Glenella Quarry Proposed Production Increase

483 Battery Road, Cowra NSW 2794

Scoping Report

State Significant Development

Report Number: ISA-268-20-21

Prepared for Glenella Quarry Pty Ltd

Date Report Issued: 1st June 2021

Version: Revision 3

InSitu Advisory

ACKNOWLEDGEMENT

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

Glenella Quarry is a certified indigenous business with Supply Nation as well as NSW Indigenous Chamber of Commerce (NSWICC) Assured Member and FACCI Affiliate.

Scoping Report – State Significant Development

Glenella Quarry Production Increase – JUNE 2021

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Project Details	
Project Name	Glenella Quarry Production Increase
Site Location	483 Battery Road, Cowra NSW 2794
Lot Details The proposed production increase area (within the existing development approval (DA)) covers approximately 64Ha, 29Ha of which is located within the Boorowa LGA with the remaining 35Ha located within the Cowra LGA. See Figure 2 for proposed production increase/approved DA extraction boundary.	**DA Lots inside proposed production increase/extraction boundary, within Boorowa LGA** L106/DP752935, L1 & 2 DP795553 **DA Lots inside proposed production increase/extraction boundary, within Cowra LGA** L35/DP752935 L44/DP752935 **Ownership outside the proposed production increase/extraction boundary, but inside the approved DA (see Figure 2)** L3/DP795553; L27/DP754584; L28/DP754584; L52/DP752935; L63/754584; L123/DP754584.
Ownership	Freehold land owned by the proponent.
Local Government Area	Cowra Shire Council and Hilltops Council.
Roads & Maritime Services (RMS) Locale	Central West & Orana

Report Preparation

We have prepared this report based on the best information available at the time. We have taken into consideration the fullest extent possible, all actual and potential environmental impacts of the proposed project.

Name	Alan Dyer	**Signature**	
Position	Director	**Date**	1st June 2021

Document Control

Reference	Status	Date	Prepared	Reviewed	Authorised
ISA-268-20-21	Revision 3	1st June 2021	Alan Dyer	Darren Herdman / Patrick Fitzsimmons	Alan Dyer
ISA-268-20-21	Revision 2	27th April 2021	Alan Dyer	Darren Herdman / Patrick Fitzsimmons	Alan Dyer
ISA-268-20-21	Revision 1	26th January 2021	Alan Dyer	Darren Herdman / Patrick Fitzsimmons	Alan Dyer
ISA-268-20-21	Revision 0	11th January 2021	Alan Dyer	Darren Herdman / Patrick Fitzsimmons	Alan Dyer

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1 Introduction

1.1 Project Overview

Glenella Quarry is an operational quarry/mine that extracts high quality basalt, weathered basalt, clay, and gravel (pebbles and sand) and some gold, extracting up to the consented limit of 200,000 t/pa to the local and regional construction and landscaping markets. Glenella Quarry and its associated resource is located within the larger "Glenella" Freehold owned property which extends over an area of approximately 700 Ha of land (see **Figure 1**).

Glenella Quarry seeks both Local and State approval for an **increase in overall production from 200,000 tonnes to 500,000 tonnes per annum inside their existing development consent boundary** within their current Freehold property**.** This increase will assist with meeting the ongoing demand for various construction and decorative aggregate materials in both the local and regional market.

Glenella Quarry Pty Ltd are not proposing to alter the operational profile of the quarry when seeking approval to increase annual production limits to 500,000 tonnes.

The development is permitted in accordance with Development Consent 73/2007 issued by Cowra Shire Council, and Development Consent 117/2006 issued by Boorowa Council (now Hilltops Shire Council). The operation is undertaken in accordance with licenses detailed as follows:

The project is classified as State significant development (SSD) under Part 4, Division 4.1 of the NSW Environmental Planning Assessment Act 1979 (EP&A Act). A development application (DA) for SSD must be accompanied by an environmental impact statement (EIS). The purpose of this scoping report is to request, and inform the content of, the Secretary's Environmental Assessment Requirements (SEARs). The SEARs will identify the requirements and level of environmental assessment required to accompany the DA and associated EIS.

1.2 Proponent Details

Glenella Quarry Pty Ltd is the proponent for the project with the relevant details provided below:

Glenella Quarry Pty Limited

ABN: 75 117 019 155

483 Battery Road

Cowra NSW 2794

Michael Howe (Director-General Manager)

(02) 63 45 4253 or 0488 138 880

Michael@Glenellaquarry.com

Glenella Quarry Pty Ltd was formed in late 2005 to manage the operations of the Glenella Quarry. The Company's directors are Mr Michael Scott Howe and Ms Amy Vidmar Howe.

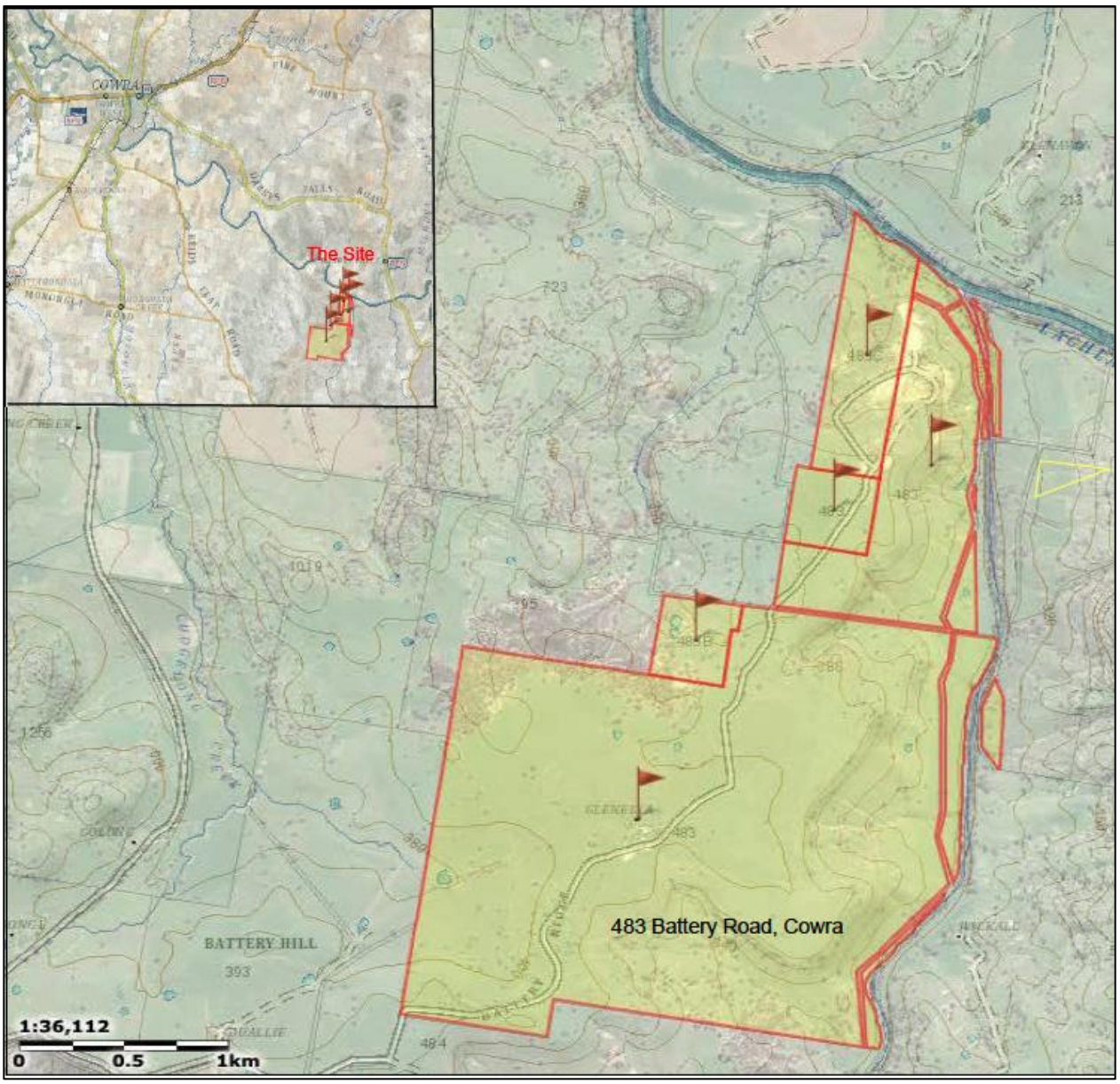
Since Glenella Quarry was purchased in December 2005, the Company has focussed on operating the Glenella Quarry in an environmentally responsible manner and establishing positive links with the local community, particularly those neighbours fronting onto both Battery Road and Reids Flat Road.

Glenella Quarry is a certified indigenous business with Supply Nation as well as NSW Indigenous Chamber of Commerce (NSWICC) Assured Member and FACCI Affiliate.

The Directors of Glenella Quarry are committed to continue the development of Glenella Quarry in a manner that achieves the responsible outcomes predicted in this document. They recognise that the recovery, processing, loading and transportation of the range of products produced should not

be achieved at the detriment of the local community. Rather, the Directors intend to continue as a responsible corporate citizen supporting both Hilltops and Cowra district communities.

Figure 1 Site Location and Lot Boundary Plan.



1.3 Purpose of the Scoping Report

The purpose of this Scoping Report is to provide background detail to the project application and highlight likely environmental, socio-economic, and commercial considerations arising out of the proposed annual production increase. This report will be submitted, alongside the required application forms and application fee, to the NSW Department of Planning, Infrastructure and Environment (DPIE) in support of an application for the SEARs.

1.4 Structure of Report

This scoping report has been prepared in accordance with DPIE's Preparing a Scoping Report – State Significant Development Guide - Exhibition Draft, 2021 (the scoping guideline).

In accordance with the scoping guideline, this report contains the following information:

- Chapter 1 Introduction – provides a project overview, proponent details and details the report structure and content;
- Chapter 2 Strategic context – provides a high level overview of the key strategic issues, justification for the project, key features of the site and surrounds, key risks and hazards, cumulative impacts etc;
- Chapter 3 Project description – provides an overview of the proposed project including layout, justification, timing, and consideration of alternatives;
- Chapter 4 Statutory context – details the relevant legislative framework and key statutory requirements for the project;
- Chapter 5 Engagement – details the stakeholder engagement undertaken during the EIS scoping phase and proposed engagement during the EIS preparation phase;
- Chapter 6 Proposed Assessment of Impacts – identifies the relevant environmental issues for the project that require assessment in the EIS, both at a project and cumulative impact level;

This scoping report has been prepared by InSitu Advisory Pty Limited (InSitu Advisory) on behalf of Glenella Quarry Pty Ltd. Specifically, the report was prepared by Alan Dyer (B.Sc. (Hons), M.Sc., C.Env, MAusIMM, MIQA, FGS, MCIWM), and reviewed by Darren Herdman (B.Sc. (Hons), FRICS, AAPI (CPV), FIQA, MAusIMM (CP)) and Patrick Fitzsimmons (Vision Town Planning).

1.5 Quarrying and Regulatory History at Glenella

In 1984, Glenella Aggregates Pty Ltd was issued with DA 4/84 and DA 23/84 by Boorowa and Cowra Councils, respectively. The development approvals permitted the extraction of gravel over part of the Glenella property. The operation conducted by Glenella Aggregates focussed primarily on the extraction and sale of white quartz pebble and limited quantities of basalt with production limited to approximately 10,000 tonnes per annum.

In December 2005, Michael Howe, acquired the Glenella property. Glenella Quarry Pty Ltd, by way of lease agreement, commenced quarrying operations on 22nd February 2006. In July 2006, the company took total control over the quarry and associated activity.

In August 2006, Glenella Quarry was granted an Exploration Licence (EL6616) over the subject properties for Group 1 and 2 minerals which include gold, clay/shale, kaolin, ores of silicon and structural clay.

In April 2007, R W Corkery & Co. Pty Ltd submitted a DA accompanied by an Environmental Impact Statement (EIS) on behalf of Glenella Quarry Pty Ltd to both Boorowa and Cowra Councils to obtain development consent to increase production to 200,000 tonnes per annum. Development consent was issued by both Councils in mid-2007 allowing for the proposed production increase over a 40-year period.

In 2010, favourable exploration under EL6616 resulted in the lodging of a Mining Lease Application (MLA336) by Geos Mining Pty Ltd on behalf of Glenella Quarry Pty Ltd over a 92.8 Ha area (within the Glenella property boundary) which includes the area covered by the current DA's.

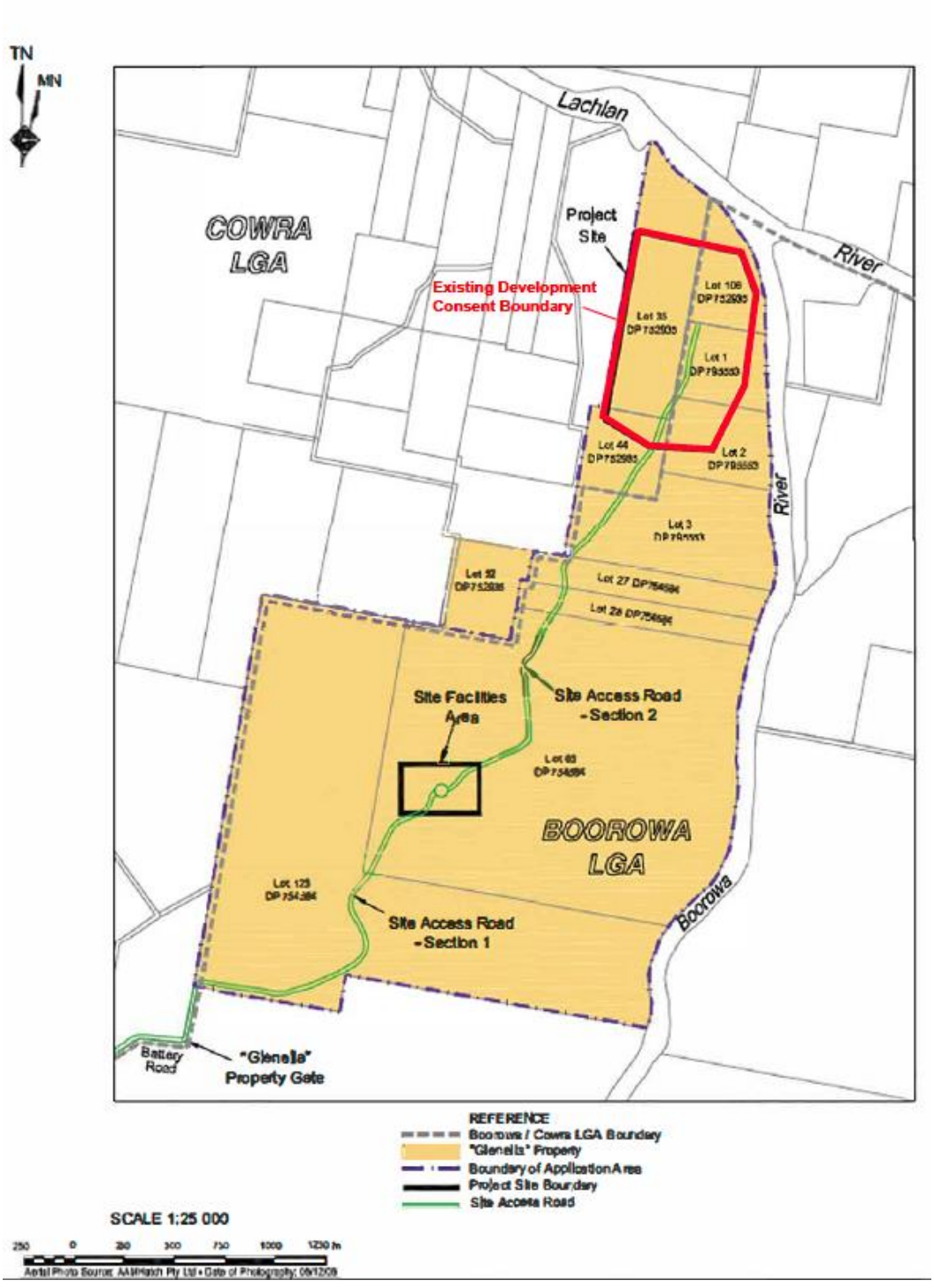
In 2013, a Mining Lease (ML1692) was granted that enables Glenella Quarry to recover (by open cut methods) and sell gold, ores of silicon and clay by-products from the gravel washing operation over a 21-year lease term. The ML covers gold, ores of silicon, and clays (kaolin, structural clay, and clay/shale) which extends over a large area, including the current permitted Extractive Industry area.

1.6 Review of Feasible Alternatives

Glenella Quarry, under its existing development consents, is permitted to extract resource within the permitted boundary (see **Figure 2**).

Extensive resource exists at the site, with estimates based on existing drilling, topography and geological mapping indicating a basalt tonnage of over 25Mt, and a pebble and sand tonnage of over 2Mt, outside the existing known resource.

Figure 2 Extent of Existing Development Consent



Quarrying operations commenced at the northern end of the consented boundary, mining basalt, sand, silica pebble and clay. Resource was known to exist to the south of the commencement area, through previous borehole investigations.

Glenella Quarry embarked on a detailed assessment of resource across the property to ascertain the depth, grade, and lateral extent of the various products by drilling that commenced in January 2021. The drilling and subsequent geological modelling helped understand with greater confidence the basalt, sand, pebble beds and clay thicknesses across the property. The post-drilling volumetric assessment has proved that circa. 15MT of resource tonnage sits currently within the existing approved development consent boundary. The 15MT is suitable to extract 500,000 t/pa for a targeted 30 year project life.

In December 2020, Geos Mining reviewed the data on the resource and potential resource within the Glenella property. The historic resource of quartz pebble and sand (based on work done in 1999) is given as follows:

- Measured Resources 1,6MT with an estimated 42% pebble content (660,000 T);
- Indicated Resource 1,45MT with an estimated 44% pebble content (650,000 T);
- Measured plus Indicated Resource 3MT with an estimated 43% pebble content (1.3MT);
- Inferred Resource 580,000T with an estimated 24% pebble content (140,000 T).

Geos Mining state that based on the existing drilling, the topography and the geological mapping, there is a basalt tonnage of over 80Mt, and a pebble plus sand tonnage of over 2Mt, across the site. This tonnage would be classed as an exploration target under the JORC code (2012).

With the required volume of resource proven to be inside the existing development consent boundary, no additional stripping and clearing was required outside the consented boundary.

Various studies, including heritage and biodiversity have been undertaken on the existing development consented extraction boundary by the previous EIS undertaken by Corkery 2007. Additional desktop heritage and biodiversity assessments have been undertaken by OzArk EHM Pty Ltd to compare the previous works undertaken to updated regulation and legislation. Their work is summarised in Section 6.4, with their reports presented within **Appendix D and E.**

It is anticipated that further design refinement will be undertaken during the environmental assessment process in consideration of other constraints that may be identified through technical assessments and ongoing stakeholder engagement.

1.6.1 Alternatives not Proposed

Alternatives to the proposed direction of mining were considered but excluded from further consideration, as follows:

- Further working of the quarry is constrained on the northern boundary by the presence of the Lachlan River and diminishing pebble resource.
- Further working of the quarry is constrained on the eastern boundary by the Boorowa River.
- Further working of the quarry is constrained on the western boundary by a neighbouring property boundary (see **Figure 2**).

Expansion to the south, further into the existing development consented area, and into proven resource was the only viable option.

1.7 Existing and Approved Development

The existing operational quarry operates under the consents and approvals detailed within **Table 1**.

Table 1 Existing Consents and Approvals

Consent / Approval	Issuing Body	Reference	Grant Date	Expiry Date	Specifics	Change
Development Consent	Cowra Shire Council	73/2007	27/08/2007	26/08/2047	200,000 t/pa Total Extraction 5Mt	Increase to 500,000 t/pa. Total Extractable Resource 15 Mt
Development Consent	Boorowa Shire Council	117/06	25/09/2007	24/09/2047	200,000 t/pa Total Extraction 5Mt	Increase to 500,000 t/pa. Total Extractable Resource 15 Mt
Environment Protection Licence (EPL)	NSW EPA	20632	28/07/2015	N/A	100,000-500,00 t/pa	No change
Mining Lease	NSW DPIE	ML 1692	23/09/2013	22/09/2034	Minerals - (G1) Gold, (G2) Ores of Silica & (G5) Clay Minerals	Subject to an application seeking an addition of minerals MLA currently under assessment by NSW Mining, Exploration & Geoscience (MEG)
Exploration Licence	NSW DPIE	EL 6616	23/06/2006	22/08/2021	Group 1 & 2 minerals	No change
Mining Operation Plan	R.W Corkery Pty Ltd	Amendment 3	Oct. 2019	Dec 2022	As required by Mining Licence	No change

Glenella Quarry straddles the Local Government Area (LGA) boundaries of Cowra Shire Council and Hilltops Council. Glenella Quarry Pty Ltd are not proposing to alter the operational profile of the quarry when seeking approval to increase annual production limits to 500,000 t/pa.

It is acknowledged that the existing development consents will be surrendered and superseded by any new SSD consent.

2 Strategic Context

The Central West and Orana Regional Plan 2036 (DPE 2017b) is a 20-year blueprint for the future of the Central West and Orana region. https://www.planning.nsw.gov.au/-/media/Files/DPE/Plans-and-policies/central-west-and-orana-regional-plan-2017-06.pdf?la=en

The plan's vision is to create a leading diverse regional economy in NSW, with a vibrant network of centres leveraging the opportunities of being at the heart of NSW. This is to be delivered through four goals:

1. the most diverse regional economy in NSW;

2. a stronger, healthier environment and diverse heritage;

3. quality freight, transport, and infrastructure networks; and

4. dynamic, vibrant, and healthy communities.

The site sits within the southern area of the Central West region.

In support of the achievement of these goals, the Glenella Quarry project will supply locally sourced and financially competitive quarry products that will be required for forecast growth and development across the region. Being an established quarry site, with a long history of operation within the community, the quarry is consistent with existing surrounding land uses and its proposed production increase avoids potential land use conflicts and amenity impacts associated with establishment of new quarry sites to respond to local market demands. The quarry is ideally located in proximity to Cowra, a major centre within the region, with forecast growth and ongoing demand for materials for Council and other planned projects, thereby minimising haulage distances and costs for materials for these local projects. The Glenella Quarry site is well serviced by heavy haulage routes to allow export to state and inter-state infrastructure and construction projects.

3 Project Particulars

3.1 Project Location

Glenella Quarry is located in the Central West region of New South Wales, approximately 18 km southeast of the township of Cowra, NSW (see **Figure 1**). The permitted Glenella Quarry extractive industry operation, which is comprised within the larger "Glenella" property, straddles the boundaries of Cowra Shire Council and Hilltops Council LGA's (see **Figure 2**).

Glenella Quarry is situated at the north western end of Battery Road, a 4km long, fully sealed road and links the site to Reids Flat Road. Reids Flat Road in turn provides access to Morongla Road, which links to Lachlan Valley Way, a sealed public highway which provides access to the rural town of Cowra 18.9km north-north west of the Battery Road / Reids Flat Road intersection.

3.2 Proposed Production Increase

Glenella Quarry Pty Ltd has experienced significant growth year-on-year since the company purchased the facility in 2005. Currently the annual rate of production is reaching the ceiling limit of the current Development Approval DA73/2007 of 200,000 tonnes per annum.

Glenella Quarry seeks both Local and State approval for an increase in overall production from 200,000 tonnes to 500,000 tonnes per annum inside their existing development consent boundary within their current Freehold property. Keys aspects as follows:

- Overall production from 200,000 tonnes to 500,000 tonnes per annum;
- Total extractable resource of c.15Mt;
- 30-year operational life; and
- Operations to remain within the existing development consent boundary (see **Figure 2**).

The proposed increase in production will allow production to meet the local, regional (specifically Sydney metro) and interstate demand for the high-quality quarried/mined products. In addition, the increases in production will also assist with meeting the substantial rise in demand for construction and high- quality landscaping products in NSW and beyond. Additionally, the increase would allow Glenella to offer large scale supply to large regional projects such as the Wyangala Dam wall raising, Rye Park windfarm and the potential of reestablishment works on the Blayney-Demondrille rail line in the coming years.

Glenella Quarry Pty Ltd are not proposing to alter the operational profile of the quarry when seeking approval to increase annual production limits to 500,000 t/pa.

Importantly, the existing quarry development is well established and is currently operating to the highest environmental standards. The proposal to increase production levels from the current limit of 200,000 tonnes per annum to 500,000 tonnes per annum will be designed in such a way to manage various relevant environmental issues during the quarrying, processing and transportation of the basalt, quartz pebble, sand, and clay products. This will ensure that the proposed development will have minimal adverse impact on the surrounding environment and local community.

3.3 Current Quarrying Activity

Operations consist of drilling and blasting to remove the hard basalt cap, followed by excavation, transport and separate stockpiling of basalt, weathered basalt, clay, and gravel (pebbles and sand). Overburden overlying the basalt is minimal and initially removed by excavator and haul trucks.

The basalt resource is removed through drilling and blasting on a campaign basis that yields between 30,000 and 60,000 tonnes per blast.

The underlying clay horizon (in the current extraction area) has an average depth of 8m-10m and is extracted in benches that allow for access to the underlying quartz pebble/sand resource. When extracted, the clay material is loaded into dump trucks where it is transported and stockpiled in the product stockpile and load out area. No processing of the clay is undertaken on site.

The clay is of strategic importance for use in the Sydney brick market. PGH Bricks and Pavers Pty Ltd (PGH) have provided a letter (See **Appendix B**) to Glenella Quarry confirming the previous and continual use of clay supplied from Glenella Quarry. PGH state '*we have used the Glenella clay as a raw material in our Sydney brick plants over the last 15 years. We confirm that on average approximately 20,000 tonnes per annum of this clay is used as a raw material within our Sydney brick and paver business and is of strategic importance as a brickmaking raw material, as it is used extensively for blending to maintain colour consistency within our product range. We confirm that cost effective and long-term supply of clay from the Glenella Cowra quarry is of importance to ensure that PGH Bricks & Pavers full product range can be maintained to service our brick and paver markets within NSW and along the Australian eastern coast*'.

The quartz pebble/sand horizon, beneath the clay horizon has an average depth of between 3 and 8 metres. The recovered gravel is washed through a custom designed plant incorporating a log washer and screens to clean and separate the various grades of pebble. The fines (sand, silt, and clay) pass through a sand recovery unit that effectively removes the silt and clay to settling ponds, leaving a clean end product. The volume of silt and clay residue is minor (less than 10% of the feed). Gold has the potential to be recovered during the washing process.

The mining rate is adjusted to maintain product stockpiles in line with customer demand. The wash plant capacity is 100t/hr, adequate for current and projected demand, but can be increased if required.

Water for operations is provided by a 20 Megalitre water licence and from the associated network of water management structures and is adequate for operations with recycling from settlement dams.

Waste (mixed materials, unsalable products, and dried settling pond tailings) is backfilled behind the mining operation and will be landscaped, covered with topsoil, and revegetated.

Product is transported from the site by subcontractor haulers. Facilities on the site include an office and an electronic calibrated weighbridge which is intended to remain to accommodate the proposed production increase.

Figure 3 shows the operational layout of the quarry.

Figure 3 Quarry and Infrastructure Layout Plan

3.4 Project Rationale

The proposed production increase has the following key advantages:

- The quarry has been in operation for approximately 36 years, during which time it has operated responsibly under the current, and previous consents, with minimal community complaints over this period.
- Current, permitted operating quarry with maximum production of 200,000 tonnes per annum (under the current consent), 18km southeast of Cowra;
- Permitted resources of 1.95 million tonnes of quartz pebble and sand, and 2 million tonnes of basalt and clay suitable for multiple construction materials purposes;
- There is a supply shortage of natural sand in NSW, and Sydney in particular, that is putting upwards pressure on sand prices;
- The quarry is well serviced by roads, and although rail is currently not available from Cowra, current engineering studies are underway for the Blayney/Demondrille line that may lead to rail freight options be available in the future;
- Remote location with limited sensitive receptors;
- Current sales approaching consented limits and growing to meet product demands;
- Silica pebbles are of exceptionally high quality, being 99.5 – 99.9% pure SiO2 (average 99.6 – 99.7% SiO2). Silica suitable for silicon manufacture and silica flour;
- Pebbles have been demonstrated to have good thermal and thermomechanical properties, hence would make a high quality feedstock for silicon metal production;
- The clay is used for ceramic tiles and manufacturing bricks;
- Gold is a by-product of the washing process but with high gold prices, the ore is a valuable commodity;
- Mining Lease 1692 is in place and current;
- Existing modern, efficient mobile plant including washing plant;
- Smelter test indicated energy efficiencies from use of Glenella pebble as feedstock;
- NSW has low energy prices, is a stable jurisdiction, and previous plans for a silicon metal smelter at Lithgow can be used as the basis for a new proposal, significantly reducing risk and time to develop a new smelter project;
- Future potential for rail connectivity to provide high quality quarry products to wider State, interstate, and international markets; and
- Large regional State Significant projects are located in close proximity to the quarry/mine site over the next 1-5 years that may benefit from close by construction materials. These projects include **Wyangala Dam** wall raising and the **Rye Park** wind farm project.
- Continued use of the established site, with the proposed production increase avoids the need for development of an alternate greenfield site.

The proposed expansion will be assessed under the NSW legislative framework, requiring consideration of contemporary impact assessment methodologies, criteria, and ongoing environmental management requirements. This will provide opportunity for stakeholder involvement in the assessment process, and community confidence in the rigour applied in consideration of potential impacts and adopted mitigation and management measures.

3.5 Capital Investment Value

Glenella Quarry Pty Ltd estimate that the capital investment value associated with the proposed production increase will be in the order of $1,000,000.

3.6 Hours of Operation

The proposed hours of operation will vary depending on the type of activity undertaken and the contract needing to be met. Currently the quarry operates in accordance with Section L5.1 of Environment Protection Licence (EPL) 20632, as detailed within **Table 2**.

Table 2 Existing and Proposed Operational Hours

Activity	Monday to Friday	Saturday	Sunday	Requested Amendment
Extraction Activities	7.00am to 5.00pm	7.00am to 3.00pm	Not Permitted	None
Blasting	9.00am to 5.00pm	Not Permitted	Not Permitted	None
Crushing	7.00am to 6.00pm	7.00am to 3.00pm	Not Permitted	None
Loading	7.00am to 10.00pm	7.00am to 4.00pm	Not Permitted	None
Maintenance	6.00am to 6.00pm	7.00am to 6.00pm	8.00am to 6.00pm	New (TBD)

3.7 Employment

Currently the quarry employs eight (8) full time employees and a range of local contractors on the site (fuel, machinery, industrial supply, blasting, waste, and other support services). In addition, the site provides employment for a range of local, regional, and interstate heavy vehicle operators delivering various quarry products from Glenella Quarry.

At the proposed maximum rate of production, it is anticipated that the quarry will employ sixteen (16) full time employees. Additionally, support services as outlined above will be substantially increased as the operation grows and reaches full production; thus, leading to a solid “ripple effect” on local and regional employment as a result.

3.8 Product Transportation

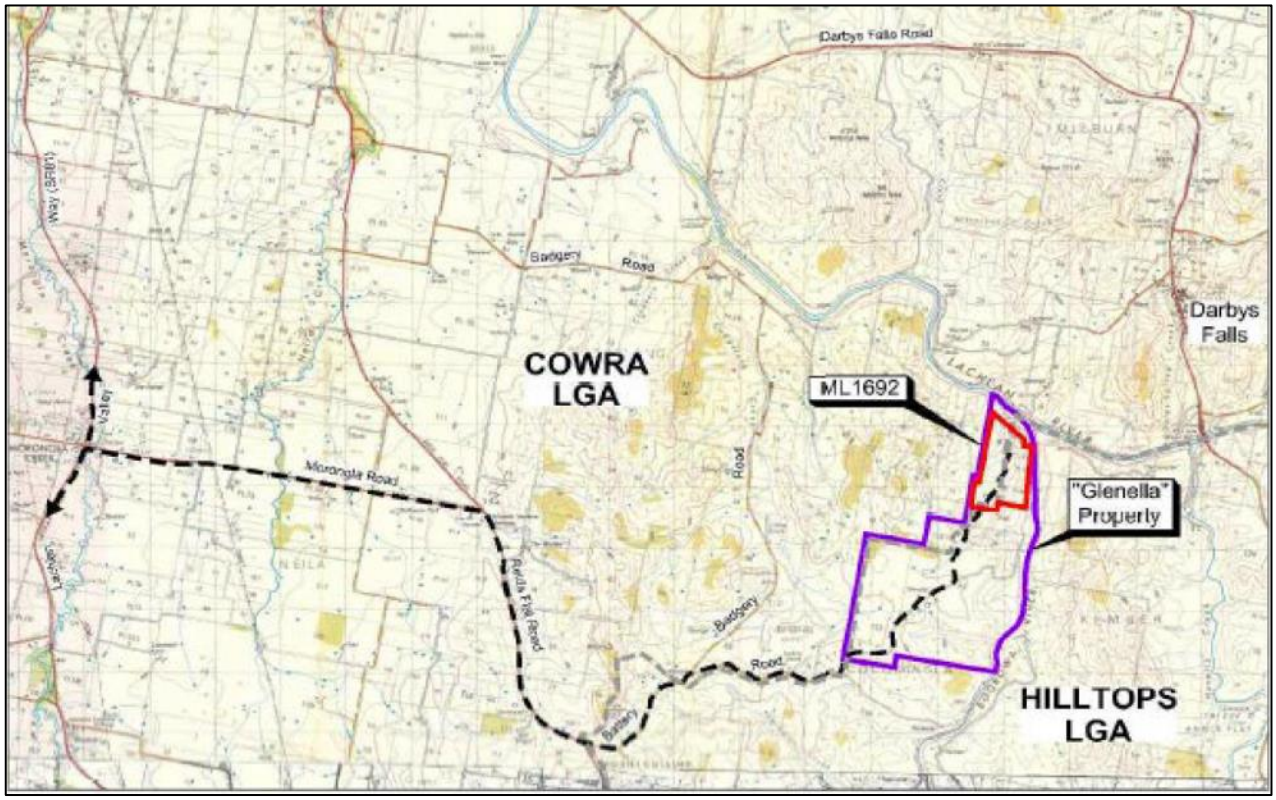
Internally, raw material will continue to be transported in a combination of front-end loaders and articulated dump trucks. Material transported off site will be via heavy vehicles as is currently the case.

Significant road upgrades of the haulage route from the Lachlan Valley Way, namely Morongla Road, Reid’s Flat Road and Battery Road, have occurred since the granting of the original DA and associated licenses. Upgrades include:

- Drainage, culvert, and bridge upgrades;
- Base course overlays;
- Road widening to 8m; and
- Double pack bituminous pre-coat seal.

At the proposed maximum rate of production (500,000 tonnes) the average number of truck loads dispatched daily will be 50. See **Figure 4** which shows the local road network associated with the existing quarry development and the proposed route to reach Lachlan Valley Way.

Figure 4 Local Road Network Plan



3.9 Rehabilitation

Currently, Glenella Quarry progressively rehabilitate (in line with the Resources Regulator approved Mine Operation Plan (MOP)) with substantial overburden stockpiled and used as backfill when areas of the quarry become exhausted. The overburden is and will continue to be used to create a natural final profile consistent with the surrounding uses which is predominately rural and conservation.

Following completion of extraction (and rehabilitation), project infrastructure would be decommissioned, temporary buildings and other structures demolished, plant and equipment would be removed from the site, and any unwanted groundwater monitoring bores capped. Dismantled and decommissioned infrastructure and equipment would be recycled where possible or disposed of at an approved waste management facility.

Future land use for the site would be identified prior to decommissioning and would be consistent with the land zoning and strategic planning context at that time.

4 Statutory Context

4.1 NSW Planning Framework

The Environmental Planning and Assessment (EP&A) Act 1979 and the NSW Environmental Planning and Assessment Regulation 2000 (EP&A Regulation) 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.

4.1.1 State Significant Development (SSD)

EP&A Act, Part 4, Division 4.7 relates to SSD. Under Section 4.36(2) a State Environmental Planning Policy (SEPP) may declare any development to be SSD.

The SEPP (State and Regional Development) 2011 (the SRD SEPP) declares development to be SSD under Clause 8 which states:

(1) Development is declared to be State significant development for the purposes of the Act if:

(a) the development on the land concerned is, by the operation of an environmental planning instrument, not permissible without development consent under Part 4 of the Act, and

(b) the development is specified in Schedule 1 or 2.

As detailed below in Section 4.1.3, the project is permissible with development consent under Part 4 of the EP&A Act.

Schedule 1 of the SRD SEPP specifies the following development category relevant to the project:

7 Extractive industries

which states

(1) Development for the purpose of extractive industry that:

(a) extracts more than 500,000 tonnes of extractive materials per year, or

(b) extracts from a total resource (the subject of the development application) of more than 5 million tonnes, or

(c) extracts from an environmentally sensitive area of State significance.

The proposed Glenella Quarry production increase project is classified as SSD under Part 4, of the EP&A Act. A development application (DA) for SSD must be accompanied by an environmental impact statement (EIS). The SEARs will identify the requirements and level of environmental assessment required to accompany the DA and associated EIS.

The existing 2007 development approval for Glenella Quarry limits the overall production to 200,000 tonnes per annum. This proposal to increase production of the existing approved quarry will meet the SSD required total extraction of >5,000,000 tonnes, (proposing to extract a total of c.15,000,000 tonnes). Accordingly, Section 7 Extractive Industries of Schedule 1 of NSW State Environmental Planning Policy (State and Regional Developments) 2011 categorises this proposal as SSD.

4.1.2 State Policies and Plans

Other State policies and plans that may be of relevance to the project, and that would be considered in the EIS include:

- State Environmental Planning Policy (Mining, Petroleum Production and Extractive Industries) 2007 (the Mining SEPP).
- State Environmental Planning Policy No 33 – Hazardous and Offensive Development; and
- State Environmental Planning Policy No 55 – Remediation of Land.

4.1.3 Local Instrument

The project area is zoned RU1 Primary Production under the Cowra LEP. Extractive industries are permissible with consent within RU1 zones.

4.1.4 Other Relevant NSW Legislation

Under sections 4.41 and 4.42 of the EP&A Act, certain environmental approvals would not be required for the proposed project or would be required to be issued consistent with the planning approval granted to the proposed project. **Table 3** presents the separate environmental approvals and their relevance to the proposed Glenella Quarry project.

Further environmental and other approvals may be required in addition to those referred to under sections 4.41 and 4.42 of the EP&A Act, and these would be considered and outlined where relevant to the assessment of the project as part of the EIS.

Table 3 Consideration of Other State Approvals and Licenses

Approval	Relevance to Glenella	Notes
Approvals not required under Section 4.41		
An approval under Part 4 or an excavation permit under section 139 of the NSW Heritage Act 1977	Not relevant	Consistent with section 4.41 of the EP&A Act, these approvals are not required for SSD or any investigative or other activities that are required to be carried out for the purpose of complying with any environmental assessment requirements in connection with an application for approval.
An Aboriginal heritage impact permit under section 90 of the NSW National Parks and Wildlife Act 1974	Relevant but not required	
A bushfire safety authority under section 100B of the NSW Rural Fires Act 1997	Relevant but not required	
A permit under section 201, 205 or 219 of the NSW Fisheries Management Act 1994 (FM Act)	Relevant but not required	
A water use approval under section 89, a water management work approval under section 90 or an activity approval (other than a groundwater interference approval) under section 91 of the NSW Water Management Act 2000	Relevant but not required	
Approvals required to be issued consistently under section 4.42		
An aquaculture permit under section 114 of the NSW Fisheries Management Act 1994	No	The project does not involve aquaculture.
Approval under section 15 of the NSW Mine Subsidence Compensation Act 1961	No	The project is not within a mine subsidence district.
A mining lease under the NSW Mining Act 1992	Yes	A variation to the quarry's existing Mining Lease may be required.
A production lease under the NSW Petroleum (Onshore) Act 1991	No	The project does not involve petroleum production.
An environment protection licence (EPL) under Chapter 3 of the NSW Protection of the Environment Operations Act 1997	Yes	A variation to the quarry's existing EPL may be required. Under section 5.24(1) of the EP&A Act, an EPL cannot be refused if it is necessary for carrying out approved SSD and is to be substantially consistent with the EP&A Act approval.

Approval	Relevance to Glenella	Notes
A consent under section 138 of the NSW Roads Act 1993	No	Under section 138 of the NSW Roads Act 1993, any works that impact on a road requires approval of the relevant road authority, however it cannot be refused if it is necessary for carrying out an approved SSD.
A licence under the NSW Pipelines Act 1967	No	The project does not involve the construction and operation of pipelines.

4.2 Commonwealth Legislation

The Commonwealth Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act) aims to protect matters deemed to be of national environmental significance (MNES).

There are no known MNES within the proposed production increase area. However, the Department of the Environment, Energy and Science (DoEES) shall be consulted during the EIS preparation stage, and any issues raised shall be addresses within the EIS and supporting specialist studies.

4.3 Application Process

The purpose of this Scoping Report is to request and inform the content of the SEARs for the project. The SEARs will specify the requirements for the EIS that will be prepared by InSitu Advisory to accompany the application for the project. Once the Scoping Report is received, DPIE will prepare the SEARs in consultation with the relevant government agencies.

Once the EIS is prepared and formally submitted to DPIE it is required to be publicly exhibited for a minimum of 28 days. A Response to Submissions report is required to be prepared which addresses any stakeholder submissions received during exhibition from the community and/or government agencies. The application would then be determined by the Minister for Planning, or under delegation.

5 Engagement

The need for meaningful stakeholder engagement with community, regulators and other stakeholders has increased in recent years, and consultation requirements are expected to be a key feature of the SEARs for the Glenella project. The Community and Stakeholder Engagement guidelines (DPE 2017d), describes how DPIE expects proponents to engage with the community and other stakeholders during the environmental impact assessment process for state significant projects.

The guidelines emphasise the importance of early engagement, commencing during the scoping stage of a project, as well as improved participation throughout the environmental impact assessment process. As part of the scoping stage of the project, Glenella Quarry Pty Ltd has engaged with a number of key stakeholders including regulatory, community and industry stakeholders. This chapter outlines the stakeholder identification process undertaken by Glenella Quarry Pty Ltd and their supporting consultants and outcomes of engagement to date.

5.1 Stakeholder Identification

To identify the relevant community, regulatory and other stakeholders, the guidelines encourage proponents to consider the following questions:

- What is the nature of the project and the extent of its environmental impacts?

- Who will be interested in the outcomes of the project?
- Who may have information that could be of value to the project?
- Who is directly affected by the project or might think they are affected by the project, and in what way?
- Who is likely to be upset if they are not informed or invited to participate?
- Who might be a person that others will look to for their opinions?

Preliminary identification of relevant stakeholders, consultation objectives and methods, has been undertaken in consideration of the above.

5.2 Engagement Carried Out

As part of the project scoping stage, Michael Howe of Glenella Quarry Pty Ltd has engaged with the community, representatives from Cowra Council and Hilltops Council, regulators, DPIE etc.

These consultations have focused on providing background to current operations, introducing the SSD project, discussing the assessment pathway and, where relevant, discussing each stakeholder's preliminary concerns about the project. A summary of engagement carried out is presented within **Table 4.**

Table 4 Stakeholder Engagement Meetings to Date

Stakeholder	Date	Name	Notes / Outcomes
Government Contacts			
Mining, Exploration and Geoscience | Department of Regional NSW	20-Jan-21 *ongoing since	Scott Anson. (Assessment Coordination Manager)	Discussion with Scott Anson the Manager of Assessment Coordination unit on the phone. Multiple phone conversations covering the proposal of the project and updates on the Scoping Document progress. Scott has been updated on the project for the past several months.
DPIE	23-Jan-21 to current	Robert Hodgkins / Nagindar Singh	Discussions with Robert Hodgkins & Nagindar Singh regarding the development of the project scoping report and application for SEARs.
Cowra Council	30-April-21	Bill West (Mayor) Paul Devery (General Manager) Kate Albury (Environmental Officer) Dirk Wymer (Operations Manager)	Representatives from Cowra Council Bill West, Paul Devery, Kate Albury, and Dirk Wymer visited the site. Topics of discussion included the Scoping Report and the SSD proposal. All representatives gave positive feedback about the proposal. Topics discussed included: • Local road network; • SECA Solution specialist traffic consultants that were to be engaged; • Ongoing and proposed community consultation; • Upgrades on the surrounding road systems during development - Intersection designs at Lachlan Valley Way/Morongla Road & Reids Flat/Morongla - Line marking on Morongla and Reids Flat roads - Give way sign at the end of Morongla Road.

Stakeholder	Date	Name	Notes / Outcomes
			• Rates and contributions (GeQ); and • Meeting on 9th June 2021 with traffic consultants and Dirk Wymer to discuss further development.
Hilltops Council	25-May-21	Anthony O'Reilly (General Manager) Brian Ingram Claire Scott	Representatives from Hilltops Council, Anthony O'Reilly, Brian Ingram and Claire Scott visited the site. Topics discussed included the proposal and the Scoping Report. All representatives gave positive feedback about the proposal. Main topics discussed included: • The Scoping Report and SSD approval process; • The SEARs • Maintenance levy on the road system; and • External road networks.
NSW EPA	20-Jan-21 *ongoing since	Sharon Peters	Discussion with Sharon Peters from the NSW EPA. Topics of discussion included the project proposal and the Scoping Report content.
Member for Goulburn	24-Feb-21	Wendy Tuckerman Paige Penning	Meeting with Wendy Tuckerman MP and Paige Penning on site to discuss the Scoping Report, project outline, SSD requirements and to inspect the Battery Road (intersection).
Community Contacts			
"Lachoona & Glenavon" - 246 Glenavon Road, Cowra	6-May-21	Richard Chalker	Phone conversation with Richard Chalker. Topics of discussion included the quarry operational hours and possible noise concerns. Furthermore, Chalker's own approximately 4,000 acres, to the North of the mine, across the Lachlan River. The two homesteads (circa 1,250m and 1,600m from the wash plant - closest operational activity) are the only two sensitive receptors from physical mining activities.
"Badgery" Badgery Road, Cowra, NSW	6-May-21	Jamie Dunlop Chris Dunlop	Phone conversation with Chris Dunlop to discuss the project. He had no issues with the current quarry activities and the proposed project.
364 Battery Road	6-May-21	Cavalier	The Smiths (previous owners) sold to Cavalier, and they have left no contact details. We requested the resident's details. Will follow up.
"Duallie", 393 Battery Road, Cowra, NSW 2794	6-May-21	Andrew Smith	Face to face conversation with Andrew Smith. Topics of discussion included Morongla/Reids Flat intersection, truck movements, Battery Road speed limits and current road developments ongoing with GeQ and the Council.
Badgery Road, Cowra NSW	7-May-21	Stewart	Phone conversation with Stewart. Topics of discussion included the SSD proposal and upgrade of the Battery Road. Stewart expressed positive feedback towards the new road upgrade however he commented on trucks speeding on the Battery Road.
Badgery Road, Cowra, NSW	5-May-21	Vince Toohey Stephen Toohey	Conversation with Vince and Stephen Toohey who were very supportive of the new proposal. Have always been supportive of the business and are very happy with Battery Road upgrades.

Stakeholder	Date	Name	Notes / Outcomes
"Bingari" Reids Flat Road, Cowra, NSW	5-May-21	Lex Webster	Conversation with the Websters. Topics of discussion included the project proposal and said they had no major concerns.
Reids Flat Road, Cowra, NSW	6-May-21	Adrian Healey	Phone conversation with Adrian Healey. Topics of discussion included the project proposal. Main concerns included the current road network system. For example, Reids Flat Road needs to be wider and has been an ongoing problem for the community. Other concerns raised were with the width of some of the shoulders on Reids Flat Road, and property values on increased activity. Overall road amenity is vastly improved and will be further upgraded as a result. Property prices in the Mt Collins area have more than doubled to tripled in last decade since Glenella has been operational. There would be several keen parties should they wish to sell.
Reids Flat Road, Cowra, NSW	6-May-21	Jamie Keady	Phone conversation with Jamie Keady, topics discussed were regarding the production increase proposal and progress so far. Jamie Keady was very supportive of the proposed project.
Morongla Road	6-May-21	Neil Lanham	Father-in-Law of John Whitby. They will pass on the information and come back with any queries.
Morongla Road	6-May-21	John Whitby	Face to Face conversation with John Whitby and his wife. Topics of discussion included the project proposal. Main concerns discussed were increased truck movements and poor truck driving behaviour. They have suggested adding a painted line down the middle of the road. John Whitby was pass on the discussion details to Bob Binington.
Morongla Road	6-May-21	Jack Wright	Phone conversation with Jack Wright discussing the details of the project proposal. Jack Wright was supportive of the business progressing and had no issues or concerns to relay.
Opposite corner of Lachlan Valley Road/Morongla Corner	6-May-21	Kristy Fuller	Attempted to call Kristy Fuller to discuss the project. Communicated via text messages.
Crn Lachlan Valley Road and Morongla Road	6-May-21	David Langfields	Conversation with David Langfields, main topics of discussion included road network systems issues (intersection) and poor driving behaviour of truck drivers.

5.3 Engagement to be Carried Out

Glenella Quarry Pty Ltd and InSitu Advisory shall continue to undertake stakeholder engagement in accordance with the community and stakeholder engagement guidelines during the subsequent phase of the project, in which the EIS will be prepared. The ongoing engagement will include further consultations with DPIE, Cowra Council, Hilltops Council, NSW EPA, regulators, Aboriginal stakeholders, and the local community, and will respond to the issues identified during the consultation process.

The EIS will include details of feedback received and actions taken to address feedback during project design and local & cumulative impact assessment.

As of 1st June 2021, the proponent has yet to inform the following members of the community about the project, but has every intention in doing so:

- Anthony Healey - Morongla Road
- Wayne Keefe - Morongla Road
- Clinton Cartwright – Reids Flat Road, Cowra, NSW
- Robyn Smith – Battery Road

6 Proposed Assessment of Impacts

6.1 Overview of Potential Impacts

Glenella Quarry and its associated resource is located within the larger "Glenella" Freehold owned property which extends over an area of approximately 700 Ha of land.

The existing DA area (area also of proposed production increase) covers approximately 54Ha, 29Ha of which is located within the Hilltops LGA with the remaining 35Ha located within the Cowra LGA. The DA area forms a relatively small total area of the freehold owned land.

The property is bisected along its entire length by the internal access/haul road. The eastern boundary of the property is delineated by the Boorowa River, which flows northwards into the Lachlan River at the northern end of the property. The land to the west of the subject property comprises principally agricultural grazing land.

The topography of the "Glenella" property is characterised by hilly undulating terrain. Ridge lines grade into flat plateau terrain with moderate to steep-sided valleys to the north, east and west of Glenella Quarry associated with the Lachlan River, Boorowa River, Battery Creek and Cudgelong Creek. Within the vicinity of Glenella Quarry, elevations range from approximately 290m AHD along the Lachlan and Boorowa Rivers to approximately 420m AHD, with isolated hills rising to in excess of 470m AHD.

The EIS to be prepared as part of this application will provide detailed assessment of the operation and how any impacts will be mitigated for noise and blasting, air quality, water, biodiversity, heritage and archaeology, traffic and transport, land resources, waste, hazards, visual impact, social and economic benefits, and detail of rehabilitation post operation of the quarry.

The environmental, social, and commercial impacts relevant to the continued operation and the proposed production increase related to Glenella Quarry have been reviewed. Key issues and the corresponding proposed level and scope of assessments have been identified using the scoping guideline (DPE 2017a) and the supporting scoping tool (refer **Appendix A**). Matters have been characterised and allocated to one of the following categories:

- **KEY ISSUES** – these have been identified as requiring detailed assessment, for example, detailed field surveys and/or quantified modelling techniques to fully understand the impacts and identify project-specific mitigation and/or alternatives; and
- **OTHER ISSUES** – potential for a material impact on a matter; however, measures to manage the impact are well understood and routinely used on similar projects.

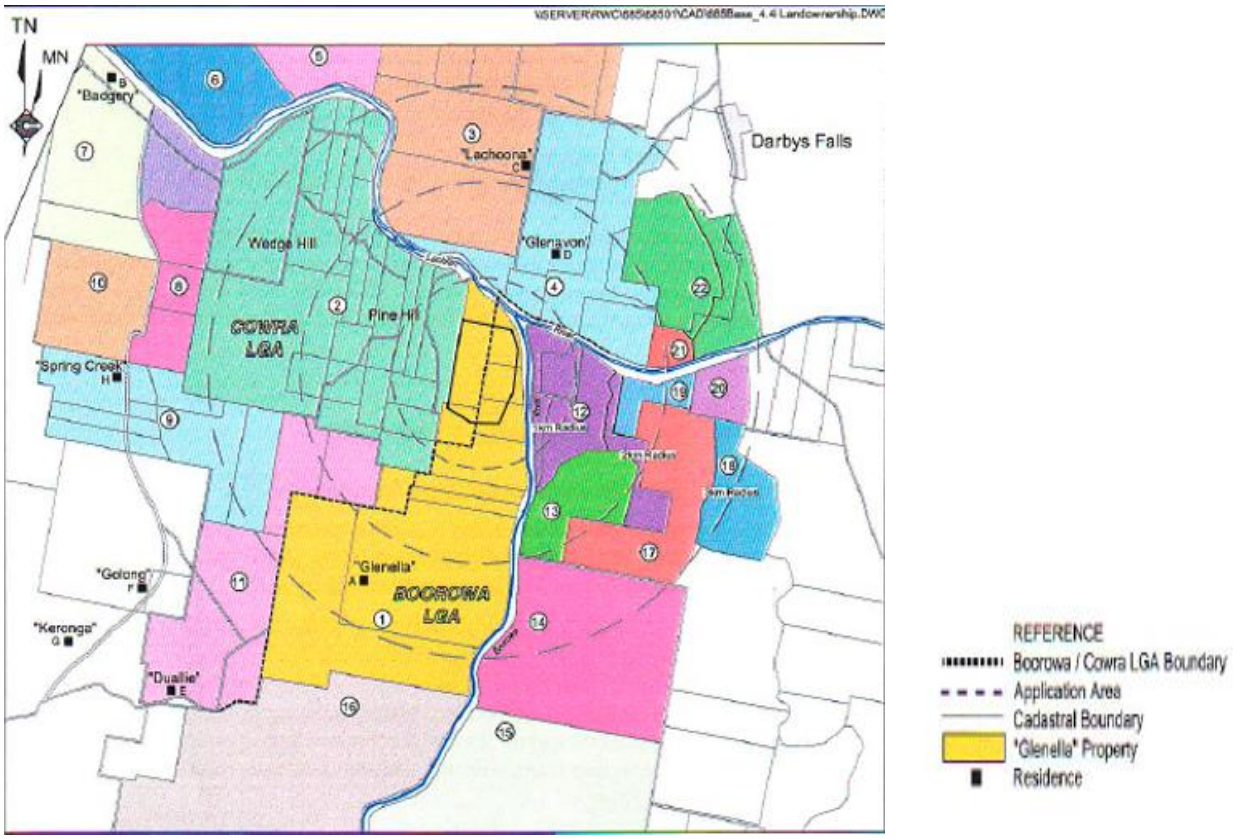
6.2 Sensitive Receptors

Glenella Quarry Pty Ltd confirm that a total of fourteen (14) residences front onto the products delivery route between Glenella and Lachlan Valley way. All will be consulted on a personal basis as a part of this process. **Table 5** and **Figure 5** presents the sensitive receptor details, their location and distance from operations.

Table 5 Details of Sensitive Receptors

Residence Identifier (Name) (see Figure 5)	Distance to Nearest Proposed Extraction Activity	Distance to Proposed Processing Plant / Product Storage Area	Comments
A (“Glenella”)	1,850m	2,600m	Project-related; no activities visible.
B (“Badgery”)	1,950m	4,900m	Extraction and processing activities topographically shielded.
C (“Lachoona”)	1,650m	2,000m	Visually exposed to existing extraction and processing activities.
D (“Glenavon”)	1,250m	1,250m	Topographically and / or shielded from all activities adjacent, southerly hill and / or vegetation.
E (“Duallie”)	3,700m	4,300m	Topographically shielded; no activities visible.
F (“Golong”)	3,150m	4,350m	Topographically shielded; no activities visible.
G (“Keronga”)	4,050m	5,250m	Topographically shielded; no activities visible.
H (“Spring Creek”)	2,200m	3,950m	Topographically shielded; no activities visible.

Figure 5 Residences Surrounding the Project Site



The NSW EPA undertake an Environmental Risk Category Summary for the existing operation, the assessment summary is presented as **Table 6.**

Table 6 NSW EPA Environmental Risk Category Summary for Glenella Quarry

Environmental Risk Category Summary

LICENCE NO	20632
LICENCE HOLDER	GLENELLA QUARRY PTY LTD
ASSSESSMENT NO	4015195

Environmental Media	**Regulatory Priority**
Air/Odour - day to day activities	Low
Water - day to day activities	Low
Noise - day to day	Low
Pollution from incidents or unplanned events - acute pollution risk	Low
Overall Regulatory Priority	**Low**

6.3 Key Issues

6.3.1 Traffic and Transportation

I. Existing Setting

Currently quarry products processed at the facility are transported via the established product delivery route between the quarry and Lachlan Valley Way, which includes Battery Road, Reids Flat Road and Morongla Road (see **Figure 4**). During 2020, 90% of Battery Road has been upgraded and sealed improving operational efficiency, dust suppression and road safety.

Glenella Quarry consider that the proposed increase in production will have minimal impact on the existing transportation network currently used by the operator. Improvements to date have provided a high quality road network that not only improves road safety for all effected residents; but the utility and amenity of the local roads for agricultural and other freight related tasks for the surrounding area.

II. Assessment Approach

A detailed traffic impact assessment (TIA) will be prepared to assess the project's potential impacts to road and intersection capacity, traffic safety and accessibility including consideration of the Austroads intersection design standards.

The TIA will be prepared by suitably qualified person/s in accordance with the Austroads Guide to Traffic Management Part 12, the complementary TfNSW Supplement and RTA Guide to Traffic Generating Developments and will identify light and heavy vehicle access routes and consider parking requirements and any other transport related matters of relevance. The key interests for Transport for NSW (TfNSW) are for the safety and efficiency of the transport network, the integrity

of State infrastructure and the integration of land use and transport in accordance with Future Transport Strategy 2056.

6.3.2 Air Quality

I. Existing Setting

It is proposed that surrounding residences would not be adversely affected given the distance between the proposed increased activities and the proposed safeguards. Dust mitigation measures will be maintained during crushing, blasting and haulage activities.

Completion of the external road network further reduces the potential of air quality issues with effective residents.

In over 10 years of operation Glenella Quarry has not received a dust complaint from any potential sensitive receptors.

II. Assessment Approach

A detailed assessment of potential impacts to air quality will be undertaken in accordance with the assessment guidelines from the EPA, namely, the Approved Methods for the Modelling and Assessment of Air Pollutants in NSW (EPA 2016).

The air quality assessment will be performed in accordance with the requirements of the NSW EPA (2016) Approved Methods for the Modelling and Assessment of Air Pollutants in New South Wales (and associated guidance), accounting for the specifications prescribed through the Protection of the Environment Operations Act (1997) and the Protection of the Environment (Clean Air) Regulation 2010. Any requirement for quantitative dispersion modelling will be performed using recognised and approved modelling techniques, as required under the 'Approved Methods'. The assessment will be performed by suitably qualified and experienced practitioners and certified as 'Certified Air Quality Professionals (CAQP) through the Clean Air Society of Australia & New Zealand (CASANZ).

As a minimum, the air quality assessment shall undertake the following:

- a description of all potential sources of air and odour emissions during construction and operation;
- an air quality impact assessment in accordance with relevant EPA guidelines, detailed above; and
- a description and appraisal of air quality impact mitigation and monitoring measures.

Potential cumulative impacts with the adjacent quarry will also be addressed.

6.3.3 Noise and Vibration

I. Existing Setting

Glenella Quarry is relatively isolated and has been previously assessed through noise modelling that the operation currently adheres to. It is considered that the increased activity, whilst adopting existing noise mitigation measures, and considerate use of specific operational function hours, would not exceed operational, sleep disturbance and transport noise criteria.

In addition, historical air blast overpressure and ground vibration data, as required by both the EPA and Mining Licenses, show blasting of the basalt resource meet air blast overpressure and ground vibration criteria at the closest residential properties to the quarry (see **Appendix C**).

Maxam Australia conducted vibration and air blast monitoring on behalf of Glenella at the nearest house, some 1700m from the blast site. The results of the monitoring were unavailable as the vibration and or the overpressure at these locations was less than the trigger levels set for the individual monitor. Certification and results are presented within **Appendix C**.

As a minimum, the noise and vibration assessment shall undertake the following:

- a description of all potential noise and vibration sources during construction and operation, including road traffic noise;
- an air quality impact assessment in accordance with relevant EPA guidelines; and
- a description and appraisal of noise and vibration impact mitigation and monitoring measures.

II. Assessment Approach

A detailed operations noise and vibration assessment will be prepared in accordance with the following relevant documents:

- NSW Noise Policy for Industry (NPfI) (EPA 2017);
- NSW Interim Construction Noise Guideline (ICNG) (DECC 2009); and
- technical basis for guidelines to minimise annoyance due to blasting overpressure and ground vibration.

There is potential for noise and vibration impacts during ongoing operation of the existing quarry. The primary noise impacts are largely known and will be associated with continued operation of quarry processing equipment, including crushers, screens, conveyors, generators together with mobile plant and equipment. Operational activities will be undertaken during standard hours outlined within **Table 2**.

Extraction rates and associated vehicle movements are proposed to remain as per existing operations. Road traffic noise associated with project related vehicle movements along the local road network will be quantified as part of the assessment.

The results of the operational noise assessment will be incorporated into the EIS submission.

6.3.4 Stormwater

I. Existing Setting

Glenella Quarry Pty Ltd continues to adopt well established surface water run off controls in accordance with their existing Soil and Water Management Plan and Mine Operation Plan (MOPs) as approved by the EPA and Resources Regulator respectively. This will ensure that minimal impact to the soils and surface water quality will occur.

II. Assessment Approach

Potential impacts to water resources as a result of the quarry production increase include quality of runoff and management of water used.

A water resources impact assessment will be prepared as part of the EIS and will include:

- desktop characterisation of the existing geomorphology and aquatic ecology of waterways that may be impacted by the project;

- assessment of potential impacts to surface water quality, quantity, water balance, geomorphology and impacts to the Lachlan River and the Boorowa River adjacent to the quarry; and
- assessment of potential impacts to downstream water users, including licensed water users and basic landholder rights.

Cumulative impacts of the project on surface water resources will also be considered in the context of other relevant operations in the region.

6.3.5 Engagement

I. Existing Setting

The nearby residents that are currently aware of the quarrying activity have been informed that the operator is intending to apply for an increase in production threshold. To date the feedback from those residents that have been made aware of the proposal has been positive and supportive in light of the improvements Glenella Quarry Pty Ltd have made to the local road network, with the most recent being the upgrade works to Battery Road.

In addition, local residents have recognised the contribution the quarry has made to employment and other operational services which provides flow on benefits to the local community and the economies of Hilltops and Cowra Local Government Areas.

People who may be directly impacted by the proposed quarry production increase include:

- the nearest residential dwellings;
- potential future residential dwellings within approved residential subdivisions;
- nearby non-residential uses; and
- farmers in the vicinity of the site.

II. Assessment Approach

Ongoing engagement with regulators, Councils etc. will be required to inform stakeholders of progress and to address issues raised. The SEARs will typically highlight the need for ongoing engagement also.

A social impact assessment (SIA) will be prepared as part of the EIS and will include:

- the demographic profile of the locality;
- impacts on access to, and demand for, local services and infrastructure and community services; and
- potential social impacts arising from noise, air quality and other impacts.

As part of the SIA, a full community engagement/consultation strategy will be implemented including face-to-face meetings with community members, issuance of a project information fact sheet to each community member, advertising of the project details in local newspapers and the public exhibition phase.

All engagement undertaken will be minuted/noted with attendees, issues raised, outcomes and actions recorded and will be presented within the EIS submission.

6.4 Other Issues

6.4.1 Soil Resources

I. Existing Setting

Glenella Quarry Pty Ltd adopts well established soil stripping, handling, and stockpiling procedures in accordance with their existing Soil and Water Management Plan and Mine Operation Plan (MOPs) as approved by the EPA and Resources Regulator respectively. The plans ensure that minimal impact to the soils and surface water quality occurs.

II. Assessment Approach

The MOPs in particular provides for designated rehabilitation reporting over the life of the Mining Licence including but not limited to:

- Accurate surveying of operational spaces including the operational void/s, topsoil and growth medium volume and storage, stockpiling and processing areas, water management structures, fuel and hydrocarbon storage, transport access and identified rehabilitation areas and commitments over a seven (7) year block;
- Annual reporting to review the progress and compliance with such rehabilitation and operational commitments;
- Resource Regulator regular onsite inspections;
- Bonding of rehabilitation requirements in line with the MOPs and associated cost in the event of end of operations prior to end of mine life scenarios. Glenella currently holds a $236,000 cash deposit with DPIE.

The EIS will include a qualitative assessment of impacts to land resources (including geology and soils, land use and potential contamination) and proposed mitigation, management and remediation measures as/if required.

Erosion and sediment control (ESC) requirements will be considered in reference to Managing Urban Stormwater: Soils and Construction – Volume 2E Mines and quarries (DECC 2008) which will likely form part of an environmental management plan or similar that will be implemented as a stand-alone requirement, or as an addition to any existing MOP/plan.

Rehabilitation objectives and performance standards will be identified having regard for the key principles in the Strategy Framework for Mine Closure (ANZMEC & MCA 2000), along with nominated final land use in consideration of any relevant strategic land use plans or resource management plans or policies. A rehabilitation strategy will likely form part of an environmental management plan or similar, to be implemented during operation.

6.4.2 Groundwater

I. Existing Setting

Current quarrying has not breached existing groundwater levels. It is anticipated that that all future increases in quarrying activity associated with this proposal will not result in the groundwater being encountered and it is therefore unlikely to have any impact on the local groundwater.

II. Assessment Approach

Interaction with groundwater will be avoided through a continuation of resource extraction in accordance with the existing practices outlined within the MOP. The proposed production increase is not intended to breach groundwater, therefore minimal groundwater assessment will be required.

A qualitative groundwater assessment will be prepared as part of the EIS and will include a:

- desktop assessment and characterisation of groundwater profiles utilising data collected by Glenella Quarry during a recent round of resource drilling and using historic groundwater bore data;
- a review of wider ground water level data from nearby groundwater bores (if present) to ascertain the wider groundwater surface and possible hydraulic profile/gradient;
- review of base of quarrying RL in comparison to groundwater levels to assist in the development of a strategy to ensure the groundwater level is not breached by continued quarrying operations in accordance with the existing MOP; and
- desktop assessment of any potential impacts upon groundwater by the project.

6.4.3 Visual

I. Existing Setting

Quarrying activities are visible from an elevated property to the north of the site, however given the undulating nature of the surrounding region along with the progressive rehabilitation undertaken at the quarry, it is considered that the increase in production will be obscured by the natural vegetation and the rolling topography of the valley within which the quarrying activity takes place. The increase in quarrying activity will have a minimal impact on the visibility of the site from nearby properties.

Albeit it a slow pace the designed progression of the active quarry void is to the South (within the existing development consent boundary) and is in fact moving away from the two homesteads located to the North and North East of the extractive operation. The closest of the homesteads is approximately 1250m from the closest operational activity with the second in the range of 1,650m from similar operations (see **Figure 5**).

II. Assessment Approach

Although the proposed production increase will have little impact, the EIS will include an assessment of potential visual amenity impacts from the continued operation of the quarry on surrounding residences, scenic or significant vistas, or road corridors in the public domain. Where relevant, the visual impact assessment and EIS will include mitigation measures to help reduce the project's impacts on visual amenity.

6.4.4 Bushfire

I. Existing Setting

Glenella Quarry is not situated within a designated bushfire prone zone, and as a result, the proposed increase in production and operational footprint is unlikely to contribute to the increasing of the local bushfire hazard.

II. Assessment Approach

As a minimum, the bushfire assessment shall undertake an assessment of bushfire risks and asset protection zones (APZ) in accordance with NSW Rural Fire Service guidelines. Furthermore, a qualitative assessment of the project against Planning for Bushfire Protection (RFS 2011) will be a provided in the main body of the EIS. A bushfire management plan will likely form part of an environmental management plan or similar, to be implemented during operation.

6.4.5 Flora and Fauna

I. Existing Setting

The majority of the existing development consent area is cleared rural bushland and highly degraded grassland. Currently Glenella Quarry Pty Ltd have engaged in revegetating rehabilitated areas of the quarry with native woodland vegetation which has assisted with the establishment of habitat corridors.

To date, Glenella Quarry have established native grass species to tie in the quarry batters and further intend to establish or seed with further native grass, shrub, and tree mixes in the current season.

This ongoing rehabilitation and revegetation of the quarry will continue in accordance with the proposed increase in production to ensure that the impact on Flora and Fauna is not significant.

Glenella Quarry Pty Ltd engaged OzArk Environment & Heritage Pty Ltd (OzArk) to undertake a desktop Adequacy Assessment of the previous heritage works undertaken as part of the original 1999 consent and the subsequent RW Corkery EIS studies that supported the 2007 Development Consent. OzArk, a highly respected firm operating since 2000, provides a range of professional ecological and heritage services throughout NSW and interstate http://ozarkehm.com.au/

The full report presented as **Appendix D**.

The OzArk BDAR waiver report concluded the following:

- Considering that there is no further clearing planned for the site, we do not anticipate any further impacts to flora at the site; and

- Considering that there is no further clearing intended to take place at the existing quarry site, we expect that these five-part tests would return a result of “no significant impact” and further biodiversity assessments under BAM (2020) will be unnecessary.

II. Assessment Approach

Due to the extensive assessments previously undertaken within the existing development consented area, and in light of the OzArk 2021 assessments, that concluded that further biodiversity assessments under BAM (2020) will be unnecessary, Glenella Quarry Pty Ltd intend to apply for a BDAR Waiver and will complete the required BDAR Waiver form.

6.4.6 Heritage

I. Existing Setting

Glenella Quarry Pty Ltd have completed a search of the Local, State and Federal Heritage Register and note that the land and improvements are not associated with any heritage affection. A search of the Register of Native Title Claims in the Cowra and Hilltops Council areas has not found any Native Title Claim covering the current approved development consent boundary.

Glenella Quarry Pty Ltd engaged OzArk to undertake a desktop Adequacy Assessment of the previous heritage works undertaken as part of the original 1999 consent and the subsequent RW Corkery EIS studies that supported the 2007 Development Consent. The OzArk assessment (2021) addressed the adequacy of previous assessments in relation to the current study area. Findings are summarised in Section 11.9.3, with the full report presented as **Appendix E**.

As stated, a comprehensive Aboriginal heritage assessment was conducted by OzArk in conjunction with the Cowra Local Aboriginal Land Council (LALC) as part of the Glenella Quarry Production Increase EIS undertaken by RW Corkery in April 2007. The objective of the assessment was to identify any sites or relics of Aboriginal heritage value on the Project Site and assess the area within a regional Aboriginal heritage context. The 2007 assessment is summarised in the following sections.

6.4.6.1 Aboriginal Heritage

Assessment Methodology

The Aboriginal heritage assessment was undertaken in the following stages.

- Stage 1 – Background Research

As part of the background research for the assessment, the Cowra LALC was consulted and the proposal discussed, a search of the DEC AHIMS register was undertaken and available mapping, relevant literature and reports and land use history reviewed. The background research also included a review of the Aboriginal heritage assessment conducted by Kelton (1999) for the Australian Silicon proposal.

- Stage 2 – Determination of Archaeological Sensitivity

Based on the background research and experience of the archaeologist, the archaeological sensitivity of landforms within the survey area were determined by OzArk to allow for a targeted survey, i.e., to concentrate survey effort in areas more likely to contain Aboriginal sites.

- Stage 3 – Field Survey

A field inspection and survey was undertaken on 29 and 30 November 2006 by an OzArk archaeologist and a representative from the Cowra LALC.

- Stage 4 – Assessment of Results

The results of the field survey were assessed considering various factors including surface visibility, survey intensity and survey approaches.

Survey Results

A search of the DEC AHIMS Site Register found that no Aboriginal sites have been recorded within the Project Site although one site is recorded <50m beyond the north-eastern boundary of the Project Site. Notably, neither the current survey nor the previous survey of the "Glenella" property (Kelton, 1999) failed to relocate the site.

During the field survey, one site, consisting of a single flake of Aboriginal origin, was recorded on a farm track along the north-eastern boundary of the Project Site. The location of the site is located within the Project Site but outside the proposed disturbance footprint.

Safeguards

The artefact would be conserved in its in-situ, where it would not be disturbed by any operations within the Project Site.

The Applicant is also aware of its obligations under the National Parks and Wildlife Act 1974, and should any relic be uncovered during extraction-related activities, work in the area surrounding the relic would cease and the Department of Environment and Climate Change and Cowra LALC informed of the find. A management strategy for the relic would then be prepared in consultation with the Department of Environment and Climate Change and Cowra LALC.

Assessment of Impacts

It is assessed that there would be no detrimental impact on Aboriginal heritage as a consequence of the proposal.

6.4.6.2 European Heritage

Assessment Methodology

A desktop search of the Cowra Local Government Area on the following heritage databases was conducted in February 2007.

- Cowra Local Environmental Plan 1990 – Schedule 1.
- Australian Heritage Database (which includes places listed in the World Heritage List, National Heritage List, Commonwealth Heritage list and Register of the National Estate).
- State Heritage Register.
- State Heritage Inventory.

No listed heritage sites were identified within the Project Site, nor within the vicinity of the Project Site.

A previous survey of the "Glenella" and "Badgery" properties (Kelton, 1999), did not record any heritage items within the Project Site.

Safeguards

Given no items of European heritage have been recorded within the Project Site, no operational safeguards were required.

Assessment of Impacts

The survey concluded that given no items of European heritage have been recorded within the Project Site, there would be no detrimental impact as a consequence of the proposal.

6.4.6.3 OzArk (2021) Desktop Adequacy Assessment

OzArk completed an Aboriginal heritage desktop adequacy assessment for the proposed production increase within the existing approved DA boundary (see **Appendix E**).

The desktop investigation for the project area used the following approach:

- Undertaking searches of Aboriginal heritage databases.
- Mapping the results of the Aboriginal Heritage Information Management System (AHIMS) search results.
- Reviewing the regional and local archaeological context.
- Using aerial imagery and existing modelling data to assess archaeological sensitivity and potential according to distance to water, landforms, land use, and accumulated impacts.
- Assessing the adequacy of previous assessments in relation to the current study area.

The following points highlight the main conclusions of the desktop analysis in regard to the adequacy of previous assessments conducted across the study area:

- There is one previously recorded AHIMS site within the study area. This is on the northeast boundary of the study area. However, there are several recorded AHIMS sites in general proximity (see Section 2.2.1 of OzArk report).
- The current study area was included in the assessment area cover by Thomas (1981).
- The current study area was included in the assessment area covered by Kelton (1999). It was surveyed by pedestrian means during Kelton's assessment, though this focused on hill and ridge crests and the upper hill slopes (see Section 2.2.2.2).
- The assessment conducted by OzArk (2007) included the entirety of the current study area.

As the study area has been assessed three times over the past thirty years, of which the latter two assessments were in the company of local Aboriginal community representatives; and as the entire study area is already approved for disturbance subsequent to the 2007 assessment, **OzArk concludes that no further field assessment should be required.**

OzArk made the following recommendations, which Glenella Quarry Pty Ltd would fully adopt if implemented by DPIE:

- As the entirety of the current study has been previously surveyed and approved for rock extraction, no further field assessment of the study area is required.
- Glenella Quarry should ensure that the location of isolated find GQ-IF-1 (#44-4-0346) is protected from any inadvertent impacts through fencing.
- This protection of GQ-IF-1 (#44-4-0346) should be perpetuated as part of the new project approval.
- It may be appropriate for Glenella Quarry to develop a Cultural Heritage Management Plan (CHMP) as an approval condition to ensure the ongoing protection of GQ-IF-1 (#44-4-0346), and to include other management measures including but not limited to:
    - An unanticipated finds protocol;
    - Cultural heritage induction / training for staff and contractors;
    - Establishment of a consultation strategy with current local Aboriginal groups in respect of heritage management etc.

II. Assessment Approach

As concluded by OzArk, there are no listed historical heritage items that would be directly impacted by the project. Consideration of indirect impacts to listed historical heritage items in the local area will be given in the EIS. However, the closest items are sufficiently distant from the project, such that impacts are expected to be negligible.

Based on the previous works undertaken at the site, within the existing footprint of the proposed production increase, no additional surveys are proposed. A summary of previous works, and the OzArk 2021 gap analysis shall be reported within the EIS.

6.4.7 Hazards

I. Existing Setting

Hazards are currently mitigated and managed through existing management plans and licenses, specifically the EPL and MOP.

II. Assessment Approach

Hazards and risks associated with the project will be minimal. A preliminary screening test of proposed quantities of hazardous goods stored on, and transported to, the site would be undertaken against the thresholds identified in the Applying State Environmental Planning Policy No 33 – Hazardous and Offensive Development (SEPP 33 guideline).

A detailed hazards and risks assessment will not be prepared as part of the EIS. However, hazard and risk controls will be incorporated into the project's environmental management plans as required.

6.5 Cumulative Impacts

An assessment of any cumulative impacts of the project and existing or proposed developments will be undertaken. Potential cumulative impacts that will be considered as part of the EIS, are:

- traffic and transportation;
- air quality;
- noise & vibration;
- stormwater; and
- socio-economic.

References

DECC 2008, Managing Urban Stormwater: Soils and Construction – Volume 2E Mines and quarries

DECC 2009, Interim Construction Noise Guideline

DECCW 2010a, Aboriginal Cultural Heritage Consultation Requirements for Proponents 2010

DECCW 2010b, Code of Practice for Archaeological Investigation of Aboriginal Objects in NSW

DPE 2017a, Scoping an Environmental Impact Statement, Draft Environmental Impact Assessment Guidance Series, June 2017

DPE 2017c, Community and Stakeholder Engagement guideline 2017

DPE 2017d, Social impact assessment guideline for State significant mining, petroleum production and extractive industry development

DPIE 2021, Preparing an EIS (SSD), Exhibition Draft

DPIE 2021, Preparing a Scoping Report (SSD), Exhibition Draft

EMM Consulting 2019, Dubbo Quarry Extension Project Scoping Report

EPA 2016, Approved Methods for the Modelling and Assessment of Air Pollutants in NSW

EPA 2017, NSW Noise Policy for Industry

OEH 2011, Guide to Investigating, Assessing and Reporting on Aboriginal Cultural Heritage in NSW

OEH 2017, Biodiversity Assessment Methodology

RFS 2011, Planning for Bushfire Protection

RTA 2002, Guide to Traffic Generating Developments

APPENDICES

APPENDIX A

Scoping Tool Worksheet

Project: GLENELLA QUARRY - PROPOSED PRODUCTION INCREASE SSD

MATTERS			IMPACTS	ASSESSMENT LEVEL	CUMULATIVE IMPACTS	COMMUNITY ISSUES	ASSESSMENT APPROACH	SCOPING REPORT
Potential matters that could be affected by the project		Is the project (without mitigation) likely to cause an impact?	Are the impacts (without mitigation) likely to be significant based on the magnitude of the impacts and/or sensitivity of receivers?	What level of assessment is required to assess impacts and determine mitigation measures?	Will cumulative assessment be required?	Did the community raise any concerns about the impacts?	Indicative approach to assessment in EIS	Where was this addressed in the Scoping Report?
Group	Specific Matters	Impact?	Significant Impact?	Assessment Level	Cumulative Impact?	Concerns?	Category	Section
ACCESS	Access to property	N						
	Port / airport facilities	N/A						
	Road and rail facilities	Unknown	Unlikely	Detailed	Yes	Yes	Detailed Assessment + Cumulative Impact Assessment (CIA) + focussed engagement	Section 6.3.1
	Traffic and parking	N						
	Other - please specify	N						
AIR	Atmospheric emissions	Y	Unknown	Standard	Yes	No	Detailed Assessment + CIA + focussed engagement	Section 6.3.2
	Gases	N						
	Particulate matter	Y	Unlikely	Standard	Yes	No	Detailed Assessment + CIA + focussed engagement	Section 6.3.2
	Other - please specify	N/A						
AMENITY	Noise	Y	Unknown	Detailed	Yes	Yes	Detailed Assessment + CIA + focussed engagement	Section 6.3.3
	Odour	N						
	Vibration	Y	Unknown	Standard	No	No	Detailed Assessment + CIA + focussed engagement	Section 6.3.3
	Visual	Unknown	Unlikely	Minor	No	No	Minor Assessment	Section 6.4.3
	Other - please specify	N/A						
BIODIVERSITY	Conservation areas	N						
	Terrestrial flora	Y	Unlikely	Standard	No	No	Standard Assessment	Section 6.4.5
	Terrestrial fauna	Y	Unlikely	Standard	No	No	Standard Assessment	Section 6.4.5
	Aquatic flora and fauna	Unknown	Unknown	Standard	No	No	Standard Assessment	Section 6.4.5
BUILT ENVIRONMENT	Private property	N						
	Public land	N						
	Public infrastructure	N						
	Other - please specify	N/A						
ECONOMIC	Natural resource use	Y	Unknown	Standard	No	No	Standard Assessment	Section 6.4.1
	Livelihood	N						
	Opportunity cost	N						
	Other - please specify	N/A						
HAZARDS AND RISKS	Biosecurity	Y	Unlikely	Minor	No	No	Minor Assessment	Section 6.4.7
	Bushfire	Y	Unlikely	Standard	No	No	Standard Assessment	Section 6.4.4
	Coastal hazards	N/A						
	Dams safety	N						
	Dangerous goods	Y						
	Environmental hazards	Unknown	Unlikely	Standard	No	No	Standard Assessment	Section 6.4.7
	Flooding	Unknown	Unlikely	Standard	No	No	Standard Assessment	Section 6.4.7 / 6.3.4
	Groundwater contamination	N						
	Hazardous and offensive development	N						
	Land contamination	N						
	Land movement	N						
	Waste	N						
HERITAGE	Aboriginal	Y	Unlikely	Standard	No	No	Standard Assessment	Section 6.4.6
	Historic	Y	Unlikely	Standard	No	No	Standard Assessment	Section 6.4.6
	Natural	Unknown	Unknown	Standard	No	No	Standard Assessment	Section 6.4.6
	Other - please specify	N/A						
LAND	Stability	Unknown	Unlikely	Standard	No	No	Standard Assessment	Section 6.4.1
	Soil chemistry	N						
	Land capability	Unknown	Unknown	Standard	No	No	Standard Assessment	Section 6.4.1
	Topography	Y	Unlikely	Standard	No	No	Standard Assessment	Section 6.4.1
	Other - please specify	N/A						
SOCIAL	Community services / facilities	N						
	Health	N						
	Housing availability	N						
	Safety	N						
	Social cohesion	N						
WATER	Hydrology	Y	Unknown	Detailed	No	No	Detailed Assessment	Section 6.3.4
	Surface water quality	Y	Unknown	Detailed	No	No	Detailed Assessment	Section 6.3.4
	Ground water quality	Unknown	Unlikely	Standard	No	No	Standard Assessment	Section 6.4.2
	Water availability	Y	Unknown	Detailed	No	No	Standard Assessment	Section 6.3.4
	Other - please specify	N/A						

APPENDIX B

PGH Bricks & Pavers Glenella Clay Letter

59-67 Cecil Road
CECIL PARK NSW 2178
61 2 9826 3964
0417 683 526
ABN 68 168 794 821

PGH BRICKS & PAVERS™

18 March 2021

To Whom It May Concern:

Glenella Clay

We refer to our recent discussions regarding the supply of the Glenella material from the Glenella Cowra Quarry. We have used the Glenella clay as a raw material in our Sydney brick plants over the last 15 years.

We confirm that on average approximately 20,000 tonnes per annum of this clay is used as a raw material within our Sydney brick and paver business and is of strategic importance as a brickmaking raw material, as it is used extensively for blending to maintain colour consistency within our product range.

We confirm that cost effective and long-term supply of clay from the Glenella Cowra quarry is of importance to ensure that PGH Bricks & Pavers full product range can be maintained to service our brick and paver markets within NSW and along the Australian eastern coast.

Yours sincerely,

Joe Gauci
National Raw Materials Manager

APPENDIX C

Vibration and Air Blast Reporting

Monitoring Nil-Trigger

Client:	Glenella	Shot ID / Location:	2020-01
Site	Cowra	Date:	10/02/2020

10/02/2020

To Whom It May Concern:

On the 10/02/2020 at approximately 11:30, I Peter Ward of MAXAM Australia conducted vibration and air-blast monitoring on behalf of Glenella Cowra.

The results of this monitoring at the following locations are unavailable, as the vibration and or the air overpressure at these locations was less than the trigger levels set for the individual monitor.

Monitor Number	Monitor Location	Approximate Distance to Blast	Trigger Level Vibration (mm/sec)	Trigger Level Air Overpressure (dBL)
4193	House	1700 m	0.5mm/sec	110

The instrument prior to monitoring, passed all test criteria, for both vibration and noise sensors, and is still within the calibration period.

Peter Ward

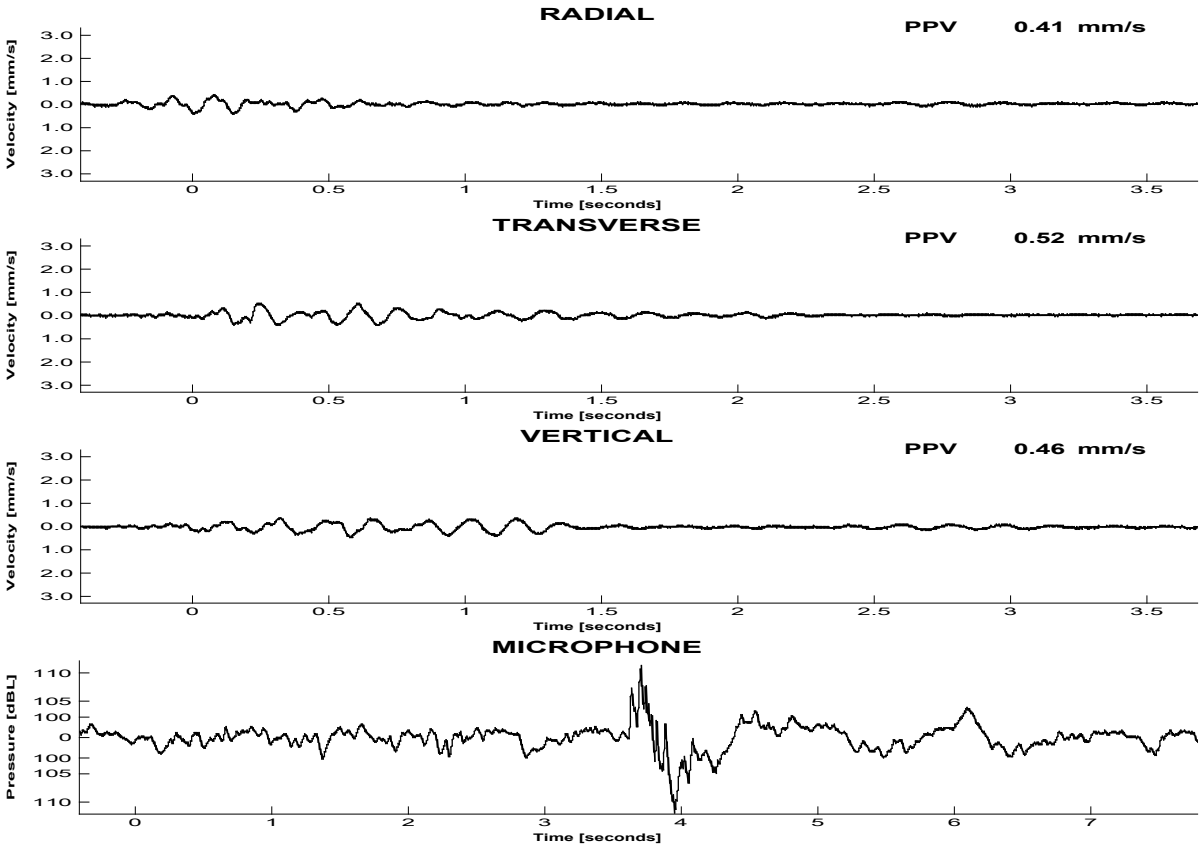
MAXAM Australia Pty Ltd,

Maxam Australia Pty. Limited
PO Box 948, Sumner Park Q 4074
Ph: +61-07-37171818
Fax: +61-07-37171888
www.maxam-int.com.au
A.C.N. 30 008 141 188

Glenella Quarry Cowra

Location: Glen Avon **Date:** 2020-02-10
Triggered by : Vector Sum **Time:** 11:13:05

Triggers Set : Vector Sum: 0.50mm/s
Channel 4: 110.0dBL



BLAST RESULTS

Peak Vector Sum Velocity : 0.62 mm/s at 0.151 s
Peak Overpressure : 111.3 dBL at 3.950 s

	Peak [mm/s]	Frequency (ZC at Peak) [Hz]	Time (Rel. to Trigger) [s]	Acceleration (Est. from PPV) [mm/s^2]	Displacement (Est. from PPV) [µm]
Radial	**0.41**	**No ZC (0)**	**0.076**	**No ZC (0)**	**No ZC (0)**
Transverse	**0.52**	**8.5**	**0.237**	**32**	**15.2**
Vertical	**0.46**	**9.8**	**0.575**	**24**	**11.8**

Monitoring conducted by: .....
(:MAXAM SNSW)

TM Serial Number : **4249** **Last Calibration:** **2019-08-08**

Glenella Quarry Cowra\M4249 Glenella Quarry Cowra @ Glen Avon @ 2020-02-10 11.13.05.twf
T-Link 1.2 - ANZEC Standard.rtt Texcel Monitors comply with Appendix J of AS 2187.2-2006

APPENDIX D

OzArk Biodiversity Gap Analysis Report

View north from the southern portion of the OzArk 2007 assessment area showing the basalt cap landform

BIODIVERSITY GAP ANALYSIS

GLENELLA QUARRY

HILLTOPS COUNCIL LGA AND COWRA SHIRE COUNCIL LGA

APRIL 2021

Report prepared by

OzArk Environment & Heritage

for InSitu Advisory on behalf of

Glenella Quarry

OzArk
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DOCUMENT CONTROLS

Proponent	Glenella Quarry		
Purchase order number	InSitu Advisory		
Document description	Glenella Quarry Biodiversity Gap Analysis		
	Name	**Signed**	**Date**
Clients reviewing officer			

Clients representative managing this document	**OzArk representative managing this document**
	Dr Crystal Graham
Location	**OzArk job number**
S:\OzArk EHM Data\Clients\InSitu Advisory\Glenella Quarry	#3008

Document status:	**Version**	**Date**	**Action**
Internal Draft series	V1.0	7 April 2021	
First Draft for Client Review	V2.0 V2.1 V2.2	7 April 2021 26 April 2021 29 April 2021	CG to AD CG to AD CG to AD
Final report for client	V3.0		

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Acknowledgement

OzArk acknowledge Traditional Owners of the area on which this assessment took place and pay respect to their beliefs, cultural heritage and continuing connection with the land. We also acknowledge and pay respect to the post-contact experiences of Aboriginal people with attachment to the area and to the elders, past and present, as the next generation of role models and vessels for memories, traditions, culture and hopes of local Aboriginal people.

Executive summary

OzArk Environment & Heritage (OzArk) has been engaged by InSitu Advisory, on behalf of Glenella Quarry (the proponent) to complete a Biodiversity Gap Analysis for the proposed increased rate of extraction at the Glenella Quarry (the project).

The quarry has been subject to biodiversity assessments in the past, in both 1999 and 2006/2007. As a result, there are already biodiversity assessment reports that cover the proposal area for flora and fauna. OzArk completed a desktop analysis summarizing the level of biodiversity assessment the area has previously undergone according to the 1999 and 2007 reports. This analysis highlights the specific methodologies and results of those studies as relevant to the impact area. This analysis did not involve a site visit and is purely desktop based.

The results of this analysis indicate that the proposal area has already been the subject of flora and fauna assessments in 1999. The flora assessments in 1999 were very comprehensive and addressed the proposal area. The fauna assessments of 1999 were more widely distributed across the landscape surrounding the quarry such that their results are less applicable to the proposal area but do give general insight into the species expected for the area. The flora and fauna assessments in 2006/2007 took place entirely within the bounds of the proposal area and are directly applicable.

Cunningham (1999) and OzArk (2007) classified the vegetation communities in the proposal area as *White Box – White Cypress Pine Community on the Open Basalt Plateau* and a small area of *River Red Gum Community along the Boorowa and Lachlan Rivers;* the remaining area was designated *"Open Grazing and Cultivation Country*". Importantly, the vegetation classification system has changed since these surveys were conducted; instead of determining vegetation communities, ecologists now determine Plant Community Types (PCTs). Accordingly, the vegetation communities can not easily be assigned to a PCT without a site visit; looking at the raw data in Cunningham (1999) we can make some inferences. In 1999 the vegetation communities were not recognised as threatened; however, two of the communities contained White Box (*Eucalyptus albens*) as their principal tree species and they may now be recognised as components of the BC Act-listed CEEC *White Box - Yellow Box - Blakely's Red Gum Grassy Woodland and Derived Native Grassland in the NSW North Coast, New England Tableland, Nandewar, Brigalow Belt South, Sydney Basin, South Eastern Highlands, NSW South Western Slopes, South East Corner and Riverina Bioregions (Box-Gum Woodland)* and the EPBC Act-listed CEEC *White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland*. Additionally, the community described as "*Open Grazing and Cultivation Country*" in 1999 may fall within the definitions of these CEECs depending on certain details of structure and composition. *White Box - Yellow Box - Blakely's Red Gum* communities are listed as critically endangered at both state and national level. Consequently, while the communities identified by Cunningham (1999) possessed no formal conservation protections in 1999, this may no longer be true. Importantly, this proposal does not involve any further clearing, so should not impact on the flora.

Previous surveys detected several species of threatened fauna, and several species that were detected have since been listed as Vulnerable in NSW. Importantly, although previous studies conducted some targeted flora and fauna surveys, they were not in accordance with the current required methodology for targeted surveys according to the BAM (2020). That being said, this proposal does not involve the clearing of any additional native vegetation, so would not trigger entry into the NSW Biodiversity Offset Scheme via exceeding the clearing thresholds, nor is the area mapped on the Biodiversity Values Map. OzArk (2007) conducted seven-part tests on the threatened species expected to be present in the area and found that the proposal would have no significant impact on those species. For those species that have been listed as threatened since 2007, it is possible that the impact of the development may have to be assessed as per section 7.3 of the Biodiversity Conservation Act 2016 (i.e., five-part-test). However, the results of these tests are not expected to be significant since there is no clearing planned.

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1 Introduction

1.1 Proposal context

Glenella Quarry is located in the Hilltops Council and Cowra Shire Council Local Government Areas (LGA's). The quarry is located approximately 18 kilometres (km) southeast of Cowra, close to the confluence of the Lachlan and Boorowa Rivers. Glenella Quarry Pty Ltd is proposing a production increase at the Glenella Quarry (the project), within existing consented boundaries (**Figure 1-1**). The proposed area for intensified quarrying will hereafter be referred to as the "proposal area" (the Northern black bounded area in **Figure 1-1**). The proposal area has been subject to biodiversity assessments in the past, in both 1999 and 2006/2007. As a result there are already biodiversity assessment reports that cover the proposal area (**Figure 1-2**). OzArk Environment & Heritage (OzArk) has been engaged by InSitu Advisory to complete a desktop analysis summarizing the level of biodiversity assessment the proposal area has previously undergone. This analysis highlights areas that have been assessed, the results of those assessments, and the context of those results in light of any relevant changes in legislation. This analysis did not involve a site visit and is purely desktop based.

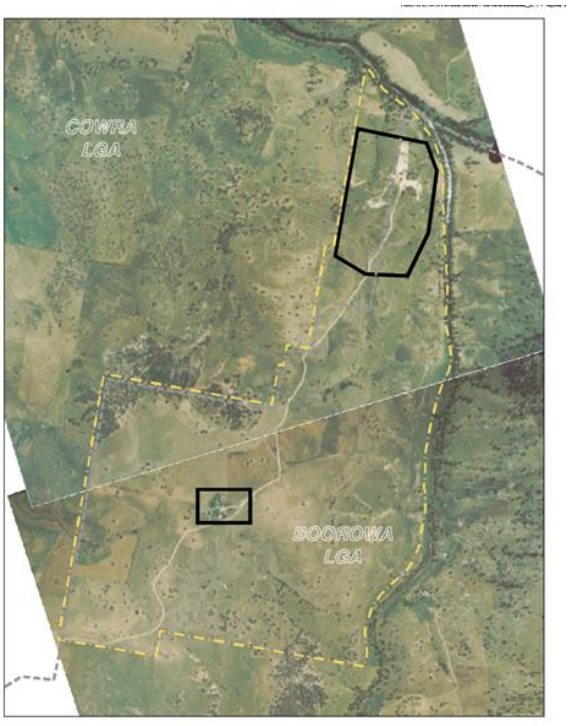


Figure 1-1. Map of Glenella Quarry. The black bounded areas show the location of the existing quarry footprint that has already received development approval. The northern black bounded area highlights the proposal area addressed in the current report.

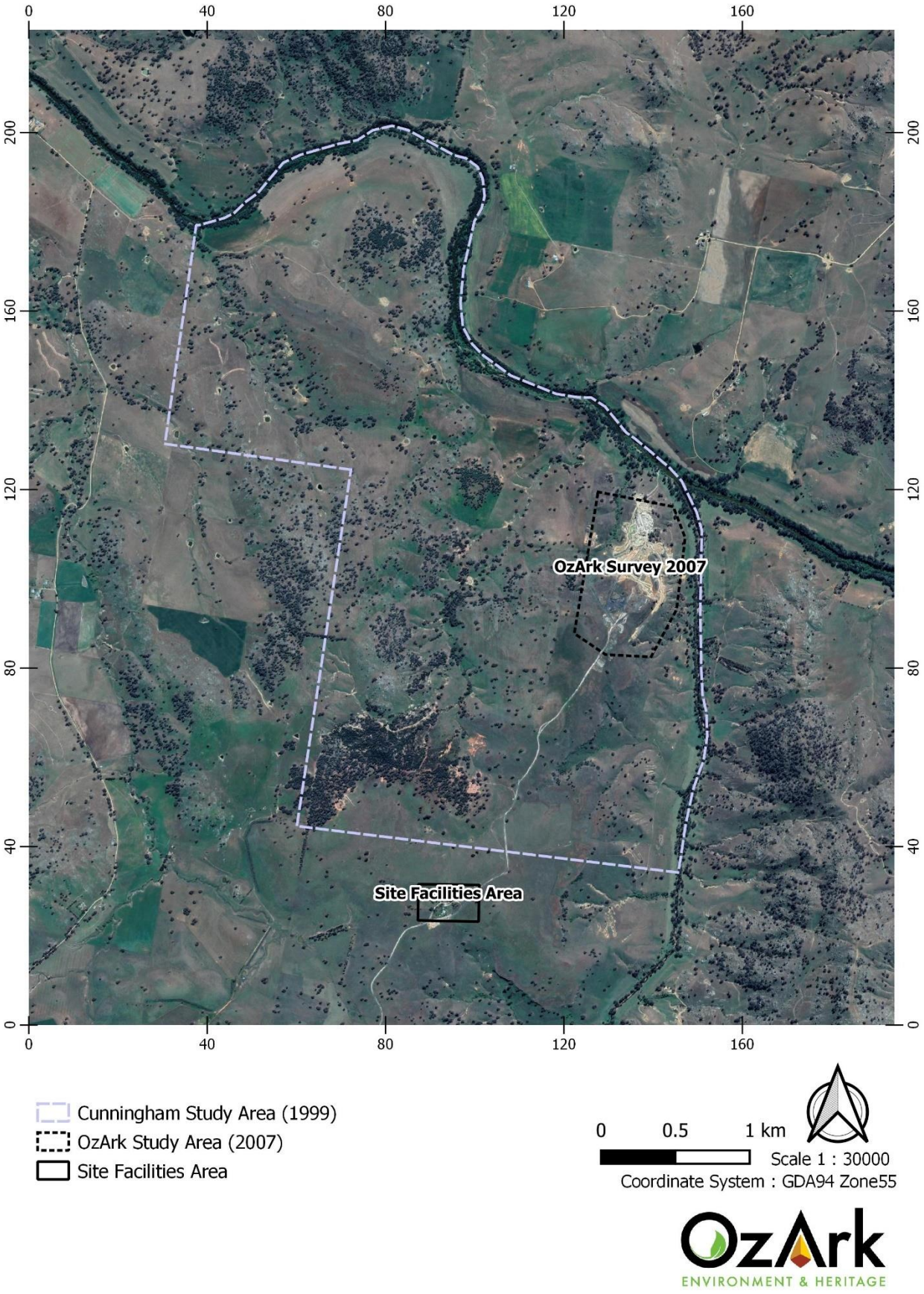


Figure 1-2. Map of Glenella Quarry and surrounds, showing the boundaries of previous survey areas. Note that the OzArk 2007 study area matches the proposal area.

1.2 Assessment approach & scope

The desktop investigation for the proposal area used the following approach:

- Obtaining and assessing the previous assessment reports
- Reviewing and summarizing the methods used and the results of each assessment
- Mapping the area covered by the previous assessments
- Mapping the vegetation communities detailed in the previous assessments
- Highlighting any changes in species, populations and ecological communities listed under the *Biodiversity Conservation Act 2016* and the *Environment Protection and Biodiversity Conservation Act 1999*
- Drawing some conclusions as to the adequacy of previous assessments
- Making recommendations regarding any further work needed.

Without field verification, conclusions in this report are based on interpretation of prior assessment results in the context of current legislative requirements.

1.3 Previous biodiversity assessments

The proposal area has been the subject of several previous biodiversity assessments (**Table 1-1**). Fauna assessments were conducted by Dr Leon Lim, Mr David Read, and Gerry Swan (Countrywide Ecological Service) in 1999, and by Phillip Cameron (OzArk Environment & Heritage) in 2006. Flora assessments were conducted by Geoff Cunningham (Geoff Cunningham Natural Resource Consultants Pty Ltd) in 1999, and by Phillip Cameron (OzArk Environment & Heritage) in 2006 (**Table 1-1**).

Table 1-1. Details of previous survey reports referred to in this analysis.

Company / Author / Year Finalised	Title	Specialist components
Countrywide Ecological Service / Dr Leong Lim, David Reed, Gerry Swan / August 1999.	Glenella Quartz Mine Project Fauna Survey and Assessment.	Fauna assessment
Geoff Cunningham Natural Resource Consultants Pty Ltd / Geoff Cunningham / 1999	Flora Study of the Proposed Glenella Quartz Mine Site South-East of Cowra.	Flora assessment
OzArk Environment and Heritage / Philip Cameron / 2007	Report No. 685/02 – 06/12/2006	Fauna and flora assessment

2 Methods

2.1 Overview of previous survey methodology

2.1.1 Cunningham (1999) Flora Survey

Desktop: Stereoscopic interpretation of colour aerial photos (taken 29 March 1998) to determine vegetation community features and boundaries. Note: no useful vegetation data or mapping existed for the site prior to the 1999 survey.

Fieldwork: Site visits were conducted on 25-29 January 1999 during typical summer conditions (18-34°C). At the time of the fieldwork conditions were dry but the preceding 5 days were rainy. Fieldwork involved foot and 4WD traverses of the site. 44 sample sites (50 m x 50 m quadrats) were chosen to be representative (**Figure 3-1**). At each sample site abundance & occurrence ratings were recorded for all ground cover species present using the modified Braun-Blanquet 6-point scale.

2.1.2 OzArk (2007) Flora Survey

Desktop:

- Searches of the BioNet website that encompasses the NSW DEC Wildlife Atlas for Threatened Flora and Fauna, Australian Museum, NSW Royal Botanic Gardens and Forests NSW databases for the Cowra Local Government Area (LGA). Threatened species of National significance that could occur in the area were identified from a search of the *Environment Protection and Biodiversity Conservation Act 1999* online database (2005).
- A review of current legislation including the *New South Wales Heritage Act 1977* (HA 1977), *New South Wales National Parks & Wildlife Act 1974* (NPW Act 1974)*, Threatened Species Conservation Act 1995* (TSC Act 1995), *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act 1999)*, Native Vegetation Conservation Act 1997* (NV Act 1997) and the *Environmental Planning and Assessment Amendment (Infrastructure and Other Planning Reform) Act 2005* (EP&A Act 2005).
- A review of available relevant literature including previous consulting reports, academic theses and articles and available works on the ecology and flora

Fieldwork:

- OzArk (2007) visited some of the same sites as Cunningham (1999), though the sites were restricted to the OzArk (2007) study area detailed in (**Figure 1-2**). Further, the report does not

specify how many plots were conducted, nor is their specific location within the study area recorded on a map. Specifically, the flora surveys were conducted as 20 m x 20 m quadrats to record:

- Canopy layer dominant species
- Shrub layer dominant species
- Ground layer dominant species
- Draft vegetation unit
- Miscellaneous notes

- OzArk (2007) also conducted targeted threatened plant species surveys within the quadrats outlined above. These "included extensive periods of targeted meander searching across the primary impact areas that is evidently suitable to detecting threatened species. Emphasis was placed on those threatened species considered to potentially occur in the study area (due to existing nearby records or suitable habitat). These included: *Austrostipa wakoolica, Goodenia macbarronii, Swainsona sericea, Philotheca ericifolia, Ammophilum craspedioides, Leucochrysum albicans var. tricolour and Thesium australe, Arachnorchis concolor, Prasophyllum petilum, Pterostylis cobarensis, Diuris sheaffiana".*

Importantly, although OzArk (2007) conducted targeted flora surveys, they were not in accordance with the newly required methodology for targeted flora surveys according to the BAM (2020). See DPIE, 2021. https://www.environment.nsw.gov.au/topics/animals-and-plants/biodiversity/accredited-assessors/assessor-resources for information on targeted survey requirements according to the BAM.

2.1.3 Lim et al. (1999) Fauna Survey

Lim et al. (1999) undertook fauna surveys over the period 17-21 December 1998 (five days, four nights), within the Glenella Quarry surrounds. Ecologists undertook visual observation and call surveys during the day for diurnal species whilst also looking beneath logs, bark, and litter for reptiles and other sheltering species. Targeted fauna surveys consisted of Elliott trapping, pitfall trapping, hairtube trapping (continued until 5 January 1999), harp trapping, and anabat recordings; the majority of these techniques were employed outside of the proposal area (see **Figure 2-1**).

2.1.4 OzArk (2007) Fauna Survey

OzArk undertook site traverses to detect any fauna species that might be present over the period of 29-30 December 2006. These surveys all took place inside the proposal area (**Figure 2-1**).

OzArk also undertook targeted fauna surveys on the 29th and 30th of December 2006 (2 days, 1 night). Targeted surveys consisted of call playback, Elliott trapping, hair funnel trapping, spotlighting, anabat recordings, harp trapping, bird point counts, general herpetological searches (e.g., raking litter, prising up bark, turning over logs, spotlighting for frogs at night, and identifying frog calls, pitfall trapping), and animal track analysis. Whilst the results of these surveys were productive, it is important to note that they do not abide by the new BAM (2020) guidelines for targeted fauna surveys (see **Section 2.2**). See also DPIE, 2021. https://www.environment.nsw.gov.au/topics/animals-and-plants/biodiversity/accredited-assessors/assessor-resources for information on targeted survey requirements according to the BAM.

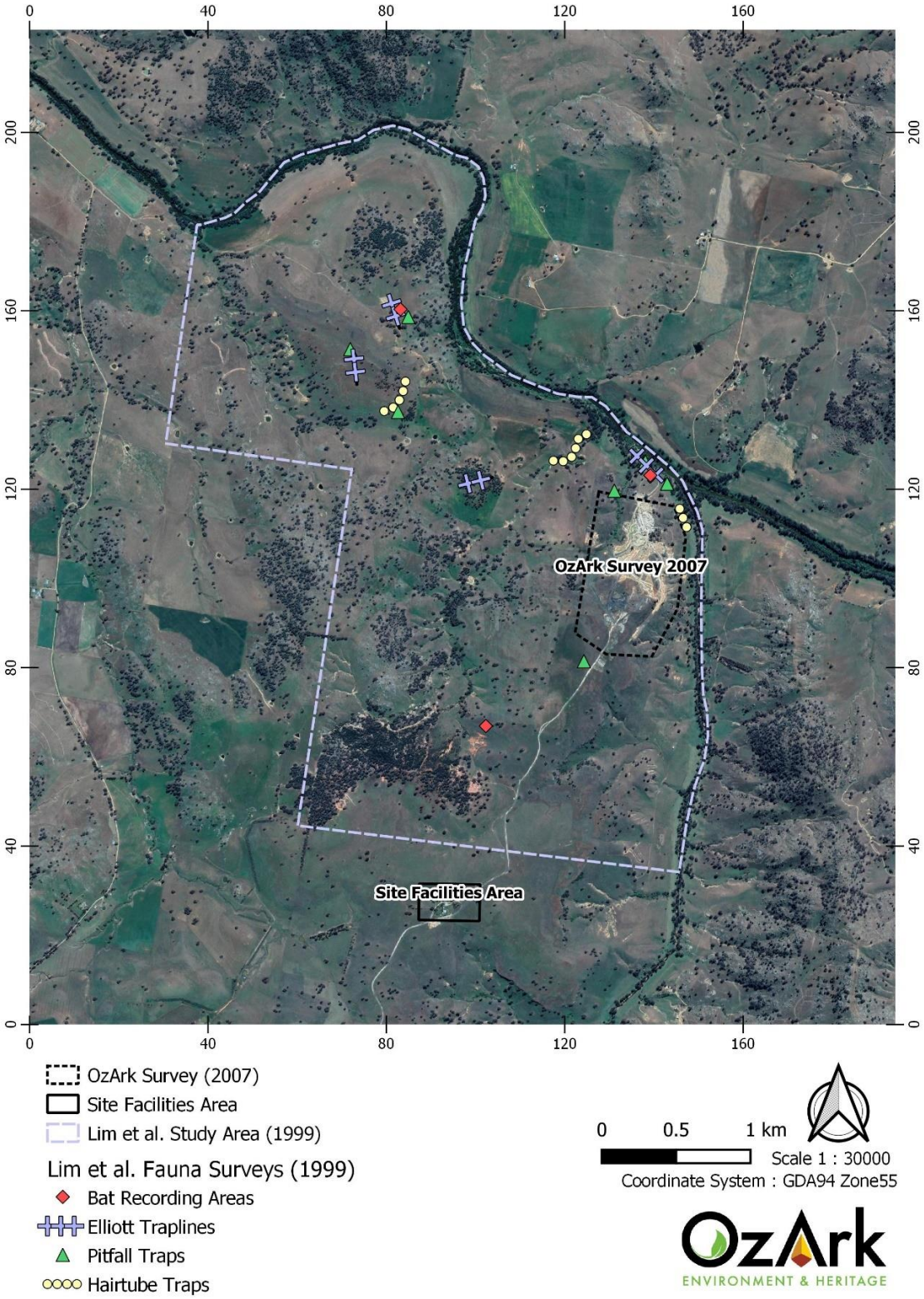


Figure 2-1. Map of Glenella Quarry and surrounds showing previous fauna survey effort. Note that the OzArk 2007 study area exactly matches the proposal area.

2.2 Overview of required survey methodology under current legislation

Based on the recent release of revised Biodiversity Assessment Method (BAM) 2020 guidelines, almost all Part 4 development projects are now assessed using a Biodiversity Development Assessment Report (BDAR). This is primarily due to definitions of native vegetation being based on the presence of *any* native plant species and the low thresholds for the clearing of native vegetation (**Table 2-1**). It is noted that the proposal area is a mix of previously disturbed land and native vegetation. According to the developer, the increased quarrying activity will not result in the clearing of any further native vegetation. As such, the development will not exceed the clearing thresholds for entry into the NSW Biodiversity Offset Scheme (**Table 2-1**).

Table 2-1. Clearing thresholds above which the BAM and NSW Biodiversity Offset Scheme Applies.

Minimum lot size associated with the property	Threshold for clearing, above which the BAM and offsets scheme apply
Less than 1 ha	0.25 ha or more
1 ha to less than 40 ha	0.5 ha or more
40 ha to less than 1000 ha	1 ha or more
1000 ha or more	2 ha or more

The proposal area is also not mapped on the Biodiversity Values Map, so will not trigger the Biodiversity Offset Scheme (BOS) via that pathway either (**Table 2-2**). However, the development may have to be assessed as per section 7.3 of the Biodiversity Conservation Act 2016 (**Table 2-2**). This would involve conducting five-part tests for the predicted threatened species. Given that there will be no further clearing, the impact to remnant flora and fauna would only be via an increase in traffic, noise, dust, and other disturbances associated with an increased rate of extraction from the existing quarry.

Table 2-2. Circumstances under which entry to the NSW Biodiversity Offset Scheme is triggered.

Trigger	Likely to be Triggered by the proposal?	Comments
If the area of native vegetation clearing exceeds the threshold area for the lot size	No	The proposal will not result in any further clearing of native vegetation
If the development occurs in an area included on the Biodiversity Values map	No	The proposal area is not mapped on the Biodiversity Values Map. Please note that the adjacent Lachlan River and creeks are mapped on the Biodiversity Values Map
If the development is likely to have a significant impact on threatened species, populations or ecological communities, or their habitats, as per section 7.3 of the Biodiversity Conservation Act 2016 (five-part-test).	Possibly, but unlikely	Desktop analyses and previous biodiversity assessment show some threatened species were present in 1999 and 2006 when last surveyed. Seven-part tests were conducted for those threatened species predicted to be present. For those species that have been listed as threatened since 2007 it is possible that five-part tests will have to be run for those species. However, since no further clearing is planned, it is likely that those tests will return the result of “no significant impact”.

3 Results

3.1 Previous Survey Findings

3.1.1 Cunningham (1999) Flora Survey Results

The results of Cunningham (1999) are very comprehensive and encompass the entire proposal area (**Figure 3-1**). Of the 44 plots carried out by Cunningham (1999) this report focuses on those plots that fall within, or closely adjacent to the proposal area: plots 4, 30, 35, 36, 37, 39, and 40 (**Table 3-1; Figure 3-1**). These survey results indicate that in 1999, the proposal area contained the vegetation community *White Box – White Cypress Pine Community on the Open Basalt Plateau* and a small area of *River Red Gum Community along the Boorowa and Lachlan Rivers.* The remaining vegetation within the proposal area was classified as "Open Grazing and Cultivation Country" by Cunningham (1999). Under current guidelines for assessing biodiversity under the Biodiversity Assessment Method (BAM), this vegetation may be deemed native vegetation if there are native species remaining within the grazed landscape (see **Section 2.2**).

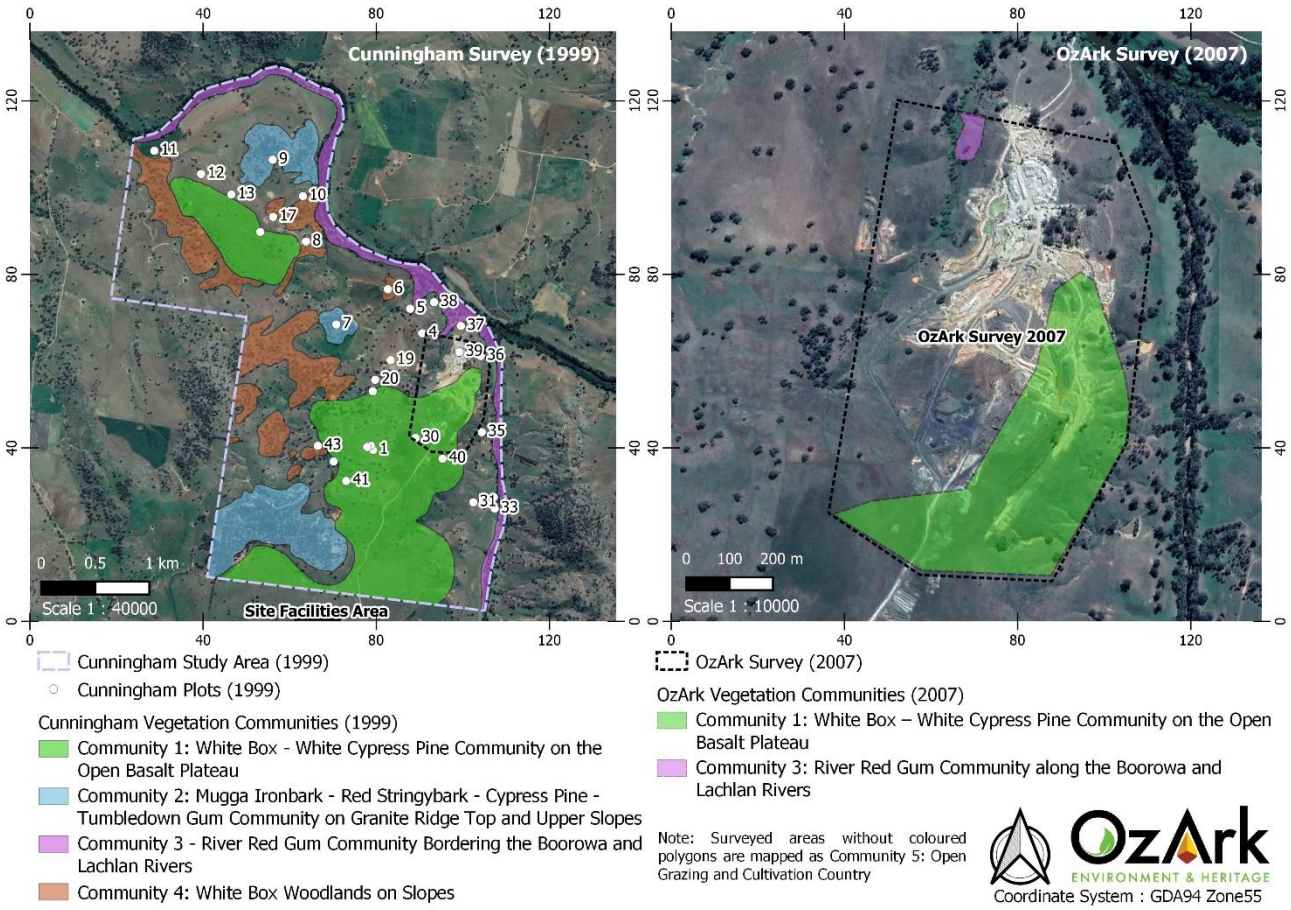


Figure 3-1. Maps of Glenella Quarry and surrounds showing previous survey effort and vegetation communities. Left: Cunningham (1999) with the location of each vegetation plot (numbers) and the identified vegetation communities. Right: OzArk (2007) showing the general survey area and the vegetation communities.

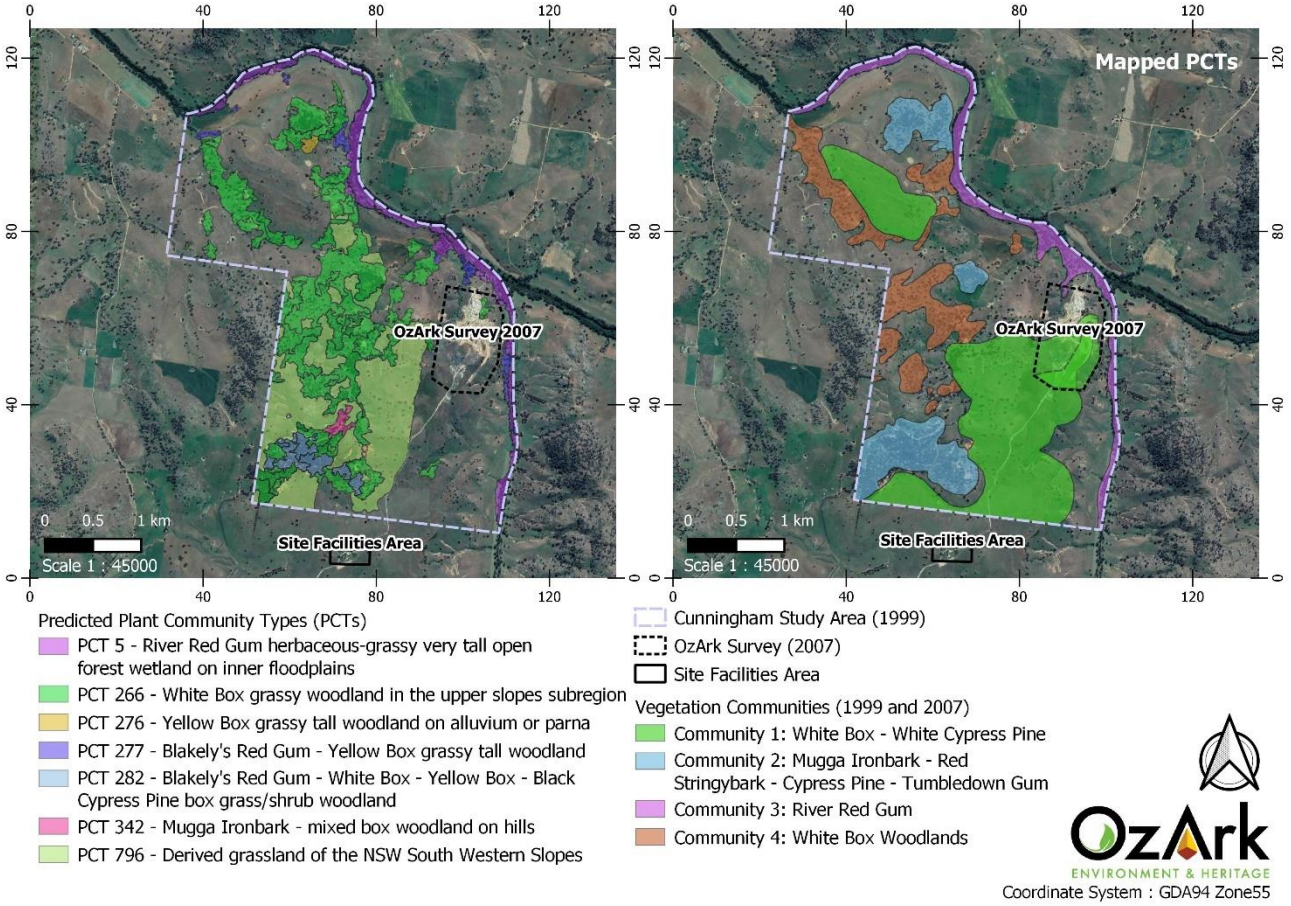


Figure 3-2. Maps of Glenella Quarry and surrounds showing previously surveyed areas. Left: current predicted PCT mapping (according to prediction models). Right: ground-truthed PCT mapping according to Cunningham (1999) and OzArk (2007), the unshaded areas were mapped as non-native vegetation.

Table 3-1. Cunningham (2009) survey data for plots within or immediately adjacent to the proposal area. * Denotes Exotic Species.

Plot	Canopy	Midstorey	Understorey
4	Scattered trees, mainly *Eucalyptus albens* and *E. blakelyi*.	None	*Bothriochloa macra, *Bromus molliformis, *Carthamus lanatus, Cheilanthes sieberi, Chloris truncate, *Chondrilla juncea, Convolvulus erubescens, Panicum effusum, *Petrorhagia nanteuilii, Plectranthus* sp., **Rostratia pumila, Austrostipa scabra* subsp. *falcata*, **Trifolium angustifolium, *Vulpia* sp.
30	"Treeless cultivation country."	None	*Unidentified cereal stubble, **Ibicella lutea*
35	*Eucalyptus blakelyi, E. macrorhyncha*, and *Brachychiton populneus* in rocky areas, 10-30 m.	Patches of *Acacia paradoxa*.	**Lysimachia arvensis, Aristida ramosa, Bothriochloa macra, *Bromus molliformis, *Carduus nutans, *Carthamus lanatus, *Centaurium spicatum, Cheilanthes distans, *Chondrilla juncea, *Echium plantagineum, *Hordeum leporinum, Hypericum gramineum, *Hypericum perforatum, *Lactuca serriola, Lomandra* sp*., *Pentaschistis airoides, *Petrorhagia nanteuilii, Rumex brownii, *Salvia verbenaca, *Solanum nigrum, *Trifolium angustifolium, *Trifolium arvense, *Verbascum virgatum, *Verbena bonariensis*
36	"Treeless pasture country," with some *E. camaldulensis* and *Casuarina cunninghamiana* along the river, 5-10 m.	None	*Alternanthera denticulata, Boerhavia dominii, *Citrullus lanatus, *Echium plantagineum, *Heliotropium europaeum, Hydrocotyle* sp., **Phalaris aquatica, Urtica incisa, *Verbena bonariensis, *Xanthium spinosum*
37	*Eucalyptus camaldulensis*, *C. cunninhamiana*, and *E. melliodora* near river. *Eucalyptus albens* and *E. blakelyi* on slope. Height 10-20 m.	None	*Bothriochloa macra, Cynodon dactylon, *Echium plantagineum, *Heliotropium europaeum, *Urtica urens, Verbena bonariensis*
39	*Eucalyptus blakelyi, E. macrorhyncha,* and *Brachychiton populneus*, 5-20 m.	None	*Bothriochloa macra, *Bromus molliformis, Cheilanthes sieberi, *Petrorhagia nanteuilii*
40	Scattered *Eucalyptus albens* and *Brachychiton populneus*.	Sandalwood (*Santalum* sp.) "at the edge of the plateau."	*Bothriochloa macra, *Bromus molliformis, *Carthamus lanatus, *Centaurium spicatum, Euphorbia drummondii, Cynodon dactylon, Rytidosperma duttonianum, *Echium plantagineum, *Hypochaeris radicata, *Pentaschistis airoides, *Trifolium angustifolium, *Trifolium glomeratum*

The plant communities identified in Cunningham (1999) and maintained in OzArk (2007) predate the current system of vegetation classification and hold no formal recognition. The present system of organising vegetation communities into Plant Community Types (PCTs) came into being in 2011 (DPIE 2020). It developed in part from the existing BioMetric Vegetation Types (BVT) database, codified in New South Wales by the *Native Vegetation Act 2003* and the Environmental Outcomes Assessment Methodology contained in the Native Vegetation Regulation 2005, which together defined the conditions under which native vegetation could be cleared. The delineation of plant communities into PCTs emerged from work conducted by J. S. Benson of the Royal Botanic Gardens and Domain Trust (Sydney, NSW) and published in the Trust's journal, *Cunninghamia*, beginning in 2006 (Benson 2006 and 2008; Benson et al. 2006 and 2010). In these papers, Benson and his collaborators defined the New South Wales Vegetation Classification and Assessment (NSW VCA) framework, which was subsequently incorporated into the BioNet Vegetation Classification application. A later paper by Maguire and colleagues (2012), including Benson, established protocols for the use of GIS in mapping the predefined communities of the NSW VCA framework onto high-resolution aerial landscape photographs. Existing PCTs are drawn from both the BVT database and the NSW VCA framework; changes and additions are overseen by a Plant Community Type Change Control Panel.

While the PCT system has emerged as the standard approach to the classification of vegetation communities, particularly in districts west of the Great Dividing Range, it did not entirely supplant earlier approaches to vegetation mapping. It remains possible to update earlier mapping to the PCT system, provided an equivalence can be made between the mapped communities and existing PCTs (DPIE 2019). This potentially allows earlier mapping efforts, such as those carried out for Glenella Quarry by Cunningham (1999) and OzArk (2007), to be carried over to the present system; however, in translating older vegetation mapping into the current system, attention must also be paid to the question of whether these communities form part of a Threatened, Endangered, or Critically Endangered Ecological Community (TEC, EEC, or CEEC). Since the initial survey in 1999, the list of threatened communities recognised at state and federal level has expanded and the thresholds for identification of these communities have changed. The same applies to the OzArk report of 2007.

At the time of the Cunningham (1999) survey, no vegetation community recorded from the quarry site was recognised as threatened; however, two of the described communities contained White Box (*Eucalyptus albens*) as their principal tree species (**Table 3-1**), and these may now be recognised as components of the BC Act-listed CEEC *White Box - Yellow Box - Blakely's Red Gum Grassy Woodland and Derived Native Grassland in the NSW North Coast, New England Tableland, Nandewar, Brigalow Belt South, Sydney Basin, South Eastern Highlands, NSW South Western Slopes, South East Corner and Riverina Bioregions (Box-Gum Woodland)* and the EPBC

Act-listed CEEC *White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland*. Additionally, the community described as “Open Grazing and Cultivation Country” may fall within the definitions of these CEECs depending on certain details of structure and composition. White Box - Yellow Box - Blakely’s Red Gum communities are listed as critically endangered at both state and national level. While national listing of this community was reportedly under consideration at the time of the initial survey, this did not take effect until May 12, 2006. Consequently, while the communities identified by Cunningham (1999) possessed no formal conservation protections in 1999, this may no longer be true.

At the time of the second survey (2007), community (i) and portions of community (iii) were regarded as falling within the then-current *White Box-Yellow Box-Blakely’s Red Gum Woodland* EEC in NSW and the still-current nationally listed CEEC *White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland*. This survey also considered that community (v), Open Grazing and Cultivation Country, may fall within the NSW-listed EEC on the grounds that that listing applied to all territory where the community formerly occurred. While the current form of this listing did not come into effect until Jul 17, 2020, the published identification criteria under the BC Act remain the same, and it is likely that this EEC still applies.

The proposal area was mapped by Cunningham (1999) and OzArk (2007) as containing the following vegetation communities:

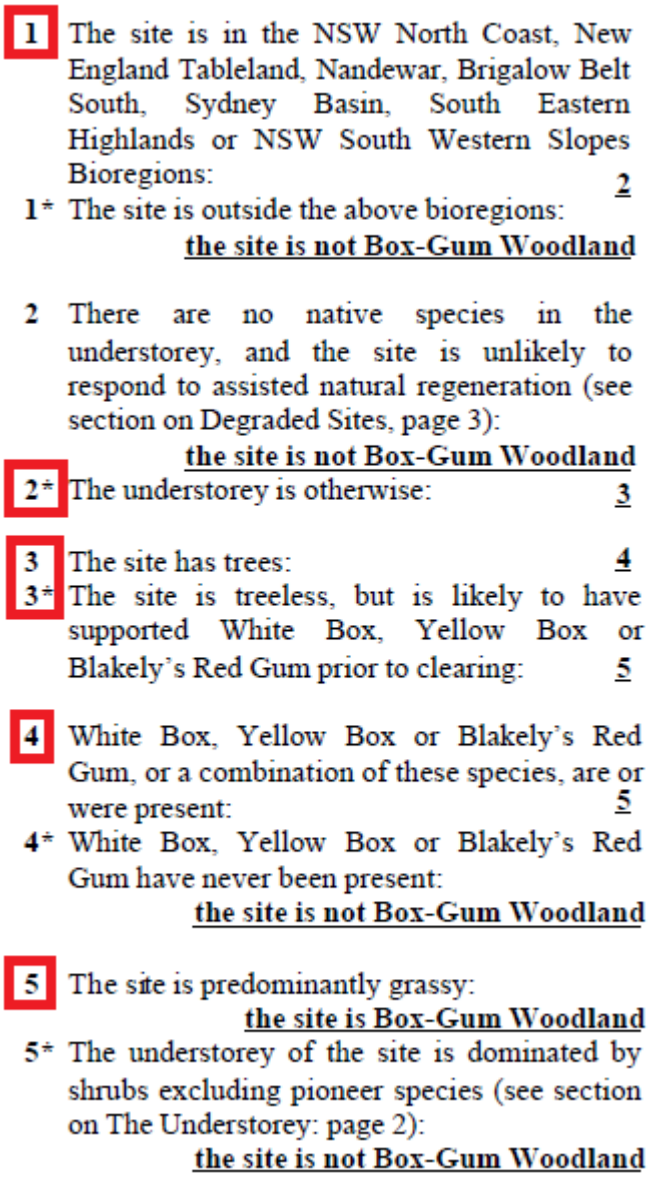
- *White Box – White Cypress Pine Community on the Open Basalt Plateau*
- *River Red Gum Community along the Boorowa and Lachlan Rivers*
- *Open Grazing and Cultivation Country*

As both “*White Box – White Cypress Pine Community on the Open Basalt Plateau*” and “*Open Grazing and Cultivation Country*” may now be recognised as components of a CEEC listed under both state and national legislation, it is important to clarify how these communities relate to the current PCT system and whether any formal conservation protections apply. This process requires direct equivalents to be found between mapped vegetation communities and established PCTs; consequently, it is dependent on the availability of survey data. In the Cunningham survey (1999), seven survey plots (4, 30, 35, 36, 37, 39, and 40) fall within or adjacent to the current subject site. Five of these (4, 35, 36, 37, 39; **Figure 3-1**) were situated in the area mapped as Open Grazing and Cultivation Country and two (30, 40; **Figure 3-1**) fall within the area mapped as *White Box – White Cypress Pine Community on the Open Basalt Plateau*. Flora recorded by Cunningham (1999) within each of these plots is presented in **Table 3-1.**

According to the species listed in the survey results (**Table 3-1**), the area surrounding plots 4 and 40 likely contains PCT 266 ("*White Box grassy woodland in the upper slopes sub-region of the NSW South Western Slopes Bioregion*") and associated derived grassland (PCT 796), which are components of the BC Act and EPBC Act CEEC. Plots 35 and 39 most closely resemble PCT 279 ("*Blakely's Red Gum - White Cypress Pine woodland on footslopes of hills in central part of the NSW South Western Slopes Bioregion*"), also a component of the CEEC. Plot 36, which approaches the riverbank, is most likely PCT 5 ("*River Red Gum herbaceous-grassy very tall open forest wetland on inner floodplains in the lower slopes sub-region of the NSW South Western Slopes Bioregion and the eastern Riverina Bioregion*"). Plot 37 contains this same community but points to a transition between this community and PCT 266; consequently, the upper slope area of this plot may form part of the CEEC. Plot 30 is non-native.

The areas around plots 4, 35, 39, and 40, together with parts of plot 37, meet the criteria for identification as the BC Act-listed CEEC (**Figure 3-3**) but do not meet the criteria for identification as the EPBC Act-listed CEEC (**Figure 3-4**), owing to the extremely sparse distribution of trees and the generally poor condition of the understorey. The areas around plots 30 and 36, along with the lower slopes of plot 37, do not meet the criteria for listing as any TEC, EEC, or CEEC.

A significant caveat to this approach is that, while overall community mapping for the site has been completed, the precise area covered by each survey is not recorded; consequently, it is not possible to map each PCT precisely.



1 The site is in the NSW North Coast, New England Tableland, Nandewar, Brigalow Belt South, Sydney Basin, South Eastern Highlands or NSW South Western Slopes Bioregions: **2**

1* The site is outside the above bioregions: **the site is not Box-Gum Woodland**

2 There are no native species in the understorey, and the site is unlikely to respond to assisted natural regeneration (see section on Degraded Sites, page 3): **the site is not Box-Gum Woodland**

2* The understorey is otherwise: **3**

3 The site has trees: **4**

3* The site is treeless, but is likely to have supported White Box, Yellow Box or Blakely's Red Gum prior to clearing: **5**

4 White Box, Yellow Box or Blakely's Red Gum, or a combination of these species, are or were present: **5**

4* White Box, Yellow Box or Blakely's Red Gum have never been present: **the site is not Box-Gum Woodland**

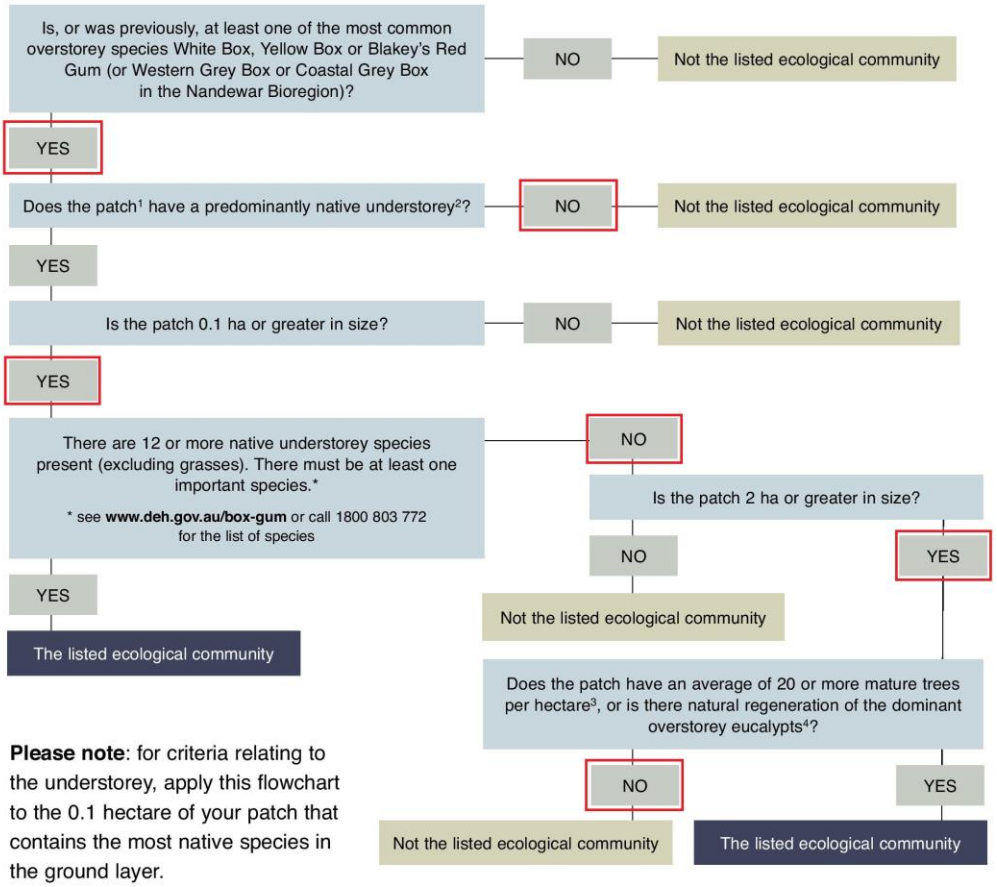
5 The site is predominantly grassy: **the site is Box-Gum Woodland**

5* The understorey of the site is dominated by shrubs excluding pioneer species (see section on The Understorey: page 2): **the site is not Box-Gum Woodland**

Figure 3-3. Identification criteria for the BC Act-listed *Box-Gum Woodland CEEC*. Responses for all patches are indicated in red.

The flowchart below represents the lowest condition at which patches are included in the listed ecological community. This is not the ideal state of the ecological community. Large patches, those that link remnants in the landscape, those that occur in highly cleared areas, those that contain rare, declining or threatened species, and those that represent the entire range of the ecological community, are important for the long-term future of the ecological community.

Determining if your land has an area of the listed ecological community



Please note: for criteria relating to the understorey, apply this flowchart to the 0.1 hectare of your patch that contains the most native species in the ground layer.

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[1] Patch – a patch is a continuous area containing the ecological community (areas of other ecological communities such as woodlands dominated by other species are not included in a patch). In determining patch size it is important to know what is, and is not, included within any individual patch. The patch is the larger of:

- an area that contains five or more trees in which no tree is greater than 75 m from another tree, or
- the area over which the understorey is predominantly native.

Patches must be assessed at a scale of 0.1 ha (1000m^2) or greater.

[2] A predominantly native ground layer is one where at least 50 per cent of the perennial vegetation cover in the ground layer is made up of native species. The best time of the year to determine this is late autumn when the annual species have died back and have not yet started to regrow. (At other times of the year, you can determine whether something is perennial or not is if it is difficult to pull out of the soil. Annual species pull out very easily.)

[3] Mature trees are trees with a circumference of at least 125 cm at 130 cm above the ground.

[4] Natural regeneration of the dominant overstorey eucalypts when there are mature trees plus regenerating trees of at least 15 cm circumference at 130 cm above the ground.

5

Figure 3-4. Identification criteria for the *EPBC Act-listed White Box – Yellow Box – Blakely's Red Gum Grassy Woodland* and Derived Native Grassland CEEC. Responses for all patches are indicated in red.

3.1.2 OzArk (2007) Flora Survey Results

The OzArk (2007) report resurveyed the proposal area and drew the same conclusions as Cunningham (1999) regarding the vegetation community for that area: *White Box – White Cypress Pine Community on the Open Basalt Plateau.* The OzArk (2007) Flora Survey results are summarized briefly below.

Three vegetation communities were recorded:

- Community (i) White Box – White Cypress Pine Community on the Open Basalt Plateau;
- Community (iii) River Red Gum Community along the Boorowa and Lachlan Rivers; and
- Community (v) Open Grazing and Cultivation Country.

At the time of the report, communities (i) and (iii) had technical protection as Endangered Ecological Communities in NSW (Box-gum Woodland). It was concluded via a seven-part test (now revised to a 5 part test) that the proposed quarry expansion in 2007 would have "no significant impact to this community as, in reality, it is highly disturbed, depleted of the majority of associated species and is represented in the field by approximately 28 isolated trees (8 mature on the basalt caps and 20 younger trees on the slopes). In essence, this community has a poor chance of natural recovery within the exiting agricultural setting and as such, its loss will not cause a significant impact to the remaining function of the EEC." No threatened flora species were detected in the targeted flora surveys conducted by OzArk (2007).

OzArk (2007) further reported that "The majority of direct impacts associated with the proposal are concentrated in cleared and disturbed land. Where vegetation clearing is to occur, there is a very low diversity of native species, moderate weed invasion and is in poor condition. All three vegetation communities present in the study area will not change to their status nor will they be adversely modified as a result of the proposal. The associate fauna habitats were poor in all areas. No impact assessments were required for flora species and no regionally significant species were recorded during the assessment."

3.1.3 Previous Fauna Survey Results

The majority of fauna recorded in previous surveys were birds; for the purpose of this report, only those birds currently classified as threatened and detected by Lin et al. (1999) and/or OzArk (2007) will be detailed below. Seven species of threatened birds were recorded during previous surveys within the study area:

- Barking Owl (*Ninox connivens*) – Current Status in NSW: Vulnerable
- Superb Parrot (*Polytelis swainsonii*) – Current Status in NSW: Vulnerable
- Brown Treecreeper (*Climacteris picumnus*) – Note the Eastern Subspecies (*Climacteris picumnus victoriae*) is currently listed as vulnerable in NSW and predicted to be present in Glenella Quarry surrounds based on PCTs present
- Hooded Robin (*Melanodryas cucullata*); – Current Status in NSW: Vulnerable
- Diamond Fire Tail Finch (*Stagonopleura guttata*) – Current Status in NSW: Vulnerable
- Dusky Woodswallow (*Artamus cyanopterus cyanopterus*) – Current Status in NSW: Vulnerable (listed in 2016, therefore was not listed at the time of previous surveys; see **Appendix**)
- Little Eagle (*Hieraaetus morphnoides*) – Current Status in NSW: Vulnerable (listed in 2010, therefore was not listed at the time of previous surveys; see **Appendix**)

Seven part tests (now revised to five part tests) undertaken on those threatened bird species showed that previous proposed quarry expansions would not cause significant impact such that a viable local population is likely to become extinct. As this test has now changed, it is possible that they would have to be repeated as five part tests, and should include all species listed as threatened since 2006 that may occur in the proposal area (see **Appendix** for a full list of threatened species associated with the PCTs predicted to occur in the proposal area).

14 species of mammals have previously been recorded on the Glenella property. None of these mammals are currently listed as threatened in NSW (**Table 3-2**).

Table 3-2: Mammal species recorded on the Glenella property during previous surveys.

Common name	Scientific name
Short-beaked Echidna	*Tachyglossus aculeatus*
Common Brushtail Possum	*Trichosurus vulpecula*
Common Ringtail Possum	*Pseudocheirus peregrinus*
Eastern Grey Kangaroo	*Macropus giganteus*
Common Wallaroo	*Macropus robustus*
Swamp Wallaby	*Wallabia bicolor*
Little Forest Bat	*Vespadelus (Eptesicus) vulturnus*
Large Forest Bat	*Vespadelus (Eptesicus) darlingtoni*
Regal Forest Bat	*Vespadelus (Eptesicus) regulus*

Common name	Scientific name
Gould's Long-eared Bat	*Nyctophilus gouldi*
Lesser Long-eared Bat	*Nyctophilus geoffroyi*
White-striped Mastiff-bat	*Nyctinomus (Tararida) australis*
Little Mastiff-bat	*Mormopterus planiceps*
Eastern Broad-nosed Bat	*Scotorepens orion*

Five species of frogs have been recorded on the Glenella property, one (*Crinia sloanei*) is listed as Vulnerable in NSW and has a Commonwealth Status of Endangered (**Table 3-3**). This species had no listing status at the time of previous surveys.

Table 3-3. Frog species recorded on the Glenella property during previous surveys.

Common name	Scientific name	Comments
Sloane's Froglet	*Crinia sloanei*	Detected in 1999 but not 2006. Conservation status in NSW: Vulnerable Commonwealth Status: Endangered
Common Froglet	*Crinia signifera*	Detected in 1999 and 2006.
Spotted Grass Frog	*Limnodynastes tasmaniensis*	Detected in 1999 but not 2006.
Peron's Tree Frog	*Litoria peronii*	Detected in 1999 but not 2006.
Gunther's Frog	*Litoria latopalmata*	Detected in 1999 but not 2006.

Ten species of reptiles have been identified on the Glenella property (**Table 3-4**), none of these are threatened.

Table 3-4. Reptile species recorded on the Glenella property during previous surveys.

Common name	Scientific name	Comments
Marbled Southern Gecko	*Christinus marmoratus*	Recorded in 1999 only
Eastern Bearded Dragon	*Pogona barbata*	Recorded In 1999 and 2006
Spiny-palmed Shining Skink	*Cryptoblepharus carnabyi*	Recorded In 1999 and 2006
Robust *Ctenotus*	*Ctenotus robustus*	Recorded In 1999 and 2006
Cunningham's Spiny-tailed Skink	*Egernia cunninghami*	Recorded In 1999 and 2006
Tree-crevice Skink	*Egernia striolata*	Recorded In 1999 and 2006
Common Blue tongue	*Tiliqua scincoids*	Recorded in 1999 only
Eastern Brown Snake	*Psuedonaja textilis*	Recorded in 2006 only
Black Snake	*Pseudechis porphyriacus*	Recorded in 2006 only
Lace Monitor	*Varanus varius*	Recorded in 2006 only

4 Conclusions

The proposal area has been the subject of some comprehensive flora and fauna assessments; particularly those conducted in 1999. The proposal area has had a thorough flora assessment conducted by Cunningham (1999) and additional assessments conducted by OzArk (2007). According to the data contained in the above reports, and in the absence of a site visit, it is suspected that the BC Act-listed *Box-Gum Woodland CEEC* (Critically Endangered Ecological Community) exists in the proposal area and if it were to be cleared it would require assessment under the new legislation. In addition, the vegetation plots and targeted surveys conducted in the past were not in accordance with the current BAM (2020) guidelines for development. However, considering that there is no further clearing planned for the site, we do not anticipate any further impacts to flora at the site.

The fauna assessment conducted by Lin et al. (1999) focused broadly on the surrounding area such that no fauna traps fell specifically within the proposal area. As such, the results of that study are not directly informative, other than for context, as to what fauna might be likely to be in the area. However, the fauna assessments conducted by OzArk (2007) focused on the proposal area and are directly applicable. The results of the above fauna studies revealed the presence of some threatened species (see **Appendix**); OzArk (2007) undertook seven-part tests for these species, the results of which showed no significant impact of the quarry expansion on those species. Since that report several further species have been listed as threatened (see **Appendix**), as such the revised five-part tests for those species may now be required. However, considering that there is no further clearing intended to take place at the existing quarry site, we expect that these five-part tests would return a result of “no significant impact” and further biodiversity assessments under BAM (2020) will be unnecessary.

5 References

Benson JS (2006). New South Wales Vegetation Classification and Assessment: Introduction - the classification, database, assessment of protected areas and threat status of plant communities. *Cunninghamia* 9(3): 331-381.

Benson JS (2008). New South Wales Vegetation Classification and Assessment: Part 2 Plant communities in the NSW South-western Slopes Bioregion and update of NSW Western Plains plant communities. Version 2 of the NSWVCA database, *Cunninghamia* 10(4): 599-673.

Benson JS, Allen CB, Togher C and Lemmon J (2006). New South Wales Vegetation Classification and Assessment: Part 1. Plant communities of the NSW Western Plains. *Cunninghamia*. 9(3): 383-450.

Benson JS, Richards PG, Waller S and Allen CB (2010). New South Wales Vegetation Classification and Assessment: Part 3 Plant communities of the NSW Brigalow Belt South, Nandewar and west New England Bioregions and update of NSW Western Plains and South-western Slopes plant communities, Version 3 of the NSWVCA database, *Cunninghamia*. 11(4): 457-579.

Department of Planning, Industry and Environment [DPIE] (2020) Biodiversity Assessment Method. Published 19 October 2020. environment.nsw.gov.au

Department of Planning, Industry and Environment [DPIE] (2019) Plant community types: Frequently asked questions. https://www.environment.nsw.gov.au/research/PCTfaq.htm

DPIE (2019) BioNet Vegetation Classification. https://www.environment.nsw.gov.au/research/Visclassification.htm

Maguire O, Armstrong RC, Benson JS, Streeter R, Paterson C, McDonald P, Salter N, East M, Webster M, Sheahan M and Young D (2012). Using high resolution digital aerial imagery interpreted in a 3-D digital GIS environment to map predefined plant communities in central-southern New South Wales, *Cunninghamia* 12(4): 247–266

6 Appendix

Threatened Species associated with the PCTs mapped in the proposal area. Bold font under Gazetted Date shows any species known to have become threatened since previous surveys were conducted.

Kingdom	Class	Species Scientific Name	Species Common Name	Associated PCTs	Previously Detected?	Gazetted Date	Conservation Status in NSW	Commonwealth Status
Animalia	Aves	*Anthochaera phrygia*	Regent Honeyeater	5, 266, 277	No	**05-Nov-10**	Critically Endangered	Critically Endangered
Animalia	Aves	*Artamus cyanopterus cyanopterus*	Dusky Woodswallow	5, 266, 277	Yes	**05-Aug-16**	Vulnerable	Not Listed
Animalia	Aves	*Burhinus grallarius*	Bush Stone-curlew	5, 266, 277	No	Not given	Endangered	Not Listed
Animalia	Aves	*Callocephalon fimbriatum*	Gang-gang Cockatoo	5, 266, 277	No	22-Jul-05	Vulnerable	Not Listed
Animalia	Aves	*Calyptorhynchus lathami*	Glossy Black-Cockatoo	266	No	Not given	Vulnerable	Not Listed
Animalia	Aves	*Chthonicola sagittata*	Speckled Warbler	266, 277	No	26-Oct-01	Vulnerable	Not Listed
Animalia	Aves	*Circus assimilis*	Spotted Harrier	5, 266, 277	No	**12-Feb-10**	Vulnerable	Not Listed
Animalia	Aves	*Climacteris picumnus victoriae*	Brown Treecreeper (eastern subspecies)	266, 277	Yes. Recorded as *Climacteris picumnus*	26-Oct-01	Vulnerable	Not Listed
Animalia	Aves	*Daphoenositta chrysoptera*	Varied Sittella	5, 266, 277	No	**12-Feb-10**	Vulnerable	Not Listed
Animalia	Aves	*Glossopsitta porphyrocephala*	Purple-crowned Lorikeet	5, 266	No	Not given	Vulnerable	Not Listed
Animalia	Aves	*Glossopsitta pusilla*	Little Lorikeet	5, 266, 277	No	**31-Jul-09**	Vulnerable	Not Listed
Animalia	Aves	*Grantiella picta*	Painted Honeyeater	5, 266, 277	No	Not given	Vulnerable	Vulnerable
Animalia	Aves	*Haliaeetus leucogaster*	White-bellied Sea-Eagle	5, 266, 277	No	**16-Dec-16**	Vulnerable	Not Listed
Animalia	Aves	*Hieraaetus morphnoides*	Little Eagle	5, 266, 277	Yes	**12-Feb-10**	Vulnerable	Not Listed
Animalia	Aves	*Hirundapus caudacutus*	White-throated Needletail	5, 266, 277	No	**04-Jul-19**	Not Listed	Vulnerable
Animalia	Aves	*Lathamus discolor*	Swift Parrot	5, 266, 277	No	24-Mar-00	Endangered	Critically Endangered
Animalia	Aves	*Lophoictinia isura*	Square-tailed Kite	5, 266, 277	No	Not given	Vulnerable	Not Listed
Animalia	Aves	*Melanodryas cucullata cucullata*	Hooded Robin (south-eastern form)	5, 266, 277	Yes. Recorded as *Melanodryas cucullata*	26-Oct-01	Vulnerable	Not Listed
Animalia	Aves	*Melithreptus gularis gularis*	Black-chinned Honeyeater (eastern subspecies)	5, 266, 277	No	26-Oct-01	Vulnerable	Not Listed
Animalia	Aves	*Neophema pulchella*	Turquoise Parrot	5, 266, 277	No	Not given	Vulnerable	Not Listed

Animalia	Aves	*Ninox connivens*	Barking Owl	5, 266, 277	Yes	12-Jun-98	Vulnerable	Not Listed
Animalia	Aves	*Ninox strenua*	Powerful Owl	5	No	Not given	Vulnerable	Not Listed
Animalia	Aves	*Pachycephala inornata*	Gilbert's Whistler	5	No	Not given	Vulnerable	Not Listed
Animalia	Aves	*Petroica boodang*	Scarlet Robin	5, 266, 277	No	**12-Feb-10**	Vulnerable	Not Listed
Animalia	Aves	*Petroica phoenicea*	Flame Robin	5, 266, 277	No	**12-Feb-10**	Vulnerable	Not Listed
Animalia	Aves	*Polytelis swainsonii*	Superb Parrot	5, 266, 277	Yes	Not given	Vulnerable	Vulnerable
Animalia	Aves	*Pomatostomus temporalis temporalis*	Grey-crowned Babbler (eastern subspecies)	266, 277	No	26-Oct-01	Vulnerable	Not Listed
Animalia	Aves	*Rostratula australis*	Australian Painted Snipe	5	No	25-Jun-04	Endangered	Endangered
Animalia	Aves	*Stagonopleura guttata*	Diamond Firetail	5, 266, 277	Yes	26-Oct-01	Vulnerable	Not Listed
Animalia	Aves	*Stictonetta naevosa*	Freckled Duck	5	No	Not given	Vulnerable	Not Listed
Animalia	Aves	*Tyto novaehollandiae*	Masked Owl	266, 277	No	Not given	Vulnerable	Not Listed
Animalia	Amphibia	*Crinia sloanei*	Sloane's Froglet	5	Yes	**28-Mar-08**	Vulnerable	Endangered
Animalia	Amphibia	*Litoria booroolongensis*	Booroolong Frog	277	No	13-Mar-98	Endangered	Endangered
Animalia	Reptilia	*Aprasia parapulchella*	Pink-tailed Legless Lizard	266, 277	No	Not given	Vulnerable	Vulnerable
Animalia	Reptilia	*Delma impar*	Striped Legless Lizard	277	No	Not given	Vulnerable	Vulnerable
Animalia	Insecta	*Synemon plana*	Golden Sun Moth	266, 277	No	15-Nov-96	Endangered	Critically Endangered
Animalia	Mammalia	*Cercartetus nanus*	Eastern Pygmy-possum	277	No	08-Jun-01	Vulnerable	Not Listed
Animalia	Mammalia	*Chalinolobus dwyeri*	Large-eared Pied Bat	277	No	Not given	Vulnerable	Vulnerable
Animalia	Mammalia	*Chalinolobus picatus*	Little Pied Bat	5	No	Not given	Vulnerable	Not Listed
Animalia	Mammalia	*Dasyurus maculatus*	Spotted-tailed Quoll	5, 266, 277	No	Not given	Vulnerable	Endangered
Animalia	Mammalia	*Falsistrellus tasmaniensis*	Eastern False Pipistrelle	266, 277	No	Not given	Vulnerable	Not Listed
Animalia	Mammalia	*Miniopterus orianae oceanensis*	Large Bent-winged Bat	266, 277	No	Not given	Vulnerable	Not Listed
Animalia	Mammalia	*Myotis macropus*	Southern Myotis	5	No	Not given	Vulnerable	Not Listed
Animalia	Mammalia	*Nyctophilus corbeni*	Corben's Long-eared Bat	266	No	Not given	Vulnerable	Vulnerable
Animalia	Mammalia	*Petaurus norfolcensis*	Squirrel Glider	5, 266, 277	No	Not given	Vulnerable	Not Listed
Animalia	Mammalia	*Petaurus norfolcensis - endangered population*	Squirrel Glider in the Wagga Wagga LGA	5, 266, 277	No	Not given	Vulnerable	Not Listed
Animalia	Mammalia	*Petrogale penicillata*	Brush-tailed Rock-wallaby	266, 277	No	04-Jul-03	Endangered	Vulnerable
Animalia	Mammalia	*Phascogale tapoatafa*	Brush-tailed Phascogale	5, 266, 277	No	Not given	Vulnerable	Not Listed
Animalia	Mammalia	*Phascolarctos cinereus*	Koala	5, 266, 277	No	Not given	Vulnerable	Vulnerable
Animalia	Mammalia	*Pteropus poliocephalus*	Grey-headed Flying-fox	5, 266, 277	No	04-May-01	Vulnerable	Vulnerable
Animalia	Mammalia	*Saccolaimus flaviventris*	Yellow-bellied Sheathtail-bat	5, 266, 277	No	Not given	Vulnerable	Not Listed

Plantae	Flora	*Acacia ausfeldii*	Ausfeld's Wattle	266, 277	No	**07-Sep-07**	Vulnerable	Not Listed
Plantae	Flora	*Ammobium craspedioides*	Yass Daisy	266, 277	No	Not given	Vulnerable	Vulnerable
Plantae	Flora	*Cullen parvum*	Small Scurf-pea	5, 277	No	Not given	Endangered	Not Listed
Plantae	Flora	*Euphrasia arguta*	Euphrasia arguta	266, 277	No	**02-Dec-11**	Critically Endangered	Critically Endangered
Plantae	Flora	*Grevillea wilkinsonii*	Tumut Grevillea	266	No	**15-May-20**	Critically Endangered	Endangered
Plantae	Flora	*Prasophyllum petilum*	Tarengo Leek Orchid	277	No	Not given	Endangered	Endangered
Plantae	Flora	*Swainsona recta*	Small Purple-pea	266, 277	No	Not given	Endangered	Endangered
Plantae	Flora	*Swainsona sericea*	Silky Swainson-pea	266, 277	No	24-Dec-99	Vulnerable	Not Listed

APPENDIX E

OzArk Heritage Desktop Study

View north from the southern portion of the OzArk 2007 assessment area showing the basalt cap landform

DESKTOP HERITAGE ADEQUACY ASSESSMENT

GLENELLA QUARRY

HILLTOPS COUNCIL LGA AND COWRA SHIRE COUNCIL LGA

APRIL 2021

Report prepared by

OzArk Environment & Heritage

for InSitu Advisory on behalf of

Glenella Quarry

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Acknowledgement

OzArk acknowledge Traditional Owners of the area on which this assessment took place and pay respect to their beliefs, cultural heritage and continuing connection with the land. We also acknowledge and pay respect to the post-contact experiences of Aboriginal people with attachment to the area and to the elders, past and present, as the next generation of role models and vessels for memories, traditions, culture and hopes of local Aboriginal people.

EXECUTIVE SUMMARY

OzArk Environment & Heritage (OzArk) has been engaged by InSitu Advisory, on behalf of Glenella Quarry (the proponent) to complete an Aboriginal heritage desktop adequacy assessment for the proposed production increase of the Glenella Quarry (the project), within existing consented boundaries.

The desktop investigation for the project area used the following approach:

- Undertaking searches of Aboriginal heritage databases
- Mapping the results of the Aboriginal Heritage Information Management System (AHIMS) search results
- Reviewing the regional and local archaeological context
- Using aerial imagery and existing modelling data to assess archaeological sensitivity and potential according to distance to water, landforms, land use, and accumulated impacts.
- Assessing the adequacy of previous assessments in relation to the current study area

The following points highlight the main conclusions of the desktop analysis in regard to the adequacy of previous assessments conducted across the study area:

- There is one previously recorded AHIMS site within the study area. This is on the northeast boundary of the study area. However, there are several recorded AHIMS sites in general proximity (see **Section 2.2.1**)
- The current study area was included in the assessment area cover by Thomas (1981).
- The current study area was included in the assessment area covered by Kelton (1999). It was surveyed by pedestrian means during Kelton's assessment, though this focused on hill and ridge crests and the upper hill slopes (see **Section 2.2.2.2**)
- The assessment conducted by OzArk (2007) included the entirety of the current study area.

As the study area has been assessed three times over the past thirty years, of which the latter two assessments were in the company of local Aboriginal community representatives; and as the entire study area is already approved for disturbance subsequent to the 2007 assessment, OzArk concludes that no further field assessment should be required.

Recommendations

Based on the desktop study, the following recommendations are made:

- As the entirety of the current study has been previously surveyed and approved for rock extraction, no further field assessment of the study area is required.

- Glenella Quarry should ensure that the location of isolated find GQ-IF-1 (#44-4-0346) is protected from any inadvertent impacts through fencing.
- This protection of GQ-IF-1 (#44-4-0346) should be perpetuated as part of the new project approval.
- It may be appropriate for Glenella Quarry to develop a Cultural Heritage Management Plan (CHMP) as an approval condition to ensure the ongoing protection of GQ-IF-1 (#44-4-0346), and to include other management measures including but not limited to:
    - An unanticipated finds protocol;
    - Cultural heritage induction / training for staff and contractors;
    - Establishment of a consultation strategy with current local Aboriginal groups in respect of heritage management etc.

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TABLES

1 INTRODUCTION

1.1 DESCRIPTION OF THE PROJECT

OzArk Environment & Heritage (OzArk) has been engaged by InSitu Advisory, on behalf of Glenella Quarry (the proponent) to complete an Aboriginal heritage desktop adequacy assessment for the proposed production increase of the Glenella Quarry (the project), within existing consented boundaries. This assessment has been prepared at a desktop level. The project is located in the Hilltops Council and Cowra Shire Council Local Government Areas (LGA's) (**Figure 1-1**).

1.2 PROJECT AREA

The proposal only relates to an increase in the extraction of material and does not require the physical expansion of the quarry beyond its current approved limits as shown in **(Figure 1-2**). This previously approved area (to be herein referred to as the study area) is located approximately 18 kilometres (km) southeast of Cowra, close to the confluence of the Lachlan and Boorowa Rivers. **Figure 1-1** shows the project area in relation to Cowra.

1.3 ASSESSMENT APPROACH

The desktop investigation for the study area used the following approach:

- Obtaining and assessing the previous assessment reports (OzArk 2007 and Kelton 1999)
- Review and summarise the methods used and the results of each assessment
- Mapping the results of the Aboriginal heritage Information Management System (AHIMS) search results
- Provide mapping to demonstrate areas previously assessed in relation to the current study area
- Draw some conclusions as to the adequacy of previous assessment and Aboriginal community consultation.
- Make recommendations regarding any further work needed.

Without field verification, conclusions in this report are based on prior assessment results and database searches.

Figure 1-1. Map showing the project area location.

Figure 1-2. Map showing the study area

2 ABORIGINAL ARCHAEOLOGICAL CONTEXT

2.1 REGIONAL ABORIGINAL HERITAGE CONTEXT

The Lachlan River flows generally in a westerly direction through Wiradjuri country and according to Tindale's (1974) and Horton's (1994) maps of tribal or ethno-linguistic boundaries, was home to a distinct river community of Wiradjuri speaking peoples prior to European settlement The project area falls within the Wiradjuri ethno-linguistic group.

Before the 1980's, no systematic, regional based archaeological studies had been undertaken in the Cowra area, and there were as a result, few sites recorded. Several studies more relevant to a scientific understanding of the archaeology of the Cowra region have been carried out in later years however, including Pearson (1981) , Witter (1992) and English and Gay (1995). Together these provide some baseline data for placing past Aboriginal sites within a regional landscape context. Following is a summary of the salient points learned from these studies.

Pearson (1981) worked primarily in the Upper Macquarie region, the western boundary of his study area being Wellington. According to Pearson archaeological sites could be divided into two main categories, occupation sites and non-occupation sites (which included grinding grooves, scarred or carved trees, ceremonial and burial sites etc.). An analysis of the location of these sites led him to build a model for site prediction which saw occupation sites occurring in places that had access to water, good drainage, level ground, adequate fuel and appropriate localised weather patterns for summer or winter occupation. Such places were most frequently found on low ridge tops, creek banks, gently undulating hills and river flats and usually in open woodland vegetation (Pearson 1981: 101 as quoted in Koettig 1985: 47). He notes that this pattern may differ somewhat as you head west (towards Dubbo and beyond) into the drier plains where there was a greater dependence on the larger, more permanent water supplies. The location of non-occupation sites were dependent on various factors relating to site function. For example, grinding grooves only occur where there is appropriate outcropping sandstone, but as close to the occupation site as possible. Scarred trees were variably located with no obvious patterning, other than proximity to watercourses, where camps were more frequently located, hence these provided a focus of human activity.

Witter (1992) undertook research for his PhD thesis in the Upper Lachlan River area to the northeast of the current study area. His results provide a framework for the interpretation of the local archaeology including the following contextual points:

- Campsites and stone tool assemblages of the Cowra-Lachlan River area tend to reflect occupation patterns consistent with the broader tablelands region
- artefact assemblages of the area include components of the Core and Flake tradition dating to c. 12,000-14,000 BP (Witter 1992:45 as quoted in Kelton 1999a:10)

- Quartz was the predominant raw material
- Occupation sites tend to occur most frequently along perennial watercourses, springs and soaks

English and Gay (1995) studied the Aboriginal occupation of the Wyangala Dam region, also to the northeast of the study area. They concluded that although their evidence could be interpreted in a number of ways, the most convincing was that past Aboriginal occupation was primarily the result of large groups occupying areas over a relatively short period of time. This was supported by the large size of the recorded camp sites which also had great quantities of stone artefacts spreading over extensive areas. The activities in evidence at these sites were diverse and although they were concentrated along watercourses, they could also be found up to a kilometre away in the hilly granite country near springs or soaks.

Several development driven assessments have also been conducted in the Cowra area. Comber (2006) conducted an archaeological assessment for the Cowra Sewerage Treatment Plant Augmentation within the town limits of Cowra. During the assessment five Aboriginal sites were recorded, three artefact scatters and two isolated finds.

Kelton (2000) conducted an archaeological assessment for a proposed residential sub-division on the northern limits of Cowra. During the assessment 25 Aboriginal sites were recorded, consisting of 22 modified trees and three artefact scatters. Kelton concluded through a site prediction model that relatively flat areas generally occurring along creek banks, and associated elevated terraces are the most archaeologically sensitive landforms in the general area. Other landforms identified by Kelton (2002) as locations for occupation sites include low gently sloping hillslopes and hill and ridge crests within close proximity to the Lachlan River and main creek lines.

In 2003, OzArk conducted a heritage survey for Aboriginal sites along a 5.5 km road corridor adjacent to the Lachlan Valley Way at Merriganowry Hill, north of Cowra. This survey recorded one scarred tree (LVWM -ST1).

In 2006, OzArk (2006a) conducted a heritage survey for Aboriginal sites at Holmwood Quarry, 8 km northeast of Cowra, NSW. This particular survey did not record any Aboriginal sites. OzArk (2006b) also conducted a heritage survey for Aboriginal sites at Mulyan Quarry, 4km north-northwest of Cowra, NSW. The survey recorded one open camp site (MQ-OS-1) and located a previously recorded site (GL-OS-1) which had been noted during previous assessment of the survey area. MQ-OS-1 is an open artefact site is situated on the banks of an un-named drainage line that runs parallel to Glen Logan Road. The site comprises four artefacts located within a ploughed paddock that forms the elevated western bank of the un-named drainage line. The artefacts include one silcrete flake that possesses definitive flake characteristics and three quartz pieces that are determined as being possibly flaked.

2.2 LOCAL ARCHAEOLOGICAL CONTEXT

2.2.1 AHIMS search

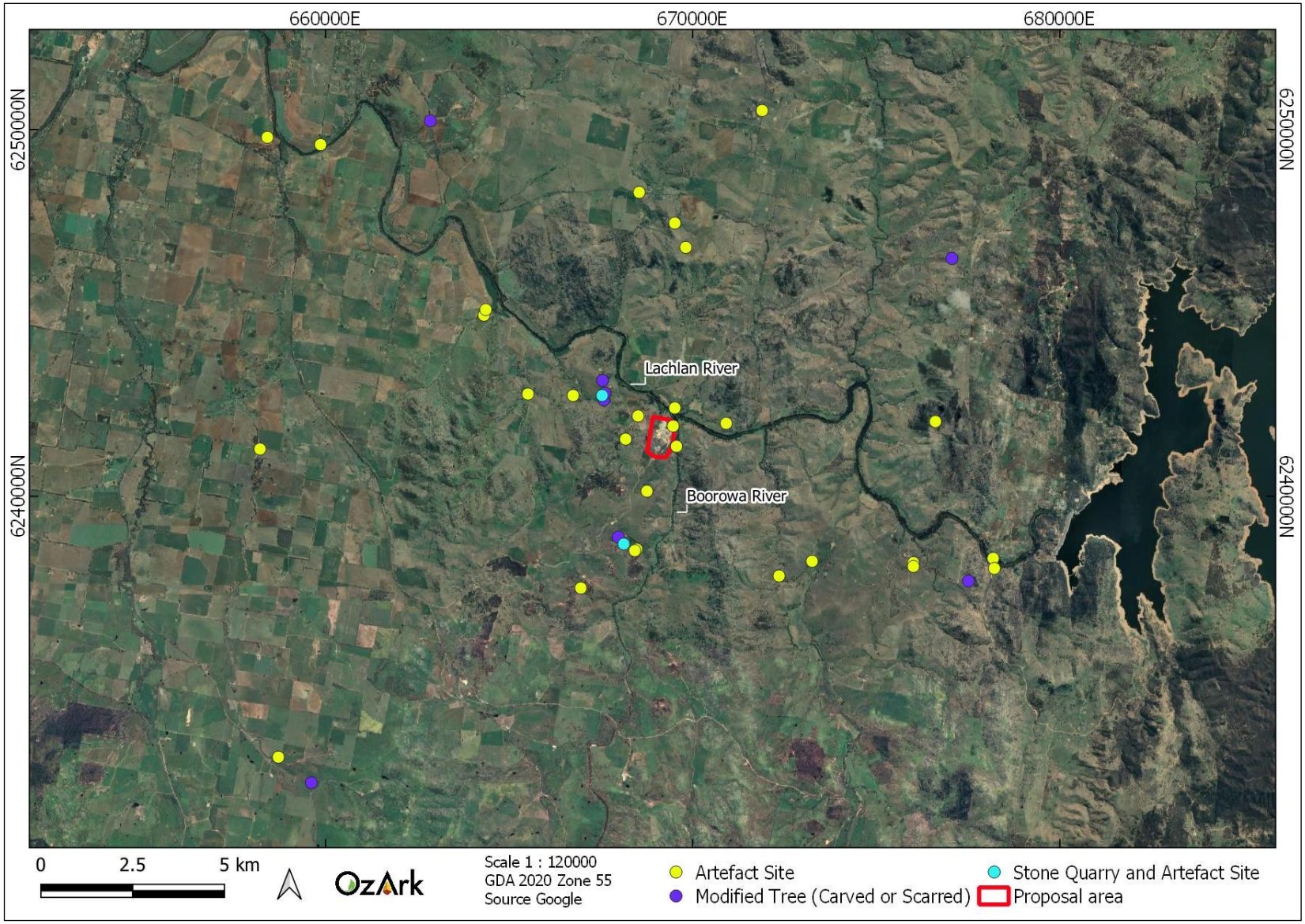
A search of the Heritage NSW administered AHIMS database returned 43 records for Aboriginal heritage sites within a 10 km search area centred on the project area (GDA Zone 55, Eastings: 657786–678456, Northings: 6229533–6250633 with no buffer) (see **Figure 2-1** and **Appendix 1**). The details of these sites are displayed in **Table 2-1.**

Table 2-1: Site types and frequencies of AHIMS sites in the study area.

Site Type	Number	% Frequency
Artefact sites	30	69.8
Modified (scarred or carved) tree	11	25.6
Stone quarry and artefact site	2	4.7
TOTAL	**43**	**100**

Figure 2-1 illustrates the site types recorded in the AHIMS search. The most common site type in the search area is artefact sites (69.8%). To this can be added the artefact site and stone quarry, as these are also stone artefact based open sites. Adding these together shows that 74.5% of previously recorded sites are comprised of stone artefact sites of varying sizes in open contexts. The next main category of sites is modified trees comprising of 25.6% of site types. The closest site type to the current study area is an isolated find consisting of a single chert core located approximately 100 m east of the study area. Further north a single silcrete flake was recorded approximately 370 m from the current study area. Approximately 360 m south of the study area a third artefact site is located. Based on the distribution of previously recorded site types and the quantity of each site type, the most likely site type to be recorded within the current study area are stone artefact sites.

Figure 2-1. AHIMS sites in relation to the study area.



2.2.2 Previous archaeological studies

Glenella Quarry is located in the upper Lachlan catchment and no dates of Indigenous occupation have been obtained from the study area, or the immediate vicinity. However, from previous studies (Winter 1992, Kelton 1999b) occupation dates based on lithic technologies stretch back at least to 14,000 years, and Kelton's studies have demonstrated that a Microblade industry existed in the region (4,000 BP to present).

2.2.2.1 Thomas 1984

The first heritage survey of the study area was undertaken in 1984 by I. Thomas as part of an Environmental Impact Statement (EIS) for a proposed extractive industry development on the Glenella property which included the current study area. Thomas' survey area was approximately 80 ha and included the existing quarry, the basalt cap, the adjacent hill slopes and the riverine margin. Within this larger survey area, Thomas surveyed the current study area, which is more limited in extent.

Thomas recorded a single open camp site (#44-4-0007) and an isolated chert core which was assumed to have been moved from site #44-4-0007. The site is located approximately 100 m east of the current study area. According to the site card description, #44-4-0007 is located on a low hill crest adjacent to a basalt cap overlooking the Boorowa River (**Figure 2-2).** The artefact assemblage at #44-4-0007 consisted of 17 flaked artefacts, seven small flakes and 10 pieces of debitage which were found on an eroded, flat surface. The artefacts comprised five silcrete and two quartz flakes.

2.2.2.2 Kelton 1998

In 1998, Jim Kelton, completed another heritage survey which included all of the current study area, and beyond (Kelton 1999b). Kelton was accompanied by Steven Ingram, a representative of the Cowra Local Aboriginal Land Council. This 165 ha survey for an expansion of the Glenella Quartz Quarry, covered a much larger area than the current study area, extending to the west along the south bank of the Lachlan River. This survey recorded 15 Aboriginal sites and three non-Aboriginal sites. Of the Aboriginal sites, six are scarred trees, three are open camp sites, four are isolated finds and two are stone procurement sites (quarries). The majority of these sites recorded by Kelton are located over 2 km west of the current study area. Kelton tried without luck to locate Thomas' site #44-4-007 but was unsuccessful due to thick grass cover. Current mapping shows site #44-4-007 to be located adjacent to Booroowa River (**Figure 2-2**), but it is noteworthy that the Kelton report plots this site much further north, and this may be the reason the site was not found. No Aboriginal sites were recorded by Kelton in the vicinity of the current study area. Two sites were recorded on Battery Creek which is located about 1 km to the west of the study area and consist of an isolated find (#44-4-0248) and an open camp site (#44-4-0246). It should

be noted, however, that Battery Creek is spring fed and no such drainage system is known to exist within the current study area.

Kelton's (1998) survey methodology employed a strategy of covering:

> *as much of the identified survey area as possible, employing a total coverage strategy that was as effective as possible given the constraints of time and funding… using a combination of vehicle and on-foot surface coverage methods* (Kelton 1998: 4-33).

It is also noted in Kelton's report that the ground surface visibility was overall low to moderate, though Kelton states that

> *When combined with the generally low level of assessed archaeological sensitivity given to a large proportion of the survey area landforms, the effectiveness of coverage was not significantly impeded: apart from the densely vegetated river banks, all other areas of relatively high archaeological sensitivity were found to have reasonable surface visibility (Kelton 1998:4-33).*

Unfortunately, there are no figures included in Kelton's report which demonstrate the exact location of pedestrian transects, likely due to the lack of GPS tracking available at that time. However, from the figures which are provided (Kelton 1997: Figure 3a to 3c) (see **Appendix 2**: Kelton Figures), all of the current study area has been surveyed, focusing on the hill and ridge crests and the upper hill slopes.

2.2.2.3 OzArk 2007

In 2007, OzArk undertook an assessment of the entire study area for the purpose of supporting the environmental studies for the development application over Glenella Quarry. It is important to note this boundary is identical to the current study area boundary and no new land is implicated. During OzArk's 2007 assessment, a search of the AHIMS register then revealed 24 previously recorded Aboriginal sites located within a 10 x 10 km square area centred on the current study area (663400–673400E, 6237000–6247000N. The site types represented include open camp sites (n=12), isolated finds (n=4), scarred trees (n=6) and quarries (n=2).

In November 2006, OzArk undertook full pedestrian survey of the project site over two days. The survey consisted of one OzArk Archaeologist and one site officer from the Cowra Local Aboriginal Land Council (LALC). During the pedestrian survey one Aboriginal site was recorded. This site, #44-4-0346, is an isolated find recorded on a farm track in the northeast corner of the project site (**Figure 2-2**)[1]. The artefact is a silcrete flake situated within a slope landform. GSV was high within the farm track but low within the rest of the project site.

[1] Please note the projection system for the AHIMS coordinates of this site, as shown in Appendix 1, are incorrect. The coordinates of this site should be listed as AGD not GDA. This AHIMS error has been brought to the attention of Heritage NSW (email dated 28/4/21). For the purpose of the mapping for this assessment, we have corrected the AHIMS coordinates system to show this site in its correct position.

Due to the sloping nature of the landform where #44-4-0346 is located, and the high disturbance that had occurred at the site due to farm practices, tree clearing and cutting the slope for track building, #44-4-0346 was assessed as not being *in situ* and had moved to its recorded location by either human or erosion agency.

As a result of the 2007 survey, it was assessed that the landforms that comprised the project site had low potential for the presence of intact, subsurface archaeological deposits. In particular, the dominant landform of the basalt cap had very shallow soils over basalt rock that was often exposed on the surface. As such, it would be extremely rare to find intact archaeological deposits in such landforms. The second landform of the study area, steep slopes to drainage lines, would probably have never been occupied, even if a depth of deposit had survived the impacts of tree clearing, farm use and erosion. The third landform type is the valleys of the minor drainage lines within the project site. In general these valleys tended to be very V-Shaped within the study area as increased run-off from the clearing of vegetation resulted in deeply incised drainage lines. Due to erosion and the fact that there is very little flat land adjacent to the drainage lines, the valleys were also assessed as having low potential to contain intact archaeological deposits.

During the survey, efforts were undertaken to locate the previously recorded site #44-4-0007. As was the case during Kelton's 1998 survey (Kelton 1999b), the 2007 survey failed to locate the site due to very low GSV. Again mapping may be an explanation for this. The location of #44-4-0007 is outside the study area, but GQ-IF-1 (#44-4-0346) is just within the current study area.

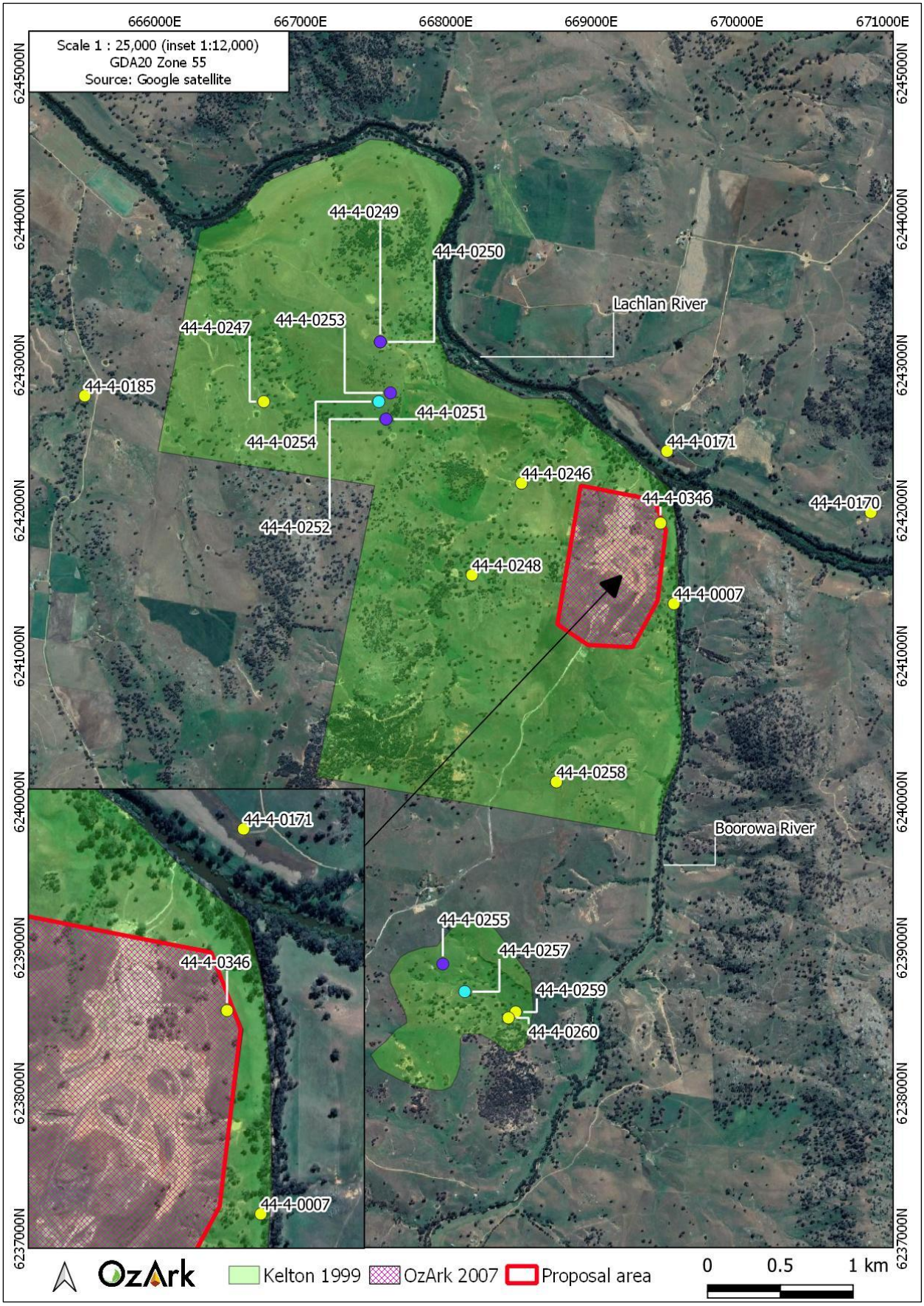
At the time of the 2007 assessment, it was acknowledged that GQ-IF-1 (#44-4-0346) was not going to be impacted by the Glenella Quarry project and that the track it was located adjacent to was not going to be used. As a result there was no recommendations for further investigation or site salvage.

2.2.3 Conclusions

Figure 2-2 shows the previous areas assessed by Kelton (1999) and OzArk (2007) and recorded AHIMS sites in the vicinity of the study area. The exact area assessed by Thomas (1984) is not defined well enough in order to be mapped. As can be seen from **Figure 2-2** the proposed quarry area is identical to that covered by OzArk in 2007 and has also been previously surveyed by Kelton (1999) (and Thomas in 1984). There is one recorded AHIMS site inside this study area, located at the very boundary in the north east, and there are several artefact scatters recorded surrounding the area.

As the study area has been assessed three times over the past thirty years, of which the latter two assessments were in the company of local Aboriginal community representatives; and as the entire study area is already approved for disturbance subsequent to the 2007 assessment, OzArk concludes that no further field assessment should be required.

Figure 2-2: Previous assessments and AHIMS sites in relation to proposed quarry extension.



3 SUMMARY AND RECOMMENDATIONS

3.1 SUMMARY

The following points highlight the main conclusions of the desktop analysis in regard to the adequacy of previous assessments conducted across the study area:

- There is one previously recorded AHIMS site within the study area. This is on the northeast boundary of the study area. However, there are several recorded AHIMS sites in general proximity (see **Section 2.2.1**)
- The current study area was included in the assessment area cover by Thomas (1981).
- The current study area was included in the assessment area covered by Kelton (1999). It was surveyed by pedestrian means during Kelton's assessment, though this focused on hill and ridge crests and the upper hill slopes (see **Section 2.2.2.2**)
- The assessment conducted by OzArk (2007) included the entirety of the current study area.

As the study area has been assessed three times over the past thirty years, of which the latter two assessments were in the company of local Aboriginal community representatives; and as the entire study area is already approved for disturbance subsequent to the 2007 assessment, OzArk concludes that no further field assessment should be required.

3.2 RECOMMENDATIONS

Based on the desktop study, the following recommendations are made:

- As the entirety of the current study has been previously surveyed and approved for rock extraction, no further field assessment of the study area is required.
- Glenella Quarry should ensure that the location of isolated find GQ-IF-1 (#44-4-0346) is protected from any inadvertent impacts through fencing.
- This protection of GQ-IF-1 (#44-4-0346) should be perpetuated as part of the new project approval.
- It may be appropriate for Glenella Quarry to develop a Cultural Heritage Management Plan (CHMP) as an approval condition to ensure the ongoing protection of GQ-IF-1 (#44-4-0346), and to include other management measures including but not limited to:
    - An unanticipated finds protocol;
    - Cultural heritage induction / training for staff and contractors;
    - Establishment of a consultation strategy with current local Aboriginal groups in respect of heritage management etc.

4 REFERENCES

English and Gay 1995 — English, A. and L. Gay 1995. Archaeological Survey and Assessment of Aboriginal Sites Wyangala Catchment, NSW. Report to NPWS and Wyangala Dam Sites Steering Committee.

Horton 1994 — Horton D. 1994. *The Encyclopaedia of Aboriginal Australia*. Canberra: Aboriginal Studies Press.

Kelton 1999 — Kelton, J. 1999. An Aboriginal archaeological survey of the proposed "Glenella" Quartz Mine, southeast of Cowra, Central West NSW. A report to R.W. Corkery.

Koettig 1985 — Koettig, M. 1985. Assessment of Aboriginal sites in the Dubbo City area. Report to Dubbo City Council.

OzArk 2003 — OzArk Environment and Heritage. 2003 Indigenous Heritage Survey – Lachlan Valley Way, Merriganowry, north of Cowra, NSW. Report to RTA Western region.

OzArk 2006a — OzArk Environment and Heritage. 2006. *Ecological & Heritage Assessment: Proposed extension of Holmwood Quarry, Cowra, NSW.* Report to Cowra Shire Council.

OzArk 2006b — OzArk Environment and Heritage. 2006. *Heritage & Ecological Assessment: Proposed extension of Mulyan Quarry, 8 km northeast of Cowra, NSW*. Report to Rocla Pty Ltd.

OzArk 2007 — OzArk Environment and Heritage. 2007. *Aboriginal heritage assessment: proposed extensions at Glenella Quarry*. Report to RW Corkery.

Pearson 1981 — Pearson, M. 1981. Seen through different eyes: Changing land use and settlement patterns in the Upper Macquarie River region of NSW from Prehistoric times to 1860. Unpublished Ph.D. Thesis, Dept of Prehistory and Anthropology, ANU, Canberra.

Tindale 1974 — Tindale A. 1974. *Aboriginal Tribes of Australia.* University of California Press.

Thomas 1984 — Thomas, I. 1984. An Archaeological Survey of a Proposed Development near Cowra, NSW. Report to Haglund and Associates.

Whitehead 2003 — Whitehead, J. 2003. "Tracking and Mapping: The Explorers" Volume 1 The Lachlan River Oxley, Evans, and Cunningham. Southern Cross University Printery: Lismore.

APPENDIX 1: AHIMS SEARCH RESULTS

Office of Environment & Heritage

AHIMS Web Services (AWS)
Extensive search - Site list report

Your Ref/PO Number : Glenella
Client Service ID : 579867

SiteID	SiteName	Datum	Zone	Easting	Northing	Context	Site Status	SiteFeatures	SiteTypes	Reports
44-4-0245	W-OS-1;Weigelli Aboriginal Drug Rehab. Centre;	AGD	55	671780	6250330	Open site	Valid	Artefact : -	Open Camp Site	
	Contact	Recorders	Central West Archaeological and Heritage Services Pty Ltd					Permits		
44-4-0239	OFC 7;Killara;	AGD	55	658100	6241100	Open site	Valid	Artefact : -	Open Camp Site	
	Contact	Recorders	Doctor.Tim Stone					Permits		
51-1-0012	Koorawatha	AGD	55	659500	6232000	Open site	Valid	Modified Tree (Carved or Scarred) : -	Scarred Tree	98836
	Contact	Recorders	A Boutland					Permits		
44-4-0109	VR-ST 1;vale Road Scarred Tree;	AGD	55	676950	6246300	Open site	Valid	Modified Tree (Carved or Scarred) : -	Scarred Tree	103499
	Contact	Recorders	Central West Archaeological and Heritage Services Pty Ltd					Permits		
44-4-0014	Riverslea 1;	AGD	55	675900	6238000	Open site	Valid	Artefact : -	Open Camp Site	1675
	Contact	Recorders	Robert Paton					Permits		
44-4-0015	Riverslea 2;	AGD	55	675900	6237900	Open site	Valid	Artefact : -	Open Camp Site	1675
	Contact	Recorders	Robert Paton					Permits		
44-4-0215	Springwood OS-2;S-OS-2;	AGD	55	669700	6246600	Open site	Valid	Artefact : -	Open Camp Site	
	Contact	Recorders	Central West Archaeological and Heritage Services Pty Ltd					Permits		
44-4-0217	SC-ST-1;	AGD	55	662740	6250050	Open site	Valid	Modified Tree (Carved or Scarred) : -	Scarred Tree	
	Contact	Recorders	Central West Archaeological and Heritage Services Pty Ltd					Permits		
44-4-0156	OFC 7;	AGD	55	658100	6241100	Open site	Valid	Artefact : -	Open Camp Site	
	Contact	Recorders	Doctor.Tim Stone					Permits		
44-4-0166	S-OS-1;Springwood Open Scatter Site (1);	AGD	55	669400	6247260	Open site	Valid	Artefact : -	Open Camp Site	
	Contact	Recorders	Central West Archaeological and Heritage Services Pty Ltd					Permits		
44-4-0169	GA 3;	AGD	55	676500	6241850	Open site	Valid	Artefact : -	Open Camp Site	
	Contact	Recorders	Mr.Matthew Barber					Permits		
44-4-0170	GA 2;	AGD	55	670800	6241800	Open site	Valid	Artefact : -	Open Camp Site	
	Contact	Recorders	Mr.Matthew Barber					Permits		
44-4-0171	GA 1;	AGD	55	669400	6242220	Open site	Valid	Artefact : -	Open Camp Site	
	Contact	Recorders	Mr.Matthew Barber					Permits		
44-4-0070	Jukes Lane (1);	AGD	55	659750	6249400	Open site	Valid	Artefact : -	Open Camp Site	
	Contact	Recorders	Central West Archaeological and Heritage Services Pty Ltd					Permits		
44-4-0185	CC 1;Cugelong Creek;	AGD	55	665400	6242600	Open site	Valid	Artefact : -	Open Camp Site	
	Contact	Recorders	Mr.Matthew Barber					Permits		

Report generated by AHIMS Web Service on 29/03/2021 for Taylor Foster for the following area at Datum :GDA, Zone : 55, Eastings : 657786 - 678456, Northings : 6229533 - 6250633 with a Buffer of 0 meters. Additional Info : Adequacy Assessment. Number of Aboriginal sites and Aboriginal objects found is 43

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AHIMS Web Services (AWS)
Extensive search - Site list report

Your Ref/PO Number : Glenella
Client Service ID : 579867

SiteID	SiteName	Datum	Zone	Easting	Northing	Context	Site Status	SiteFeatures	SiteTypes	Reports
44-4-0186	Neila 2;	AGD	55	664200	6244750	Open site	Valid	Artefact : -	Open Camp Site	
	Contact	Recorders	Mr.Matthew Barber					Permits		
44-4-0187	Neila 1;	AGD	55	664250	6244900	Open site	Valid	Artefact : -	Open Camp Site	
	Contact	Recorders	Mr.Matthew Barber					Permits		
44-4-0188	Maze 1;	AGD	55	658300	6249600	Open site	Valid	Artefact : -	Open Camp Site	
	Contact	Recorders	Mr.Matthew Barber					Permits		
44-4-0193	HC-OS-1;	AGD	55	672240	6237640	Open site	Valid	Artefact : -	Open Camp Site	
	Contact	Recorders	Central West Archaeological and Heritage Services Pty Ltd					Permits		
44-4-0204	S-OS-2.	AGD	55	668430	6248100	Open site	Valid	Artefact : -	Open Camp Site	
	Contact	Recorders	Central West Archaeological and Heritage Services Pty Ltd					Permits		
44-4-0210	HC-OS-2;	AGD	55	673140	6238040	Open site	Valid	Artefact : -	Open Camp Site	
	Contact	Recorders	Central West Archaeological and Heritage Services Pty Ltd					Permits		
51-1-0017	OFC 5	AGD	55	658600	6232700	Open site	Valid	Modified Tree (Carved or Scarred) : -	Scarred Tree	98836
	Contact	Recorders	Doctor.Tim Stone					Permits		
51-1-0018	OFC 6	AGD	55	658600	6232700	Closed site	Valid	Artefact : -	Shelter with Deposit	98836
	Contact	Recorders	Doctor.Tim Stone					Permits		
44-4-0010	The Peppers Koorawatha	AGD	55	677400	6237500	Open site	Valid	Modified Tree (Carved or Scarred) : -	Scarred Tree	1027
	Contact	Recorders	Bonhomme Craib & Associates					Permits		
44-4-0346	GQ-IF-1	GDA	55	669356	6241727	Open site	Valid	Artefact : 1		
	Contact	Recorders	OzArk Environmental and Heritage Management					Permits		
44-4-0371	WYANGALA ROAD DEVIATION 4	GDA	55	678189	6238304	Open site	Valid	Artefact : 1		
	Contact	Recorders	Kayandel Archaeological Services					Permits	3552	
44-4-0372	WYANGALA DAM ROAD DEVIATION 2	GDA	55	678220	6238032	Open site	Partially Destroyed	Artefact : 1		
	Contact	Recorders	Kayandel Archaeological Services,Mr.Nicholas James Harrop					Permits	3552	
44-4-0246	B-OS-1	AGD	55	668400	6242000	Open site	Valid	Artefact : -	Open Camp Site	
	Contact	Recorders	Central West Archaeological and Heritage Services Pty Ltd					Permits		
44-4-0247	B-OS-2	AGD	55	666630	6242560	Open site	Valid	Artefact : -	Open Camp Site	
	Contact	Recorders	Central West Archaeological and Heritage Services Pty Ltd					Permits		
44-4-0248	B-IF-1	AGD	55	668060	6241370	Open site	Valid	Artefact : -	Isolated Find	
	Contact	Recorders	Central West Archaeological and Heritage Services Pty Ltd					Permits		

Report generated by AHIMS Web Service on 29/03/2021 for Taylor Foster for the following area at Datum :GDA, Zone : 55, Eastings : 657786 - 678456, Northings : 6229533 - 6250633 with a Buffer of 0 meters. Additional Info : Adequacy Assessment. Number of Aboriginal sites and Aboriginal objects found is 43

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AHIMS Web Services (AWS)

Extensive search - Site list report

Your Ref/PO Number : Glenella
Client Service ID : 579867

SiteID	SiteName	Datum	Zone	Easting	Northing	Context	Site Status	SiteFeatures	SiteTypes	Reports
44-4-0249	B-ST-1	AGD	55	667430	6242970	Open site	Valid	Modified Tree (Carved or Scarred) : -	Scarred Tree	
	Contact	Recorders	Central West Archaeological and Heritage Services Pty Ltd					Permits		
44-4-0250	B-ST-2	AGD	55	667430	6242970	Open site	Valid	Modified Tree (Carved or Scarred) : -	Scarred Tree	
	Contact	Recorders	Central West Archaeological and Heritage Services Pty Ltd					Permits		
44-4-0251	B-ST-3	AGD	55	667470	6242440	Open site	Valid	Modified Tree (Carved or Scarred) : -	Scarred Tree	
	Contact	Recorders	Central West Archaeological and Heritage Services Pty Ltd					Permits		
44-4-0252	B-ST-4	AGD	55	667470	6242440	Open site	Valid	Modified Tree (Carved or Scarred) : -	Scarred Tree	
	Contact	Recorders	Central West Archaeological and Heritage Services Pty Ltd					Permits		
44-4-0253	B-ST-5	AGD	55	667500	6242620	Open site	Valid	Modified Tree (Carved or Scarred) : -	Scarred Tree	
	Contact	Recorders	Central West Archaeological and Heritage Services Pty Ltd					Permits		
44-4-0254	B-QS-1	AGD	55	667420	6242560	Open site	Valid	Stone Quarry : -, Artefact : -	Quarry	
	Contact	Recorders	Central West Archaeological and Heritage Services Pty Ltd					Permits		
44-4-0255	G-ST-1	AGD	55	667860	6238700	Open site	Valid	Modified Tree (Carved or Scarred) : -	Scarred Tree	
	Contact	Recorders	Central West Archaeological and Heritage Services Pty Ltd					Permits		
44-4-0256	G-OS-1	AGD	55	666840	6237310	Open site	Valid	Artefact : -	Open Camp Site	
	Contact	Recorders	Central West Archaeological and Heritage Services Pty Ltd					Permits		
44-4-0257	G-QS-1	AGD	55	668010	6238510	Open site	Valid	Stone Quarry : -, Artefact : -	Quarry	
	Contact	Recorders	Central West Archaeological and Heritage Services Pty Ltd					Permits		
44-4-0258	G-IF-1	AGD	55	668640	6239950	Open site	Valid	Artefact : -	Isolated Find	
	Contact	Recorders	Central West Archaeological and Heritage Services Pty Ltd					Permits		
44-4-0259	G-IF-2	AGD	55	668360	6238370	Open site	Valid	Artefact : -	Isolated Find	
	Contact	Recorders	Central West Archaeological and Heritage Services Pty Ltd					Permits		
44-4-0260	G-IF-3	AGD	55	668310	6238330	Open site	Valid	Artefact : -	Isolated Find	
	Contact	Recorders	Central West Archaeological and Heritage Services Pty Ltd					Permits		
44-4-0007	Glenella Site 1 Glenella Homestead	AGD	55	669447	6241173	Open site	Valid	Artefact : -	Open Camp Site	806

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AHIMS Web Services (AWS)

Extensive search - Site list report

Your Ref/PO Number : Glenella
Client Service ID : 579867

SiteID	SiteName	Datum	Zone	Easting	Northing	Context	Site Status	SiteFeatures	SiteTypes	Reports
	Contact	Recorders	I Thomas					Permits		

Report generated by AHIMS Web Service on 29/03/2021 for Taylor Foster for the following area at Datum :GDA, Zone : 55, Eastings : 657786 - 678456, Northings : 6229533 - 6250633 with a Buffer of 0 meters. Additional Info : Adequacy Assessment. Number of Aboriginal sites and Aboriginal objects found is 43

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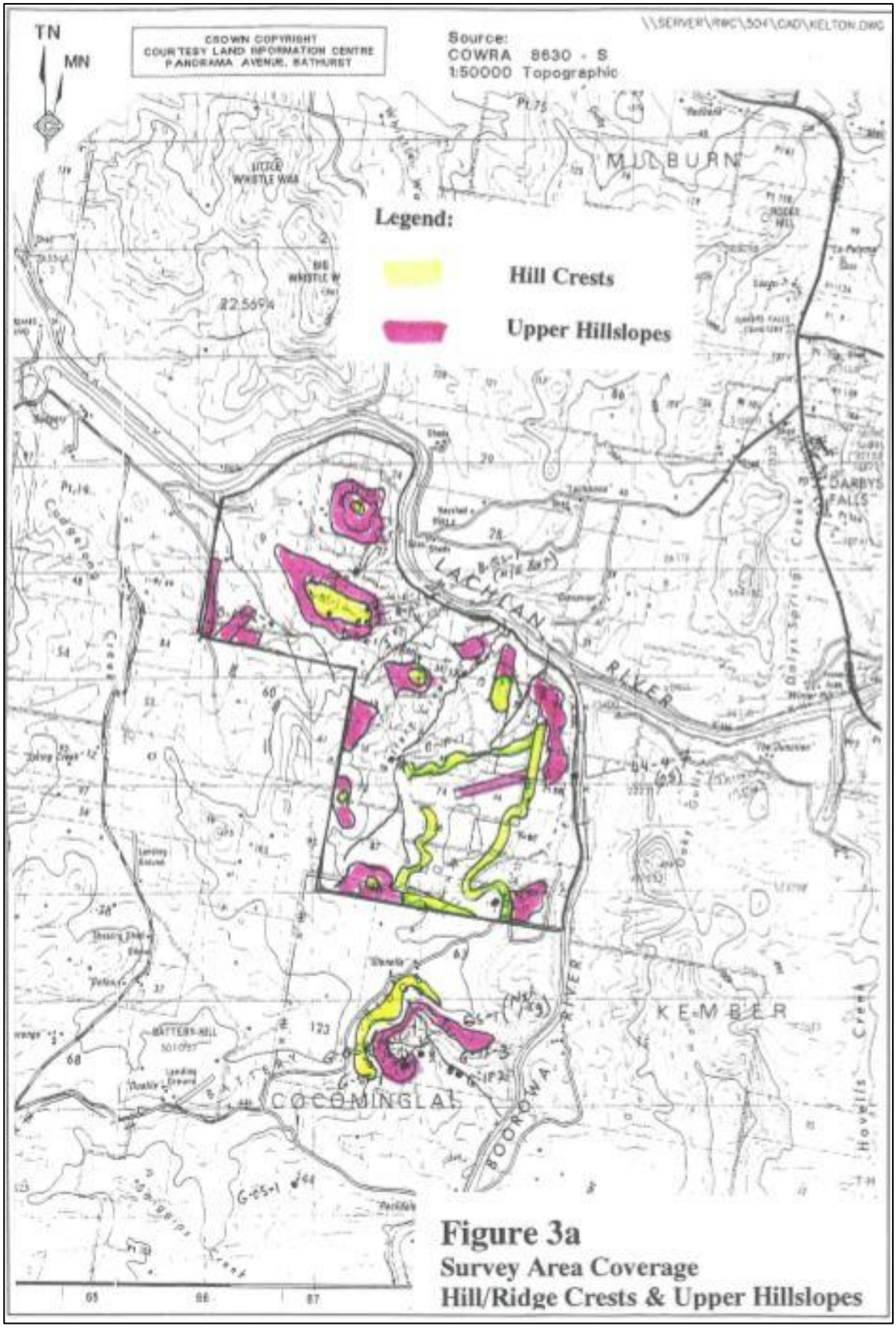
APPENDIX 2: KELTON FIGURES



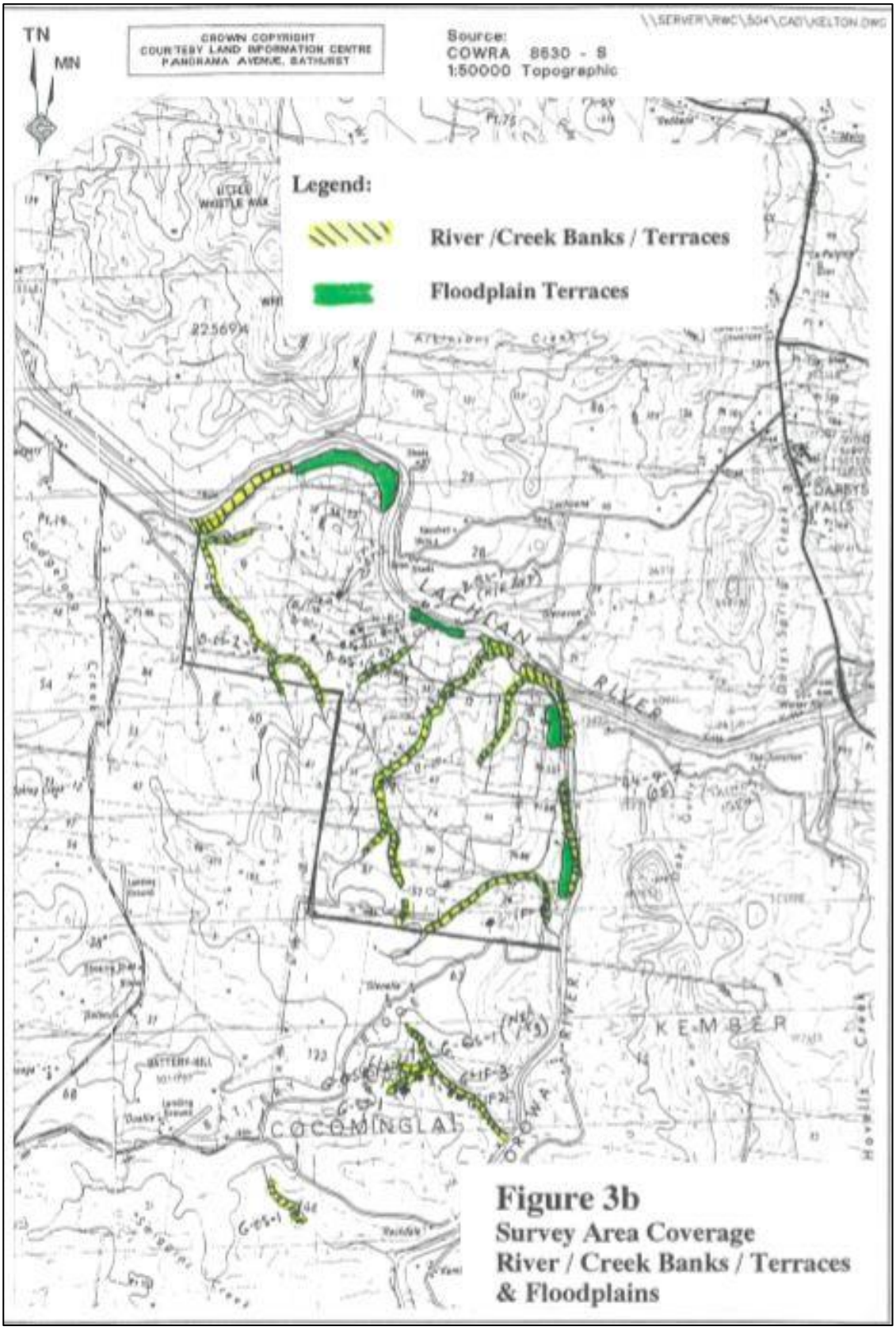
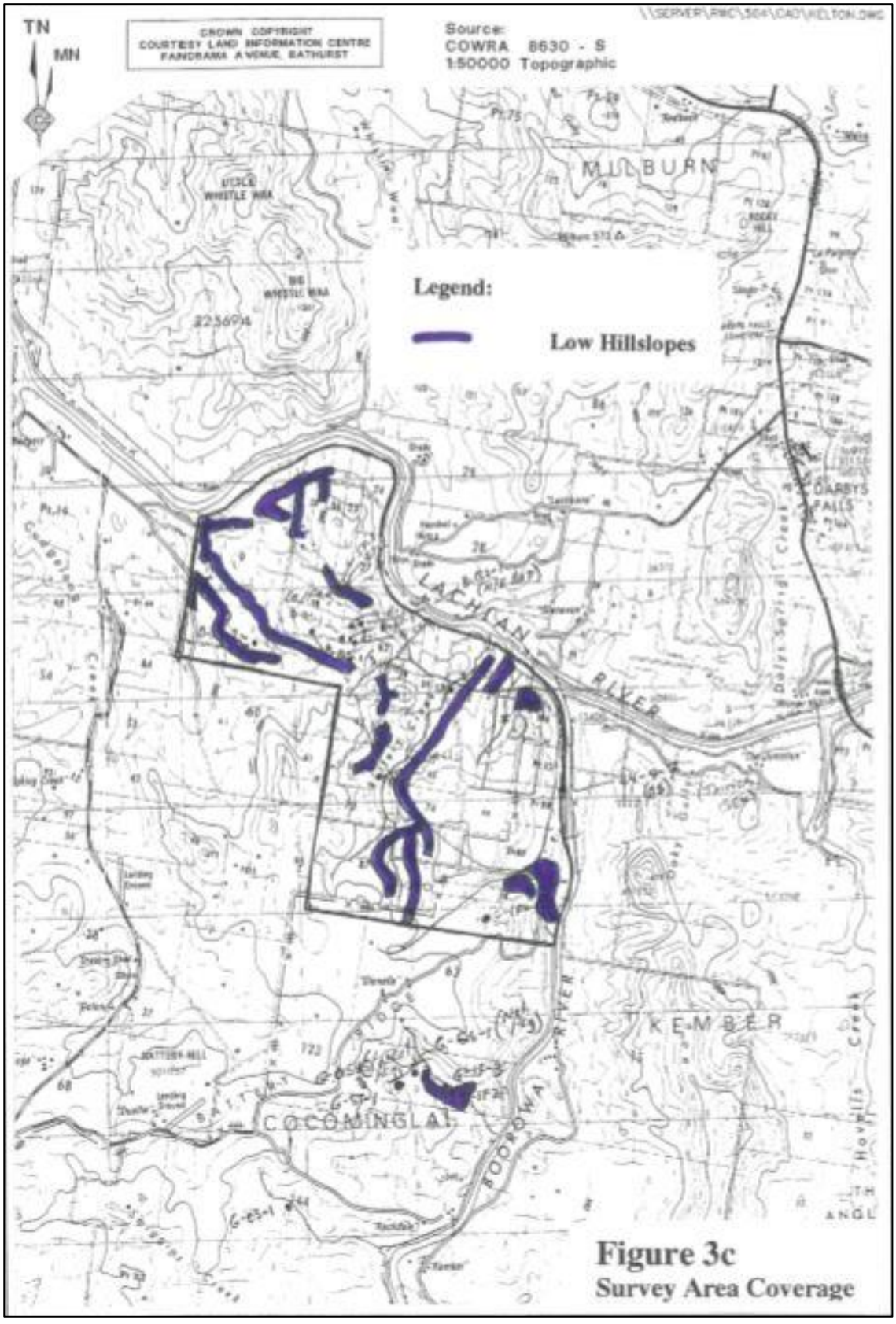


Figure 3b
Survey Area Coverage
River / Creek Banks / Terraces & Floodplains


TN
MN
CROWN COPYRIGHT
COURTESY LAND INFORMATION CENTRE
PANORAMA AVENUE, BATHURST
Source:
COWRA 8630 - S
1:50000 Topographic
Legend:
Low Hillslopes
MILBURN
LACHLAN
RIVER
COCOMINGLA
KEMBER
Figure 3c
Survey Area Coverage

APPENDIX F

Social Impact Assessment Scoping Report

Glenella Quarry Proposed Production Increase

483 Battery Road, Cowra NSW 2794

Social Impact Assessment

To accompany a Scoping Report for a State Significant Development

Report Number: ISA-268-20-21

Prepared for Glenella Quarry Pty Ltd

Date Report Issued: 4th June 2021

Version: Revision 0

InSitu Advisory

ACKNOWLEDGEMENT

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

Glenella Quarry is a certified indigenous business with Supply Nation as well as NSW Indigenous Chamber of Commerce (NSWICC) Assured Member and FACCI Affiliate.

Social Impact Assessment report, to accompany a Scoping Report – State Significant Development

Glenella Quarry Production Increase – JUNE 2021

We have prepared this report based on the best information available at the time. We have taken into consideration the fullest extent possible, all actual and potential environmental impacts of the proposed project.

Document Control

Reference	Status	Date	Prepared	Reviewed	Authorised
ISA-268-20-21	Revision 0	4th June 2021	Amy Alessi / Alan Dyer	Darren Herdman	Alan Dyer

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1 Introduction

1.1 Project Overview

Glenella Quarry is an operational quarry/mine that extracts high quality basalt, weathered basalt, clay, and gravel (pebbles and sand) and some gold, extracting up to the consented limit of 200,000 t/pa to the local and regional construction and landscaping markets. Glenella Quarry and its associated resource is located within the larger "Glenella" Freehold owned property which extends over an area of approximately 700 Ha of land.

Glenella Quarry seeks both Local and State approval for an **increase in overall production from 200,000 tonnes to 500,000 tonnes per annum inside their existing development consent boundary** within their current Freehold property**.** This increase will assist with meeting the ongoing demand for various construction and decorative aggregate materials in both the local and regional market.

Glenella Quarry Pty Ltd are not proposing to alter the operational profile of the quarry when seeking approval to increase annual production limits to 500,000 tonnes.

The development is permitted in accordance with Development Consent 73/2007 issued by Cowra Shire Council, and Development Consent 117/2006 issued by Boorowa Council (now Hilltops Shire Council). The operation is undertaken in accordance with licenses detailed as follows:

The project is classified as State significant development (SSD) under Part 4, Division 4.1 of the NSW Environmental Planning Assessment Act 1979 (EP&A Act). A development application (DA) for SSD must be accompanied by an environmental impact statement (EIS). The purpose of this scoping report is to request, and inform the content of, the Secretary's Environmental Assessment Requirements (SEARs). The SEARs will identify the requirements and level of environmental assessment required to accompany the DA and associated EIS.

1.2 Purpose of the Social Impact Assessment Scoping Report

The purpose of this social impact assessment (SIA) scoping report is to accompany the environmental impact assessment scoping report to inform the content of, and request the Secretary's Environmental Assessment Requirements (SEARs). The SEARs will identify the requirements and level of environmental and social assessment required to accompany the development application (DA) and associated EIS.

The objective of this SIA is to:

- Identify and understand the area of social influence;
- Identify potentially affected people;
- Identify the potential, negative and positive, social impacts for further investigation as part of the EIS; and
- Determine the level of assessment required for each potential social impact.

This report has been prepared by InSitu Advisory Pty Ltd (InSitu Advisory) on behalf of Glenella Quarry Pty Ltd in accordance with the social impact assessment guideline for State significant mining, petroleum production and extractive industry development (DPIE, 2017).

2 Project Description

2.1 Scale and Nature of Project

Glenella Quarry (the site) was established and has been operating since 1984, currently employing approximately eight (8) quarry staff and a range of local contractors on the site (fuel, machinery, industrial supply, blasting, waste, and other support services). In addition, the site provides employment for a range of local, regional, and interstate heavy vehicle operators delivering various quarry products from Glenella Quarry. In support of the achievement of these goals, the Glenella Quarry project will supply locally sourced and financially competitive quarry products that will be required for forecast growth and development across the region.

Being an established quarry site, with a long history of operation within the community, the quarry is consistent with existing surrounding land uses and its proposed production increase avoids potential land use conflicts and amenity impacts associated with establishment of new quarry sites to respond to local market demands.

The quarry is ideally located in proximity to Cowra, a major centre within the region, with forecasted growth and ongoing demand for materials for Council and other planned projects, thereby minimising haulage distances and costs for materials for these local projects. The Glenella Quarry site is well serviced by heavy haulage routes to allow export to state and inter-state infrastructure and construction projects.

The proposal involves increasing overall production within the existing approved boundary site to:

1. Extract more than 500,000 tonnes of extractive materials per year, and
2. Extract from a total source (the subject of the development application) or more than 5 million tonnes

2.2 Surrounding Development

The site is located approximately 18km southeast of the township of Cowra NSW. The permitted Glenella Quarry extractive industry operation, which is comprised within the larger “Glenella” property, straddles the boundaries of Cowra Shire Council and Hilltops Council LGA’s.

Glenella Quarry is situated at the north-western end of Battery Road, a 4km long, predominantly sealed road and links the site to Reids Flat Road. Reids Flat Road in turn provides access to Morongla Road, which links to Lachlan Valley Way, a sealed public highway which provides access to the rural town of Cowra 18.9km north-northwest of the Battery Road / Reids Flat Road intersection.

Glenella Quarry Pty Ltd confirm that a total of fourteen (14) residences front onto the existing product haulage route between Glenella and Lachlan Valley Way. The site is isolated with limited surrounding developments.

3 Cowra Social Baseline

The area of social influence for the project has been identified as Cowra city and surrounding areas.

The summary below uses Australian Bureau of Statistics (ABS) census data using the following categories:

- Cowra State suburb code (SSC): to describe the population of Cowra city; and
- Cowra Region.

3.1 Demographic Profile

The Australian Bureau of Statistics (ABS) estimated resident population of Cowra in 2019 was 5,556 people while the Cowra region estimated a total of 12,743 people in 2019 (ABS 2019). The population of Cowra was made up of 49.8% male and 50.2% female (ABS 2016) with a median age of 41 years, which is slightly older than the median age of people in NSW (38 years). Children aged 0-14 constituted 19.8% of the population, while people aged 65 years and older comprised 19.4% of the population (ABS 2016). Cowra Shire Council estimate the population of Cowra to slightly increase between 2016 and 2041 from 12,650 to 12,800 people according to the 2019 NSW population projections.

https://www.planning.nsw.gov.au/-/media/Files/DPE/Factsheets-and-faqs/Research-and-demography/Population-projections/2019-Cowra.pdf

3.1.1 Aboriginal and Torres Strait Islander Peoples

Aboriginal and Torres Strait Islander people constituted 8.5% of the population in Cowra SSC from the 2016 Census. The Aboriginal and Torres Strait Islander population percentage for Cowra region (1.9%) from the 2016 Census is less than the NSW average of 2.9% (ABS 2016). The traditional owners in Cowra are the Tubbagah People of the Wiradjuri Nation.

3.1.2 Cultural Diversity

Most of the population of the Cowra region was born in Australia (85.2%), with the other most common countries of birth being England (1.4%), New Zealand (0.6%), South Africa (0.3%) and Germany (0.3%). Of people in Cowra SSC, 76.8% stated that both of their parents were born in Australia as well (ABS 2016) and 89.0% of people only spoke English at home, with 1% of households speaking a non-English language (ABS 2016). Diversity is much lower than the NEW average.

3.2 Workforce

The number of reported people in Cowra SSC in the labour force was 4,110 of these people 55.1% worked full-time, 32.8% worked part-time and 6.7% were unemployed (ABS 2016). The most common occupations in Cowra SSC were labourers (15.4%), managers (14.5%) and professionals (14.4%), technicians and trades workers (14.1%), Sales workers (11.3%), Community and Personal Service workers (11.3%), Clerical and administrative workers (10.6%) and Machinery operators and drivers (6.4%).

3.3 Housing and Accommodation

In Cowra SSC, the median weekly rent was $190, while the median monthly mortgage repay was $1,200 (ABS, 2016). These payments are substantially less than the NSW averages. The average household size was 2.3 persons, with most households being without children (44.5%). Most homes were owned outright (40.4%), but a less percentage owned with a mortgage (28.6%) or rented (28.9%).

3.4 Local Business

There were 809 businesses within the Cowra region from the 2019 Census. In 2019, 93 new business entries and 67 business exits were recorded within the Cowra region (ABS 2019). The number of non-employee businesses (62%) was less compared to the overall total number of employee businesses hiring (38.31%). According to the ABS (2019) the number of registered businesses in Cowra Region were in the agriculture, forestry, and fishing industry (460), followed by construction (59), Transport, postal and warehousing (38) and retail trade (35). Five of the registered businesses were in the mining industry (ABS 2019).

3.5 Employment

The employment status of couple families within Cowra SSC from the 2016 Census stated 18.6% had both partners employed full-time, 4.6% had both employed part-time and 21.0% has one employed full-time and the other part-time (ABS 2016).

3.6 Income

The median equivalised total household income (weekly) at the time of the 2016 census was $629/week, while the median total income was $39,187 (ABS 2016). The median total income was lower compared to Australia ($48,360) in 2017.

3.7 Homelessness

The estimated homelessness rate in Cowra LGA from the 2016 Census was 9.7 people. While the Cowra region had a higher estimated homelessness rate of 28 people from the 2016 Census.

4 SIA Scoping Methodology

4.1 Baseline Review

Review of existing project information provided by Glenella Quarry Pty Ltd, along with demographic and economic data sourced from ABS has been undertaken to identify potentially affected communities and key stakeholders to define the area of social influence.

4.2 Identification of Area of Social Influence

The area of social influence was assessed to identify surrounding stakeholders who would potentially be directly or indirectly affected by the project. This includes identifying businesses and schools who may have an interest in the project; and who would potentially be impacted.

4.3 Stakeholder Approaches

Glenella Quarry owners Michael Howe and Amy Vidmar Howe contacted seventeen (17) members of the community along Lachlan Valley Way, Morongla Road, Reids Flat Road, and Battery Road. The community along the highlighted roads would be impacted as these continue to be along the haulage route for quarried products. Community approaches were undertaken during the beginning of May 2021, whereby details of the existing operation and the proposed SSD production increase was discussed. Concerns from the community were requested, in order to be addressed within the EIS. A summary of the community approaches and notes are presented within **Table 1**.

A number of Government contacts were approached as part of the initial consultation. The existing operation together with the SSD proposed production increase was discussed at length. A summary of the Government stakeholder engagement is presented within **Table 2.** A number of the stakeholders undertook a site inspection, accompanied by Michael Howe.

4.4 Remaining Stakeholder Engagement

Glenella Quarry Pty Ltd and InSitu Advisory shall continue to undertake stakeholder engagement in accordance with the community and stakeholder engagement guidelines during the subsequent phase of the project, in which the EIS will be prepared. The ongoing engagement will include further consultations with DPIE, Cowra Council, Hilltops Council, NSW EPA, regulators, Aboriginal stakeholders, and the local community, and will respond to the issues identified during the consultation process.

The EIS will include details of feedback received and actions taken to address feedback during project design and local & cumulative impact assessment.

As of 1st June 2021, the proponent has yet to inform the following members of the community about the project, but has every intention in doing so:

- Anthony Healey - Morongla Road
- Wayne Keefe - Morongla Road
- Clinton Cartwright – Reids Flat Road, Cowra, NSW
- Robyn Smith – Battery Road

5 Scoping Outcomes

5.1 Community Feedback

Community consultations were undertaken between 5th – 7th May 2021 with the twenty consultees by face-to-face discussions and some phone calls together with the issuance of a community information flysheet (see **Appendix A**). Details of the consultation, recipients, dates and comments are presented within **Table 1**.

Table 1 Community Stakeholder Engagement Summary

Stakeholder	Date	Name	Notes / Outcomes
"Lachoona & Glenavon" - 246 Glenavon Road, Cowra	6-May-21	Richard Chalker	Phone conversation with Richard Chalker. Topics of discussion included the quarry operational hours and possible noise concerns. Furthermore, Chalker's own approximately 4,000 acres, to the North of the mine, across the Lachlan River. The two homesteads (circa 1,250m and 1,600m from the wash plant - closest operational activity) are the only two sensitive receptors from physical mining activities.
"Badgery" Badgery Road, Cowra, NSW	6-May-21	Jamie Dunlop Chris Dunlop	Phone conversation with Chris Dunlop to discuss the project. He had no issues with the current quarry activities and the proposed project.
364 Battery Road	6-May-21	Cavalier	The Smiths (previous owners) sold to Cavalier, and they have left no contact details. We requested the resident's details. Will follow up.
"Duallie", 393 Battery Road, Cowra, NSW 2794	6-May-21	Andrew Smith	Face to face conversation with Andrew Smith. Topics of discussion included Morongla/Reids Flat intersection, truck movements, Battery Road speed limits and current road developments ongoing with GeQ and the Council.
Badgery Road, Cowra NSW	7-May-21	Stewart	Phone conversation with Stewart. Topics of discussion included the SSD proposal and upgrade of the Battery Road. Stewart expressed positive feedback towards the new road upgrade however he commented on trucks speeding on the Battery Road.
Badgery Road, Cowra, NSW	5-May-21	Vince Toohey Stephen Toohey	Conversation with Vince and Stephen Toohey who were very supportive of the new proposal. Have always been supportive of the business and are very happy with Battery Road upgrades.

Stakeholder	Date	Name	Notes / Outcomes
"Bingari" Reids Flat Road, Cowra, NSW	5-May-21	Lex Webster Alan Jolof	Conversation with the Websters. Topics of discussion included the project proposal and said they had no major concerns.
Reids Flat Road, Cowra, NSW	6-May-21	Adrian Healey	Phone conversation with Adrian Healey. Topics of discussion included the project proposal. Main concerns included the current road network system. For example, concerns raised were with the width of some of the shoulders on Reids Flat Road, and property values on increased activity. Overall road amenity is vastly improved and will be further upgraded as a result. Property prices in the Mt Collins area have more than doubled to tripled in last decade since Glenella has been operational. There would be several keen parties should they wish to sell.
Reids Flat Road, Cowra, NSW	6-May-21	Jamie Keady	Phone conversation with Jamie Keady, topics discussed were regarding the production increase proposal and progress so far. Jamie Keady was very supportive of the proposed project.
Morongla Road	6-May-21	Neil Lanham	Father-in-Law of John Whitby. They will pass on the information and come back with any queries.
Morongla Road	6-May-21	John Whitby	Face to Face conversation with John Whitby and his wife. Topics of discussion included the project proposal. Main concerns discussed were increased truck movements and poor truck driving behaviour. They have suggested adding a painted line down the middle of the road. John Whitby was pass on the discussion details to Bob Binington.
Morongla Road	6-May-21	Jack Wright	Phone conversation with Jack Wright discussing the details of the project proposal. Jack Wright was supportive of the business progressing and had no issues or concerns to relay.
Opposite corner of Lachlan Valley Road/Morongla Corner	6-May-21	Kristy Fuller	Attempted to call Kristy Fuller to discuss the project. Communicated via text messages.
Crn Lachlan Valley Road and Morongla Road	6-May-21	David Langfields	Conversation with David Langfields, main topics of discussion included road network systems issues (intersection) and poor driving behaviour of truck drivers.

5.2 Government Feedback

Government consultations were undertaken between 20th January – 25th May 2021 with a number of agencies and representatives, again by face-to-face discussions and some phone calls. Details of the consultation, recipients, dates and comments are presented within **Table 2**.

Table 2 Government Stakeholder Engagement Summary

Stakeholder	Date	Name	Notes / Outcomes
Mining, Exploration and Geoscience | Department of Regional NSW	20-Jan-21 *ongoing since	Scott Anson. (Assessment Coordination Manager)	Discussion with Scott Anson the Manager of Assessment Coordination unit on the phone. Multiple phone conversations covering the proposal of the project and updates on the Scoping Document progress. Scott has been updated on the project for the past several months.
DPIE	23-Jan-21 to current	Robert Hodgkins / Nagindar Singh	Discussions with Robert Hodgkins & Nagindar Singh regarding the development of the project scoping report and application for SEARs.
Cowra Council	30-April-21	Bill West (Mayor) Paul Devery (General Manager) Kate Albury (Environmental Officer) Dirk Wymer (Operations Manager)	Representatives from Cowra Council, Bill West, Paul Devery, Kate Albury, and Dirk Wymer visited the site. Topics of discussion included the Scoping Report and the SSD proposal. All representatives gave positive feedback about the proposal. Topics discussed included: • Local road network; • SECA Solution specialist traffic consultants that were to be engaged; • Ongoing and proposed community consultation; • Upgrades on the surrounding road systems during development - Intersection designs at Lachlan Valley Way/Morongla Road & Reids Flat/Morongla - Line marking on Morongla and Reids Flat roads - Give way sign at the end of Morongla Road. • Rates and contributions (GeQ); and • Meeting on 9th June 2021 with traffic consultants and Dirk Wymer to discuss further development.
Hilltops Council	25-May-21	Anthony O'Reilly (General Manager) Brian Ingram Claire Scott	Representatives from Hilltops Council, Anthony O'Reilly, Brian Ingram and Claire Scott visited the site. Topics discussed included the proposal and the Scoping Report. All representatives gave positive feedback about the proposal. Main topics discussed included: • The Scoping Report and SSD approval process; • The SEARs • Maintenance levy on the road system; and • External road networks.
NSW EPA	20-Jan-21 *ongoing since	Sharon Peters	Discussion with Sharon Peters from the NSW EPA. Topics of discussion included the project proposal and the Scoping Report content.
Member for Goulburn	24-Feb-21	Wendy Tuckerman Paige Penning	Meeting with Wendy Tuckerman MP and Paige Penning on site to discuss the Scoping Report, project outline, SSD requirements and to inspect the Battery Road (intersection).

5.3 Proposed Area of Social Influence

5.3.1 Geographical

For the purpose of the EIS and SIA, the area of social influence is proposed to incorporate the following:

- Community and/or businesses on or close to Lachlan Valley Way, Morongla Road, Reids Flat Road, and Battery Road, likely to be directly impacted by the project; and
- Cowra city and region, for those with potential to be indirectly impacted.

Data from the ABS has formed the basis of the SIA for Cowra SSC and Cowra Region. The community within the south and south-east of Cowra city may have the potential to experience impacts (largely transport related) during the continued operation, and proposed production increase of the quarry. Potential issues and impacts surrounding the site and along the haul route will focus on landholders and nearby neighbours. This includes a number of existing residential dwellings; local farmers, along with a residential subdivision and associated potential future dwellings along the transport route (i.e. Lachlan Valley Way, Morongla Road, Reids Flat Road, and Battery Road). It is anticipated that impacts to the social area of influence would be primarily transport-related rather than operational related (quarry noise, dust generation etc.).

5.3.2 Potentially Affected People

There is potential for surrounding landowners and land users to be directly impacted by the proposed production increase in quarry operations, including:

- The nearest residential dwellings, in particular neighbours fronting onto both Battery Road and Reids Flat;
- Potential future residential dwellings within approved residential subdivisions;
- Nearby non-residential uses; and
- Farmers, in the vicinity of the site.

The SIA should consider the potential for health and emergency services to be indirectly impacted due to health and wellbeing related to stress from livelihood and public safety related issues.

The potential vulnerable groups that may be affected are the total of fourteen (17) residents which front onto the haulage route between Glenella Quarry and Lachlan Valley Way. Public safety for concerns around traffic and network systems were raised by community members. There are currently no early indicators that other vulnerable groups would be directly impacted however the proposal has considered the impacts on Indigenous, homeless and at risk of homeless because they are vulnerable.

6 Anticipated Social Impacts

A preliminary set of potential impacts (both positive and affected) has been identified based on the scoping assessment, including the outcomes of stakeholder engagement, and observations on site. The purpose of identifying impacts at this preliminary stage is to ensure that the appropriate range of stakeholders is engaged and that no affected group or individual is excluded from the engagement.

During the initial stakeholder engagement sessions, summarised within **Tables 1 and 2**, the community and Government views were sought. Many of the stakeholders approached were largely positive about the existing operation and the proposed production increase. Most of the concerns discussed were transport related, either regarding the condition and layout of existing

roads/intersections or the driving habits of existing truck drivers (not necessarily those related to the quarry operation).

An assessment of both positive and impacts that may have an effect on the community, (requiring further assessment) and likelihood of potential positive social impacts is detailed in **Table 3**.

Table 3 Identified Potential Social and Economic Impacts

Potential social impacts	Likely Positives	Possible Negatives:
Social		
Landscape	Extraction areas will be progressively rehabilitated with the planting of native species. Quarrying in a remote location with large buffer distances to sensitive receptors	Localised generation of quarry dust Localised increase in noise and vibration
Residential and land values	With increased employment comes demand for additional housing.	No evidence to suggest land and house prices have dropped as a result of the existing operation. Uncertain whether properties will be impacted as a result of the proposed production increase.
Surrounding – public safety	Glenella Quarry is committed to ongoing community engagement, and will administer a complaints and handling procedure to ensure issues are addressed. Truck drivers to be briefed on haulage routes, speed limits and driving habits to meet community expectations.	Additional truck movements: Impact on existing roads Road formation/width within limited locations. Truck/vehicle safety on local roads
Economic		
Employment	Increase in employment figures as a direct impact to the proposed production increase. Indirect positive impact due to increase in plant and equipment needed, fitters, consumables etc. As a certified indigenous business with Supply Nation as well as NSW Indigenous Chamber of Commerce (NSWICC) Assured Member and FACCI Affiliate, employment of indigenous staff would also be encouraged.	No known or foreseen negative impacts to employment.
Residential and land values	With increased employment comes demand for additional housing.	No evidence to suggest land and house prices have dropped as a result of the existing operation. Uncertain whether properties will be impacted as a result of the proposed production increase.
Providing construction materials to the region	High-quality materials available locally, minimal transport distances and limited emissions	Production of additional natural construction materials could be offset by the use of recycled products.

7 References

ABS, 2019 Region summary: Cowra (A), Population and people, accessed 3 June 2021 https://dbr.abs.gov.au/region.html?lyr=lga&rgn=12350

ABS, 2019 Cowra LGA, Population and people, accessed 3 June 2021 https://quickstats.censusdata.abs.gov.au/census_services/getproduct/census/2016/quickstat/SSC11099

InSitu Advisory, 2021. Glenella Quarry proposed production increase, Scoping Report, State Significant Development, dated 1 June 2021.

NSW Government Cowra Shire Council, 2019 NSW population Projections, https://www.planning.nsw.gov.au/-/media/Files/DPE/Factsheets-and-faqs/Research-and-demography/Population-projections/2019-Cowra.pdf

NSW Government, Education Aboriginal Affairs, Community Portrait: Cowra LGA https://www.aboriginalaffairs.nsw.gov.au/new-knowledge/facts-and-figures/community-portraits/Indigenous-Portrait2016D-Cowra.pdf

APPENDICES

APPENDIX A

Community Information Flysheet

Glenella Quarry Proposed Production Increase

Community Data Sheet

ACKNOWLEDGEMENT

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

Glenella Quarry will be seeking both Local and State approval for an **increase in overall production from 200,000 tonnes to 500,000 tonnes per annum inside their existing development consent boundary** within their current Freehold property**.** As neighbours we wanted to share with you the news and discuss any questions and/or concerns you may have.

As such, we wanted to highlight the below:

Glenella Quarry Pty Ltd is not proposing to alter the operational profile of the quarry when seeking approval to increase annual production limits to 500,000 tonnes.

The development is permitted in accordance with Development Consent 73/2007 issued by Cowra Shire Council, and Development Consent 117/2006 issued by Boorowa Council (now Hilltops Shire Council).

This is considered a State Significant project as the total tonnages will surpass local approval limits of 5-million tonnes.

Key Take-Aways:

Transportation

- With proposed maximum rate of production (500,000 tonnes) the average number of truck loads dispatched daily will be 50.
- The same local road network associated with the existing quarry development will be used with the proposed production increase (Battery Road to Reids Flat Road onto Morongla Road turning left or

right on Lachlan Valley Way).

- Through a Voluntary Planning Agreement with Cowra Shire Council and Glenella Quarry, Morongla and Reids Flat Road both have been widened and sealed to 8 metres.
- Hilltops Council, in conjunction with Glenella Quarry, obtained a NSW Drought Stimulus grant which has provided for Battery Road culvert and pavement upgrades, as well as, a newly sealed Road, improving operational efficiency, dust suppression and road safety.
- Glenella Quarry consider that the proposed increase in production will have minimal impact on the existing transportation network currently being used. Improvements to date have provided a high-quality road network that not only improves road safety for all effective residents; but the utility and amenity of the local roads for agricultural and other freight related tasks for the surrounding area.

Employment

- Currently the quarry employs eight (8) full time employees and a range of local contractors on the site (fuel, machinery, industrial supply, blasting, waste, and other support services). In addition, the site provides employment for a range of local, regional, and interstate heavy vehicle operators delivering various quarry products from Glenella.
- At the proposed maximum rate of production, it is anticipated that the quarry will employ sixteen (16) full time employees. Additionally, support services as outlined above will be substantially increased as the operation grows and reaches full production; thus, leading to a solid "ripple effect" on local and regional employment as a result.

Rehabilitation and Environmental Considerations

- Glenella Quarry progressively rehabilitate (in line with the Resources Regulator approved Mine Operation Plan (MOP)) with substantial overburden stockpiled and used as backfill when areas of the quarry become exhausted. The overburden is and will continue to be used to create a natural final profile consistent with the surrounding uses which is predominately rural and conservation.
- The NSW EPA undertook an Environmental Risk Category Summary for the existing operation, with the assessment summary coming under category of **LOW RISK.**
- Specialist independent consultants engaged to assess environmental considerations or proposed production increase.

Operational Hours and Activities

Activity	Monday to Friday	Saturday	Sunday	Requested Amendment
Extraction Activities	7.00am to 5.00pm	7.00am to 3.00pm	Not Permitted	None
Blasting	9.00am to 5.00pm	Not Permitted	Not Permitted	None
Crushing	7.00am to 6.00pm	7.00am to 3.00pm	Not Permitted	None
Loading	7.00am to 10.00pm	7.00am to 4.00pm	Not Permitted	None
Maintenance	6.00am to 6.00pm	7.00am to 6.00pm	8.00am to 6.00pm	New

Please note that operational hours and activities will not change from already existing and approved conditions.

In closing, we would like to reiterate our commitment to you, our neighbours, to continue operations in a similar responsible and professional manner as we have strived to do so for over a decade now.

Regards,

Michael and Amy Howe
Directors/Owners
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Email: info@glenellaquarry.com

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