Environmental Impact Statement

CONTINUATION AND EXPANSION OF
EXISTING EXTRACTIVE INDUSTRY:
BOLGERS PIT

LOT 139 DP 751012
No. 809 OAKEY CREEK ROAD, PIALLAWAY NSW 2342

Prepared by:

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On behalf of:

Gunnedah Shire Council
63 Elgin Street
GUNNEDAH NSW 2380

March 2023

EIS prepared by:

Name: **Qualifications:**	Gary William Peacock Bachelor of Town Planning (UNSW), Member Planning Institute of Australia (PIA)
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in respect of:	Bolgers Pit Continued Operations and Expansion Project

Development Application

Applicant name: **Applicant address**:	Gunnedah Shire Council c/- Outline Planning Consultants Pty Ltd • Suite 2301,Level 3, Quattro BuildingNo. 4 Daydream Street, WARRIEWOOD NSW 2102 • 432 Carool Road, CAROOL NSW 2486
Land to be developed:	Lot 139 DP 751012 No. 809 Oakey Creek Road, Piallaway NSW 2342

Environmental Impact Statement

An Environmental Impact Statement (EIS) is attached

Pursuant to clause 190 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: March 2023

Signature:

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Executive Summary

Overview

Gunnedah Shire Council (Council) requires road making material to be readily available for the ongoing maintenance and upgrading of its extensive road network throughout the Gunnedah local government area (LGA). Council operates numerous quarries, more commonly known as 'borrow pits', in various locations throughout the Gunnedah local government area (LGA) in close proximity to the local road network. Bolgers Pit is one of Council's larger borrow pits, located at No. 809 Oakey Creek Road, Piallaway NSW 2342, in the south-east portion of the Gunnedah Shire, located approximately 32km to the south-east of the Gunnedah township. Refer Figure 0.1.

Council now wishes to continue the use of this quarry and to laterally expand the active quarry pit through the development approval process. The existing disturbed quarry has an area of approximately 3.4ha. A lateral expansion is proposed, with a rate of extraction of up to 40,000 tonnes per annum utilising a quarry resource of approximately 306,000 cubic metres-equivalent to about 734,000 tonnes (the Project, the Project Site).

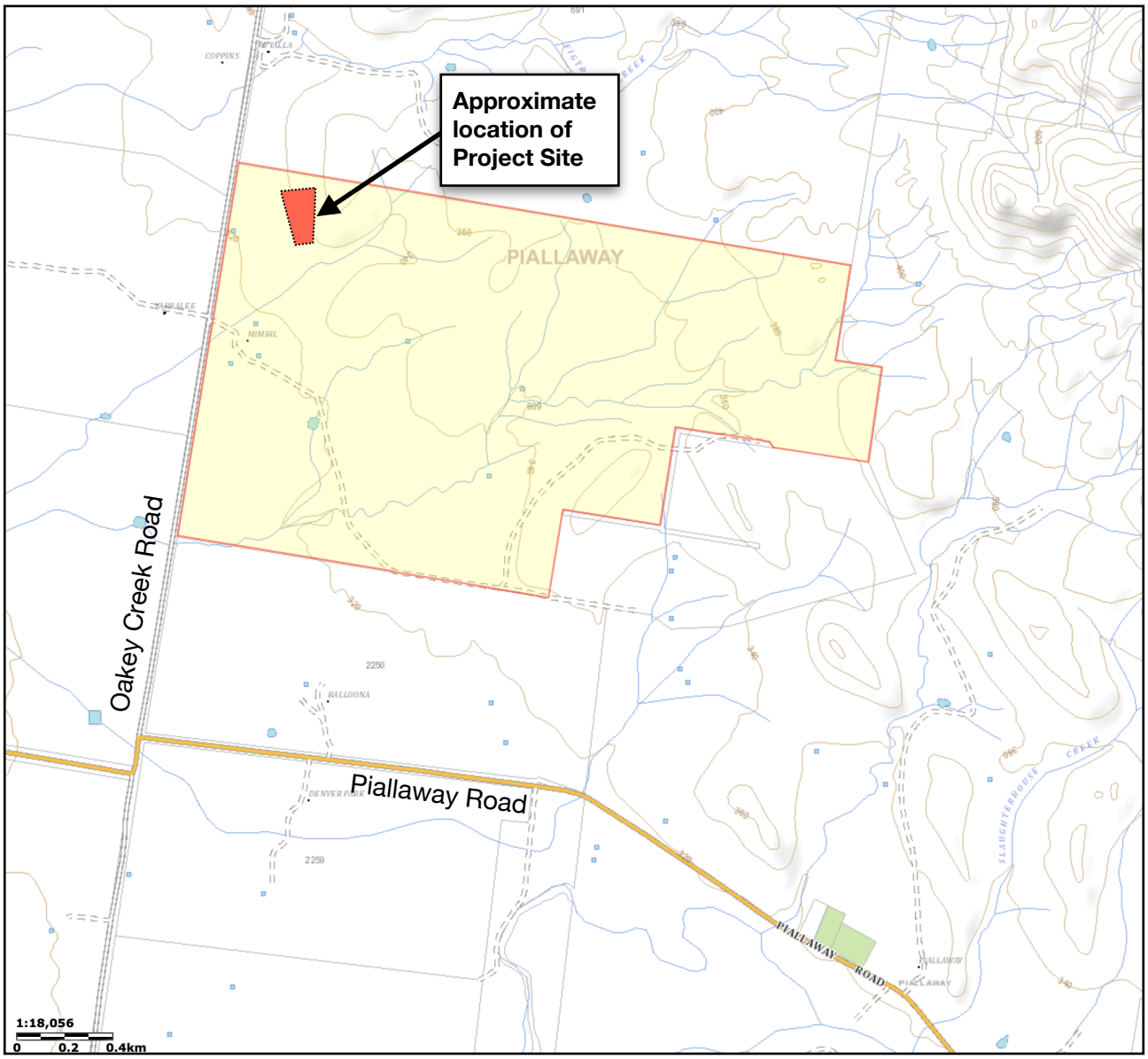


FIGURE 0.1: No. 809 Oakey Creek Road, Piallaway (shaded yellow) & Project Site

(Source: SIX maps)

Gunnedah Shire Council, the proponent, has engaged town planning consultants Outline Planning Consultants Pty Limited to prepare an Environmental Impact Statement (EIS) in support of the Project, including detailed technical reports assessing the potential environmental, social, cultural and economic impacts and benefits of the Project.

■ Quarry Development Proposed

Council proposes to regularise the use of the site as a quarry at the same time as seek approval for a modest lateral extension of the quarry ('the Project'). A lateral expansion of up to a further 1ha is proposed, with a rate of extraction of up to 40,000 tonnes per annum of a total resource of just over 306,000 cubic metres-equivalent to about 734,000 tonnes. Table 0.1 presents a summary of the indicative key Project components. Refer also to ***Figures 0.2, 0.3 and 0.4****.*

Table 0.1: Key quarry project components

Quarry component	Summary description
Extraction Method	*Excavator used to remove weathered sandstone, with drill and blast used for unweathered sandstone.*
Resource	*Weathered and unweathered sandstone- benched where required.*
Disturbance area	*The Project Site, the subject of the proposed quarry development, has an area of 2.715ha.*
Processing	*Crushing and screening of unweathered and weathered sandstone material.*
Annual extraction rate	*Up to 40,000 tonnes per annum, to be extracted on a campaign basis according to the need for local council road works in the vicinity.*
Transport	*Access to the quarry to be from Oakey Creek Road, the existing quarry haul route. A mix of 6-7 axle quarry trucks (24-30 tonnes carrying capacity) and truck and dog combination (32 tonnes), with smaller trucks may be used. It is anticipated that the quarry may generate up to 40 loaded quarry trucks per day.*
Waste management	*Minimal waste materials are anticipated to be generated.*
Hours of operation	*The hours of operation are to be limited to 7.00am to 6.00pm Monday to Friday (ie. 11 hours operation per day) and 7.00am to 1.00pm on Saturdays (ie. 6 hours operation). Hours of blasting are to be restricted to 9.00am to 3.00pm Monday to Friday.*
Total recoverable resource and project life	*The total quarry resource is estimated to be 306,000 cubic metres-equivalent to about 734,000 tonnes.*
Workforce	*Up to 4 employees working on site + contractors (eg. blasting contractor, machinery servicing contractors, refuelers).*
Key environmental issues	*Noise, blasting impacts, dust, visibility, rehabilitation and traffic. Based on past blast monitoring, a Maximum Instantaneous Charge (MIC) of 200kg has been adopted.*

■ Quarry Project Objectives

The objectives in developing this quarry further are as follows:

- *To facilitate the continuation and expansion of an established Council borrow pit.*
- *Provide a reliable source of road base material for Council road works and to maximise recovery of a known quarry resource within the defined quarry extraction area.*
- *Provide a fit for purpose, safe and complaint quarry operation. To undertake quarrying activities in an environmentally responsible manner, employing a various mitigation measures and safeguards in compliance with relevant regulatory requirements.*
- *To create a safe and stable landform, capable of being effectively rehabilitated.*

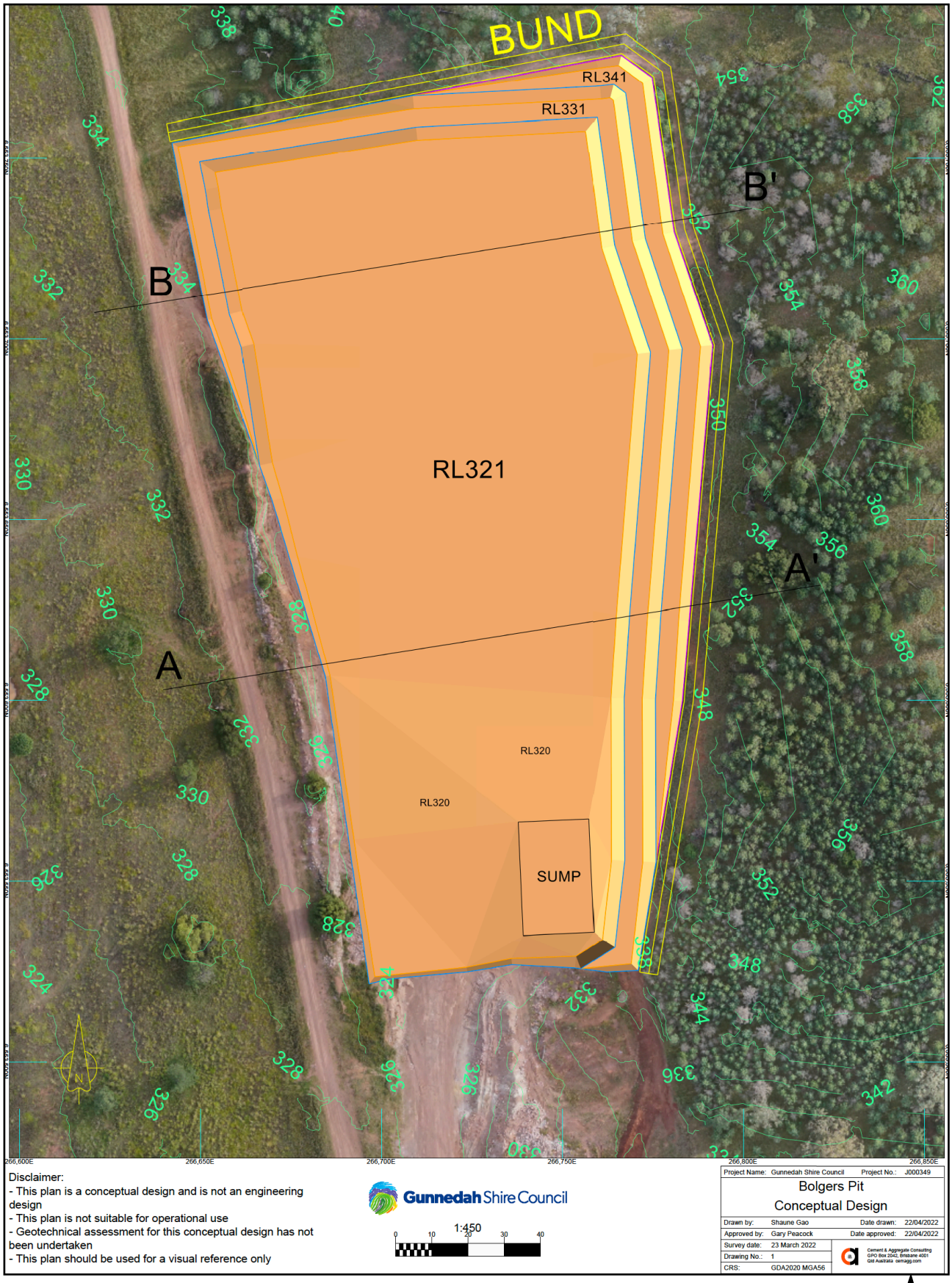
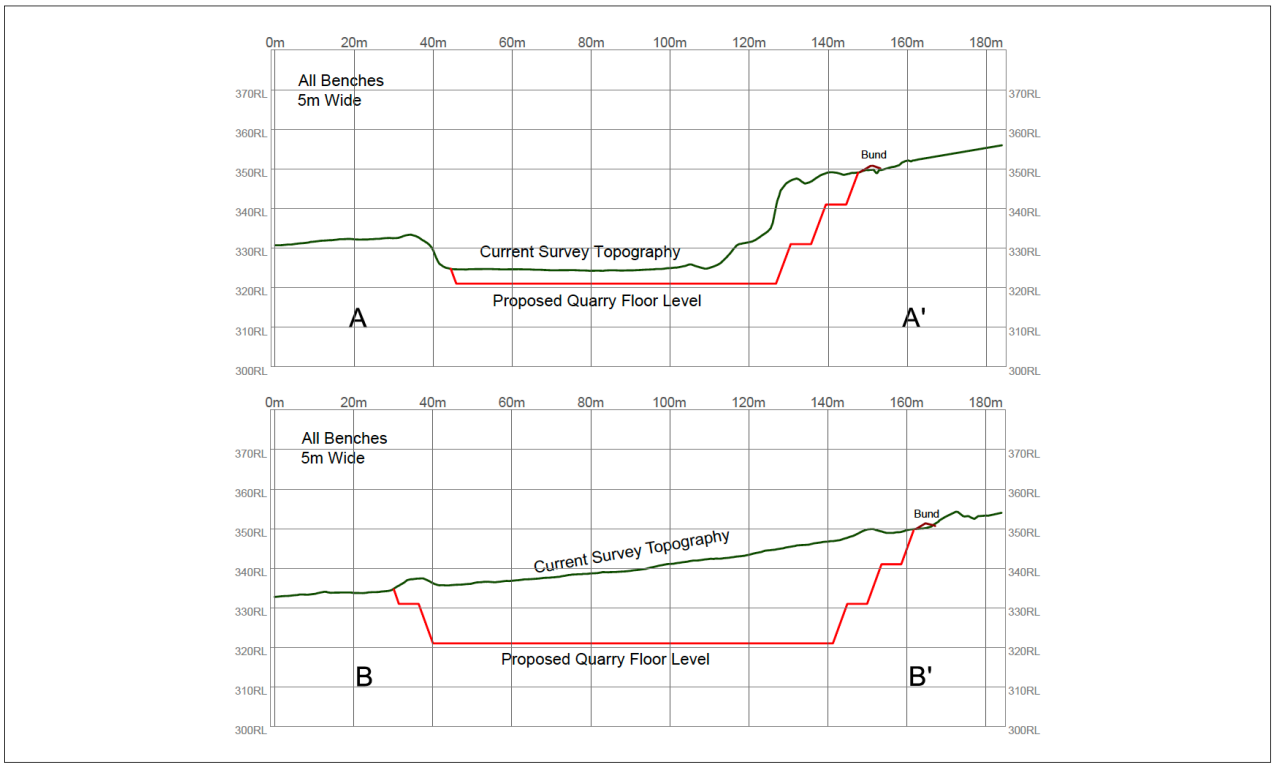


FIGURE 0.2: Proposed Quarry Extension: Bolgers Pit, showing cross-sections

(Source: Eltrius)



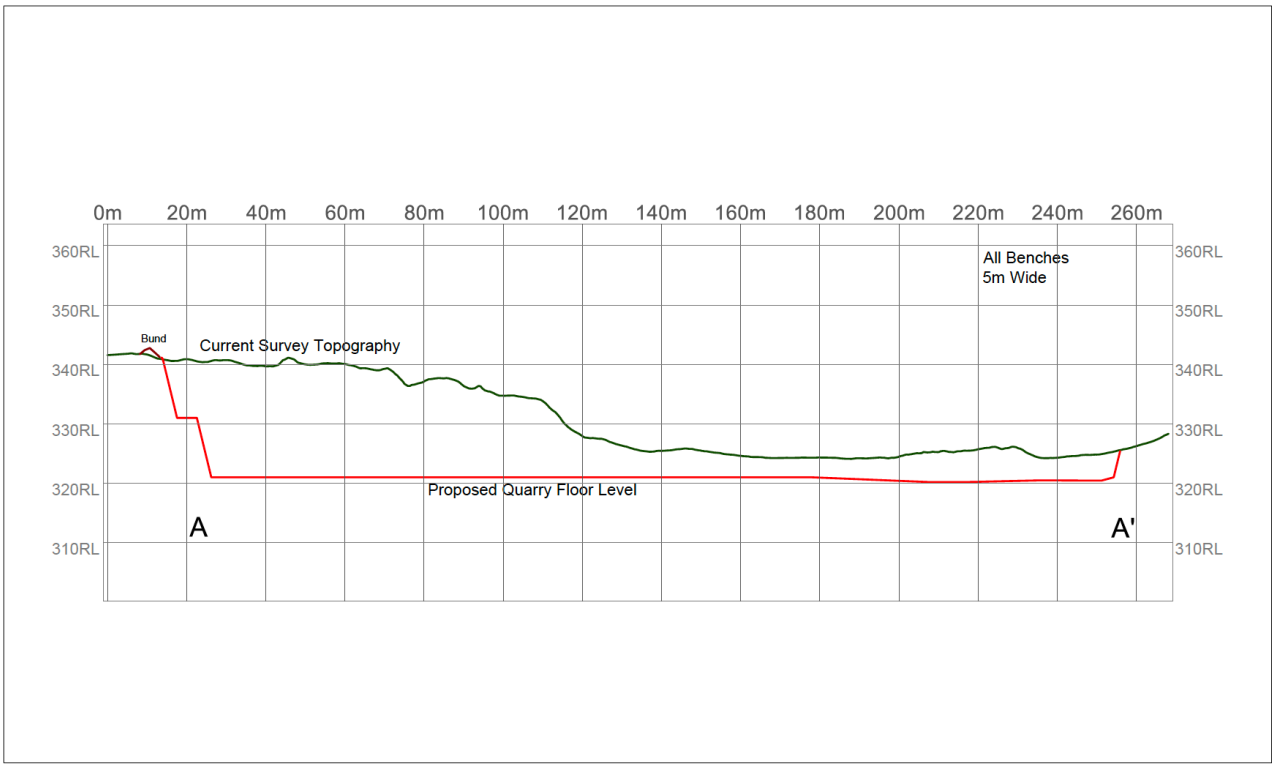


FIGURE 0.3: Proposed Quarry Extension Bolgers Pit -Cross-Sections + Long Section

(Source: Eltrius)

FIGURE 0.4: Aerial Overlay Proposed Quarry Extension Bolgers Pit ('Project Site')

(Source: Eltrius)

▪ *Planning Approvals Process and the EIS*

The proposed quarry development is classified as '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) given that it triggers one of the criteria listed in Schedule 3 of the Environmental Planning and Assessment Regulation 2021 (EP&A Regulation 2021)– item 26 Extractive Industries, namely, the quarry has an area in excess of 2ha- identified in bold below. Schedule 3 provides:

> *"26 Extractive industries*
>
> *(1) Development for the purposes of an extractive industry facility is designated development if the facility obtains or processes for sale, or reuse, more than 30,000 cubic metres of extractive material per year*
>
> *(2) Development for the purposes of an extractive industry facility is designated development* ***if the facility disturbs or will disturb a total surface area of more than 2 hectares of land by*** *—*
>
> *(a) clearing or excavating, or*
>
> *(b) constructing dams, ponds, drains, roads or conveyors, or*
>
> *(c) storing or depositing overburden, extractive material or tailings.*
>
> *(3) Development for the purposes of an extractive industry facility is designated development if the facility is located —*
>
> *(a) in or within 40 metres of a natural waterbody, wetland or an environmentally sensitive area of State significance, or*
>
> *(b) in or within 100 metres of a wetland, or*
>
> *(c) within 200 metres of a coastline, or*
>
> *(d) in an area of contaminated soil or acid sulphate soil, or*
>
> *(e) on land that slopes at more than 18 degrees to the horizontal, or*
>
> *(f) if the facility involves blasting—within 1,000 metres of a residential zone or within 500 metres of a dwelling not associated with the development, or*
>
> *(g) within 500 metres of the site of another extractive industry that has operated during the last 5 years."*

[NOTE: The quarry area the subject of this EIS is more than 40 metres away from the nearest watercourse]

The proposed designated development is also regionally significant development under item 7 of Schedule 6 of State Environmental Planning Policy (Planning Systems) 2021. It is not classified as State significant development pursuant to Schedule 1 of the same policy, 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.

It is a mandatory requirement that any development application for designated development must be accompanied by an Environmental Impact Statement (EIS), prepared in accordance with the provisions of Division 4.7 of the EP&A Act.

This EIS responds to and addresses the Department of Planning and Environment Secretary's Environmental Assessment Requirements (SEARs) EAR 1674, issued on 30 August 2022, 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 measures to mitigate and manage any potential impacts arising from the development. It also addresses relevant matters for consideration including the following:

- *Details of the proposed quarry development.*
- *Assessment of potential environmental impacts of the proposed development in accordance with the Secretary's Environmental Assessment Requirements (SEARs), having regard to biophysical, economic and social considerations, including the principles of ecologically sustainable development.*
- *Justification for the proposed quarry development, as well as details pertaining to proposed truck movements.*
- *Measures proposed to mitigate any adverse impacts on the environment.*

Under the provisions of the Gunnedah Local Environmental Plan (LEP) 2012 the land proposed to accommodate the quarry is wholly zoned RU2 Rural Landscape. The quarry development, defined as "extractive industries" in the Dictionary to the LEP, is permissible with development consent in the RU2 zone. Moreover, quarries are a permissible on the project site under the provisions of State Environmental Planning Policy (Resources and Energy) 2021.

In addition the proposal is required to obtain approval from the NSW Environment Protection Authority (EPA) as a scheduled activity in accordance with item 19(3)(b) of Schedule 1 of the Protection of the Environment Operations Act 1997 (POEO Act). The quarry development is a land based extractive industry involving the extraction, processing and storage of more than 30,000 tonnes per year under Schedule 1(19) of the POEO Act. As such and pursuant to s.4.46 of the EP&A Act, the proposed quarry is also deemed to be 'integrated development'. Given that a quarry production of up to 40,000 tonnes per annum is proposed, an Environment Protection Licence (EPL) would be required from the EPA.

■ Suitability of the Site for the Proposed Quarry Project

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

- *The quarry and the internal quarry haul route have an appropriate (RU2) zoning under Council's LEP, which permits 'extractive industries' (as defined).*
- *The land supports, in part, an already approved operating quarry.*
- *Satisfactory road access is available for heavy vehicles accessing the quarry.*
- *The proposed quarry project will provide sufficient volumes of road base material to service existing and future local Council roads projects.*
- *The quarry is reasonably removed from nearby rural dwellings not associated with the quarry.*
- *The land proposed for lateral expansion comprises generally cleared land.*

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

■ Mitigation Measures and Impact Assessment

The Project has been designed to avoid and minimise adverse biophysical, social and economic impacts and is anticipated to result in satisfactory environmental impacts. In support of this conclusion 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.

Soil and Water Resources

A centrepiece of the soil and water management strategy is the diversion of 'clean' water around the new quarry area and the collection and retention of all 'dirty' water (ie. runoff from disturbed areas) within the active quarry area. This will ensure that run-off does not contaminate off-site areas or downstream waterways. Coupled with this, the proponent will implement the following measures:

- *The use of appropriate soil stripping, handling and stockpiling procedures.*
- *All drainage from within the active quarry area will be directed to the sediment basin (sump) at the base of the quarry, designed to capture all relevant design stormwater flows and discharges.*
- *The captured water from the sediment basin system can 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 proponent and improvements made where necessary.*

The proposed quarry development has been designed, sited and will be managed to avoid any significant adverse stormwater, erosion and sedimentation or water quality impacts. It is not proposed to extract water from any watercourse or to rely on bore water. 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, and in particular in terms of:

- *Water quality and flows within any downstream watercourse.*
- *The stability of the bed and banks of the watercourses downstream.*
- *The need for any future rehabilitation of downstream watercourse and riparian areas arising from the proposed quarry development.*

Noise and Blasting

In the interests of protecting neighbourhood amenity, the quarry is to be operated during daytime periods only. The Project Site is within 1km of three rural residences located to the north. 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. Based on past blast monitoring, a Maximum Instantaneous Charge (MIC) of 200kg has been adopted.

Air Quality

A raft of dust abatement measures are to be implemented on site, including regular watering of the internal haul route , dust abatement to be carried out near plant where dust is likely to become a nuisance, and the requirement that all loads leaving the site must be covered. The results of the modelling by Vipac Engineers and Scientists show that air quality should not be a constraint to the proposed quarry development.

Agriculture

The proposed quarry development would not compromise good quality agricultural land or other viable rural activities.

Visual Amenity

The proposed quarry development would not cause any adverse impacts on visual amenity.

Contamination

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 ongoing use as a quarry.

Landscape and Visual Impacts

The existing quarry is proposed to be laterally expanded, incorporating more elevated land to the east and to the north of the existing quarry. The lateral expansion of quarrying to the east will result in the quarry being visible from Oakey Creek Road to the west and to the south-west of the quarry site, however, views from the north will be largely obscured by intervening topography and vegetation. Visual impacts are assessed to be satisfactory.

Bushfire

Notwithstanding the fact that the Project Site is almost totally cleared land, it is located within Bushfire Prone land-Vegetation Buffer. The proposed quarry does not seek to provide for any permanent occupation of the Project Site: the quarry used intermittently and on a campaign basis when the need arises for road base materials for various local Council roads projects. With the various bushfire safeguards and controls proposed, it is considered that the bushfire hazard to the Project Site would be acceptable and that the proposed operations would not significantly contribute to increasing local bushfire hazard.

Heritage

The Project Site has not been identified as containing any significance in terms of Aboriginal or European heritage values. No Aboriginal items or relics of heritage significance occur within the proposed quarry area. 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.

Traffic

It is proposed that a maximum of up to 40 loaded trucks per day would transport quarry products from the Project Site back to the local road system via an existing internal access route. The traffic impact assessment by Streetwise completed for the proposal has determined that the proposed volumes of heavy truck traffic volume attributable to the quarry project would not significantly impact on existing road safety and performance.

Flora and Fauna, Rehabilitation

Most of the proposed quarry site is cleared or disturbed land, with no ecological or habitat significance. Moreover, there are no Endangered Ecological Communities found on the Project Site.. Having regard for the safeguards, management controls and mitigation measures (including the rehabilitation of the Project Site to native vegetation) it has been assessed by consultants Bower Ecology that the proposal would not have a significant impact on flora or fauna generally, and threatened species in particular, including the Koala.

Social and Economic

Quarries stimulate local communities through investment and by providing jobs. In this case, the quarry is an important borrow pit utilised by Gunnedah Shire Council for local road construction projects in the vicinity.

Positive economic impacts include the provision of much-needed road base to local and regional road and associated infrastructure projects and increased employment opportunities arising from an expanded quarry development. Assuming the safeguards and controls nominated to manage impacts on other environmental aspects are adopted, especially in relation to heavy quarry truck traffic, 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. The Project will maximise socio-economic benefits to the State of NSW and to the local economy by the recovery of an additional valuable resource from the quarry site that would otherwise be sterilised, without material additional environmental or social costs.

▪ *Conclusion*

A Council borrow pit is already established and operating on the land, and is highly accessible to local Council road projects in this part of the Gunnedah LGA. The greater the distance of a borrow pit from a roads project, the more expensive road construction becomes. The Project Site has safe and adequate access suitable for the proposal.

The proposed quarry development has been designed to avoid and minimise adverse biophysical, 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 Environmental Planning and Assessment Act 1979. The land the subject of the proposed quarry development is mostly cleared and disturbed land, and because of this has no significant environmental constraints to development.

Overall, this EIS concludes that the proposed quarry development is in the public interest and is not predicted to cause significant environmental impacts or pose significant environmental risks.

1. Introduction

1.1 Overview

Gunnedah Shire Council (Council) requires road making material to be readily available for the ongoing maintenance and upgrading of its extensive road network. A source of borrow material for each part of the local road network is therefore required. Council operates numerous quarries, more commonly known as 'borrow pits', in various locations throughout the Gunnedah local government area (LGA) in close proximity to the local road network.

'Bolgers Pit' is one of Council's larger borrow pits, located at No. 809 Oakey Creek Road, Piallaway NSW 2342, in the south-east portion of the Gunnedah Shire, located approximately 32km to the south-east of the Gunnedah township. Refer to **Figures 1.1 and 1.2**. showing the location of the quarry and proximity to its neighbours. Gunnedah Shire Council now wishes to regularise the use of this quarry and to laterally expand the active quarry pit through the development approval process. The existing disturbed quarry has an area of approximately 3.4ha. The Project Site, the subject of the proposed quarry expansion, has an area of 2.715ha. A lateral expansion is proposed, with a rate of extraction of up to 40,000 tonnes per annum utilising an additional quarry resource of approximately 306,000 cubic metres-equivalent to about 734,000 tonnes. The existing and expanded quarry is hereafter referred to as the 'Project Site'.

The proposed quarry development 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).

FIGURE 1.1: Regional Context- Bolgers Pit

(Source: Gunnedah Shire Council)

FIGURE 1.2: Local Context Bolgers Pit and Nearest Residences

(Source: NSW Government MinView website)

This Environmental Impact Statement (EIS) has been prepared by Outline Planning Consultants Pty Ltd on behalf ofGunnedah Shire Council (the proponent). This document has been prepared to accompany a development application for a continuation and lateral expansion to the existing Bolgers Pit (the Project). This EIS has been prepared in accordance with the Secretary's Environmental Assessment Requirements (EAR 1674) provided in **Appendix A**. It is most unfortunate to note, however, that there were only limited responses by other government agencies to the SEARs request lodged by Outline Planning Consultants Pty Ltd.

▪ 1.2 Locational Context

Bolgers Pit is located in the Gunnedah Shire in northern NSW. Gunnedah Shire is a largely rural area, with most of the population living in the township of Gunnedah and the villages of Breeza, Carroll, Curlewis, Mullaley and Tambar Springs. **Figure 1.1** shows the location of these settlements and that of Bolgers Pit. The nearest village, Breeza (population 146 persons in 2016 Census), lies approximately 15km away, to the south-west of the Project Site. The quarry is surrounded by cleared open woodland used for cropping and grazing to the north, west and to the south, with only four (4) rural dwellings located within 1km of the quarry pit- refer **Figure 1.2**. Immediately to the east are timbered undulating to rolling low hills flanking the spine of the Melville Ranges. These hillsides are characterised by rapid changes in geology.

▪ 1.3 Project Overview and Objectives

The proponent seeks approval for the following, henceforth referred to as 'the Project':

- A continuation of quarrying the resource from the Project Site.
- A lateral expansion of the existing quarry footprint, in order to maximise winning of the quarry resource, enabling a continuation of the extraction and production of a range of road construction materials from the quarry.
- The Project Site, including the land proposed for lateral extension, will have an area of approximately 2.71ha.
- Rate of extraction limited to 40,000 tonnes per annum (pa).

The objectives in developing this quarry further are as follows:

- To facilitate the continuation and expansion of an established Council borrow pit.
- Provide a reliable source of road base material for Council road works and to maximise recovery of a known quarry resource within the defined quarry extraction area.
- Provide a fit for purpose, safe and complaint quarry operation. To undertake quarrying activities in an environmentally responsible manner, employing a various mitigation measures and safeguards in compliance with relevant regulatory requirements.
- To create a safe and stable landform, capable of being effectively rehabilitated.

▪ 1.4 Restrictions and Covenants

The Project Site is leased by Council from the owners. A rural dwelling associated with the quarry, 'Mimbil', is located within 500m of the Project Site. No restrictions or covenants apply to the Project Site.

▪ 1.5 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. 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 following table.

Table 1.1: EIS Project Team

Specialist area of expertise	Name of consulting firm	Names of specialist personnel
Details of the proposed quarry project, including design and operational aspects	*Eltrius and Outline Planning Consultants, in consultation with Gunnedah Shire Council*	*Shaune Gao, Eltrius, Gary Peacock, Director Outline Planning Consultants, and Grant Roberts, Manager Engineering Services, Gunnedah Shire Council*
Roads and traffic assessment	*Streetwise*	*Andy Davis Traffic Engineer* *Craig Nethery Senior Engineer*
Stormwater, Drainage	*Martens & Associates, consulting engineers, and Outline Planning Consultants*	*Terry Harvey, Martens & Associates, and Gary Peacock, Outline Planning Consultants*
Rehabilitation	*Bower Ecology and Outline Planning Consultants*	*Steve Jarman, Bower Ecology, and Gary Peacock, Outline Planning Consultants*
Contamination	*Ballpark Environmental*	*Andrew Ballard*
Air quality, greenhouse gas impacts	*Vipac Engineers & Scientists*	*Dr Stephen Thomas*
Noise impacts	*Vipac Engineers & Scientists*	*Jackson Yu and Patrick Drake*
Surveying, visual, hazards	*Stewart Surveys*	*Kathryn Yigman*
Aboriginal heritage	*Niche Environment & Heritage*	*Carly Todhunter*

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

▪ 1.6 Content of this EIS

The accompanying table summarises how this EIS satisfies the statutory requirements of s.192(1) of the *Environmental Planning and Assessment Regulation 2021* (EP&A Regulation 2021) regarding the content of an EIS.

Table 1.2: Content of an EIS

EIS Requirement s.192(1) of EP&A Regulation 2021	Where addressed in this EIS
s.192(1) "(a) a summary of the environmental impact statement"	*Executive summary*
"(b) a statement of the objectives of the development, activity or infrastructure"	*Section 1.3*
"(c) an analysis of feasible alternatives to the carrying out of the development, activity or infrastructure, considering its objectives, including the consequences of not carrying out the development"	*Section 2.7*
"(d) an analysis of the development, activity or infrastructure, including—"	
(i) a full description of the development, activity or infrastructure	*Section 3*
(ii) a general description of the environment likely to be affected by the development, activity or infrastructure and a detailed description of the aspects of the environment that are likely to be significantly affected	*Section 2*
(iii) the likely impact on the environment of the development, activity or infrastructure	*Section 7*
(iv) a full description of the measures to mitigate adverse effects of the development, activity or infrastructure on the environment	*Section 4*
(v) a list of the approvals that must be obtained under another Act or law before the development, activity or infrastructure may lawfully be carried out"	*Section 5*
"(e) a compilation, in a single section of the environmental impact statement, of the measures referred to in paragraph (d)(iv)"	*Section 4*
"(f) the reasons justifying the carrying out of the development, activity or infrastructure, considering biophysical, economic and social factors, including the principles of ecologically sustainable development set out in section 193"	*Section 8*

1.7 Compliance with SEARs

The accompanying table summarises how this EIS satisfies the Secretary's Environmental Assessment Requirements (SEARs) regarding the matters addressed in an EIS.

Table 1.2: Content of an EIS

SEARs Requirement EIS	*Where addressed in this EIS*
General Requirements ▸ *Executive Summary* ▸ *Comprehensive description of development.* ▸ *A conclusion.* ▸ *Signed declaration from the author of the EIS*	▸ *Executive Summary.* ▸ *Section 3: Project Description.* ▸ *Section 8.* ▸ *Declaration on page 2 of EIS.*
Consultation	*Section 6.*
Noise, Blasting and Vibration	*Sections 2.11, 3.5.3, 4.2 and 7.3.11.*
Air	*Sections 2.11, 3.5.7, 4.2 and 7.3.1.*
Water	*Sections 2.5, 2.6, 3.5.6, 4.2 and Section 7.3.2.*
Biodiversity	*Sections 2.13, 4.2 and 7.3.3.*
Heritage	*Sections 2.10, 4.2 and Section 7.3.4.*
Traffic and Transport	*Sections 2.9, 3.5.8, 4.2 and Section 7.3.5.*
Land Resources	*Sections 2.4, 2.5, 4.2 and 7.3.6.*
Waste	*Sections 3.7, 4.2 and 7.3.7.*
Hazards	*Sections 2.7, 2.8, 3.8, 3.9, 4.2 and Section 7.3.8.*
Visual	*Section 7.3.9.*
Social and Economic	*Sections 2.1, 2.3 and 7.3.10*
Rehabilitation	*Sections 3.11, 4.2 and 7.3.12.*
All relevant State Government environmental planning instruments, guidelines, policies, and plans, including Gunnedah Local Environmental Plan 2012 and any relevant development control plans/ strategies	*Sections 5, 7.1 and 7.2.*

1.8 EIS Report Structure

The purpose of this EIS is to enable consideration of the implications of the proposed quarry project. The EIS has been prepared in accordance with the EP&A Act and the EP&A Regulation 2021. 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 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 project, including justification of the project, risks or hazards for the project and cumulative impacts potential.

Section 3: Provides details of the quarry project. This part of the EIS also includes details of management measures proposed, along with alternatives to the Project.

Section 4: Provides a full description of the measures to mitigate adverse effects of the Project. the results of the assessment and mitigation of the potential impacts of the quarry project.

Section 5: Outlines the statutory planning context for the 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 quarry project during the preparation of the EIS.

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

Section 8: Provides a justification and evaluation for the 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:

- The Secretary's Environmental Assessment Requirements- refer **Appendix A**.
- NSW Government Property Report- refer **Appendix B**.
- Petrographic Report- refer **Appendix C**.
- Melville Soil landscape- refer **Appendix D**.
- Preliminary Site Investigation by Ballpark Environmental- refer **Appendix E**.
- Traffic assessment by Streetwise- refer **Appendix F**.
- Heritage assessment by Niche Environment and Heritage- refer **Appendix G**.
- Air quality, greenhouse gas impacts assessment by Vipac- refer **Appendix H**.
- Noise impact assessment report by Vipac- refer **Appendix I**.
- Ecological assessment by Bower Ecology- refer **Appendix J**.
- Water balance by Martens & Associates- refer **Appendix K**.
- Blast records- refer **Appendix L**.
- Draft bush fire emergency and evacuation plan, prepared by Stewart Surveys- refer **Appendix M**.
- Consultation documents- refer **Appendix N**.
- Bush fire assessment report, prepared by Stewart Surveys- refer **Appendix O**.
- Visual assessment, prepared by Stewart Surveys- refer **Appendix P**.

2. Site Features and Context

2.1 Locational Context

The site of the quarry expansion (Project Site) is located at No.Oakey Creek Road, Piallaway NSW, approximately 32km to the south-east of the township of Gunnedah, in the Gunnedah local government area (LGA). The land on which the quarry is situated comprises Lot 139 in Deposited Plan 751012. Refer **Figures 1.1, 1.2** and **2.1**.

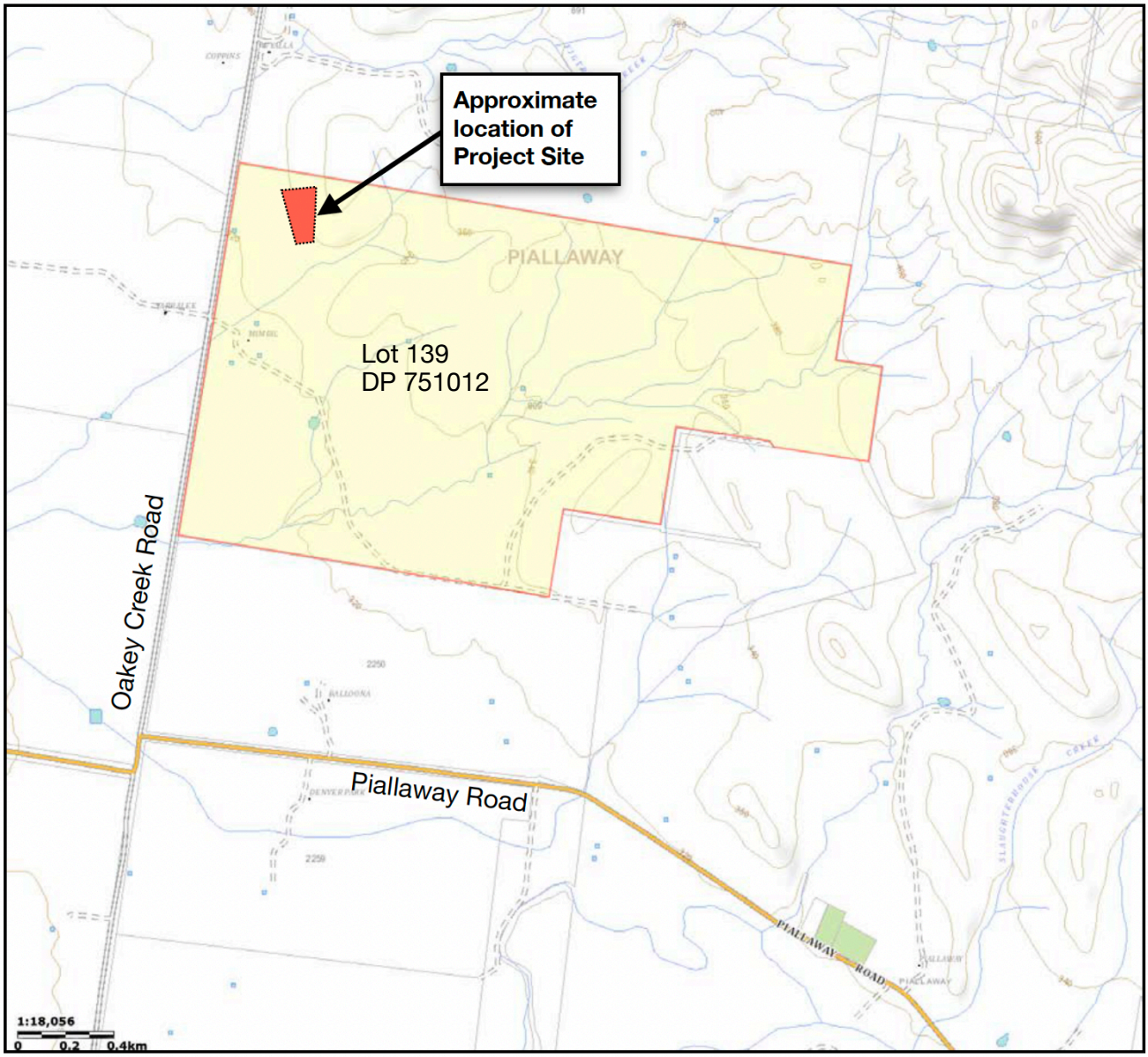


FIGURE 2.1: No. 809 Oakey Creek Road, Piallaway (shaded yellow) & Project Site
(Source: SIX maps)

Bolgers Pit site is located in the Gunnedah Shire in northern NSW. Gunnedah Shire is a largely rural area, with most of the resident population living in the township of Gunnedah and the villages of Breeza, Carroll, Curlewis, Mullaley and Tambar Springs. The nearest village, Breeza (146 residents), lies to the south. Rural land within the Gunnedah Shire is predominantly used for agriculture, particularly wheat and crop growing, cattle and sheep grazing and pig raising, with some coal mining. Tourism is also an important industry.

The Shire's primary commercial area is the Gunnedah CBD. The Shire encompasses a total land area of about 5,000 square kilometres. The Shire's primary commercial area is the Gunnedah CBD. The 2021 Census estimated resident population of the Gunnedah Shire was 13,085 persons, an increase on the 2016 Census population of 12,215 residents. This population was living in 5,811 dwellings with an average household size of 2.24 person per household. Gunnedah township had an estimated resident population of 10,490 in 2021, or about 80% of the total Shire population. In 2021 the Piallaway locality had a population of 240 persons spread over an area of 493 square kilometres, a very low rural density of 0.49 persons per square kilometre. In 2021 14.1% of the total Gunnedah LGA workforce were engaged in mining, compared to 2.4% for Regional NSW, with 12.9% engaged in agriculture, forestry and fishing, compared to 5.1% for Regional NSW.

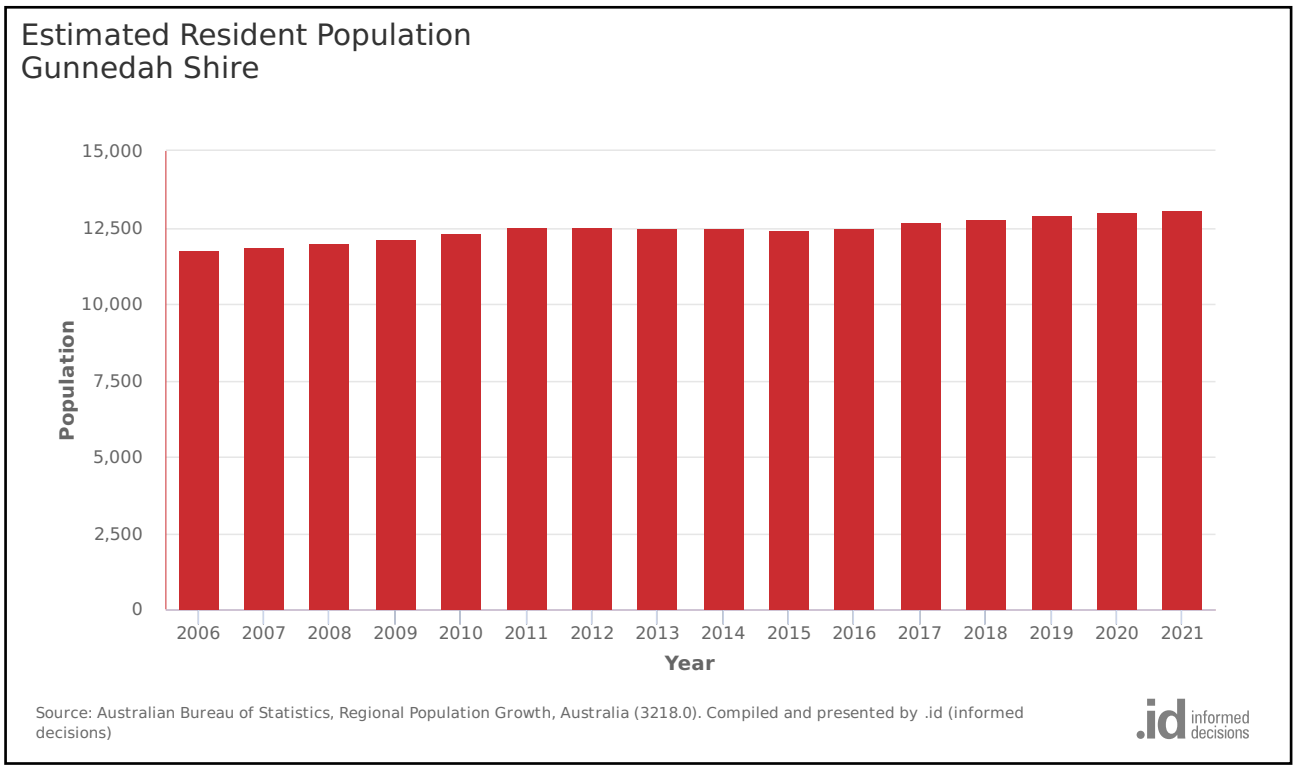


FIGURE 2.2: Estimated Resident Population Gunnedah Shire

(Source: Australian Bureau of Statistics 2022)

▪ 2.2 Description of the Project Site

Bolgers Pit forms a part of Lots 139 DP 751012, No. 809 Oakey Creek Road, Piallaway NSW 2342. The land on which the quarry is situated is privately owned, the quarry leased to Gunnedah Shire Council. Refer **Figure 2.3**. The area of the quarry proposed for further expansion is known as the Project Site. It has an area of just over 2.7ha- refer **Figure 2.4**.

The topography of this quarry is undulating to moderate, with slopes of up to about 11% or more and with elevations ranging from RL 350m at the northern end of the quarry, down to about RL 325m at the southern end. The quarry floor slopes in a southerly direction from about RL340m to RL325m. The ecological value of the forested lands to the east of the quarry are unknown. The total disturbed quarry area is approximately 3.4ha, including areas cleared ahead of quarrying on the eastern and northern sides of the current active quarry pit. The site the subject of this EIS has an area of 2.7ha approximately. Most of the quarry site is cleared. Quarry expansion is proceeding in a generally north-easterly direction, evidenced by the current active quarry working face. This would appear to be where the most readily obtainable quarry resource is located. More weathered material is to be found on the western-most flanks of the active quarry. Refer Photographs 2.1 and 2.2. Refer also to **Appendix B**- NSW Government Property Report.

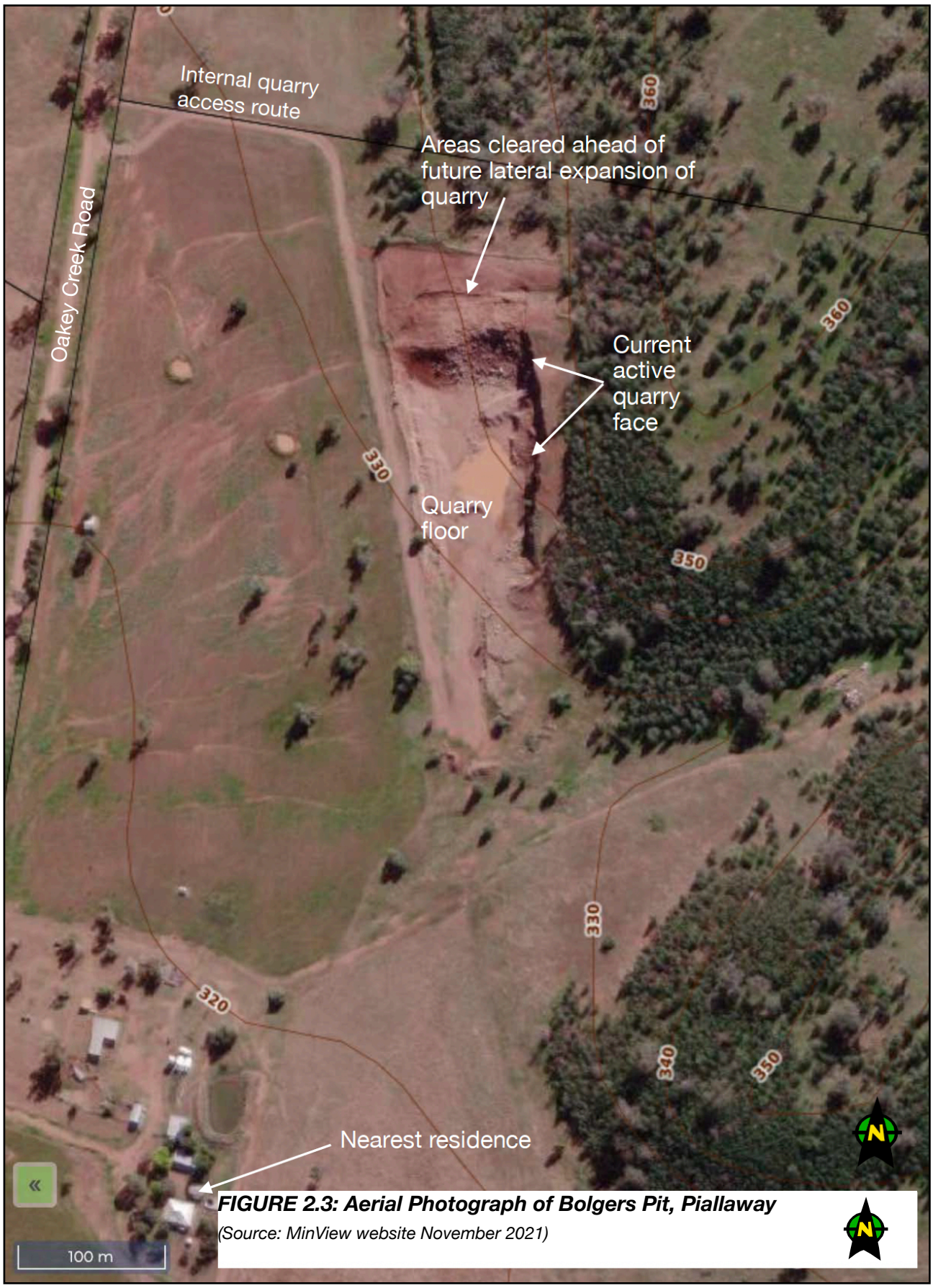


FIGURE 2.3: Aerial Photograph of Bolgers Pit, Piallaway

(Source: MinView website November 2021)

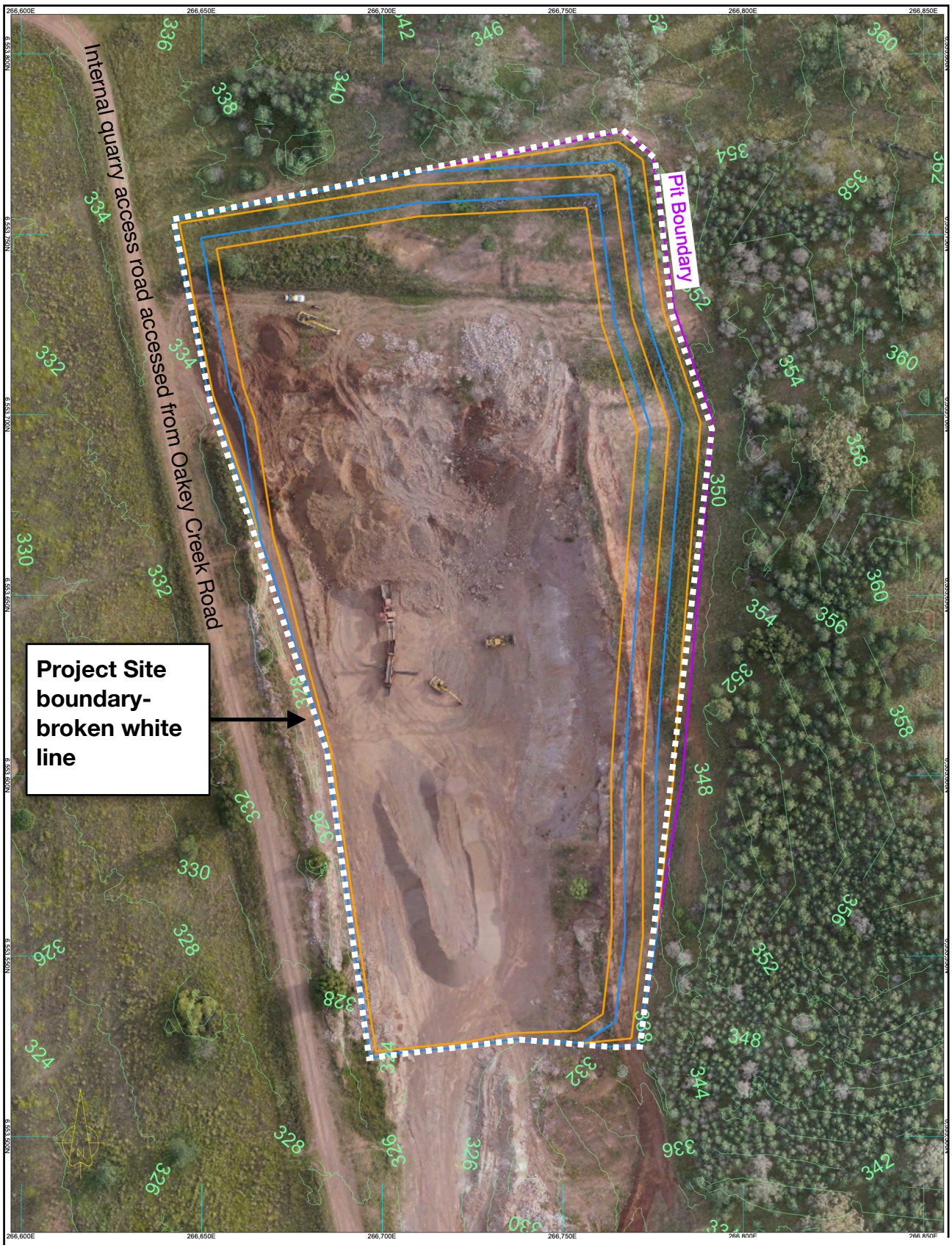


FIGURE 2.4: Aerial Photograph of Project Site & Extraction Area

(Source: Eltrius 2021)

PHOTOGRAPH 2.1: Photograph of Bolgers Pit from within the north-western section of the existing quarry pit looking south and south east

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PHOTOGRAPH 2.2: Photograph of Bolgers Pit from elevated hillside to the east of existing quarry looking south-west

The Project Site also has the following features:

- The land does not comprise critical habitat and is not within a conservation area or identified in the Gunnedah LEP 2012 as having any terrestrial habitat or scenic value.
- The land does not contain an item of the environmental heritage.
- The land is not affected by any road widening or road realignment proposals.
- The land is not within any drinking water catchment.
- The land is not affected by any policy relating to landslip hazard or is affected by mine subsidence.
- The land has no acid sulphate soils potential.
- The land 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 quarry is not flood prone, by reference to Gunnedah LEP 2012 Flood Planning Map Sheet FLD_005. However, the quarry haul route is known to be affected by flooding.
- The cleared quarry is a bushfire buffer zone (vegetation buffer). Refer **Appendix B**.
- The land is not located in the vicinity of competing extractive industries and is not identified by an environmental planning instrument as being the location of significant resource materials.
- Due to the steepness of the site, the subject land would have limited agricultural productive potential.

The most relevant of the above are discussed in further detail in the following.

2.3 Surrounding Development

The Piallaway area comprises mainly rural and rural-residential properties, with livestock grazing the predominant land use. Most of the land to the west is cleared grazing land, with forested land immediately to the east and to the north. Refer **Figures 1.2**, **2.1** and **2.3**. There is only privately-owned one rural residence within 500m of the active quarry working area, located on the same property as the quarry("Mimbil"). This dwelling is associated with the quarry- refer Photograph 2.1. There are only three additional rural dwellings located within 1km of the Project Site, comprising the following:

- The active quarry face is approximately 592m to the ENE of the next nearest rural dwelling, located on the west side of Oakey Creek Road ("Yarralee"), to the south-west of the project Site.
- Approximately 562m from active quarry face to the next nearest rural dwelling to the north ("Wyalla").
- The active quarry area is approximately 576m from the next nearest rural dwelling to the north ("Coppins").

2.4 Geology and Soils, Quarry Production

NSW Surface Geology mapping of the quarry and surrounds shows the quarry to be underlain by Pute Weire Basalt with Cutm Sandstone to the east of a nearby geological uplift called the Moki Thrust. An overlay is provided of the approximate location and extent of the existing quarry. Based on the Geochempet Service Petrographic Report of the resource found at Bolgers Pit (**Appendix C**) It is concluded that the quarry is underlain by Cutm Sandstone. The reserves of quarry material potentially available within the Project Site with the adopted design is estimated to be 306,000 cubic metres, or approximately 800,000 tonnes. [NOTE: This includes overburden material as well as quarry resource to be won from the Project Site]

The soils of the Project Site form a part of the Melville Soil Landscape, highlighted in red in the accompanying **Figure 2.5** . This soil landscape is to be found in the extensive undulating to rolling hills and mountain hill slopes flanking and including areas of highly complex geology in the Melville Ranges. Soil depth is variable, generally shallow, with much rock outcropping at or near the surface. Refer also to **Appendix D** or further details.

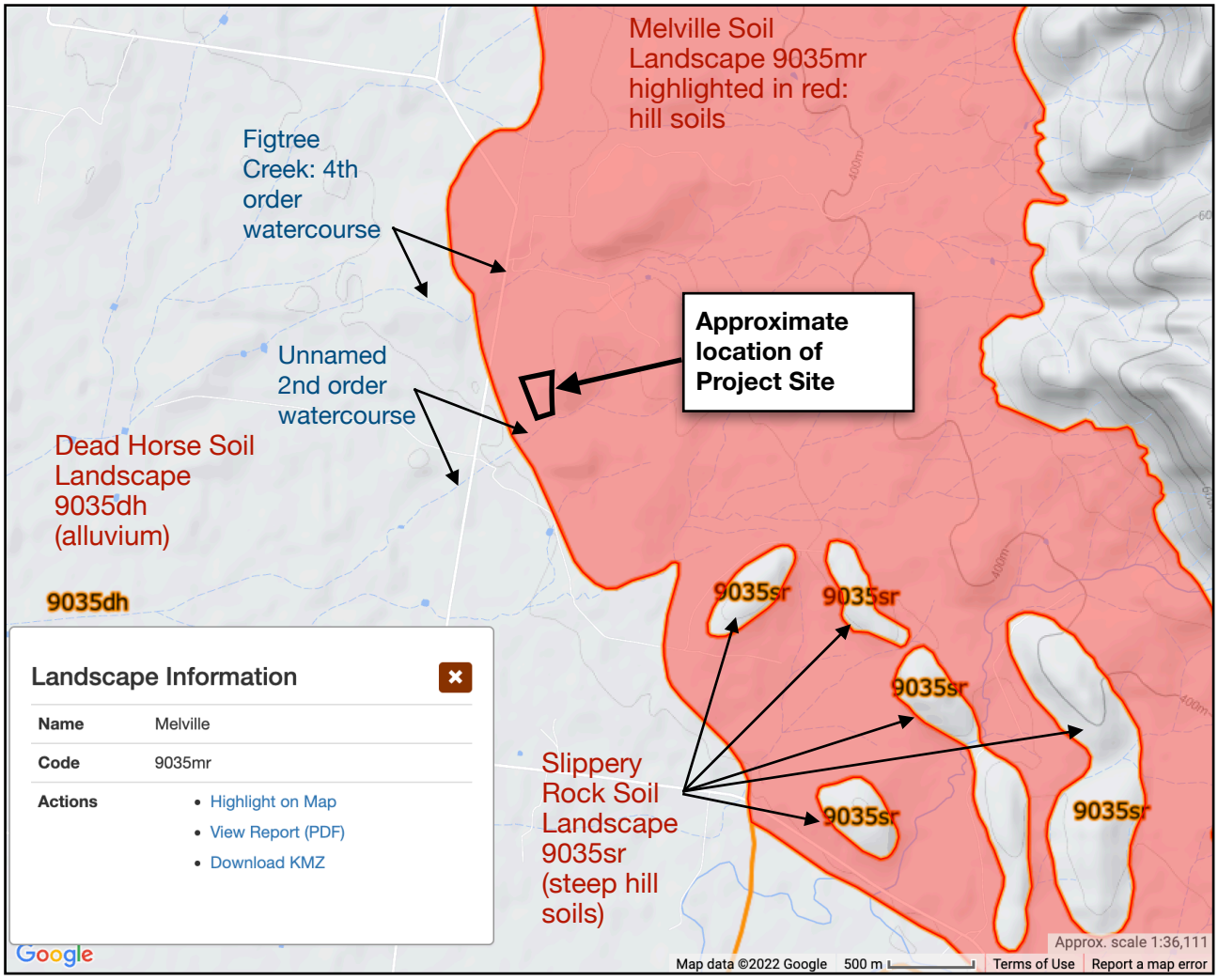


FIGURE 2.5: Soil Landscapes of the Project Site and Surrounds

(Source: NSW Government eSpade website)

The soils of the Melville soil landscape within the Project Site have generally moderate to high limitations for grazing and high limitations for cropping, possessing a Class 4-5 agricultural suitability.

Biophysical Strategic Agricultural Land (BSAL) is land considered to be highly suitable for agriculture, having the best quality landforms, soil and water resources which are naturally capable of sustaining high levels of productivity and require minimal management practices to maintain this high quality. In short, BSAL lands are of significance to the State. In this regard, the Project Site is not identified as BSAL land in Figure 5 of the *New England-North West Regional Plan 2036* (refer **Figure 2.6**) or NSW Government SEED mapping.

The geology of the Melville Ranges is complex and extremely variable. A comprehensive geological assessment of the extent and quality of the quarry resource undertaken (refer **Appendix C**) indicates the Project Site contains a hard rock suitable for the production of road base. The material won from the quarry is, however, not suited to higher specification applications, such as sealing aggregate or DGB 20.

Gunnedah Shire Council keeps quarry production statistics for Bolgers Pit. For the period 2016-2020 Bolgers Pit has provided up to 18,355 tonnes of quarry in any one year (in 2018) down to 556 tonnes (in 2017). In total, during the period 2016-2020 Bolgers Pit produced a total of 54,361 tonnes of processed quarry material.

The Geochempet Service Petrographic Report dated 22 March 2021 describes the resource found here in the following terms:

"The submitted gravel sample from Bolgers Quarry is interpreted to be partly ferricreted volcaniclastic sandstone. It is interpreted to have been generated by chemical weathering and ferruginous cementation of moderately sorted sandstone during a cycle of lateritization. It now consists almost largely of silica (in the form of quartz grains) and secondary iron oxide (in the form of hematite and goethite) but more recent weathering has converted some of the secondary iron to more earthy types.

For engineering purposes, the rock within the supplied road base sample may be summarised as:

- *volcaniclastic sandstone (sedimentary rock)*
- *slightly weathered*
- *carrying about 77% of robust mineral grains and lithic clasts and 4% moderately robust carbonate*
- *consists of 19% soft, weak clays and earthy secondary iron oxides*
- *essentially hard*
- *essentially strong*

In essence, the rock is predicted to be essentially durable.

The rock of the type represented by the supplied sample is interpreted to be suitable for use as road base."

Gunnedah Council (Council) requires road making material to be readily available for the ongoing maintenance and upgrading of its extensive road network. Based on the above petrographic report the quarry resource is thus well-suited to road-making purposes on local council roads in the Gunnedah area.

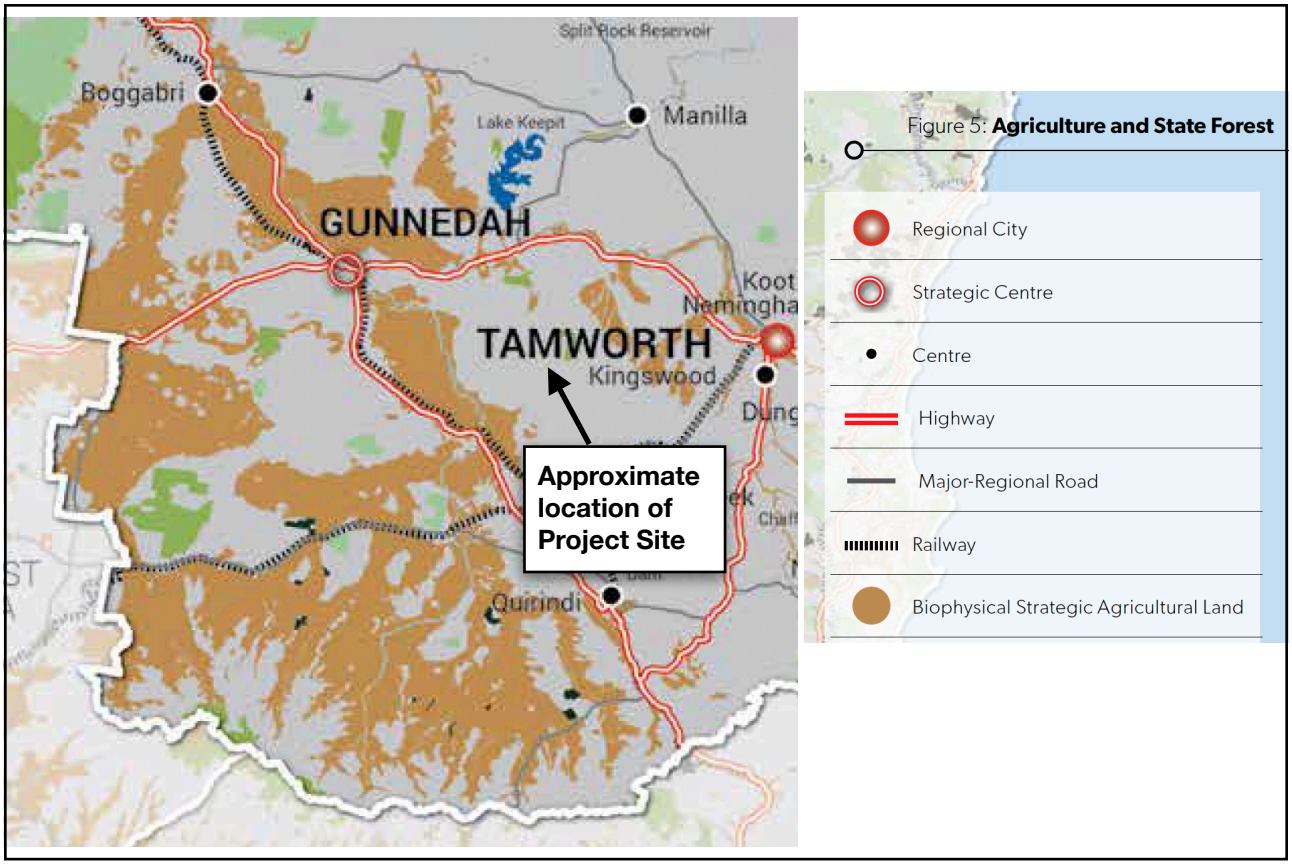


FIGURE 2.6: The Project Site is not identified as comprising Biophysical Strategic Agricultural Land

(Source: New England-North West Regional Plan 2036 Figure 5)

■ 2.5 Topography and Hydrology

Topographically the site is in an area of undulating to rolling hills with extremely complex geology and soils. The site itself is located on the south-west mid to lower slopes of a trending north-south hill system adjoining steep landscapes in the Melville Ranges, further removed from the Project Site to the east. The topography of the site is heavily influenced by past quarrying activities, containing a generally flat quarry floor rising steeply by up to 25m back up to the existing hillside area to the east. The topography of the northern section of the Project Site, yet to be quarried, comprises rolling topography rising by between 15m to 25m from the western flanks back up to the eastern flanks of the Project Site, with slopes in the vicinity of 15% to 19% gradient. Elevations range from RL 350m at the northern end of the quarry, down to about RL 325m at the southern end. The quarry floor slopes in a southerly direction from about RL340m to RL325m.

The total quarry area the subject of this EIS is approximately 2.71ha, including areas cleared ahead of quarrying on the eastern and northern sides of the current active quarry pit. Most of the quarry site is cleared.

An earth bund has been constructed to the east above the pit and directs surface runoff away from the pit to the south- refer Photograph 2.3. Drainage within the quarry pit appears to be directed towards the southwest and a small sump- refer Photograph 2.4.

PHOTOGRAPH 2.3 (above): Earthen bund above Bolgers Pit diverts 'clean' runoff from upslope areas around the quarry

PHOTOGRAPH 2.4 (above) : All runoff from within the existing quarry drains to a sediment basin (sump) in the southern part of the quarry

Figtree Creek is the closest permanent 4th Order (Strahler Stream Order) waterway and is located up-gradient to the north (~ 580m) of the pit. Drainage within the quarry pit was directed to the lowest point in the southwest. Drainage of other areas within the site outside of the existing quarry pit follow the constructed earthen bunds to the south towards the low-lying areas of the remaining Lot 139. Approximately 130m away to the south of the Project Site is an intermittent, unnamed 2nd order watercourse that drains into a flat alluvial plain. If unchecked, Bolgers Pit would drain towards this watercourse. Refer **Figure 2.5** and **Figure 2.7**.

Existing site topography is depicted on **Figures 2.3** and **2.4**.

The erosion and flooding hazards of the Project Site can be summarised as follows:

- The Project Site is flood-free.
- Very Low Landslip Erosion Risk.
- Moderate Water Erosion Risk.
- Very Low Wind Erosion Risk.

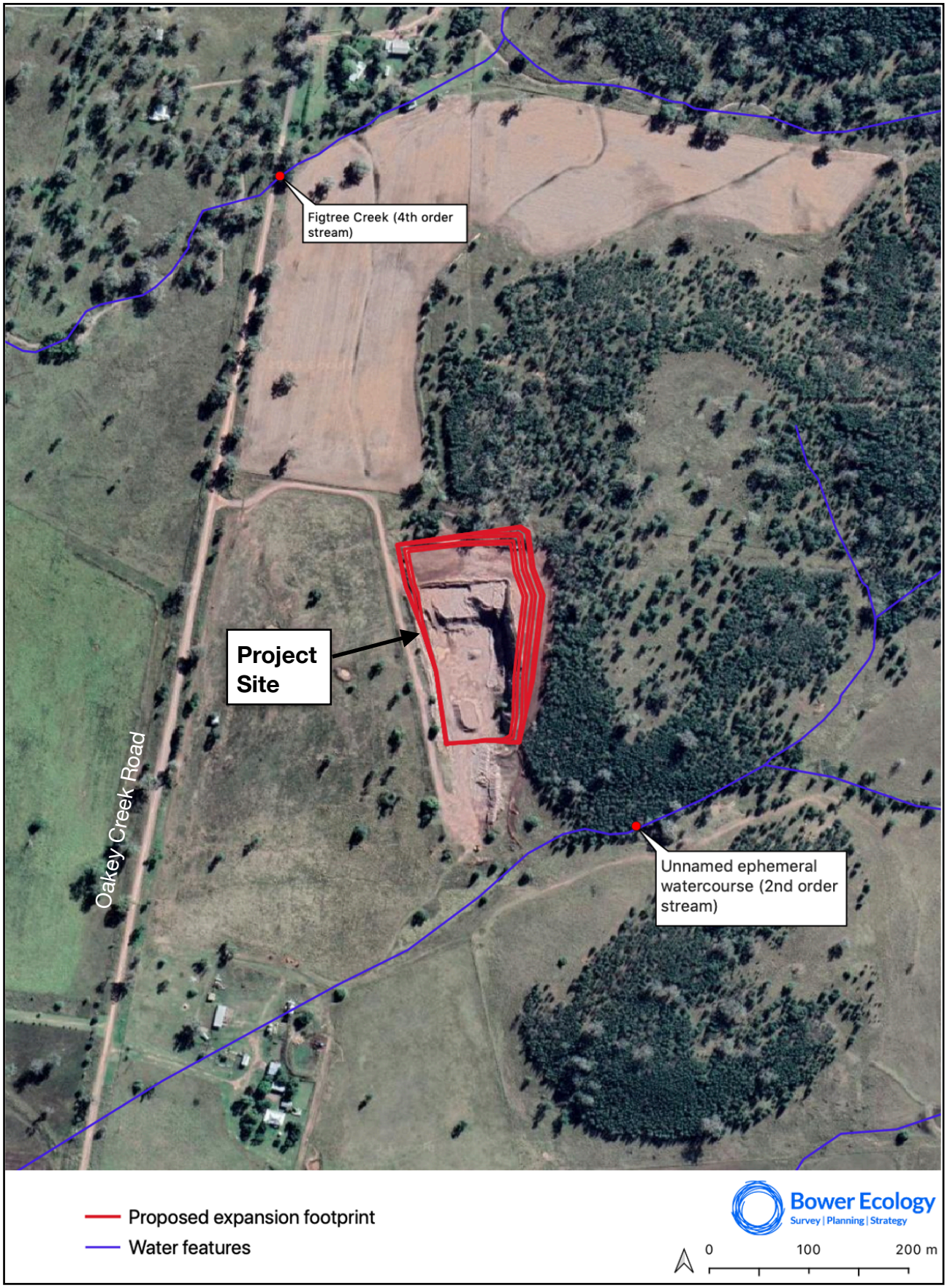


FIGURE 2.7: Water features in proximity to the Project Site

(Source: Bower Ecology)

The hydro-geologic unit for the site consisted of Paleozoic and Pre-Cambrian fractured rock aquifers (low permeability). The hydrogeology within the site comprises of fractured or fissured aquifer systems with low to moderate productivity.

Publicly available groundwater information utilising results from Water NSW Realtime Data identifies twelve (12) licensed groundwater bores within 2km of the Project Site and five (5) licensed groundwater bores within 1km of the Project Site. Refer **Figure 2.8**.

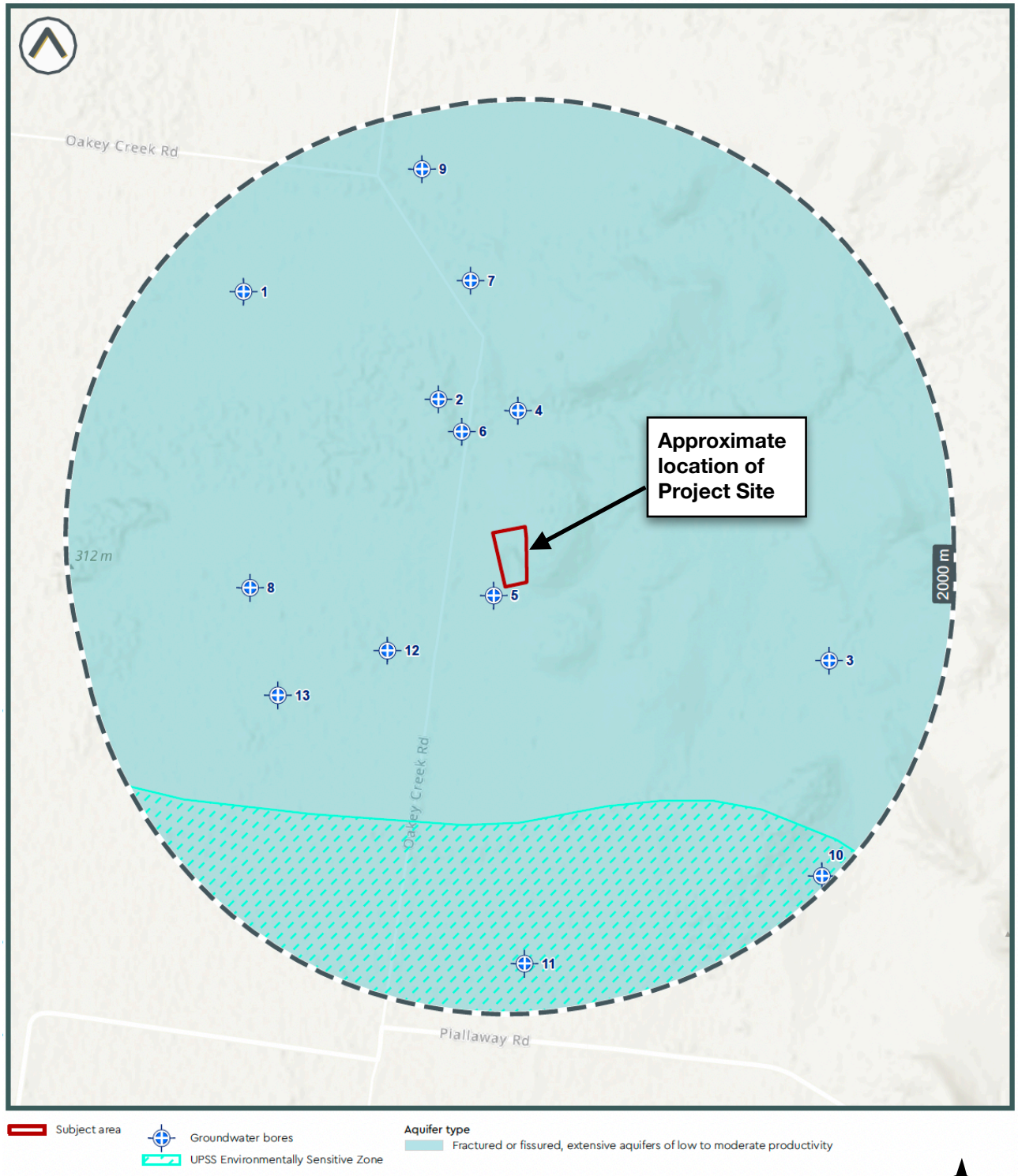


FIGURE 2.8: Licensed groundwater bores within 2km of Project Site

(Source: Ballpark Environmental)

Details of the five closest groundwater bores are summarised as follows:

- GW029958 being Location 5 on **Figure 2.8**, located approximately 67.9m to the south-west of Bolgers Pit. No groundwater was encountered after a drilled depth of 56.4m.
- GW064563 being Location 6 on **Figure 2.8**, located to the north of Bolgers Pit. Based on NSW Government MinView mapping, the ground level at GW064563 is at just below RL 330m AHD, with groundwater encountered 8.9 metres below the ground surface, that is, at or about RL 320m AHD.
- GW023731 being Location 4 on **Figure 2.8**, located to the north of Bolgers Pit. Based on NSW Government MinView mapping, the ground level at GW023731 is at approximately RL 330m AHD, with groundwater encountered 12.2 metres below the ground surface, that is, at RL 318m AHD.
- GW054789 being Location 12 on **Figure 2.8**, located to the south-west of Bolgers Pit. No groundwater was encountered after a drilled depth of 54.9m.
- GW010465 being Location 2 on **Figure 2.8**, located to the north of Bolgers Pit. Based on NSW Government MinView mapping, the ground level at GW010465 is at approximately RL 340m AHD, with groundwater encountered 19.2 metres below the ground surface, that is, at approximately RL 320m AHD.

Refer also to **Appendix E** for further details regarding groundwater.

From the above, it can be concluded that groundwater in the area is located at approximately RL 320m AHD. It is noted that the lowest part of the proposed expanded quarry, being the quarry floor, will be at or above RL 320m AHD. As such, the quarry development will be most unlikely to intersect local groundwater.

2.6 Climate and Rainfall

The Project Site is located on the Northwest Tableland's region in NSW.. A review of available Bureau of Meteorology (BoM) data shows that the site location is in temperate zone characterised by warm summers and cool dry winters.The local daily rainfall data records for the site were based on the nearby (~4km) BoM station at Breeza (Station 055065), with the long-term average rainfall data tabulating shown below in **Figure 2.9**. Breeza has an annual average rainfall of about 640mm. The *New England North West Climate change snapshot* (Office of Environment & Heritage) predicts the likely changes to climate in the region as a result of climate change- refer **Figure 2.10**.

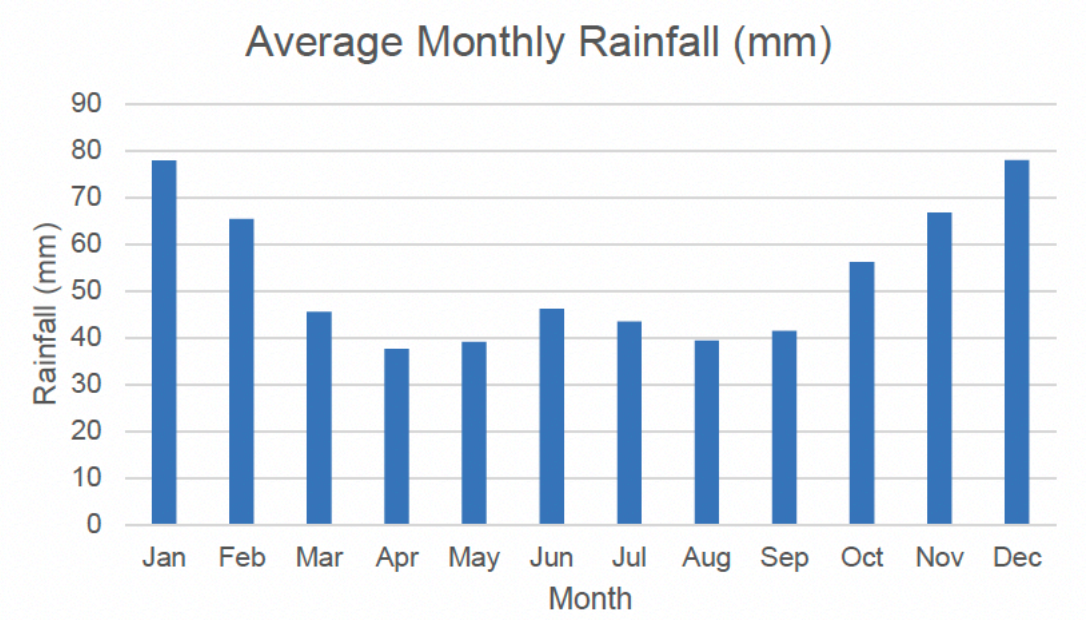
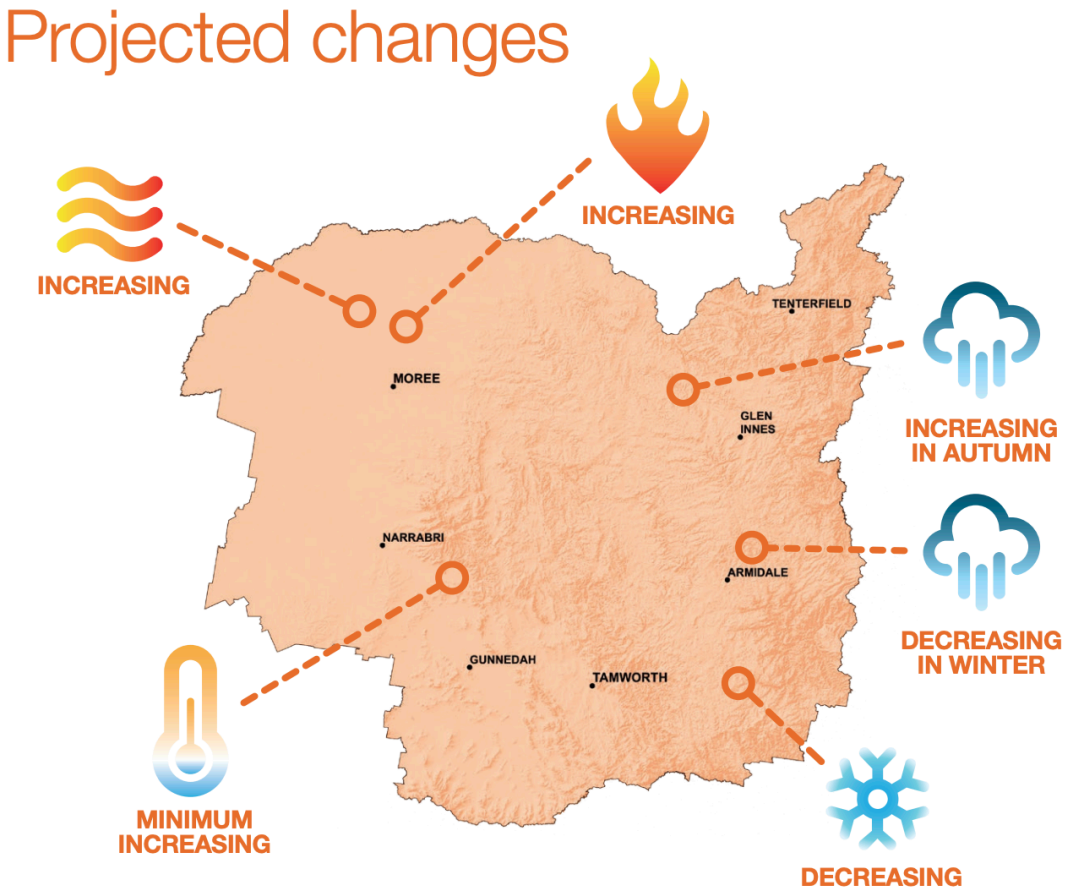


FIGURE 2.9: Average rainfall at Breeza (BoM Station #055065)

(Source: Ballpark Environmental)



Projected **temperature** changes	
Maximum temperatures are projected to increase in the near future by 0.4 – 1.0°C	Maximum temperatures are projected to increase in the far future by 1.9 – 2.7°C
Minimum temperatures are projected to increase in the near future by 0.5 – 1.0°C	Minimum temperatures are projected to increase in the far future by 1.6 – 2.7°C
The number of hot days will increase	The number of cold nights will decrease
Projected rainfall changes	
Rainfall is projected to decrease over most of the region in winter	Rainfall is projected to increase in autumn
Projected Forest Fire Danger Index (FFDI) changes	
Average fire weather is projected to increase in summer, spring and winter	Severe fire weather days are projected to increase in summer and spring

FIGURE 2.10: Projected changes to climate of the New England North West region

(Source: Adapt NSW Office of Environment & Heritage)

■ 2.7 Site Contamination Potential

Ballpark Environmental Pty Ltd (Ballpark) was engaged to undertake a preliminary site investigation (PSI) for potential site contamination associated with quarrying at this project site. The objective of the PSI was to identify past or present potentially contaminating activities performed at this site, provide a preliminary assessment of site contamination and, if required, provide a basis for a more Detailed Site Investigation (DSI).

The findings of the Ballpark contamination assessment are as follows:

- Site disturbance from current quarry activities is visible in the 2002 aerial photograph. Prior to this date the historical aerial photographs show areas of minor ground disturbance has been present since 1974.
- No buildings or structures were constructed on this site and therefore it is unlikely that waste building materials, including asbestos, are present on this site.
- A review of the NSW EPA Contaminated Land Record database revealed that no notices had been issued for the site under the *Environmentally Hazardous Chemicals Act* (1985) or the *Contaminated Land Management Act* (1997) (CLM). In addition, a search of the public register under section 308 of the *Protection of the Environment Operations Act* (1997) (POEO) found no licences, applications or notices for this area. Moreover, a review of the licences, approvals and assessments identified no notices for the site or within the 1km buffer area of the site.
- Observations made during the site walkover found that previous poor waste disposal practices have resulted in the partial burial of inert waste, including scrap metal on the southern margins of the quarry pit.
- A review of the initial Conceptual Site Model (CSM) prepared for this PSI found no areas of environmental concern have been identified on this site.

Ballpark make the following recommendations and findings:

"1. Inert waste – waste materials are collected and removed from this site for recycling (e.g., scrap metal) or to an appropriate NSW EPA licensed waste facility which can accept this waste.

2. Unexpected Finds Protocol – An unexpected fines protocol should be included as part of the quarry Environment Management Plan or as a stand-alone document in the event that potentially contaminated material or buried unexpected finds, are encountered during future quarry expansion earthworks on this site.

In consideration of the results from this PSI we conclude that this site on part of Lot 139 DP751012, 809 Oakey Creek Road, Piallaway, has an acceptable low level of risk for site contamination and is suitable for its proposed ongoing industrial use as a quarry.

The site is assessed to be suitable for its ongoing industrial use, in accordance with Chapter 4 of the Resilience and Hazards SEPP (2021)." (From Ballpark Environmental Pty Ltd report-Executive Summary.)

Refer **Appendix E** for further details regarding the contamination assessment undertaken.

■ 2.8 Bushfire Potential

Almost all of the Project Site is cleared of vegetation, save for a few stands of trees on the outer periphery of the Project Site. The extensively cropped alluvial farmlands surrounding the Project Site are cleared of native vegetation and are not identified as being bushfire prone. Similarly, the existing haul route from Oakey Creek Road to the existing quarry is cleared, with little in the way of significant tree stands situated along the route.

The small pockets of remnant vegetated lands on the Project Site are identified are being bushfire prone (buffer) lands-coloured yellow on the accompanying **Figure 2.11**. Refer also to **Appendix E**.

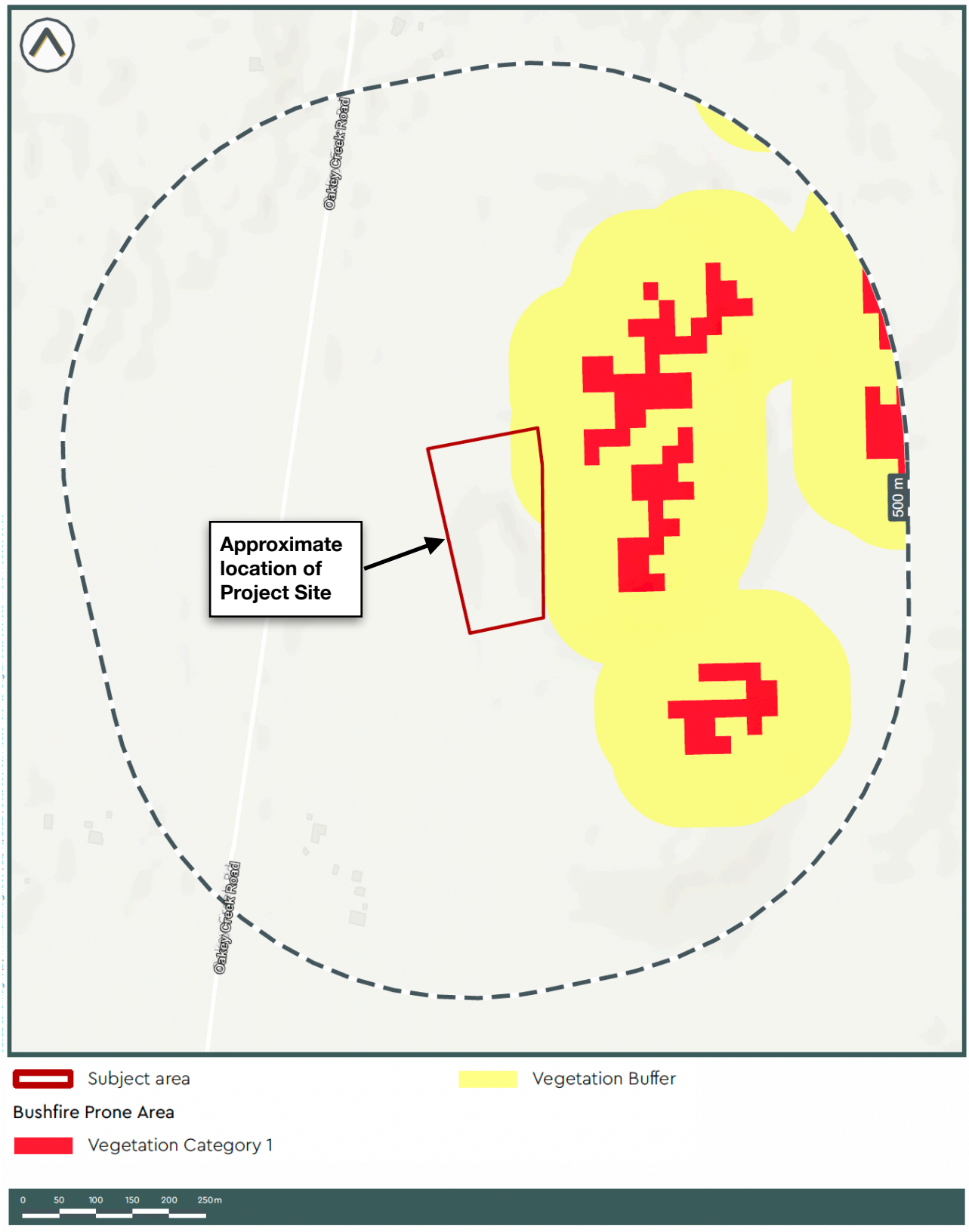


FIGURE 2.11: Bushfire prone lands proximate to the Project Site

(Source: Ballpark Environmental)

▪ 2.9 Roads and Traffic

StreetWise Road Safety & Traffic Services Pty Ltd (StreetWise) were engaged to prepare a traffic assessment for the project. Refer **Appendix F** for details.

Bolgers Pit quarry has been operated by Gunnedah Shire Council for a number of years. The quarry is accessed off Oakey Creek Road and Piallaway Road from Werris Creek Road. Bolgers Pit is located in a rural area, mid-way between Tamworth and Gunnedah.

The roads in the immediate vicinity of the quarry are low-volume, rural roads owned and maintained by the local council. A number of the local roads are designated B-double routes approved by Transport for NSW (TfNSW), or haulage roads previously approved by council. The majority of Piallaway Road, to the east, is within the Liverpool Plains council area. Refer **Figure 2.12**.

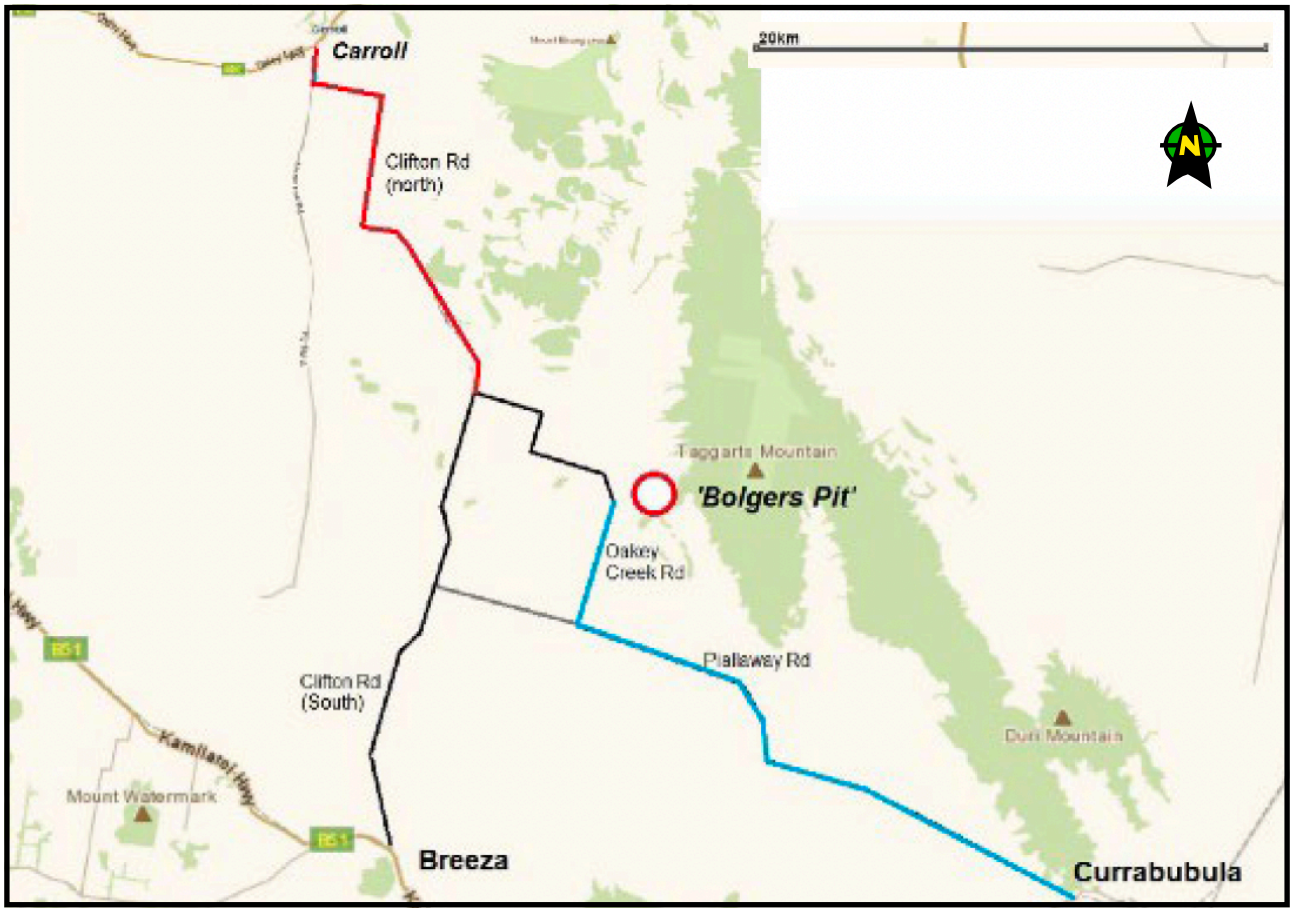


FIGURE 2.12: Road network proximate to the Project Site

(Source: Streetwise)

Oakey Creek Road

Oakey Creek Road is a low-volume, unsealed rural road, which connects Clifton Road in the west to Piallaway Road in the south-east. The road is generally 7m wide, and was in reasonable condition at the time of inspection (Monday 28 November 2022, apart from some damage around a number of floodways (following recent flooding). Oakey Creek Road provides access to Bolgers Pit, and advice from Gunnedah Council indicates Oakey Creek is an approved haul road. Refer Photograph 2.5.

PHOTOGRAPH 2.5: Typical view of Oakey Creek Road, just west of Bolgers Pit quarry

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Clifton Road (south)

Clifton Road is a rural road, which connects the township of Breeza in the south to Carroll in the north. The section of road between the Kamillaroi Highway and Oakey Creek Road is 7 – 8m wide and generally in good condition, apart from a number of floodways, which currently exhibit damage after recent flooding.

Clifton Road is an approved quarry haul route, suitable for heavy vehicles including laden truck and dog traffic.

Refer Photograph 2.6.

PHOTOGRAPH 2.6: Typical view of Clifton Road, looking north at floodway

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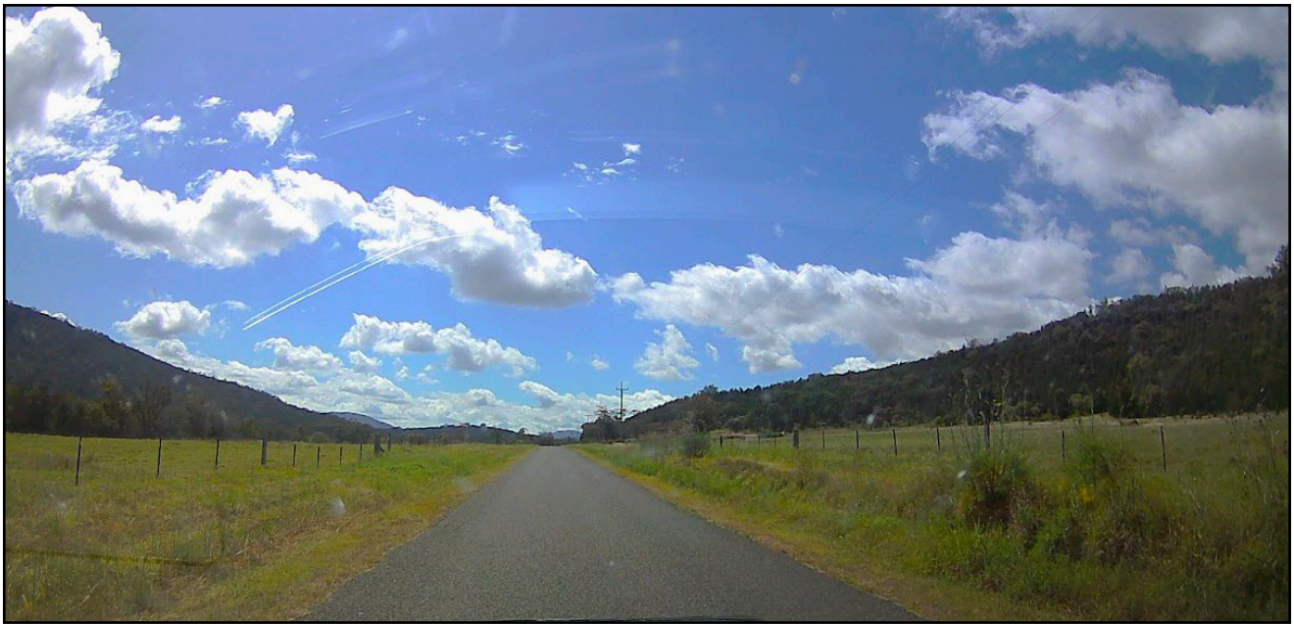
Clifton Road (north)

Clifton Road is a rural road which connects the township of Breeza in the south to Carroll in the north. The section of Clifton Road between Oakey Creek Road and the Oxley Highway at Carroll is generally sealed, and approximately 7m wide. However, a few sections of the road are unsealed. Clifton Road (north) is generally in good condition, apart from a number of floodways, which currently exhibit damage after recent flooding. Clifton Road is an approved quarry haul route, suitable for heavy vehicles including laden truck and dog traffic. It should be noted that the condition of the unsealed sections is dependent on regular grading and maintenance.

Piallaway Road

Piallaway Road is a rural road, approximately 25 kms in length, which connects the township of Currambubula in the east to Clifton Road in the west. The western section of Piallaway Road, located within the Gunnedah Shire Council area, is unsealed, while the eastern section (Liverpool Plains Council) is sealed. The unsealed section is generally 7 – 8m wide, and in reasonable condition, apart from those sections damaged by recent flooding. The eastern section is sealed, and generally 6 – 7m wide. Refer Photograph 2.7.



PHOTOGRAPH 2.7: Typical view of Piallaway Road, looking east

Kamilaroi Highway

The Kamillaroi Highway is a major rural road which connects the New England Highway, in the south, to Gunnedah, Narrabri and towns in the north-west on New South Wales. The Kamillaroi Highway is an approved heavy vehicle route, with the section between Werris Creek and Gunnedah generally suitable for B-doubles (conditional to weather and road conditions). The Kamillaroi Highway is currently a TfNSW approved heavy vehicle route suitable for 25m B-doubles.

Werris Creek Road

Werris Creek Road is a major rural road which connects Tamworth with Currabubula, Werris Creek and Quirindi to the south. The sealed road provides 2 lanes and sealed shoulder in both directions, and a painted median generally provides 1m separation between carriageways along the majority of its length. The section of Werris Creek Road between Tamworth and Werris Creek is an approved B-double route (with conditions relating to wet weather and road conditions).

Existing Intersections

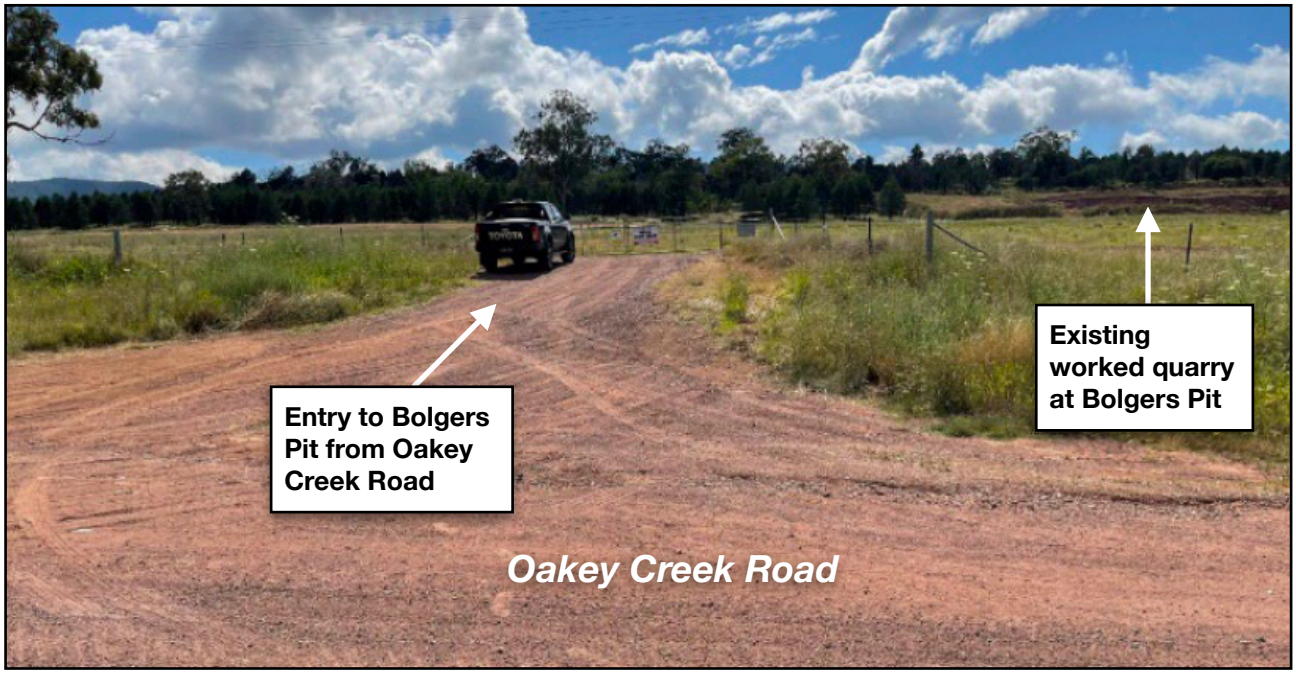
The following summarises the adequacy of the existing intersections of the roads likely to be used as haul routes for quarry products from Bolgers Pit described above:

- **Kamillaroi Highway & Clifton Road, Breeza**: The existing intersection of Kamillaroi Highway and Clifton Road is a T-intersection. Clifton Road actually merges with Hogarth St approximately 120m from the intersection. The roadway then crosses a railway line about 70m from the intersection with the highway, with signals and boom gate controlling traffic movements. The sight distance to the west, towards Gunnedah, meets the desired Safe Intersection Sight Distance per Austroads *Guide to Road Design Part 4A: Unsignalised and Signalised Intersections*, for a 2.0 second reaction time. The sight distance to the east, towards Werris Creek, is approximately 15– 20m short of the required distance, however, the existing sight distance exceeds the minimum Approach Stopping Sight Distance (114m). .

- **Werris Creek Road & Piallaway Road, Currabubula:** The existing intersection of Werris Creek Road and Piallaway Road is a T-intersection.The sight distance in both directions meets the desired Safe Intersection Sight Distance, as per Austroads *Guide to Road Design Part 4A: Unsignalised and Signalised Intersections*, for a 2.0 second reaction time. However, the sight distance to the north, towards Tamworth, is obstructed by signage, vegetation and a bridge.

- **Oxley Highway (B56) & Clifton Road, Carroll:** The existing intersection of the Oxley Highway and Clifton Road is a T-intersection. Clifton Road actually merges with Howe St just south of the intersection. The sight distance to the west, towards Gunnedah, meets the desired Safe Intersection Sight Distance per Austroads *Guide to Road Design Part 4A: Unsignalised and Signalised Intersections*, for a 2.0 second reaction time.

- **Access to Bolgers Pit off Oakey Creek Road:** The existing access to the Bolgers Pit quarry is off the western side of Oakey Creek Road, near Piallaway. The driveway forms a T-intersection with the unsealed local road. The sight distance to the north, towards Gunnedah, and south, towards Piallaway Road, meets the desired Safe Intersection Sight Distance per Austroads *Guide to Road Design Part 4A: Unsignalised and Signalised Intersections*, for a 2.0 second reaction time. Refer to Photograph 2.8.



PHOTOGRAPH 2.8: Entry to internal quarry haul route from Oakey Creek Road, looking east. Views of elevated parts of quarry are also visible from this viewing point.

Streetwise conducted on-site manual traffic counts at select intersections. Streetwise also considered road capacities of the above quarry haul routes. These are addressed in detail Section 7.3.5 of this EIS.

▪ 2.10 Heritage

Aboriginal Heritage

Niche Environment and Heritage (Niche) were engaged to prepare a Aboriginal Due Diligence report in accordance with the *Due Diligence Code of Practice for the Protection of Aboriginal Objects in NSW* (DECCW 2010; 'The Due Diligence Code') for the proposed extension of the Bolgers Pit Quarry. A representative of the Red Chief Local Aboriginal Council (LALC) was involved in the site inspection undertaken on 23 November 2022, and a copy of this report was sent to the Red Chief LALC for comment on the Friday 16th of December 2022 with the review period ending on Friday 20 January 2023. Feedback was provided and incorporated into Niche's final assessment report. Refer **Appendix G** for details.

The survey was conducted on foot with the entirety of the Project Site and surrounds (Subject Area) being assessed visually (**Figure 2.12**). In accordance with advice from the LALC, the assessment focussed on areas of least disturbance, exposures, and at any identified landscape features, while additionally covering a 100% of the survey area visually in order to fully assess disturbances and the surrounding landscape.

FIGURE 2.12: Extent of Aboriginal Due Diligence Survey of Project Site & surrounds

(Source: Niche Figure 6)

An extensive Aboriginal Heritage Information Management System (AHIMS) search was conducted , the search identifying 71 Aboriginal cultural heritage sites and objects, with no previously recorded Aboriginal heritage sites or objects within the Subject Area or within close proximity to the Subject Area. The closest identified Aboriginal cultural heritage site identified on the AHIMS database is AHIMS ID#29-2-0019, Oakleigh; Oakley Creek, which is an Open Camp site, located more than 2 km from the Subject Area. This site will not be impacted by the proposed quarry development.

No notable landscape features were identified within the survey area itself during the survey. Discussion with the LALC representative noted that the survey area itself likely could have been associated with the Aboriginal community moving through the landscape, but that groups would have likely travelled on the easier terrain encountered on the nearby flat plains in association with larger water sources, with there being known sites which have been recorded within 5km of the project Site, specifically along the Mooki and Namoi River flood plains.

The findings of the Niche/LALC investigations of the project Site and surrounds are summarised as follows:

> "*Based on this Aboriginal Objects Due Diligence Assessment (DD), it is unlikely that Aboriginal objects have survived within the Subject Area, largely due to ground disturbances associated with de-vegetation and agricultural use in the area. The location of the Subject Area is not within an archaeologically sensitive landscape, and the high level of past disturbance means that the potential for in situ archaeological deposits is considered low.*
>
> *The Subject Area is associated with one (1) sensitive Aboriginal landform, these being within 200 metres (m) from a crest, and is located within a broader culturally significant landscape. Despite this it was determined through discussion between the Red Chief Local Aboriginal Land Council (RCLALC) representative and the Heritage Consultant present, that due to the high levels of disturbance and landscape within the Subject Area, no further investigation or impact assessment is required*."

The Niche report also made a number of recommendations, which are provided in Section 7.3.4 of the EIS.

European heritage

Niche also undertook a search of the Australian World Heritage Database, the Commonwealth Heritage List, National Heritage List, State Heritage Register, State Heritage Inventory, the Gunnedah Local Environmental Plan (LEP) 2012.

- Parts of the Mellville Range Nature Reserve is located within 3km of the Subject Area, however, no part of the Mellville Range Nature Reserve will be impacted by the proposed quarry development or is within the Subject Area..
- The nearest listed heritage item is located at 'Dalblair Homestead', which is located 10km to the north-east of the Project Site within the Tamworth local government area (LGA). (Item 1525 State Heritage Inventory and *Tamworth LEP 2010*). The site has local historical significance due to its connection with Cobb and Co, and thus is stated to be important in the pattern and course of cultural history within the Shire.
- The nearest heritage item located within the Gunnedah LGA is at 'Pullaming Station', located more than 20km to the north-west of the Project Site. (Item 1018 *Gunnedah LEP 2012*). The site has local significance as a homestead due to farming and grazing connections within the region.

▪ 2.11 Acoustic, Air Quality Setting

Vipac Engineers and Scientists (Vipac) undertook noise monitoring at two locations in proximity of the Bolgers Pit between 7 June 2022 and 14 June 2022. Noise levels were typical of that of a sparsely populated rural area. Refer to **Appendices H and I** for further details.

The topography of the quarry is undulating to moderate, with slopes of up to about 11% or more and with elevations ranging from RL 350m at the northern end of the quarry, down to about RL 325m at the southern end. The quarry floor slopes in a southerly direction from about RL340m to RL325m. The Melville Range is a dominant terrain feature that lies approximately 3.5km east of the quarry extending 25km in a north-to-south direction.

The Melville Range influences wind patterns and may explain some of the differences between the wind roses from the measured and model derived datasets.

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 2016 and approximately centred at the proposed Project has been used to provide further information on the local meteorological influences. Details of the modelling approach are provided in **Appendices H and I**.

The wind roses from the TAPM-CALMET derived dataset for the year 2016 finds that the dominant wind direction is from the north-east direction for all season- refer Figure 2.13. Overall, winds from the south are infrequent. It is noteworthy that the measured 24 hour background PM10 of 51.7 µg/m^3 is already above the criteria of 50 µg/m^3.

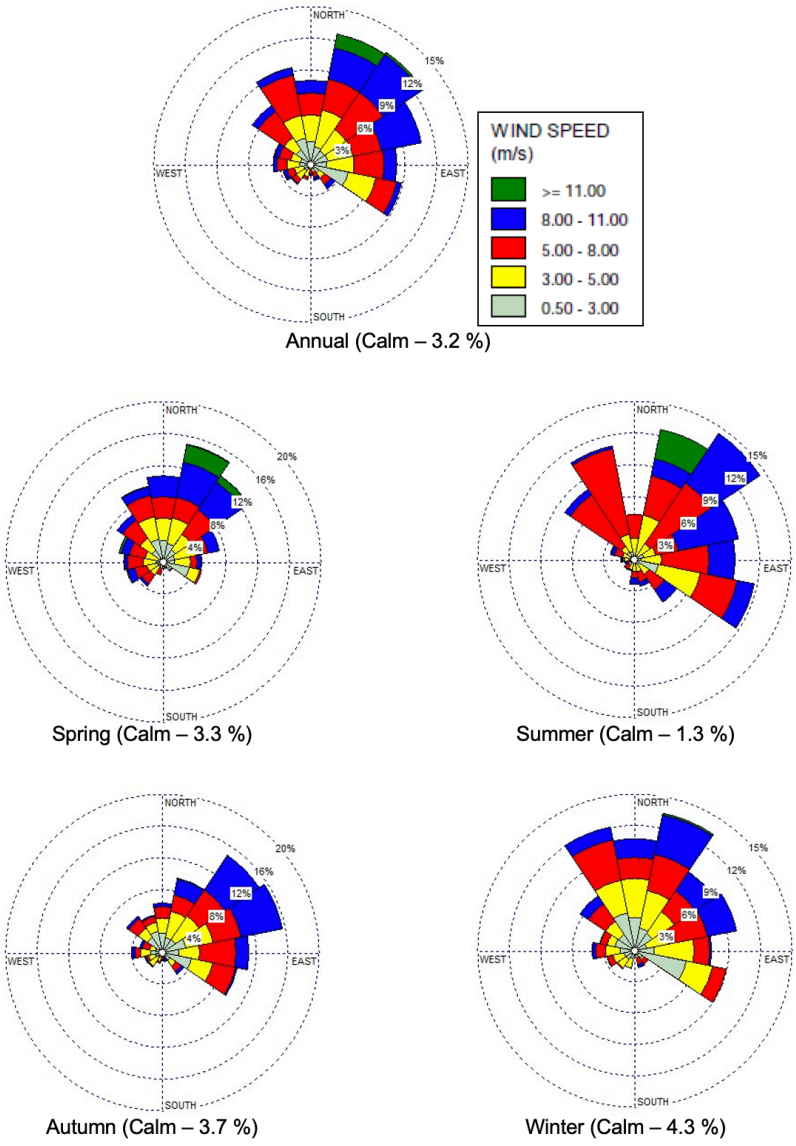


Figure 5-3: Site-specific wind roses by season for the TAPM-CALMET derived dataset, 2016

FIGURE 2.13: Site specific wind roses for Bolgers Pit

(Source: Vipac Figure 5-3)

▪ 2.12 Ecology

Bower Ecology was engaged to undertake a flora and fauna assessment of the Project Site and immediate surrounds.. Key features were identified -refer also to **Appendix J** for details.

Vegetation

The NSW State Vegetation Type Map and NSW Government Trees Near Me website were reviewed to help identify the Plant Community Type (PCT) of the vegetation to the north and east of the site, including the areas proposed for clearing. PCT is a vegetation classification system used to describe patterns of species assemblages of native plants in relation to environmental conditions such as soil, temperature and moisture. This vegetation is mapped by the NSW State Government as PCT 589, described as "*White Box – White Cypress Pine – Silver-leaved Ironbark grassy woodland on mainly clay loam soils on hills mainly in the Nandewar Bioregion*".

The topographic setting and the presence of some diagnostic species to the west (particularly *Callitris glaucophylla*) support the identification of the vegetation as PCT 589, however the lack of the other key diagnostic tree species (such as *Eucalyptus albens*) in the project footprint and history of disturbance prevents full classification of PCTs on site.The classification of PCT on site is further complicated by the fact that the geology of the Melville Ranges is complex and extremely variable. Further, the quarry site is on the mapped boundary of two soil landscapes. PCT presence and distribution is likely to be strongly influenced by the these factors.

With the above in mind, the broad classification of PCT 101 (not 589, as mapped by the State Government) has been used in this report due to the existence of diagnostic species[1], and topographical position of the proposed project footprint. However, this does not preclude the possibility of PCT 589 existing further to the west of the site, as the survey undertaken for this assessment did not encompass this area. PCT 101 has several associated Threatened Ecological Communities (TEC); however only one is considered relevant to this site: "*Inland Grey Box Woodland in the Riverina, NSW South Western Slopes, Cobar Peneplain, Nandewar and Brigalow Belt South Bioregions*" listed under the *Biodiversity Conservation Act 2016* (BC Act) and the equivalent Grey Box (Eucalyptus microcarpa) Grassy Woodlands and Derived Native Grasslands of South-Eastern Australia, listed under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act).

Figure 2.14 shows the extent of existing cleared areas encountered within the proposed quarry footprint.

This TEC is listed as an Endangered Ecological Community under both Acts and likely exists in the broader area; however the vegetation within the proposed footprint would not *in and of itself* meet the determination of this TEC due to its size and lack of key floristic diagnostic features. Nonetheless, the likely local presence of this TEC, the single *Eucalyptus microcarpa* immediately to the north, and a precautionary approach is considered enough to classify the vegetation as this TEC.

Surrounding the patches of forested vegetation within and immediately surrounding the quarry site are areas previously cleared. These areas, which comprise the majority of the proposed quarry expansion area, are a mixture of native and exotic pasture grasses, and heavily disturbed lands.

Fauna

The NSW BioNet Threatened Species database found only two records of threatened species within 5 km of the site (**Figure 2.15**). Both these records were of koalas (*Phascolarctos cinereus*); one record was from 2006 and the other from 2015. The Gunnedah *Koala Conservation Plan for Landcare and Community Groups* (Koala Conservation Plan) shows koala records across the area surrounding the site up to 2015; no records are proximate to the quarry site. The area of vegetation within the project footprint is small and not expected to represent important or core foraging, feeding or breeding habitat for any species. This is due to the small size and isolated nature of the forest fragments on site, the general lack of vegetative strata, and quarry disturbance areas in the area.

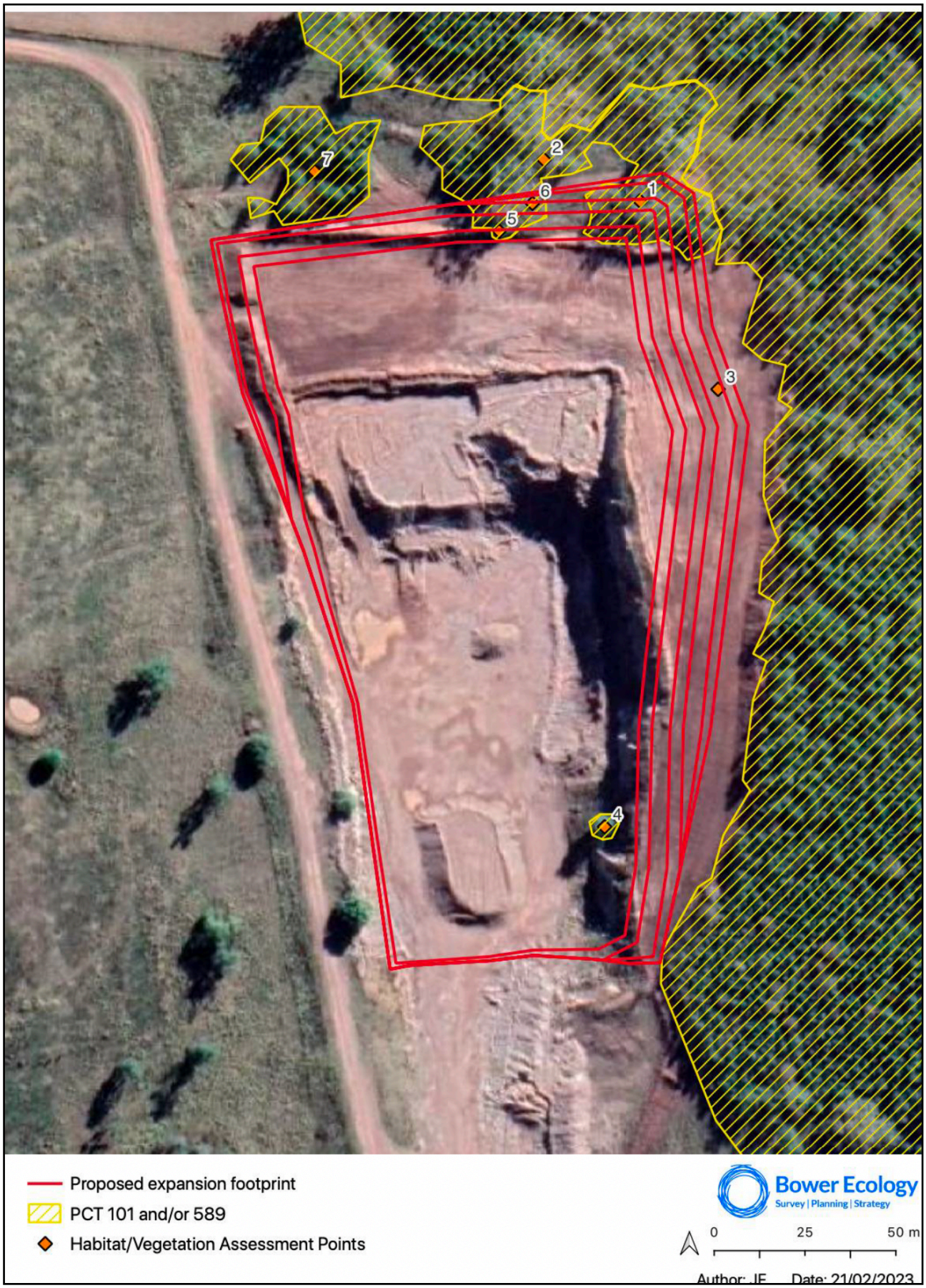


FIGURE 2.14: Vegetation/Habitats in and around Bolgers Pit

(Source: Bower Ecology)

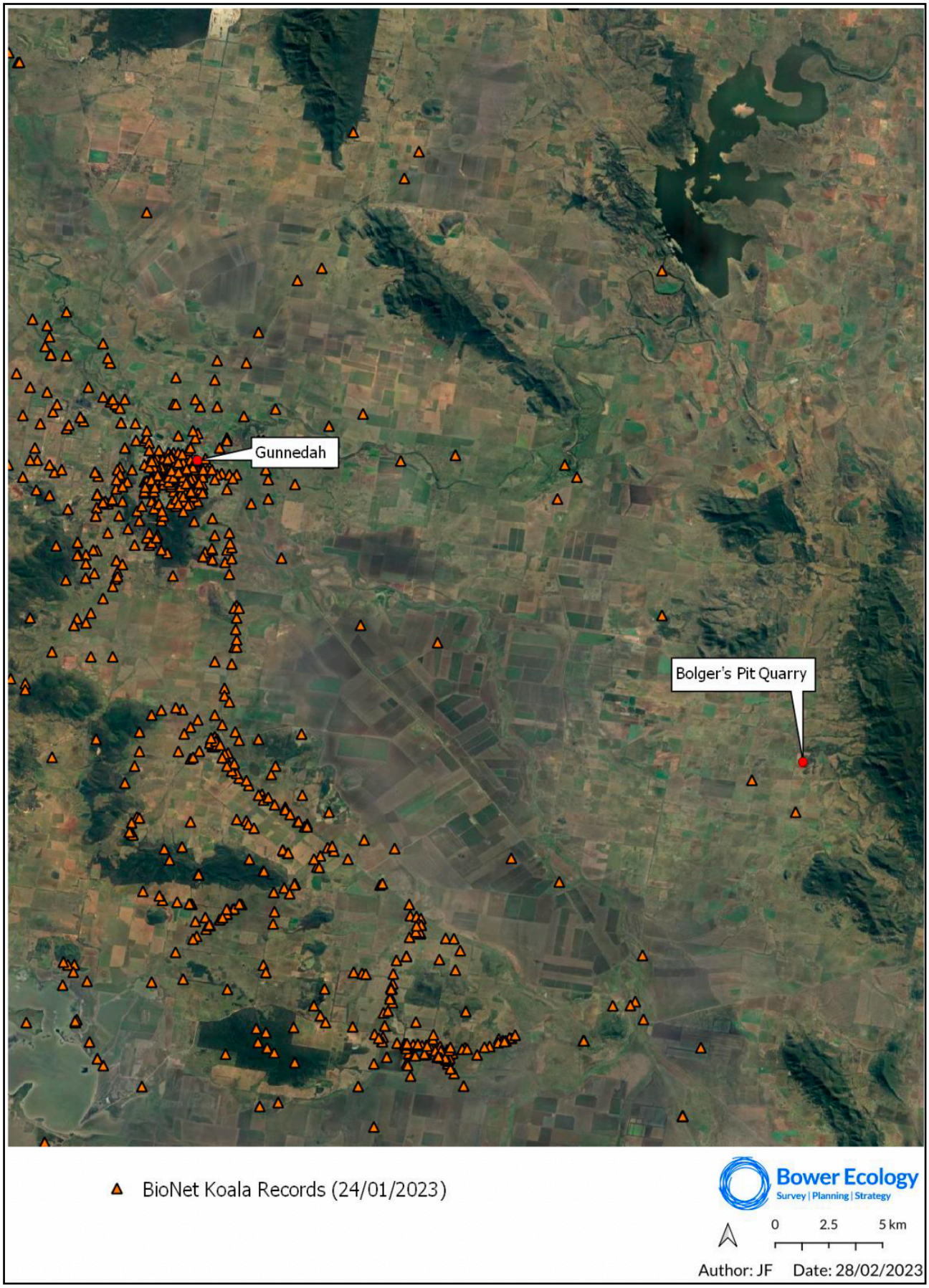


FIGURE 2.15:BioNet Koala records show only 2 Koala sightings proximate to Bolgers Pit

(Source: Bower Ecology)

3. Project Description

3.1 Introduction

This section of the EIS provides a comprehensive and consolidated description of the 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 types of extraction/production 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.

3.2 Project Overview

Council proposes to regularise the use of the site as a quarry at the same time as seek approval for a modest lateral extension of the quarry. A lateral expansion of up to a further 1ha is proposed, with a rate of extraction of up to 40,000 tonnes per annum and a total additional resource of just over 125,000 cubic metres-equivalent to about 300,000 tonnes. Table 0.1 presents a summary of the indicative key Project components. Refer also to **Figures 3.1-3.4**.

Table 3.1: Key quarry project components

Quarry component	*Summary description*
Extraction Method	*Excavator used to remove weathered sandstone, with drill and blast used for unweathered sandstone.*
Resource	*Weathered and unweathered sandstone- benched where required.*
Disturbance area	*The Project Site, the subject of the proposed quarry development, has an area of 2.715ha.*
Processing	*Crushing and screening of unweathered and weathered sandstone material.*
Annual extraction rate	*Up to 40,000 tonnes per annum, to be extracted on a campaign basis according to the need for local council road works in the vicinity.*
Transport	*Access to the quarry to be from Oakey Creek Road, the existing quarry haul route. A mix of 6-7 axle quarry trucks (24-30 tonnes carrying capacity) and truck and dog combination (32 tonnes), with smaller trucks may be used. It is anticipated that the quarry may generate up to 40 loaded quarry trucks per day.*
Waste management	*Minimal waste materials are anticipated to be generated.*
Hours of operation	*The hours of operation are to be limited to 7.00am to 6.00pm Monday to Friday (ie. 11 hours operation per day) and 7.00am to 1.00pm on Saturdays (ie. 6 hours operation). Hours of blasting are to be restricted to 9.00am to 3.00pm Monday to Friday.*
Total recoverable resource and project life	*The total quarry resource is estimated to be 306,000 cubic metres-equivalent to about 734,000 tonnes.*
Workforce	*Up to 4 employees working on site + contractors (eg. blasting contractor, machinery servicing contractors, refuelers).*
Key environmental issues	*Noise, blasting impacts, dust, visibility, rehabilitation and traffic. Based on past blast monitoring, a Maximum Instantaneous Charge (MIC) of 200kg has been adopted.*

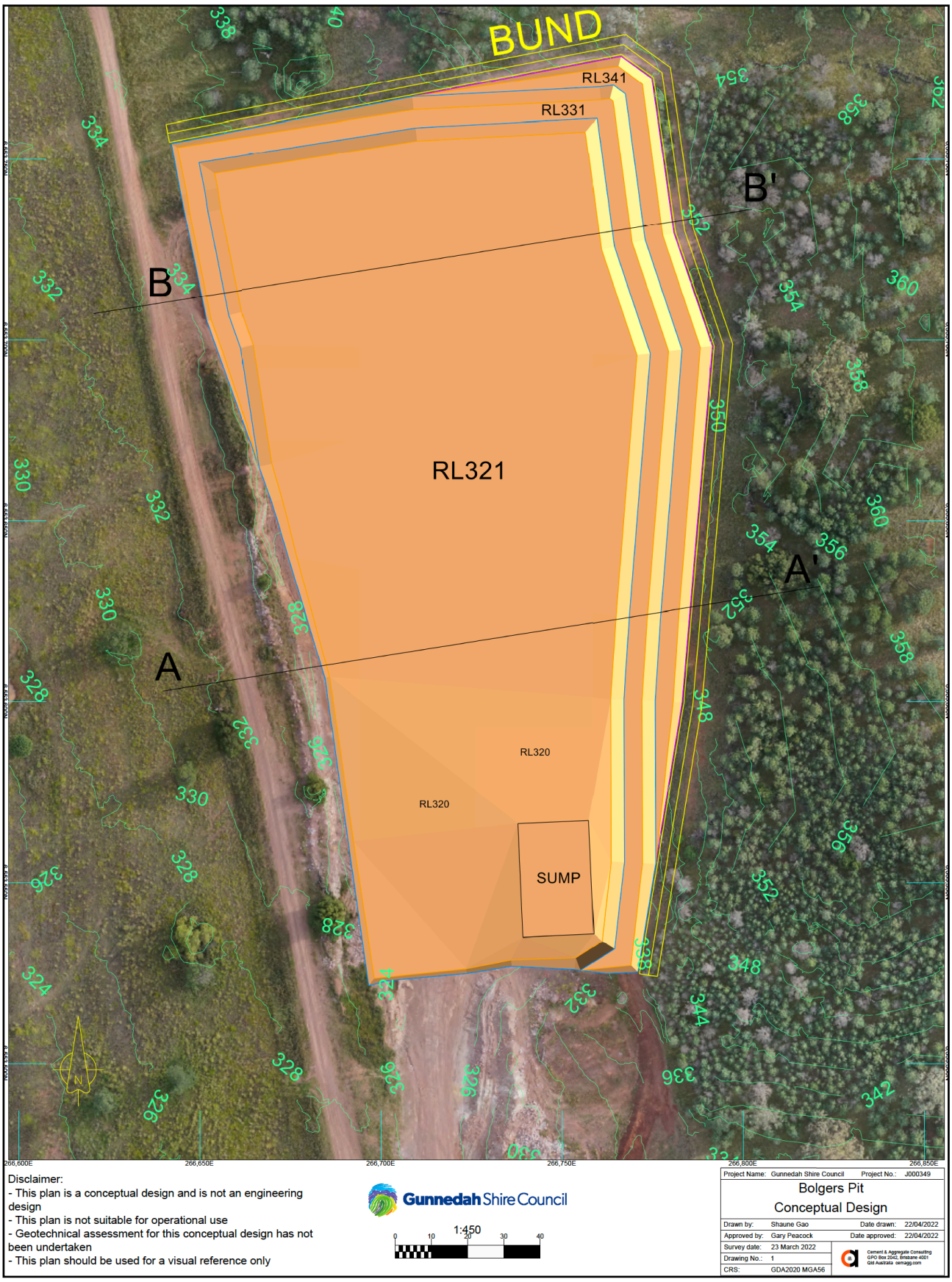


FIGURE 3.1: Proposed Quarry Extension: Bolgers Pit

(Source: Eltrius)

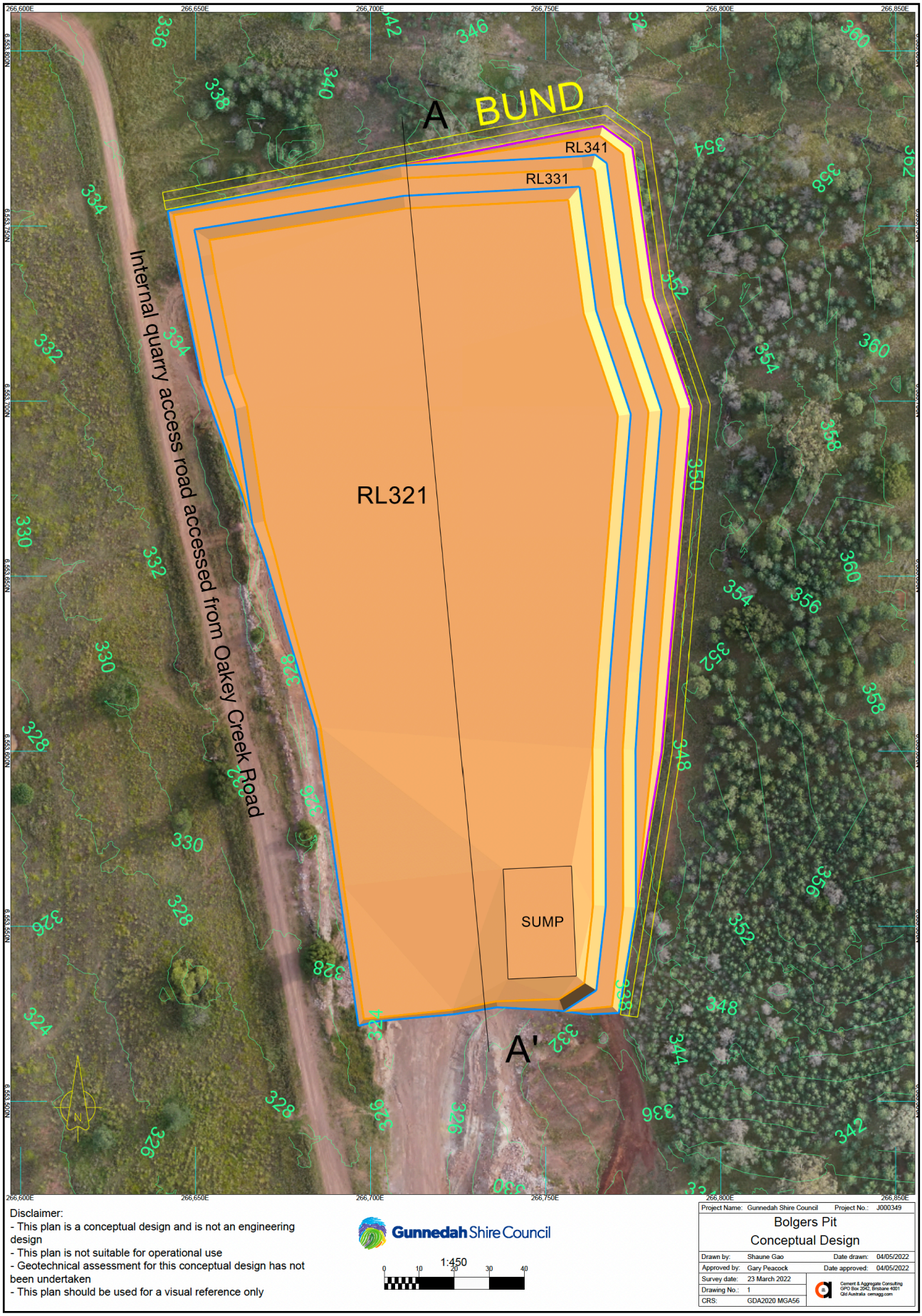
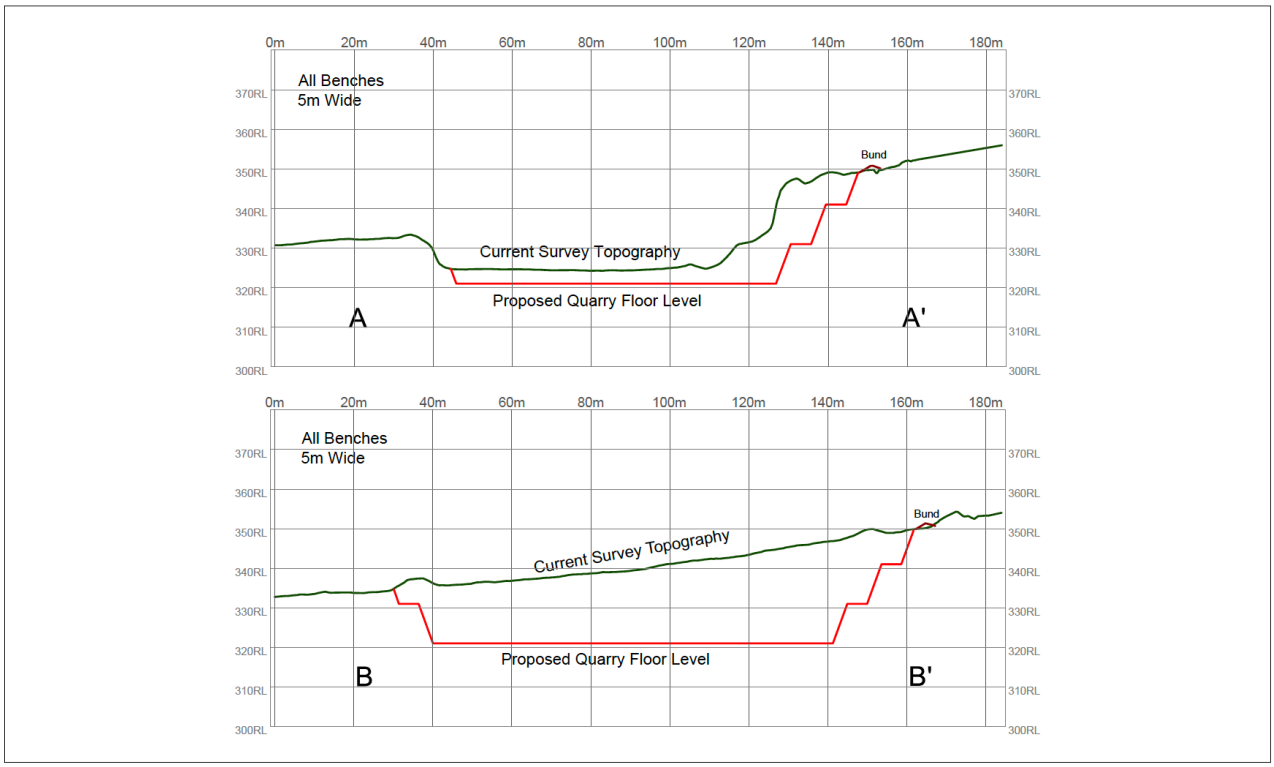


FIGURE 3.3: Proposed Quarry- Long Section) A-A'- referred to in Figure 3.2

(Source: Eltrius)

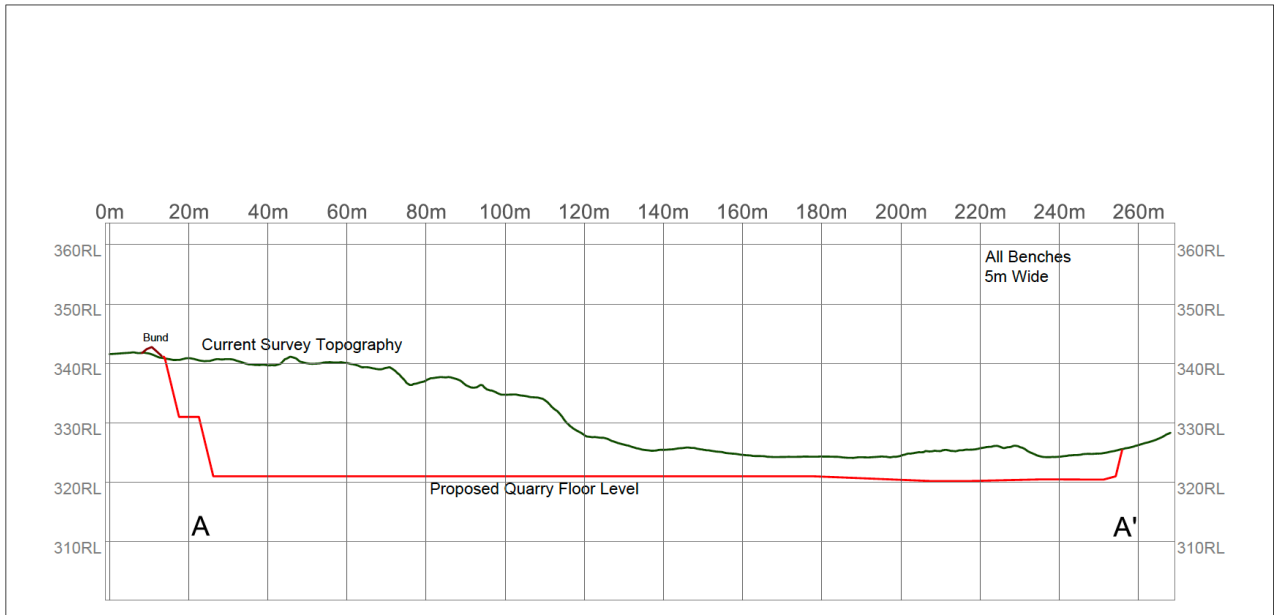
FIGURE 3.4: Aerial overlay of proposed quarry extent and quarry benching

(Source: Eltrius)



Cross-Sections A-A' and B-B'- refer Figure 3.1

(Source: Eltrius)



Long Section A-A'- refer Figure 3.3

(Source: Eltrius)

FIGURE 3.2: Proposed Quarry Extension Bolgers Pit -Cross-Sections (above)+ Long Section (below)

(Source: Eltrius)

▪ 3.3 Quarry Project Objectives

The objectives in developing Bolgers Pit further are as follows:

- To facilitate the continuation and expansion of an established Council-operated borrow pit.
- Provide a reliable source of road base material for Council road works in the Gunnedah area and to maximise recovery of a known quarry resource within the defined quarry extraction area.
- Provide a fit for purpose, safe and complaint quarry operation.
- To undertake quarrying activities in an environmentally responsible manner, employing a various mitigation measures and safeguards in compliance with relevant regulatory requirements.
- To create a safe and stable landform, capable of being effectively rehabilitated.

▪ 3.4 Layout and Design

3.4.1 Introduction

The existing and proposed quarry footprint will be modest in size. As such, only one diagram has been produced, showing the extent of the lateral expansion proposed and benching. Refer to accompanying **Figures 3.1- 3.4** which illustrates the project, including location of key components including benching and sediment basin- the latter being conceptual only.Given that the Project Site will be quarried on a short-term campaign basis only by Council for short periods of time, no buildings are proposed.

3.4.2 Internal Roads

No changes are proposed in terms of the method of product loading or product despatch of quarry products from the Project Site back to Oakey Creek Road. As a result, the Project does not require the construction of any new roads beyond the Project Site boundary for the despatch of products fro the Project.

3.4.3 Stockpiling of Quarry Product

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.

3.4.4 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 could include but would not be limited to the following:

- Introduction of buildings and sheds in accordance with 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,"

■ 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/sediment basins within the active extraction area to collect sediment and runoff, prior to discharge to the main sediment basin. 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, internal haul roads within the active quarry may need to be periodically relocated in order to satisfy the requirement for safe access to quarry plant and equipment and the active quarry working face.

3.4.5 Services

The current site is not connected to any mains power or reticulated water or sewage services. The extraction operations to be carried out within the Project Site would continue to 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 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 by diesel-fuelled generators.

The annual water requirement for dust suppression on the internal gravel access route would be approximately 0.7ML 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 approximately 4ML at maximum production. The bulk of this water would be initially drawn from the existing sediment basin at the southern end of the project. It is estimated that the annual runoff collected from the above sediment basins should be capable of meeting the current and projected annual quantity of water required for the Project.The potable water demand for the site is estimated as 27 L/person/day (based on NSW Health (2012) guidelines for industrial use). If the quarry were to operate all year round this would mean that for 4 employees on site for 6 days a week (excluding public holidays) a total annual demand of 0.03 ML per annum would result. Water demand for the Project is discussed in Section 7.3.4 and **Appendix K**.

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.

3.4.6 Identification of Quarry Operational Area

The boundary of the area proposed for quarrying expansion 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 the processing, product stockpiling and despatch of quarry product from the Project Site via an existing haul route back to Oakey Creek Road and thence to the surrounding road network of the Gunnedah Shire.
- Retention of bushland area surrounding the proposed active quarry footprint.

3.5.2 Extraction Method

The general procedure for extracting material from the expanded quarry at Bolgers Pit will comprise the following activities:

- Install erosion and sediment control works, including diversion drains and catch drains.
- Strip and stockpile the topsoil 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).
- 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 mobile processing plant for crushing and screening.
- Stockpile the various processed quarry products until trucked off site for local council road making purposes.

3.5.3 Blast Management

Gunnedah Shire Council engages experienced blasting contractors.

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.
- All recognised safety procedures and protocols will be observed.
- 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.
- 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. Based on past blast monitoring, a Maximum Instantaneous Charge (MIC) of 200kg has been adopted, compliant with the EPA's vibration and overpressure requirements- refer Table 3.2. Refer also to blast monitoring records in **Appendix L**.
- 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.

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.

Table 3.2: 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*

All nearby residents within the immediate vicinity of the Project Site would be notified in writing with a copy of these Blast Warning procedures and will be advised verbally at least 24 hours prior to every intended blast. Typically:

- A modulated frequency siren will be played with one long blast of 15 seconds duration one minute before firing.
- The signal "fire" given immediately before the charges are fired.
- The siren will be played with three short blasts of one second duration each separated by one second as an "all clear" signal.

The Blast Report for the most recent blast event, on 30 January 2021, yielded 4,777 cubic metres of quarry rock, equivalent to about 9,550 to 11,900 tonnes of extracted material. The blast involved a Maximum Instantaneous Charge (MIC) of 200kg-a very large charge- over a quarry bench of height ranging between 12-19m. The Blast Report (**Appendix L**) indicate that the EPA limits for blast vibration and overpressure were not triggered during this blast event.

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 40,000 tonnes per annum from a resource totalling approximately 0.734 million tonnes. [NOTE: “extraction” means taking the material out of the ground per Pain J in the Land and Environment Court in *Hy-Tec Industries (Queensland) Pty Ltd v Tweed Shire Council* [2019] NSWLEC 175].

Importantly, Bolgers Pit will not be operated continuously, but on a campaign basis only when there is a Council roads project that needs to be supplied with quarry product from this borrow pit. At a maximum of 40 loaded trucks per day, and assuming trucks carrying loads of up to 32 tonnes, would mean that up to 1,280 tonnes of quarry product could be exported from the site on any one day, or 6,400 tonnes per (5 day) week. At that rate of truck movements the quarry could supply quarry material for a total of just over 6 weeks in any one year, with the quarry lying dormant for the remainder of that year.

3.5.5 Processing of Quarry Material

Quarrying, as an extractive industry, includes processing of the blasted quarry material by crushing and grinding.

Raw material won from the worked quarry face is dumped into a feed hopper from where it will feed into a heavy duty crusher. The processing plant will reduce the size of the rock won from the quarry by crushing, then screens will be used to separate the materials into various sizes and product types.

Mobile crushing and screening plant is proposed. Other typical plant to be used at Bolgers Pit would include front end loaders (for loading processed quarry product into trucks), excavators or bulldozers (for stripping of overburden), and service trucks including water cart. It is proposed that instead of relying on a weigh-bridge to record the weight of processed quarry material despatched from the site the quarry operator will, instead, rely on and maintain an on-board weighing systems installed on all front end loaders, excavators and all other loading machinery in order to keep accurate records. This method of record keeping has been successfully employed at other quarries in New South Wales.

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 (eg avoidance of mobile equipment clustering) 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 must be maintained in a proper and efficient condition and must be operated in a proper and efficient manner.

3.5.6 Drainage and Sediment Capture

The drainage and sediment capture system to be employed will prevent erosion, as well as ensuring that run-off does not contaminate offsite areas or downstream waterways. The main features of the stormwater basin system employed are as follows.

The sediment basin, located at the lower end of the quarry pit, will have a storage capacity of at least 1,600 cubic metres, sufficient to capture all design rainfall and runoff from within the active quarry area using guidelines provided in *Managing Urban Stormwater: Soils and Construction – Volume 1* (Landcom, 2004) and *Volume 2E Mines and Quarries* (DECC, 2008)- refer to **Appendix K** for further details. The water captured at the quarry sediment basin can be re-used for quarry-related purposes, such as dust suppression. Bunds are provided around active quarry areas, diverting runoff from upslope areas away from the disturbed quarry area.

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:

- The sediment basin and 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 capacity within the sediment basin.
- The sediment basin is to be cleaned of accumulated sediment material (or extended or replaced) as soon as approx. 30% capacity is lost due to the accumulated material such that the specified capacities are maintained. The sediment basin is 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.

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; and machinery and blasting. Measures proposed to reduce dust nuisance include:

- A water tanker will be used to spray water on working quarry areas during acutely dry and windy weather conditions. A water tanker is always used to clean down heavy machinery leaving the quarry site, for weed control and to eliminate dust coming off any plant float.
- Quarry trucks leaving the site to Oakey Creek Road and surrounding 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 are not carried out when weather conditions give rise to offsite dust emissions. Blasting will be restricted if windy conditions are likely to carry visible dust emissions beyond the quarry boundary where they could create a nuisance. Another measure is to minimise dust emissions from blasting by sequential firing and using minimum force.
- Miscellaneous dust sources such as spillages from trucks and silt from sediment controls are to be regularly cleaned up.
- Proper maintenance and tuning of the vehicles and equipment also assists in avoiding any off-site effects.

3.5.8 Transport of Quarry Product

The Project Site would be accessed from Oakey Creek Road via an existing site access road traversing Lot B, DP 432415 to the quarry. The Project seeks consent to allow up to 40 loaded trucks per day leaving the Project Site with quarry products from the borrow pit at Bolgers Pit.

Transportation of quarry products will typically be by truck and trailer ('truck and dog') style vehicles to service local council roads projects, however, quarry products would also be transported using smaller haulage vehicles, including semi-trailers and rigid trucks. Once loaded, all haulage vehicles would be required to cover the load prior to exiting the Project Site. An internal haul road system, linking the quarry to Oakey Creek Road, is already in place. It is intended that this internal road would be maintained by Council to a trafficable standard.

▪ 3.6 Management of the Quarry

Council and the quarry operator will be jointly responsible for all activities on-site. 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 adopted quarry environmental management plan for Bolgers Pit.
- 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 , including ensuring that site safety protocols are in place and development or implementation of control plans for hazards, including incident management, are also in place.
- Ensure proper training and oversight of quarry staff and contractors.
- Undertake appropriate updates, reviews and audits of the quarry operation to measure progress and to ensure compliance with the relevant conditions of consent, as well as with the requirements of the NSW EPA. Includes the lodgement of annual reports.
- Managing community feedback and/or 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.

▪ 3.7 Waste Management

The management of general waste products will address the following:

- 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 tip at Gunnedah for disposal.

Separation of recyclable materials (e.g. paper, glass, plastics) will be carried out wherever possible. It will be the responsibility of the contractor to take responsibility for the appropriate disposal of any waste that they create on site.

▪ 3.8 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 need to 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. 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 within its catchment. 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. Should the capacity of the sediment basin be exceeded, excess water will be discharged to the flat plain and intermittent watercourse located to the south of the quarry. 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.
- Unauthorised access: Access to Bolgers Pit is through gates that are locked after hours.
- 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.

Refer to **Appendix M** for further details.

3.9 Fire Management

The timbered hillsides to the east and to the north of the quarry are bushfire prone. Almost all of the quarry is cleared land, with no bushfire hazard. Similarly, the quarry and surrounding agricultural lands do not possess any bushfire hazard. Provided existing cleared areas and access are maintained, coupled with the implementations outlined below, the fire risk on the site can be managed to an satisfactory degree, in particular having regard for the following. Refer also to Section 4 of the EIS for a full list of mitigation measures proposed and Section 7.3.8 and **Appendix O**:

- Extinguishers to be kept on all mobile plant and site vehicles. The extinguishers are to be serviced regularly. The extinguishers are to be serviced regularly. AS2444 provides details on the various extinguishers available.
- Access to the quarry to enable access by RFS fire fighting vehicles.
- No explosives are to be kept on site.
- A trunk-mounted water spray unit to be used when the quarry is operation.
- Any fuel storage facilities 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. [NOTE: No permanent fuel storage is currently proposed]
- All mobile equipment fitted with spark arresting mufflers.
- Retention of water run-off from the quarry in the main sediment basin, suitable for use in fighting fires.
- A trunk-mounted water spray unit to be used when the quarry is operation
- A draft bush fire emergency plan has been prepared, applicable during a fire emergency. Refer **Appendix M**.

3.10 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: diesel fuel. The total amount of fuel which will be used by the trucks which will be hauling material from the quarry 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 years of so, for road works largely in the southern parts of the Gunnedah Shire.

The amount of fuel used will be a function of the distance travelled. Fuel requirements for loading and transporting will be approximately 1,500 litres of diesel fuel per thousand (1,000) tonnes of material transported. At a maximum annual extraction/production rate of 40,000 tonnes of material per annum, total fuel usage for loading and transporting quarry products from the quarry is estimated at 60,000 litres of diesel fuel. 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 40,000 tonnes of material, total fuel usage for plant used on site is estimated at 20,000 litres of diesel fuel.

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

3.11 Rehabilitation

Quarrying is a temporary land use, and quarrying is expected to cease production at some point in the future. The closure of the quarry operation typically occurs when the resource is exhausted, and provides opportunities for land.

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 and returned to agricultural use. 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 working quarry area will be reshaped to enable future use for grazing. 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).

Under the rehabilitation plan, the western berm and benches of the quarry are to be rehabilitated with trees (planting density of 5 m centres) and shrubs (planting density of 10 m centres) planted from tubestock. Species planted will reflect the PCTs in the local area, including species observed during site surveys, and subject to commercial availability. Target tree species will comprise a combination of *Callitris glaucophylla* (75%), *Eucalyptus microcarpa* (15%) and *Eucalyptus albens* (10%); target shrub species will comprise a combination of *Acacia pendula* and *Geijera parviflora*. Species used may be substituted or added depending on commercial availability at commencement of rehabilitation works, but must be consistent with the flora adjacent to the quarry.

It is expected that other strata (e.g. other shrubs, forbs and grasses) will naturally colonise the rehabilitation areas due to the stand of native vegetation to the east acting as a source of seed. The works will be supported by weed management until vegetation establishes. Ongoing weed management will be required by the landowner consistent with any biosecurity duties in legislation at the time of closure. Refer to **Appendix J** for full species to be replanted.

The quarry floor is to be rehabilitated with palatable grasses and other ground covers to enable future agricultural use. The sediment basin will be retained for future use by stock.

The key project rehabilitation completion criteria to be applied to the project site are summarised in the accompanying Table 3.3.

Table 3.3: Project rehabilitation completion criteria

Feature	Rehabilitation completion criteria
Decommissioning	*All quarry plant/equipment and other infrastructure will be decommissioned and removed*
Landform	*Achieve a stable landform, with no erosion, free of any hazardous materials*
Soil	*Topsoil or suitable alternative spread uniformly over rehabilitation surfaces. Overburden and soil material to be placed over quarry floor making it suitable for agricultural use.*
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. Trees to be grown on quarry benches- refer **Appendix J** for details. Once quarrying is complete, revegetate quarry floor with open grassland, suitable for grazing/agricultural purposes. Weed control measures to be implemented. Control of feral pests to be undertaken by landowner*
Bushfire hazard	*Appropriate bushfire hazard controls to be implemented- refer Sections 3.9 and 4 of EIS.*

3.12 Monitoring and Recording

3.12.1 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 3.12.4 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.

3.12.2 Annual reporting

An annual report of quarry operations must be completed and a copy of the report provided to Gunnedah Shire Council within 1 month of the expiration 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.

3.12.3 Records of extraction and volumes of material leaving the site

The Council and/or the quarry operator will be responsible for:

- Recording the volume/tonnage of rock won from the quarry by blasting. Production at the quarry has varied over the years, from 18,355 tonnes (2018) down to 556 tonnes (2017). Over the five years 2016-2020 the quarry produced a total of 54,361 tonnes of road making material.
- 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 3.12.2 above.

3.15.5 Recording of pollution complaints

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

- Date and time of the complaint and the method by which the complaint was made.

- Personal details of the complainant provided by the complainant.
- The nature of the complaint.
- Action taken by the quarry operator in relation to the complaint.
- If no action was taken by the licensee, the reasons why no action was taken.

The Council and/or 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 the quarry, including truck traffic.

3.13 Alternatives

The issued SEARs (EAR 1674) requires a consideration of alternatives to the project. There are a number of alternative ways of developing the quarry resource on the Project Site, considered below. 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. In such an assessment it is relevant to note that:

- The Project as outlined in this EIS is, in effect, an extension of an existing established quarry operation.
- Likewise, for the transportation of products from the quarry, the product delivery route is well established.

A further consideration of alternatives to the Project is provided below, including the following:

- To not proceed with any expansion of Bolgers Pit, effectively leaving the quarry working area as is without further change. However, the current proposal is considered to be the most efficient and environmentally acceptable. Moreover, it is confined to already cleared and disturbed lands surrounding the existing working quarry area. This alternative is not consistent with the objectives for the project.
- To rely on other Council borrow pits to service Council's longer term needs for road making material.

Of all of Council's currently operating quarries, Bolgers Pit has the largest available resource for road making purposes, making it a key Council road base quarry. Other nearby potential Council borrow pits in the region have been considered for expansion however Bolgers Pit is the more feasible alternative, consistent with the objectives for the project- refer Table 3.4 and **Figure 3.5**.

Table 3.4: Alternative Council-operated quarries considered

Name of Quarry and Location	*Property Description*	*Features, Limitations*
McCormacks Pit, Curlewis	*Lot 49 DP 755493 No.326 Digby Lane, Curlewis NSW 2381*	*Similar quarry product. The quarry is surrounded by identified Koala habitat, with little or no prospects for expansion beyond the current disturbed footprint. Potential for extraction of about a further 450,000 tonnes of resource (versus 734,000 tonnes of resource proposed to be won at Bolgers Pit).*
Nashs Pit, Orange Grove	*Lot 1 DP 1125563 No.3044 Orange Grove Road, Orange Grove NSW 2380*	*Different quarry product- but suitable for road making. The site has been extensively disturbed with a number of watercourses running through it, triggering the need for the approval of Department of Industry-Water under the Water Management Act 2000 if further quarrying required. Limited quarry resource remaining.*
Pines Pit, Emerald Hill	*Lots 61 DP 811645 & Lot 3 DP 804633 No. 92 Quia Station Road, Emerald Hill NSW 2380*	*Similar quarry product, however, resource at this Council borrow pit is almost exhausted, with limited quarry resource remaining. Geology underlying the existing quarry is inferior to existing sandstone resource.*

If the proposed extension and expansion of the quarry does not proceed then the quarry will continue to operate in the current manner until the extractable hard rock resource is depleted- an unacceptable outcome given the limited availability of alternate quarry resources at Council's other borrow pits, considered in Table 3.4 above.

The size of the final quarry footprint has been determined on the basis of no further increase in the current disturbed area around the exiting working pit, avoiding the need to enlarge the pit size and to encroach into more elevated, forested lands. This design decision will result in negligible impact on forested lands above the quarry and ecological systems generally, and much reduced visual impacts. Safeguards have been incorporated into project design to either eliminate, or reduce to acceptable levels, any other likely environmental impacts.

FIGURE 3.5: Location of Council Quarries: Regional Context

(Source: Google Earth website October 2021)

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:

- Discontinuation of employment opportunities for an existing, established Council-operated quarry.
- Sterilisation of a valuable quarry resource.

■ Earlier completion of rehabilitation.

■ Potential shortages of raw materials for Council to source in carrying out much-needed road works on Gunnedah Shire Council roads.

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]

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 to mitigate the adverse effects of the proposed quarry development. These measures will be incorporated into and form a part of an overall quarry environmental management plan.

4.2 Mitigation Measures Proposed

The following Table 4.1 provides details of the mitigation measures proposed for the quarry development.

Table 4.1: Mitigation measures proposed by issue

Environmental Issue	***Potential environmental impact***	***Mitigation measures proposed: expanded quarry Bolgers Pit***
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.* ▸ *Maintenance of a water truck and pumps suitable for fire fighting at the site during any extraction operations.[NOTE: The Project Site to be operated on a campaign basis only. For much of the year the quarry will not be in operation]* ▸ *Any chemical and fuels are to be stored in bunded areas. This measure will prevent the potential for 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 sediment basin.* ▸ *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.* ▸ *A draft bush fire emergency and evacuation plan has been prepared as part of overall quarry management plan- refer **Appendix M**.*
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.* ▸ *Existing waste materials found on the Project Site to be collected and removed from this site for recycling or to an appropriate NSW EPA licensed waste facility.* ▸ *Unexpected finds protocols to be established in the event that potentially contaminated material or buried unexpected finds, are encountered during future quarry expansion earthworks on this site.*

Environmental Issue cont.	Potential environmental impact cont.	Mitigation measures proposed: expanded quarry Bolgers Pit
Air quality	Generation of dust during operation of the quarry.	▸ When operational, all quarry 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 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. ▸ Maintaining a high level of repair and servicing for all trucks associated with the quarry. ▸ All gravel roads to be regularly maintained and graded, to avoid vehicle meandering. ▸ Regular use of water carts as required. A water tanker is always used to clean down heavy machinery leaving the quarry site, for weed control and to eliminate dust coming off any plant float. ▸ All vehicles on site are to be confined to designated roads with a signposted speed limit ie. 30km/hour which is to be strictly maintained. ▸ 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. ▸ Air quality levels are predicted to comply with applicable amenity criteria at nearest sensitive receptors.
Soil and water	Need to control sedimentation and erosion, stormwater and leachate.	▸ 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. In this regard berms have already been constructed above the quarry area. ▸ Containing all runoff within the quarry area also reduces the quantity of water flowing downstream during flood periods. ▸ No need for any groundwater monitoring or use of bores for water. ▸ Appropriate stripping and stockpiling controls and procedures required to maximise the value for stored soil used in rehabilitation of the site. ▸ Runoff will be managed in the facility by ensuring that the stormwater management system is monitored and maintained. ▸ Discharges off-site of 'dirty' water are not predicted. ▸ Prepare Pollution Incident Response Management Plan for the quarry as part of an overall quarry management plan. ▸ Concentration of a pollutant discharges must not exceed the concentrations limits specified. ▸ Soil and water management plan to be implemented for the quarry.

Environmental Issue cont.	Potential environmental impact cont.	Mitigation measures proposed: expanded quarry Bolgers Pit
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. ▸ 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. ▸ 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 currently approved Driver Code of Conduct for the quarry. ▸ Limits on quarry trucks numbers permitted to enter and leave the quarry each working 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. ▸ A Maximum Instantaneous Charge (MIC) of 200kg applies. ▸ 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. ▸ The crushing and screening equipment is to be located in appropriate locations to reduce existing and potential noise impacts, where possible, taking advantage of natural topographical features and/or the high berm located on the western edge of the quarry working area.
Traffic and transport	Heavy machinery on local roads, road and pedestrian safety.	▸ Restriction of 40 loaded trucks per day to apply. ▸ Driver Code of Practice to apply, 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. ▸ 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 Oakey Creek Road is satisfactory, however, regular maintenance will be required.

Environmental Issue cont.	Potential environmental impact cont.	Mitigation measures proposed: expanded quarry
Rehabilitation	*Achieving a satisfactory rehabilitation of the quarry, once completed*	▸ *When completed, the quarry will be left in a healthy, rehabilitated and safe condition.* ▸ *Appropriate stripping and stockpiling controls and procedures required to maximise the value for stored soil 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. Use of indigenous trees and shrubs wherever appropriate in rehabilitated areas. 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 (max.30km/hour) limits the potential for conflict with fauna.* ▸ *No groundwater dependent ecosystems affected by quarry.* ▸ *Rehabilitation of the quarry slopes 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. Hollow-bearing trees should be removed at a time (ie season) selected to avoid potential disturbance to breeding fauna (ie nesting individuals) and torpid individuals (ie hibernating individuals mainly during winter months).*
Cultural heritage	*Impact on archaeological sites potential.*	▸ *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.* ▸ *Staff to be suitably inducted, and made aware of their obligations under the National Parks and Wildlife Act 1974 and any conditions of consent relating to heritage protection.* ▸ *In the unlikely event that human remains are discovered, all activities must stop, the affected area must be 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 at 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 proposed to ameliorate visual impacts associated with quarrying the site.*
Annual return	*Annual reporting requirements.*	*An annual report to be submitted to 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
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, to outline the procedure to be followed in the event of an incident or emergency during construction and operation of the quarry, 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.* ▸ *Draft bushfire emergency and evacuation plan prepared- refer to* ***Appendix M****.*

5. Statutory & Strategic Policy Context

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 NSW 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 the continuation and expansion of a small Council-operated quarry at Piallaway known as 'Bolgers Pit' (Project Site). 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 Northern Regional Planning Panel (NRPP) is the consent authority for this proposed quarry development.

The reasons why the Project is not State significant development relate to the smaller scale of the quarry operation proposed (less than 500,000 tonnes per annum and 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*). In this regard:

- No part of the Project Site is within the coastal waters of the State, or is identified as "coastal wetlands" or "littoral rainforest", or is reserved as an aquatic reserve under the NSW *Fisheries Management Act, 1994* or as a marine park under the NSW *Marine Parks Act, 1997*, or declared Ramsar wetland within the meaning of the *Environment Protection and Biodiversity Conservation Act 1999* of the Commonwealth.
- No part of the Project Site is located on land identified as being of high Aboriginal cultural significance or high biodiversity significance under the *Gunnedah 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*.
- No land, places, buildings or structures listed on the State Heritage Register under the *Heritage Act, 1977* occur within the Project Site.
- 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 (EAR 1674) for this project, issued on 30 August 2022, 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 Gunnedah Shire Council, the government authority who also operates the subject quarry.

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. If a proposal does require approval from another government agency, it will be dealt with it as an 'integrated development' application 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 below.

Table 5.1: Integrated Development Checklist for Project

Approval Authority	Law Requiring Approval	Applicability
Dept Planning & Environment (Environmental Protection Authority (EPA))	*ss.43(a), 47 & 55 Protection of the Environment Operations Act 1997*	***Applicable**. As more than 30,000 tonnes per annum of quarry material is to be extracted from the Project Site in any one year an environment protection licence (EPL) will be required once development consent is granted to the proposed quarry development.*
Dept Premier & Cabinet (formerly Office of Environment & Heritage)	*Approval required under s.58 Heritage Act 1977*	*Not Applicable. No Heritage Order applies.*
Dept Transport & Roads (Transport for NSW-TfNSW), Gunnedah Council	*s.138 Roads Act 1993- works over or on public roads, including connection to a classified road*	*Not Applicable. No new roads or access points are proposed. Refer also to Note below.*
Dept Premier & Cabinet (formerly Office of Environment & Heritage)	*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 Planning & Environment (Resources Regulator)	*Approval to alter or to erect improvements under s.15 of Mine Subsidence Compensation Act 1961*	*Not Applicable*
Dept Planning Industry & Environment (Resources Regulator)	*Grant of mining lease under ss. 63 & 64 Mining Act 1992*	*Not Applicable.*
Dept Planning & Environment	*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 NSW)	*Ss 89,90 & 91 of Water Management Act 2000*	*Not Applicable. No license required given that development proposed lies more than 40 metres away from the nearest watercourse. No anticipated groundwater impacts likely or groundwater required to service the quarry operation.*

NOTES TO TABLE 5.1:
1.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. 2. 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.

Given that extraction of more than 30,000 tonnes per year of quarry resource is proposed to be extracted in any one year section 4.47(2) of the EP&A Act requires an 'integrated development' approval be first obtained from the NSW Environmental Protection Authority (EPA) under the *Protection of the Environment Operations Act 1997*.

5.1.4 Consistency with Objects of EP&A Act

The Project the subject of this EIS 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,"	*Gunnedah Shire Council (Council) requires road making material to be readily available for the ongoing maintenance and upgrading of its extensive road network. Council relies on Bolgers Pit to supply road making material to roads projects in the Gunnedah LGA. The Project Site already supports an existing established operating quarry. The Project seeks to maximise the safe and economic recovery of the valuable quarry resource known to underlay the site.It avoids the need to utilise a new site for a new quarry project.*
"(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 has involved consideration of potential traffic, water quality, bushfire, air quality, noise and quarry impacts generally. The Project incorporates 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 already being used for the purposes of quarrying. It will entail the orderly lateral expansion of an existing, established local council quarry.*
"(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, in the main, already cleared land. The Project has been sited and designed to minimise the impacts to the environment. Mitigation and management measures have been proposed to encourage the protection of the environment.*
"(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, no Aboriginal items have been found on the site or significance identified.*
"(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…,"	*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 Gunnedah 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. Local residents have been notified and their comments sought on the project.*

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***	*The Gunnedah Local Environmental Plan 2012 (LEP) is the comprehensive environmental planning instrument applying to the quarry site. 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 Gunnedah Development Control Plan 2012. 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 (former s.93F) 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 expansion 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 Gunnedah LEP 2012

The *Gunnedah Local Environmental Plan 2012* (LEP) is the comprehensive environmental planning instrument applying to the project site. The Project Site is zoned RU1 Primary Production. ”Extractive industries” as defined, are a use permissible with the consent of Council- refer **Figure 5.1**.

The LEP mapping indicates that Bolgers Pit is free from the following planning or environmental constraints:

- Drinking water catchment.
- Wetlands or other lands with a high ecological or environmental value.
- Scenic protection.
- Riparian lands.
- Heritage-listed features, including Conservation Area, Aboriginal Place of Heritage Significance or Conservation Area- Landscape designations.
- Flood prone land, by reference to Gunnedah LEP 2012 Flood Planning Map Sheet FLD_005- refer **Figure 5.1**.

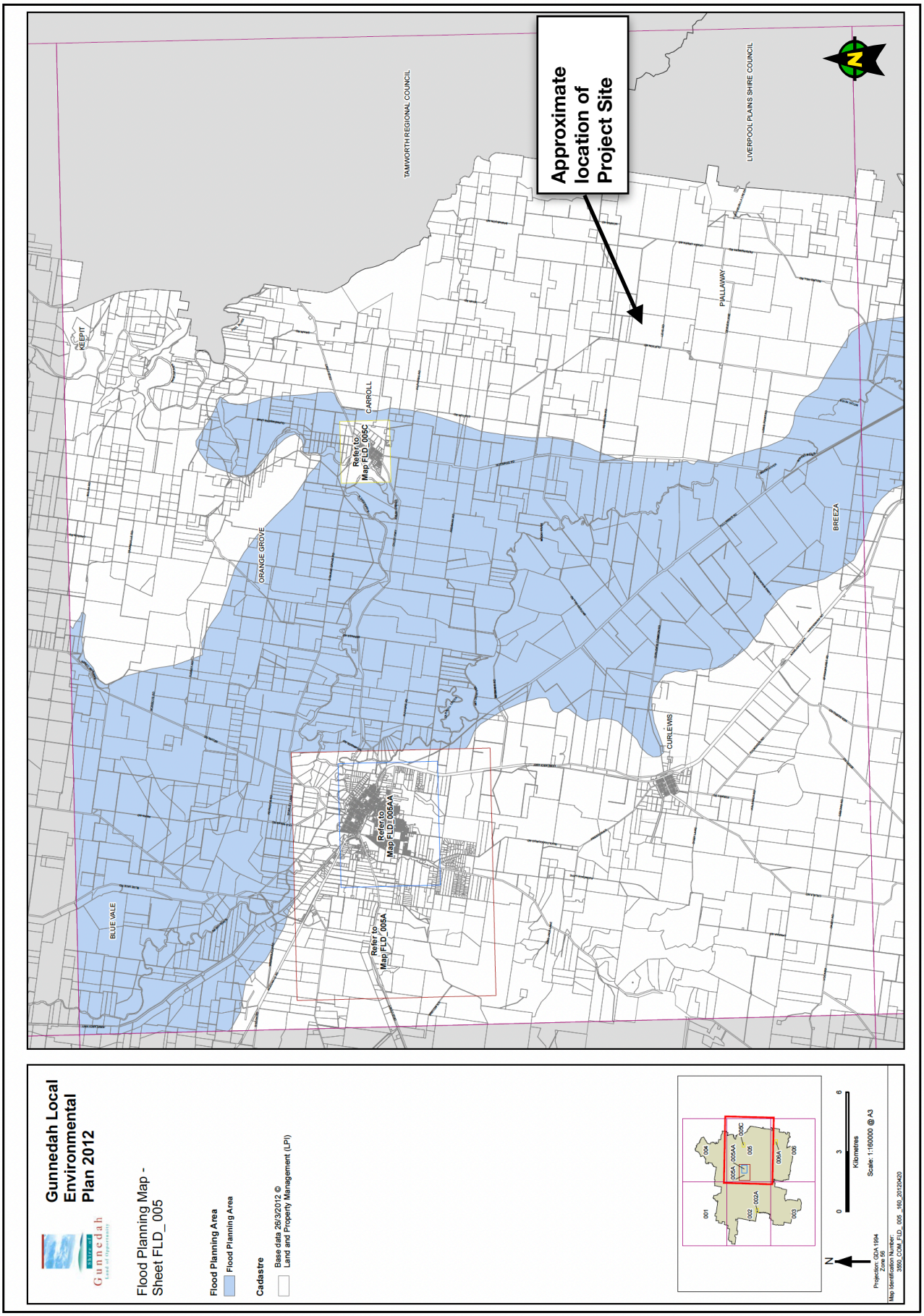


FIGURE 5.1: The Project Site is not mapped as being flood-prone land in the Gunnedah LEP

(Source: Gunnedah LEP 2012 Flood Planning Map Sheet FLD_005)

LEP Aims

An LEP is required to set out the overarching aims of the plan, with each land use zone then providing details as to the land uses permitted in each zone. The compliance of the proposed quarry development with the relevant aims of Gunnedah Local Environmental Plan LEP 2012 are set out in the accompanying Table 5.4.

Table 5.4: Compliance of the Project with Gunnedah LEP 2012 Aims

Gunnedah LEP Aim	***Assessment***
"(aa) to protect and promote the use and development of land for arts and cultural activity, including music and other performance arts"	*Not applicable to the project.*
"(a) to conserve and enhance, for current and future generations, the ecological integrity, environmental heritage and environmental significance of Gunnedah"	*The Project satisfies this aim. The proposed lateral expansion of the existing quarry is to be undertaken within a footprint that has, in the main, been already cleared.* *No significant adverse ecological or heritage or environmental impacts are predicted arise as a result of the proposed modest expansion of the current quarry footprint.*
"(b) to promote the economic well being of the community in a socially and environmentally responsible way, focusing on new employment growth and a diversified economy"	*The further development of the quarry will assist in the promoting the orderly and economic use of an existing established Council borrow pit. It will also result in the generation of further employment opportunities at the quarry site for the future.* *The proposed expansion will enable Bolgers Pit to continue to operate in a safe and environmentally responsible manner which meeting the requirements of government and accepted 'best practice' quarry industry standards.*
"(c) to encourage the proper management of productive agricultural land and prevent the fragmentation of agricultural holdings,"	*The proposed quarry development avoids productive agricultural land and does not involve the fragmentation of agricultural holdings. It aims to utilise land currently approved for quarry-related purposes.*
"(d) provide opportunities for a range of new housing and housing choice"	*Not applicable to the project.*
"(e) to facilitate the provision and coordination of community services and facilities,"	*Not applicable to the project.*
"(f) to seek the provision of adequate and appropriate infrastructure to meet the needs of future development"	*The Project will have adequate infrastructure available to service the quarry operations.* *Gunnedah Shire Council requires road making material to be readily available for the ongoing maintenance and upgrading of its extensive road network. Bolgers Pit is an important source to Council for road making material.*
"(g) to provide direction and guidance in the management of growth and development."	*The Project is on the site of an established operating Council borrow pit: Bolgers Pit..*
"(h) to conserve the cultural and environmental heritage of Gunnedah."	*The Project seeks a modest lateral expansion of the existing quarry. No cultural heritage impacts are likely. *
"(i) to allow development in a way that minimises risks due to environmental hazards."	*The Project can be undertaken in a manner that will minimise risks due to environmental hazards. The proposed quarry development proposes various mitigation measures which, when considered as a whole, will ensure that acceptable environmental impacts will ensue.* *A contamination assessment finds no evidence of any concerns relating to site contamination As such, risks are anticipated to be controlled to an acceptable level.*

Zoning of the Project Site & RU1 zone objectives

The Department of Planning LEP Practice Note PN 09-005, dated 10 September 2009 explains the relationship between LEP, aims, objectives and zoning provisions. It states, inter alia:

> *"It is important not to confuse aims and objectives with each other, and with planning tools. As stated in clause 1.2 of the [Standard Instrument], an LEP is required to set out the particular overarching aims of the plan. Each zone then includes core objectives which describe in more detail the purpose of the land it refers to. Permitted land uses and principal development standards are the key tools to be used to achieve objectives of a zone. This means there are three levels of information (aims, zone objectives and land use controls) and they form a hierarchy of policy intention."*

The compliance of the quarry project with the objectives of the RU1 Primary Production zone are set out in the following Table 5.5.

Table 5.5: Compliance of the 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. The project will enable extraction of a quarry resource known to be suited to road making purposes. The continued operation of the quarry will support a diversity of Council road making projects in the Gunnedah Shire.*
"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. In fact, it seeks to expand an already approved quarry in order that there is increased access to a known quarry resource.*
"To minimise conflict between land uses within this zone and land uses within adjoining zones"	*The quarry is sufficiently buffered from neighbouring residential land uses and from lands used for agriculture, and can go ahead without detriment to or conflict with the surrounding neighbourhood.The measures proposed to mitigate any identified impacts will serve to reduce the potential for conflict, such as dust or noise impacts.*
"To provide for a range of ecologically sustainable agricultural and rural land uses and development on broad acre rural lands."	*The quarry project will will be undertaken in an ecologically sustainable manner. Refer to EIS Section 2.1.4 for further details.*
"To protect significant agricultural resources (soil, water and vegetation) in recognition of their value to Gunnedah's longer term economic sustainability."	*The quarry project is situated on an approved quarry site with a low agricultural suitability. It avoids significant agricultural lands. The quarry operation can continue to operate without adverse effects on the neighbouring agricultural uses.*
"To conserve and enhance the quality of valuable environmental assets, including waterways, riparian land, wetlands and other surface and groundwater resources, remnant native vegetation and fauna movement corridors as part of all new development and land use"	*The quarry project will not intersect with any groundwater resources, and does not contain any wetlands, remnant native vegetation or known fauna movement corridors.*

Pursuant to the provisions of the Gunnedah LEP 2012 the approved quarry footprint, including the approved haul route, is zoned RU1 Primary Production. A small area of E3 Environmental Protection zoned land, outside of the approved quarry footprint, sits at the top of the hill above the approved quarry. The access route to the site, over Lot 2 DP 865898, is wholly zoned RU1 Primary Production. Refer **Figure 5.2**.

"Extractive industries", as defined, are a use specifically permitted in the RU1 zone.

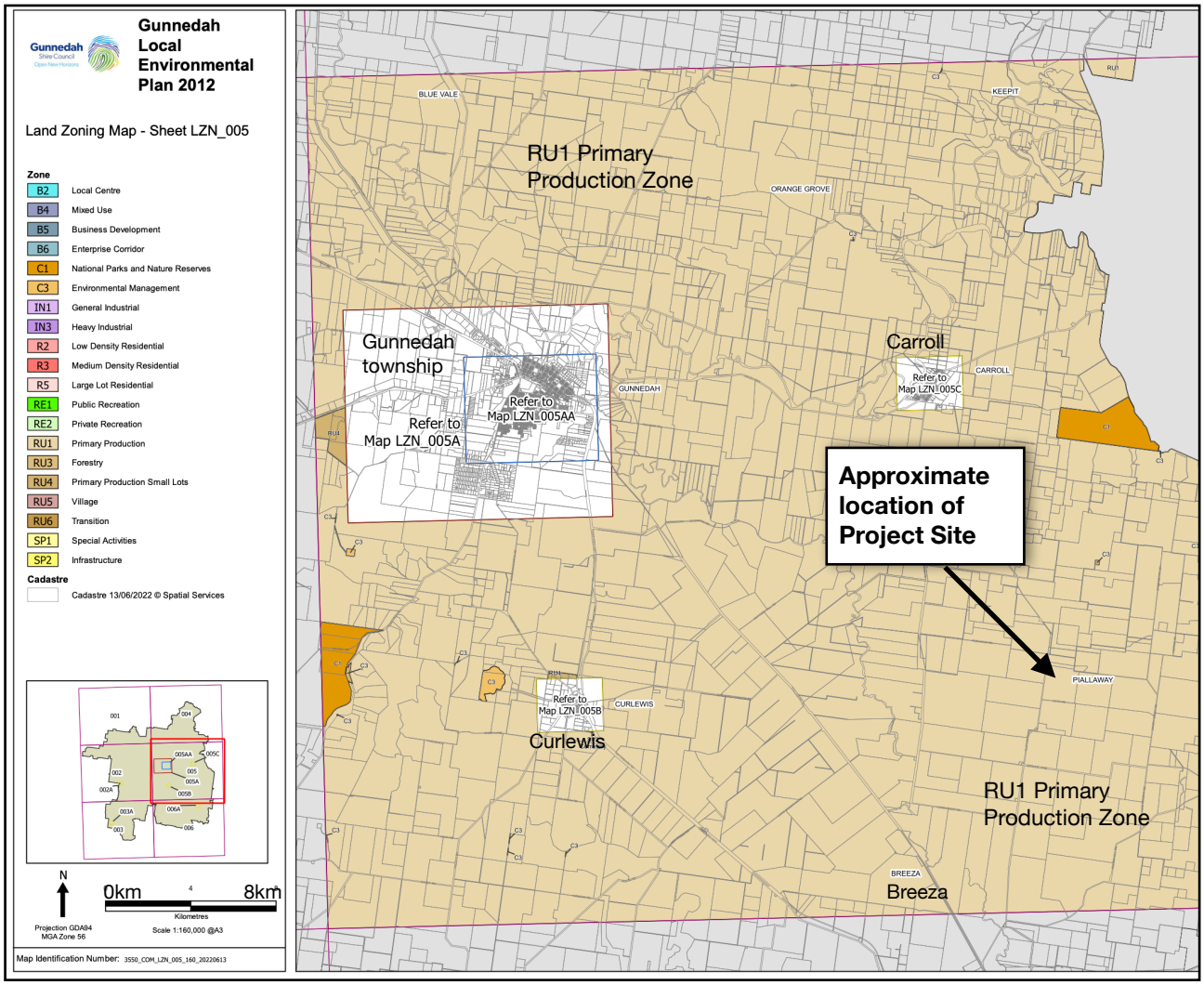


FIGURE 5.2: Quarries are a permissible use in the Gunnedah LEP 2012 RU1 zone

(Source: Gunnedah LEP 2012 Flood Planning Map Sheet LZN_005)

Under the heading "3 Permitted with consent" the Land Use Table for the RU zone allows the following uses:

> *"Bed and breakfast accommodation; Cellar door premises; Dwelling houses; Dual occupancies (attached);* ***Extractive industries****; Farm buildings; Farm stay accommodation; Home industries; Intensive livestock agriculture; Open cut mining; Roadside stalls; Rural workers' dwellings; Any other development not specified in item 2 or 4" [our emphasis]*

The Dictionary accompanying the LEP defines 'extractive industries' as follows:

> *"****extractive industry*** *means the winning or removal of extractive materials (otherwise than from a mine) by methods such as excavating, dredging, tunnelling or quarrying, including the storing, stockpiling or processing of extractive materials by methods such as recycling, washing, crushing, sawing or separating, but does not include turf farming."*

For the preceding reasons the proposed development is considered to be consistent with the RU1 Primary Production zone objectives.

By reference to Gunnedah LEP 2012 Lot Size Map Sheet LSZ_005 the Project Site and surrounds-in fact all of the alluvial plain in and around Piallaway and Breeza-is subject to a minimum lot size of 200ha-the minimum lot size reflecting the use of the surrounding land for intensive agriculture.

By reference to Gunnedah LEP 2012 Terrestrial Biodiversity Map Sheet BIO_005 no part of the Project Site or immediate surrounds is identified as possessing biodiversity values. Refer **Figure 5.3**.

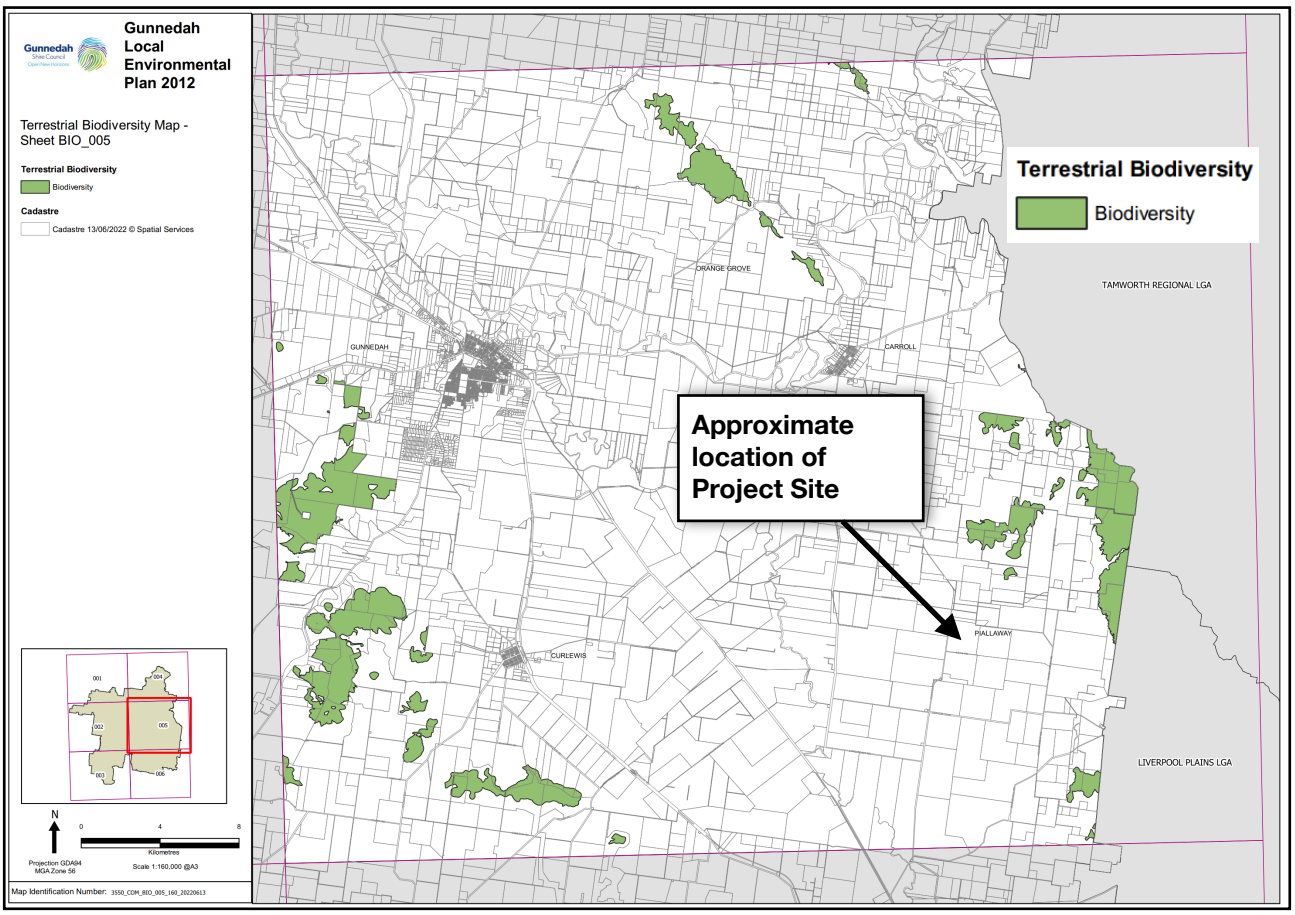


FIGURE 5.3: No part of the Project Site or immediate surrounds has been identified in the Gunnedah LEP 2012 as possessing biodiversity values

(Source: Gunnedah LEP 2012 Terrestrial Biodiversity Map Sheet BIO_005)

The following Table 5.6 summarises the compliance of the proposed quarry development with other relevant provisions of the Gunnedah LEP 2012.

Table 5.6: Compliance of the Project with other relevant provisions of the Gunnedah LEP 2012

Gunnedah LEP 2012 provision	***Compliance***
Clause 1.9 Application of SEPPs	*Various state environmental planning policies prevail over the LEP as provided by section 36 of the Act. In particular, the provisions State Environmental Planning Policy (Resources and Energy) 2021 applies.*
Clause 5.2 Preservation of trees or vegetation	*The LEP provides: "This clause applies to species or kinds of trees or other vegetation that are prescribed for the purposes of this clause by a development control plan made by the Council." No such DCP controls or descriptions apply, the existing Council DCP 2012 silent on this issue.*
Clause 5.10 Heritage Conservation	*No part of the project site is listed as a heritage item or known archaeological site. The approved quarry site is not identified as an Aboriginal place of heritage significance. As such, the provisions of clause 5.10 of the LEP, Heritage Conservation, do not apply*
Clause 5.11 Bush Fire Hazard Reduction	*This clause of the LEP states:* *"Bush fire hazard reduction work authorised by the Rural Fires Act 1997 may be carried out on any land without development consent."*

Gunnedah LEP 2012 provision cont.	Compliance cont.
Clause 6.1 Flood planning	*No part of the proposed quarry, or the haul route back to the intersection of Oakey Creek Road, is identified as "Flood planning area" on the Flood Planning Map (source: Gunnedah Local Environmental Plan 2012 Flood Planning Map - Sheet FLD_ 005).*
Clause 6.5 Essential services	*All stormwater runoff from landfilling activities is to be detained using the on site sediment basins, with no potential for off-site runoff. The quarry has suitable access to the local and regional road system via Oakey Creek Road.*

5.2.2 Compliance with Gunnedah Council Strategies and Council DCP

Gunnedah Community Strategic Plan 2017-27

The *Gunnedah Community Strategic Plan 2017-27* sets the vision, direction and framework for the Gunnedah Shire for the next decade. It recognises the strategic importance of diversifying the economic base of the Shire, for the Shire community. The Plan articulates a range of desired outcomes for 'Building the Shire's Economy' as well as engaging and supporting the community, retaining the quality of life, and protecting and enjoying Gunnedah's beautiful surrounds. The Project is compatible with Council's "Building Our Shire's Economy", "Retaining Our Quality of Life" and 'Protecting and Enjoying Our Beautiful Surrounds" visions for the Shire, and in particular:

- "*2.1 A growing population and diversified economy*". The Project will support Council's ability to maintain the local roads system with suitable road making material.
- "*2.2 Access to our goods, services and markets*". In this regard the proposed continuation and expansion of the Bolgers Pit quarry will ensure that agricultural producers have access to to markets through the maintenance of a Council road network.
- "*3.3.2 Advocate for quality transport links between Gunnedah and Villages*". This objective will be achieved through Council's ongoing maintenance of the local road system.
- "*4.1 Balance between development and environmental protection*". The Project strikes such a balance. The proposed quarry development avoids lands possessing any biodiversity significance. In addition, the proposed quarry development will be beneficial in that it aims to rehabilitate the quarry void once extraction is completed.
- "*4.5 Managed exposure and reduced contribution to climate change*". The landfill project will take general solid waste from surrounding sources, as well as accept material that has been processed at the proposed Torrens Road recycling facility. On site the Project includes measures to appropriately use water within the approved quarry development footprint, and to have a practical, achievable rehabilitation strategy in place in support of the Project (ie. proposed restoration of landform affected by quarrying in association with new plantings).

Gunnedah Shire Local Strategic Planning Statement Future 2040

Council's *Local Strategic Planning Statement Future 2040* (2040 Statement) outlines themes, planning priorities and actions that will provide a road map for the future land use planning in the Shire for the next twenty (20) years. This document is informed by the *Gunnedah Community Strategic Plan 2017 -2027* and is designed to be read alongside it.

The 2040 Statement also gives effect to the *New England North West Regional Plan 2036* by implementing the goals, directions, and actions at a local level, for example, in protecting key agricultural land. Some of the key strategies, relevant to the proposed quarry development, are summarised below:

- The ability to continue to maintain and upgrade Council's local roads system will ensure that development can be encouraged in the Shire.
- Council aims to protect key Koala habitats. The project site is cleared and/or disturbed land with no likely impacts on threatened fauna or flora, including the Koala.

Gunnedah Development Control Plan 2012 (DCP)

The Gunnedah DCP contains no provisions which specifically apply to extractive industries *per se*, however, it does cover a number of provisions of a more generic nature which may relate to such development. The proposed development is consistent with the following relevant provisions of Gunnedah DCP 2012, summarised in the accompanying Table 5.7. Importantly, s.4.15(3A) of the EP&A Act makes it clear that if a development application complies with any LEP standards, then a DCP cannot require more onerous standards with respect to that aspect of the development.

Table 5.7: Assessment of proposed development against relevant provisions of Gunnedah DCP 2012

Relevant DCP provision	*Compliance*
Clause 6.2- Parking	▸ *More than adequate parking is provided on site to accommodate both truck parking and staff parking.* ▸ *The project site is not located within the Business or Industrial zones of the Gunnedah Local Government Area. Hence, under the provisions of Council's DCP, there is no obligation for landscaping of parking areas for shading or to reduce the visual impact of large expansive hardstand areas.* ▸ *Any parking area is not expected to be visible from outside of the site, or if visible parking areas will be of low visual impact due to distance to nearby receivers and in comparison to the visual impact of the quarry development.* ▸ *Landscaping is to be developed as part of rehabilitation of quarry benches, once completed.*
Clause 6.3- Landscaping	*Rehabilitation of the site is proposed following completion of quarrying.*
Clause 6.4- Outdoor lighting	*No outdoor lighting proposed.*
Clause 6.5 - Outdoor advertising/signage	*The proposed quarry development does not propose any new advertising signage or structures.*
Clause 6.6 - Environmental effects, other issues	▸ *The environmental effects of the proposed development have been assessed elsewhere in this EIS report, including specialist reports.* ▸ *The EIS assessment finds acceptable impacts in terms of sediment and erosion controls, land use conflicts, heritage, waste, noise or air quality impacts.Refer to specialists reports in Appendices.* ▸ *Appropriate sediment and erosion controls are proposed.* ▸ *The project seeks a continuation and modest expansion of an existing Council borrow pit, the quarry resource used by Council in road making. It is located on a hillside with low agricultural value.*

Gunnedah Koala Strategies

The *Gunnedah Koala Strategy 2015* aims to provide guidelines for development and to encourage the conservation and management of Koala habitat through land use planning and other measures. The plan notes that an investigation into Koala habitat is to be undertaken for all development. The koala assessment and survey undertaken as part of this ecological assessment revealed the proposed footprint does not constitute core koala habitat, and no evidence of koala was observed. Further, no Koala feed tree species listed in Schedule 2 of the Koala SEPP 2020 were recorded in the vegetation proposed for clearing. The *Gunnedah Koala Conservation Plan* identifies priority areas on crown land where habitat enhancement is recommended to be conducted to make those areas optimal Koala habitat. The area in which this quarry is located is not within one of these priority areas.

■ 5.3 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* ('SEPP (Resources and Energy) 2021) in Chapter 2, Parts 2.1-2.5. This SEPP aims for the sustainable operation and management of mineral, petroleum and extractive material resources. This SEPP makes extractive industries permissible with consent on any land where agriculture is permissible, including the Project Site. An assessment of the compliance of the proposed quarry development with the provisions of this SEPP are considered in the following table.

Table 5.8: Compliance of the Project with SEPP (Resources and Energy) 2021

Relevant clause in SEPP	***Applicability to quarry proposal Bolgers Pit***
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.* ► *The proposed quarry development seeks a modest increase in the size of the current quarry footprint, with no further significant tree clearing involved.* ► *No concerns likely in terms of incompatibility with neighbouring land uses. The quarry has been in operation for a number of years with no apparent issues raised by near neighbours to quarrying operations on the project site.*
(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)***	► *Specialist reports have been prepared to address the noise, vibration and dust impacts on nearby receivers. The specific mitigation measures proposed will ensure that the impacts on surrounding receivers are satisfactorily mitigated.* ► *The expanded quarry will result in benefits to the local and regional economy, enablingenable Council to continue to be able to rely on this pit for road making purposes in the future.* ► *The Project contains a raft of mitigation measures that aim to ensure that the impacts of associated with the modest expansion proposed can be satisfactorily mitigated.*
Clause 2.19-Compatibility	*The land is not located in the vicinity of any competing extractive industries and is not identified by an environmental planning instrument as being the location of significant resource materials.*
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, to be sourced from sediment basin on the site. There are no works proposed or required near any adjoining watercourses and there are no works that will impact on riparian vegetation. There is no proposal to pump water from any nearby watercourse.* ► *No significant impacts on threatened species.* ► *The quarry products will be used for local road making by the local council. The localised nature of operations means that greenhouse gas emissions are minimised.*
Clause 2.21 -Resource recovery	*The proposed quarry expansion will enable the optimisation of a quarry resource from an established local council quarry.*
Clause 2.22 - ***transport***	► *Satisfactory impacts will ensue. Access to a larger quarry resource will mean the the life of the quarry- including use of local roads for haulage- will be extended. [NOTE: Council the roads authority for this DA]* ► *Transportation of quarry product will be along the same approved quarry haul route ie. Oakey Creek Road and thence to the broader local road system. Refer to Streetwise traffic assessment in* ***Appendix F****.*
Clause 2.23 - ***Rehabilitation***	*The rehabilitation of the land will occur in once quarrying is completed within each of the various quarry benches.*

■ 5.4 Compliance with Other State Planning Policies

The accompanying Table 4.3 provides a summary and preliminary assessment of the compliance with and/or applicability of the relevant State Environmental Planning Policies to the proposed quarry development.

Table 4.3: Preliminary Compliance of the Project with State Environmental Planning Policies (SEPPs)

State Environmental Planning Policy	Summary of SEPP provisions	Compliance: Bolgers Pit Proposal
SEPP (Transport and Infrastructure) 2021	*Provides a consistent planning regime for the assessment of traffic generating development across NSW- principally that having a frontage to a classified road.*	*An increase in quarry truck traffic is proposed. The project site does not have a frontage to a classified road. The traffic assessment finds acceptable traffic impacts will result. -refer to Streetwise traffic impact assessment report in* ***Appendix F****.*
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. There are no identified potentially hazardous substances currently stored or proposed to be stored on site.* ▸ *Not identified by EPA records under the Contaminated Land Management Act 1997.* ▸ *No site contamination encountered on site and no remediation of contaminated land is required, thus satisfying the requirements of State Environmental Planning Policy (Resilience and Hazards) 2021 Ch 4, s.4.6(1). Refer to contamination assessment report in* ***Appendix E****.* ▸ *The quarry is only used for quarrying and processing on a campaign basis, with quarry plant brought to the site on an 'as needed' basis', with no storage of fuels or other material left permanently on site.*
State Environmental Planning Policy (Biodiversity and Conservation) 2021	▸ *Encourages the conservation and management of natural vegetation areas that provide habitat for Koalas.* ▸ *Assessment of any likely impact on koalas or koala habitat must be assessed.*	▸ *Impacts on threatened or endangered flora and fauna have been investigated and acceptable impacts ensue. Refer to ecological impact assessment report in* ***Appendix J****.* ▸ *The quarry footprint is cleared and/or disturbed land, and, as such, is not potential koala habitat or within proximity to core koala habitat.*
State Environmental Planning Policy (Planning Systems) 2021	*The former SEPP (State and Regional Development) 2011 defines certain developments that are projects of state significance or involving State significant infrastructure.*	*Pursuant to the provisions of Schedule 6 of the SEPP, the project is of a type that triggers the relevant criteria for Regionally significant development requiring consent from the Northern Region Planning Panel. The project does not constitute State significant development.*

■ 5.5 New England North West Regional Plan

The *New England North West Regional Plan* encompasses a vision, goals and actions geared towards delivering greater prosperity in the years ahead for those who live, work and visit the NSW North Coast. The plan is not meant to be detailed land use plan, but rather, it provides an overarching framework to guide subsequent and more detailed land use plans, development proposals and infrastructure funding decisions.

■ The proposed quarry development complies with Direction 3: *SustainablyProtect and enhance productive agricultural lands* in that it is not located on land so identified- *r*efer also to **Figure 2.6**.

■ Quarries provide the essential materials to enable major road upgrades and other related infrastructure projects to occur. The above is reflected in Direction 4 "Sustainably manage mineral resources" and Action 4.1 and 4.2 of the Plan, namely:

"*Direction 4….New England North West's resources provide the raw materials for major infrastructure projects, new housing, and industrial and agricultural businesses. These resources must not be affected or sterilised by the encroachment of sensitive land uses.*

Actions:

4.1 Consult with the NSW Division of Resources and Geoscience when assessing applications for land use changes (strategic land use planning, rezoning and planning proposals) and new developments or expansions.

4.2 Protect areas of mineral and energy resource potential through local strategies and local environmental plans." (p.23)

As requested in the SEARs issued by the Regional NSW, Geological Survey of NSW – Mining, Exploration & Geoscience this EIS provides documents attesting to the quality of the resource and suitability for road making purposes.

■ The importance of maintaining resources for road building is also reflected in Direction 14 of the Plan, where it states the need for a strengthening of regionally significant transport corridors, such corridors reliant on a reliable source of road making material. The Project will enable the ongoing productive use and expansion of a known existing quarry resource that will have the ability to service major road upgrades and other projects in the region as well as provide continued employment growth.

■ The proposed quarry development also complies with Direction 10: *Sustainably manage and conserve water resources* in that:

- It relies on the quarry sediment basin for its water needs.
- The quarry does not rely on water bores for its water needs.
- It is suitably set back from the nearest watercourse.

■ The proposed quarry development also complies with Direction 11: *Protect areas of potential high environmental value* in that:

- The proposed quarry footprint is already cleared and/or disturbed.
- The proposed quarry does not comprise land considered to be of high environmental value.
- The proposed quarry development does not give rise to any unacceptable impacts on threatened flora or fauna.

■ The proposed quarry development also complies with Direction 12: *Adapt to natural hazards and climate change* in that:

- The proposed quarry, being already cleared and/or disturbed land, has minimal risk from bushfires.
- The proposed quarry development incorporates various bushfire mitigation measures to deal with existing as well as future bushfire risks.
- The proposed quarry is situated on elevated Aland, and is not affected by flooding.
- The water balance indicates the ability to supply water to the project under various climate conditions.
- The proposed quarry site is free of ay contamination potential.

■ The proposed quarry development also complies with Direction 23: *Collaborate with Aboriginal communities to respect and protect Aboriginal culture and heritage*.

The cultural assessment work undertaken for this Project, involving the Red Chief Local Aboriginal land Council, reveals no Aboriginal sites or sites potential- refer **Appendix G**.

▪ 5.6 Commonwealth Planning Matters

The Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) covers 'matters of national environmental significance', which among other things, includes listed threatened species and communities. Because the site is already cleared and/or disturbed land being used for quarrying or quarry-related purposes there is no need for any flora or fauna approvals or referrals required under Commonwealth legislation.

▪ 5.7 Other NSW Legislation

5.7.1 Protection of the Environment Operations Act 1997

The granting of development consent under the *Environmental Planning and Assessment Act 1979* to further develop the quarry will not exhaust the approvals process necessary for the expansion of quarrying operations on the subject land. The *Protection of the Environment Operations Act, 1997* requires licensing for industries, like quarries, once consent has been obtained, for extraction in excess of 30,000 tonnes per annum.

The quarrying activities currently carried out at Bolgers Pit are not scheduled activities within the meaning of the *Protection of the Environment Operations Act 1997*, however, the proposed increase in the rate of extraction at the expanded quarry will trigger the need for 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 *Protection of the Environment Operations Act, 1997*.

ss7 (1) and 50 (2) of the *Protection of the Environment Operations Act, 1997* makes it clear that the *Protection of the Environment Operations Act, 1997* 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 at [166] and [177] where it is stated, 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 variation (or 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.

5.7.2 Water Management Act

The *Water Management Act 2000* 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 the *Water Management Act 2000* 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. It also regulates the use of land where there may be interference with groundwater or where it involves works within 40m of of a watercourse.

In tis regard the project site is more than 40m away from the nearest watercourse. Moreover, the Project is unlikely interfere with or rely on any groundwater. None of the preceding statutory triggers are thus activated by the proposed quarry development.

5.7.3 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 bush fire authority is required to be issued for any extractive industry. A very small part of the Project Site, located in the far north-east corner, is mapped by the RFS as comprising bushfire prone land (vegetation buffer)- refer to DPE Property Report in **Appendix B** and **Figure 2.10**.

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, such as quarry offices/amenities buildings. Quarries are not identified in *Planning for Bush Fire Protection* as comprising 'hazardous industry' and, as such, no special Fire Safety Study is required in support of this project. In any case, as as part of good quarry practice, various measures are to be proposed at Bolgers Pit to effectively control or manage any bushfire threat- refer to Section for details.

5.7.4 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 repeals the *Threatened Species Conservation Act 1995*, the *Native Vegetation Act 2003*, *Nature Conservation Act 2001* and part 6 of the *National Park and Wildlife Act 1974*.

The project proposes to expand operations into a further 0.8 ha of land (which in and of itself is under the native vegetation clearing threshold), clear only 0.09 ha of 'native vegetation', and the subject lot isn't overlayed by Biodiversity Values Mapping. Additionally, no threatened species were recorded within the area assessed, and a Test of Significance found no significant impacts to threatened species or threatened ecological communities (Table 4) are likely to occur due to the project. Therefore, it is concluded that the Biodiversity Offset Scheme will not be triggered.

5.7.5 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 **Appendix E** For details.

5.7.6 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 Bolgers Pit 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.

6.Community Engagement

6.1 Overview

The Project Site is located within a sparsely populated rural area, adjoining rural lands used, in the main, for broad-scale agriculture. As a consequence, the number of rural residences in the near vicinity is comparatively low, with only one rural residence within 1km of the Project Site (associated with the quarry) and a total of 3 rural dwellings within 2km of the Project Site. The Project Site is reasonably buffered from neighbouring residences and is visually obscured from neighbouring residences to the north by intervening topography.

A briefing paper was prepared and submitted to the NSW Department of Planning and Environment requesting the Planning Secretary's Environmental Assessment Requirements (SEARs) for the project. The following stakeholders were briefed and provided a SEARs response:

- NSW Department of Planning and Environment: Planning Secretary's Environmental Assessment Requirements Bolgers Pit Quarry Project (EAR 1674).
- Transport for NSW.
- Biodiversity, Conservation and Science Directorate (BCS) of NSW Department of Planning and Environment.
- Heritage NSW who advise that: "*The subject site is not listed on the State Heritage Register (SHR), nor is it in the immediate vicinity of any SHR items. Further, the site does not contain any known historical archaeological relics. Therefore, no referral to the Heritage Council of NSW is required. The Department does not need to refer subsequent stages of this proposal to the Heritage Council of NSW*."
- NSW Rural Fire Service who advise, inter alia, that: "…*a bush fire assessment report shall be prepared which identifies the extent to which the proposed development conforms with or deviates from the relevant provisions of Planning for Bush Fire Protection 2019*."
- The Department of Planning and Environment – Crown Lands.
- Department of Regional NSW – Mining, Exploration & Geoscience (MEG) – Geological Survey of NSW (GSNSW), who request further details regarding the resource.
- Resource Regulator who advise that: " *The Resources Regulator has reviewed the request and has not identified any specific concerns regarding mine safety in relation to the proposals*."
- NSW EPA who request studies dealing with noise and vibration, air and water and soils.

The project team has carried out consultation with various stakeholders since the issuing of the SEARs above and in particular:

- Environment Protection Authority (EPA).
- Biodiversity, Conservation and Science Directorate (BCS) of NSW Department of Planning and Environment.
- Gunnedah Shire Council.
- Transport for NSW (TfNSW) Grafton office.
- Neighbouring owners were notified of the proposed development by way of a Council mail out of a Facts Sheet (**Appendix N**). Refer **Figure 6.1** showing the extent of properties contacted in this mail out.
- Local Aboriginal community, as part of a due diligence 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.

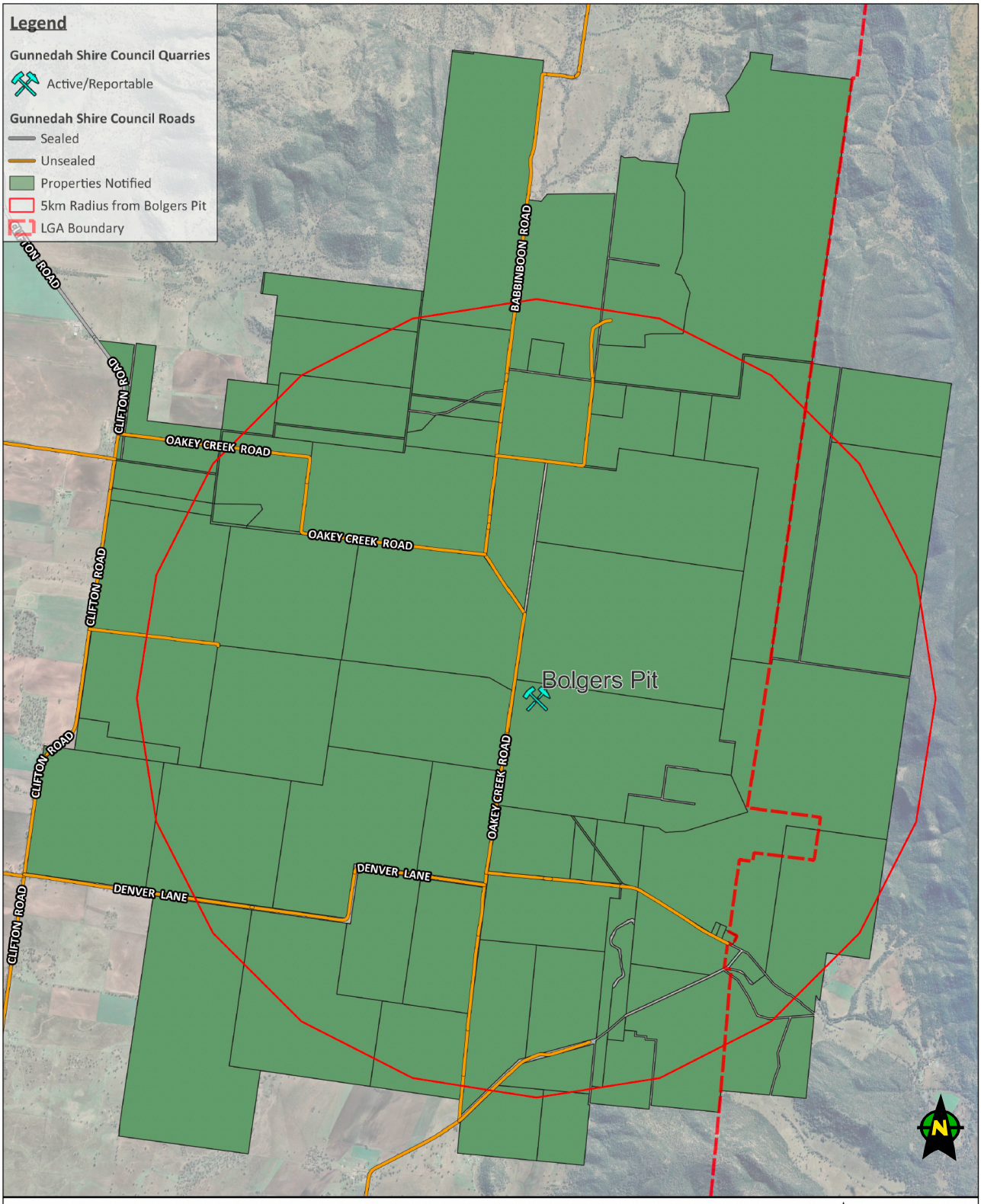


FIGURE 6.1: Properties that were notified of the proposed quarry development by way of a Council mail-out in October 2022

(Source: Gunnedah Council)

6.2 Consultation Undertaken

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 nominated by DPE in the SEARS, seeking further comments or clarifications 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
Gunnedah Shire Council	*Council , as the client, was regularly consulted by Outline Planning Consultants during preparation of this EIS.*
Transport for NSW (TfNSW)	*The EIS addresses all issues raised by TfNSW in their SEARs response. There has been further email and telephone communications between TfNSW and traffic consultants Streetwise, in February 2023. Refer* ***Appendix F****.*
Department of Planning & Environment	*The Biodiversity, Conservation and Science Directorate (BCS) of NSW Department of Planning and Environment was consulted during preparation of the ecological assessment. Refer* ***Appendix J****.*
Red Chief Local Aboriginal Land Council	*A Due Diligence assessment of the Project Site, involving a site inspection with representatives of the Red Chief Local Aboriginal Land Council (RCLALC) and Niche Environment and Heritage (Niche), was undertaken in November 2022. it was determined by RCLALC and Niche that due to the high levels of disturbance and landscape within the Project Site, no further investigation or impact assessment was required. Refer* ***Appendix G****.*
Rural Fire Service	*This EIS has been prepared in accordance with SEARs comments received from the NSW Rural Fire Service.*
EPA	*This EIS has been prepared in accordance with SEARs comments received from EPA.*
Neighbouring owners and occupiers of land	*In October 2022 a Fact Sheet about the proposed continuation and expansion of Bolgers Pit was circulated to neighbouring residences within a 5km of the Project Site by way of letter-boxing- refer* ***Figure 6.1****. A public meeting was held at the offices of Council on 20 February 2023.* ***Refer Appendix N****. Community concerns raised at this meeting are addressed elsewhere in this EIS.*

6.3 Proposed Future Consultation

The quarry operator, and Council propose to maintain a proactive approach to ongoing engagement, in particular with near neighbours, once the quarry development is approved. This will include the following:

- 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, and in particular dust- an issue raised by local residents at the pubic meeting held on 20 February 2023. The quarry operator and Council will keep a legible record of all complaints made 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, General Terms of Approval will be sought.

7. Environmental Assessment

The following section assesses the likely environmental and planning impacts arising from the proposed continuation and expansion of quarrying on the Project Site.

7.1 Overview

The identification and prioritisation of environmental issues associated with the proposed quarry development 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 and 4 of the EIS report and comprise a part of the quarry development proposed. 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 4.15(1) of the *Environmental Planning and Assessment Act 1979* (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 Quarry Development 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 Gunnedah Local Environmental Plan (LEP) 2012 and is also a permissible use with consent under the provisions of State Environmental Planning Policy (Resources and Energy) 2021. Refer Section 5.2 of this EIS for details.*
(a)(iii) Any development control plan	*The proposed development is generally consistent with the Gunnedah Development Control Plan. [NOTE: There are no provisions within this DCP that specifically apply to extractive industries per se.] 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 a known quarry resource, to be relied on by Gunnedah Shire Council as a borrow pit in servicing local council roads and providing employment for Council staff and contractors-positive social and economic impacts.* ▸ *The quarry management and mitigation measures proposed will minimise the impact on neighbouring sensitive receivers, in particular in terms of noise and air quality.* ▸ *The truck numbers/volumes proposed can be satisfactorily accommodated by the internal quarry haul route, the existing intersection at Oakey Creek Road.* ▸ *There will be no likely adverse impacts on the environment or agriculture. Virtually all of the proposed quarry site is cleared or disturbed land, with no ecological or habitat significance.* ▸ *The Project Site has not been identified as containing any significance in terms of Aboriginal or European heritage values.* ▸ *The quarry is set well back from Oakey Creek Road, with topographic barriers obstructing views of the quarry from the north.* ▸ *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 contains an existing local council quarry, and is suitable for continued quarrying activities and modest lateral expansion.* ▸ *The land the subject of the proposed quarry development is mostly cleared and disturbed land, and because of this has no significant environmental constraints to development.* ▸ *The project site is reasonably 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.* ▸ *Gunnedah Shire Council (Council) requires road making material to be readily available for the ongoing maintenance and upgrading of its extensive road network throughout the Gunnedah local government area (LGA). Bolgers Pit is one of Council's larger borrow pits. Council now wishes to regularise the use of this quarry and to laterally expand the active quarry pit through the development approval process.* ▸ *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.*

7.1.2 Compliance with Objects of EP&A Act, ESD Principles

The objects of the *Environmental Planning and Assessment Act 1979* (EP&A Act) at s.1.3 include (b) "*the facilitation of ecologically sustainable development*" (ESD). The accompanying Table 7.2 shows that the proposed quarry development satisfies the principles of ecologically sustainable development as set down in clause 193 of the EP&A Regulation 2021.

Table 7.2: Compliance of the 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.*	*The proposed quarry development will operate with certainty in a safe and environmentally responsible manner which meets the requirements of local council and State government agencies, and accepted industry standards. This EIS concludes that the 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, its likely impacts, or relationship to adjoining development:(Oates v Northern Beaches Council [2021] NSWLEC 1684 at [29] and Telstra Corporation v Hornsby Shire Council [2006] NSWLEC 133.)*
The Integration Principle	*The decision-making processes should effectively integrate both long-term and short-term economic, environmental and social considerations.*	*Management measures have been proposed that will ensure that acceptable impacts will ensue in both the short-term and the long-terms. During the operation of the quarry, employment benefits will arise in terms of ongoing employment for Council staff involved in road building projects, as well as workers at the quarry itself and in the broader community. The local council roads projects that the quarry development will serve will benefit all members of the Gunnedah Shire community, as well as future generations. In the longer term the quarry will be progressively rehabilitated and returned to agricultural use.*
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 , which involves extending the life of the quarry, will provide benefits for future generations by providing a secure a significant quarry resource close to local council road making projects.* *Environmental management measures have been developed to minimise the impact of the project on the environment and community to the extent reasonably practicable.*
Biological Diversity Principle	*The conservation of biological diversity and ecological integrity.*	*The land the subject of the Project is cleared or disturbed 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 development.*
Valuation and Pricing of Environmental Resources principle	*Improved valuation, pricing and incentive mechanisms as well as environmental factors should be included in the valuation of assets and services.*	*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 Project 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 quarry development on the Project Site and in facilitating approval of the proposed quarry development include:

- *Gunnedah Local Environmental Plan (LEP) 2012* which permits 'extractive industries', as defined, in the RU1 zone and sets down the objectives of the zone and other planning provisions. Refer **Figure 5.2**.
- 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 provisions of other state environmental planning policies also apply- refer to Section 5.2 of the EIS. 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.

The *Gunnedah LEP 2012* is the comprehensive local environmental planning instrument applying to the project site. The LEP is a conventional, modern one based on the Standard Instrument Template. In this regard the Project complies with the applicable aims, zone objectives and land use controls contained in the Gunnedah LEP 2012. The above approach to assessing a project in terms of zoning was confirmed most recently in the NSW Land & Environment Court judgement of Robson J in Omid Mohebati-Arani v Ku-ring-gai Council [2017] NSWLEC 143. The above approach to assessing a project in terms of zone objectives was confirmed by the NSW Land & Environment Court to follow the decision of Schaffer Corporation v Hawkesbury City Council (1992) 77 LGERA 21, at [21] in assessing the compatibility of a development with the zone objectives, as follows:

> *"…the guiding principle then is that development will be generally consistent with the objectives, if it is not antipathetic to them. It is not necessary to show that the development promotes or is ancillary to those objectives, nor even that is compatible." (referred to in Land & Environment Court judgement in the matter of New Street No. 1 Pty Ltd v Waverley Council [2017] NSWLEC 1592 24 October 2017).*

7.2.2 Any Proposed Instrument (s.4.15(1)(a)(ii))

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))

The quarry complies with the general objectives of the DCP, summarised in Table 5.6 in Section 5.2.2.of the EIS. As was made clear by the NSW land and Environment Court in the judgement dated 7 February 2023 in *Windang Kruger Resorts Pty Ltd ATF Windang Kruger Resorts Unit Trust v Wollongong City Council* [2023] NSWLEC 1046 at [46]:

> "…*The EPA Act, at s 4.15(3A), is quite direct in its framing of actions for consent authorities when considering development control plan provisions. 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.*"

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 prepared in accordance with the requirements of the regulations relating to Designated Development. The proposal is also recognised as 'Integrated Development', as an 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 3.15.*
(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	*Section 2.*
(iii) Likely impact on the environment	*Section 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

The case law on what constitutes a 'development' is now relatively settled. The 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.

Moreover, in assessing likely impact, the ameliorative measures proposed must 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].

PHOTOGRAPH 7.1: View of existing quarry and cleared/disturbed areas, proposed for extraction, above the quarry floor looking north-east from south-west corner of the quarry

Mitigating factors

Following the above, the mitigation measures proposed at Bolgers Pit form a functional part of the proposed development. These measures are described in Section 3 and 4 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:

- The site is already cleared and disturbed by past quarrying activities. This includes the use of heavy machinery and heavy truck traffic.
- Due to past site clearing and disturbance, the Project Site has no significance in terms of ecological values. Refer to Photograph 7.1.
- Rehabilitation of the Project Site is proposed following the progressive cessation of quarrying.
- The Project Site has been found to possess no archaeological or heritage values.
- The Project Site does not comprise either 'prime' or 'important' or BSAL agricultural land.
- The Project Site is not subject to landslip hazard, or subsidence or acid sulphate soils.
- The proposed quarry operation will not intersect with local groundwater.

- The Project Site is flood-free, however, the quarry haul route back to Breeza is affected by periodic flooding.
- The Project Site enjoys the benefit of an existing internal road which connects directly with Oakey Creek Road. The existing intersection 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 accordance with the SEARs requirements:

- **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.
- **Land resources**. Potential impacts on soils and land capability (including potential erosion and land contamination, agricultural worth) and proposed mitigation, management and remedial measures.
- **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.
- **Blasting and vibration**. Blasting impacts of the Project on sensitive receivers, including monitoring and mitigation strategies to be adopted.
- **Noise**. Noise impacts of the Project on sensitive receivers, including monitoring and mitigation strategies to be adopted.

7.3.1 Air Quality

Dust Generation Sources

By their very nature, quarries have the potential, if unchecked, to generate dust and minor exhaust emissions. Crushing and screening of the quarry resource, once won from the working quarry face, can 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. The overall objective of any quarry dust management regime will be to achieve acceptable air quality standards through the control of dust movement offsite and within the quarry.

The fact that the quarry, at maximum truck movements, is likely to operate for just over 6 weeks in any one year, and not for just under the remaining 46 weeks of the year, means that dust caused by travelling quarry trucks along unsealed sections of the haul route is confined to a short time only in any one year- a major mitigation factor in itself. Moreover, these same quarry truck movements are a fundamental part of Gunnedah Council's road maintenance program over unsealed local Council roads in this part of the Gunnedah Shire.

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.

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. In addition to those discussed above they include the following:

- In acute weather conditions, a water tanker to be regularly used to spray water on working areas, to reduce dust nuisance. A water tanker is regularly used to clean down all heavy equipment leaving the site, for weed control and to eliminate dust coming off plant and equipment while on a float.
- Covering of loads.
- Blasting will be restricted if windy conditions are likely to carry visible dust emissions beyond the quarry boundary where they could create a nuisance. Another measure is to minimise dust emissions from 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 40 kph maximum speed limit on the internal haul road, in order to minimise dust generation.

Most of these measures have already been employed at the quarry. It is also noteworthy that the forested lands that virtually encircle the quarry site will further assist in shielding stockpiles and working quarry areas from prevailing winds.

Impact Assessment: Air

Vipac Engineers and Scientists Ltd was commissioned by Outline Planning Consultants Pty Ltd to conduct an air quality impact assessment for the proposed quarry development. The assessment evaluated the potential impacts of air pollutants generated. The cumulative impacts of the quarry development have been assessed against the criteria specified in the NSW EPA's *Approved Methods for the Modelling and Assessment of Air Pollutants in New South Wales* technical document. Refer also to **Appendix H**.

The air quality impact assessment was carried out as follows:

- An emissions inventory of Total Suspended Particles (TSP), particulate matter (PM10-Particulate matter less than 10 microns in size, PM2.5-Particulate matter less than 2.5 microns in size) and deposited dust for the continued operation of the quarry was compiled using National Pollutant Inventory (NPI) and United States Environmental Protection Agency (USEPA) AP-42 emissions estimation methodology for the Project.
- Estimated emissions data was used as input for air dispersion modelling. The modelling techniques were based on a combination of The Air Pollution Model (TAPM) prognostic meteorological model (developed by CSIRO), and the CALMET model suite used to generate a three-dimensional meteorological dataset for use in the CALPUFF dispersion model.
- The atmospheric dispersion modelling results were assessed against the air quality assessment criteria as part of the impact assessment. Air quality controls are applied to reduce emission rates where applicable.

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 receptors, summarised in the accompanying Table 7.6.

Table 7.6: Summary of Air Quality Predicted Impacts-Project in Isolation

Pollutant	Averaging period	Criteria	Range of Predictions at Nearest Receptors Operation	Compliance
TSP	*Annual*	*90 µg/m^3*	*0.36-1.46 µg/m^3*	*Yes*
PM10	*24 Hour*	*50 µg/m^3*	*5.37-10.11 µg/m^3*	*Yes*
	Annual	*25 µg/m^3*	*0.32-0.96 µg/m^3*	*Yes*
PM2.5	*24 Hour*	*25 µg/m^3*	*0.97-1.84 µg/m^3*	*Yes*
	Annual	*8 µg/m^3*	*0.06-0.18 µg/m^3*	*Yes*
Dust Deposition	*Monthly Total*	*2 g/m^2/month*	*0.09-0.13/m^2/month*	*Yes*

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

TSP, dust deposition and annual average PM10 and PM2.5 predictions are also less than criteria for the Project.

Whilst the cumulative 24 hour average PM10 predictions are above the criteria (Table 7.7), the exceedance is driven by the elevated background adopted for the assessment, which are already above 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. 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 Vipac conclude that no additional assessment is therefore required at these receptors.

Vipac conclude that air quality should not be a constraint to proposed quarry development.

Table 7.7: Summary of Air Quality Predicted Impacts-Cumulative

Pollutant	Averaging period	Criteria	Range of Predictions at Nearest Receptors Operation	Compliance
TSP	*Annual*	*90 µg/m^3*	*57.36-58.46 µg/m^3*	*Yes*
PM10	*24 Hour*	*50 µg/m^3*	*57.07-61.81 µg/m^3*	*Yes (refer Note 1)*
	Annual	*25 µg/m^3*	*15.62-16.26 µg/m^3*	*Yes*
PM2.5	*24 Hour*	*25 µg/m^3*	*18.57-19.44 µg/m^3*	*Yes*
	Annual	*8 µg/m^3*	*7.66-7.78 µg/m^3*	*Yes*
Dust Deposition	*Monthly Total*	*4g/m^2/month*	*2.09-2.13/m^2/month*	*Yes*

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

NOTE 1: Whilst the 24 hour average PM10 predictions are above, the exceedances are driven by the elevated background adopted for the assessment, which are already above the criteria.

Refer **Figures 7.1-7.4**.

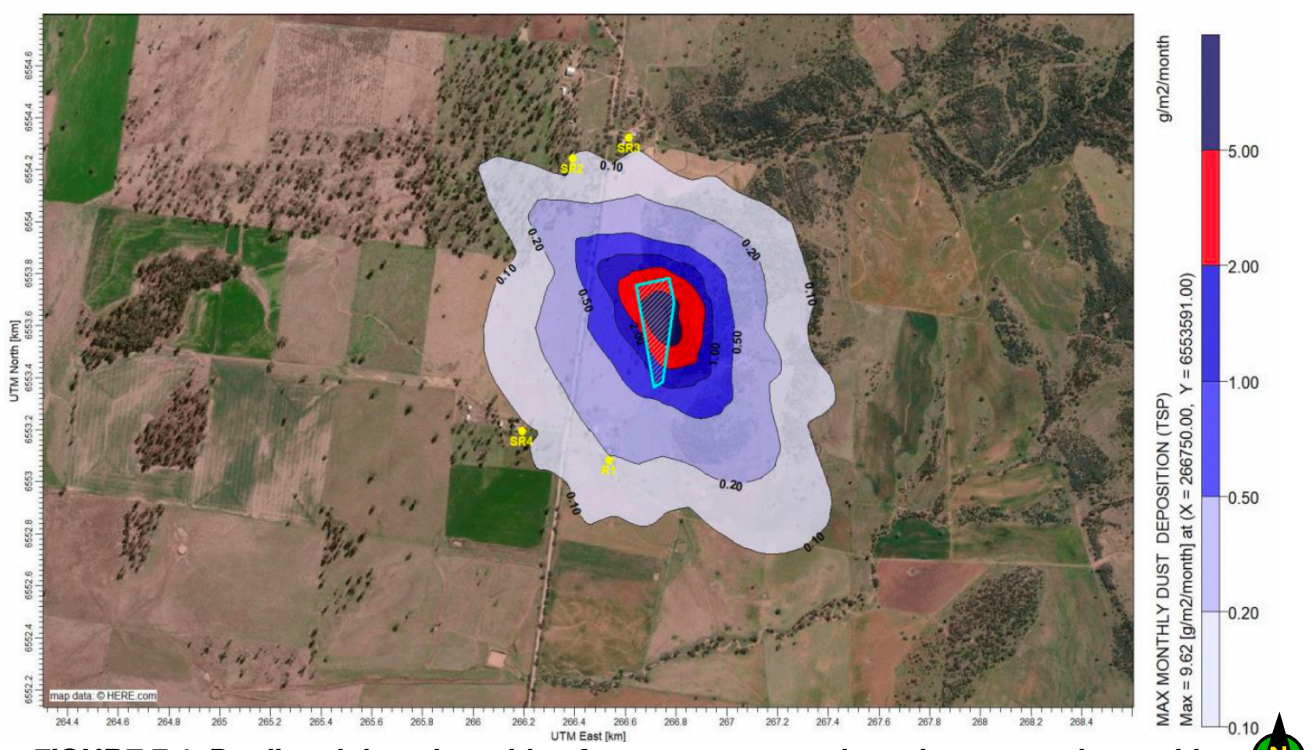


FIGURE 7.1: Predicted dust deposition from quarry operations- incremental, monthly

(Source: Vipac Air Quality Assessment Appendix ??)

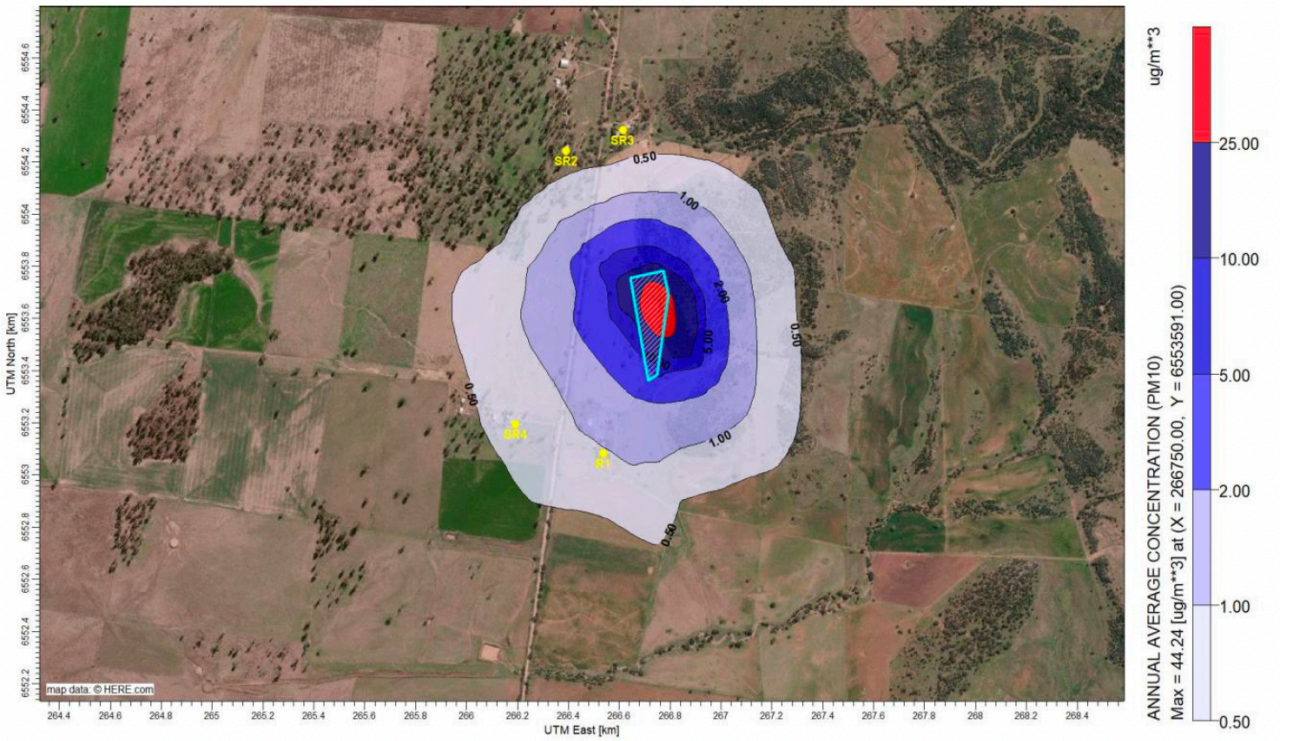


FIGURE 7.2: Predicted PM10 deposition from quarry operations- incremental, annual

(Source: Vipac Air Quality Assessment Appendix ??)

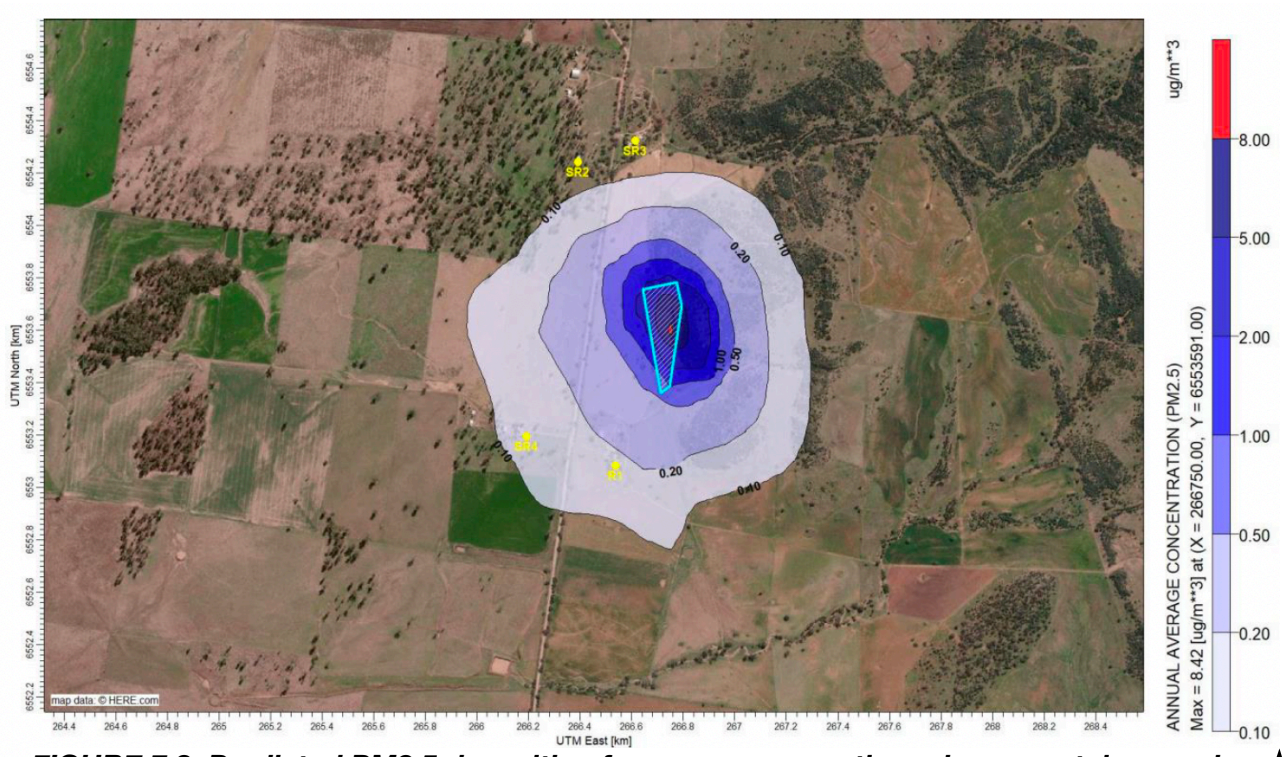


FIGURE 7.3: Predicted PM2.5 deposition from quarry operations- incremental, annual

(Source: Vipac Air Quality Assessment Appendix ??)

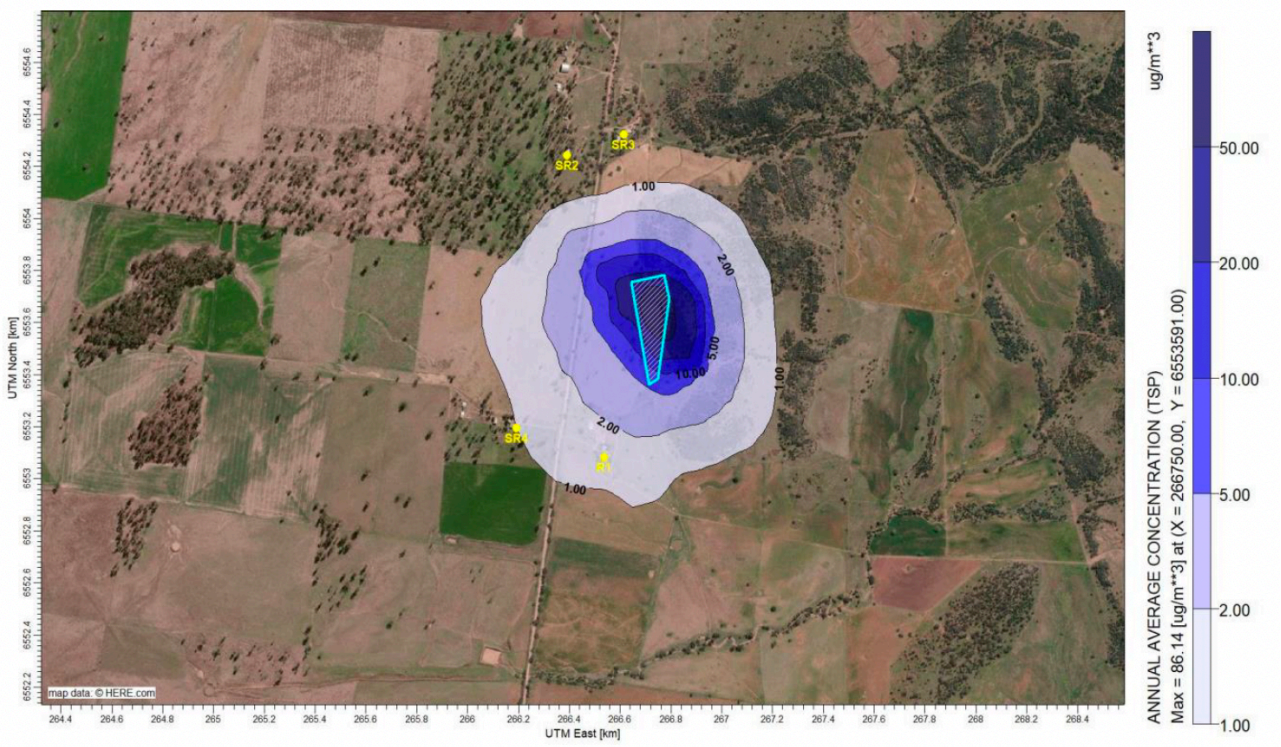


FIGURE 7.4: Predicted TSP deposition from quarry operations- incremental, annual

(Source: Vipac Air Quality Assessment Appendix ??)

7.3.2 Water

Overview

All of the Project Site is located on elevated land found on the lower slopes of the Melville Range, with drainage from quarrying to a sediment basin at the southern end of the quarry.

The Project Site lies adjacent to a large alluvial floodplain that drains into the Mooki River, a perennial stream that is a part of the Namoi River catchment. The Mooki catchment is located in the south-east of the Namoi river basin and has an area of 3,870 square kilometres. The Namoi River basin drains a total area of 42,000 square kilometres.

The following issues are considered as a part of any impact assessment:

- The existing and proposed quarry area is situated on an elevated hill land well above the estimated 1 in 100 year flood level. The quarry is sited on an elevated ridge removed from local watercourses. The land is well- drained and free from depressions, low-lying, flood-prone areas or watercourses. There will be no impacts on any riparian areas or SEPP 14 Wetlands (none of the latter exist in the vicinity of the Project Site).
- The existing and proposed quarry area implements a range of on site controls to ensure that there will be minimal potential for impacts on local water resources.
- A sediment basin is proposed within the quarry area capable of accommodating design water storage needs- refer **Annexure K**. The quarry expansion site will be drained internally, and no discharges are proposed to surface waterways. Therefore, no on- or offsite flooding would occur, nor would any drainage system be impacted.
- There is currently no groundwater extraction occurring at the quarry and groundwater pumping is not part of the proposed project.
- A stormwater bund is currently constructed around the upslope section and perimeter of the quarry.

The implications of flood events or water management for the proposed development will therefore not be significant. The water management impacts of the proposal would comply with relevant goals. This includes soil and erosion control impacts. Discharges from the proposed water management system will be licensed under the *Protection of the Environment Operations Act 1997*.

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 2B Waste Landfills (*NSW DECC, 2008):

- Reduce erosive effect of stormwater. The existing 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 exceed those required by the 'Blue Book'. Water captured within the sedimentation basins may be immediately reused for dust suppression within the quarry..
- Manage unsealed roads within the quarry site. When required during hot and windy condition, 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 has been established immediately up-slope of the active quarry and stockpile area.'Clean' water is currently being diverted 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

Nearby groundwater data was reviewed in order to establish indicative groundwater levels in the vicinity of the project site- also refer to **Appendix E**. Based on recorded groundwater levels in nearby bores a the groundwater level at the extraction area of the quarry was estimated at below RL320m AHD. It is noted that the lowest part of the proposed expanded quarry, being the quarry floor, will be at or above RL 320m AHD. As such, the quarry development will be most unlikely to intersect local groundwater.

Water management

Clause 21 of the *Water Management (General) Regulation 2018* under the *Water Management Act 2000* provides for several exemptions from the requirement for a Water Access Licence (WAL). These include –

> "*Schedule 1 - Excluded Works, Item 3*
>
> *Dams solely for the capture, containment and recirculation of drainage and/or effluent, consistent with 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*."

Adequate storage volume is proposed to be provided in order to comply with the requirements of *Managing Urban Stormwater: Soils and Construction – Volume 1* (4th ed, Landcom 2004) and *Managing Urban Stormwater: Soils and Construction – Volume 2E Mines and Quarries* (Department of Environment and Climate Change NSW, 2008).

Refer to **Appendix K** for storage basin calculation details.

Overland Flow and Flooding

An intermittent 2nd order streams to the south of the quarry. Given the elevation of the quarry compared to the flood plain below, the quarry area is not considered to be at risk of mainstream flood inundation from this or any other watercourse in the locality. It is not mapped as being flood prone land and as such, the relevant operative provisions of clause 5.21 of the *Gunnedah Local Environmental Plan 2012*, Flood planning, do not apply.

Riparian corridors

Figtree Creek is the closest permanent 4th Order (Strahler Stream Order) waterway and is located up-gradient to the north (~ 580m) of the Project Site. Approximately 130m away to the south of the Project Site is an intermittent, unnamed 2nd order watercourse. Given the separation distance of the Project Site from these two watercourses it is concluded that no riparian trigger requirements are activated.

Water balance

A MUSIC model was developed to inform both the water balance for the proposed quarry development. The water balance characteristics of the production).Consulting engineers Martens & Associates prepared a water balance assessment for dry, wet and average rainfall years for the quarry operating at peak production. Refer to **Appendix K** of this EIS for details.

The site is not serviced by a town water supply and has no reticulated wastewater service. Site water demands are therefore to be met through the capture and reuse of stormwater runoff, for dust suppression, and imported potable water, when required on site. [NOTE: the current application does not seek approval for the establishment of a site office or amenities]

Water balance is assessed considering these components:

- Site Water Demand. Consideration of quarry and operational water demands.
- Site Water Supply. Assessment of site water supply comprising surface water runoff.
- Site Balance. The balance of supply and demand is assessed based on a range of climatic conditions to determine water supply and demand for the quarry operation.

Water balance is assessed for a range of rainfall scenarios for the following purposes:

- Average rainfall year-with annual rainfall equal to average rainfall of all years (637.2 mm).
- Dry year– with annual rainfall equal to 10th percentile rainfall of all years to assess 'worst case/severe' water demand (411.6 mm).
- Wet year- with annual rainfall equal to 90th percentile rainfall of all years to assess 'worst case/severe' water surplus (869.4 mm).

The site water demand for the quarry is summarised in the accompanying Table 7.8. Non-potable water supply is to reuse stormwater runoff which is captured in the sediment basin. Water supply is based on the MUSIC modelling using the climate data.

Table 7.8: Summary of site water demand

Quarry activity	Water demand ML/year
Dust suppression within active quarry and internal haul road back to Oakey Creek Road	*0.70*
Production of quarry product within active quarry	*4.0*
Staff water needs (to be from off-site sources)	*0.03*
Total non-potable water demand	***4.70 ML/year***
Total potable water demand	***0.03 ML/year***

(Source: Martens & Associates, consulting engineers- refer **Appendix K**)

The site water balance for an 'average', 'dry' and 'wet' year in terms of non-potable water needs, that is, for dust suppression on the site and for quarry production, is presented in the accompanying Tables 7.9-7.11.

Table 7.9: Site water balance- average year

Supply	ML/year	Demand	ML/year
		NON POTABLE WATER	
Runoff to Sediment basin	*14.36 ML*	*Dust suppression*	*0.70ML*
Storage (evaporative & seepage) losses	*-3.12ML*	*Quarry production*	*4.00ML*
Non Potable Balance			***+ 6.54ML***

(Source: Martens & Associates- refer **Appendix K** for details)

Table 7.10: Site water balance- dry year

Supply	ML/year	Demand	ML/year
		NON POTABLE WATER	
Runoff to Sediment basin	*9.13 ML*	*Dust suppression*	*0.70ML*
Storage (evaporative & seepage) losses	*-3.28ML*	*Quarry production*	*4.00ML*
Non Potable Balance			***+ 1.15ML***

(Source: Martens & Associates- refer **Appendix K** for details)

Table 7.11: Site water balance- wet year

Supply	ML/year	Demand	ML/year
		NON POTABLE WATER	
Runoff to Sediment basin	*19.27 ML*	*Dust suppression*	*0.70ML*
Storage (evaporative & seepage) losses	*-3.28ML*	*Quarry production*	*4.00ML*
Non Potable Balance			***+ 11.29ML***

(Source: Martens & Associates- refer **Appendix K** for details)

Consulting engineers Martens and Associates conclude that the sediment basin proposed will generate, capture and store sufficient runoff to meet quarry water demands for 'average', 'dry' and 'wet' years modelled.

In satisfaction of s.2.20(1)(a) of *State Environmental Planning Policy (Resources and Energy) 2021* it is concluded that impacts on impacts on significant water resources, including surface and groundwater resources, are, in the case of groundwater, avoided, or minimised to the greatest extent practicable.

7.3.3 Biodiversity

Overview

The ecological assessment undertaken by Bower Ecology (**Appendix J**), 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. This project seeks consent for the removal of a limited area of trees in the north-east corner of the project site- approximately 0.09ha. Some other clearing work has occurred in the past few years. In any case, the clearing proposed and/or undertaken recently is below the threshold for biodiversity offsets in s 7.3 of the *Biodiversity Conservation Act 2016* (BC Act) and s. 2.6 of the *State Environmental Planning Policy (Biodiversity and Conservation) 2021* (Biodiversity SEPP).

Vegetation

The Bower Ecology assessment revealed that there is very little vegetation within the proposed quarry expansion area. The small patches that do exist likely represent Plant Community Type (PCT) 101, which is described as "*Poplar Box - Yellow Box - Western Grey Box grassy woodland on cracking clay soils mainly in the Liverpool Plains, Brigalow Belt South Bioregion*".

This PCT is also considered a Threatened Ecological Community (TEC) under both the NSW *Biodiversity Conservation Act 2016* (BC Act) and the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act). The likely local presence of this TEC, the single *Eucalyptus microcarpa* immediately to the north of the site, other matching floristics, and a precautionary approach is considered enough to classify the vegetation within the expansion area as this TEC.

Threatened Flora and Fauna

No threatened flora or fauna (or evidence of fauna) were observed during the site survey undertaken by Bower Ecology, and the project site offers limited habitat value due to its size, isolation, history of disturbance, lack of habitat resources such as tree hollows and logs, and proximity to the existing quarry.

No wetlands, groundwater dependent ecosystems, or waterways are present in the proposed footprint; however waterways do exist to the north and south of the site. This includes a fourth order stream located 580m up-slope to the north of the quarry and an ephemeral unnamed second order stream approximately 130 m to south of the quarry.

Impact Assessment

Both the BC Act and *Biodiversity Conservation Regulation 2017* (BC Regulation) apply to the Project Site, however as the proposed development does not propose more than 1ha of clearing, the terms of the *Biodiversity Conservation Act* are not engaged.

The Proposed Development will not any impact on koalas or koala habitat. The siting of the proposed quarry footprint generally follows that of the existing cleared area, with less than 1ha of additional vegetation proposed to be cleared.

Bower Ecology conclude that as a result of the size of the vegetation proposed for clearing, as well as its low biodiversity value, it is considered unlikely that clearing and the associated quarry expansion will have a significant impact on either biodiversity regulated under the BC Act, or Matters of National Environmental Significance regulated under the EPBC Act. Further, the NSW Biodiversity Offset Scheme is not triggered by the proposal. This is because:

- Proposed vegetation clearing is less than the 1 ha native vegetation clearing threshold (as the minimum lot size associated with the property is 200 ha). The entire quarry expansion area is only about 0.8 ha in area, of which approximately 0.09ha remains vegetated.
- Development over any areas identified mapped as having biodiversity values is avoided.
- The project is very unlikely to result in a significant impact to threatened species or ecological communities pursuant to s.7.3 of the BC Act (the test of significance).

With regards to other relevant legislation, Bower Ecology conclude that:

- The project will satisfy the biosecurity duty under the NSW *Biosecurity Act 2015* via the removal and appropriate disposal of weeds during clearing, as well as via the weed management program proposed. The rehabilitation plan on closure of the quarry will also include ongoing weed management until the rehabilitation becomes self-sustaining.
- The development is not inconsistent with the provision of the *Gunnedah Local Environment Plan 2012* and associated *Development Control Plan 2012*. Further, the development, and associated rehabilitation upon closure will assist with meeting the aims of these plans. By reference to the *Terrestrial Biodiversity Map Sheet BIO_005* of the LEP (refer Figure 5.3 of this EIS) the project site is not identified as possessing any biodiversity values and, as such, the relevant operative provisions of clause 6.7 of the *Gunnedah Local Environmental Plan 2012*, Terrestrial biology, do not apply.
- The Koala assessment and survey undertaken revealed the proposed footprint does not constitute core koala habitat, and no evidence of Koala was observed. Further, no Koala feed tree species listed in Schedule 3 of the Biodiversity SEPP were recorded in the vegetation proposed for clearing. Hence, provision of the SEPP and the Gunnedah Koala Strategy are not triggered.
- All quarry operation activities are to be managed according to the *Protection of the Environment Operations Act (1997),* which aims to protect, restore and enhance the quality of the environment in NSW.
- In satisfaction of s.2.20(1)(b) of *State Environmental Planning Policy (Resources and Energy) 2021* impacts on threatened species and biodiversity have been minimised to the greatest extent practicable.

7.3.4 Heritage

Known Heritage Values

No part of the project site is listed as a European/Aboriginal heritage item or known archaeological site. The site is not identified as an Aboriginal place of heritage significance. As such, the relevant operative provisions of clause 5.10 of the *Gunnedah Local Environmental Plan 2012*, Heritage Conservation, do not apply.

Aboriginal Cultural Heritage Assessment

As a part of the EIS assessment a survey of the Project Site was undertaken on 23 November 2022 by Niche Environment and Heritage (Niche) and representatives of the Red Chief Local Aboriginal Council (RCLALC) in accordance with the *Due Diligence Code of Practice for the Protection of Aboriginal Objects in NSW* (DECCW 2010).

Refer also to **Appendix G**.

The Niche report refers to the proposed quarry development as the "proposed activity" and the Project Site as the "Subject Area". In a covering letter to Outline Planning Consultants dated 27 January 2023 Niche advised as follows:

> "*Based on this Aboriginal Objects Due Diligence Assessment (DD), it is unlikely that Aboriginal objects have survived within the Subject Area, largely due to ground disturbances associated with de-vegetation and agricultural use in the area. The location of the Subject Area is not within an archaeologically sensitive landscape, and the high level of past disturbance means that the potential for in situ archaeological deposits is considered low.*
>
> *The Subject Area is associated with one (1) sensitive Aboriginal landform, these being within 200 metres (m) from a crest, and is located within a broader culturally significant landscape. Despite this it was determined through discussion between the Red Chief Local Aboriginal Land Council (RCLALC) representative and the Heritage Consultant present, that due to the high levels of disturbance and landscape within the Subject Area, no further investigation or impact assessment is required*."

In the same letter of advice, included with their report, Niche made the following recommendations:

> "*1. Should earthworks be undertaken outside the Subject Area assessed in this document, further impact assessment should be undertaken prior to work in those areas in consultation with the RCLALC*."
>
> "*2. 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*."
>
> "*3. All workers associated with any future work within the Subject Area should be inducted into the Subject Area, so they are made aware of their obligations under the National Parks and Wildlife Act 1974 and any conditions of any future AHIP prior and during and after construction activities*."
>
> "*4. In the unlikely event that human remains are discovered, all activities must stop, the affected area must be 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 13 15 55 or (02) 9995 5555*."

The above recommendations have been adopted in full for the purposes of this proposed quarry development.

7.3.5 Traffic and Transport

Traffic consultants Streetwise were engaged to undertake a traffic and transport assessment relating to the proposed quarry development. Refer also to **Appendix F**. A summary of the the assessment, conclusions and recommendations of the Streetwise report are set out in the following.

Forecast Traffic Volumes

Future predicted traffic volumes for peak and average quarry operations are illustrated in the accompanying Table 7.12.

Table 7.12: Average and maximum quarry truck traffic volumes

Item	*@ Average Loaded Truck Volumes*	*@ Peak Loaded Truck Volumes*
Maximum annual output (tonnes)	*40,000 tonnes*	*40,000 tonnes*
Quarry truck load capacities	*Max. 32 tonnes*	*Max. 32 tonnes*
Maximum no. of loaded quarry trucks pa	*1,250 pa (max.)*	*1,250 pa (max.)*
Quarry working weeks per year (equivalent at maximum production)	*6.25 weeks*	*6.25 weeks*
Number of loaded trucks per week	*26 loads per week (assumes quarry operates 5 days per week)*	*200 loads per week (assumes quarry operates 5 days per week)*
Number of loaded trucks per day	*5.2 (say 6 loaded trucks)*	*40 loaded trucks*
Number of loaded trucks per hour	*Less than 1 per hour*	*5 per hour*

(Source: Streetwise March 2023 *Bolgers Pit Traffic Impact Assessment*)

From the above table, the maximum output of 40 laden trips per day will greatly reduce the number of days the quarry will operate, and by implication the number of days per year that the quarry would have an impact on the local road network and on neighbourhood amenity.

To date, the quarry has produced a maximum of 18,355 tonnes in any one year. With a proposed annual maximum extraction rate of 40,000 tonnes per annum, the future quarry-generated vehicle movements will increase by slightly more than twice the current maximum number of trips currently being generated, that is, from 625 laden trips per year (or an average of 13 laden trips per week) to a maximum of 1,250 laden trips per year (or 26 laden trips per week).

Road capacities

In terms of road capacities as impacted by the proposed quarry development Streetwise find that:

- Clifton Road, Oakey Creek Road and Piallaway Road have adequate capacity to cater for the existing and future traffic volumes, including quarry-generated movements, with minimal impact on existing traffic patterns or road safety.
- Oxley Highway, Kamillaroi Highway and Werris Creek Road, all of which are TfNSW classified roads and which currently operate a Level of Service of 'A', have adequate capacity to cater for the existing and future traffic volumes generated by the proposed quarry development,, with minimal impact on traffic patterns or road safety.

Traffic efficiency

From Streetwise's assessment of existing traffic volumes as well as road and intersection capacity the local road network around the site is currently operating at the highest levels of efficiency. The combination of low traffic volumes and a good standard of road construction mean that motorists on the local road network experience a high level of service with little or no delays.

Additionally, Streetwise find that:

- Even at maximum rate of extraction/production of 40,000 tonnes pa being achieved, given the good standard of the existing haul roads, and the current low volumes on the local road network- and in particular Clifton Road, Oakey Creek Road and Piallaway Road -the existing Level of Service of 'A' currently experienced by motorists will not be reduced as a result of the proposed quarry development.
- Similarly, the efficiency of the intersections at Oxley Highway, Kamillaroi Highway and Werris Creek Road will satisfy the required AustRoads guidelines with minimal interruptions to flow conditions as a result of the proposed quarry development.
- There is currently adequate capacity in the local road network and the efficiency will not be significantly impacted on by the proposed quarry development. Uninterrupted flow conditions will continue to exist on local roads and intersections for the expected remaining life of the quarry

Traffic amenity

Streetwise recognise that amenity issues for adjoining residents in regard to the traffic generated by a development usually relate to traffic noise and dust generation. In regard to dust generation, the majority of existing haulage routes are sealed, which results in minimal dust generation from the haulage traffic, provided all loads are covered as required by law in NSW. Streetwise also note that traffic volumes on the local road network are currently less than 200 vehicles per day (vpd), relatively low daily traffic volumes on major roads.

Streetwise conclude that: "*It is considered that any dust or noise generated by the quarry activities will have no significant impact on residences, schools or other community activities*." (p.21 of **Appendix F**)

Road safety

In terms of road safety, the main issues that need to be considered are type of traffic, road geometry and intersection safety. Streetwise find that:

- The local road network servicing the site is in satisfactory condition and is considered suitable in terms of road geometry, speed zoning and pavement construction for use by traffic generated by the quarry. No further works are thus required in order to accommodate the additional truck traffic generated by the proposed quarry development. It

should be noted that existing road damage noted by Streetwise during the site inspections was likely caused by recent flooding, and is scheduled to be repaired in the near future.

- The intersections of Clifton Road and the Oxley Highway, Clifton Road/Hogarth Road and the Kamillaroi Highway, and Piallaway Road and Werris Creek Road all have suitable road geometry, and the available sight distance generally exceeds Austroads requirements (as specified in *Guide to Road Design Part 4A: Unsignalised and Signalised Intersections*).

- It should be noted that the current haul routes have previously been utilised by Gunnedah Shire Council for a number of years, while the major roads are currently approved by TfNSW for use by 25m B-Double vehicles.

- The intersection of Babbinboon Road and Oakey Creek Road was also assessed as a part of the traffic impact assessment. It should be noted that Babbinboon Road is not one of the primary quarry haul routes identified by Council for the transport of its quarry products. Despite the small radius curve through the intersection, road users would drive to suit conditions. Moreover, traffic volumes on this road would be low and sight distances are good. It is therefore considered that this intersection does not present any traffic safety concerns. Council's gravel road network contains numerous other examples of such 'tight' intersections.

In summary, Streetwise conclude that the local road network currently impacted by quarry traffic is suitably safe for use by quarry traffic, while the major roads are approved for B-doubles and therefore suitable for haulage of quarry material.

Pavement condition

The Streetwise assessment finds that the existing haulage routes are currently utilised by Gunnedah Shire Council, and therefore considered to be suitable for use by heavy vehicles. Clifton Road is sealed and 7m wide, and a visual assessment of the road pavement along the proposed haulage route indicates that the road is in relatively good condition, apart from some damage caused by recent flooding. Similarly, Piallaway Road is a sealed road with 6m - 7m width. Oakey Creek Road is unsealed, but currently in good condition. However, it's condition is likely to vary, dependent on regular grading and maintenance. The number of heavy vehicle truck movements generated by the proposed quarry development is relatively low.

Summary

The Streetwise assessment concludes, inter alia:

- *"It is proposed to continue to utilise Oakey Creek Road and Clifton Road to access the Oxley Highway and Kamillaroi Highway as haulage roads for efficient haulage of quarry materials to project locations north, south and west of the quarry. If required, Piallaway Road is also suitable for haulage vehicles to access Werris Creek Road to the east.*

  The current layout, condition and capacity of the existing approved haul roads can easily cater for the existing low volumes on these roads, with adequate capacity available to safely cater for the ongoing heavy vehicle movements generated by Bolgers Pit quarry."

- " *In summary, the proposal to extract up to 40,000 tonnes of quarry material a year may result in minor increases to the existing average daily haulage volumes. However, the existing haulage routes are good quality and have the capacity to safely cater for the haulage truck movements generated by the Bolgers Pit quarry, with minimal impact on the efficiency or safety of the local road network*."

In terms of *State Environmental Planning Policy (Transport and Infrastructure) 2021* the proposed quarry development does not trigger the need for referral to TfNSW pursuant to Column 2 of Schedule 3 and s.2.122 of the SEPP as it involves less than 200 or more motor vehicles per hour.

In terms of the transport-related provisions of *State Environmental Planning Policy (Resources and Energy) 2021*:

- Limits are proposed on daily maximum ruck movements (s.2.22(1)(b)).
- A Driver Code of Conduct is proposed (s.2.22(1)(c)).
- In the case of this quarry development Gunnedah Council is the responsible roads authority (s.2.22(4)).

7.3.6 Land Resources, Agriculture, Contamination

Land Resources, Agriculture

The quarry resource is proven, supported by petrographic analysis (**Appendix C**), and Council has relied on the material won from this quarry for use in road making for a number of years. The land proposed for a quarry and associated haul route comprises elevated land at the base of the Melville Range with a low land capability and low agricultural value. The following Table 7.13 summarises the potential impact of the proposed quarry development on agriculture and land resources generally.

Table 7.13: Impacts of the Project on land resources & agriculture

Issue	Consideration of impacts
Zoning requirements	*The proposed quarry development is a permissible use on the land. The provisions of State Environmental Planning Policy (Resources and Energy) 2021 and Gunnedah Local Environmental Plan 2012 permits the proposed quarry development subject to development consent- the latter a permissible use in the RU1 Primary Production zone. The proposal complies with the LEP and relevant zone objectives.*
Land use conflict potential	*Quarrying is already well established on this site. The land proposed for quarry expansion is, in the main, already cleared and/or disturbed land. The proposed quarry is located in a sparsely populated rural area. Concerns have been expressed by neighbours regarding dust generation by quarry vehicles on local unsealed roads and traffic safety, however, the EIS assessment finds that, on balance, satisfactory impacts will ensue. No biodiversity offsets triggered.*
Land capability and agricultural worth	*The hill containing the extractive resource comprises land with a very limited agricultural value. The proposed quarry expansion area and haul route do not comprise, nor are they proximate to or likely to have any impact on, Biophysical Strategic Agricultural Land (BSAL). The assessment reasonably identifies potential agricultural land use impacts as low. No areas removed from agriculture.*
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 been identified as being bush fire prone. Various mitigation measures are proposed to address fire hazards within the proposed quarry development.*
Water	*No groundwater affected by the quarry. All stormwater to be contained within the proposed quarry pit and quarry infrastructure areas, with no resultant downstream impacts likely. Site water balance shows that water can be provided to the quarry in all rainfall scenarios. Quarry site is flood free.*
Traffic and livestock	*No Travelling Stock Routes affected by the proposed development. Low traffic speeds to be observed along the internal quarry haul route. Quarry truck traffic proposed to utilise the local road system for an equivalent of just over 6 weeks per year at full production.*
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. Appropriate mitigation measures proposed.*

Extraction from the proposed quarry expansion area has been shown to be both feasible and practical. The existing quarry pit is proposed to be progressively expanded, as described in detail in Section 3 of the EIS document. This method of quarrying will minimise impacts in terms of soil erosion potential or land stability. A noticeable feature of the proposal will be the use of stepped benches running up from the final worked floor to natural ground level. These benches are designed for stability.

There will be minimal loss of usable soil or usable agricultural land, given the rocky terrain encountered over the ground surface on almost all of the land proposed to be used for quarrying and associated quarry area. The topsoil available on site will be used in quarry benches, at the rehabilitation stages and in the establishment of planted areas at project commencement. Overburden containing weathered rock can also be used in rehabilitation and is also used to create the stormwater diversion bunds around the perimeter of the quarry.

Steps will continue to be taken to ensure that soil erosion and sedimentation impacts are contained within the quarry site. During dry periods, dust control practices will be applied within the quarry by way of the application of water by a water truck. In addition, any erosion of soils overlying cut slopes would not impact local streams because the proposed quarry project provides for an internally drained system.

Surface water runoff would be contained in a sediment pond system designed to accommodate relevant design stormwater flows. While erosion could occur on site, the limited quantity of erodible material, and the implementation practices and features proposed as part of the project, makes this impact less than significant. Given the area of additional impact associated with the Proposal is located entirely on land with limitations for agriculture (refer to EIS Section 2.4) which would not result in the removal of any land suited to any significant agricultural production, a detailed review of local agricultural resources of the region is not considered necessary.

In addition to the above, no significant impacts on agriculture arise by virtue of the proposal, having regard for the following:

- Unlikely potential for the physical division of an established rural community. Firstly, the Project Site is an already operating Council quarry which has operated for some years. The Project is located in a low density rural area, zoned for agricultural uses and extractive industry. The locality has a dispersed rural population, with the nearest dwelling not associated with the quarry, at 'Wyalla', located 562m away and out of sight of the quarry. The nearest rural dwelling within sight of the quarry is at ''Yarralee' located some 591m away.
- Unlikely potential for conflict with any applicable land use plan, zoning or policy adopted for the purpose of avoiding or mitigating a significant environmental effect. Quarrying is a permissible use here. The site is currently used for a quarry. The assessment in this EIS shows general compliance with other applicable local and State planning provisions. Refer Section 5 of the EIS for further details.
- No potential for a significant affect on prime agricultural land or Biophysical Strategic Agricultural Land to non-agricultural use. The land is poorer quality agricultural land- refer Section 2.4 of the EIS for details. Given the known site conditions encountered, with extensive areas of bare rock and stone outcrops, the Project Site does not possess any regional value to agriculture. The Project Site is not designated as Biophysical Strategic Agricultural Land by the State Government.

The proposed quarry is screened from view by residents to the north, with glimpses only of limited parts of the disturbed quarry visible from Oakey Creek Road.

In general, the local environmental setting can be characterised as intensive agriculture with some dust generation activities present. Noise generating activities are limited to neighbouring intensive agriculture. Acceptable noise, dust and vibration impacts are anticipated to ensue from the proposed quarry expansion. At full production the quarry will only operate for an equivalent of just over 6 weeks per year, with the quarry not in operation for the remainder of the year. This feature of the quarry is in itself a significant mitigation measure in terms of noise, traffic and dust generation impacts.

Given the above, it is anticipated that the proposed quarry development will not adversely impact on surrounding land uses in any significant way and will thus satisfy the 'compatibility' test set down in *Project Venture Developments v Pittwater Council* [2005] NSWLEC 191.

Contamination Potential

Consideration has been given to whether the Project Site is contaminated as required by s.4.6 of *State Environmental Planning Policy (Resilience and Hazards) 2021* (Resilience and Hazards SEPP).

A Preliminary Site Investigation by Ballpark Environmental (**Appendix E**) has been prepared for the Project Site. Based on the assessments undertaken as part of the site investigations, the Project Site is considered suitable for the proposed quarry development, in satisfaction of the Resilience and Hazards SEPP. In addition, and based on the on-site investigations undertaken, further investigation of land contamination is not required.

7.3.7 Waste

The contamination report by Ballpark Environmental identifies historical poor waste disposal practices at Bolgers Pit, including on-site disposal of inert waste, including scrap metal on the southern margins of the quarry pit. This waste material will be collected and removed from the Project Site site for recycling (e.g., scrap metal) or to an appropriate NSW EPA licensed waste facility which can accept this waste. It is also noted that if the quarrying expansion is approved the environment protection license (EPL) to be issued for extractive activities will include enforceable conditions prohibiting the disposal of any waste generated by the quarry operations on this site. 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. All employees and contractors working on site will be required to undertake an annual site induction which covers both safety and environmental requirements of the site.

7.3.8 Hazards

Overview

The SEARs for this quarry project require 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*"

Overall, the environmental hazards and potential risks posed by the proposed quarry development on the Project Site will be manageable and acceptable. The proposed quarry development will be required to hold an environment protection licence (EPL), issued by the EPA, under the *Protection of the Environment Operations Act 1997* and the regulations made under that Act. The quarry operator will be under a legal obligation to not pollute waters in breach of section 120 of that Act, cause air pollution in breach of sections 124, 125 or 126 of that Act, or emit offensive odour in breach of section 129 of that Act. Moreover, the quarry operator must notify the EPA of pollution incidents causing or threatening material harm to the environment within the meaning of section 148 of that Act.

Risk assessment

The risks associated with the 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. The mitigation strategies form a fundamental part of this Project- refer Sections 3 and 4 of the EIS. These measures have been proposed in response to the risks identified and significance.

It is important to note that the precautionary principle need not be applied to try to avoid all risks. A zero risk precautionary standard is, in the circumstances, considered to be impractical. 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.

These risks are considered in the following.

Bushfire hazard

There is forest or woodland vegetation along the project boundary to the east and north of the Project Site, with grassland vegetation to the south and west. Beyond the immediate Project Site, the property contains areas of forest, woodland and open grassland vegetation. A small patch of vegetation in the far north-eastern corner of the Project Site is mapped as comprising bushfire prone land as shown on **Figure 2.11**. Almost all of the proposed quarry development area comprises cleared land. It is noteworthy that the Project Site will be quarried on a campaign basis only, when there is a demand for road works and allied infrastructure projects from Bolgers Pit. Moreover, no buildings or permanent structures are proposed as a part of this development application.

The *Environmental Planning and Assessment Act 1997* (EP&A Act) and the *Rural Fires Act 1997* (RF Act) provides the legal framework for development assessments on bushfire prone land in NSW. A bushfire assessment report has been prepared by Stewart Surveys- refer **Appendix O**. In accordance with the Rural Fire Service's *Planning for bush fire protection: A guide for Council, Planners, Fire Authorities and Developers* (Planning for Bushfire Protection) dated November 2019. Some of the more important points arising from a consideration of bushfire hazards in and around the quarry are as follows:

- Under the RF Act s.100B only development applications for subdivision, special fire protection purpose development or residential development require referral to the Rural Fire Service (RFS). Importantly, the Project does not constitute a 'special fire protection purpose' as defined under the provisions of the *Rural Fires Act 1997*, and therefore does not trigger the need to obtain a bush fire safety authority under s.100B of that Act.
- It is noted that Planning for Bush Fire Protection does not require Asset Protection Zones for extractive industries, and in particular quarries that will only be occupied and in operation for a limited time each year- in this case- for a little over 6 weeks (equivalent) in any one year. If the proposed development was a residential development an upslope APZ of 20m would have been required and a downslope APZ over grassland of 12m would have applied. However, limits do not apply to a development such as that proposed.
- No Asset Protection Zone *per se* is required. The existing quarry pit provides a cleared area at the rear of the high wall (eastern side) of 37 metres in the northern section of the quarry pit and 10 metres in the southern section. This section is cleared of vegetation, is trafficable, and provides a a de facto asset protection zone. Slopes are generally undulating to moderate- refer **Figure 7.5**.
- The Project Site is accessed from Oakey Creek Road, with egress availability to the south to Breeza or the north to Carroll. Oakey Creek Road is a gravel road providing access to properties in this locality. It has good sight lines in both directions**.** The property entry is signposted for easy identification.There are no bridge or drainage structures on Oakey Creek Road which would prevent the load of fire engine access to the site. Bolgers Pit is accessed from Oakey Creek Road via an internal haul route of approximate length 200 metres. Throughout the life of the proposed quarry development the access will be maintained to provide vehicle clearance and turning for fire fighting vehicles.

Notwithstanding this fact, and in the interests of ensuring that bushfire threat is addressed as a matter of 'best practice' management, the following bushfire mitigation measures have been proposed at Bolgers Pit, including the following:

- Fire extinguishers are to be provided in all mobile equipment. The extinguishers are to be serviced regularly. AS2444 provides details on the various extinguishers available, their use and effectiveness for various types of fire.
- Access to the quarry to enable access by RFS fire fighting vehicles.
- No explosives to be kept on site. Plant and equipment to be well maintained, to reduce the risk of sparks.
- A truck-mounted water spray unit to be available.
- Any fuel storage facilities 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. [NOTE: No permanent fuel storage is currently proposed]
- All mobile equipment fitted with spark arresting mufflers.
- Work instructions to employees to include emergency response procedures, applicable during a fire emergency. Refer to **Appendix M** for the draft bush fire emergency and evacuation plan proposed.
- Retention of water run-off from the quarry in the main sediment basin, suitable for use in fighting fires.
- In accordance with Section 8.3.6 of Planning for Bush Fire Protection, relating to mining and petroleum production - but not quarries- a Bush Fire Emergency Plan has been prepared- refer **Appendix M**.
- Maintenance of cleared areas. The quarry footprint is cleared land. This cleared land provides for a suitable buffer from surrounding bushfire prone lands.

With the implementation of the proposed mitigation measures and safeguards it is considered that any bush fire hazard arising from the Project can be satisfactorily managed in terms of the quarry operation itself as well as for the surrounding community.

FIGURE 7.5: Slope analysis of Project Site and surrounds

(Source: Stewart Surveys- refer Appendix O)

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 Bolgers Pit and other quarries in New South Wales are regulated by the NSW Mines Regulator (currently called the NSW Natural Resources Access Regulator).

The operators of the quarry are currently required to comply with the relevant occupational, health and safety provisions with regard to the carrying out of the quarrying works.

These obligations will continue with the approval of the expanded quarry. 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 Bolgers Pit, 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 Bolgers Pit.

Unauthorised access

The quarry operation is located on private land in a sparsely populated rural location where members of the public are unlikely to enter. The quarry site is protected by fencing and a locked gate on the boundary, effectively limiting unauthorised, out-of-hours public access to the quarry

Hazardous materials storage and management

No hazardous materials are to be stored on the site. All blasts are undertaken by licensed blast contractors, who will be responsible for safely transporting and using explosives on site during any blast event. No explosives are to be stored on site. 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].

Natural hazards

The Project site is free from flooding, with appropriate surface water management measures proposed. The slopes encountered on site are generally undulating to moderate, with steeper slopes found at quarry working faces. Refer to **Figure 7.5**. The risk of landslip impacting benches and property damage is Low. The design shows quarry benches of height 10 metres. In view of the assessed Low hazard risk of the development and the implementation of mitigation measures proposed (refer Section 4), the risk of hazardous incidents 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.

7.3.9 Visual Assessment

Overview

The SEARs for this quarry project require the following risks to be considered as a part of the EIS assessment:

> "*Visual – including an assessment of the likely visual impacts of the development on private landowners in the vicinity of the development and key vantage points in the public domain, including with respect to any new landforms*"

A detailed visual appraisal has been undertaken for the Project Site and surrounds by Stewart Surveys, to establish the approximate visibility of the site from any surrounding receptors in the vicinity, including from Oakey Creek Road- refer **Appendix P**. The identification visual impact of the proposed quarry development is assessed in the following. The extent of the quarry expansion proposed in terms of visual impact relies on photographs taken from key viewing points- refer **Figure 7.6** for viewing locations.

Visual impact is assessed according to the following criteria as set down in the accompanying Table 7.14.

Table 7.14: Assessment Criteria- Visual Impact

Visual Impact	*Significance of visual and landscape impact*
Low	*The development would cause very minor changes to the existing view over a wide area or minor changes over a limited area, usually with no significant adverse impact on overall visual character. In terms of landscape, minor change, affecting some characteristics and the experience of the landscape to an extent; and introduction of elements that are not uncharacteristic.* *Development would either not be visible or barely visible, with minor changes in the shape of the overall topographic panorama evident as a result of quarrying- distances of more than 2 km typically apply. Small area only affected, with no significant adverse impact on overall visual character. Typically short term impacts only. Impacts capable of being mitigated or offset by beneficial impacts*
Moderate	*The development would cause minor changes to the existing view over a wide area or noticeable change over a limited area- quarrying visible. Distances of 1 to 2 km typically apply. 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 would result in extensive, noticeable change, affecting many key characteristics and the experience of the landscape, and Introduction of many incongruous elements into the landscape. Development would cause a considerable change to the existing view over a wide area or an intensive change over a limited area- typically impacting a visual resource of high visual significance. Quarrying operations 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*

In summary, the factors considered in assessing potential visual and landscape impacts associated with this proposed quarry expansion are as follows:

- Land already approved for quarrying purposes: The land that has been quarried or cleared/disturbed comprises all of the proposed quarry footprint. Save for a small stand of trees I the north-east corner of the site, all of the quarry footprint is already cleared and/or disturbed.

- Visual exposure: The potential for visual exposure of the Project Site from viewing points along public roads and from surrounding residences. A quarry confined to only a small area with limited visibility from nearby residences has a Low visual impact only. In terms of overall visual prominence for the viewer travelling on Oakey Creek Road or from the nearest residence to the south, looking towards the Project Site from south, the quarry lies at the base of a hill that rises from a generally undulating to flat plain, dominated by more elevated hills and ranges to the north-east and to the east. The lower parts of this hill system, including the project Site, are considered to have a Low level of prominence and visibility.

- Magnitude of the visual impact: Impacts confined to a small area are generally less intrusive in nature than larger areas of disturbance. In this regard the Project Site is modest in size, with the lower sections obscured by a tall bund that runs along the western side of the quarry. A quarry confined to only a small area with limited visibility from nearby residences has a Low visual impact only.

- Duration of impact: The duration of the impact can be very important in determining the significance of impacts.

- Sensitivity of the altered landscape and visual resources: The development context and the character, importance, condition and tolerance of the existing landscape to any significant change.

- Beneficial or adverse impacts: Whether the visual impact is beneficial or adverse.

Assessed visual impacts

By their very nature, quarry developments have the potential to result in permanent changes to and can fundamentally alter the appearance of a landscape. In the case of this quarry development this has been shown not to be the case.The visual assessment has focused primarily on positions within 1km of the proposed quarry development as this is the viewing range most likely to have the potential to experience significant visual effect. These viewpoints are therefore representative of 'worst case scenario' views of the proposed quarry development. As viewers move further from the site, visual impacts diminish.

The viewing locations chosen by Stewart Surveys for the purposes of this visual impact assessment are summarised in the following Table 7.15 and **Figure 7.6**.

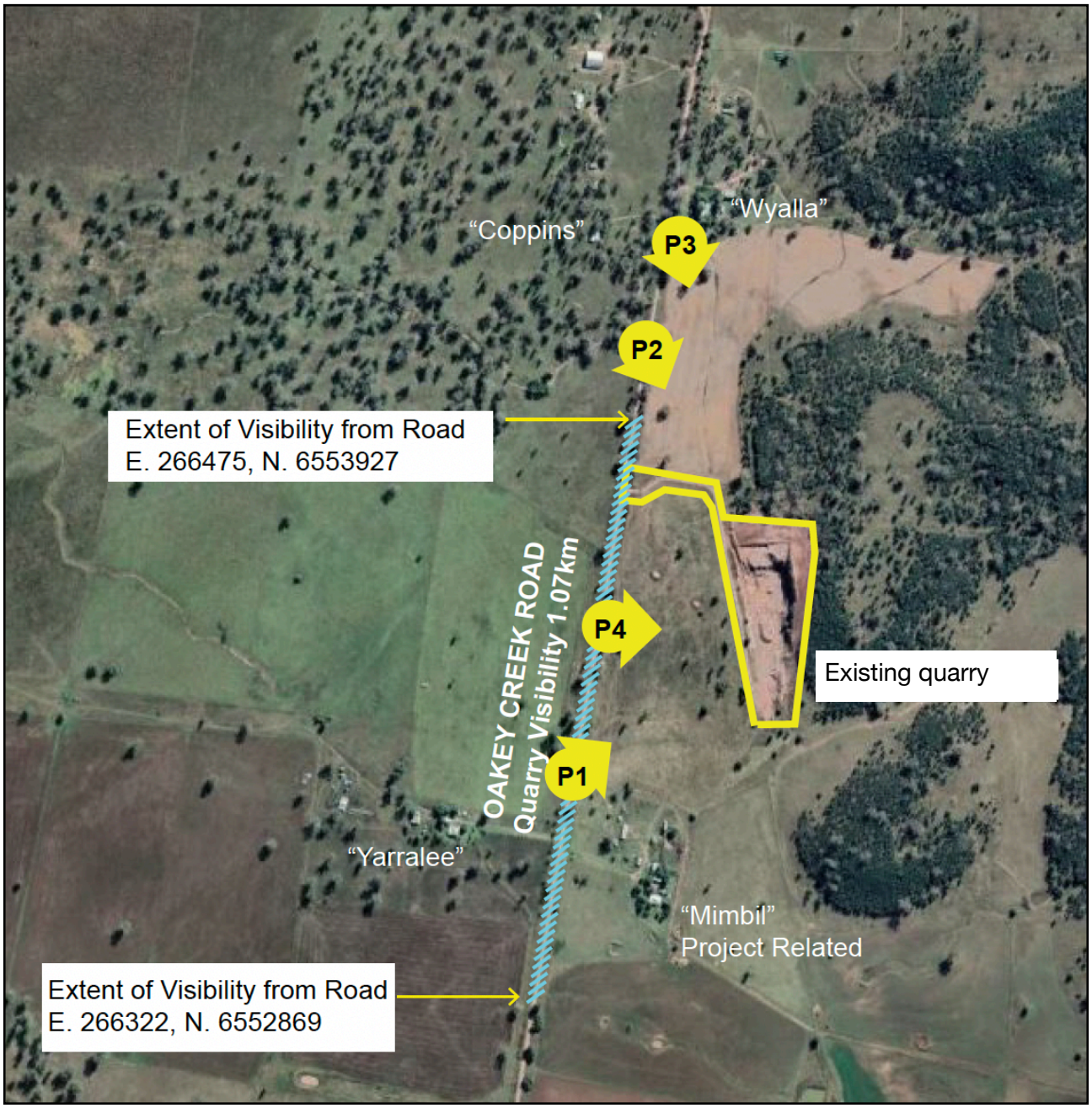


FIGURE 7.6: Bolgers Pit visual assessment. Plan showing viewing locations

(Source: Stewart Surveys- refer Appendix P)

FIGURE 7.7: Photomontage of expanded quarry from P1 'Yarralee', No. 808 Oakey Creek Road-Photo Point: E. 266376 N. 6553240

(Source: Stewart Surveys- refer Appendix P)

FIGURE 7.8: Photomontage of expanded quarry from P2 'Coppins', No. 696 Oakey Creek Road-Photo Point: E. 266486 N. 6554015

(Source: Stewart Surveys- refer Appendix P)

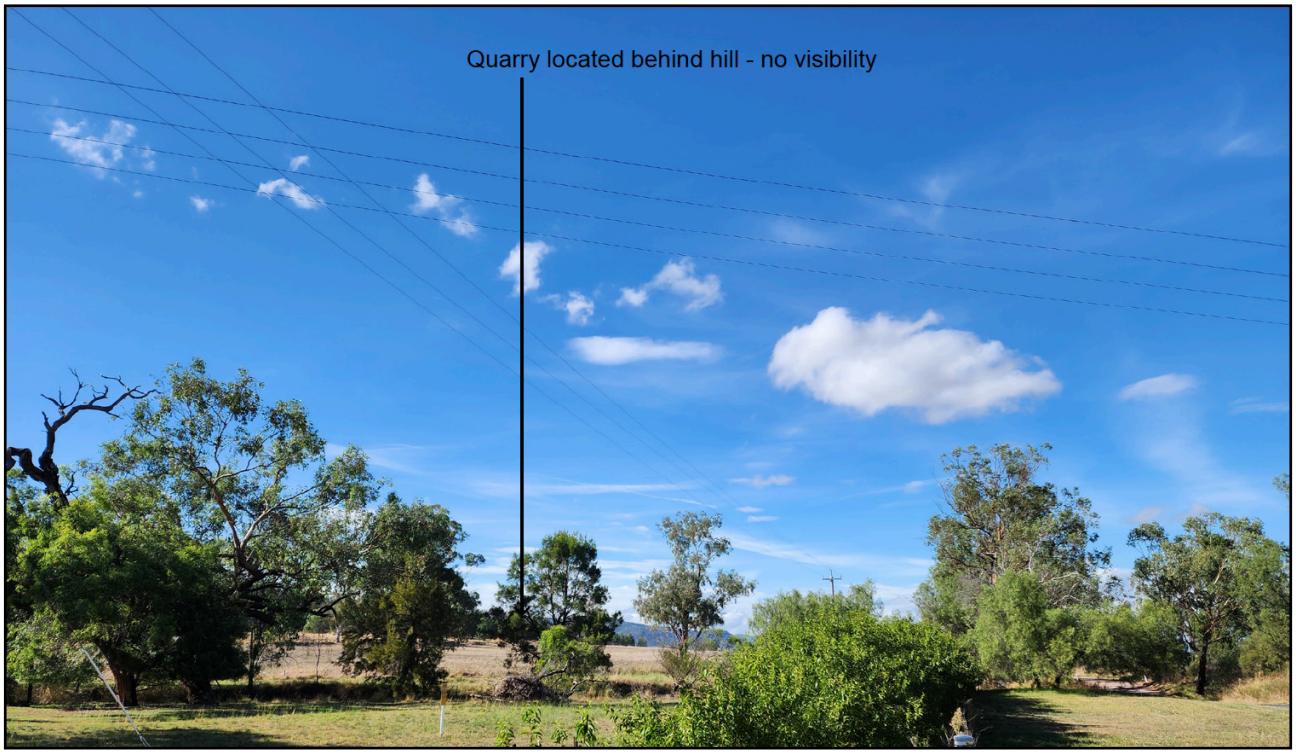


FIGURE 7.9: Photomontage of expanded quarry from P3 'Wyalla', No. 691 Oakey Creek Road-Photo Point: E. 266532 N. 6554304

(Source: Stewart Surveys- refer Appendix P)

FIGURE 7.10: Photomontage of expanded quarry from P4 Oakey Creek Road-Photo Point: E. 266431 N. 6553619

(Source: Stewart Surveys- refer Appendix P)

Table 7.15: Visual impact assessment

Viewing Location and Address	Significance of visual and landscape impact
P1: "Yarralee" 808 Oakey Creek Road, Piallaway	*Photo Point: E. 266376 N. 6553240 from Oakey Creek Road looking towards quarry. Moderate Visibility to the quarry. Residence has significant landscape hedging and trees which would further reduce visibility from within residence. Distance from residence to quarry is about 620 metres. Quarry is visible, however it is located in the lower slopes of a hill system that is much more visually dominant. Low visual impact.*
P2: "Coppins" 696 Oakey Creek Road, Piallaway	*Photo Point: E. 266486 N. 6554015* *No visual impact, quarry not visible from this residence due to intervening topography. Nil visual impact.*
P3: "Wyalla" 691 Oakey Creek Road, Piallaway	*Photo Point E. 266532 N. 6554304* *No visual impact, quarry not visible from this residence due to intervening topography. Nil visual impact.*
P4: View from Oakey Creek Road	*The quarry is visible for 1.07 km along Oakey Creek Road beginning at E. 266475, N. 6553927, which is 130m north of quarry entrance and ending at E. 266322, N. 6552869.* *Photo Point: E. 266431 N. 6553619* *The quarry is highly visible from the road, with some scattered trees providing some intermittent screening. While highly visible from this part of Oakey Creek Road, it is relevant to note that this road is a back road, only used in the main by residents with residences fronting this road. Due to the nature of the road, with low vehicle use and the limited visibility of the quarry from the surrounding properties the overall visual impact of this development is considered to be Low.*

Overall, the quarry sits in a visual setting of Low visual prominence and visual sensitivity, situated as it is at the base of a more visually prominent hill system, with the Melville Ranges further in the distance.

The visual assessment demonstrates that the proposed quarry development will have a Low to Nil visual impact when viewed from surrounding residences and Oakey Creek Road, thus satisfying the tests of visual impact required by *Tenacity Consulting v Warringah Shire Council* [2004] NSWLEC 140 (ie. 1. What views will be affected; 2. How are the views obtained?; 3. Where is the view enjoyed from?; and 4. Is the proposal reasonable?). Oakey Creek Road is a local road servicing the properties which are located along its extent. The road has a low level of usage and the visual corridor, from which the quarry is visible is only 1.07km in length. While the quarry is highly visible from the road immediately in front of the quarry, this is a productive rural landscape in which a quarry is not highly intrusive. Visual impacts are limited to this 1.07km stretch or Oakey Creek Road and from residential receiver "Yarralee" located south east of the quarry.Existing scattered trees and landscaping around the residence aid to reduce the visual impact of the quarry from these locations.

7.3.10 Social and Economic

> *"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 any quarry project.

Gunnedah Council's Works Section is responsible for the construction of new Council road and bridge structures as well as the rehabilitation and/or reconstruction of any pre-existing assets. The Rural and Urban Roads teams comprise of Council's own labour staff, supplemented by specialised contractors when required. Typical work includes reconstruction of failed road pavements, provision of new kerb and gutter and replacement of timber bridges. Council's three-year Management Plan identifies the road and bridge projects on which it intends to undertake work within this time frame. Implementation of these works is subject to available funding and resources.

A recent Council roads projects identified in Council's Management Plan involved the upgrading and sealing the 13.5 km of Clifton Road that was previously unsealed. The works included widening of 5km of the Clifton Road, Hogarth Street, Maitland Street and Bulunbulun Road, and the replacement of the bridge on Maitland Street, Breeza across the Mooki River. The project was valued at $9.6 million and works were carried out by Gunnedah Shire Council. This upgrade will improve safety and productivity, enabling access for Higher Productivity Vehicles.

Employment is generated by the Project through the maintenance and creation of jobs and economic benefits arising from these Council roads projects. These jobs are directly related to the quarrying operation. Council employs a regular workforce to maintain and repair its local road system. Contractors are employed to carry out the quarrying and processing of quarry rock. At peak production the Project at Bolgers Pit will generate up to 4 full-time jobs, excluding blasting contractors and others. Gunnedah Council has an ongoing program of providing training and up-skilling opportunities to local workers and youth in the local area.

There are also jobs and economic opportunities created outside of the 'gates' of the quarrying operation. This includes industries and infrastructure projects that a dependent on quarry products from Bolgers Pit 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 this case, Gunnedah Council is reliant on this major borrow pit for road making material serving this sector of the Gunnedah Shire. Presently, there are few sources of road base material locally available to service Council's needs.

The Project Site is suitably located in a sparsely populated rural area, where surrounding residents are few in number. A range of mitigation measures are proposed to minimise adverse impacts to residents of nearby rural properties.

Public safety and dust generated by increased truck movements on the primary transport route were the primary concerns raised by stakeholders at a public meeting held in February 2023 at Gunnedah. A Driver Code of Conduct, that requires compliance with road safety procedures and prohibiting unsafe driving practices such as tailgating, convoying and speeding, is proposed to addressed both issues. The dust generated by quarry truck traffic needs to be kept in perspective: at full production the quarry will operate for just over 6 weeks in any one year. Quarry truck traffic- and the dust that will be created from this traffic- would be generally confined to these periods of quarry truck traffic activity.

The noise assessment by Vipac (Appendix I) finds that that the increase in road noise resulting from the truck traffic volumes predicted will not result in any exceedance of road traffic noise criteria- the noise assessment finding that acceptable noise outcomes will result.

The Project will have direct access to a local road system and surrounding major road network that provides an excellent basis for the distribution of quarry products to Council roads projects in the locality and elsewhere in the Gunnedah Shire. All of the quarry material to be transported off site will be used to service various local council roads infrastructure projects, including the repair and maintenance of Oakey Creek Road. The road making material won from the quarry will ensure that the local Council road system is able to be satisfactorily maintained by Council on a longer term basis.

In summary, the ongoing direct and indirect employment provided by this Project will contribute to underpinning the maintenance of local council roads, and employment and economic development generally.

The predicted socio-economic impacts of the Project are therefore , on balance, positive in nature.

7.3.11 Rehabilitation

The SEARs for this quarry project require rehabilitation to be considered as a part of the EIS assessment:

"*Rehabilitation – including:*

- *a detailed description of the proposed rehabilitation measures that would be undertaken throughout the development and during quarry closure;*
- *- a detailed rehabilitation strategy, including justification for the proposed final landform and consideration of the objectives of any relevant strategic land use plans or policies; and*
- *- potential impacts on landforms (topography), paying particular attention to the long-term geotechnical stability of any new landforms (such as overburden dumps, bunds etc).*"

An appropriate rehabilitation strategy is planned for the project, details of which are contained in Section 3.11 of this EIS, in compliance with the SEARs, and summarised below:

- Quarry benches of maximum height 10 metres will be worked systematically and capped with a layer of overburden and topsoil, and planted with native species characteristic of vegetation within the surrounding landscape.
- Rehabilitated areas will be inspected regularly to assess the health of revegetation and to check for erosion, pest animal browsing damage and weed infestation. This will promote rapid vegetation growth and development, and address any problems arising with vegetation establishment. The stability of the quarry and surround areas would continue to be monitored during the project, to ensure a safe work environment.
- The quarry floor will be filled to the extent possible using overburden and other material from on-site sources and returned to agricultural use.
- The sediment basin is proposed to be retained for erosion control and as a water supply for stock.
- To slow down surface runoff the contour banks upslope of the quarry area will be retained. This will ensure that 'clean' stormwater continues to be diverted around the quarry and minimises the risk of erosion.
- No overburden dumps will be retained.

This rehabilitation strategy will achieve a stable landform, with minimal or no erosion potential, in accordance with *Managing Urban Stormwater: Soils and Construction, Volume 2E Mines and Quarries* (DECC, 2008).

There is no Biophysical Strategic Agricultural land (BSAL) in or near the Project Site, with a generally low land capability.

7.3.12 Blasting and Vibration

The SEARs for this quarry project require blasting and vibration to be considered as a part of the EIS assessment:

"*Blasting & Vibration – including:*

- *proposed hours, frequency, methods and impacts; and;*
- *an assessment of the likely blasting and vibration impacts of the development, having regard to the relevant ANZECC guidelines and paying particular attention to impacts on people, buildings, livestock, infrastructure and significant natural features.*"

Vipac Engineers and Scientists Ltd (Vipac) was commissioned to conduct a blast and vibration impact assessment for the proposed quarry development- refer **Appendix I.**

Blasting overpressure and ground vibration standards

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

The recommended maximum level for airblast overpressure is 115 dBL. This level may be exceeded on up to 5% of the total number of blasts over a period of 12 months. However, the level should not exceed 120 dBL at any time. The recommended maximum level for ground vibration is 5 mm/s peak particle velocity. This level may be exceeded on up

to 5% of the total number of blasts over a period of 12 months. However, the level should not exceed 10 mm/s peak particle velocity at any time. Refer to Table 3.2 of this EIS.

Refer Section 3.5.3 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.

Summary of findings and recommendations: blasting and vibration

Vipac's summary of findings and recommendations is set out in the following. It finds, inter alia:

- Due to the discontinuous nature of the geology encountered (refer to Section 2.4 of this EIS for further discussion) reliance has been placed on blast monitoring results to date.
- A Maximum Instantaneous Charge of 200kg has been recommended in the Vipac report, based on the blast monitoring undertaken to date.
- Monitoring of all blasts at the Project Site to continue, to ensure compliance is achieved at the closest receptors.
- Should larger MICs be required in the future, a detailed assessment may be required, supported by further blast monitoring results.

7.3.13 Noise

Quarries by their very nature produce noise. Rock won from a quarry pit is crushed and processed on site before being transported off-site. Various mitigation strategies are available to reduce the impact of noise on surrounding receivers.

The SEARs for this quarry project require blasting and vibration to be considered as a part of the EIS assessment:

"*Blasting & Vibration – including:*

- *proposed hours, frequency, methods and impacts; and;*
- *an assessment of the likely blasting and vibration impacts of the development, having regard to the relevant ANZECC guidelines and paying particular attention to impacts on people, buildings, livestock, infrastructure and significant natural features.*"

The detailed acoustical assessment prepared as part of the EIS has confirmed that the project can achieve full compliance with the relevant noise emission targets set by the EPA for all but the clearing works in the north-east corner of the project Site, the latter which are predicted to take approximately half a day to complete.

The acoustical assessment, undertaken by Vipac Engineers and Scientists, was based on a site evaluation which included the measurement of the current ambient noise levels, determination of source sound power levels of plant and equipment at the existing quarry together with prediction of the impact of noise from the proposed quarry during various stages of the project. Refer also to **Appendix I**.

The results of this assessment are summarised in the following.

Sensitive receptors

The predicted operational noise emissions from the proposed quarry development have been assessed at the nearest rural residences (noise sensitive receptors- NSR). The accompanying **Figure 7.11** shows the location of nearest rural residences to Bolgers Pit, not associated with the quarry, comprising:

- NSR1: 'Iventure', located approximately 1,150m to the north of the quarry.
- NSR2: 'Coppins', located approximately 576m to the north-west of the quarry.
- NSR3: 'Wyalla', located approximately 576m to the north of the quarry.
- NSR4: 'Yarralee', located approximately 592m to the south-west of the quarry.

[NOTE: The rural dwelling on 'Mimbil' is associated with the quarry, and does not need to be modelled in terms of noise impacts]

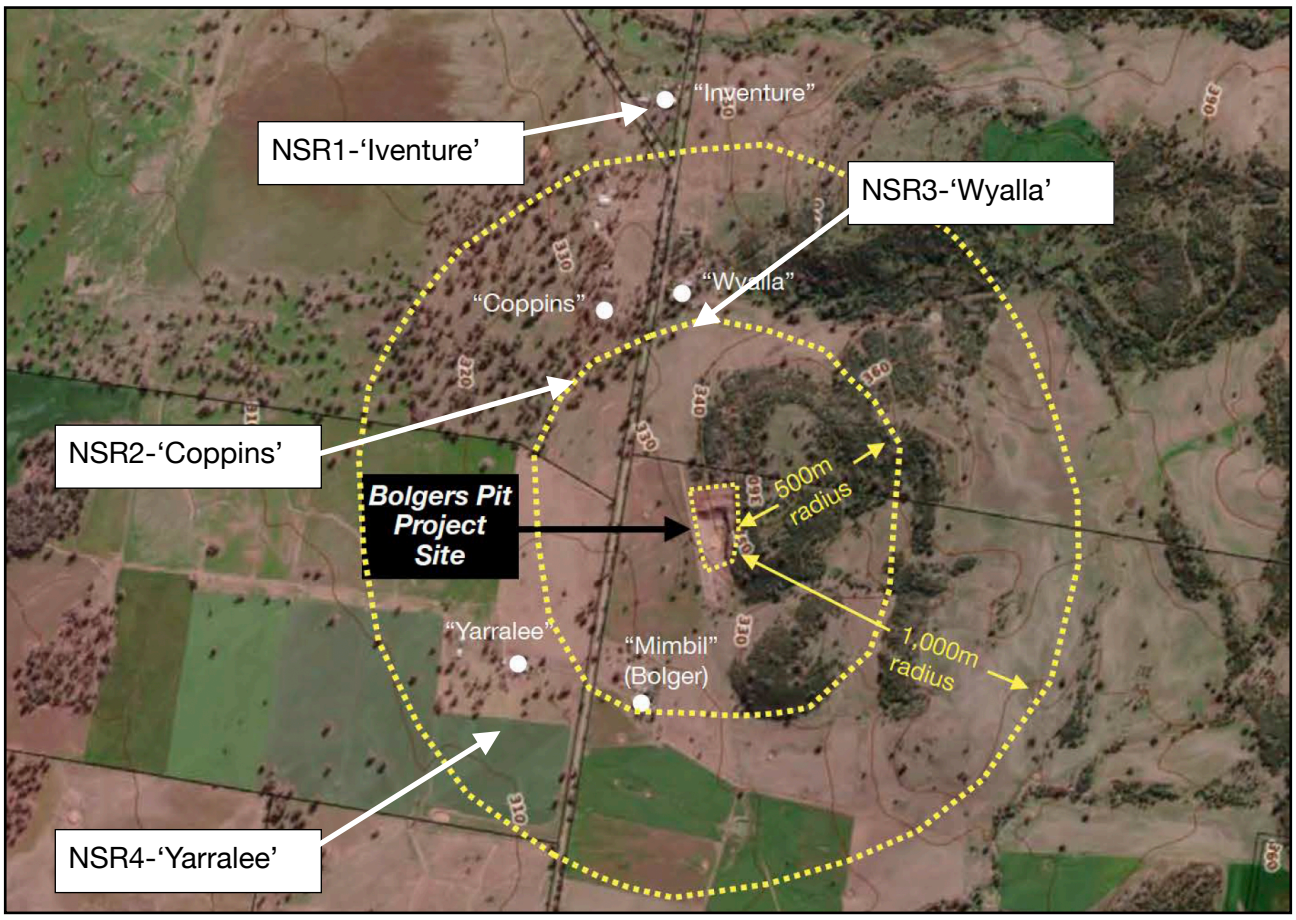


FIGURE 7.11: Nearest rural residences to Bolgers Pit Project Site modelled for noise impacts

Quarry noise assessment & Noise Policy for Industry (2017)

The quarry noise assessment considered likely noise generated by the quarry under various scenarios, as follows:

- Excavator operating in elevated north-east corner of the Project Site, undertaking clearing of trees (**Figure 7.12**).
- Quarry operations in the middle of the quarry floor(**Figure 7.13**).
- Quarry operations in the northern part of the quarry floor (**Figure 7.14**).

In the latter two scenarios it is assumed that the equipment remains the same, only the locations of the machines operating in the quarry would change. The activities associated with the initial development of the quarry will comprise of excavators removing trees (1st noise scenario above, lasting for about half a day), blasting of the quarry face, with trucks moving the quarry material, and screens, loaders and crushing plant working on on the quarry floor.

Noise modelling was undertaken to assess the potential noise impacts associated with the initial development phase of the proposed quarry under the *Noise Policy for Industry 2017* (NPI), which sets assessment noise levels, consistent methods, and best practice measures to manage industrial noise, and is based on the latest scientific research regarding noise's health effects.

Noise from quarrying is considered in terms of both the increase in noise level above background levels- intrusive noise-and the absolute noise level. Both noise types will be important in terms of determining the likelihood of concerns that a community may have to noise generated by a quarry.

FIGURE 7.12: Noise impact assessment scenario: excavator at elevation

(Source: Vipac Figure 5-1— refer Appendix I)

FIGURE 7.13: Noise impact assessment scenario: quarry operations in middle of quarry pit

(Source: Vipac Figure 5-2— refer Appendix I)

FIGURE 7.14: Noise impact assessment scenario: quarry operations in northern end of quarry pit

(Source: Vipac Figure 5-3— refer Appendix I)

It is noteworthy that the excavator only scenario represents the excavator clearing and stripping material in an exposed, elevated position at the northern end of the quarry footprint, above the quarry floor.

The other two scenarios represent the processing of the existing quarry face material using the combination of the loader, crusher, and screen equipment on the bottom of the quarry pit. The middle-west noise sources scenario represents the operation of the equipment to the current existing quarry façade to be extracted and the current worst-case distances to NSR4. The northeast noise sources scenario represents the final stages of the quarry extraction phase, the worst-case distance to the northern receivers (NSRs 1 – 3), and worst-case line of sight to the south-western receiver (NSR 4). Note that the haul truck is operational in all scenarios.

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* (NPI) and *NSW Road Noise Policy* (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.

Construction Noise

"Construction" is not defined in the Dictionary of either the (NSW) *Protection of the Environment Operations Act 1997* or *Protection of the Environment Operations (General) Regulation 2022*. The assessment and management of noise from construction work is completed with reference to the ICNG, specifically aimed at managing noise from construction work regulated by the EPA and is used to assist in setting statutory conditions in licences, including quarry licenses (EPLs). The ICNG, published by the EPA, expressly provide that they do not apply to construction activities associated with quarrying. However, the NPI expressly excludes construction activities.

Quarry development in the initial construction phase will consist of construction of berms for drainage, 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 *per Champions Quarry Pty Limited v Lismore City Council* - [2011] NSWLEC 1124 at [216-217]. An excavator will be employed to carry out this work in the construction stage. Once these works are completed, the quarry will be considered to be in operation phase. The ICNG recommends standard hours for construction activities where the noise from construction is audible at residential premises, as follows:

- 7.00am to 6.00pm Monday to Friday.
- 8.00am to 1.00pm Saturdays.
- 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 where required in an emergency to avoid the loss of lives, property and/or to prevent environmental harm.

Operational Noise

The operational phase of the quarry project can commence once the construction phase is completed.The operational phase of the quarry will apply the following hours of operation:

- 7.00am to 6.00pm Monday to Friday.
- 7.00am to 1.00pm Saturdays.
- At no time on Sundays or Public Holidays.
- Hours of blasting are to be restricted to 9.00am to 3.00pm Monday to Friday.

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 NPI provides two separate noise trigger levels: intrusiveness and amenity. The fundamental difference being intrusiveness noise levels apply over 15 minutes in any period (day, evening or night), and the amenity noise levels apply to the entire assessment period (day, evening or night).

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).

Noise prediction modelling has been carried out to assess the potential impact associated with the quarry operations at the nearest noise sensitive receptors for the proposed operational scenario. The predicted noise levels representative of each of the operational scenarios for neutral conditions, worst-case conditions, and north easterly winds case weather conditions during the day period are presented in Table 7.16.

Table 7.16: Predicted Noise Levels Daytime LAeq 15 minute dB(A)

Rec #	Criteria	*Excavator Only**			**Middle-West Noise Sources**			**Northeast Noise Sources**		
		Neutral	*Worst Case*	*North Easterly Winds Case*	**Neutral**	**Worst Case**	**North Easterly Winds Case**	**Neutral**	**Worst Case**	**North Easterly Winds Case**
NSR1	40	*24.5*	*29.4*	*17.5*	17.7	22.5	12.1	18.3	23.1	12.3
NSR2		*33.5*	*37.7*	*28.6*	26.7	30.7	22.4	27.4	31.4	23.3
NSR3		*33.9*	*38.1*	*27.7*	26.7	30.7	21.5	28.2	32.1	23.0
NSR4		*30.2*	*34.7*	*34.7*	33.6	37.8	37.7	32	36.4	36.4
*NSR5***		*31.4*	*35.8*	*35.8*	*47.9*	*51.9*	*51.9*	*45.6*	*49.8*	*49.7*

**The Excavator Only scenario is a very small aspect of the operations at the quarry, expected to take half a day to finalise the stripping of the north east corner.*

***NSR5 is owned by the Quarry land owner and is not considered as a sensitive receptor for the purposes of this assessment.*

Noise levels are predicted to comply at all receptors in all scenarios during all modelled weather conditions.

(Source: Vipac Table 8-1— refer Appendix I)

Based on the predicted results above for the operational scenarios modelled, it is concluded that noise levels from quarry operations will comply with the applicable noise criteria without the need for any additional acoustic mitigation measures.

These results been reproduced graphically as Noise Contour Maps (refer **Appendix I** for full mapping), with 'worst case' results shown in **Figures 7.15-717**.

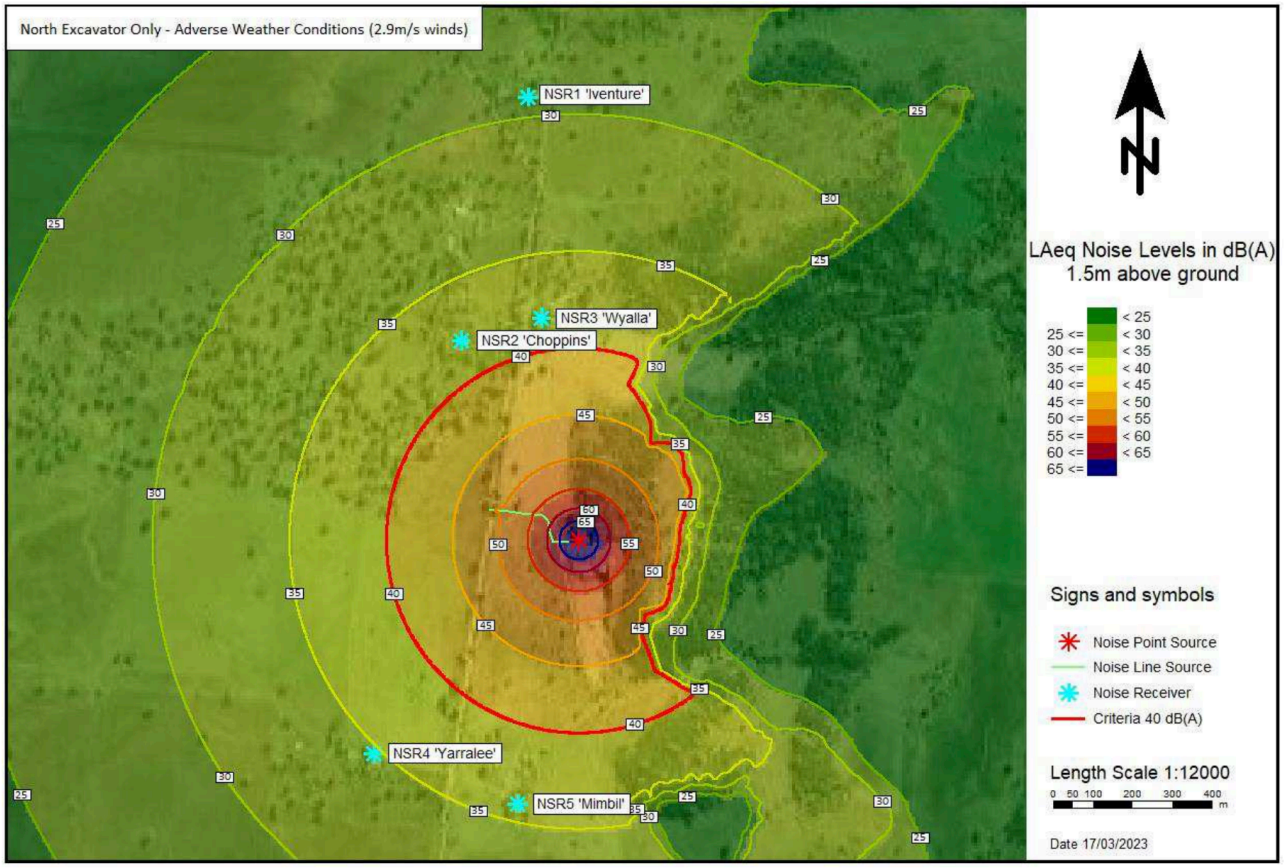


FIGURE 7.15: Noise impact contours 'worst case' scenario: excavator at elevation

(Source: Vipac Appendix A Noise Contours— refer Appendix I)

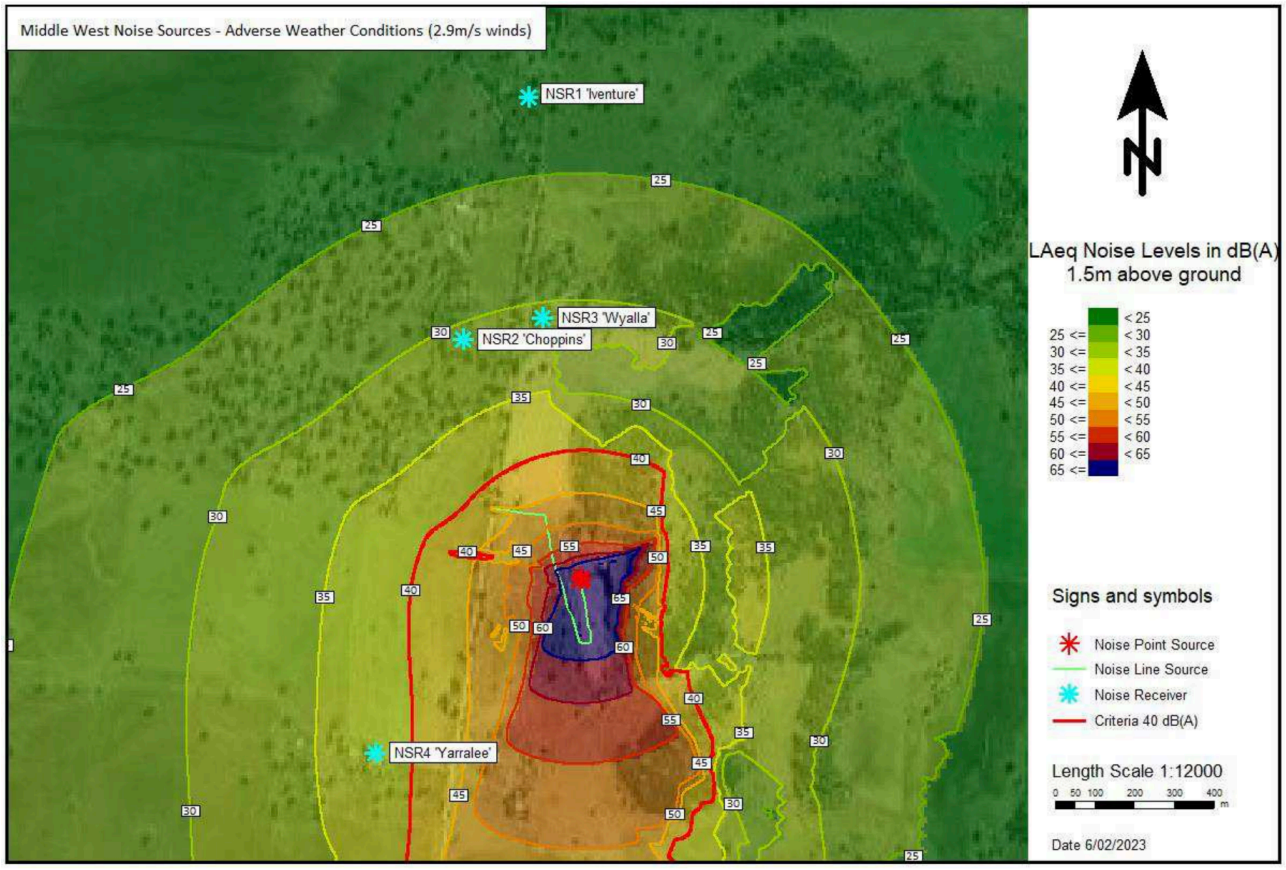


FIGURE 7.16: Noise impact contours 'worst case' scenario: middle of quarry operations

(Source: Vipac Appendix A Noise Contours— refer Appendix I)

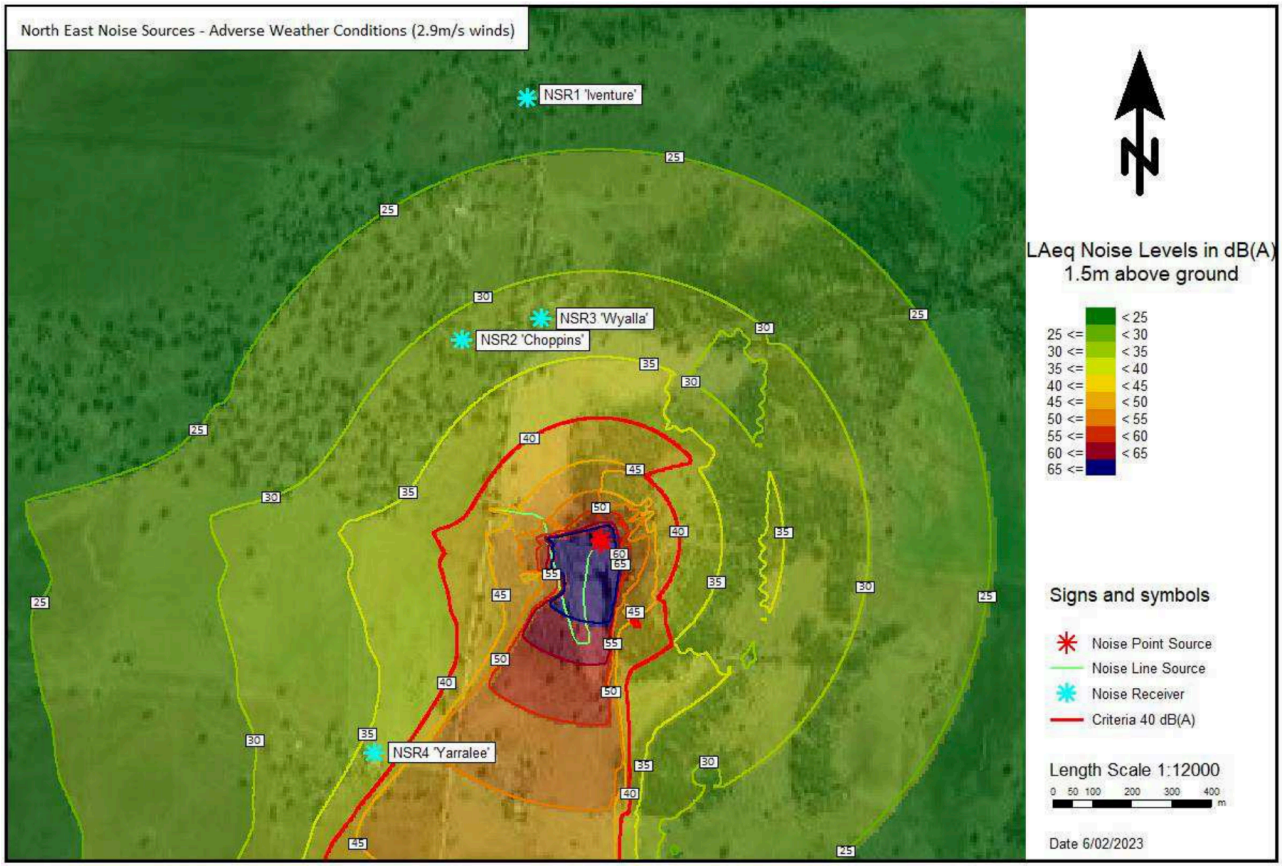


FIGURE 7.17: Noise impact contours 'worst case' scenario: northern quarry operations

(Source: Vipac Appendix A Noise Contours— refer Appendix I)

Traffic noise assessment

Modelling by Vipac conclude that traffic noise associated with the Project on existing haul routes are predicted to comply with relevant traffic noise criteria without the need for acoustic mitigation measures. Predicted road traffic noise was modelled at seven (7) different locations along the haul route from the quarry back to the kamilaroi Highway, to the south, and to the Oxley Highway, to the north. Refer to **Figure 7.18** and **Appendix I** for locations of the 7 modelled noise sensitive receptors (NSRs), identified by residence number (R1-R7).

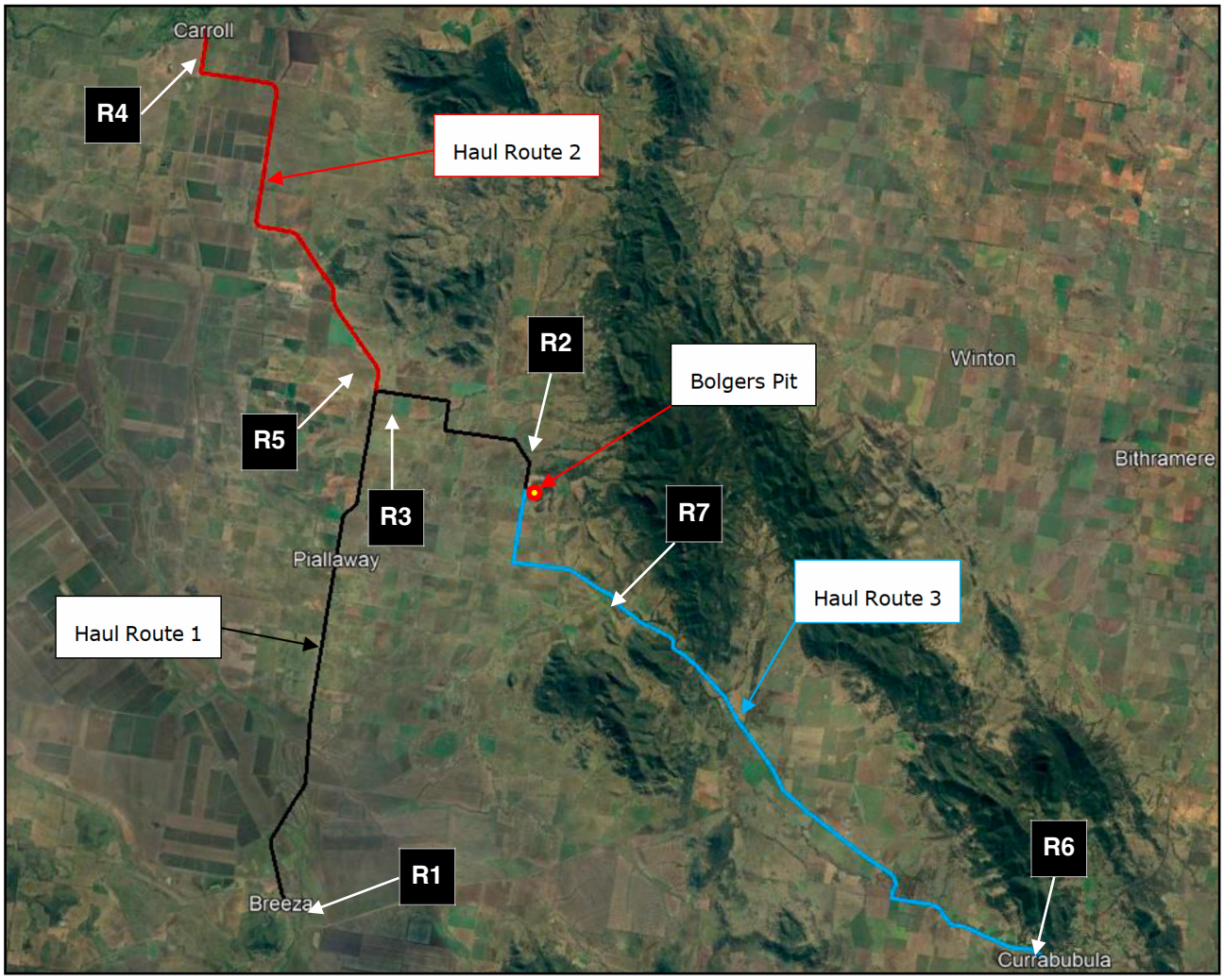


FIGURE 7.18: Traffic noise impact - noise sensitive receivers (approx. location)
(Source: Vipac Refer Appendix I)

The accompanying Table 7.17 presents the traffic noise predictions for existing traffic, alongside future predicted traffic volumes at the nearest residential receptors along the nominated quarry truck haul routes. Road traffic noise monitoring was not conducted as part of this traffic noise assessment, therefore validation of a traffic noise model used to predict noise levels at the nearest receivers cannot be undertaken, 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.

Note that because noise levels of the existing traffic are unknown, the results are intended to provide a conservative indication based on a 'worst-case' scenario of an additional 80 truck movements per day (i.e. laden and unladen).

Table 7.17: Cumulative 'Worst Case' Predicted Quarry Traffic Noise Levels

Noise Levels, $L_{Aeq,\ 15\ hour}$ dB(A)– façade corrected					
Receptor	**Predicted Existing Traffic**	**Predicted Future Traffic**	**Criteria**	**Predicted Compliance?**	*Maximum Difference* (Existing v Future) ≤2dB(A)*
R1	44.3	46.9	60	✓	*2.6*
R2	44.5	46.9		✓	*2.4*
R3	42.7	43.4		✓	*0.7*
R4	39.4	41.9		✓	*2.5*
R5	42.1	43.5		✓	*1.4*
R6	42.5	45.5		✓	*3*
R7	43.9	46.8		✓	*2.9*

*Only applicable for receptors where it is anticipated existing traffic noise levels already exceed the criteria.

(Source: Vipac Table 8-2)

As can be seen in Table 7.17 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 detailed in Table 7.17 (existing traffic + 12dB), 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 existing haul routes associated with the quarry are predicted to comply with the criteria without the need for acoustic mitigation measures.

Monitoring of quarry blasts

Previous monitoring of blasts undertaken at the quarry during 2019 and 2020 (refer **Appendix L**) show that compliant vibration and overpressure readings were recorded at the two nearest residences ('Mimbil', to the south, and 'Wyalla', to the north) for blasts with a Maximum Instantaneous Charge (MIC) of between 105kg to 200kg. [NOTE: "Maximum Instantaneous Charge (MIC)" means the total charge mass of explosives firing at one instant during a blast, a key measure in managing blasting vibration] These blast monitoring results are summarised in Table 7.18 below.

Table 7.18: EPA Quarry Blast Monitoring Results Bolgers Pit 2019-2020

Noise/Blasting standard	***Blast 30 January 2019 MIC 200kg***	***Blast 27 August 2019 MIC 105kg***	***Blast 23 July 2020 MIC 197kg***
Airblast Overpressure - 115dBL(Lin peak) - Maximum of 120dBL(Lin peak)	*Not triggered*	*Not triggered*	*Airblast overpressure 112.7dBL (Lin Peak) measured at 'Wyalla'. Not triggered at 'Mimbil'.*
Ground Vibration - 5mm/second - Maximum 10mm/ second	*Not triggered*	*Not triggered*	*Vibration of 1.05 mm/s measured at 'Wyalla'. Not triggered at 'Mimbil'.*

One likely reason for the low to nil readings measured for both vibration and overpressure from basting undertaken at the quarry may be as a result of the complex geology encountered here and discontinuous nature of rock types over a very small area within and adjacent to the Melville Range- refer to Section 2.4 of this EIS. On the basis of the above readings, an MIC of 200kg has been found to be within all relevant vibration and overpressure limits.

7.4 Section 4.15(1)(c): Suitability of the Site for Development

The suitability of the Bolgers Pit for ongoing quarrying 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]. The Project Site is suitable site for the continuation and modest expansion of quarrying for a number of reasons, including the following, as set out in the accompanying Table 7.18.

Table 7.18: Suitability of the Site for Proposed Quarry Development

Item	Suitability of quarry site
The extractive resource	*Availability of a known quarry resource, well suited to road making purposes, from the Project Site. The Project Site is in current use as a quarry.*
Neighbourhood amenity, agriculture	*Acceptable noise, visual, vibration and air quality impacts are predicted.* *The land proposed for quarrying and related activities is well set back from nearest residences not associated with the quarry with appropriate mitigation measures in place per Randall Pty Ltd v Leichhardt Council [2004] NSWLEC 277 (NSW Land and Environment Court Planning Principle relating to impact of intensification of a use) and Stockland Developments v Wollongong Council and others [2004] NSWLEC 470 (NSW Land and Environment Court Planning Principle relating to noise impacts).* *No conflicts with agriculture are likely.* *Dust caused by quarry truck traffic on gravelled sections of the haul route will be of nuisance value, however, this impact is considered acceptable given that the quarry will operated for an equivalent of 6 or more weeks per year at full production, with the quarry not operating for the remainder of any one year. Further, that dust impacts will continue throughout the year, however, such impacts will be caused by non-quarry traffic.*
Hazards	``
Operational requirements	*The Project Site provides more than sufficient land area for future extraction requirements. The area proposed to be quarried has a small environmental footprint relative to the size of the quarry resource to be won.* *A quarry management plan will be prepared following the issue of consent, based on the details contained in this EIS.*
Suitability of the access arrangements	*Suitable, safe access to local and regional road network via an existing internal quarry haul route which connects to Oakey Creek Road.*
Site features	*The Project Site is located at the base of a low hill surrounded by an alluvial plain. The quarry operation is sufficiently removed from all nearby watercourses. There is no risk of flooding, given the elevated nature of the Project Site and local runoff conditions. All runoff from within the quarry is to diverted to the on-site detention basins to be then re-used within the quarry. Stormwater bunds already in place to divert 'clean' water from upslope areas around the working quarry.*
Permissibility of the development	*Extractive industries are a permissible use on the Project Site.It has an appropriate zoning (RU1) which permits quarrying operations per 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).*
Ecological values	*The land the subject of the proposed quarry development is almost totally cleared and disturbed land, the proposed expansion includes clearing of a small area of native woodland (0.09 ha) amongst heavily disturbed lands / pasture areas that contain a mix of both native and exotic species.* *There are no significant environmental constraints to further quarrying development, nor is there any apparent need for ecological offsets. Unlikely impacts on threatened species, populations or ecological communities or their habitats, including Koalas. No groundwater interference likely.*
Heritage	*The land proposed for quarrying and related activities is not identified in the LEP as comprising land with heritage value, with no archaeological sites found during on-site surveys.*

It is relevant to note that the Project Site contains an existing working quarry, and is suitable for continued quarrying activities. The suitability of the site for the 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.

Based on the above, 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

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 proposed development will advance the objects of the EP&A Act which form part of the public interest, as confirmed by the assessment contained in Section 5.1.4 of this EIS.

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 summarised in the following:

- The Project would enable Gunnedah Council to continue to obtain much-needed quarry material from one of its most important borrow pits, the quarried resource to be then used to maintain and improve the roads infrastructure of the Gunnedah Shire. The Project would contribute to the economy locally and through employment generation and the provision of materials for road projects in the Shire.
- The proposed quarry development maximises access to and enables the fuller utilisation and economic recovery of a valuable local council quarry resource used for road making.
- The Project can be undertaken without any significant adverse impact on agriculture.
- The quarry has been operating to date and, save for the intermittent nuisance from dust generated by quarry trucks on gravelled local roads that form a part of the designated quarry truck haul routes, functions without significant adverse impact on surrounding neighbours. Blast monitoring finds that blasting has been undertaken in compliance with applicable vibration and overpressure standards.
- 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).
- The proposed quarry development is to be undertaken on a site that has already largely been cleared, with only a further 0.09ha of treed area yet to be cleared. As such, the biodiversity offsets scheme threshold pursuant to cl.7.2(4) of the *Biodiversity Conservation Regulation 2017* is not triggered and a biodiversity development assessment report (BDAR) is not required. Refer to **Appendix J** for further details in this regard.
- Only a small part of the site is subject to any bushfire hazard. Satisfactory mitigation measures are proposed. Refer to **Appendices M and O**.

- 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). Refer to Section 7.3.9 of the EIS and **Appendix P** for details.

- 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). Refer also to Section 7.1.2 of the EIS for details.

- Satisfactory environmental outcomes will ensue. It is proposed that the quarry will operate in accordance with a proposed quarry plan of management, the key components of which having been described in this EIS, 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).

- The proposed water management strategy has been designed to minimise impacts on downstream water quality and flows. The assessment by consulting engineers Martens & Associates (refer **Appendix K**) finds that there would be sufficient water available for the proposed operations under all climatic conditions modelled.

- 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 to Section 7.3.4 of the EIS and **Appendix G** for details.

- The proposed quarry pit does not intersect with groundwater and is not subject to flooding.

- The Project is predicted to result in satisfactory impacts in terms of air quality, with there being no predicted exceedances (either incrementally or cumulatively) at any privately-owned residence near the quarry. Refer to EIS Section 7.3.1 and **Appendix H** for details.

- The Project is predicted to result in satisfactory impacts in terms of noise, vibration and overpressure, with there being no predicted exceedances at any privately-owned residence near the quarry during operation of the quarry. Refer to EIS Section 7.3.12 and **Appendix I** for details.

- When completed, the quarry will be left in a healthy, rehabilitated and safe condition.

- The quarry haul route is to a standard and capacity that can accommodate traffic likely to be generated by the proposed quarry development. Refer to EIS Section 7.3.5 and **Appendix F** for details.

- Consideration has been given as to whether the subject site is contaminated as required by s.4.6 of *State Environmental Planning Policy (Resilience and Hazards) 2021*. Based on the site investigations by Ballpark Environmental (refer **Appendix E**) the Project Site is unlikely to contain any ground contamination and is suitable for the proposed use.

- The Project Site is zoned RU1 under the provisions of the *Gunnedah Local Environmental Plan 2012* and development for the purposes of 'extractive industries' are permissible with development consent in the zone. Refer to Section 5.2 of this EIS for further details.

The impact assessment contained in this Environmental Impact Statement (EIS) demonstrates that the project complies with relevant planning and environmental legislation and meets many key environmental and quarry operational requirements.

8. CONCLUSION

The SEARs for this quarry project require a conclusion to be included in the EIS report, addressing the following:

"a conclusion justifying why the development should be approved, taking into consideration:

- *alternatives;*
- *- the suitability of the site;*
- *- the biophysical, economic and social impacts of the project, having regard to the principles of ecologically sustainable development; and*
- *- whether the project is consistent with the objects of the Environmental Planning and Assessment Act 1979;."*

8.1 Alternatives

The proposed quarry development is considered to be the best project option having regard for for various planning and environmental considerations, including project alternatives as follows:

- Reliance on other Council borrow pits located elsewhere in the Gunnedah Shire. Firstly, Bolgers Pit is one of the large more strategically important Council borrow pits in theGunnedah Shire. Importantly, it is the only Council borrow pits that has the capacity to expand and to gain access to any significant sized quarry resource. Lastly, other local council borrow pits are less suited to ongoing quarrying, with two other pits about to cease in the near future.
- Undertake quarrying from within the existing cleared/disturbed area around the quarry. This option has the benefit of minimising ecological impacts as well as visual impacts. The continuation and modest expansion of Bolgers Pit proposed will not increase the current disturbance area.
- Undertaking quarrying to a maximum depth of RL 320m AHD means that the likelihood of encountering groundwater is remote.

8.2 Suitability of the Site

The location of a quarry is determined by the presence of the resource of a quality to warrant ongoing extraction. The quarry resource found at Bolgers Pit is well suited to Council's intended use a a road base, as confirmed by the petrographic analysis (refer **Appendix C**). Moreover, the Project Site is in current use as a quarry, leased by Gunnedah Council from the owner.

The quarry is suitable for the proposed development (refer Section 7.4 for further details) and has been designed having regard for known site constraints and opportunities. In addition to the above, the site is considered to be well suited to the proposed quarry development having regard for the following:

- The site is flood-free land of low agricultural worth. No significant farmland will be lost as a result of the quarry expansion proposed.
- The site is free of any contamination potential.
- Almost all of the Project Site is cleared/disturbed area of minimal ecological value.
- The Project Site has suitable and safe access to the local road system that has been designed with ample capacity and conditions suited for the quarry truck traffic proposed.
- The site of the quarry is at the base of a low hill system of Low visual prominence and visual sensitivity.
- The likelihood of encountering groundwater is remote.
- No heritage constraints.

Refer to EIS Section 7.4 for further details.

▪ 8.3 Biophysical, Economic and Social Impacts and ESD

The SEARs require that the EIS include 'the reasons why the development should be approved, having regard to the biophysical, economic and social impacts of the development, including the principles of ecologically sustainable development'. The assessment detailed in 7.1.2 of this EIS finds that the Project is consistent with the principles of ecologically sustainable development, summarised below:

- **The precautionary principle:** This EIS concludes that the 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, its likely impacts, or relationship to adjoining development.

- **The Integration principle:** Quarry management measures appropriate to the size and scale of quarry operations proposed have been developed to ensure that acceptable impacts will ensue in both the short-term and the long-terms. The local council roads projects that the quarry development will serve will benefit all members of the Gunnedah Shire community, as well as future generations. In the longer term the quarry will be progressively rehabilitated and returned to agricultural use.

- **Intergenerational Equity principle:** The proposed quarry development , which involves extending the life of the quarry, will provide benefits for future generations by providing a secure a significant quarry resource close to local council road making projects.

- **Biological Diversity principle:** The land the subject of the Project is mainly cleared or disturbed 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 development.

- **Valuation and Pricing of Environmental Resources principle:** Satisfied in that the Project seeks to fully utilise a known quarry resource, relied upon by Gunnedah Council for road making purposes.

▪ 8.4 Objects of the EP&A Act

The assessment detailed in 7.1.2 of this EIS finds that the Project is consistent with the relevant objects of the *Environmental Planning and Assessment Act 1979* (EP&A Act) at s.1.3 and in particular:

- Enables Gunnedah Council to continue to have access to a strategically important borrow pit containing quarry material suited to local road making purposes (s.1.3(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*".)

- Satisfies the principles of ecologically sustainable development- refer to Sections 7.1.2 and 8.3 of this EIS for details (s.1.3(b) "*to facilitate ecologically sustainable development by integrating relevant economic, environmental and social considerations in decision-making about environmental planning and assessment*").

- Enables the orderly and economic development an established local council quarry, with quarrying in the main confined to existing cleared or disturbed areas on the Project Site. (s.1.3(c) "*to promote the orderly and economic use and development of land*".)

- No Aboriginal sites or relics were found during site surveys involving the local Aboriginal community, with the potential for in situ archaeological deposits considered low. (s.1.3(f) "*to promote the sustainable management of built and cultural heritage (including Aboriginal cultural heritage*)".)

- Once approved, the monitoring of the environmental performance of the quarry project will be the shared responsibility of both Gunnedah 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*) (s.1.3(h) "*to promote the sharing of the responsibility for environmental planning and assessment between the different levels of government in the State*".)

- The views of the local community have been sought as a part of the EIS preparation process. Further community engagement will be sought. (s.1.3(j "*to provide increased opportunity for community participation in environmental planning and assessment*)".)

8.5 Conclusions

On the basis of the detailed assessment undertaken, it is concluded that the Project has town planning merit and can be approved subject to appropriate conditions.

This also includes the imposition of a consent condition requiring the preparation of a site-specific quarry management plan for Bolgers Pit. This has been the approach adopted by Gunnedah Shire Council and the planning panel in the case of other quarry developments approvals in the Gunnedah Shire. In so doing, this will ensure that any quarry management plan is ultimately consistent with the final form of the environmental protection licence (EPL), issued by the EPA, that will enable the expanded quarry operation to proceed. It is sensible to finalise the quarry management plan after receiving those details as they often go to the details regarding the ultimate management of quarry operations, including noise, vibration and overpressure, dust, as well as soil and water management.

At the end of the day, the evidence presented in this EIS document is that the site is presently extensively cleared and modified, with no significant adverse planning, environmental, amenity or other impacts likely to arise as a result of the proposed quarry development. In short, the proposed continuation and expansion of the existing quarry at Bolgers Pit is modest in nature and is an acceptable form of development.

Bolgers Pit is one of the most strategically important borrow pits that Gunnedah Shire Council relies upon for the supply of known, quality road base material for local council road making purposes. In terms of its benefits to the wider Shire0wide community, its future availability is important for the future supply of road making material required by Council to repair, maintain and to upgrade its extensive roads network. That the borrow pit is used only on a campaign basis for limited times of the year does not diminish its importance as a source of quarry material. This proposed intermittent use of the quarry site means that its impacts, in particular dust generated by quarry truck traffic on unsealed local council roads, are confined to short periods of time only in any one year.

For the reasons as set down in this EIS, the determining authority can be satisfied that the proposed quarry development is acceptable on its merits after assessment under the EP&A Act.

9. SELECT REFERENCES

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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.*
ACM	*Asbestos containing material.*
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.*
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.*
BCA	*Building Code of Australia.*
Bench (in a quarry)	*A ledge constructed in a batter or natural slope within a quarry. A step in the face of a quarry.*
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 2000 and the Planning and Infrastructure Planning Circular PS 10-008. 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.*
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 a 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 act of contaminating, or of making something impure or unsuitable by contact with something unclean, bad, etc.*
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	*Gunnedah 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.*
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.*

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	*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 2000 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. It has the same meaning it has in s.6(2) of the Protection of the Environment Administration Act 1991 - as also defined in clause 7(4) of Schedule 2 of the Environmental Planning and Assessment Regulation 2000. 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).*

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 POEO 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.*
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.*
ha	*hectare.*
Integrated Development	*Development which requires development consent and one or more of the approvals listed in Section 4.46 of the Environmental Planning and Assessment Act 1979.*
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 projects beyond.*
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).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.*
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 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).*
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 charge.*
Modification	*A change to a project that is implemented by modifying an existing development consent. An application must be made under 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.*
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.*
(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.*
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.*
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).*
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.*
Secretary/Planning Secretary	*The Secretary of the NSW Department of Planning and Environment.*
Shot rock	*Rock won from blasting at a quarry*
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.*
Watercourse	*Means any river, creek, stream or chain of ponds, whether artificially modified or not, in which water usually flows, either continuously or intermittently, in a defined bed or channel, but does not include a waterbody (artificial).*
Weathered Rock	*Rock affected to any degree by the processes of chemical or physical weathering.*
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

Appendix A

Secretary's Environmental Assessment Requirements (SEARs)

Appendix B

NSW Government Property Report

Appendix C

Petrographic Report

Appendix D

Melville Soil Landscape

Appendix E

Preliminary Site Investigations by Ballpark Environmental

Appendix F

Roads and traffic assessment by Streetwise

Appendix G

Due Diligence Aboriginal Report by Niche Environment and Heritage

Appendix H

Air quality impact assessment by Vipac

Appendix I

Noise impact assessment by Vipac

Appendix J

Ecological assessment by Bower Ecology

Appendix K

Water balance by Martens & Associates, consulting engineers

Appendix L

Blast records

Appendix M

Draft bush fire emergency and evacuation plan by Stewart Surveys

Appendix N

Consultation documents

Appendix O

Bush fire assessment by Stewart Surveys

Appendix P

Visual assessment by Stewart Surveys