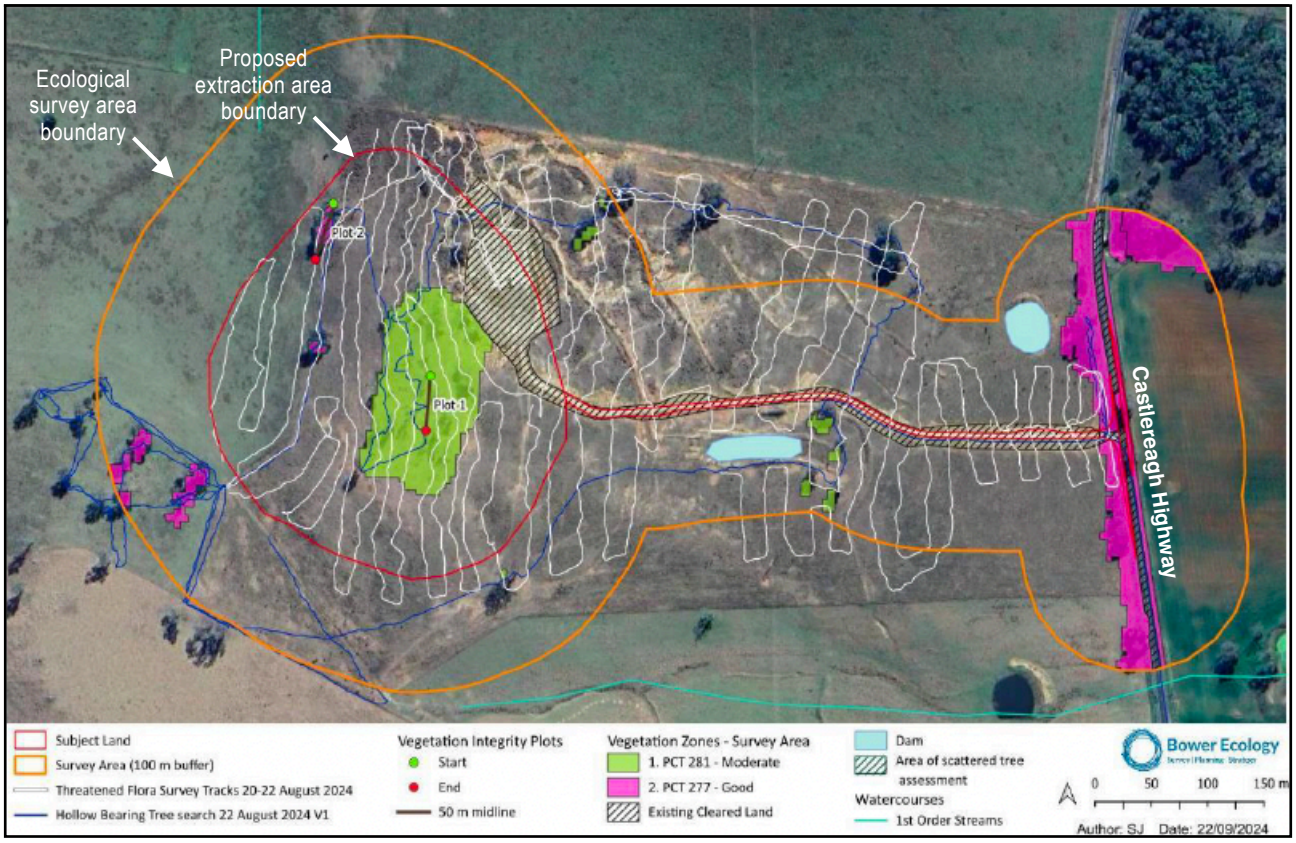


FIGURE 7.24: Bower Ecology flora survey locations
(Source: Figure 10 of Bower Ecology BDAR report)

Field surveys by Bower Ecology identified that the site contained a small sparse patch of remnant *Angophora floribunda* (Rough-barked Apple) individuals within the central portion of the site. There were also occurrences of large remnant individuals of species Rough-barked Apple, *Eucalyptus blakelyi* (Blakely's Red Gum), *Eucalyptus melliodora* (Yellow Box) and *Eucalyptus albens* (White Box) scattered across the subject lot and beyond. The remaining vegetation within the survey area contains mixed native and introduced grass species. Vegetation cover was mapped throughout the survey area through a combination of assessment for vegetation mapping, walking parallel threatened species survey transects, and the Vegetation Integrity plots. Category 2 land (assessable vegetation under BAM) within the subject land occupies 1.58 ha, which comprises 17.59% of the proposed quarry site.

The ground cover layer was inconsistent across the area investigated, with some patches of regrowth native grass species, while other areas were dominated by introduced pastoral grasses. Overall, while there were patches of native ground cover, the ground cover would be considered low conservation value as less than 50% of the vegetation cover consisted of native species. The vegetation within the area investigated by Bower Ecology was heavily degraded due to historical and current agricultural land usage.

Two Plant Community Types (PCTs) were identified in the Bower Ecology site survey:

- PCT 281: Rough-barked Apple-Red Gum-Yellow Box Woodland (Low condition) . A sparse PCT 281 woodland was found at the top of the elevated knoll, and a few trees near the dam nearer the highway. Refer Photograph 7.11.
- PCT 277: Blakelys Red Gum-Yellow Box grassy tall woodland (Moderate condition) . A few scatted trees on the site of the proposed quarry, as well as areas of scattered trees and low-quality native grassland proximate to the highway. Considered to be a threatened ecological community. Refer Photograph 7.12.

Figure 7.25 shows the general distribution of native vegetation and pasture across the land. In total, 7.10ha was Category 1 Exempt Land under the LLS Act draft mapping, with 1.54ha of PCT vegetation.

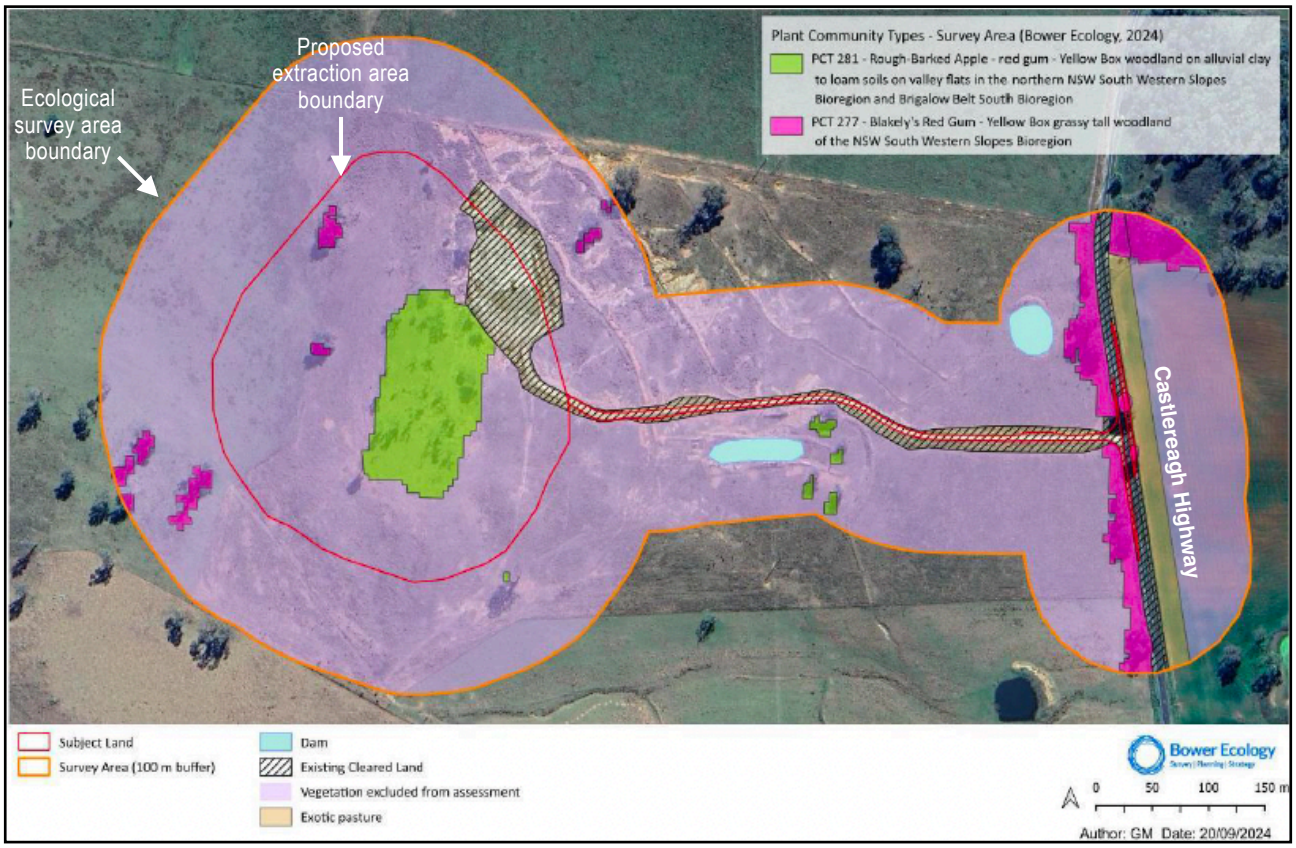


FIGURE 7.25: Plant community types
(Source: Figure 15 of Bower Ecology BDAR report)

The accompanying Table summarises the area and condition of each PCT encountered on site.

Table 7.21: PCTs and associated vegetation zones identified

Vegetation Zone and PCT ID	PCT Name	Vegetation Formation	Condition Class	Approx. Area (ha)
1a PCT 281	*Rough-Barked Apple - red gum - Yellow Box woodland on alluvial clay to loam soils on valley flats in the northern NSW South Western Slopes Bioregion and Brigalow Belt South Bioregion.*	*KF_CH3 Grassy Woodlands*	*Low Condition Woodland*	*1.46 ha*
2a PCT 277	*2Blakely's Red Gum - Yellow Box grassy tall woodland of the NSW South Western Slopes Bioregion.*	*KF_CH3 Grassy Woodlands*	*Moderate Condition Woodland*	*0.08 ha*
				TOTAL AREA 1.54ha

(*Source: Table 10 of Bower Ecology BDAR report*)

No threatened flora species listed under the BC Act or EPBC Act were identified within the subject land during the threatened flora surveys by Bower Ecology.

PHOTOGRAPH 7.11: PCT 281: Low Condition Woodland within the central portion of the proposed quarry

PHOTOGRAPH 7.12: PCT 277: Moderate Condition scattered Eucalyptus blakelyi (Blakely's red gum) and Eucalyptus albens (White Box) individuals near the highway entry

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Fauna

Targeted threatened fauna surveys were undertaken by Bower Ecology for species credit species that were assessed as candidate species credit species for further assessment. The fauna species surveyed were as follows, with survey locations illustrated in **Figure 7.26**:

- Brush-tailed Phascogale: *Phascogale tapoatafa*.
- Koala: *Phascolarctos cinereus*.
- Southern Myotis; *Myotis macropus*.
- Squirrel Glider: *Petaurus norfolcensis*.
- Superb parrot (breeding): *Polytelis swainsonii*.
- White-bellied Sea-Eagle (breeding):*Haliaeetus leucogaster*.
- Pink-tailed Legless Lizard: *Aprasia parapulchella*.
- Striped Legless Lizard: *Delma impar*.
- Key's Matchstick Grasshopper: *Keyacris scurra*.
- Golden Sun Moth: *Synemon plana*.

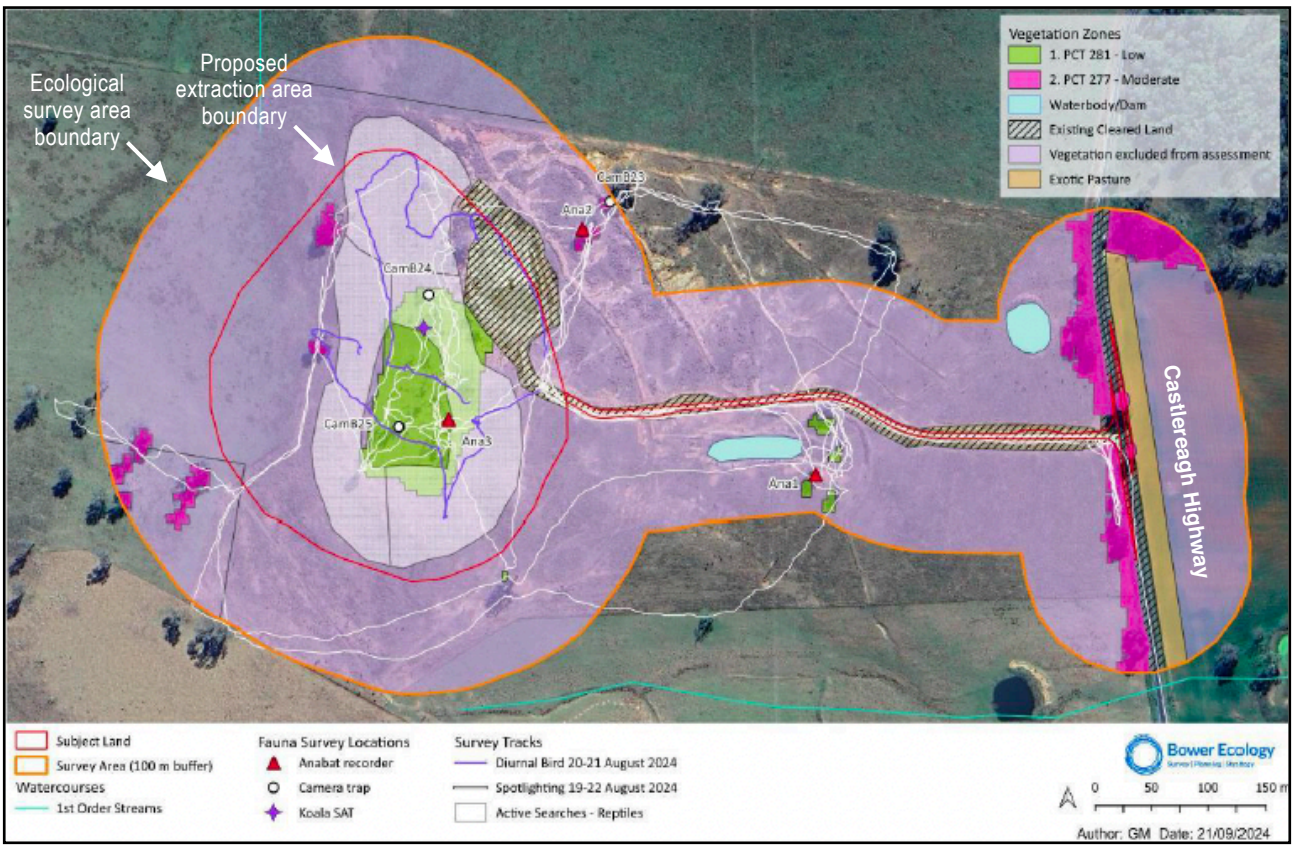


FIGURE 7.26: Fauna survey locations

(Source: Figure 11 of Bower Ecology BDAR report)

The survey methods adopted for each target fauna species was as follows:

- Spotlighting surveys. Target species: Brush-tailed Phascogale, Squirrel Glider, Koala. Spotlighting was undertaken once each night during between 19- 23 August 2024 in all areas of woody vegetation within the subject land for a survey period of approximately two hours each night.
- Motion sensor camera traps. Target species: Brush-tailed Phascogale, Squirrel Glider, Koala. The cameras were set on 20 August 2024 for a period of four weeks and removed on 17 September 2024.
- Spot assessment technique surveys. Target species: Koala. Surveys for Koalas were undertaken following the Koala *Biodiversity Assessment Method Survey Guide* (DPE 2022) using a method known as the Spot Assessment Technique. Spotlighting targeting the Koala was also undertaken during the field survey by Bower Ecology.
- Ultrasound call detention surveys.Target species: Southern Myotis. Three ultrasonic call detection units were placed in proximity to areas of the most suitable habitat and left onsite for a minimum of four consecutive nights to record microbat activity.
- Diurnal Bird Surveys Target species: Superb Parrot (Breeding), White-bellied Sea-Eagle (Breeding).
- Active search in suitable habitat. Target species: Pink-tailed Legless Lizard, Striped Legless Lizard.
- Meander Searches in Potential Habitat. Target species: Key's Matchstick Grasshopper, Golden Sun Moth. The surveys involved extensive meanders through the native grassland present within the survey area, with all the suitable habitat within the subject land covered during the search surveys.

Bower Ecology conclude that the site does not form part of a regional or local biodiversity corridor, or a flyway for migratory species. Additionally, there are no areas containing karst, caves, cliffs, or other geological features of significance within the site. However, the central knoll along the gentle slopes provides rocky area that may serve as a reptile habitat for a few species.

Impact Assessment: Direct Impacts

The direct impact resulting from the Gulgong Quarry Project is the loss of vegetation and associated habitat within the quarry site and (potentially) the loss of two trees as a result of the proposed highway intersection- the latter to be confirmed by an arborist at the detailed design stage.

A direct impact to fauna habitat (foraging/breeding/shelter resources) will also occur due to the extent of clearing proposed, including twenty hollow bearing trees. As the proposal quarry footprint is relatively small compared with the surrounding contiguous vegetation, Bower Ecology conclude that the direct impacts of the proposed clearing on fauna species are likely to be minimal.

Bower Ecology conclude that no significant direct impact to the fauna species is expected during vegetation clearing; however, the clearing itself does provide a residual risk to fauna due to direct mortality during clearing works. This risk can be minimised-but not completely eliminated.

Bower Ecology conclude that the likelihood of direct mortality of threatened species during clearing and quarry works is considered to be very low / improbable if appropriate mitigation measures are applied.

No threatened flora and fauna species were confirmed to occur within the subject land except for the threatened bat *Miniopterus orianae oceanensis* (Large bent-winged bat), which, due to the lack of breeding habitat on site, was inferred to be foraging. Additionally, the undifferentiated *Nyctophilus* sp. was recorded by Bower Ecology within the site. Bower Ecology conclude that there is a low likelihood that this was a threatened *Nyctophilus* species. In any case, the threatened *Nyctophilus spp*. are all ecosystem credit species and will therefore be compensated for via retirement of ecosystem credits. It is also worth noting however, that no *Nyctophilus sp*. are associated with the PCTs 277 or 281, per the NSW Threatened Biodiversity Data Collection.

No other threatened species was recorded to be present within the subject land during the field surveys. As a result, Bower Ecology conclude that no direct impacts are expected to occur to any of the threatened flora or fauna species.

Impact Assessment: Indirect Impacts

Various indirect impacts are considered in Table 7.22 and Table 7.23.

Table 7.22: Potential Indirect Impacts and Residual Risks/Impacts: Construction Stage

Potential Impact Construction	*Assessment*	*Residual Risk*
Impacts on adjacent habitats	▸ *Quarrying work limited to quarry footprint.*	*LOW-NEGLIGIBLE*
Dust impacts to surrounding lands	▸ *Likely negligible impacts- refer to air quality impact assessment in Appendix H.* ▸ *No impact to threatened fauna.*	*LOW-NEGLIGIBLE*
Water impacts, downstream sediment impacts	▸ *All quarrying limited to quarry footprint.* ▸ *All drainage within quarry directed to onsite sediment basin- no risk of any off site drainage impacts.*	*LOW-NEGLIGIBLE*
Noise/visual impacts	▸ *Likely negligible impacts to threatened fauna.* ▸ *No impact to native vegetation.*	*LOW-NEGLIGIBLE*
Light spillage- impact on nocturnal fauna	▸ *Will not occur during construction.*	*LOW-NEGLIGIBLE*
Transport of weeds. pathogens	▸ *Unlikely to negligible impact to native vegetation and threatened fauna.*	*LOW*

Table 7.23: Potential Indirect Impacts and Residual Risks/Impacts: Quarry Operational Stage

Potential Impact Construction	Assessment	Residual Risk
Dust impacts to surrounding lands	▸ *Dust mitigation strategies form a part of the quarry project.* ▸ *Likely negligible impacts- localised to immediate vicinity of the working quarry- refer to air quality impact assessment in Appendix H.* ▸ *No impact to threatened fauna.*	*LOW-NEGLIGIBLE*
Impacts on adjacent habitats-edge effects	▸ *Likely negligible impacts- localised to immediate vicinity of the working quarry.*	*LOW-NEGLIGIBLE*
Water impacts, downstream sediment impacts	▸ *All quarrying limited to quarry footprint.* ▸ *All drainage within quarry directed to onsite sediment basin- no risk of any off site drainage impacts.*	*LOW-NEGLIGIBLE*
Noise/visual impacts	▸ *Limited blasting. Noise impacts confined to a small area around the working quarry and access. No impact to native vegetation and likely negligible to minor impacts to threatened fauna.*	*LOW-NEGLIGIBLE*
Light spillage- impact on nocturnal fauna	▸ *Daytime use only. Security lighting only to be utilised at night- no lighting associated with operational plant.* ▸ *No or negligible impact to native vegetation or threatened fauna.*	*LOW-NEGLIGIBLE*
Transport of weeds. pathogens	▸ *Unlikely to negligible impact to native vegetation and threatened fauna.* ▸ *The quarry unlikely to be a source of weeds.*	*LOW-NEGLIGIBLE*
Increased risk of starvation or exposure, and loss of shade or shelter	▸ *Not applicable given the degraded nature of the site and more suitable extent of contiguous habitat in the surrounding land* ▸ *Unlikely to negligible impact to native vegetation and threatened fauna.*	*NEGLIGIBLE*
Loss of breeding habitat	▸ *Negligible impact expected due to lack of mature forest adjacent to the site.*	*NEGLIGIBLE*
Trampling of threatened flora	▸ *Quarrying confined to a quarry void at depth.* ▸ *Very unlikely to occur.*	*NEGLIGIBLE*
Impact on nitrogen fixation, increased soil salinity, fertiiser drift	▸ *Quarrying confined to a quarry void at depth.* ▸ *Very unlikely to occur.*	*NEGLIGIBLE*
Waste/rubbish	▸ *Quarrying confined to a quarry void at depth, with site access restricted via locked gates, wastes managed.* ▸ *No impacts likely.*	*NEGLIGIBLE*
Increase in predators/pests	▸ *Quarrying confined to a quarry void at depth.* ▸ *No impacts likely.*	*NEGLIGIBLE*
Change in fire regime	▸ *The land is not bushfire prone.* ▸ *Fire management measures in place.* ▸ *No impacts likely.*	*NEGLIGIBLE*

Prescribed Impacts

The Gulgong Quarry Project has been assessed in terms of three prescribed impacts:

- Geological features of significance: The elevated knoll has has rocky outcrops of approximately 3.9ha area that may serve as a habitat feature.The above-mentioned geological feature of significance will be permanently removed. The Bower Ecology survey found no threatened reptile species. A significant impact to this species is considered unlikely.
- Habitat connectivity: The site has a sparse woodland and the surrounding agricultural landscape only offers patches of one to three large trees and together may offer 'stepping stones' for the fauna moving across the more connected and larger patches of vegetation about 600 m to the west of the subject land and a similar patch to the east of the subject land. However, the project will not significantly change the movement patterns of wildlife in the larger area. Overall, the proposed project is unlikely to have a significant impact on the movement of fauna across the wider landscape. The proposed development will not result in any habitat fragmentation across the landscape.
- Vehicle strikes: The extensive fauna surveys have indicated that none of the threatened species are likely to occur within the subject land except a couple of microbat species that were detected moving through the subject land. The development footprint will be a disturbed area once the vegetation clearing has been carried out and the highly mobile threatened species are likely to avoid the area of subject land, thereby further reducing the potential vehicle strikes. The project is unlikely to impact the threatened species and all the fauna occurring on the site via vehicle strikes.

Mitigation Measures and Impacts

Some of the relevant mitigation measures proposed are considered in the following:

- Induction protocols for all staff members required to conduct works within the subject land to outline the mitigation measures being implemented to project biodiversity values within the study area i.e waste management, road rules, clearing limits. Refer EIS Sections 3 and 4 for further details.
- The clearing limits for the quarry will be suitably marked out.
- Preventing access to the site through fencing and locked gates- already in place.
- 30km/hour speed limit and draft Driver Code of Conduct applies, to reduce vehicle strike.
- Pre-clearance surveys/clearing protocols to be conducted prior to vegetation clearance. A pre-clearing survey will be undertaken within two weeks of clearing works by a Project Ecologist. Captured fauna to be removed responsibly.Should a koala be encountered within the project area during clearing activities, all work must cease within a radius of 50m of the tree in which the koala is observed.
- Weed prevention to be implemented.
- 'Best practice' erosion and sedimentation, dust controls to be implemented. Refer to EIS Section 3 for details.
- Various dust mitigation measures are proposed for the project. Refer to EIS Section 3.5.7 for details.
- Quarry to be rehabilitated- refer to EIS Section 3.14 for details.Progressive rehabilitation of the benches will be undertaken via seeding ground layer and shrub species, as well as planting of tube stock (for tree species).

Serious and Irreversible Impacts (SAII)

Only two SAII entities will be impacted by the proposed quarry development:

- The White Box Yellow Box Blakely's Red Gum Woodland (0.08 ha, represented by 5 paddock trees). Bower Ecology conclude that an SAII to this TEC is not anticipated.The Biodiversity Offset System (BOS) will be utilised to compensate for the loss via the requirement to provide ecosystem credits for loss of PCT 277.
- Loss of foraging habitat for the Large Bent-winged Bat. Bower Ecology conclude that an SAII to this TEC is not anticipated.

Bower Ecology identify 1 ecosystem credit is required for the loss of 0.08ha of Moderate Condition Woodland: PCT 277: Blakely's Red Gum Yellow Box grassy tall woodland. Further, Bower Ecology conclude that an EPBC Act referral is not required

7.3.12 Traffic and Transport

Introduction

A Traffic Impact Assessment (TIA) has been prepared by Streetwise for the Gulgong Quarry Project and is provided in **Appendix D**. The TIA describes the existing local and regional traffic network surrounding the existing site and assesses the impacts of the project on that network, and addresses both the SEARs requirements as well as the Traffic Impact Assessment requirements of Transport for NSW (TfNSW) accompanying the issued SEARs. The TIA has been prepared by suitably qualified experts in accordance with the Austroads *Guide to Traffic Management Part 12, Australian Standards* and any complementary TfNSW Supplements, and Roads and Maritime *Guide to Traffic Generating Developments*.

The TIA also includes a draft Traffic Management Plan that could be implemented following approval of the EIS, as well as a proposed Driver Code of Conduct for quarry haulage vehicles.

Existing Road Network: Castlereagh Highway

The Castlereagh Highway (B55) is a classified road providing a connection between Wallerawang in the south and the Golden Highway in the north via townships such as Mudgee and Gulgong. The formation generally provides for a single travel lane in each direction with widenings at intersections and for overtaking lanes along its route. In the vicinity of the proposed quarry the travel lanes are generally 3.20m wide in each direction with 0.50m to 1.00m wide sealed.

The proposed quarry truck traffic will rely on this route to service local infrastructure projects.

The posted speed limit in the vicinity of the proposed quarry operation is 100km/h. The Castlereagh Highway is an approved B Double route for heavy vehicles up to a length of 26.0m long.

Mid-Western Regional Council is the relevant Roads Authority for this route.

PHOTOGRAPH 7.13: View of Castlereagh Highway at entry to site looking south.

PHOTOGRAPH 7.14: View of Castlereagh Highway at entry to site looking north.

Existing Road Network: Tuklan Road

Tucklan Road is a local rural access road providing access to rural properties and the township of Dunedoo in the north. There is a gravel section of Tucklan Road between the Castlereagh Highway and 500m north of Artz Lane which is approximately 6.20km north of the Castlereagh Highway. The gravel formation width of Tucklan Road varies in width between 6.0 and 7.0m wide.

The posted speed limit of Tucklan Road in the vicinity of the proposed quarry operation is unrestricted (drive to the conditions). The “T Junction” intersection of Castlereagh Highway (B55) and Tucklan Road generally conforms to a minimum standard BAR / BAL intersection treatment.

It shall be noted that EnergyCo's CWO-REZ approved project nominates Tucklan Road as one of a number of construction routes providing access to the transmission lines. The impact of truck traffic servicing this project was addressed in the EIS for this project.

Existing Traffic Volumes and Capacities

EnergyCo's 2022 EIS referenced the following Average Daily Traffic (ADT) for the Castlereagh Highway:

- 725 ADT on that section between Golden Highway and Tuklan Road, with 19.4% heavy vehicles, with peak hour traffic flows of between 29-41 vehicles per hour.
- 1,445 ADT on that section north-west of Old Mill Road, Gulgong, with 18.5% heavy vehicles, with peak hour traffic flows of between 52-65 vehicles per hour.

Transport for NSW (TfNSW) have advised they do not have any traffic data information near the location of the proposed quarry site. However, they did indicate there was traffic data available for a site on the Castlereagh Highway approximately 4km north of Gulgong in 2021 where the two way volumes were 1,366 vehicles per day with approximately 15.70% of them being heavy vehicles.

Applying the Austroads *Guide to Traffic Management* in the determination of roadway capacity on two lane two way rural roads., Streetwise conclude that:

- The Castlereagh Highway is a Class I category rural road.
- The Castlereagh Highway has a current Level of Service (LoS) of LoS A- primarily free-flow traffic, with vehicles are completely unimpeded in their ability to manoeuvre within the traffic stream, and control delay at the boundary intersections minimal.
- Tuklan Road also operates at LoS A.

Traffic Generation by Proposed Quarry

It is predicted that the Gulgong Quarry Project may generate up to a maximum of 60 laden quarry trucks per day, with a mix of truck and dog combinations (32 & 37.50 tonnes), with larger (42 tonne truck and dog) and smaller trucks used where road weight limits allow. The accompanying Table 7.24 provides a summary of the predicted peak hour traffic generation of the proposed quarry operation.

Table 7.24: Peak traffic generation Gulgong Quarry Project

Land Use Operation	*Proposed Peak Hour Traffic generation*
Proposed Quarry Material Generation (Laden and Unladen Trips) (Maximum)	*60 daily laden trips* *120 daily laden & unladen trips* *5.50 laden trips / hour*
General Quarry Operation (staff & contractors)	*Up to 20 daily trips or 2 trips / peak hour*
Total Peak Hour Trip Generation	*8 laden trips / hour* *13 laden / unladen / general quarry operation trips/day and 140 laden/unladen quarry trucks/day*

(Source: Streetwise Traffic Impact Assessment)

Traffic Generation Accounting for CWO-REZ Projects

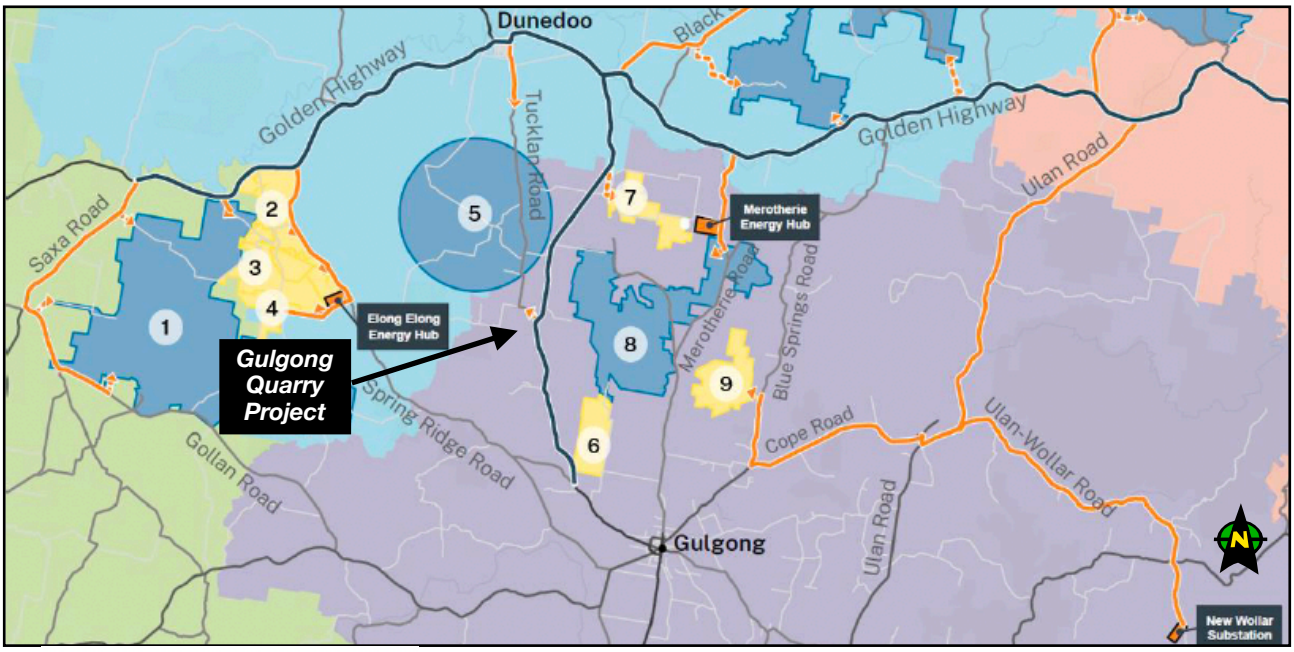
At the time of this report being prepared only four CWO-REZ projects have development approval with construction estimated to commence in the near future. A review of completed traffic impact assessments for these projects relating to construction traffic and ongoing increased operational traffic was assessed by Streetwise.

In summary, the environmental impact and traffic reports prepared in support of these projects indicate each has considered construction phase trips external to the site and the impacts these extra trips will have on the local road network.

The EnergyCo document entitled *Central West Orana Renewable Energy Zone Coordinating community impacts and benefits in the REZ* dated March 2023, makes this very clear:

> "*While upgrades to state roads will be shared by multiple proponents,* ***local road work will typically be specific to individual projects****. Each developer will be responsible for minimising and mitigating impacts of their project on the surrounding communities and environment under the requirements of their respective planning approvals.* ***Any proposed road upgrades required to meet construction and operational requirements will be outlined in each project's Environmental Impact Statement*** *(EIS)*. " (p.10 of the above EnergyCo report) [our emphasis in bold]

The local road upgrades required to service the various REZ nearest to the project site are illustrated in the accompanying **Figure 7.27**. These road upgrades are generated by, and will be responsibility of, each of the REZ projects.



Legend

Local government areas (LGAs)

- Dubbo Regional Council
- Mid-Western Regional Council
- Upper Hunter Shire Council
- Warrumbungle Shire Council

REZ infrastructure

- Energy hub footprint
- Indicative local access road
- Indicative site access road
- Wind development
- Solar development

Indicative only. Map not to scale.

Proposed generation projects with planned connections to the REZ network

1. Spicers Creek Wind Farm
2. Cobbora Solar Farm
3. Sandy Creek Solar Farm
4. Dapper Solar Farm
5. Orana Wind Farm
6. Tallawang Solar Farm
7. Birriwa Solar Farm and Battery Energy Storage System (BESS)
8. Barneys Reef Wind Farm
9. Stubbo Solar Farm

FIGURE 7.27: Local road upgrades generated by renewable energy projects in the Central-West Orana REZ -coloured orange.

"Any proposed road upgrades required to meet construction and operational requirements will be outlined in each project's Environmental Impact Statement"

(Source: p.10 of EnergyCo Central West Orana Renewable Energy Zone Coordinating community impacts and benefits in the REZ dated March 2023)

There are many other proposed renewable energy projects as well as other developments in the region, at various stages of the planning approval process. The construction timings for most of these projects unknown.

The CWO-REZ report used an annual traffic growth rate of 1.60% for its assessments of the Castlereagh Highway. This figure was based on statements in a 2016 report for the Golden Highway Corridor Study where it indicated the annual traffic growth rate of 1.60% was indicative prior to this report being released.

Assessing the TfNSW 2021 traffic data against the CWO-REZ 2022 data the annual traffic growth equates to an increase in traffic volumes of 5.45% per annum. A design horizon of 5 years (2025 to 2030) into the future was used to assess the impacts of the local road network allowing for ongoing CWO-REZ construction projects. Using the above scenarios for traffic growth the following Average Daily Traffic (ADT) volumes on the Castlereagh Highway were derived for 2024 as the CWO-REZ construction design horizon of 5 years—considered to be the period of peak traffic flows associated with construction of the various CWO-REZ projects. Refer Table 7.25.

Table 7.25: Predicted Average Daily Traffic (ADT) volumes on the Castlereagh Highway: 2024-2030

CWO-REZ (1.6% growth) 2024	CWO-REZ (1.6% growth) 2030	TfNSW (5.45% growth) 2024	TfNSW (5.45% growth) 2030
(725) 748 ADT	818 ADT	804 ADT	1,041 ADT

(Source: Streetwise Traffic Impact Assessment)

When the predicted traffic generations are added to the above traffic growth ADT figures the following predicted traffic volumes can be assumed for the Quarry Access and the Castlereagh Highway intersection- refer **Figure 7.28** (1.60% traffic growth Castlereagh Highway) and **Figure 7.29** (5.45% traffic growth Castlereagh Highway)

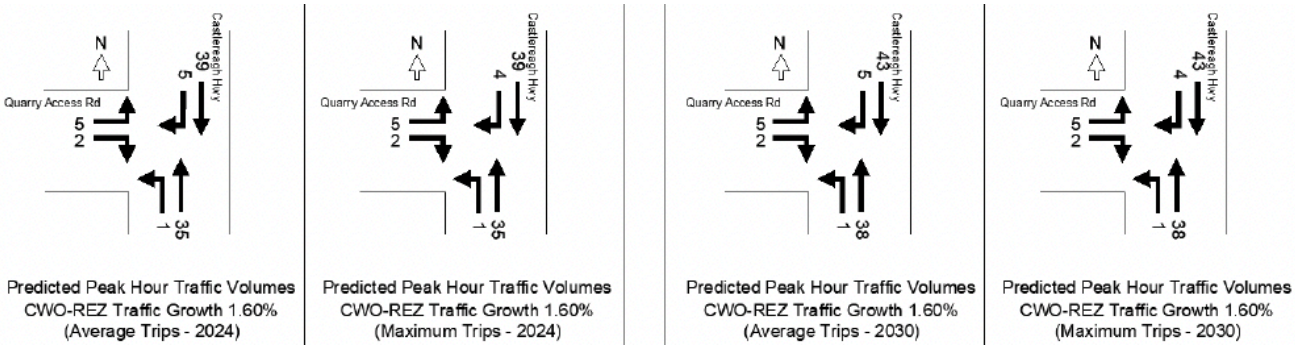


FIGURE 7.28: Predicted peak hour traffic volumes intersection of quarry access and Castlereagh Highway: CWO-REZ 1.6% traffic growth scenario 2024-2030

(Source:Streetwise Traffic Impact Assessment)

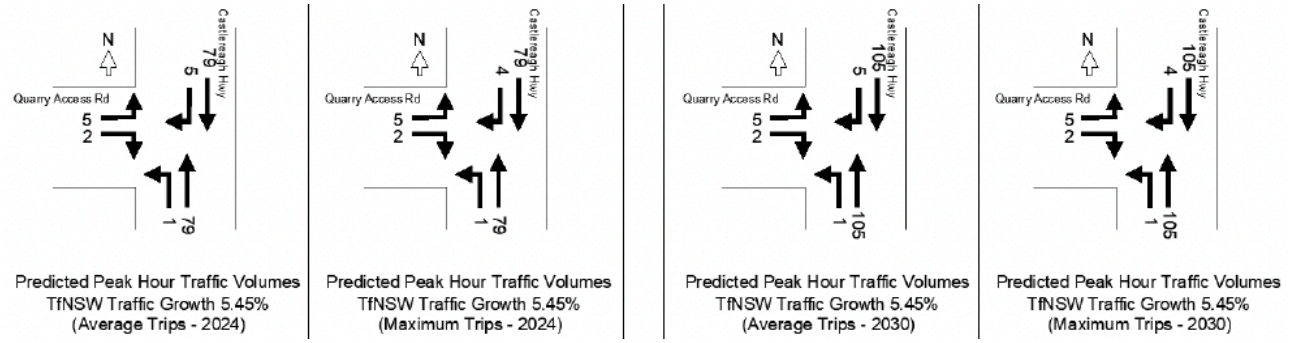


FIGURE 7.29: Predicted peak hour traffic volumes intersection of quarry access and Castlereagh Highway: TfNSW 5.45% traffic growth scenario 2024-2030

(Source:Streetwise Traffic Impact Assessment)

Streetwise conclude that the intersection of the quarry access road and the highway will require a Type BAL/BAR intersection layout in order to accommodate existing and future traffic flows. Streetwise also recommend the sealing of shoulders, having regard for the number of heavy vehicles predicted to use the highway and the quarry. In this case the sealing of the shoulders will improve the amenity of the intersection along with improving road safety and reduce the inherent maintenance issues that comes with heavy vehicles turning at intersections.

A site inspection of the proposed quarry access location by Streetwise finds that the quarry access with the highway will have adequate sight distance (at least 300m) in both directions for both the horizontal and vertical planes along the Castlereagh Highway from the proposed quarry access location. Streetwise also recommend that W5 – 22 (B size) signs (refer **Figure 7.30**) be erected at 150m on approach to each side of the quarry access, to make drivers more aware of heavy vehicles in the area and to improve road safety around the quarry access.

FIGURE 7.30: Typical W-22 sign face (TfNSW)

(Source:Streetwise Traffic Impact Assessment)

A review of the New South Wales Centre for Road Safety website does not indicate there has been any heavy vehicle crashes in the vicinity of the proposed quarry access for the period from 2018 to 2022. However, the website indicates three (2 Moderate Injury, 1 Non-Casualty Tow Away) light vehicle crashes in the vicinity of the Tucklan Road intersection on the Castlereagh Highway. There was also 1 reported serious injury crash on Tucklan Road. Considering the local climatic conditions the crash data did not indicate any of the recorded crashes were related to inclement weather condition (ie. rain events, etc) on either the Castlereagh Highway or Tucklan Road. desktop assessment of the haulage route, Castlereagh Highway between the proposed quarry access and Tucklan Road and Tucklan Road itself indicates they generally conform to the 85th percentile design standard. Where there are departures, adequate signposting has been installed as a road safety measure.

The quarry operation will generate a maximum of 6 laden trips and 6 unladen trips per hour or 60 trips (120 return trips) per day. This is a very minor number of trips when considering the overall construction phase of the CWO-REZ project. Any upgrade of Tucklan Road will not be a result of the quarry operation given the overall CWO-REZ construction requirements.

Currently there are no approved public bus routes in the vicinity of the quarry access on either the Castlereagh Highway or Tucklan Road. Following consultation by Streetwise with Ogden's Coaches it was advised there are school bus routes that run in the vicinity of the proposed quarry site. Impacts on these services will be minimal considering the minor amount of traffic to be generated by the quarry operation given the interactions may only be for a half hour period in the morning for pickup to the schools and the afternoon for the drop off from the schools.

The proposed quarry which is currently used as a farm borrow pit with an existing gravel track running between it and the Castlereagh Highway. The existing track does cross an electricity transmission easement. Consultation with Essential Energy has indicated the existing track / proposed access road will need to be located a minimum of 4.50m from any pole / tower infrastructure in the horizontal plane and a minimum of 3.00m from the overhead 66kv power lines in the vertical plane. A preliminary investigation has indicated the existing track is located 2.30m from its nearest edge to the existing transmission poles. Therefore, the proposed quarry access will need to be relocated so the minimum offset is 4.50m to the poles.

In order to maintain safe access between the quarry pit and the Castlereagh Highway 2 passing lay-bys are to be provided along the proposed access road. One for out bound traffic located 70.0m west of the proposed access road intersection and a second inbound bay located just before entry to the quarry pit area. Further detailed design is recommended for the relocation of the proposed quarry access road in order to satisfy the Essential Energy requirements.

It is proposed to establish on site amenities once the quarry pit of is sufficient size, including a small demountable site office with staff amenities. Initially, front-end loaders with calibrated scales will be used for loading and weighing of the hard rock resource won from the site into road trucks. It is anticipated that once production significantly increases a weigh-bridge will be installed.

Streetwise recommendations and conclusions are as follows:

"• *Design and Construction a Type BAR / BAL intersection treatment for the quarry access.*

• *W5-22 Advanced Warning signage is to be erected on both sides of the approach to the intersection to make drivers more aware of heavy vehicles in this location thus improving road safety.*

In summary, StreetWise Road Safety and Traffic Services recommend that the proposed development as being a suitable development based on the predicted traffic impacts. The additional vehicle trips to be generated by the development will not have a significant impact on the efficiency or safety of the local road network, and that the local roads and intersections have the capacity to cater for the additional trips generated by the development, with minimal upgrades required."

7.4 Section 4.15(1)(c): Suitability of the Site for Development

The suitability of the site for the development is a key consideration in the assessment of any application under s.4.15(1) of the EP&A Act per *Lippmann Partnership Pty Ltd v Canterbury – Bankstown Council* [2017] NSWLEC 1601 at [42]. In this regard, it is relevant to note that the Project Site contains an existing approved quarry, and is suitable for continued quarrying activities. Most-but not all- of the proposed quarry footprint comprises cleared land.

The suitability of the site for a Project is consistent with all relevant legislation, guidelines and policies applicable to the site and surrounding area including the zoning future use of the surrounding area. The use of the site is also consistent with the principles of ecologically sustainable development and with the objectives of the *Environmental Planning and Assessment Act 1979* - refer section 7.1.2 of this EIS for further details.

The Project Site is considered to be most suitable for the Gulgong Quarry project for a number of reasons, including:

- Availability of a known economic quarry resource from the Project Site.
- The proposed quarry is strategically placed in terms of its proximity to Central-West Orana Renewable Energy Zone (CWO-REZ) projects, including: EnergyCo's extensive, 1km wide CWO-REZ project (approximately 3.1km to the north of the project site); and Acciona's Orana Wind Farm project (as close as 2km to the project site). Truck traffic serving these projects does not need to travel through any townships or villages.
- The land is a stony outcrop with shallow soils with low agricultural value, underlain by weathered and unweathered phyllite and meta-siltstone suited to road making purposes to service the above infrastructure projects. Relatively small environmental footprint of the proposed quarry development, equivalent to 0.6% of the 'Talinga' farm holding. Refer to **Appendix E, Appendix N** and Section 2.2.3 for further details.
- The project site has an appropriate (RU1) zoning, which permits 'extractive industries' (as defined): *BGP Properties Pty Limited v Lake Macquarie City Council* [2004] NSWLEC 399 (NSW Land and Environment Court Planning Principle relating to weight to be given to the zoning of a site for any proposed development).
- The land is largely cleared land with a low ecological value. Refer to **Appendix L** for further details.
- Good road access is available to the highway for heavy vehicles to potential customers and nearby infrastructure projects. Refer to **Appendix D** for further details regarding traffic.

- The proposed quarry development will not impact on any known Aboriginal sites or relics. Refer to **Appendix K** for further details.
- Given the proposed depth of quarry excavation, topography and licensed groundwater bore information, it is unlikely that the proposed quarrying work will intercept permanent groundwater. Further, the elevation and location of mapped potential Groundwater Dependent Ecosystems (GDEs) are such that the proposed development is not likely to have any significant affect on the mapped potential GDEs. Refer to **Appendix F** for further details.
- The quarry is reasonably buffered from nearby dwellings not associated with the quarry. Measures are proposed to ensure that any increase in impact arising from the project, in particular relating to noise impacts, are sufficiently mitigated *per* *Stockland Developments v Wollongong Council and others* [2004] NSWLEC 470 (NSW Land and Environment Court Planning Principle relating to noise impacts). Refer to **Appendix C** for further details in regard to noise impacts and **Appendix H** in regard to air quality impacts.
- The contamination assessment undertaken finds that the site has an acceptable low level of risk for contamination and is suitable for its proposed use as a quarry, in satisfaction of *State Environmental Planning Policy (Resilience and Hazards) 2021*. Refer to **Appendix I** for further details.
- Limited views will be possible of the proposed quarry from any rural residences or from the highway.

Based on the above factors, the project site is considered the most suitable location for the project.

▪ 7.5 Section 4.15(1)(d): Any submissions made

This application will be subject to notification for submissions. Any issues raised in those submissions will be duly considered prior to any final determination of the application.

▪ 7.6 Section 4.15(1)(e): The Public interest

By the operation of s 4.15(1)(e) of the EP&A Act the public interest is identified as one of the mandatory considerations to be taken into account in the evaluation of the Gulgong Quarry Project. What comprises the public interest is not expressly stated in s 4.15. In *Minister for Planning v Walker* [2008] 161 NSWCA 224 it was held at [41] that: "*However, this requirement, so stated, operates at a very high level of generality, and does not of itself require that regard be had to any particular aspect of the public interest.*."

The objects of the EP&A Act (at s 1.3) include:

> *"(a) to promote the social and economic welfare of the community and a better environment by the proper management, development and conservation of the State's natural and other resources,*
>
> *(b) to facilitate ecologically sustainable development by integrating relevant economic, environmental and social considerations in decision-making about environmental planning and assessment,*
>
> *(c) promote the orderly and economic use and development of land,*
>
> *(d) to protect the environment…"*

In this case the evidence is that the proposed development will advance the objectives of the EP&A Act which form part of the public interest, as well as the public interest generally. The proposed quarry development is considered to be in the public interest as it has positive social and economic outcomes, and has satisfactory environmental impacts including:

- The quarry resource is suitable for road making associated uses in the region.
- The project will provide for the employment of up to six quarry personnel, with additional support of employment in relation to road transport drivers and other contractors; resulting in positive flow on economic effects to the local and regional economy.
- The quarry has been operating to date without significant adverse impact on surrounding neighbours.
- The Project's physical impacts on surrounding development are acceptable *per* *Project Venture Developments v Pittwater Council* [2005] NSWLEC 191 and *Davies v Penrith City Council* [2013] NSWLEC 1141 (NSW Land and Environment Court Planning Principles relating to compatibility with surrounding development and impacts on

neighbouring properties, respectively). Almost 64% of the Project Site is to be retained as native vegetation.

- Acceptable visual impacts are predicted *per* *Tenacity Consulting v Warringah* [2004] NSWLEC 140 and *Rose Bay Marina Pty Limited v Woollahra Municipal Council and anor* [2013] NSWLEC 1046 (NSW Land and Environment Court Planning Principles relating to view impacts on views).
- The development has regard for, and is compatible with, relevant principles of ecologically sustainable development per *BGP Properties Pty Limited v Lake Macquarie City Council* [2004] NSWLEC 399 and *Telstra Corporation Limited v Hornsby Shire Council* [2006] NSWLEC 133 (NSW Land and Environment Court Planning Principles relating to ecologically sustainable development).
- The site of the proposed quarry has been mapped as forming a part of a broader area of land identified as BSAL land. However, the site of the proposed quarry is a stony, rocky outcrop with significant limitations to agriculture generally and is unsuited to cropping; limited grazing being the optimal use of the land here. It is these features that makes the project site so well suited to that of a hard rock quarry. Refer to **Appendix E** and Section 2.2.3 for further details. The footprint of the proposed quarry will occupy approximately 7.34ha, or 0.6% of the 'Talinga' rural holding. Following rehabilitation, approximately 6ha would be returned to grazing land- a loss of only about 0.8ha of land, or about 0.06% of 'Talinga' land holding-with the additional benefit of having a dam for livestock water needs also provided.
- The project is anticipated to have minimal impact on existing agricultural activities, with the project expected to co-exist with the surrounding agricultural land uses in the locality or on site, thus satisfying the 'compatibility' test set down in *Project Venture Developments v Pittwater Council* [2005] NSWLEC 191.
- The proposed quarry development maximises access to and enables the fuller utilisation and economic recovery of a valuable quarry resource.
- The proposed quarry development provides for the ongoing extraction of road base quarry products important for the continued growth and prosperity of NSW generally, and in particular in the supply of much-needed road making and fill material to service the renewable energy projects existing and proposed in the Mid-Western Regional LGA. Flow-on and multiplier effects can be expected, which will further enhance the local economy.
- Satisfactory environmental outcomes will ensue. Refer **Appendix L** for details relating to ecological impacts, and to **Appendices C and H** regarding noise and air quality impacts, respectively. It is proposed that the quarry will operate in accordance with a proposed plan of management, to be incorporated in the conditions of consent, per *Renaldo Plus 3 Pty Limited v Hurstville City Council* [2005] NSWLEC 315 and *Amazonia Hotels Pty Ltd v Council of the City of Sydney* [2014] NSWLEC 1247 (NSW Land and Environment Court Planning Principle relating to plans of management).
- On the basis of on-site investigations undertaken in conjunction with the local Aboriginal community, the proposed quarry development is unlikely to affect the heritage significance of any Aboriginal or non-Aboriginal heritage items found or likely to be found on the site. Refer **Appendix K** for details.
- Based on the groundwater assessment by Martens and Associates, consulting engineers (**Appendix F**) the proposed quarry pit is most unlikely to intersect with groundwater and is not subject to flooding.
- The quarry haul route, including the proposed intersection upgrade with Castlereagh Highway, , will be to a standard and capacity that can accommodate traffic likely to be generated by the proposed quarry development. Refer to **Appendix D** for details.
- The project incorporates measures to control and manage to appropriate levels potential environmental and amenity impacts. In this regard it is proposed that the quarry operate in accordance with a quarry plan of management, the key components of which having been described in this EIS.

The impact assessment contained in this Environmental Impact Statement (EIS) demonstrates that the project complies with relevant planning and environmental legislation and with the proposed quarry design and mitigation measures in place, will be capable of proceeding without significantly impacting the environment or that of the local community.

It is therefore concluded that the project is in the public interest and should be approved.

8. Conclusions, Justification of Project

8.1 Introduction

The owners, Hamish and Sally Drury of Talinga Pastoral Company, seek development consent to expand an existing borrow pit and to establish a planned quarry on an elevated, stony knoll on Lot 1 DP1239728, which forms a part of a larger rural holding known as 'Talinga', No.1848 Castlereagh Highway Gulgong NSW 2852: the Gulgong Quarry Project. The existing borrow pit has operated as a quarry for decades, including use as a quarry by the local council.

This Environmental Impact Statement (EIS) has been prepared by Outline Planning Consultants Pty Ltd to accompany a Development Application (DA) for the Gulgong Quarry Project, seeking consent to extract up to 350,000 tonnes per annum of quarry material within a quarry footprint of 7.34ha with a total resource of about 4.6 million tonnes. The internal access route to the quarry connects directly with the Castlereagh Highway. As part of this project the intersection of the internal haul route with the highway is proposed to be suitably upgraded.

The hard rock resource found on this elevated hill is proposed to be quarried and used as a road base or select fill, primarily to service nearby infrastructure projects undertaken within the Central-West Orana Renewable Energy Zone (CWO-REZ). A strategic advantage of the site is that it is proximate to these projects, in the main located in the northern part of the Mid-Western Regional Council area.

This EIS provides an assessment of the potential environmental impacts of the Project in accordance with the Secretary's Environmental Assessment Requirements (SEARs) for an EIS, issued on 5 June 2024 (EAR 1894), and in particular:

- Strategic position of the project site and close proximity to CWO-REZ projects.
- Site suitability and design of the quarry project, and agricultural worth of the site.
- The environmental, social and economic costs and benefits of the project.
- Statutory planning considerations under the EP& Act, including how the Gulgong Quarry Project satisfies local and state planning policies, and how it accords with the principles of Ecologically Sustainable Development (ESD) and the objects of the EP&A Act.

In accordance with the issued SEARs various environmental investigations were undertaken during the preparation of the EIS to assess the potential environmental impacts associated with the Gulgong Quarry Project, addressing environmental impacts including but not limited to noise and vibration impacts, ecological impacts, aboriginal heritage, soils and agriculture, contamination, traffic and transport, rehabilitation, hazards, land resources, air quality impacts, visual impacts, water and relevant environmental planning instruments.

The EIS has documented the potential environmental impacts associated with the Gulgong Quarry Project, considering both potential positive and negative impacts of the proposal, and provides details of practical, achievable mitigation measures to protect the environment where required, and in particular:

- Likely impacts on site ecology, agriculture, heritage and amenity generally.
- Impacts in terms of noise, air quality, blasting and vibration.
- Water management.
- End-use of the Project Site at the completion of quarrying.

The mitigation measures proposed are considered to be practical, feasible and reasonable.

As more than 30,000 tonnes per year of quarry resource is proposed to be extracted in any one year, an 'integrated development' approval is required from the NSW Environmental Protection Authority (EPA) under the *Protection of the Environment Operations Act 1997*.

8.2 Justification of Project

The Gulgong Quarry Project is justified for a number of reasons, including but not limited to the following:

- The project seeks the continuation of quarrying from an existing quarry which has been in operation since circa 1964. It is considered to be compatible with surrounding land uses and can co-exist with these uses.
- The proposed extraction area consists almost entirely of cleared land, limiting the potential ecological impacts of further disturbance.
- The views of the quarry project are limited, with visual impacts are considered to be either zero or Low. In order to appropriately manage visual and acoustic impacts, the quarry has been designed such that the working face is shielded from the most critical views at all times, at the same time achieve a suitable depth of quarrying.
- The Project will support the planned future growth of the region, maintain local employment and supply of quarry materials close to markets and existing and future Central-West Orana Renewable Energy Zone (CWO-REZ) projects. Road making materials are becoming increasingly scarcer in the region. The close proximity of the site to these projects means that haulage distances and impacts on the regional road system will be minimised.
- Suitable ,safe and direct access to the Castlereagh Highway is provided from the site without impacting adversely on the local road network. While the Gulgong Quarry Project and surrounding CWO-REZ projects would increase the number of heavy quarry truck traffic using the Castlereagh Highway, there is unlikely to be any detrimental impact on road safety given the existing low traffic volumes using this arterial road and reasonably high standard of the road. Moreover, a Driver Code of Conduct will be implemented.
- The project has been designed to ensure that noise and air quality impacts on surrounding properties are satisfactorily minimised.
- The project site is to be appropriately rehabilitated once quarrying is completed. The quarry benches, batters and slopes proposed are in accordance with current 'best practice'- *Guidelines for Open Pit Slope Design* (2009) promoted by NSW Trade & Investment- Mine Safety.
- The quarry is a permissible use in the RU1 zone under the *Mid Western Regional Local Environmental Plan 2012*. A quarry development is consistent with the zoning of the Project Site.
- The Project will provide employment for quarry workers and contractors dependent on the operation of the quarry.
- The Project would not result in disturbance to any identified Aboriginal heritage sites.
- The quarry is strategically positioned in terms of ability to service local growth areas as well as future infrastructure projects in the region.
- The project would generate flow-on economic benefits to the region of direct expenditure generated by wages, contractors fees and the sale of quarry products.
- The project accords with the objects of the EP&A Act (refer to Section 5.1.4 of this EIS) and in particular:
  - The project seeks to maximise the safe and economic recovery of the valuable quarry resource known to underlay the site.
  - The design of the quarry project achieves satisfactory environmental, social and economic outcomes generally, incorporating design features to reduce the potential for adverse impacts. Additional safeguards and mitigation measures have been proposed to minimise potential impacts.
  - The land proposed for the expansion of the quarry is lawfully cleared land.
  - No cultural sites affected.
- The project accords with the Ecologically Sustainable Development (ESD) (refer to Section 7.1.2 of this EIS) and in particular:
  - The Precautionary Principle: After a full evaluation of the project, as considered in this EIS, it is concluded that the proposed quarry can operate within acceptable criteria, with no serious or irreversible environmental damage resulting. Nor does does it give rise to any uncertainty in terms of what is proposed or likely impacts, or relationship to adjoining development.

- The Integration Principle: Quarry management measures have been proposed that will ensure that acceptable impacts will ensue in both the short-term and the long-terms. The project will serve in particular the CWO-REZ renewable energy projects nearby, which will benefit all members of the community, as well as future generations.
- Intergenerational Equity Principle: The project will provide benefits for future generations by providing a secure source of road making material close to committed renewable energy projects nearby in the short-medium term.
- Biological Diversity Principle: The site is land that was lawfully cleared prior to 1990, with limited ecological value. The potential impacts of the project have been described in this EIS, including the potential impact of the project on biodiversity.
- Valuation and Pricing of Resources Principle: The site of the proposed quarry site has limited value to agriculture. In any case, the quarry project affects only 0.6% of the 'Talinga' farm holding, with 0.55% returned to agriculture upon project completion.

From the above, there are demonstrable benefits associated with the project, and with appropriate conditions of approval, these benefits can be achieved without significant adverse social or environmental impacts.

8.3 Summary: Environmental Issues

In addition to the design of the quarry, the mitigation measures proposed also form a fundamental part of the quarry project. These measures proposed will ensure that satisfactory environmental impacts will ensue- refer to Section 4. The accompanying Table 8.1 summarises impacts by key issue identified in the SEARs.

Table 8.1: Compliance of quarry development by environmental issue (summary)

Issue	*Compliance of Proposed Quarry Development*
Soil and water resources	▸ *The proposed quarry site has limited value to agriculture.* ▸ *All stormwater to be contained within the proposed quarry pit.* ▸ *Groundwater unlikely to be encountered by quarrying, the floor of the quarry being 26m above known groundwater levels in the vicinity.*
Noise, vibration, blasting	▸ *The quarry can operate in compliance with applicable noise criteria.* ▸ *The quarry will operate only during daytime periods.* ▸ *Blasting can be undertaken to achieve EPA vibration and overpressure requirements.*
Air quality	*Dust abatement measures are to be implemented on site to ensure acceptable air quality impacts.*
Contamination	*The contamination assessment by Ballpark Environmental finds that the Project Site presents an acceptable low level of risk for site contamination and is suitable as a quarry.*
Heritage	*The Project Site does not contain any significance in terms of Aboriginal or European heritage values. No Aboriginal items or relics of heritage significance occur within the proposed quarry area.*
Traffic	*The traffic impact assessment by Streetwise has determined that acceptable roads and traffic impacts will ensue.The intersection with the Castlereagh Highway will be suitably upgraded.*
Ecology	▸ *The proposed extraction area extension consists almost entirely of cleared land, limiting the potential ecological impacts of further disturbance.* ▸ *No core Koala habitat or threatened vegetation of fauna communities have been identified.*
Bushfire	▸ *The site is not mapped as being bushfire prone land.* ▸ *Various various bushfire safeguards and controls are proposed.*
Visual impacts	*The proposed quarry will not be visible to the surrounding neighbourhood, save for two neighbouring residences-the latter which will have screened views in part. Low to zero visual impacts.*
Social and economic	*The proposal would contribute to the economy locally and through employment generation and the provision of materials for roads and other infrastructure projects in the region- and in particular existing and future Central-West Orana Renewable Energy Zone (CWO-REZ) projects.*

8.4 Conclusions

The Mid-Western Regional Council area is about to enter an era of major investments and employment arising from the NSW State Government's commitment to accelerate the roll-out of renewable energy projects in NSW: a transformation of NSW's energy landscape.

The recent approval of EnergyCo's Central West Orana Renewable Energy Zone (CWO-REZ) transmission project paves the way for the construction of essential transmission infrastructure to connect large-scale, wind, solar and energy storage projects in the Mid-Western Regional Council area, forecast to generate up to $20 billion in private investment and about 1,800-5,000 jobs during peak construction.

Less appreciated is the fact that all of these major projects will be reliant on sourcing a reliable, proximate source of road making and other quarry products to service these projects.

The site of the Gulgong Quarry Project is strategically located in terms of its close proximity to, and ability to service currently approved or proposed nearby infrastructure projects within the CWO-REZ zone. It proposes safe and adequate access suitable for the project. The project provides for the supply of much-needed quarry product to these projects, thus ensuring employment opportunities and maintaining stimulus to the economy of the Mid-Wester Regional Council area. The consequences of not proceeding with the Project also weigh heavily in favour of proceeding with the project.

This EIS has been prepared in accordance with the provisions of the EP&A Act and addresses the SEARs, as well as all relevant environmental issues raised by government and others. Moreover, the Gulgong Quarry Project accords with the principles of Ecologically Sustainable Development. The Project is classified as regionally significant development pursuant to the provisions of Schedule 6 of the State Environmental Planning Policy (Planning Systems) 2021 and the Western Regional Planning Panel (WRPP) is the consent authority for this proposed quarry development.

The land the subject of the Gulgong Quarry project is mostly cleared and disturbed land, and has no likely significant environmental constraints to the development. The project site is well removed from residential areas in a relatively remote rural location.

The potential environmental, social and economic impacts, both direct and cumulative, have been identified and thoroughly assessed as part of this EIS. The proposed quarry development has been designed to avoid and minimise adverse environmental, social and economic impacts and is anticipated to result in satisfactory environmental impacts in accordance with the jurisdictional requirements of s.4.15(1) of the EP&A Act.

As a result, it is concluded that the environmental and community impacts associated with the Gulgong Quarry Project are deemed to be acceptably low, and the project benefits outweigh any project negatives. Overall, this EIS concludes that the Gulgong Quarry Project is in the public interest and is not predicted to cause significant environmental impacts or pose significant environmental risks.

Consequently, the proposed quarry development is considered to be in the public interest, and should be approved, subject to conditions of consent appropriate for the development.

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10. Glossary of Terms

Term	Meaning
AADT	*Annual Average Daily Traffic.*
ABS	*Australian Bureau of Statistics.*
Aboriginal object, place	*Has the same meaning as the definition of the term in section 5 of the National Parks and Wildlife Act 1974.*
Acoustic	*Relating to hearing, noise and sound.*
Aggregate	*Rock crushed to the required size for use in concrete, masonry products, road sealing, pavement materials and other uses.*
AHD	*Australian Height Datum. The standard reference level used to express the relative elevation of various features. A height given in metres, AHD is essentially the height above sea level.*
Air Blast Overpressure	*Air vibration or air blasts are the pressure or shock waves that radiate in air from an exploding charge. When a pressure wave passes a given point, the pressure of the air rises rapidly before returning to atmospheric pressure after a period of oscillations. The maximum pressure is the 'Air Blast Overpressure' measured in dB.*
Ambient noise	*This is the total encompassing sound in a given situation at a given time where no particular sound is dominant. It is composed of sound from all sources near and far, normally experienced in the area. Ambient noise is measured as dB ('A' weighted) over a set period of time.*
Amenity	*The quality of a local environment.*
AS	*Australian Standard.*
ASS	*Acid sulfate soils.*
Attenuation	*Reduction in sound level between a noise source and another location.*
Avoid	*Measures taken by a proponent such as careful site selection or actions taken through the design, planning, construction and operational phases of the development to completely avoid impacts on the environment, includiing biodiversity values, or certain areas of biodiversity.*
A-Weighted Sound Level dB(A)	*A level of sound pressure in which the sound pressure levels of the various frequency bands have been weighted to accord roughly with human aural system frequency sensitivity.*
Basalt	*Fine grained, dark volcanic igneous rock.*
Batter	*The face of the slope eg. walls, banks, cuttings, etc.*
Bench (in a quarry)	*A ledge constructed in a batter or natural slope within a quarry. A step in the face of a quarry.*
Biodiversity	*The biological diversity of life at genetic, species and ecosystem scales. The maintenance of biodiversity, at all levels, is acknowledged internationally as a high conservation priority.Biodiversity values comprise vegetation integrity, habitat suitability and biodiversity values generally.*
BDAR	*Biodiversity Development Assessment Report*
Blasting	The operation of breaking rock in a quarry by means of explosives.

Bund	*An earthen mound wall which may be used for noise attenuation or visual screens or for redirecting stormwater/runoff around a part of a site. Bunds may also be used to contain spillage of liquid materials.*
Blue Book	*Means Managing Urban Stormwater: Soils & Construction (4th edition, Landcom, 2004), commonly referred to as the "Blue Book".*
Biodiversity	*Biological variety at genetic, species and ecosystem scales. The maintenance of biodiversity, at all levels, is acknowledged internationally as a high conservation priority.*
BoM	*Bureau of Meteorology (Commonwealth).*
Building Code of Australia	*Means means the document, published by or on behalf of the Australian Building Codes Board, that is prescribed for purposes of this definition by the regulations, together with— (a) such amendments made by the Board, and (b) such variations approved by the Board in relation to New South Wales, as are prescribed by the regulations*
CC	*Construction certificate.A Construction Certificate (CC) is a certificate that is issued by an accredited private certifier or a consent authority under the provisions of Environmental Planning and Assessment Act 1979. The Certificate allows for building work to commence on a project.*
Catchment	*Drainage area of a river, creek. Can also refer to a visual catchment, which is the area within view of a particular viewing location, or road catchment, which is the area reliant on a particular road in order to gain access to another centre or locality.*
CIV	*Capital investment value as defined by the Environmental Planning & Assessment Regulation 2021. Includes all costs necessary to establish and operate the project, with some exclusions.*
Consent	*Means development consent issued under the Environmental Planning and Assessment Act 1979.*
Contributions Plan	*Section 7.11 of the Environmental Planning and Assessment Act 1979 allows councils to levy contributions towards the cost of providing local infrastructure. Contributions plans set out the local infrastructure required to meet the demand from new development, and the contributions a council can levy on developers to fund the necessary land and works.*
Construction	*All physical works to enable operation, including but not limited to the demolition and removal of buildings, the carrying out of works for the purposes of the development, including bulk earthworks, and erection of buildings and other infrastructure permitted by this consent, but excluding the following: •building and road dilapidation surveys; •investigative drilling, investigative excavation or Archaeological Salvage; •establishing temporary site offices (in locations identified by the conditions of this consent); •installation of environmental impact mitigation measures, fencing, enabling works; and minor adjustments to services or utilities.*
Contamination	*The action or state of makings or being made impure by polluting or poisoning, or the state of containing unwanted or dangerous substances.*
Contour Drain	*Drainage channel constructed approximately along the contour, and which is designed to slow down and direct the flow of water across a disturbed area to a sediment trap for sediment removal.*
Council	*Mid Western Regional Council.*
Crushing	*The mechanical process of reducing quarry rock size usually by pressure or impact.*

DA	*Development Application.A Development Application (DA) is required for various types of development projects under the provisions of NSW Environmental Planning and Assessment Act 1979. It means an application for consent under Part 4 to carry out development but does not include an application for a complying development certificate.Sometimes also referred to as Development Approval.*
Daytime	*Means between the hours of 7.00am to 6.00pm.*
dB (A)	*To approximate the human response to sound, noise level meters have weighting networks which correspond approximately with subjective loudness. The 'A- Weighting' is used to simulate human hearing.*
DBYD	*Dial Before You Dig.*
DCP	*Development Control Plan. A development control plan provides detailed planning and design guidelines to support the planning controls in an environmental planning instrument.*
Department, DP&E	*NSW Department of Planning and Environment.*
Designated development	*Means development that is declared to be designated development by an environmental planning instrument or the regulations. All applications for designated development in NSW need to be accompanied by an EIS.*
Development	*The development described in the development application. For the purposes of the NSW Environmental Planning and Assessment Act 1979, "development" is any of the following: "(a) the use of land,(b) the subdivision of land, (c) the erection of a building, (d) the carrying out of a work,(e) the demolition of a building or work,(f) any other act, matter or thing that may be controlled by an environmental planning instrument." (2) However, development does not include any act, matter or thing excluded by the regulations (either generally for the purposes of this Act or only for the purposes of specified provisions of this Act). (3) For the purposes of this Act, the carrying out of development is the doing of the acts, matters or things referred to in subsection (1). (sub clauses 1.5(1)(2) and (3) of the NSW Environmental Planning and Assessment Act 1979).*
Development Consent	*Means consent under the provisions of NSW Environmental Planning and Assessment Act 1979 to carry out development and includes, unless expressly excluded, a complying development certificate.*
Deposited Plan (DP)	*Deposited Plans (DP) define legal boundaries of land and often record subdivisions, easements and the like.*
Designated Development	*Section 4.10 of the Environmental Planning and Assessment Act 1979 states that "Designated development is development that is declared to be designated development by an environmental planning instrument or the regulations." Schedule 3 of the Environmental Planning and Assessment Regulation 2021 defines the type of development which is classified as designated development.*
Drainage Line	*A natural depression with no stream bed channel, which may only carry surface water during rainfall events.*
Dust or particulate matter	*Dust or particulate matter are terms used to define solid or liquid particles that may be suspended in the atmosphere. The potential affect of particulate matter on the environment, human health and amenity depends on the size of the particles, the concentration of particulate matter in the atmosphere and the rate of deposition.*
Earthworks	*Bulk earthworks, site levelling, import and compaction of fill material, excavation for installation of drainage and services, to prepare the site for construction.*
EEC	*Endangered Ecological Community.*

Ecologically Sustainable Development (ESD)	*Development that meets the needs of the present without compromising the ability of future generations to meet their own needs. Ecologically sustainable development can be achieved through the implementation of the following principles and programs including: the precautionary principle; inter-generational equity; conservation of biological diversity and ecological integrity; improved valuation, and pricing and incentive mechanisms.*
EIS	*Environmental Impact Statement submitted with the application for consent for the development.*
Emission	*The release of material into the environment (eg dust).*
Evening period	*Means the period from 6.00pm to 10.00pm.*
Environment	*Includes all aspects of the surroundings of humans, whether affecting any human as an individual or in his or her social groupings.*
Environmental Planning Instrument (EPI)	*An environmental planning instrument is the collective name for local environmental plans (LEPs) and state environmental planning policies (SEPPs) but does not include development control plans (DCPs). The provisions of EPIs are legally binding on both government and developers.*
Environment Protection License (EPL)	*Has the same meaning as the definition of the term in the Dictionary to the NSW Protection of the Environment Operations Act, namely:* *"a licence authorising the carrying out of scheduled development work or scheduled activities or controlling the pollution of water arising from non-scheduled activities, being a licence issued under Chapter 3 and in force."*
EP&A Act	*NSW Environmental Planning and Assessment Act 1979.*
EP&A Regulation ("regulations")	*NSW Environmental Planning and Assessment Regulation 2021.*
EPA	*NSW Environment Protection Authority constituted by the Protection of the Environment Administration Act 1991.*
EPL	*Environment Protection Licence.*
Erosion	*The process of wearing away of the land surface (whether natural or artificial) by the action of water, wind.*
ESCP	*Erosion and sediment control plan.*
Excavator	*Item of earth moving equipment either tracked or wheeled fitted with a bucket on an articulated boom and used for digging material from a quarry pit face in front of, or below the machine.*
Extraction	*A term synonymous with quarrying. Under the Environmental Planning and Assessment Act, 1979, quarrying is defined as "extractive industries".*
Feasible	*Means what is possible and practical in the circumstances.*
Flora and fauna	*Plants and animals.*
Flyrock	*Rock that is ejected from beyond a blast site, typically with the potential to cause injury or damage to property. Proper planning can reduce the incidence of flyrock.*
Groundwater	*Water found in the subsurface in the saturated zone below the water table or piezometric surface i.e. the water table marks the upper surface of groundwater systems.*
ha	*hectare.*
Habitat	*The place where an organism normally lives; habitats can be described by their floristic and physical characteristics.*

Haul Road	*Road used for haulage of material from/to the worked quarry face to/from markets beyond.*
Hazard	*A source of potential harm; a potential occurrence or condition that could lead to injury, damage to the environment, delay or economic loss.*
Heritage	*Encompasses both Aboriginal and historic heritage including sites that predate European settlement, and a shared history since European settlement.*
Heritage item	*A place, building, work, relic, archaeological site, tree, moveable object or precinct of heritage significance, that is listed under one or more of the following registers: the Heritage Act 1977 (NSW), a state agency heritage and conservation register under section 170 of the Heritage Act 1977 (NSW), a Local Environmental Plan under the EP&A Act, the World, National or Commonwealth Heritage lists under the Environment Protection and Biodiversity Conservation Act 1999 (Cth), and an "Aboriginal object" or "Aboriginal place" as defined in section 5 of the National Parks and Wildlife Act 1974 (NSW). An item as defined under the Heritage Act 1977, and assessed as being of local, State and/ or National heritage significance, and/or an Aboriginal Object or Aboriginal Place as defined.*
Integrated development	*Development (not being State significant development or complying development) that, in order for it to be carried out, requires development consent and one or more approvals from the government agencies listed in s.4.46 of the NSW Environmental Planning and Assessment Act 1979.*
Incident	*An occurrence or set of circumstances that causes or threatens to cause material harm and which may or may not be or cause a non-compliance with an issued consent.*
km	*Kilometre.*
kV	*Kilovolt.*
Land	*Has the same meaning as the definition of the term in section 1.4 of the NSW Environmental Planning and Assessment Act 1979.*
Land Capability	*The ability of land to support agriculture on a sustainable basis.*
Land Use Table	*A table in an environmental planning instrument (EPI) listing the objectives of any land use zone, along with uses permitted and prohibited under any zoning.*
Landscaped area	*Means a part of a site used for growing plants, grasses and trees, but does not include any building, structure or hard paved area.*
L_{Aeq}(time)	*Equivalent sound pressure level: the steady sound level that, over a specified period of time, would produce the same energy equivalence as the fluctuating sound level actually occurring.*
L_{A90}(time)	*The A-weighted sound pressure level that is exceeded for 90 per cent of the time over which a given sound is measured. This is considered to represent the background noise e.g. LA90 (15 min).*
Lithosol	*An azonal soils having no clearly expressed soil morphology and consisting of a freshly and imperfectly weathered mass of rock fragments; largely confined to steep hillsides or areas where rock tends to outcrop close to the surface.*
Local Environmental Plan (LEP)	*Local Environmental Plans are planning documents prepared by a Council which detail the zoning of land and the type of development which is permitted with consent in a particular zone. Controls on development are also provided.*
Management Plan	*A plan which demonstrates how the management objectives for an environmental matter will be achieved. Also referred to as Environmental Management Plan (EMP).*
Minister	*NSW Minister for Planning (or delegate).*

Mitigation	*Activities associated with reducing the impacts of the development prior to or during those impacts occurring.*
ML	*Megalitre: 1,000,000 litres.*
m/s	*Metres per second*
MIC	*Maximum instantaneous charge for blasting, measured in kg per drill hole.*
Modification	*A change to a project that is implemented by modifying an existing development consent. An application must be made under s.4.55 of the EP&A Act before the modification can be approved.*
Monitoring	*The regular measurement of components of the environment to ensure that environmental guidelines standards are being met.*
Night	*Means the period between 10.00pm and 7.00am.*
NSW planning portal	*Means the website with the URL of www.planningportal.nsw.gov.au, or any other website, used by the Planning Secretary to provide public access to documents or other information in the NSW planning database.*
OEH	*(former) NSW Office of Environment & Heritage*
Overburden	*Subsoil and decomposed rock overlying the main quarry rock body- a low value quarry material.*
Peak Particle Velocity	*A measure of ground vibration caused by quarry blasting reported in millimetres/second (mm/sec)*
Plan of Management/ Environmental Management Plan	*A document that details the management measures (including controls, monitoring and other safeguards) to be implemented during a the life of a development eg. for a quarry, landfill or resource recovery facility.*
(Quarry) Processing Plant & Facilities	*In the case of a quarry extraction operation, the combination of crushers, screens, conveyors and the like used to reduce the size of the rock and separate it into various sized products. Used in association with other quarry plant that includes aggregate pre-coating facility, fuel storage, sheds, offices, haul roads, weigh bridge and sediment basins, collectively forming a part of a quarry infrastructure area.*
Planning Secretary/ Secretary	*Planning Secretary under the EP&A Act, or nominee.*
POEO Act	*Protection of the Environment Operations Act 1997.*
Project	*The development the subject of an application for consent or approval on a site ("project site").*
Proponent	*The person or entity seeking consent or approval for a project, including any associated entities that have been engaged to assist with project delivery.*
Reasonable	*Means applying judgement in arriving at a decision, taking into account: mitigation, benefits, costs of mitigation versus benefits provided, community views, and the nature and extent of potential improvements.*
RL	*Reduced Level means height above the Australian Height Datum, being the datum surface approximating mean sea level that was adopted by the National Mapping Council of Australia in May 1971.*
Rehabilitation	*The restoration of land disturbed by the development to a good condition, to ensure it is safe, stable and non-polluting. Typically involves the preparation of a final landform after a project is completed and its stabilisation with grasses, trees and/or shrubs.*

Risk, Risk Assessment	*The chance of something happening that will have an impact on objectives. Risk assessment is the overall process of risk identification, risk analysis and risk evaluation.*
Road	*Means a public road or a private road within the meaning of the Roads Act 1993, and includes a classified road.*
Sensitive receivers	*Means a location where people are likely to work, occupy or reside, including a dwelling, school, hospital, office or public recreational area.*
Scenic quality/visual	*The values of visible components of landscape which contribute to its scenic characteristics.*
Sediment pond/ basin	*Collects waterborne sediment from disturbed areas within a development site and stores that water while suspended sediments fall out of solution (settle).*
SEE	*Statement of Environmental Effects, required for a development application (DA) lodged pursuant to the provisions of the (NSW) EP&A Act 1979.*
SEARS	*The Secretary's Environmental Assessment Requirements set out clear expectations on the level of assessment required for each relevant matter which must be addressed by the proponent in the EIS.*
Screening	*A process which separates quarry product into various sizes, usually involving a mechanical vibration of the rock over a series of decks fitted with steel mesh, steel plate and/or polyurethane and/or rubber mats with fixed sized apertures.*
Sealing aggregate	*Crushed rock usually of uniform size bonded by bitumen on the surface of the road to form a wear surface.*
Shot rock	*Rock won from blasting at a quarry.*
Siltstone	*Siltstone is a clastic (ie. rocks composed of broken pieces of older rocks) sedimentary rock that is mostly composed of silt-sized particles. It forms where water, wind, or ice deposit silt, and the silt is then compacted and cemented into a rock.*
State Significant Development (SSD)	*Development projects which have State significance due to their size, economic value or potential impacts assessed and approved under the EP&A Act.*
State Significant Project	*A State significant development or State significant infrastructure project as defined under the EP&A Act. Defined in State Environmental Planning Policy (State and Regional Development) 2011 requiring the consent of the Minister for Planning or delegate.*
Soil Landscape	*An area of land that has recognisable and describable topography and soils that are capable of being represented on maps and of being described by concise statements. The Soil Conservation Service of NSW has published a Soil Landscapes Series, describing the soils of NSW.*
Stakeholder	*Persons, groups, government and semi-government agencies, and non-government organisations with a legitimate interest in the process of assessment, its inputs and outcomes, as described in the Director General's Requirements.*
State Environmental Planning Policy (SEPP)	*A planning instrument made by the State. These Plans deal with planning issues of State significance.*
Scheduled Activity	*Has the same meaning as the definition of the term in the Dictionary to the POEO Act, namely: "means an activity listed in Schedule 1 [of the PIEO Act]." An Envioronment Protection License (EPL) is required for the operation of any schedule premises.*
The Site, or Project Site	*Refers to the land upon which the proposed development is to take place.*

Subdivision (of land)	*Means the division of land into two or more parts that, after the division, would be obviously adapted for separate occupation. Subdivision of land includes the procuring of the registration in the office of the NSW Registrar-General of a plan of subdivision.*
SWL	*Standing water level is the distance from the ground surface to the water surface for a well or bore.*
Tertiary	*Period of geological time, prior to the Quaternary, 65 million years ago- usually associated with volcanic activity.*
TfNSW	*Transport for New South Wales.*
Threatened species	*Species of flora and fauna that are listed as endangered species or vulnerable species.*
Use of land	*Includes a change of use of building use.*
Visual Analysis	*Landscape analysis based on visual qualities only, excluding consideration of heritage, cultural or social values*
Visual Catchment	*Land within view-sheds. View-sheds are edges or limits to views from a single place or combination of viewpoints.*
vpd, vph	*Abbreviations of vehicles per day (vpd), vehicles per hour (vph).*
WAL	*Water Access Licence, issued under Section 95 of the (NSW) Water Management Act 2000.*
Water Balance	*Means an assessment to determine the adequacy of water stored at a quarry site in meeting future water needs for that development in 'dry', 'average' and 'wet' years.*
Waterfront Land	*Means the bed of any river, lake or estuary and land within 40 metres of a river bank, lake shore or estuary mean high-water mark. Any proposed development fronting waterfront land, as defined, is a 'controlled activity' for the purposes of the Water Management Act 2000 and 'integrated development', requiring approval from the responsible agency listed in s.4.46 of the NSW Environmental Planning and Assessment Act 1979.*
Water Sensitive Urban Design (WSUD)	*Water-sensitive urban design (WSUD) is a and planning and engineering design approach which integrates the urban water cycle, including stormwater, groundwater and wastewater management and water supply, into urban design to minimise environmental degradation and improve aesthetic and recreational appeal.*
Weathered Rock	*Rock affected to any degree by the processes of chemical or physical weathering.*
Wind rose	*Means a graphics tool that summarises winds at any location, showing strength, direction and frequency.*
Zoning, Zoning Map	*A planning tool used to apply planning policy and provisions of an environmental planning instrument to specific areas of land within a local or sate government area.*

APPENDICES

Environmental Impact Statement

APPENDIX A

Secretary's Environmental Assessment Requirements (SEARS)

APPENDIX B

Quarry project plans

APPENDIX C

Noise impact assessment report by Vipac

APPENDIX D

Roads and traffic assessment by Streetwise

APPENDIX E

Agronomists report

APPENDIX F

Groundwater assessment by Martens & Associates

APPENDIX G

Water balance report by Martens & Associates

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APPENDIX H

Air quality impact assessment by Vipac

APPENDIX I

Contamination report by Ballpark Environmental

APPENDIX J

RFS website

APPENDIX K

Aboriginal heritage by OzArk Environment & Heritage

APPENDIX L

Ecological assessment by Bower Ecology

APPENDIX M

Roads and traffic assessment by Streetwise

APPENDIX N

Geotechnical report Douglas Partners

APPENDIX O

Pre-lodgement meeting with Council

APPENDIX P

Newsletter distributed to neighbours