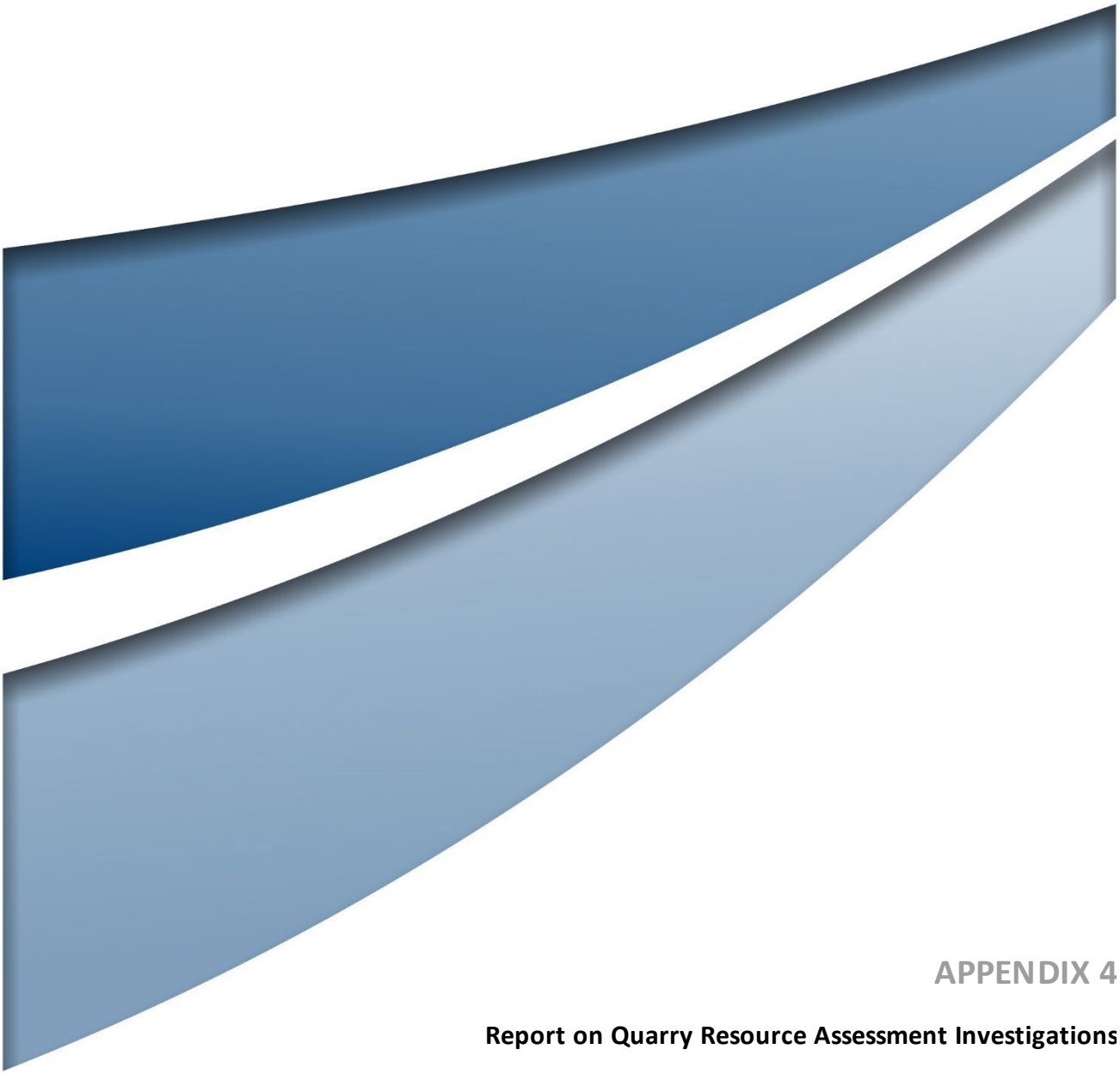
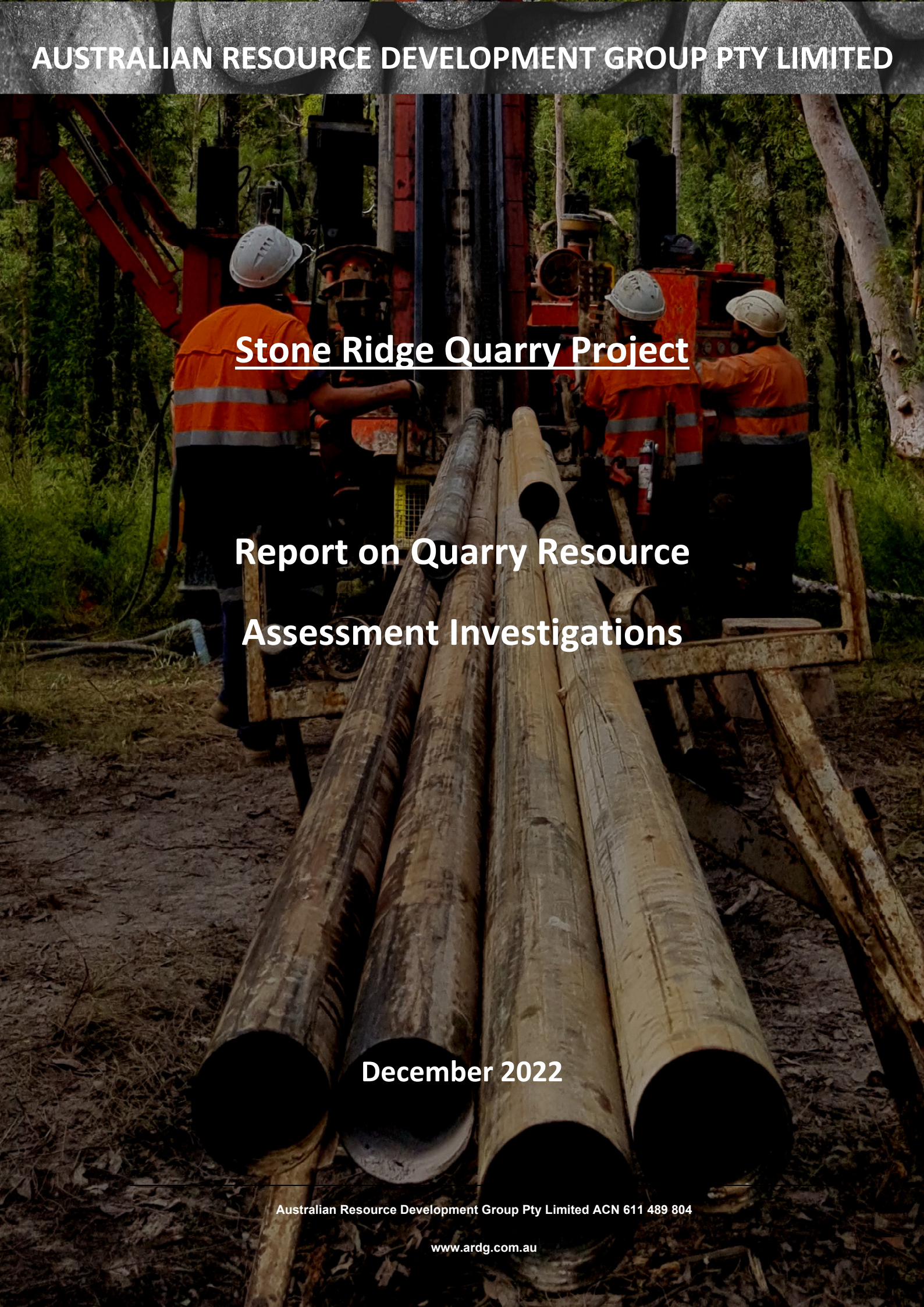


APPENDIX 4

Report on Quarry Resource Assessment Investigations

AUSTRALIAN RESOURCE DEVELOPMENT GROUP PTY LIMITED



Stone Ridge Quarry Project

Report on Quarry Resource Assessment Investigations

December 2022

Australian Resource Development Group Pty Limited ACN 611 489 804

www.ardg.com.au

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EXECUTIVE SUMMARY

Between late 2017 and mid-2019, Australian Resource Development Group Pty Limited (ARDG) undertook a comprehensive hard rock quarry resource assessment program within the Wallaroo State Forest, approximately 30 kilometres north of Newcastle, New South Wales. The assessment program was focussed on a prominent ridge line of outcropping volcanic rocks, now referred to as Stone Ridge, and was undertaken in close consultation with Forestry Corporation NSW (FCNSW) and strictly in accordance with the requirements of the *Forestry Act 2012* (NSW) and the land access agreements issued to ARDG by FCNSW.

The key objective of the assessment program was to determine whether a hard rock quarry resource of viable size and quality exists that could provide a long-term consistent supply of high-quality quarry products to the Lower Hunter, Central Coast and Northern Sydney construction materials markets. The program involved a range of investigations, including detailed surface geological mapping, ground magnetic surveying, diamond drilling, comprehensive geotechnical testing and petrography. The objectives, methodology and results of this work are detailed in this report.

The resource assessment program has confirmed the existence of a very large (> 100 Mt) hard rock quarry resource at Stone Ridge associated with ignimbritic volcanic rocks – predominantly rhyodacite and dacite – that comprise part of the *Eagleton Volcanics* Formation. Investigations confirm the hard rock resource extends over an area of approximately 60 hectares and remains open at depth below the limit of drill testing. From a geological perspective, the resource is remarkably uniform and predictable, and overburden is close to non-existent.

If developed, a quarry at Stone Ridge would be capable of producing a full suite of high-quality quarry products, including in-specification:

- concrete aggregates;
- sealing aggregates;
- high Polished Aggregate Friction Value (PAFV) asphalt aggregates;
- gabion;
- armour rock;
- ballast;
- roadbase; and
- crushed rock products.

A quarry located at Stone Ridge and so close to the Pacific Highway would be ideally situated from a transportation cost perspective to competitively service a pending shortfall in the supply of high-quality quarry products to the Lower Hunter, Central Coast and Northern Sydney construction materials markets.

A quarry would generate a significant revenue stream for FCNSW for the initial 20-year term of a Forest Materials Licence (FML) with ARDG, as well as from any subsequent licence period approved by FCNSW. Given the large size of the hard rock resource confirmed by ARDG, it is expected that extraction of the quarry resource would provide a long-term royalty revenue stream to the State, well exceeding the term of the initial 20-year FML.

1. INTRODUCTION

1.1 Background

This report presents the objectives, methodology and results of a comprehensive hard rock quarry resource assessment program undertaken by Australian Resource Development Group Pty Limited (ARDG) within the Wallaroo State Forest, approximately 30 kilometres north of Newcastle, New South Wales. The assessment program was undertaken between late 2017 and mid-2019 and was focussed on assessing the quarry resource potential of *Eagleton Volcanics* Formation centred on prominent ridge known locally as 'Hamburger Hill', but hereafter referred to as **Stone Ridge**. The key objective of the assessment program was to determine whether a hard rock quarry resource of viable size and quality exists that could provide a long-term consistent supply of high-quality quarry products to the Lower Hunter, Central Coast and Northern Sydney construction materials markets.

The existing supply of hard rock quarry products to the Lower Hunter and Central Coast areas is currently serviced by several large quarries that are generally in the latter stages of their development lives, as well as from several small operations with either comparatively short resource lives and/or sub-optimal resource quality. As a result, it is estimated that within approximately 10 years, these growth areas will experience significant shortfalls in the supply of high-quality quarry products unless alternate quarry resources can be located and developed.

Opportunities to locate replacement quarry resources are considered extremely limited, due to significant constraints relating to the occurrence of prospective geology, as well as planning, environmental and transportation factors. Two existing quarry operations in the Lower Hunter (Boral's Balickera / Seaham Quarry and Daracon's Martins Creek Quarry) have or are in the process of seeking approval to expand their operations to access additional resources, and a determination is pending on a proposal for a small hard rock quarry in a marginal geological location at Eagleton. Should all quarry projects obtain approval, they will remain unable to significantly impact the forecast shortfall in quarry products supply to the market.

The Stone Ridge Project Area (the Project Area) represents what is unarguably one of the last opportunities within the Lower Hunter Region to develop a large tonnage (> 50 Mt) greenfield quarry operation on geology demonstrated to be favourable for production of high-quality quarry products. The proximity of the Project Area to key markets and existing road infrastructure (*i.e.* the Pacific Highway) would enable a quarry at this location to significantly impact the forecast shortfall in supply of quarry materials to the Lower Hunter and Central Coast regions. A quarry located within the Project Area would be highly competitive from a transportation cost perspective and would generate long-term revenue to the State through royalties on quarry products sold from the site.

1.2 Land Tenure and Licencing

The quarry resource assessment program undertaken by ARDG has been undertaken in close consultation with Forestry Corporation NSW (FCNSW) and strictly in accordance with the requirements of the *Forestry Act 2012* (NSW).

Initial low-impact ground investigations by ARDG were undertaken under a Forest Permit issued by FCNSW on 30 August 2016. Subsequent drilling and geophysical investigations were undertaken under a Level 2 Access Agreement granted by FCNSW on 1 September 2017.

ARDG and FCNSW executed a Deed of Agreement (Deed) for the issue of a Forest Materials Licence (FML) on 1 November 2018 and ongoing site investigations are occurring in accordance with the terms

and conditions of the Deed. The FML will be issued to ARDG upon receipt of all planning approvals and licences required to develop a quarry and will relate to an area of approximately 140 hectares centred on Stone Ridge. Issue of the FML will enable the Company to develop and operate a quarry for an initial period of 20 years.

Under the FML, ARDG will pay FCNSW a royalty for each tonne of quarry product sold from the site. This royalty stream would translate to a significant revenue stream for FCNSW over the initial 20-year life of a quarry operation, as well as for any subsequent period that FCNSW approves for quarry operations at the site.

1.3 Resource Assessment Program Objectives

The resource assessment program undertaken by ARDG was designed to achieve the following critical objectives.

1. Confirm the nature and extent of the different geological units comprising the *Eagleton Volcanics* within the Project Area, to determine the spatial distribution of prospective quarry resource units, as well as zones of potential overburden and interburden.
2. Confirm any structural features (*e.g.* faults, shears) that influence the geological framework of the Project Area and impact on prospective quarry resource units.
3. Confirm through comprehensive geotechnical testing of drill core the suitability of the different geological materials for producing in-specification quarry products, including coarse and fine concrete aggregates (including manufactured sand), asphalt and sealing aggregates and roadbase products.
4. Obtain oriented structural information from diamond drill core to enable a slope stability assessment to be undertaken to inform the appropriate quarry face design parameters that should be adopted to support safe and stable quarry development.
5. Prepare a staged quarry development strategy for the Project Area that takes account of resource and geotechnical / slope stability constraints.
6. Obtain sufficient geological and resource quality information to support the reporting of a Measured Resource for the site as defined by the JORC Code.

1.4 Acknowledgements

This report has been compiled by Damon Bird (BSc Hons U.Syd, MAIG, MIQ), ARDG's Group Geologist and Director of Resource and Operations. The author has approaching 30 years professional experience as a geologist; over 18 of which have been in the extractive industries assessing quarry resources and managing their development. He qualifies as a 'Competent Person' for reporting of resources and reserves for a number of commodities under the JORC Code.

This report has been reviewed by Justin Meleo **(**BSc Hons U.Syd, PhD, MEIANZ), ARDG's Director of Planning and Development. Justin has over 25 years practice in environmental consulting and planning across a wide variety of industries that include the mining and extractive industries.

The following professionals / organisations undertook work that contributed to the resource assessment program.

- Blacklaws Drilling Contractors Pty Limited

- Dr Paul Ashley – MAusIMM, FSEG – Paul Ashley Petrographic and Geological Services
- Graham Lee – Graham Lee & Associates Pty Limited
- Coffey Services Australia Pty Limited
- Fender Geophysics
- Groundsearch Pty Limited

2. PROJECT AREA

2.1 Location

The Wallaroo State Forest is located approximately 30 kilometres north of Newcastle and comprises three separate areas of land that have a combined area in excess of 3,600 hectares. The Wallaroo State Forest is located on the northern side of the Pacific Highway, and extends from Italia Road, in the west, to the Karuah River in the east (**Figure 1**).

The Stone Ridge Project Area covers approximately 140 hectares in the western part of the Wallaroo State Forest, immediately adjacent to Italia Road and to the immediate northeast of Boral's Balickera / Seaham Quarry – a large quarry that has been in operation since 1991.

An area of approximately 75 hectares within the central part of the Project Area is associated with Stone Ridge – a rocky volcanic ridge that trends northeast-southwest and which has been the focus of the resource assessment investigations outlined in this report.

2.2 Access

Access to the Project Area can currently be achieved from the Pacific Highway via either Italia Road in the southwest, or Nine Mile Creek Road in the east. Vehicle access within the Wallaroo State Forest from either road can currently only be achieved along several unsealed forest tracks using four-wheel drive vehicles. Most of these tracks are in a relatively poor condition and often difficult to traverse during wet weather.

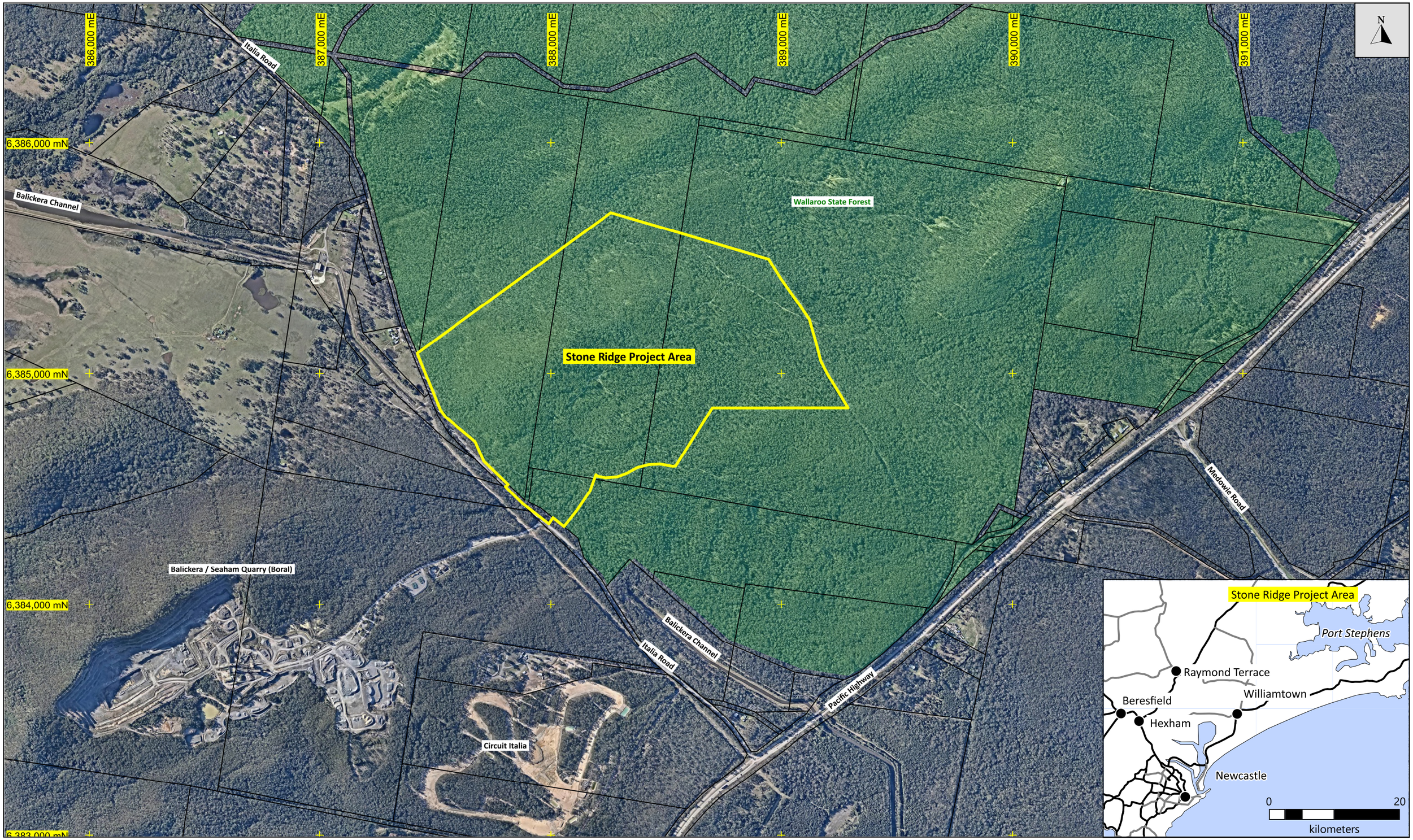
Italia Road is a sealed two-lane road that links the village of Seaham in the west, with the Pacific Highway in the east. It is the sole road used by heavy vehicles travelling between Boral's Balickera / Seaham Quarry and the Pacific Highway. The speed limit along Italia Road is currently 90 kilometres per hour.

Nine Mile Creek Road is an unsealed forest road that runs in a northwest direction through the Wallaroo State Forest from the Old Pacific Highway, north of Balickera Channel. The road is generally unsuitable for two-wheel drive vehicles during wet weather. There is no sign posted speed limit along Nine Mile Creek Road.

2.3 Topography

Stone Ridge is approximately 1100 metres long and strikes 058° grid / true north (046° magnetic). The ridge comprises two rocky hills separated by a low saddle (**Figure 2**). The hill at the southwest end of the ridge has a maximum elevation of 107.5 metres AHD (Australian Height Datum), whereas the hill to the northeast has a maximum elevation of 83.0 metres AHD.

More gently undulating topography to the northwest and southeast of Stone Ridge is associated with more weathered volcano-sedimentary geology that typically ranges in elevation from 20-60 metres AHD. A prominent broad low ridge (South Ridge) extends from the central southeastern flank of Stone Ridge, approximately 1600 metres southeast to the Pacific Highway. This ridge has a maximum elevation of approximately 62 metres AHD.



Legend

- Cadastral boundary
- Stone Ridge Project Area Boundary
- Wallaroo State Forest
- Freeway / Highway
- Major Road

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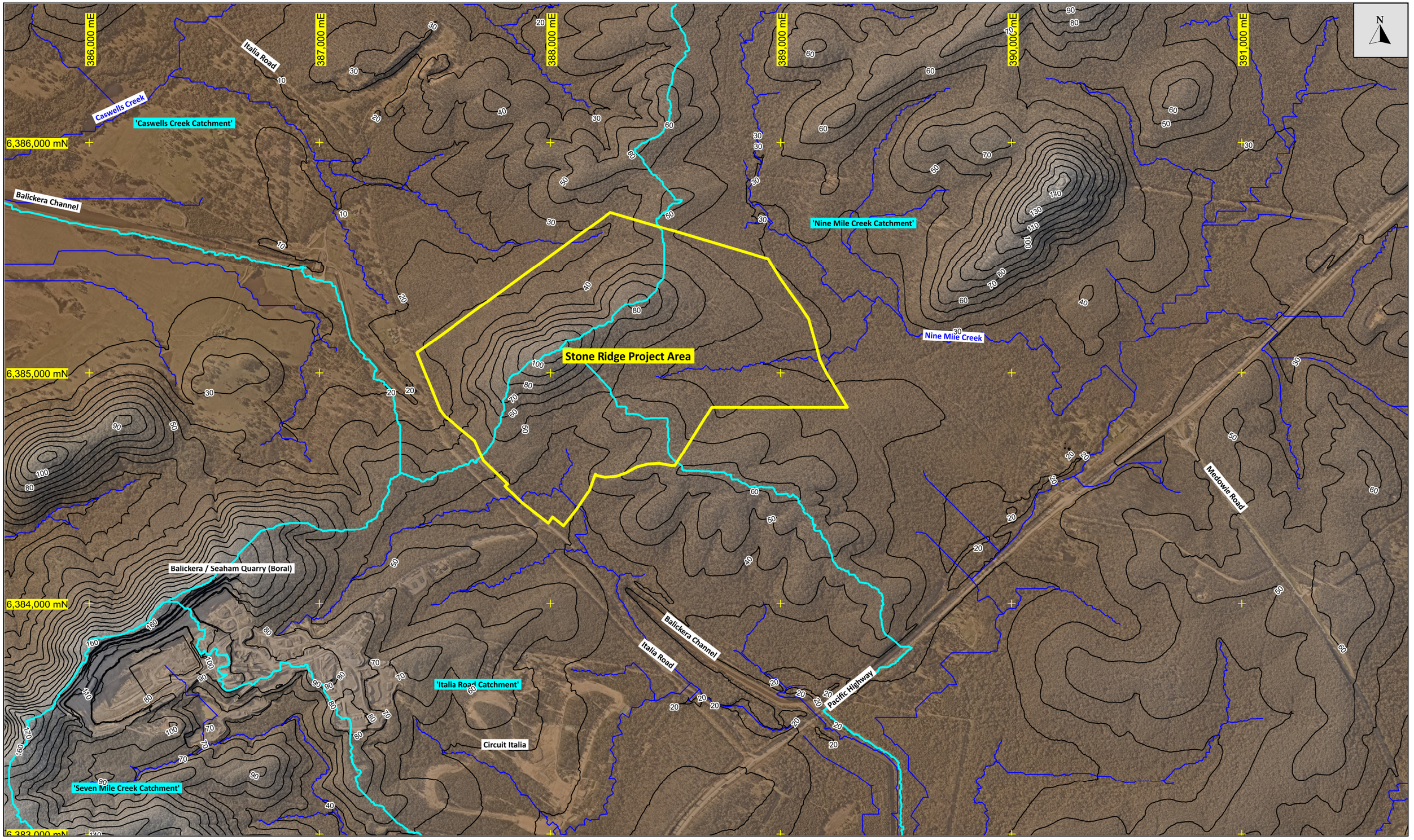
Project:	**STONE RIDGE QUARRY PROJECT**					**Figure 1**	
Title:	**Project Area Location**						
Author:	DMB	*Date:*	December 2019	*Scale:*	1:15,000 @ A3	*Grid:*	MGA Zone 56 (GDA94)
Source:	Aerial Photograph: NearMap Image - 9 September 2018 Cadastral Data: NSW State Government - Six Maps - Port Stephens LGA						



Legend

- Stone Ridge Project Area Boundary
- Topographic contour (10m contour interval)
- Drainage line (ephemeral)
- Catchment boundary

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Project:	**STONE RIDGE QUARRY PROJECT**					**Figure 2**	
Title:	**Project Area Topography and Drainage**						
Author:	DMB	*Date:*	December 2019	*Scale:*	1:15,000 @ A3	*Grid:*	MGA Zone 56 (GDA94)
Source:	Aerial Photograph: NearMap Image - 9 September 2018 Digital Elevation Model: Generated from LIDAR 0.5m contour data Topographic Contours: 10m contour interval - generated from Digital Elevation Model - 1m pixel resolution						

2.4 Drainage

The Project Area extends into three main drainage catchment areas, with catchment boundaries controlled by Stone Ridge and South Ridge. All drainages within and around the Project Area are ephemeral, although Nine Mile Creek to the immediate east tends to permanently hold water in scattered waterholes along its length.

Approximately 44 hectares of the northern part of the Project Area, including the northern flank of Stone Ridge, falls within the 'Caswells Creek catchment'. This catchment has a total area of 1123 hectares and drains into Balickera Channel, approximately 2.7 kilometres to the northwest of Stone Ridge.

Approximately 61 hectares of the eastern side of the of the Project Area forms part of the 'Nine Mile Creek catchment'. This catchment has a total area of approximately 2227 hectares and drains into Grahamstown Dam, approximately 6.5 kilometres downstream of the Project Area boundary and 3.6 kilometres to the southeast of Stone Ridge.

Approximately 35 hectares of the western side of the of the Project Area forms part of the 'Italia Road catchment'. This catchment has a total area of approximately 512 hectares and drains to the southeast under the Pacific Highway and via overland flow into Grahamstown Dam, over 3 kilometres to the southeast of Stone Ridge.

2.5 Vegetation

Vegetation cover on ridges and ridge flanks within the Project Area is dominated by dry sclerophyll forest. Most of this vegetation can be classified as 'regrowth' that has occurred following historical logging operations. Vegetation cover at lower elevations transitions to wetter forest types.

3. HISTORICAL GEOLOGICAL INVESTIGATIONS

3.1 Drilling – Hunter District Water Board (~1955)

Balickera Channel was excavated by the Hunter District Water Board in the late-1950's with the purpose of enabling fresh water from the Williams River to be pumped into Grahamstown Dam, when dam levels fall below acceptable levels. The channel is predominantly an open feature along most of its length but was tunnelled below surface for approximately 1200 metres through volcanic rock exposures at the southern end of Stone Ridge. Between the Balickera Pumping Station and the Pacific Highway the channel and tunnel are oriented approximately normal to the strike of the geology, and as such, provide an excellent representative sectional exposure through the geology of this area.

The first detailed historical geological assessment of relevance to the Project Area was undertaken by Hunter District Water Board in 1957 and documented in its report titled "Report on Geology of Balickera Tunnel Site". This report provided an overview of the geology of the proposed tunnel alignment based on information obtained from surface examination; nine (9) vertical diamond drill holes; surface trenching and petrographic examination.

The report confirms that the geology of the area between Seaham and the Pacific Highway comprises a bedded sequence of Carboniferous-age sedimentary and volcanic rocks that dip in a south easterly direction at angles up to 50°. The stratigraphy is represented by a basal sequence of conglomerate, interbedded with tuff and sandstone, that outcrop between Seaham and the western end of Balickera Tunnel. These are overlain by beds of volcanic lava comprising 'mainly toscanitic and andesitic lavas with a good distribution of interbedded andesitic and rhyolitic tuffs' that are spatially associated with the proposed Balickera Tunnel that now passes through the southern limit of Stone Ridge. The volcanic rocks are overlain by a further sequence of basal conglomerate, sandstone and tuff, overlain by toscanitic lava, followed by interbedded tillitic conglomerate and indurated shales. These overlying units characterise the geology between the eastern end of the Tunnel and the Pacific Highway.

3.2 Geological and Stratigraphic Mapping – J.H. Rattigan (1966)

Rattigan (1966) generated a detailed stratigraphic section for the geology ultimately exposed in the Balickera Tunnel excavation and used this information to prepare one of the first reliable geological maps for the surrounding area (**Figure 3**). The results of this work were published in the paper titled *"The Balickera Section of the Carboniferous Kuttung Facies, New South Wales"* and have been an important information source for the ARDG quarry resource assessment program.

Based on Rattigan's mapping, the Carboniferous stratigraphy was interpreted to strike northeast-southwest and dip at approximately 35° to the southeast. On the northwestern side of Stone Ridge, the geology was characterised by andesitic to dacitic volcanic rocks (including ignimbrites and tuffs) assigned to the *Mosman Swamp Andesites* (Formation) (lower part of the *Gilmore Volcanic Group*).

The *Mosman Swamp Andesites* were described as being overlain by the *Eagleton Volcanics* (Formation) – the upper part of the *Gilmore Volcanic Group* – that have since been reclassified (refer **Section 3.3).** At the time, Rattigan described the *Eagleton Volcanics* as 'toscanitic, dellentitic and rhyolitic volcaniclastic and pyroclastic rocks with minor intermediate (andesitic or dacitic) tuffs and minor volcanic breccias and tuffaceous sediments'. The term 'toscanite' is a now superseded term that was originally used for a volcanic rock of rhyodacitic composition with a glassy groundmass. Similarly, the term 'dellenite' is a now disused term for a volcanic rock intermediate in composition between rhyolite and dacite and roughly synonymous with rhyodacite. The mapped extent of the

Eagleton Volcanics was at the time limited to the ridge line defined by Stone Ridge and its southern strike continuation on which the Boral Balickera / Seaham Quarry is located.

The geology overlying the Eagleton Volcanics and associated with more undulating topography to the southeast, was described by Rattigan as being dominated by boulder conglomerates and interbedded tuffs. He assigned these units to the *Balickera Conglomerate* (*Kings Hill Group*).

3.3 Quarry Feasibility Study and Diamond Drilling Program – FCNSW (1992)

During the early 1990's State Forests (now FCNSW) commissioned a study within the Wallaroo State Forest aimed at determining the suitability of establishing a hardrock quarry at Hamburger Hill. The outcomes of this study were documented in a report titled *"Geological Study on the Feasibility of Establishing a Hardrock Quarry – Hamburger Hill, Wallaroo State Forest, Buladelah District"*.

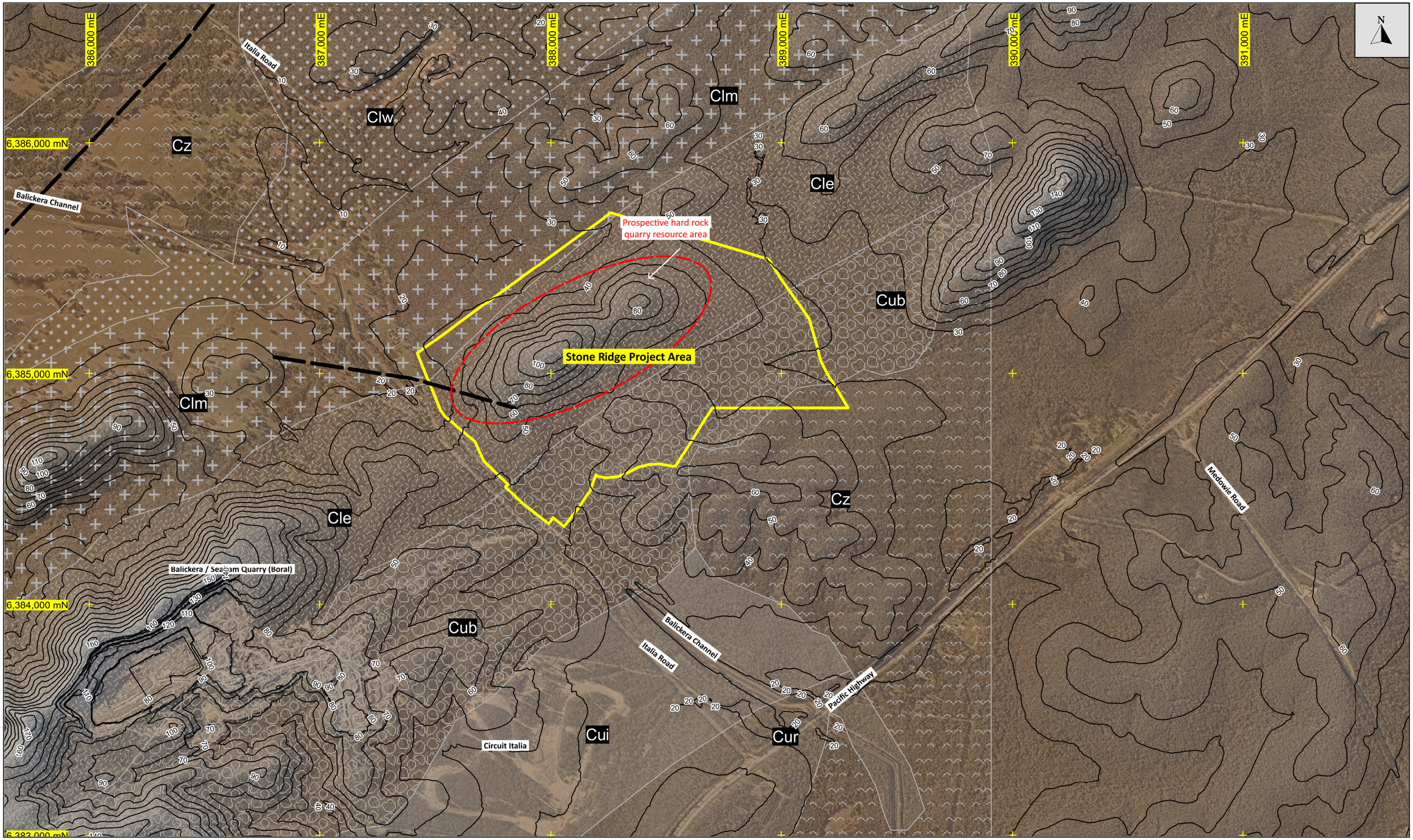
As part of the study two short (30 metre) vertical diamond holes were drilled on the ridge line. The precise collar location of these holes was not provided in the report, although a surface excavation that may be an old drill sump for one of the holes is located near the saddle.

While both diamond holes intersected relatively competent rhyodacite close to surface, insufficient drilling and geotechnical testing was undertaken to define the lateral or depth extent of the geology or to justify the 16.7 Mt volume and tonnage calculation that was reported as a 'reserve' estimate. Geotechnical testing of drill core from the site was limited to four (4) bulk samples that were assessed for coarse particle density, water absorption and uniaxial compressive strength. Unfortunately, these tests alone provide very little useful information on the suitability of the geology for producing the common types of quarry products. Although Boral's nearby quarry produces high quality quarry products from the same geological formation, a comprehensive and site-specific program of diamond drilling and physical property testing, as well as an evaluation of extraction options and staging, would have been required at the time to support any reserves estimate for the site.

The State Forests' study also involved the completion of two seismic lines across the ridge. Again, the precise location of these survey lines was not provided in the report and therefore the hand drawn seismic survey results are largely of no benefit to assessing the resource potential of the Project Area.

3.4 Regional Geology – Geological Survey of NSW (2015)

In 2015, the Geological Survey of NSW published its Zone 56 Seamless Geology digital dataset. The dataset presents a revised geological interpretation for the Project Area and surrounds (**Figure 4**), with the geology previously assigned by Rattigan (1966) to the *Mosman Swamp Andesites,* incorporated within the *Eagleton Volcanics*. The geology previously mapped as *Balickera Conglomerate* has now been assigned to the *Mount Johnstone Formation*. The lower part of the *Mount Johnstone Formation* is dominated by conglomerate with subordinate rhyolitic tuff and ignimbrite, whereas the upper part of the Formation is characterised by sandstone, shale and carbonaceous shale.



Geology Legend

- Cainozoic sediments (Cz) - Undifferentiated marine, estuarine and fluvial deposits
- Grahamstown Lake Formation (Cur) - Laminated claystones, siltstones, fine sandstones and varves and massive mudstones; zeolitic sandstones, lithic sandstones and pebble conglomerates
- KINGS HILL GROUP
  - Italia Road Formation (Cui) - Coarse to medium, massive lithic arenites with interbeds of fine laminated sandstones, shales, carbonaceous shale and poor coal, and minor mottled and laminated cherts
  - Balickera Conglomerate (Cub) - Boulder conglomerate; massive, poorly sorted, polymictic, phenoclasts well rounded to 160m with coarse, red, angular lithic sand matrix, interbedded grey acid pumiceous tuffs and ignmibrite
- GILMORE VOLCANIC GROUP
  - Eagleton Volcanics (Cle) - Massive toscanitic and delenitic lavas and ignimbrites; acid to intermediate litic, vitric and crystal tuffs
  - Mosman Swamp Andesites (Clm) - Litholdal andesites; andesitic and dacitic tuffs, including ignimbrites and bentonites; pyroxene andesitic pitchstones at the base
  - Wallaringa Formation (Clw) - Thickly bedded, massive, conglomeratic, coarse lithic arenites, with interbdeds of dense, red and grey ignimbrites and graded ashfall tuffs; dominant lithology is a coarse, red, feldspathic, lithic arenite with angular fragments of andesite and other intermediate volcanic rocks and mineral grains, set in a zeoloitic and haematitic paste
- Fault - Inferred

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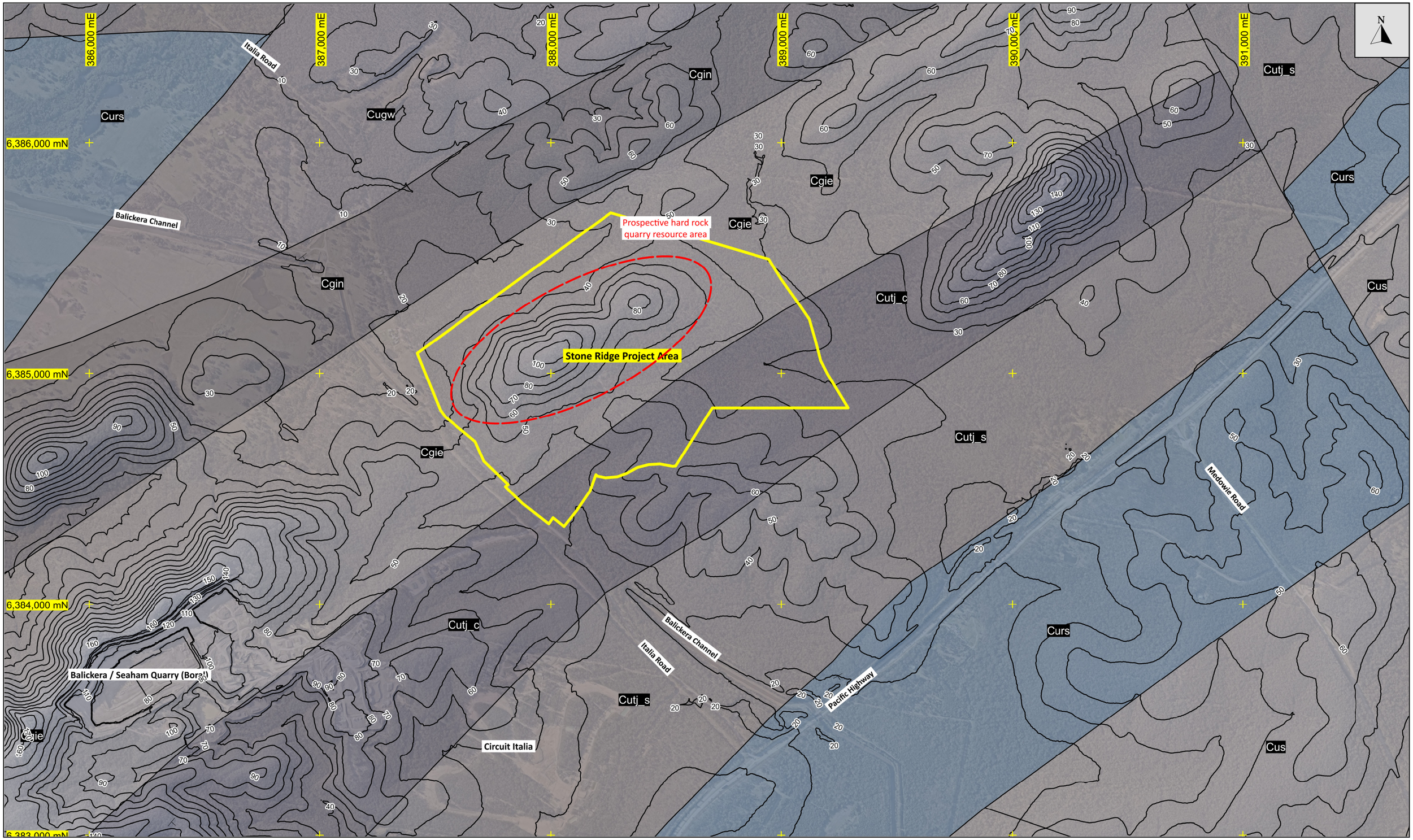
Figure 3

Title: **Historical Geological Mapping - J.H. Rattigan, 1966**

Author: DMB | *Date:* December 2019 | *Scale:* 1:15,000 @ A3 | *Grid:* MGA Zone 56 (GDA94)

Source: Aerial Photograph: NearMap Image - 9 September 2018
Digital Elevation Model: Generated from LIDAR 0.5m contour data
Topographic Contours: 10m contour interval - generated from LIDAR 0.5m contour data
Geology: J.H Rattigan (1966) - The Balickera Section of the Carboniferous Kuttung Facies, NSW.



Geology Legend

GILMORE VOLCANIC GROUP

- Unnamed Carboniferous units (Cus) - Sandstone, schist, phyllite, slate, chert, jasper, basalt, tuff and amphibolite
- Seaham Formation (Curs) - Tillite, varved siltstone, tuff, red and green zeolitic mudstone with dropstones interbedded within thick bedded lithic sandstone and conglomerate
- Mount Johnstone Formation (upper) - sandstone(Cutj_s) - Graded, massive, lithic arenite with interbeds of fine, laminated sandstone, shale, carbonaceous shale, poor coal and minor chert
- Mount Johnstone Formation (lower) - conglomerate (Cutj_c) - Polymictic boulder conglomerate with grey, pumiceous rhyolitic tuff and ignimbrite
- Eagleton Volcanics (Cgie) - Massive toscanite and dellenitic coherent volcanics and ignimbrite units; acid to intermediate lithic, crystal and vitric tuff
- Newtown Formation (Cgin) - Red to purple lithic sandstone, red, purple, or green siltstone, pebble conglomerate with interbedded rhyolitic and rhyodacitic ignimbrite and tuff
- Wallaringa Formation (Cugw) - Pink to brown, thickly bedded lithic sandstone, conglomerate and granitoids, minor sandstone

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Project:	**STONE RIDGE QUARRY PROJECT**					**Figure 4**	
Title:	**Regional Geological Mapping & Mapped Extent of Eagleton Volcanics**						
Author:	DMB	*Date:*	December 2019	*Scale:*	1:15,000 @ A3	*Grid:*	MGA Zone 56 (GDA94)
Source:	Aerial Photograph: NearMap Image - 9 September 2018 Digital Elevation Model: Generated from LIDAR 0.5m contour data Topographic Contours: 10m contour interval - generated from LIDAR 0.5m contour data Geology: NSW Seamless Geology Zone 56 - Geological Survey of NSW						

4. GEOLOGICAL MAPPING AND PETROGRAPHY

4.1 Background

Preliminary geological mapping of the Project Area commenced on 27 March 2017, with the purpose of confirming the general character of the dominant *Eagleton Volcanics* rock types based on examination of surface outcrop exposures. Several representative samples of outcrop were collected for detailed hand specimen and thin section analysis, which was subsequently undertaken by Dr Paul Ashley (Paul Ashley Petrographic and Geological Services). The locations from which these samples were collected are illustrated in **Figure 5.**

A program of detailed geological mapping was subsequently undertaken across the Project Area with the objective of confirming the lateral extent and contact relationships of major *Eagleton Volcanics* rock types identified from the preliminary investigations. Mapping activities have been ongoing throughout the period of the resource assessment program, with information generated by diamond drilling and ground magnetic surveys guiding ongoing surface mapping.

Given the excellent outcrop exposure of rhyodacite on Stone Ridge, mapping has tended to focus northwest and southeast of the ridge, where outcrop exposure is more limited and geological complexity is greater.

4.2 Methodology

Geological mapping was undertaken using mobile mapping software (initially Locus Map Pro and later Datamine MapInfo Discover Mobile) with the GPS-controlled location of outcrop, subcrop and float recorded for different rock types. Mapping traverse routes where geological information was not available due to the absence of outcrop or subcrop, were also recorded.

Geological information was later plotted as a series of colour-coded points to generate a geological outcrop, subcrop and float map (**Figure 5**), with traverse routes devoid of rock exposure also plotted.

4.3 Results

Mapping and petrographic assessment confirmed the presence of five (5) major rock types, which are summarized below in decreasing order of abundance.

4.3.1 Rhyodacite

The flanks and crest of Stone Ridge are characterised by extensive outcrop, subcrop and float of a pink to pinkish grey, medium grained, quartz and feldspar dominated volcanic rock, confirmed by petrographic assessment as **rhyodacite**.

Outcrop of rhyodacite varies in character from extensive areas of blocky rubble (**Plate 1**) to areas of broad sheet-like outcrop interpreted as dip-slope bedding surfaces (**Plate 2**).

Sample 3 (**Plate 3**) is a representative sample of rhyodacite collected from the southeast flank of Stone Ridge (GR: 388,045mE, 6,384,877mN). The following detailed hand specimen and petrographic thin section description of this sample is presented below.