



Wedgerock Pty Ltd

ABN: 15 099 038 123

Karuah South Quarry

Aboriginal Cultural Heritage Assessment Report

Prepared by

Biosis Pty Ltd

October 2018

**Specialist Consultant Studies Compendium
Volume 2, Part 7a**

This page has intentionally been left blank

WedgeRock Pty Ltd

ABN: 15 099 038 123

Aboriginal Cultural Heritage Assessment Report

Prepared for: R.W. Corkery & Co. Pty Limited
1st Floor, 12 Dangar Road
PO Box 239
BROOKLYN NSW 2083

Tel: (02) 9985 8511
Email: brooklyn@rwcorkery.com

On behalf of: Wedgerock Pty Ltd
PO Box 59
KARUAH NSW 2324

Tel: (02) 4997 5583
Email: wedgerock@aapt.net.au

Prepared by: Biosis Pty Ltd
8/27 Annie Street
WICKHAM NSW 2293

Tel: (02) 4911 4040
Email: newcastle@biosis.com.au

Ref No: 26512

October 2018

Please note: All Figures and Plates in this document are presented in colour on the electronic version supplied on the USB or downloaded from the DPE Website.

This Copyright is included for the protection of this document

COPYRIGHT

© Biosis Pty Ltd 2018
and
© Wedgerock Pty Ltd 2018

All intellectual property and copyright reserved.

Apart from any fair dealing for the purpose of private study, research, criticism or review, as permitted under the Copyright Act, 1968, no part of this report may be reproduced, transmitted, stored in a retrieval system or adapted in any form or by any means (electronic, mechanical, photocopying, recording or otherwise) without written permission. Enquiries should be addressed to Biosis Pty Ltd.

CONTENTS

	Page
COMMONLY USED ACRONYMS	7a-7
EXECUTIVE SUMMARY.....	7a-9
1. INTRODUCTION.....	7a-11
1.1 PROJECT BACKGROUND	7a-11
1.2 STUDY AREA	7a-11
1.3 THE PROPOSED PROJECT.....	7a-14
1.4 PLANNING APPROVALS.....	7a-16
1.5 RESTRICTED AND CONFIDENTIAL INFORMATION.....	7a-16
1.6 ABORIGINAL CULTURAL HERITAGE	7a-16
1.6.1 General description	7a-16
1.6.2 Tangible Aboriginal cultural heritage.....	7a-17
1.6.3 Intangible Aboriginal cultural heritage	7a-17
1.6.4 Statutory	7a-17
1.6.5 Values	7a-17
2. STUDY AREA CONTEXT	7a-18
2.1 TOPOGRAPHY, GEOLOGY AND HYDROLOGY.....	7a-18
2.2 SOIL LANDSCAPES.....	7a-20
2.3 CLIMATE.....	7a-22
2.4 LANDSCAPE RESOURCES	7a-22
2.5 EUROPEAN LAND USE HISTORY.....	7a-23
3. ABORIGINAL CULTURAL HERITAGE CONTEXT	7a-25
3.1 ETHNOHISTORY	7a-25
3.2 ABORIGINAL HERITAGE LOCATED WITHIN AND SURROUNDING THE STUDY AREA	7a-26
3.3 INTERPRETATION OF PAST ABORIGINAL LAND USE	7a-26
4. ABORIGINAL COMMUNITY CONSULTATION	7a-28
4.1 STAGE 1: NOTIFICATION OF THE PROPOSED PROJECT AND REGISTRATION OF INTEREST	7a-28
4.1.1 Identification of relevant Aboriginal stakeholders	7a-28
4.1.2 Public notice	7a-28
4.1.3 Registration of Aboriginal parties	7a-29
4.2 STAGE 2: PRESENTATION OF INFORMATION ABOUT THE PROPOSED PROJECT	7a-29
4.3 STAGE 3: GATHERING INFORMATION ABOUT CULTURAL SIGNIFICANCE.....	7a-29
4.3.1 Archaeological assessment methodology information pack	7a-29
4.3.2 Information gathered during fieldwork.....	7a-29
4.4 STAGE 4: REVIEW OF DRAFT ACHA REPORT	7a-29

CONTENTS

	Page
5. ABORIGINAL CULTURAL SIGNIFICANCE ASSESSMENT	7a-30
5.1 INTRODUCTION TO THE ASSESSMENT PROCESS	7a-30
5.2 CULTURAL (SOCIAL SIGNIFICANCE) VALUES.....	7a-31
5.3 HISTORIC VALUES	7a-32
5.4 ARCHAEOLOGICAL (SCIENTIFIC SIGNIFICANCE) VALUES	7a-32
5.5 AESTHETIC VALUES.....	7a-32
5.6 STATEMENT OF SIGNIFICANCE.....	7a-32
6. DEVELOPMENT LIMITATIONS AND MITIGATION MEASURES	7a-33
6.1 POTENTIAL RISKS TO ABORIGINAL CULTURAL HERITAGE.....	7a-33
6.2 MANAGEMENT AND MITIGATION MEASURES	7a-33
7. RECOMMENDATIONS	7a-33
REFERENCES	7a-35

ANNEXURES

Annexure 1 Coverage of Environmental Assessment Requirements Relating to Aboriginal and Historic Heritage.....	7a-39
Annexure 2 Consultation Log	7a-43
Annexure 3 Stage 1: Notification of the Proposed Project and registration of interest	7a-47
Annexure 4 Stage 2: Presentation of information about the Proposed Project.....	7a-91
Annexure 5 Stage 4: Review of draft cultural heritage assessment report	7a-117
Annexure 6 Archaeological Report.....	7a-121

FIGURES

Figure 1 Location of the Study Area.....	7a-12
Figure 2 Study Area Detail	7a-13
Figure 3 Indicative Site Layout	7a-15
Figure 4 Geological units within the vicinity of the Study Area.....	7a-19
Figure 5 Mitchell Landscapes within the Study Area	7a-21
Figure 6 AHIMS records near the Study Area.....	7a-27

TABLES

Table 1 List of registered Aboriginal parties (RAPs) and group contacts	7a-9
Table 2 List of registered Aboriginal parties (RAPs) and group contacts	7a-29

CONTENTS

	Page
<hr/>	
PLATES	
Plate 1	Diagram showing Strahler stream order (Ritter et al 1995, p. 151) 7a-20
Plate 2	1954 aerial photograph showing approximate location of the Study Area, highlighted in orange (Source: NSW LPI 2018) 7a-24
Plate 3	1993 aerial photograph showing approximate location of Study Area (Source: NSW LPI 2018)..... 7a-24

This page has intentionally been left blank

COMMONLY USED ACRONYMS

ACHA	Aboriginal Cultural Heritage Assessment
AHIMS	Aboriginal Heritage Information Management System
DECCW	Department of Environment, Climate Change and Water (now OEH)
DP	Deposited Plan
DPE	Department of Planning and Environment
GPS	Global Positioning System
ICOMOS	International Council on Monuments and Sites
LALC	Local Aboriginal Land Council
LEP	Local Environmental Plan
LGA	Local Government Area
NNTT	National Native Title Tribunal
NPW Act	<i>National Parks and Wildlife Act 1974</i>
NPWS	National Parks and Wildlife Service
NSW	New South Wales
NTSCORP	Native Title Services Corporation
OEH	Office of Environment and Heritage
PAD	Potential Archaeological Deposit
RAP	Registered Aboriginal Party
SEPP	State Environmental Planning Policy
Study Area	The area of impact for the proposed Project defined as the southern section of Lot 11 DP 1024564, beyond the area of disturbance associated with the Karuah Quarry

This page has intentionally been left blank

EXECUTIVE SUMMARY

Biosis Pty Ltd was commissioned by RW Corkery & Co. Pty Ltd on behalf of Wedgerock Pty Ltd to undertake an Aboriginal cultural heritage assessment (ACHA) for a proposed hard rock Quarry, on the southern part of Lot 11 DP 1024564, Karuah, New South Wales (NSW). The Study Area for the proposed Project comprised the largely undisturbed area south of the adjoining Karuah Quarry. The Study Area is located in bushland approximately 4 kilometres northeast of Karuah and approximately 40 kilometres north of the Newcastle central business district (CBD).

There are 12 Aboriginal cultural heritage sites registered with the Aboriginal Heritage Information Management System (AHIMS) register in the vicinity of the Study Area, however, none of these are located within the Study Area. Biosis conducted an archaeological survey of the Study Area in May 2018 in the company of three Aboriginal RAPs. The overall effectiveness of the survey for examining the ground for Aboriginal sites was deemed low. This was attributed to vegetation cover restricting ground surface visibility combined with a low amount of rock exposures.

No previously unrecorded Aboriginal cultural heritage sites were identified during the field survey. No areas of (archaeological) sensitivity were identified.

Consultation

The Aboriginal community was consulted regarding the heritage management of the proposed Project throughout its lifespan. Consultation has been undertaken as per the process outlined in the DECCW document, *Aboriginal cultural heritage consultation requirements for proponents 2010* (DECCW 2010a) (consultation requirements). The appropriate government bodies were notified and advertisements were placed in the Myall Coast News of the Area newspaper (25 January 2018), which resulted in the following Aboriginal organisations registering their interest (**Table 1**).

Table 1
List of registered Aboriginal parties (RAPs) and group contacts

Organisation	Contact person
Karuah Local Aboriginal Land Council (LALC)	Kelly Drinkwater
Didge Ngunawal	Lilly Carrol
Divine Diggers	Deidre Perkins

A search conducted by the Office of the Registrar, *Aboriginal Land Rights Act 1983* listed no Aboriginal Owners with land within the Study Area. A search conducted by the National Native Title Tribunal (NNTT) listed no Registered Native Title Claims, Unregistered Claimant Applications or Registered Indigenous Land Use Agreements within the Study Area. Upon registration, the Aboriginal parties were invited to provide their knowledge on the Study Area and on the proposal provided in the methodology for the survey and assessment. The responses identify the Study Area as an area of low significance. Responses from the RAPs are included in **Annexure 5**.

Several RAPs participated in the field survey and provided comment on the Study Area with regard to the proposed Project. The outcome of the consultation process was that the RAPs considered the Study Area to have a low level of cultural significance. The results of the consultation process are included in this document.

The recommendations that resulted from the consultation process are provided below.

Management recommendations

Prior to any development impacts occurring within the Study Area, the following is recommended:

Recommendation 1: Discovery of unanticipated Aboriginal objects

All Aboriginal objects and places are protected under the *National Parks and Wildlife Act 1974* (NPW Act). It is an offence to knowingly disturb an Aboriginal site without a consent permit issued by the Office of Environment and Heritage (OEH). Should any Aboriginal objects be encountered during works associated with this proposal, works must cease in the vicinity and the find should not be moved until assessed by a qualified archaeologist. If the find is determined to be an Aboriginal object the archaeologist will provide further recommendations. These may include notifying the OEH and Aboriginal stakeholders.

Recommendation 2: Discovery of Aboriginal ancestral remains

Aboriginal ancestral remains may be found in a variety of landscapes in NSW, including middens and sandy or soft sedimentary soils. If any suspected human remains are discovered during any activity you must:

1. immediately cease all work at that location and not further move or disturb the remains;
2. notify the NSW Police and OEH's Environmental Line on 131 555 as soon as practicable and provide details of the remains and their location; and
3. not recommence work at that location unless authorised in writing by OEH.

Recommendation 3: Continued consultation with the registered Aboriginal stakeholders

In accordance with the *Aboriginal cultural heritage consultation requirements for proponents 2010* (DECCW 2010), it is recommended that the Applicant provides a copy of this report to the RAPs and considers all comments received. The Applicant should continue to inform these groups about the management of Aboriginal cultural heritage sites within the Study Area throughout the life of the Project.

Recommendation 4: Lodgement of final report

A copy of the final report will be sent to:

- The three RAPs; and
- the AHIMS database.

1. INTRODUCTION

1.1 PROJECT BACKGROUND

Biosis Pty Ltd was commissioned by RW Corkery & Co. Pty Ltd on behalf of Wedgerock Pty Ltd (the Applicant) to undertake an ACHA and archaeological report for the proposed Karuah South Quarry, a hard rock quarry located on the southern part of Lot 11 DP 1024564, Karuah, NSW (the Site) (**Figure 1**). The proposed Project involves the extraction and processing of hard rock resources and is classified as a State Significant Development under Schedule 1 of the State Environmental Planning Policy (State and Regional Development) 2011 (State and Regional Development SEPP). This archaeological report has been prepared to support an Environmental Impact Statement and to address the relevant requirements documented in the Secretary's Environmental Assessment Requirements (SEARs) for the proposed Project.

This investigation has been carried out under Part 6 of the NPW Act and undertaken in accordance with the Code of practice for archaeological investigation of Aboriginal objects in NSW (DECCW 2010b) (the code). The code has been developed to support the process of investigating and assessing Aboriginal cultural heritage by specifying the minimum standards for archaeological investigation undertaken in NSW under the NPW Act. An archaeological investigation must be undertaken in accordance with the requirements of the code.

The *Environmental Planning and Assessment Act 1979* (EP&A Act) includes provisions for local government authorities to consider environmental impacts in land use planning and decision making. Each Local Government Area (LGA) is required to create and maintain a Local Environmental Plan (LEP) that includes Aboriginal and historical heritage items. Local Councils record items that are of significance within their LGA, and these items are listed on heritage schedules in the local LEP and are protected under the EP&A Act and *Heritage Act 1977*.

1.2 STUDY AREA

The Study Area (the Site) is located approximately 4 kilometres northeast of the town of Karuah and approximately 40 kilometres north of the Newcastle CBD. It encompasses approximately 18 hectares of private land adjacent to the Pacific Highway. An existing hard rock quarry (the Karuah Quarry) occupies the northern part of Lot 11 1024564 (**Figure 2**).

The Study Area is within the:

- Mid-Coast LGA;
- Parish of Gloucester; and
- County of Tarean.

Figure 2 shows the Study Area quarry is located immediately south of the Karuah Quarry and southwest of Karuah East Quarry, both operated by Hunter Quarries Pty Ltd. It is bounded to the south by the Pacific Highway, and to the west by Lot 12 DP 1024654, which is owned by Hunter Quarries Pty Ltd.

The northern part of the Site covers the southern part of the Karuah Quarry which is fully disturbed and not required to be included in the Study Area.

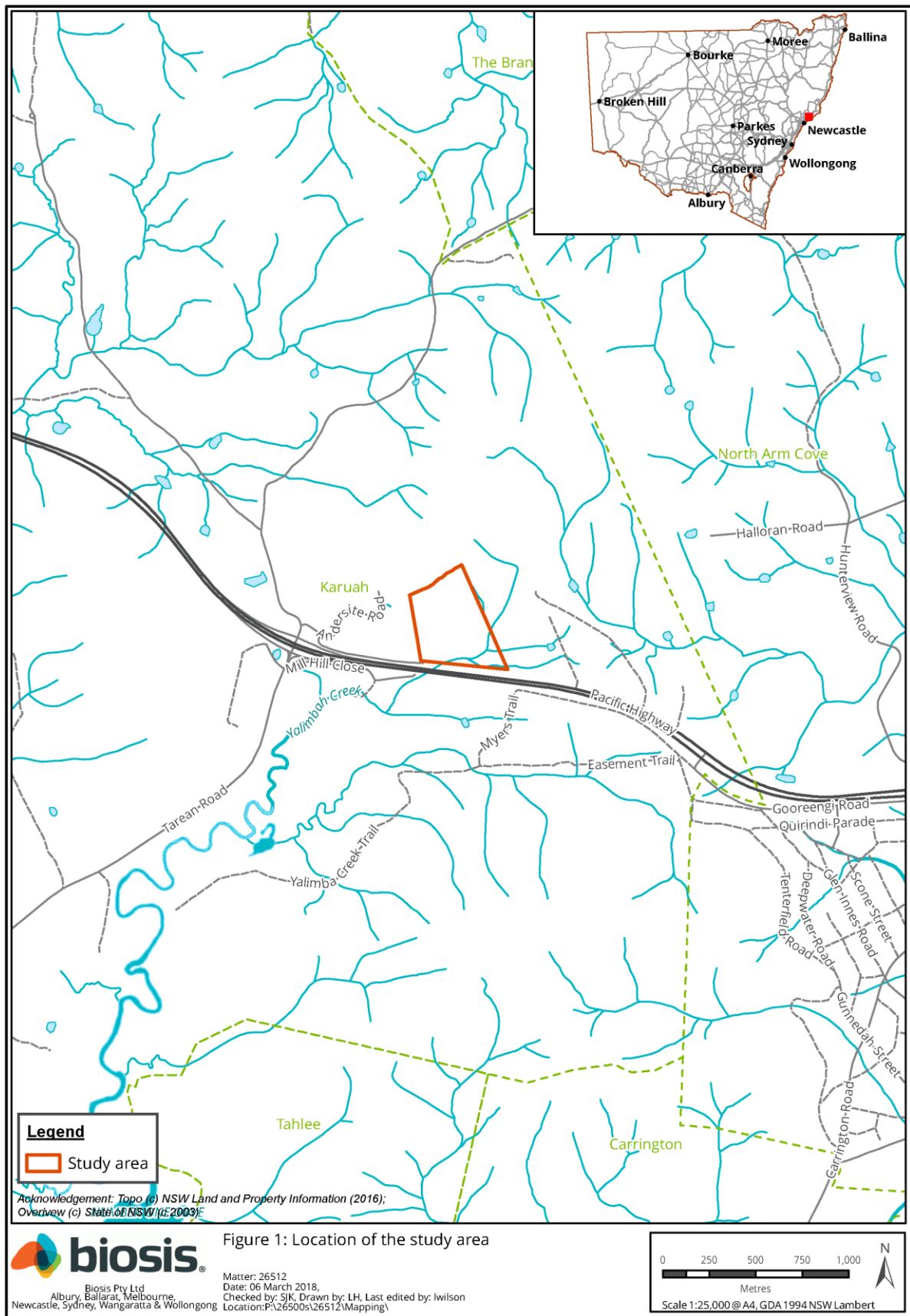


Figure 1 Location of the Study Area

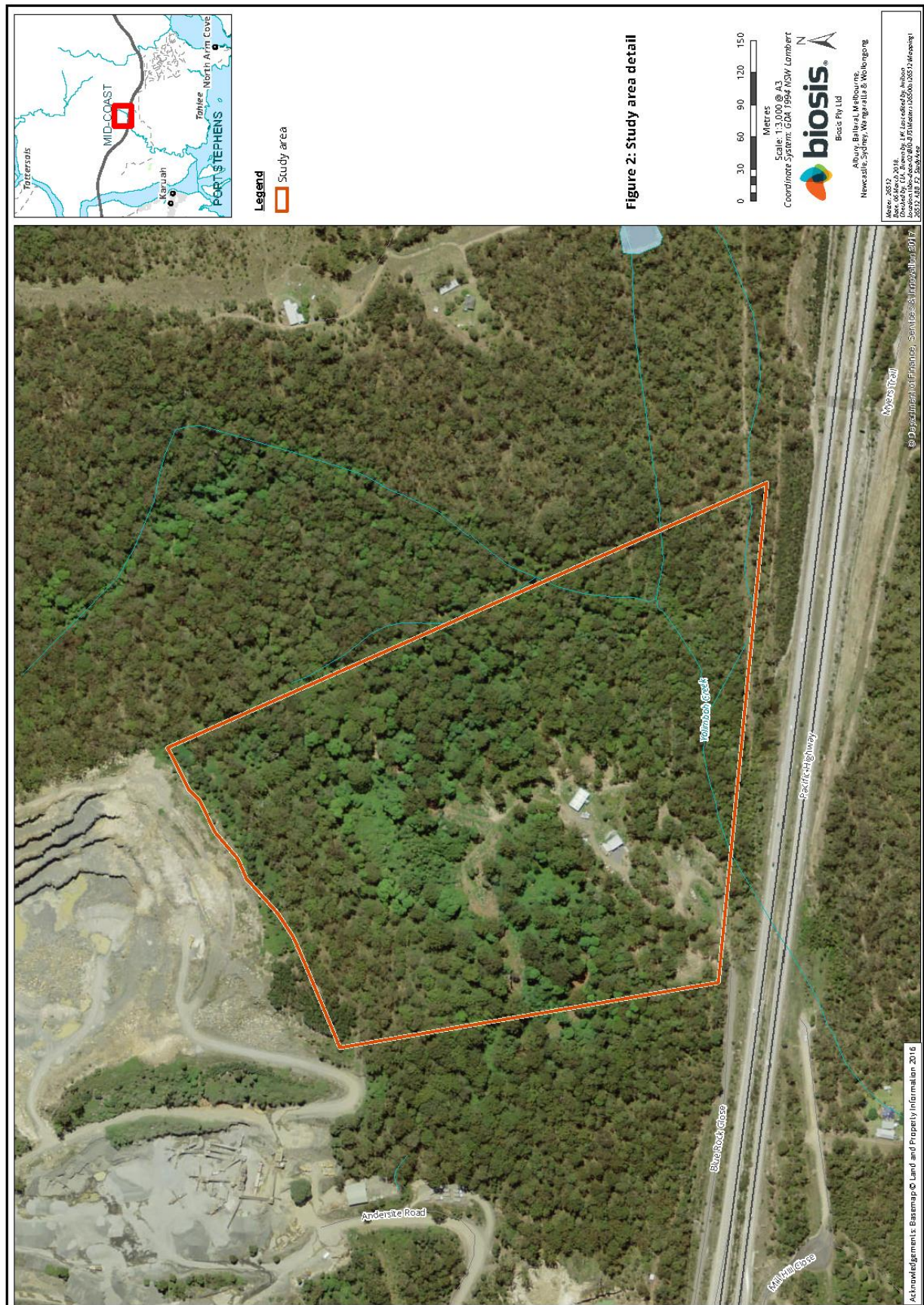


Figure 2 Study Area Detail

1.3 THE PROPOSED PROJECT

Figure 3 displays the following principal components of the proposed Project that would be located on the Site.

- **Extraction Area - Stage 1**
The Stage 1 extraction area would cover approximately 4.9ha with its footprint typically between approximately 30m AHD and 75m AHD (to a floor with an elevation of approximately 8m AHD).
- **Extraction Area - Stage 2**
The Stage 2 extraction area would cover approximately 5.9ha with its footprint typically between 75m AHD and 120m AHD (to a sloping floor from an elevation of 8m to 12m AHD).
- **Quarry Infrastructure Area**
The quarry infrastructure area would be located on the southern side of the extraction area and would incorporate the product stockpiling area, ancillary components area and mobile processing plant.
- **Product Stockpiling Area**
The product stockpiling area would be located on the northern section of the Quarry infrastructure area during Stage 1. This area would be expanded to cover northern, southern and western sections of the Quarry infrastructure area during Stage 2.
- **Mobile Processing Plant**
The mobile processing plant would incorporate a range of crushers and screens and would be located on the western section of the Quarry infrastructure area during Stage 1. During Stage 2, the mobile processing plant would be relocated to the eastern section of the Quarry infrastructure area to minimise product haulage distances.
- **Internal Roads**
A network of roads to provide access for off-road haul trucks between the extraction and processing area.
- **Quarry Access Road**
The inclined, sealed section of road extending from the Quarry entrance to the southern side of the Quarry infrastructure area.
- **Sediment Basins**
Two sediment basins (Western and Southern), each with a with pre-treatment pond, would be constructed to collect sediment-laden runoff from the disturbed sections of the Quarry.
- **Diversion Drains**
Two clean water diversion (CWD) drains (CWD East and CWD West) would be constructed to direct runoff from undisturbed areas upslope of the extraction area.

Quarry products would be despatched by road using the existing road network with access to the Site via a new entrance to Lot 11 DP 1024564 from Blue Rock Close. The location of the Quarry entrance would be close to the existing entrance to the property and would be constructed to accommodate quad-dog trailers and semi-trailers.

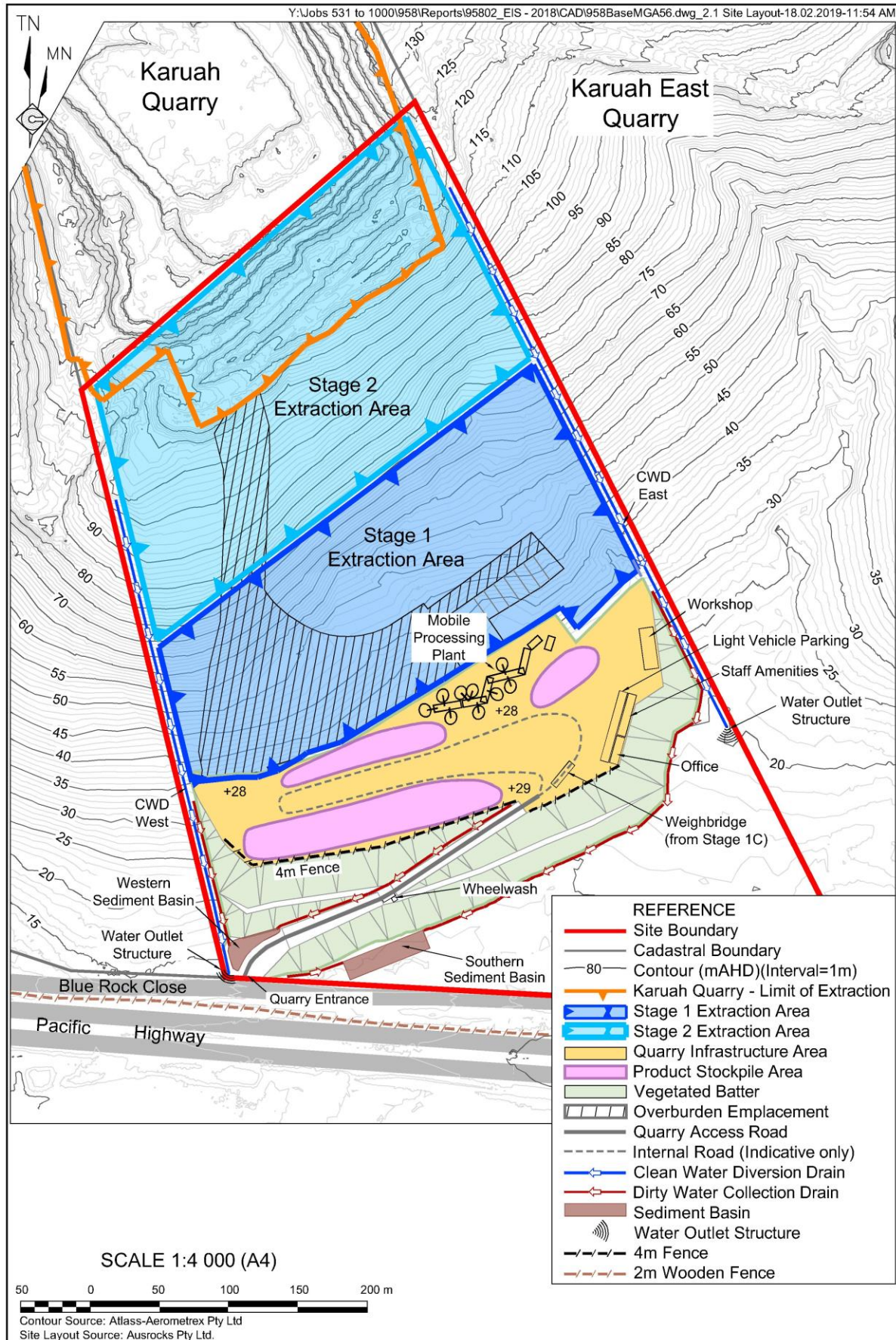


Figure 3 Indicative Site Layout

The overall footprint of the operation would be kept as small as possible during all stages of operation, with vegetation and soil removed immediately prior to the progressive extension of operations. Progressive rehabilitation would be undertaken as soon as practicable following disturbance.

1.4 PLANNING APPROVALS

The proposed development will be assessed against Part 4 (Division 4.7) of the EP&A Act. Other relevant legislation and planning instruments that will inform this assessment are as follows.

- Commonwealth Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act).
- NPW Act.
- National Parks and Wildlife Amendment Act 2010.
- Infrastructure SEPP 2007.
- Great Lakes LEP 2014.

1.5 RESTRICTED AND CONFIDENTIAL INFORMATION

No information in this report is restricted due to cultural sensitivities.

1.6 ABORIGINAL CULTURAL HERITAGE

1.6.1 General description

According to Allen and O'Connell (2003), Aboriginal people have inhabited the Australian continent for the last 50,000 years. New evidence out of the Northern Territory has pushed this date back to around 60,000 years with the Malakanunja II rock shelter dated at 61,000 +9000/-13,000 BP (Clarkson *et al* 2015). In NSW, according to Bowler *et al* (2003), Aboriginal people have occupied the land for over 42,000 years. However, preliminary evidence presented by Biosis (2016) from a subsurface testing program in south-western NSW suggests Aboriginal people may have occupied the semi-arid zone of the NSW region for 50,000 years. The timing for the human occupation of the east coast of NSW is still uncertain. While there is some possible evidence for occupation of the region around 40,000 years ago, the earliest known radiocarbon date for the Aboriginal occupation of the NSW east coast is associated with a cultural / archaeological deposit at Parramatta, which was dated to 30,735 ± 407 BP (JMCHM 2005a and 2005b).

Without being part of the Aboriginal culture and the productions of this culture, it is not possible for non-Aboriginal people to fully understand the meaning of site, objects and places to Aboriginal people – only to move closer towards understanding this meaning with the help of the Aboriginal community. Similarly, definitions of Aboriginal culture and cultural heritage without this involvement constitute outsider interpretations.

With this preface, Aboriginal cultural heritage broadly refers to things that relate to Aboriginal culture and hold cultural meaning and significance to Aboriginal people (DECCW 2010a, p.3). There is an understanding in Aboriginal culture that everything is interconnected. In essence, Aboriginal cultural heritage can be viewed as potentially encompassing any part of the physical and/or mental landscape, that is, 'Country' (DECCW 2010a, p.iii).

Aboriginal people's interpretation of cultural value is based on their 'traditions, observance, lore, customs, beliefs and history' (DECCW 2010a p.3). The things associated with Aboriginal cultural heritage are continually and actively being defined by Aboriginal people (DECCW 2010a p.3). These things can be associated with traditional, historical or contemporary Aboriginal culture (DECCW 2010a, p.3).

1.6.2 Tangible Aboriginal cultural heritage

Three categories of tangible Aboriginal cultural heritage may be defined as follows.

- Things that have been observably modified by Aboriginal people.
- Things that may have been modified by Aboriginal people but no discernible traces of that activity remain.
- Things never physically modified by Aboriginal people (but associated with Dreamtime Ancestors who shaped those things).

1.6.3 Intangible Aboriginal cultural heritage

Examples of intangible Aboriginal cultural heritage would include memories of stories and 'ways of doing', which would include language and ceremonies (DECCW 2010a, p.3).

1.6.4 Statutory

Currently, Aboriginal cultural heritage, as statutorily defined by the NPW Act, consists of objects and places which are protected under Part 6 of the Act.

Aboriginal objects are defined as:

'any deposit, object or material evidence...relating to the Aboriginal habitation of the area that comprises NSW, being habitation before or concurrent with (or both) the occupation of that area by persons of non-Aboriginal extraction, and includes Aboriginal remains'

Aboriginal places are defined as a place that is or was of special Aboriginal cultural significance. Places are declared under section 84 of the NPW Act.

1.6.5 Values

Aboriginal cultural heritage is valued by Aboriginal people as it is used to define their identity as both individuals and as part of a group (DECCW 2010a, p.iii). More specifically it is used to provide:

- 'a connection and sense of belonging to Country' (DECCW 2010a, p.iii);
- a link between the present and the past (DECCW 2010a, p.iii);
- a learning tool to teach Aboriginal culture to younger Aboriginal generations and the general public (DECCW 2010a, p.3); and

- further evidence of Aboriginal occupation prior to European settlement for people who do not understand the magnitude to which Aboriginal people occupied the continent (DECCW 2010a, p.3).

2. STUDY AREA CONTEXT

This section discusses the Study Area with regards to its landscape, environmental and Aboriginal cultural heritage context. This section should be read in conjunction with the archaeological report attached in **Annexure 6**. The background research has been undertaken in accordance with the *Code of practice for the archaeological investigation of Aboriginal objects in NSW* (DECCW 2010b).

The Study Area is located within in a semi-bushland environment east of the Karuah River within the Port Stephens region (Matthei 1995), and is situated within an area of undulating, conical hills with some steep, rocky ridges present, adjacent to coastal swamps and plains (**Figure 2**).

2.1 TOPOGRAPHY, GEOLOGY AND HYDROLOGY

The Study Area is located within the southern portion of the New England Fold belt within the Nerong Volcanics (**Figure 4**). The Nerong Volcanics consists of carboniferous siliceous flows of rhyolitic and dacitic ignimbrites, with occasional interbeds of tuffaceous sandstone and conglomerate (RW Corkery 2017). The formation extends across the wider local area, and originates from a volcanic ignimbrite eruption in the Carboniferous Period (approximately 359 Ma) (Geological Survey of NSW, 2014). The geology described above suggests the potential for Aboriginal cultural heritage materials such as stone tools manufactured from the harder ignimbrites and rhyolite raw material resources to be present within the Study Area.

Topographically, the Study Area is located on a steep south-south-eastern slope of a hill typical of the Gan Gan landscape. The Study Area slopes steeply from north to south, with an area of lesser slope adjacent to a minor drainage line (Yalimbah Creek) in the southernmost part of the lot. The steep inclination combined with the high relief of the area would put the Study Area in a system of sharply undulating rises to undulating hills (Speight 2009, p. 47). Common landform elements within these systems include hillslopes, crests, drainage depressions, valley flats, and stream channels.

Stream order is recognised as a factor which assists the development of predictive modelling in Aboriginal archaeology, and has seen extensive use throughout south eastern NSW, most notably by Jo McDonald Cultural Heritage Management in the Sydney Basin (JMCHM 2000, 2005a, 2005b, 2006). Predictive models which have been developed for the Port Stephens region have a tendency to favour higher order streams as having a high potential for campsites as these types of streams would have been more likely to provide a stable source of water and by extension, other resources which would have been used by Aboriginal groups.

The stream order system used for this assessment was originally developed by Strahler in 1952 (1964). It functions by adding two streams of equal order at their confluence to form a higher order stream, as shown in **Plate 1**. As stream order increases, so does the likelihood that the stream would be a perennial source of water.

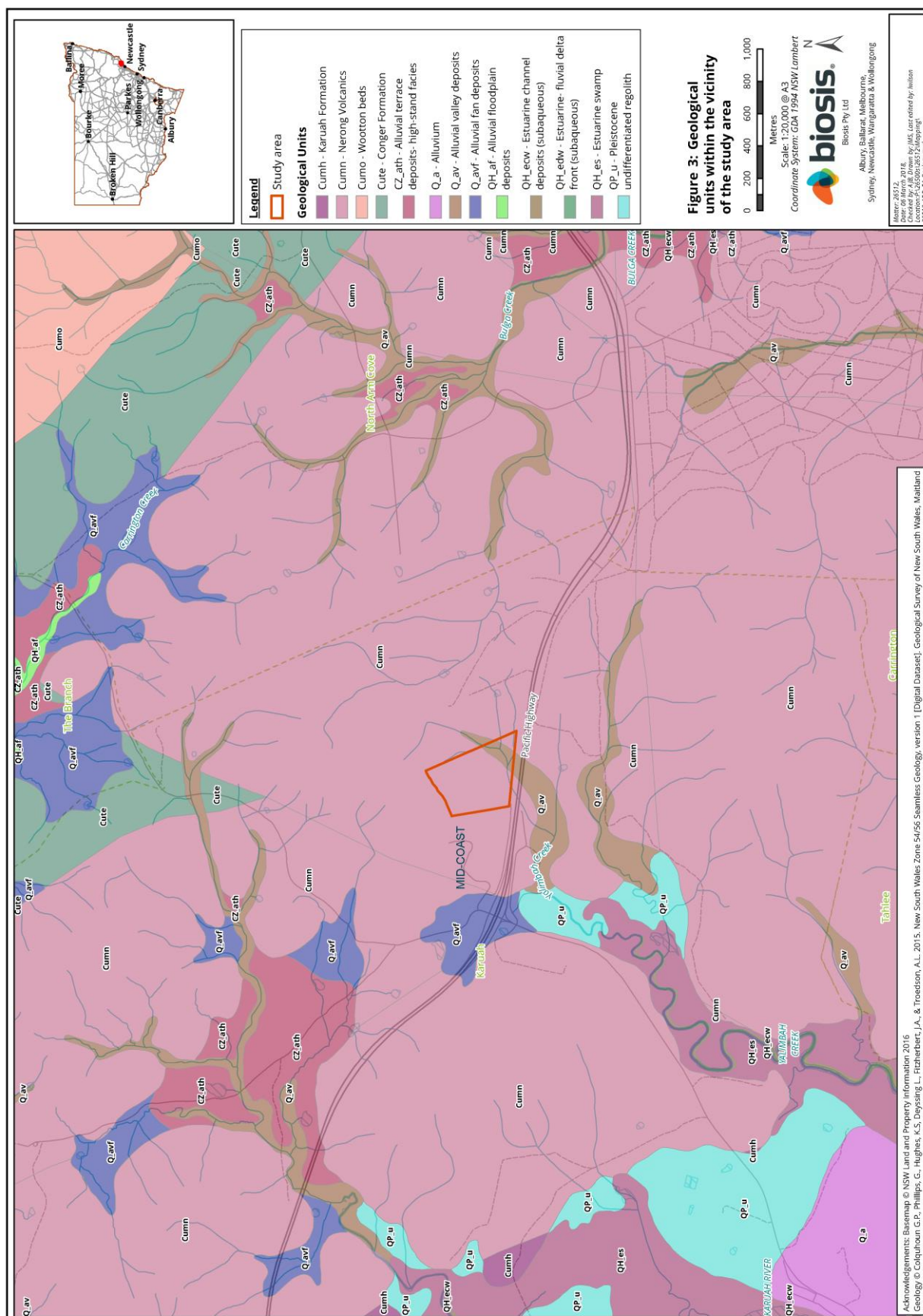


Figure 4 Geological units within the vicinity of the Study Area

The southern border of the Study Area is located immediately adjacent to and partially inclusive of head waters of Yalimbah Creek. Within the Study Area, Yalimbah Creek comprises an ephemeral, second order stream, fed by a series of first order drainage channels. Whilst this section of Yalimbah Creek may have provided fresh water during times of higher rainfall, during the survey it was dry, narrow and overgrown with vegetation.

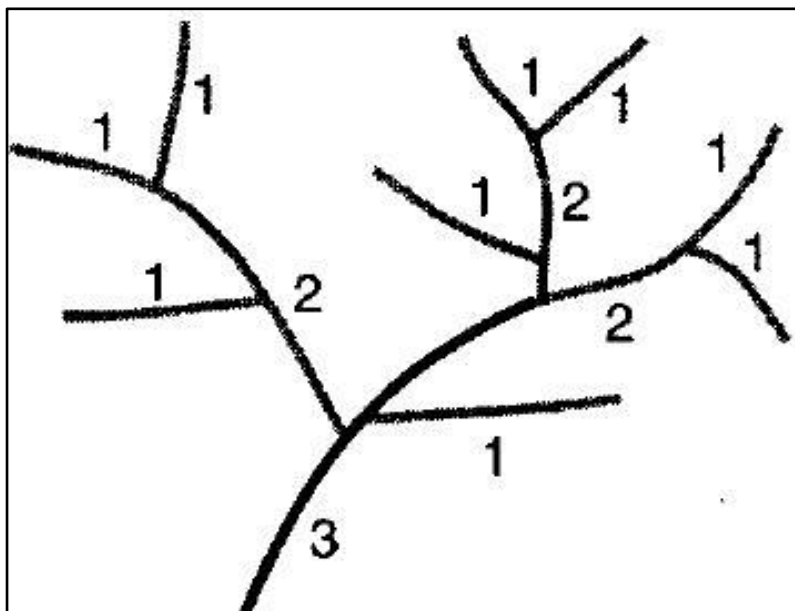


Plate 1 Diagram showing Strahler stream order (Ritter et al 1995, p. 151)

2.2 SOIL LANDSCAPES

Soil landscapes have distinct morphological and topographic characteristics that result in specific archaeological potential. Because they are defined by a combination of soils, topography, vegetation and weathering conditions, soil landscapes are essentially terrain units that provide a useful way to summarise archaeological potential and exposure.

The Study Area is divided between the Gan Gan, a variant soil landscape which spans most of the Study Area, and a small section of the Nungra soil landscape in the lot's southern part (**Figure 5**). The Gan Gan soil landscape is characterised by very steep, conical hills, with gradients >25%, uneven slopes and reliefs of between 100 to 200 metres. Hill crests are typically peaked, with occasional rocky, narrow precipices, cliffs, scarps and rocky outcrops. Drainage lines are often deeply incised and narrow, forming a radial pattern around volcanic peaks (Matthei, 1995). The Nungra soil landscape is characterised by long, smooth, gently inclined footslopes with elevations of up to 40 metres, gradients less than 3% and a relief of less than 10 metres. Footslopes may be quite long (up to 2000 metres) with wide, ill-defined drainage lines with empty into broader drainage plains (Murphy, 1995).

For further detail on the soil landscapes located within the Study Area refer to the archaeological report in **Annexure 6**.

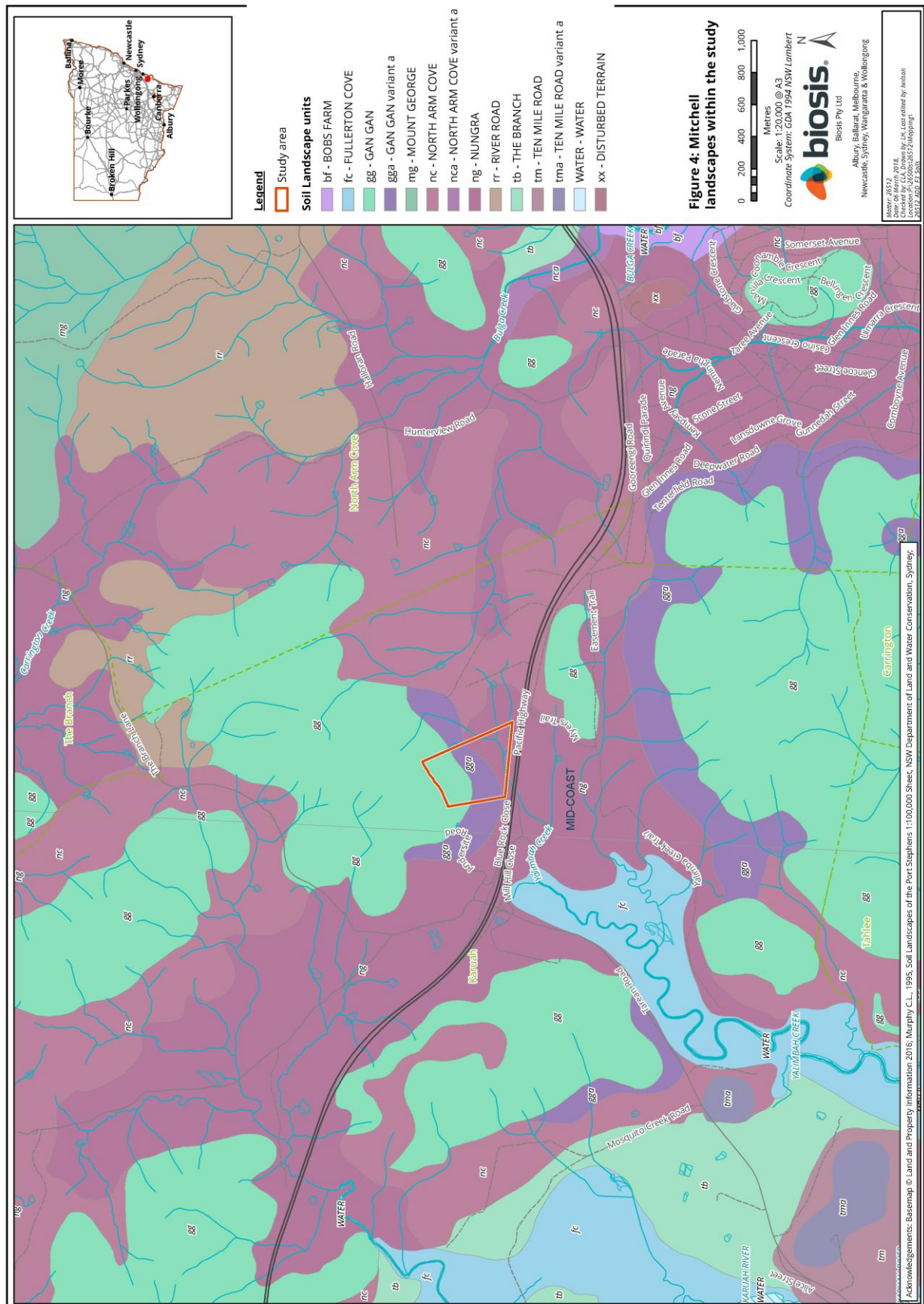


Figure 5 Mitchell Landscapes within the Study Area

2.3 CLIMATE

The Port Stephens area possesses a warm temperate to sub-humid environment, dominated by high and low pressure systems in accordance with coastal environments. Summer months commonly experience onshore winds with hot weather, whilst during winter months offshore winds result in cool to mild temperatures, with frosts often developing in low lying areas (Australian Bureau of Meteorology 2018).

Temperature averages range between 9.1 degrees Celsius in July to 27.3 degrees Celsius in January, with autumn and winter being the wettest seasons. June possesses the highest monthly average rainfall (157.9 millimetres) and October the lowest monthly average (77.9 millimetres) (Australian Bureau of Meteorology 2018). These climatic conditions make the area suitable for human occupation on a year-round basis, and support a wide range of landscape resources used by Aboriginal people and discussed in Section 2.4.

2.4 LANDSCAPE RESOURCES

The Karuah area was a part of Worimi Country and would have generally provided a number of resources used by Aboriginal inhabitants. Sokoloffnov (1977) notes that the exploitation of land resources by the Worimi would have been directly relatable to the seasonal availability and relative abundance of certain food sources. Terrestrial resources would have been utilised in the winter months by Worimi tribes, whilst coastal resources would have been more readily available in the warmer seasons.

Though the Gan Gan soil landscape contains generally poor soils, it supports a range of flora species within an uncleared, low open-forest and shrub understorey. Common tree species can include Smooth-barked Apple *Angophora costata*, Grey Gum *Eucalyptus punctata*, White Mahogany *E. acmenoides*, Scribbly Gum *E. signata*, Red Bloodwood *C. gummifera*, Forest Oak *Allocasuarina torulosa*, Tallowwood *E. microcorys*, Spotted Gum *C. maculata* and Grey Ironbark *E. paniculata*. The shrub understorey commonly contains Hill Banksia *Banksia spinulosa* var. *collina*, Mountain Devil *Lambertia Jormosa*, Grass Tree *Xanthorrhoea* spp., Gynea Lily *Doryanthes excelsa*, Eggs and Bacon *Dillwynia* spp., Geebung *Persoonia* spp., Bracken *Pteridium esculentum*, and *Hakea* spp.. Kangaroo grass *Themeda australis* may occur as a herb layer (Murphy, 1995). The Nungra soil landscape contains many similar tree species to the Gan Gan soil landscape, however along drainage lines and in poorly drained areas, Paperbark *Melaleuca* spp dominate, whilst on lower portions of drainage flats, Swamp Oak *Casuarina glauca* is common.

Aboriginal people used plant resources in a variety of ways. Fibres were twisted into string, which was used for many purposes, including the weaving of nets, baskets and fishing lines. String was also used for personal adornment. Bark was used in the provision of shelter; a large sheet of bark being propped against a stick to form a gunyah (Attenbrow 2002). Robert Dawson, an agent of the Australian Agricultural company in 1825, notes the Grass Tree *Xanthorrhoea* spp. was used for a variety of purposes. The stalks of the grass tree were used in the manufacturing of spears, and a wax-like gum could be extracted from the grass tree and used as a glue for various implements. When flowering, the grass tree also acted as a sweet food source (Dawson in Haslam 1984). The grass tree was also used in the making of fire sticks. Fire sticks were an important tool that would be carried from place to place and used in daily life and sacred ceremonies (Scott in Haslam 1984). Sokoloffnov notes that the 'firing' of vegetation at periodic intervals, also allowed the Worimi to influence the environment and available resources.

Various types of eucalypts were used by Aboriginal people and were a valuable resource. Stringybark in particular, was used in the construction of canoes by the Worimi. A single sheet of its bark would form the hull of a single canoe according to Scott (in Haslam 1984). The bark from eucalypts could also be used in the construction of shelters (*gunyers*), and in the fashioning other objects used in everyday life. The fragrant oil-bearing leaves were further used for medicinal purposes, whilst the seeds, barks, nectar, galls, sap, water and manna of certain species could be eaten (Percival & Stewart 1997).

Kangaroo, wallaby, possum, flying fox, koala, kangaroo-rat and the echidna were also abundant traditional terrestrial food sources for the Worimi and would have been valuable sources of fat and protein during the colder months. As well as being important food sources, animal products were also used for tool making and fashioning a myriad of utilitarian and ceremonial items. For example, tail sinews are known to have been used to make fastening cord, while 'bone points', which would have functioned as awls or piercers, are often an abundant part of the archaeological record (Attenbrow 2002).

2.5 EUROPEAN LAND USE HISTORY

Recorded European land use in the Karuah area dates from 1816 onwards, with a timber cutting and logging industry established in the area. In 1824, the Australian Agricultural Company was granted a half million acres, with extensive land clearing taking place in some areas of the grant. The only recorded land use of the area is selective logging, the clearing of logging trails and the building of several sheds and associated structures noted during the site inspection undertaken by Biosis staff in May 2018 for the current report.

A historic aerial photograph of the Study Area from 1954 (**Plate 2**) shows the Study Area and surrounding land covered in dense vegetation. No buildings are present within the Study Area, although a small Quarry or borrow pit is located just outside the south-western boundary of the Study Area. The Pacific Highway is visible to the direct south beyond its current alignment.

By 1993 (**Plate 3**) the Study Area appears to have been fenced along the eastern boundary, and a small clearing made where the current shed structures are located. Some areas of selective logging appear to have taken place on the steeper slopes above the cleared area. A Quarry is visible to the west of the Study Area, whilst the Pacific Highway is again located to the south. In 2002, a hard rock Quarry was established on the northern part of Lot 11 DP 1024564, and on sections of Lot 21 DP 1024564, adjoining to the west. With the exception of the construction of several rural sheds and logging trails, no other developments have occurred within the Study Area.



Plate 2 1954 aerial photograph showing approximate location of the Study Area, highlighted in orange (Source: NSW LPI 2018)



Plate 3 1993 aerial photograph showing approximate location of Study Area (Source: NSW LPI 2018)

3. ABORIGINAL CULTURAL HERITAGE CONTEXT

3.1 ETHNOHISTORY

Aboriginal people have occupied the Hunter Valley for at least 20,000 years according to Koetigg (1987). Karuah is located within lands traditionally inhabited by the Worimi people. Worimi territory extended from north of the Hunter River to Forster near Cape Hawke, along the coastline, encompassing Port Stephens and stretching inland close to Gresford, and as far south as Maitland (Tindale 1974). The Worimi were considered to be hunter-gatherers and Sokoloffnov (1977) argues that the territories of the Worimi were established to include a variety of habitats rich in raw materials and food resources. Trade, intermarriage, and the sharing of ceremonial places were central to the Worimi nation's interaction with neighbouring tribal groups, such as the Awabakal, Kamilaroi, Gringai, Wanaruah, and other tribes of the region.

Little is known about the size of the population of the Worimi tribe within Port Stephens before white settlement, however it is agreed that numbers declined rapidly after contact (Pam Dean-Jones 1990). Sources from the early 1800s to the 1840s vary in their estimates, from 120 at a single campsite (Ebsworth 1826), to 500 Worimi individuals within the Port Stephens Area in 1837. Threkeld (in Pam Dean-Jones 1990) even reports that by 1839, the population of the Awabakal People around the Lake Macquarie area, to the south of Worimi territory had declined to as low as 20. Exposure to diseases brought by white settlers, the destruction of food resources, and instances of hostile relations between white settlers/Europeans and the Worimi people would have contributed significantly to this decline.

The earliest account of contact between Europeans and the Worimi is recorded by David Collins. It was reported that five convicts who had escaped from Parramatta in 1790 were shipwrecked at Port Stephens. The convicts lived among the Worimi for 5 years until they were recaptured (Bramble 1981). Following this, a small garrison of soldiers was established in the 1820's at a place now known as Soldiers Point to aid in the recapture of convicts who had escaped from Port Macquarie. According to Bramble, relations between escaped convicts and local tribes were good natured, and signified the introduction of products of European civilisation. Colonel Paterson upon exploring the Hunter region in 1801 commented upon the possible use of European axes by Aboriginal tribes, and perhaps convicts who lived among them, to cut down trees (in Bramble 1981). This introduction to European resources would have led to the establishment of more fruitful relations between the Aboriginal people of the Hunter region and European penal authorities, in aiding in the recapture of escaped convicts.

Hostile relations between Europeans and the Worimi tribes of Port Stephens seemed to have originated from early interactions with timber-getters exploiting good quality cedar along the coastal regions of NSW. Accounts of hostilities between timber-getters and the Aboriginal people in the region are recorded from as early as 1804. Dawson, having arrived in Newcastle in 1825 after free-settlement was made available in the Hunter region in 1820, comments upon the hostile relations which existed between European timber-getters and the Worimi Tribe of Port Stephens. This consequently set a precursor to relations between Europeans or white settlers and local tribes within the Port Stephens Area:

'The timber-cutting parties... were the first people who came in contact with the natives in the neighbourhood of the sea; and as they were composed of convicts and other people not remarkable either for humanity or honesty, the communication was not at all to the advantage of the poor natives, or subsequently to the settlers who succeeded those parties. The

consequence of the behaviour of the cedar getters was, that the natives inflicted vengeance upon almost every white man they came in contact with, and as convicts were frequently running away from the penal settlement of Port Macquarie to Port Stephens ...numbers of them were intercepted by the natives and sometimes detained whilst those who fell into their hands and escaped with life, were uniformly stripped of their clothes' (Dawson 1831).

The non-Indigenous cultural heritage of this area is defined mostly by the Hunter Regions economic development in terms of pastoral, agriculture and mining industries. In 1804, a penal settlement had been established in Newcastle, and its primary source of industry was coal production. Natural coal deposits of the Newcastle and Tomago regions were exploited, disturbing Worimi and Awabakal territories.

3.2 ABORIGINAL HERITAGE LOCATED WITHIN AND SURROUNDING THE STUDY AREA

Figure 6 displays the locations of 12 recorded archaeological sites within the AHIMS. Further information of these sites is presented in **Annexure 6**.

The archaeological assessment identified no Aboriginal cultural heritage sites in the Study Area (**Annexure 6**) (**Figure 6**).

3.3 INTERPRETATION OF PAST ABORIGINAL LAND USE

The Study Area has been subject to some minor historical disturbance including logging and small areas of clearing, which may impact the context in which Aboriginal sites are identified. This disturbance is likely to have influenced the nature of the archaeology within the Study Area, and our interpretation of it.

Plant and animal resources are likely to have been present in the Study Area, and as such this area would have been used for the gathering of resources, including plants and animals. As there were no Aboriginal cultural heritage sites identified within the Study Area, it is likely that the area was used for hunting and gathering, and for short term, sporadic camping.

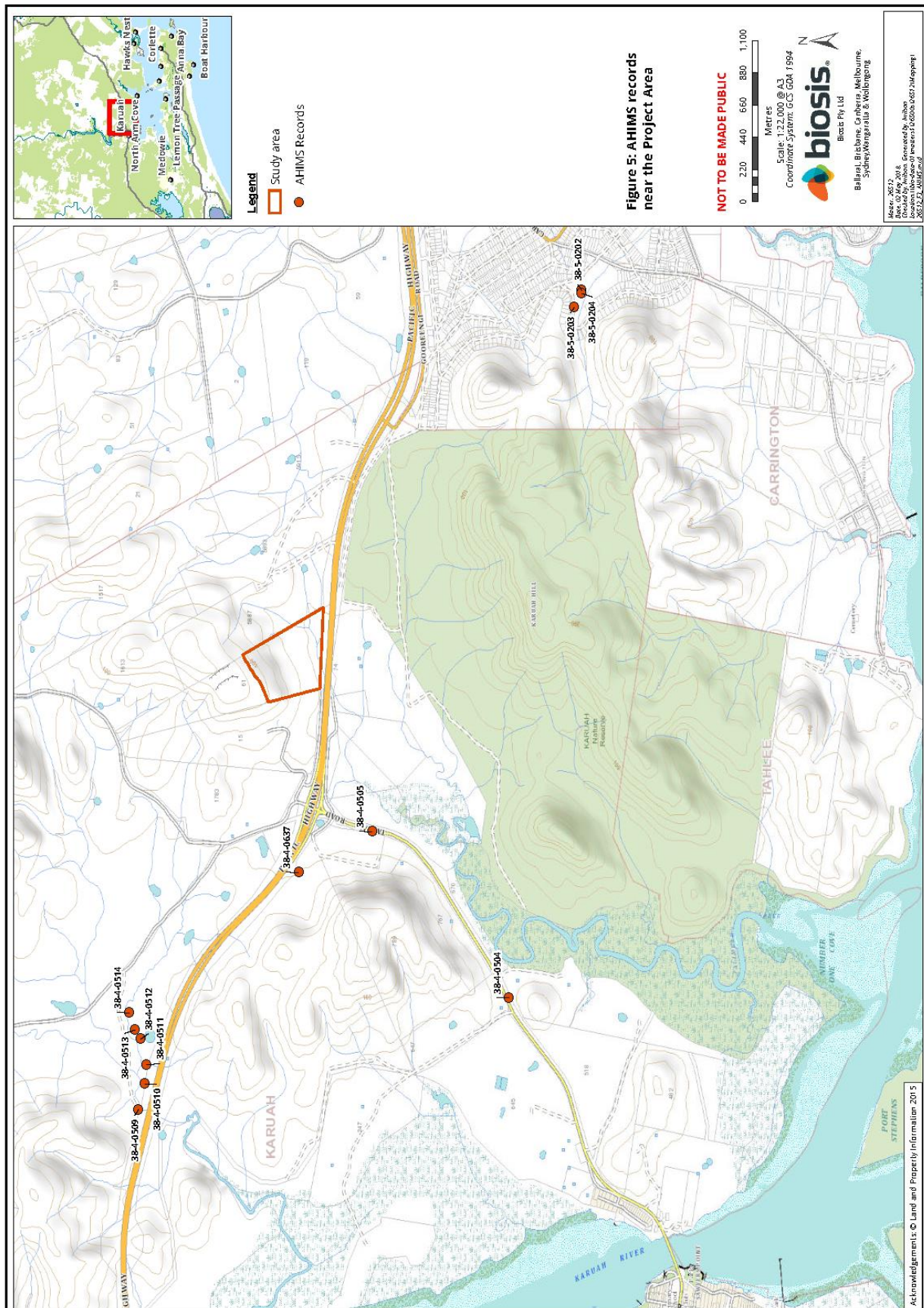


Figure 6 AHIMS records near the Study Area

4. ABORIGINAL COMMUNITY CONSULTATION

Consultation with the Aboriginal community has been undertaken in compliance with the consultation requirements as detailed below. A consultation log of all communications with RAPs is provided in **Annexure 2**.

4.1 STAGE 1: NOTIFICATION OF THE PROPOSED PROJECT AND REGISTRATION OF INTEREST

4.1.1 Identification of relevant Aboriginal stakeholders

In accordance with the consultation guidelines (DEWW, 2010a, pp.10-14), Biosis Pty Ltd notified the following bodies regarding the proposed Project.

- OEH
- NSW Native Title Services Corporation Limited (NTSCORP Limited)
- Office of the Registrar, *Aboriginal Land Rights Act 1983* of Aboriginal Owners
- NNTT
- Mid-Coast Council
- Karuah Local Aboriginal Land Council

A list of known Aboriginal stakeholders in the Port Stephens/Karuah area was provided by OEH (a copy of this/these responses are provided in **Annexure 2** and include:

- | | |
|---------------------------------|--------------------------------|
| • AGA Services | • Kawul (Wonn1 sites) |
| • Cacatua Culture | • Lakkari NTCG |
| • Crimson-Rosie | • Lower Hunter Aboriginal Inc. |
| • Divine Diggers | • Lower Hunter Wonnarua |
| • Hunters and Collectors | • Murra Bidgee Mullangari |
| • Karuah Indigenous Corporation | • Worimi LALC. |

A search conducted by the Office of the Registrar, *Aboriginal Land Rights Act 1983* (NSW) listed no Aboriginal Owners with land within the Study Area. A search conducted by the NNTT listed no Registered Native Title Claims, Unregistered Claimant Applications or Registered Indigenous Land Use Agreements within the Study Area.

4.1.2 Public notice

In accordance with the consultation guidelines (DECCW, 2010a, pp.10-14), a public notification was placed in the Myall Coast News of the Area (25 January 2018). The advertisement invited Aboriginal people who hold cultural knowledge to register their interest in a process of community consultation to provide assistance in determining the significance of Aboriginal object(s) and/or places in the vicinity of the Study Area. A copy of the public notice is provided in **Annexure 3**.

4.1.3 Registration of Aboriginal parties

Aboriginal groups identified in Section 4.1.1 were sent a letter inviting them to register their interest in a process of community consultation to provide assistance in determining the significance of Aboriginal object(s) and/or places within or in the vicinity of the Study Area. In response to the letters and public notice, a total of three groups registered their interest in the proposed Project. Responses to registration from Aboriginal parties are provided in **Annexure 3**. The three Aboriginal parties who registered for consultation are as follows:

Table 2
List of registered Aboriginal parties (RAPs) and group contacts

Organisation	Contact person
Karuah Local Aboriginal Land Council (LALC)	Kelly Drinkwater
Didge Ngunawal	Lilly Carrol
Divine Diggers	Deidre Perkins

4.2 STAGE 2: PRESENTATION OF INFORMATION ABOUT THE PROPOSED PROJECT

On 4 March 2018, Biosis provided the three RAPs with details about the proposed Project (project information pack). A copy of the Project information pack is provided in **Annexure 4**.

4.3 STAGE 3: GATHERING INFORMATION ABOUT CULTURAL SIGNIFICANCE

4.3.1 Archaeological assessment methodology information pack

On 4 March 2018, Biosis also provided the three RAPs with a copy of the Project methodology pack outlining the proposed ACHA process and methodology for this Project. RAPs were given 28 days to review and prepare feedback on the proposed methodology. A copy of the Project methodology pack is provided in **Annexure 4**.

No comments from RAPs were received at this stage of consultation.

4.3.2 Information gathered during fieldwork

No information regarding any Aboriginal cultural heritage sites or places was gathered during fieldwork.

4.4 STAGE 4: REVIEW OF DRAFT ACHA REPORT

A copy of both the draft ACHA and AR reports was emailed to all RAPs on 11 December 2018. No further comments regarding the reports were received.

5. ABORIGINAL CULTURAL SIGNIFICANCE ASSESSMENT

The two main values addressed when assessing the significance of Aboriginal sites are cultural values to the Aboriginal community and archaeological (scientific) values. This report will assess the cultural values of Aboriginal sites in the Study Area. Details of the scientific significance assessment of Aboriginal sites in the Study Area are provided in **Annexure 6**.

5.1 INTRODUCTION TO THE ASSESSMENT PROCESS

Heritage assessment criteria in NSW fall broadly within the significance values outlined in the Australia International Council on Monuments and Sites (ICOMOS) Burra Charter: The Australia ICOMOS Charter for Places of Cultural Significance (Australia ICOMOS 2013) (the Burra Charter). This approach to heritage has been adopted by cultural heritage managers and government agencies as the set of guidelines for best practice heritage management in Australia. These values are provided as background and include the following.

- **Historical significance** (evolution and association) refers to historic values and encompasses the history of aesthetics, science and society, and therefore to a large extent underlies all of the terms set out in this section. A place may have historic value because it has influenced, or has been influenced by, an historic figure, event, phase or activity. It may also have historic value as the site of an important event. For any given place the significance will be greater where evidence of the association or event survives *in situ*, or where the settings are substantially intact, than where it has been changed or evidence does not survive. However, some events or associations may be so important that the place retains significance regardless of subsequent treatment.
- **Aesthetic significance** (Scenic/architectural qualities, creative accomplishment) refers to the sensory, scenic, architectural and creative aspects of the place. It is often closely linked with social values and may include consideration of form, scale, colour, texture, and material of the fabric or landscape, and the smell and sounds associated with the place and its use.
- **Social significance** (contemporary community esteem) refers to the spiritual, traditional, historical or contemporary associations and attachment that the place or area has for the present-day community. Places of social significance have associations with contemporary community identity. These places can have associations with tragic or warmly remembered experiences, periods or events. Communities can experience a sense of loss should a place of social significance be damaged or destroyed. These aspects of heritage significance can only be determined through consultative processes with local communities.
- **Scientific significance** (Archaeological, industrial, educational, research potential and scientific significance values) refers to the importance of a landscape, area, place or object because of its archaeological and/or other technical aspects. Assessment of scientific value is often based on the likely research potential of the area, place or object and will consider the importance of the data involved, its rarity, quality or representativeness, and the degree to which it may contribute further substantial information.

The cultural and archaeological significance of Aboriginal and historic sites and places is assessed on the basis of the significance values outlined above. As well as the Burra Charter significance values guidelines, various government agencies have developed formal criteria and guidelines that have application when assessing the significance of heritage places within NSW. Of primary interest are guidelines prepared by the Australian Government, the NSW OEH and the Heritage Branch, and the NSW Department of Planning and Environment (DPE). The relevant sections of these guidelines are presented below.

These guidelines state that an area may contain evidence and associations which demonstrate one or any combination of the Burra Charter significance values outlined above in reference to Aboriginal heritage. Reference to each of the values should be made when evaluating archaeological and cultural significance for Aboriginal sites and places.

In addition to the previously outlined heritage values, the OEH *Guidelines to investigating, assessing and reporting on Aboriginal cultural heritage in NSW* (OEH 2011) also specify the importance of considering cultural landscapes when determining and assessing Aboriginal heritage values. The principle behind a cultural landscape is that 'the significance of individual features is derived from their inter-relatedness within the cultural landscape'. This means that sites or places cannot be 'assessed in isolation' but must be considered as parts of the wider cultural landscape. Hence, the site or place will possibly have values derived from its association with other sites and places. By investigating the associations between sites, places, and (for example) natural resources in the cultural landscape the stories behind the features can be told. The context of the cultural landscape can unlock 'better understanding of the cultural meaning and importance' of sites and places.

Although other values may be considered – such as educational or tourism values – the two principal values that are likely to be addressed in consideration of Aboriginal sites and places are the cultural/social significance to Aboriginal people and their archaeological or scientific significance to archaeologists and the Aboriginal community. The determinations of archaeological and cultural significance for sites and places should then be expressed as statements of significance that preface a concise discussion of the contributing factors to Aboriginal cultural heritage significance.

5.2 CULTURAL (SOCIAL SIGNIFICANCE) VALUES

Cultural or social significance refers to the spiritual, traditional, historical and/or contemporary associations and values attached to a place or objects by Aboriginal people. Aboriginal cultural heritage is broadly valued by Aboriginal people as it is used to define their identity as both individuals and as part of a group (DECCW 2010a, p.iii). More specifically it provides a:

- 'connection and sense of belonging to Country' (DECCW 2010a, p.iii);
- link between the present and the past (DECCW 2010a, p.3);
- a learning tool to teach Aboriginal culture to younger Aboriginal generations and the general public (DECCW 2010a, p.3); and
- further evidence of Aboriginal occupation prior to European settlement for people who do not understand the magnitude to which Aboriginal people occupied the continent (DECCW 2010a, p.3).

It is acknowledged that Aboriginal people are the primary determiners of the cultural significance of Aboriginal cultural heritage. No specific information regarding cultural values within the Study Area have been received from the RAPs.

5.3 HISTORIC VALUES

Historic significance refers to associations a place or object may have with a historically important person, event, phase or activity to the Aboriginal and other communities. The Study Area is not known to have any historic associations.

5.4 ARCHAEOLOGICAL (SCIENTIFIC SIGNIFICANCE) VALUES

An archaeological scientific assessment was undertaken for the Study Area and is presented in detail as part of the attached Archaeological Report (**Annexure 6**). No Aboriginal sites or Potential Archaeological Deposits (PADs) were identified within the Study Area and no previously recorded sites are located within, or in close proximity to the Study Area. There is a low likelihood of Aboriginal cultural heritage with archaeological (scientific) value occurring within the Study Area. The scientific significance of the entire Study Area is therefore assessed as low.

5.5 AESTHETIC VALUES

Whilst the Study Area is relatively undisturbed and is a typical example of the Port Stephens hinterland in its natural context, the northern part of Lot 11 DP 1024564 has been highly disturbed by quarrying, resulting in substantial modification of original landforms. The natural landscape features of the moderate-steep and lower slopes of an unnamed hill gradually descending to a minor drainage line feeding into the headwaters of Yalimbah Creek are still evident. The Study Area has been subject to historic logging, and is covered in dense regrowth vegetation. Very few old growth trees were noted during the field survey. The Study Area has been assessed as having low aesthetic significance.

5.6 STATEMENT OF SIGNIFICANCE

No Aboriginal sites or PADs were identified within the Study Area and no previously recorded sites are located within, or in close proximity to the Study Area. The archaeological significance of the Study Area has been assessed as low. This is because the landforms present (predominantly moderate to steep slopes and open depression); the lack of sandstone outcropping suited to shelter or engraving; the considerable distance of the less disturbed parts of the Study Area to permanent water sources; the widespread presence of shallow soils; and the major disturbances to the ground surface in the northern part of the Lot mean that the Study Area is unlikely to retain intact or extensive evidence of past Aboriginal use.

No specific information on the cultural significance of the Study Area has been provided by the RAPs. The historic and aesthetic significance of the Study Area have both been assessed as low. Overall, the study demonstrates low Aboriginal cultural heritage significance.

6. DEVELOPMENT LIMITATIONS AND MITIGATION MEASURES

As previously outlined, the Project would involve the establishment of a hard rock Quarry for the extraction and processing of rhyodacitic ignimbrite, a hard rock resource. The proposed Project comprises the construction, use and ongoing maintenance the following components:

- an extraction area of approximately 11 hectares;
- internal haul roads from the extraction area to the processing area;
- a mobile processing plant and related infrastructure located immediately south of the extraction area;
- an ancillary components area, including a weighbridge, office, staff amenities and workshop.
- a product stockpiling area; and
- a Quarry access road extending from the Quarry infrastructure area to Blue Rock Close.

6.1 POTENTIAL RISKS TO ABORIGINAL CULTURAL HERITAGE

Approximately 78% of the Study Area is likely to be impacted by the proposed Project. However, no Aboriginal sites or PADs were identified within the Study Area and no previously recorded sites are located within, or in close proximity to the Study Area. The cultural significance of the entire Study Area has been assessed as low.

Overall, the Study Area has been assessed as having low Aboriginal cultural heritage significance.

6.2 MANAGEMENT AND MITIGATION MEASURES

No Aboriginal sites or PADs were identified within the Study Area during the survey and no previously recorded Aboriginal sites are located within the Study Area. The potential for the Study Area to contain significant unidentified Aboriginal heritage is considered to be low based on the assessment.

No further Aboriginal archaeological or cultural heritage assessment is required prior to the proposed works commencing.

7. RECOMMENDATIONS

The recommendations below respond specifically to the wishes of the three RAPs who participated in the consultation process for the proposed Project. Recommendations regarding the archaeological value of the Study Area, and the subsequent management of Aboriginal cultural heritage is provided in the archaeological report (**Annexure 6**).

Recommendation 1: Discovery of unanticipated Aboriginal objects

All Aboriginal objects and places are protected under the NPW Act. It is an offence to knowingly disturb an Aboriginal site without a consent permit issued by the OEH. Should any Aboriginal objects be encountered during works associated with this proposal, works must cease in the vicinity and the find should not be moved until assessed by a qualified archaeologist. If the find is determined to be an Aboriginal object, the archaeologist will provide further recommendations. These may include notifying the OEH and Aboriginal stakeholders.

Recommendation 2: Discovery of Aboriginal Ancestral Remains

Aboriginal ancestral remains may be found in a variety of landscapes in NSW, including middens and sandy or soft sedimentary soils. If any suspected human remains are discovered during any activity you must:

1. immediately cease all work at that location and not further move or disturb the remains;
2. notify the NSW Police and OEH's Environmental Line on 131 555 as soon as practicable and provide details of the remains and their location; and
3. not recommence work at that location unless authorised in writing by OEH.

Recommendation 3: Continued consultation with the registered Aboriginal stakeholders

In accordance with the *Aboriginal cultural heritage consultation requirements for proponents 2010* (DECCW 2010), it is recommended that the Applicant provides a copy of this report to the RAPs and considers all comments received. The Applicant should continue to inform these groups about the management of Aboriginal cultural heritage sites within the Study Area throughout the life of the Project.

Recommendation 4: Lodgement of Final Report

A copy of the final report should be sent to:

- The three RAPs; and
- The AHIMS database.

REFERENCES

Australian Bureau of Meteorology 2018. Climate statistics for Australian locations. http://www.bom.gov.au/climate/averages/tables/cw_061054.html [Accessed May 2018].

Allen, J. and O'Connell J.F. 2003. The long and the short of it: archaeological approaches to determining when humans first colonised Australia and New Guinea. *Australian Archaeology*, 57:5-19.

Attenbrow, V. 2002. Sydney's Aboriginal Past: Investigating the archaeological and historical records. University of New South Wales Press Ltd, Sydney.

Australia ICOMOS 2013. 'Australia ICOMOS Charter for the Conservation of Places of Cultural Significance (the Burra Charter), revised edition'. Australia ICOMOS, Canberra.

Biosis. 2016. Darcoola west water efficiency scheme: Aboriginal cultural heritage assessment report. Unpublished report to Department of Primary Industries – Water. Authors: Atkinson, A., Smith S. and Cole, J.

Bowler, J.M., Johnston, H., Olley, J.M., Prescott, J.R., Roberts, R.G., Shawcross, W. and Spooner, N.A. 2003. New ages for human occupation and climatic change at Lake Mungo, Australia. *Nature* 421:837-840.

Bramble, C.M. 1981. *Relations Between Aborigines and White Settlers in Newcastle and the Hunter District 1804– 1841: With Special Reference to the Influence of the Penal Establishment*. CSIRO Publishing & National Committee on Soil and Terrain (Australia), 2009. *Australian soil and land survey field handbook, 3rd ed, CSIRO Publishing, Collingwood, Vic.*

Clarkson, C., M. Smith, B. Marwick, R. Fullagar, L. A. Wallis, P. Faulkner, T. Manne, E. Hayes, R. G. Roberts, Z. Jacobs, X. Carah, K. M. Lowe, J. Matthews and S. A. Florin 2015. "The archaeology, chronology and stratigraphy of Madjedbebe (Malakunanja II): A site in northern Australia with early occupation." *Journal of Human Evolution* 83(0): 46-64

Dawson, R. 1831. The Present State of Australia: A Description of the Country, its advantage and prospects, with reference to Emigration: and a particular account of the manners, customs, and condition of its Aboriginal Inhabitants, Second ed., London, Smith, Elder & Co.

Dean-Jones, P. 1990. *Newcastle Bight Aboriginal Sites Study: A Report to the NSW National Parks and Wildlife Service and National Estate Grants Committee*.

Department of Environment, Climate Change and Water 2010a. *Aboriginal cultural heritage consultation requirements for proponents 2010*. NSW Department of Environment, Climate Change and Water, Sydney NSW.

Department of Environment, Climate Change and Water 2010b. *Code of Practice for the Archaeological Investigation of Aboriginal Objects in NSW*. NSW Department of Environment, Climate Change and Water, Sydney NSW.

Ebsworth, H.T. 1826. *A Letter Book, Kept at Sydney and Port Stephens*. ML. MS. B852.

Haslam, P. and New South Wales. Ministry of Aboriginal Affairs & New South Wales. Department of Education. Hunter Region & Hunter Social Studies Association (N.S.W.), 1984. *Aborigines of the Hunter Region*, Department of Education, Hunter Region, Newcastle.

Jo McDonald CHM Pty Ltd. 2000. Archaeological Survey for Aboriginal sites: Proposed Light Industrial Subdivision 'Austral Site'- Mamre Road, Erskine Park, NSW. Report prepared for Gunninah Environmental Consultants on behalf of Austral Brick Company care of the Hanover Property Group.

Jo McDonald CHM Pty Ltd. 2005a. Archaeological Salvage Excavation of Site RTA-G1 109-113 George Street Parramatta, NSW. Report prepared for Landcom.

Jo McDonald CHM Pty Ltd. 2005b. Archaeological Salvage Excavation of Site CG1 (NPWS #45-5-2648), at the corner of Charles and George Streets, Parramatta, NSW. Report prepared for Meriton Apartments Pty. Ltd.

Jo McDonald CHM Pty Ltd. 2006. Archaeological Salvage Excavation of the Colebee Release Area, Schofields, NSW. Report prepared for Medallist Golf Holdings Pty Ltd.

Koetigg, M. 1987. *Preliminary Assessment of Aboriginal Archaeological Sites in the Proposed Sand Extraction Area at Nelson Bay Road*, Newcastle Bight.

Matthei, L.E. 1995. Soil Landscapes of Newcastle 1:100 000 Sheet. Department of Land and Water Conservation, Sydney.

Murphy, C.L. 1995. *Soil Landscapes of the Port Stephens 1:100 000 Sheet*. Report, Department of Land and Water Conservation, Sydney.

Office of Environment and Heritage 2011. *Guide to Investigating, assessing and reporting on Aboriginal cultural heritage in NSW*. Office of Environment and Heritage, Sydney. NSW.

Percival, B. and Stewart, K. 1997. *Bush foods of New South Wales: A botanic record and an Aboriginal oral history*. Royal Botanic Gardens, Sydney.

Ritter, D.F., Kochel, R.C., Miller, J.R. 1995. *Process Geomorphology*. Waveland Press Inc., Long Grove.

R.W. Corkery & Co. Pty Ltd. 2017. Preliminary Environmental Assessment for Kiely's Karuah Quarry. Report to Wedgerock Pty Ltd. Brooklyn NSW.

Sokoloffnov B. 1977. *The Worimi: Hunter-gatherers at Port Stephens*.

Speight, J.G. 2009. *Australian Soil and Land Survey Field Handbook*. CSIRO, Collingwood.

Strahler, A. 1964. 'Quantitative geomorphology of drainage basins and channel networks' in Chow, V.T. (eds.), *Handbook of Applied Hydrology*. McGraw-Hill, New York.

Tindale, N.B. 1974. *Aboriginal Tribes of Australia*. Australian National University, Canberra.

Annexures

(Total No. of pages including blank pages = 148)

Annexure 1	Coverage of Environmental Assessment Requirements Relating to Aboriginal and Historic Heritage (4 pages)
Annexure 2	Consultation Log (4 pages)
Annexure 3	Stage 1: Notification of Project proposal and registration of interest (44 pages)
Annexure 4	Stage 2: Presentation of information about the proposed Project Stage 3: Gathering information about cultural significance (26 pages)
Annexure 5	Stage 4: Review of draft cultural heritage assessment report (4 pages)
Annexure 6	Archaeological report (64 pages)

This page has intentionally been left blank

Annexure 1

Coverage of Environmental Assessment Requirements Relating to Aboriginal and Historic Heritage

(Total No. of pages including blank pages = 4)

This page has intentionally been left blank

Table A1
Coverage of Environmental Assessment Requirements Relating to
Aboriginal and Historic Heritage

Page 1 of 2

Agency / Organisation	Relevant Requirement	Relevant Section(s)
HERITAGE		
Department of Planning and Environment 02/8/18	<ul style="list-style-type: none"> an assessment of the potential impacts on Aboriginal heritage (cultural and archaeological), including evidence of appropriate consultation with relevant Aboriginal communities/parties and documentation of the views of these stakeholders regarding the likely impact of the development on their cultural heritage; and 	Aboriginal Cultural Heritage Assessment (ACHAR)
	<ul style="list-style-type: none"> identification of historic heritage in the vicinity of the development and an assessment of the likelihood and significance of impacts on heritage items, having regard to the relevant policies and guidelines listed in Attachment 1; 	Historic Heritage Assessment (HHA)
ABORIGINAL CULTURAL HERITAGE		
Office of Environment & Heritage 22/5/18	<ul style="list-style-type: none"> The Environmental Impact Assessment (EIS) must identify and describe the Aboriginal cultural heritage values that exist across the whole area that will be affected by the development and document these in the Aboriginal Cultural Heritage Assessment Report (ACHAR). This may include the need for surface survey and test excavation. The identification of cultural heritage values should be guided by the Guide to investigating, assessing and reporting on Aboriginal Cultural Heritage in NSW (DECCW. 2011) and consultation with OEH regional branch officers. 	ACHAR, Archaeological Report
	<ul style="list-style-type: none"> Consultation with Aboriginal people must be undertaken and documented in accordance with the Aboriginal cultural heritage consultation requirements for proponents 2010 (DECCW). The significance of cultural heritage values for Aboriginal people who have a cultural association with the land must be documented in the ACHAR. 	ACHAR Section 4
	<ul style="list-style-type: none"> Impacts on Aboriginal cultural heritage values are to be assessed and documented in the ACHAR. The ACHAR must demonstrate attempts to avoid impact upon cultural heritage values and identify any conservation outcomes. Where impacts are unavoidable, the ACHAR must outline measures proposed to mitigate impacts. Any objects recorded as part of the assessment must be documented and notified to OEH. 	ACHAR Section 5 and Section 6
HISTORIC HERITAGE		
Office of Environment & Heritage 22/5/18	<ul style="list-style-type: none"> The EIS must provide a heritage assessment including but not limited to an assessment of impacts to State and local heritage including conservation areas, natural heritage areas, places of Aboriginal heritage value, buildings, works, relics, gardens, landscapes, views, trees should be assessed. Where impacts to State or locally significant heritage items are identified, the assessment shall: 	HHA Section 5 Section 6
	<ul style="list-style-type: none"> a) outline the proposed mitigation and management measures (including measures to avoid significant impacts and an evaluation of the effectiveness of the mitigation measures) generally consistent with the NSW Heritage Manual (1996), 	HHA Section 6 Section 7

Table A1
Coverage of Environmental Assessment Requirements Relating to
Aboriginal and Historic Heritage

Page 2 of 2

Agency / Organisation	Relevant Requirement	Relevant Section(s)
HISTORIC HERITAGE (Cont'd)		
Office of Environment & Heritage 22/5/18 (Cont'd)	b) be undertaken by a suitably qualified heritage consultant(s) (note: where archaeological excavations are proposed the relevant consultant must meet the NSW Heritage Council's Excavation Director criteria),	HHA Section 1
	c) include a statement of heritage impact for all heritage items (including significance assessment),	HHA Section 6
	d) consider impacts including, but not limited to, vibration, demolition, archaeological disturbance, altered historical arrangements and access, landscape and vistas, and architectural noise treatment (as relevant), and	HHA Section 6
	e) where potential archaeological impacts have been identified develop an appropriate archaeological assessment methodology, including research design, to guide physical archaeological test excavations (terrestrial and maritime as relevant) and include the results of these test excavations.	N/A No heritage values were identified
Department of Planning and Environment 02/8/18	Environmental Planning Instruments, Policies, Guidelines & Plans	
	The Burra Charter (The Australia ICOMOS charter for places of cultural significance)	ACHAR Section 1.2 HHA Section 2
	Aboriginal Cultural Heritage Consultation Requirements for Proponents (OEH)	ACHAR Section 1.2
	Code of Practice for Archaeological Investigation of Aboriginal Objects in NSW (OEH)	HHA Section 2
	Guide to Investigating, Assessing and Reporting on Aboriginal Cultural Heritage in NSW (OEH)	ACHAR Section 1.2
	NSW Heritage Manual (OEH)	HHA Section 2
	Statements of Heritage Impact (OEH)	ACHAR Section 1.2

Annexure 2

Consultation Log

(Total No. of pages including blank pages = 4)

This page has intentionally been left blank

SPECIALIST CONSULTANT STUDIES*Part 7a: Aboriginal Cultural Heritage Assessment Report***WEDGEROCK PTY LTD***Karuah South Quarry**Report No. 958/03*

STAGE 1 Notifications		Contacted By		Date	Method	Notes
Organisation	Person	Organisation	Person			
Office of Environment and Heritage		Biosis	Amy Butcher	19/01/2018	Email	
NNTT		Biosis	Amy Butcher	19/01/2018	Email	
NTS		Biosis	Amy Butcher	19/01/2018	Email	
Registra		Biosis	Amy Butcher	19/01/2018	Email	
Midcoast Council		Biosis	Amy Butcher	19/01/2018	Email	
Karuah LALC		Biosis	Amy Butcher	19/01/2018	Email	
Biosis	Amy Butcher	NNTT		19/01/2018	Email	
Biosis	Amy Butcher	Registra	Jodie Rikiti	23/01/2018	Email	
Biosis	Amy Butcher	OEH	Peter Saaid	24/01/2018	Email	
AGA Services	Ashley, Gregory, Adam Sampson	Biosis	Amy Butcher	9/02/2018	Email	
Cacatua Culture	Donna and George Sampson	Biosis	Amy Butcher	9/02/2018	Email	
Crimson-Rosie	Jeffery Matthews	Biosis	Amy Butcher	9/02/2018	Email	
Divine Diggers	Deidre Perkins	Biosis	Amy Butcher	9/02/2018	Email	
Hunters and Collectors	Tania Matthews	Biosis	Amy Butcher	9/02/2018	Email	
Karuah Indigenous corporation	David Feeney	Biosis	Amy Butcher	9/02/2018	Email	
Kawul (Wonn1 sites)	Arthur Fletcher	Biosis	Amy Butcher	9/02/2018	Email	
Lakkari NTCG	Mick Leon	Biosis	Amy Butcher	9/02/2018	Email	
Lower Hunter Aboriginal Inc.	David Ahoy	Biosis	Amy Butcher	9/02/2018	Email	
Lower Hunter Wonnarua	Lea-Anne Ball	Biosis	Amy Butcher	9/02/2018	Email	
Murra Bidgee Mullangari	Ryan Johnson	Biosis	Amy Butcher	9/02/2018	Email	
Didge Ngunawal Clan	Paul Boyd	Biosis	Amy Butcher	9/02/2018	Email	
Worimi LALC		Biosis	Amy Butcher	9/02/2018	Email	
Biosis	Amy Butcher	Karuah LALC Didge	Kelly Drinkwater	1/02/2018	Email	Registering interest
Biosis	Amy Butcher	Ngunawal	Lilly Carroll	9/02/2018	Email	Registering interest
Biosis	Amy Butcher	Divine Diggers	Deidre Perkins	9/02/2018	Email	Registering interest

Stage 2 Project Information Mail Out		Contacted By		Date	Method
Organisation	Person	Organisation	Person		
Karuah LALC	Kelly Drinkwater	Biosis	Amanda Markham	4/03/2018	Letter
Didge Ngunawal	Lilly Carroll	Biosis	Amanda Markham	4/03/2018	Email
Divine Diggers	Deidre Perkins	Biosis	Amanda Markham	4/03/2018	Email

Stage 3 Project Methodology Mail Out		Contacted By		Date	Method
Organisation	Person	Organisation	Person		
Karuah LALC	Kelly Drinkwater	Biosis	Amanda Markham	4/03/2018	Letter
Didge Ngunawal	Lilly Carroll	Biosis	Amanda Markham	4/03/2018	Email
Divine Diggers	Deidre Perkins	Biosis	Amanda Markham	4/03/2018	Email

Field Survey Contact Log							
Organisation	Person	Contacted By		Date	Method	Notes	Additional Comments
Organisation	Person	Organisation	Person	Date	Method	Notes	Additional Comments
Karuah LALC	Kelly Drinkwater	Biosis	Ashleigh Keevers-Eastman	1/05/2018	Email	Email response received after phone call on same day	Confirmed that a KLALC rep would be available in mid-May for the field survey
Karuah LALC	Kelly Drinkwater	Biosis	Amanda Markham	15/05/2018	Email	Email response received after phone call on same day	Email with KLALC, confirming costs, date of survey (16/5/2018), availability of RAPs and site logistics.

Annexure 3

Stage 1: Notification of the Proposed Project and registration of interest

(Total No. of pages including blank pages = 44)

This page has intentionally been left blank

**Kiely's Karuah Quarry Development Consent
NOTIFICATION AND REGISTRATION OF ABORIGINAL INTERESTS**

Wedgerock Pty Ltd is proposing development consent to develop and operate Kiely's Karuah Quarry.

Biosis invites Aboriginal people who hold cultural knowledge in determining the significance of Aboriginal object(s) and/or places in the vicinity of the above area to register their interest in a process of community consultation.

The project will be undertaken in accordance with the *National Parks and Wildlife Act 1974*. The purpose of the community consultation will be to provide sufficient information for the assessment of Aboriginal cultural heritage values and to assist the Chief Executive of OEH in his or her consideration and determination of the development application, if required. Consultation will be undertaken in accordance with the *Aboriginal cultural heritage consultation guidelines for proponents* (DECCW 2010).

In accordance with the consultation requirements, please note that the relevant client contact is

RW Corkery & Co. Pty Ltd
PO Box 239,
Brooklyn NSW 2083
Tel: (02) 9985 8511

For more information, or to register in writing, please contact:

Amy Butcher
Research Assistant
8 Tate Street, Wollongong NSW 2500
Tel: (02) 4911 4040
Email: abutcher@biosis.com.au

REGISTRATIONS MUST BE RECEIVED BEFORE 5pm 5 February 2018



19 January 2018

Office of Environment and Heritage
PO Box 1477
Gosford NSW
info@environment.nsw.gov.au
Ph: (02) 4320 4200

Dear Office of Environment and Heritage

RE: Aboriginal cultural heritage assessment at Kiely's Karuah Quarry, Karuah NSW
Our Ref: Matter 26512

An Aboriginal cultural heritage assessment is required in support of development application (DA) under Part 4.1 of the *Environmental Planning and Assessment Act 1979* to develop and operate Kiely's Karuah Quarry at Lot 11 DP 1024564, Pacific Highway, Karuah, New South Wales (NSW).

Biosis Pty Ltd is assisting Wedgerock Pty Ltd with consultation with the Aboriginal community in accordance with the *Aboriginal Cultural Heritage Consultation Requirements for Proponents 2010* (DECCW 2010). The purpose of the Aboriginal community consultation is to provide sufficient information for the assessment of Aboriginal cultural heritage values and to inform the Aboriginal Cultural Heritage Assessment and to assist the Chief Executive of OEH in his or her consideration and determination of the development application.

We wish to identify Aboriginal people who may have an interest in the proposed study area and hold cultural knowledge relevant to determining the cultural significance of Aboriginal objects and/or Places in the Karuah area. If you could please respond with your registration of interest by **5pm on 2 February 2018** it would be appreciated.

In accordance with the consultation requirements, please note that the proponent is Wedgerock however; the relevant contact for this project is:

Robert Corkery
Principal/Managing Director, RW Corkery & Co. Pty Ltd
Level 1, 12 Danger Road
PO Box 239, Brooklyn NSW 2083
Tel: (02) 9985 8511
rob@rwcorkery.com

All correspondence regarding registrations of interest should be provided in writing to:

Amy Butcher
Biosis Pty Ltd
8 Tate Street
Wollongong NSW 2500
abutcher@biosis.com.au

Biosis Pty Ltd
Wollongong Resource Group

8 Tate Street
Wollongong NSW 2500

Phone: 02 4201 1090
Fax: 03 9646 9242

ACN 006 175 097
ABN 65 006 175 097

Email: wollongong@biosis.com.au

biosis.com.au



If you have any queries regarding the study area please don't hesitate to contact me on the details below.

Yours sincerely,

A handwritten signature in black ink, appearing to read "Amy Butcher", with a long horizontal line extending to the right.

Amy Butcher

Research Assistant

abutcher@biosis.com.au

0437 689 734

(02) 9101 8715



19 January 2018

Karuah Local Aboriginal Land Council

16 Mustons Road,
Karuah NSW 2037

Dear Sir/Madam,

RE: Aboriginal cultural heritage assessment at Kiely's Karuah Quarry, Karuah NSW
Our Ref: Matter 26512

An Aboriginal cultural heritage assessment is required in support of development application (DA) under Part 4.1 of the *Environmental Planning and Assessment Act 1979* to develop and operate Kiely's Karuah Quarry at Lot 11 DP 1024564, Pacific Highway, Karuah, New South Wales (NSW).

Biosis Pty Ltd is assisting Wedgerock Pty Ltd with consultation with the Aboriginal community in accordance with the *Aboriginal Cultural Heritage Consultation Requirements for Proponents 2010* (DECCW 2010). The purpose of the Aboriginal community consultation is to provide sufficient information for the assessment of Aboriginal cultural heritage values and to inform the Aboriginal Cultural Heritage Assessment and to assist the Chief Executive of OEH in his or her consideration of the development application.

We wish to identify Aboriginal people who may have an interest in the proposed study area and hold cultural knowledge relevant to determining the cultural significance of Aboriginal objects and/or Places in the Karuah area. If you could please respond with your registration of interest by **5pm on 5 February 2018** it would be appreciated.

In accordance with the consultation requirements, please note that the applicant is Wedgerock Pty Ltd however; the relevant contact for this project is:

Robert Corkery
Principal/Managing Director, RW Corkery & Co. Pty Ltd
Level 1, 12 Dangar Road
PO Box 239, Brooklyn NSW 2083
Tel: (02) 9985 8511
rob@rwcorkery.com

All correspondence regarding registrations of interest should be provided in writing to:

Amy Butcher
Biosis Pty Ltd
8 Tate Street
Wollongong NSW 2500
abutcher@biosis.com.au

If you have any queries regarding the study area please don't hesitate to contact me on the details below.

Biosis Pty Ltd
Wollongong Resource Group

8 Tate Street
Wollongong NSW 2500

Phone: 02 4201 1090
Fax: 03 9646 9242

ACN 006 175 097
ABN 65 006 175 097

Email: wollongong@biosis.com.au

biosis.com.au

SPECIALIST CONSULTANT STUDIES

Part 7a: Aboriginal Cultural Heritage Assessment Report

WEDGEROCK PTY LTD

Karuah South Quarry

Report No. 958/03



Yours sincerely,

A handwritten signature in black ink, appearing to be "Amy Butcher", with a long horizontal line extending to the right.

Amy Butcher

Research Assistant

abutcher@biosis.com.au

0437 689 734

(02) 9101 8715



19 January 2018
Mid Coast Council
Myall Street,
Tea Gardens NSW

Dear Sir/Madam,

RE: Aboriginal cultural heritage assessment at Kiely's Karuah Quarry, Karuah NSW
Our Ref: Matter 26512

An Aboriginal cultural heritage assessment is required in support of development application (DA) under Part 4.1 of the *Environmental Planning and Assessment Act 1979* to develop and operate Kiely's Karuah Quarry at Lot 11 DP 1024564, Pacific Highway, Karuah, New South Wales (NSW).

Biosis Pty Ltd is assisting Wedgerock Pty Ltd with consultation with the Aboriginal community in accordance with the *Aboriginal Cultural Heritage Consultation Requirements for Proponents 2010* (DECCW 2010). The purpose of the Aboriginal community consultation is to provide sufficient information for the assessment of Aboriginal cultural heritage values and to inform the Aboriginal Cultural Heritage Assessment and to assist the Chief Executive of OEH in his or her consideration of the development application.

We wish to identify Aboriginal people who may have an interest in the proposed study area and hold cultural knowledge relevant to determining the cultural significance of Aboriginal objects and/or Places in the Karuah area. If you could please respond with your registration of interest by **5pm on 5 February 2018** it would be appreciated.

In accordance with the consultation requirements, please note that the applicant is Wedgerock Pty Ltd however; the relevant contact for this project is:

Robert Corkery
Principal/Managing Director, RW Corkery & Co. Pty Ltd
Level 1, 12 Dangar Road
PO Box 239, Brooklyn NSW 2083
Tel: (02) 9985 8511
rob@rwcorkery.com

All correspondence regarding registrations of interest should be provided in writing to:

Amy Butcher
Biosis Pty Ltd
8 Tate Street
Wollongong NSW 2500
abutcher@biosis.com.au

If you have any queries regarding the study area please don't hesitate to contact me on the details below.

Biosis Pty Ltd
Wollongong Resource Group

8 Tate Street
Wollongong NSW 2500

Phone: 02 4201 1090
Fax: 03 9646 9242

ACN 006 175 097
ABN 65 006 175 097

Email: wollongong@biosis.com.au

biosis.com.au

SPECIALIST CONSULTANT STUDIES

Part 7a: Aboriginal Cultural Heritage Assessment Report

WEDGEROCK PTY LTD

Karuah South Quarry

Report No. 958/03



Yours sincerely,

A handwritten signature in black ink, appearing to read "Amy Butcher", with a long horizontal line extending to the right.

Amy Butcher

Research Assistant

abutcher@biosis.com.au

0437 689 734

(02) 9101 8715



19 January 2018

National Native Title Tribunal
Level 16, Law Courts Queens Square
Sydney NSW 2000

Dear Sir/ Madam

RE: Aboriginal cultural heritage assessment at Kiely's Karuah Quarry, Karuah NSW

Our Ref: Matter 26512

An Aboriginal cultural heritage assessment is required in support of development application (DA) under Part 4.1 of the *Environmental Planning and Assessment Act 1979* to develop and operate Kiely's Karuah Quarry at Lot 11 DP 1024564, Pacific Highway, Karuah, New South Wales (NSW).

Biosis Pty Ltd is assisting Wedgerock Pty Ltd with consultation with the Aboriginal community in accordance with the *Aboriginal Cultural Heritage Consultation Requirements for Proponents 2010* (DECCW 2010). The purpose of the Aboriginal community consultation is to provide sufficient information for the assessment of Aboriginal cultural heritage values and to inform the Aboriginal Cultural Heritage Assessment and to assist the Chief Executive of OEH in his or her consideration of the development application.

We wish to identify Aboriginal people who may have an interest in the proposed study area and hold cultural knowledge relevant to determining the cultural significance of Aboriginal objects and/or Places in the Karuah area. If you could please respond with your registration of interest by **5pm on 5 February 2018** it would be appreciated.

In accordance with the consultation requirements, please note that the applicant is Wedgerock Pty Ltd however; the relevant contact for this project is:

Robert Corkery
Principal/Managing Director, RW Corkery & Co. Pty Ltd
Level 1, 12 Dangar Road
PO Box 239, Brooklyn NSW 2083
Tel: (02) 9985 8511
rob@rwcorkery.com

All correspondence regarding registrations of interest should be provided in writing to:

**Amy Butcher
Biosis Pty Ltd
8 Tate Street
Wollongong NSW 2500
abutcher@biosis.com.au**

If you have any queries regarding the study area please don't hesitate to contact me on the details below.

Biosis Pty Ltd
Wollongong Resource Group

8 Tate Street
Wollongong NSW 2500

Phone: 02 4201 1090
Fax: 03 9646 9242

ACN 006 175 097
ABN 65 006 175 097

Email: wollongong@biosis.com.au

biosis.com.au

SPECIALIST CONSULTANT STUDIES

Part 7a: Aboriginal Cultural Heritage Assessment Report

WEDGEROCK PTY LTD

Karuah South Quarry

Report No. 958/03



Yours sincerely,

A handwritten signature in grey ink, appearing to read 'Amy Butcher', with a long horizontal line extending to the right.

Amy Butcher

Research Assistant

abutcher@biosis.com.au

0437 689 734

(02) 9101 8715



19 January 2018

Native Title Services Corporation Limited
PO Box 2105
Strawberry Hills NSW 2012

Dear Sir/ Madam

RE: Aboriginal cultural heritage assessment at Kiely's Karuah Quarry, Karuah NSW
Our Ref: Matter 26512

An Aboriginal cultural heritage assessment is required in support of development application (DA) under Part 4.1 of the *Environmental Planning and Assessment Act 1979* to develop and operate Kiely's Karuah Quarry at Lot 11 DP 1024564, Pacific Highway, Karuah, New South Wales (NSW).

Biosis Pty Ltd is assisting Wedgerock Pty Ltd with consultation with the Aboriginal community in accordance with the *Aboriginal Cultural Heritage Consultation Requirements for Proponents 2010* (DECCW 2010). The purpose of the Aboriginal community consultation is to provide sufficient information for the assessment of Aboriginal cultural heritage values and to inform the Aboriginal Cultural Heritage Assessment and to assist the Chief Executive of OEH in his or her consideration of the development application.

We wish to identify Aboriginal people who may have an interest in the proposed study area and hold cultural knowledge relevant to determining the cultural significance of Aboriginal objects and/or Places in the Karuah area. If you could please respond with your registration of interest by **5pm on 5 February 2018** it would be appreciated.

In accordance with the consultation requirements, please note that the applicant is Wedgerock Pty Ltd however; the relevant contact for this project is:

Robert Corkery
Principal/Managing Director, RW Corkery & Co. Pty Ltd
Level 1, 12 Dangar Road
PO Box 239, Brooklyn NSW 2083
Tel: (02) 9985 8511
rob@rwcorkery.com

All correspondence regarding registrations of interest should be provided in writing to:

Amy Butcher
Biosis Pty Ltd
8 Tate Street
Wollongong NSW 2500
abutcher@biosis.com.au

If you have any queries regarding the study area please don't hesitate to contact me on the details below.

Biosis Pty Ltd
Wollongong Resource Group

8 Tate Street
Wollongong NSW 2500

Phone: 02 4201 1090
Fax: 03 9646 9242

ACN 006 175 097
ABN 65 006 175 097

Email: wollongong@biosis.com.au

biosis.com.au

SPECIALIST CONSULTANT STUDIES

Part 7a: Aboriginal Cultural Heritage Assessment Report

WEDGEROCK PTY LTD

Karuah South Quarry

Report No. 958/03



Yours sincerely,

A handwritten signature in black ink, appearing to read "Amy Butcher", with a long horizontal line extending to the right.

Amy Butcher

Research Assistant

abutcher@biosis.com.au

0437 689 734

(02) 9101 8715



19 January 2018

Office of Environment and Heritage

PO Box 1477

Gosford NSW

info@environment.nsw.gov.au

Ph: (02) 4320 4200

Dear Office of Environment and Heritage

RE: Aboriginal cultural heritage assessment at Kiely's Karuah Quarry, Karuah NSW

Our Ref: Matter 26512

An Aboriginal cultural heritage assessment is required in support of development application (DA) under Part 4.1 of the *Environmental Planning and Assessment Act 1979* to develop and operate Kiely's Karuah Quarry at Lot 11 DP 1024564, Pacific Highway, Karuah, New South Wales (NSW).

Biosis Pty Ltd is assisting Wedgerock Pty Ltd with consultation with the Aboriginal community in accordance with the *Aboriginal Cultural Heritage Consultation Requirements for Proponents 2010* (DECCW 2010). The purpose of the Aboriginal community consultation is to provide sufficient information for the assessment of Aboriginal cultural heritage values and to inform the Aboriginal Cultural Heritage Assessment and to assist the Chief Executive of OEH in his or her consideration of the development application.

We wish to identify Aboriginal people who may have an interest in the proposed study area and hold cultural knowledge relevant to determining the cultural significance of Aboriginal objects and/or Places in the Karuah area. If you could please respond by identifying any Registered Aboriginal Parties who may have cultural knowledge by **5pm on 5 February 2018** it would be appreciated.

In accordance with the consultation requirements, please note that the applicant is Wedgerock Pty Ltd however; the relevant contact for this project is:

Robert Corkery
Principal/Managing Director, RW Corkery & Co. Pty Ltd
Level 1, 12 Dangar Road
PO Box 239, Brooklyn NSW 2083
Tel: (02) 9985 8511
rob@rwcorkery.com

All correspondence regarding registrations of interest should be provided in writing to:

**Amy Butcher
Biosis Pty Ltd
8 Tate Street
Wollongong NSW 2500
abutcher@biosis.com.au**

Biosis Pty Ltd
Wollongong Resource Group

8 Tate Street
Wollongong NSW 2500

Phone: 02 4201 1090
Fax: 03 9646 9242

ACN 006 175 097
ABN 65 006 175 097

Email: wollongong@biosis.com.au

biosis.com.au



If you have any queries regarding the study area please don't hesitate to contact me on the details below.

Yours sincerely,

A handwritten signature in black ink, appearing to read "Amy Butcher", with a long horizontal line extending to the right.

Amy Butcher

Research Assistant

abutcher@biosis.com.au

0437 689 734

(02) 9101 8715



19 January 2018

Office of the Registrar, Aboriginal Land Rights Act 1983
Stephen Wright
PO Box 112
Glebe NSW 2037

Dear Stephen,

RE: Aboriginal cultural heritage assessment at Kiely's Karuah Quarry, Karuah NSW
Our Ref: Matter 26512

An Aboriginal cultural heritage assessment is required in support of development application (DA) under Part 4.1 of the *Environmental Planning and Assessment Act 1979* to develop and operate Kiely's Karuah Quarry at Lot 11 DP 1024564, Pacific Highway, Karuah, New South Wales (NSW).

Biosis Pty Ltd is assisting Wedgerock Pty Ltd with consultation with the Aboriginal community in accordance with the *Aboriginal Cultural Heritage Consultation Requirements for Proponents 2010* (DECCW 2010). The purpose of the Aboriginal community consultation is to provide sufficient information for the assessment of Aboriginal cultural heritage values and to inform the Aboriginal Cultural Heritage Assessment and to assist the Chief Executive of OEH in his or her consideration of the development application.

We wish to identify Aboriginal people who may have an interest in the proposed study area and hold cultural knowledge relevant to determining the cultural significance of Aboriginal objects and/or Places in the Karuah area. If you could please respond with your registration of interest by **5pm on 5 February 2018** it would be appreciated.

In accordance with the consultation requirements, please note that the applicant is Wedgerock Pty Ltd however; the relevant contact for this project is:

Robert Corkery
Principal/Managing Director, RW Corkery & Co. Pty Ltd
Level 1, 12 Dangar Road
PO Box 239, Brooklyn NSW 2083
Tel: (02) 9985 8511
rob@rwcorkery.com

All correspondence regarding registrations of interest should be provided in writing to:

Amy Butcher
Biosis Pty Ltd
8 Tate Street
Wollongong NSW 2500
abutcher@biosis.com.au

If you have any queries regarding the study area please don't hesitate to contact me on the details below.

Biosis Pty Ltd
Wollongong Resource Group

8 Tate Street
Wollongong NSW 2500

Phone: 02 4201 1090
Fax: 03 9646 9242

ACN 006 175 097
ABN 65 006 175 097

Email: wollongong@biosis.com.au

biosis.com.au

SPECIALIST CONSULTANT STUDIES

Part 7a: Aboriginal Cultural Heritage Assessment Report

WEDGEROCK PTY LTD

Karuah South Quarry

Report No. 958/03



Yours sincerely,

A handwritten signature in black ink, appearing to read "Amy Butcher", with a long horizontal line extending to the right.

Amy Butcher

Research Assistant

abutcher@biosis.com.au

0437 689 734

(02) 9101 8715



09 February 2018

AGA Services
22 Ibis Parade
Woodberry NSW 2322
aga.services@hotmail.com
Ph: 0403 765 019

Dear Ashley, Gregory and Adam Sampson

RE: Aboriginal cultural heritage assessment at Kiely's Karuah Quarry, Karuah NSW
Our Ref: Matter 26512

An Aboriginal cultural heritage assessment is required in support of development application (DA) under Part 4.1 of the *Environmental Planning and Assessment Act 1979* to develop and operate Kiely's Karuah Quarry at Lot 11 DP 1024564, Pacific Highway, Karuah, New South Wales (NSW).

Biosis Pty Ltd is assisting Wedgerock Pty Ltd with consultation with the Aboriginal community in accordance with the *Aboriginal Cultural Heritage Consultation Requirements for Proponents 2010* (DECCW 2010). The purpose of the Aboriginal community consultation is to provide sufficient information for the assessment of Aboriginal cultural heritage values and to inform the Aboriginal Cultural Heritage Assessment and to assist the Chief Executive of OEH in his or her consideration of the development application.

We wish to identify Aboriginal people who may have an interest in the proposed study area and hold cultural knowledge relevant to determining the cultural significance of Aboriginal objects and/or Places in the Karuah area. In accordance with the consultation requirements, individuals or groups are invited to register their interest in writing to participate in the Aboriginal Cultural Heritage Assessment and consultation process for the proposal. If you would like to register to be consulted for this project, please respond to this letter by no later **Monday 26 February 2018**. Please note that the details of registered Aboriginal parties will be forwarded to OEH and the Karuah Local Aboriginal Land Council (TLALC). Please advise us if you would not like these details released.

In accordance with the consultation requirements, please note that the applicant is Wedgerock Pty Ltd however; the relevant contact for this project is:

Robert Corkery
Principal/Managing Director, RW Corkery & Co. Pty Ltd
Level 1, 12 Dangar Road
PO Box 239, Brooklyn NSW 2083
Tel: (02) 9985 8511
rob@rwcorkery.com

Biosis Pty Ltd
Wollongong Resource Group

8 Tate Street
Wollongong NSW 2500

Phone: 02 4201 1090
Fax: 03 9646 9242

ACN 006 175 097
ABN 65 006 175 097

Email: wollongong@biosis.com.au

biosis.com.au



All correspondence regarding provision of names and contact details of Aboriginal people who may hold cultural knowledge relevant to the study area should be provided in writing to:

Amy Butcher
Biosis Pty Ltd
8 Tate Street
Wollongong NSW 2500
abutcher@biosis.com.au

If you have any queries regarding the study area please don't hesitate to contact me on the details below.

Yours sincerely,

A handwritten signature in black ink, appearing to read "Amy Butcher", with a long horizontal line extending to the right.

Amy Butcher
Research Assistant
abutcher@biosis.com.au
0437 689 734
(02) 9101 8715



09 February 2018

Cacatua Culture Consultants
22 Ibis Parade
Woodberry NSW 2322
cacatua4service@tpg.com.au
Ph: 0434 877 016

Dear Donna and George Sampson

RE: Aboriginal cultural heritage assessment at Kiely's Karuah Quarry, Karuah NSW
Our Ref: Matter 26512

An Aboriginal cultural heritage assessment is required in support of development application (DA) under Part 4.1 of the *Environmental Planning and Assessment Act 1979* to develop and operate Kiely's Karuah Quarry at Lot 11 DP 1024564, Pacific Highway, Karuah, New South Wales (NSW).

Biosis Pty Ltd is assisting Wedgerock Pty Ltd with consultation with the Aboriginal community in accordance with the *Aboriginal Cultural Heritage Consultation Requirements for Proponents 2010* (DECCW 2010). The purpose of the Aboriginal community consultation is to provide sufficient information for the assessment of Aboriginal cultural heritage values and to inform the Aboriginal Cultural Heritage Assessment and to assist the Chief Executive of OEH in his or her consideration of the development application.

We wish to identify Aboriginal people who may have an interest in the proposed study area and hold cultural knowledge relevant to determining the cultural significance of Aboriginal objects and/or Places in the Karuah area. In accordance with the consultation requirements, individuals or groups are invited to register their interest in writing to participate in the Aboriginal Cultural Heritage Assessment and consultation process for the proposal. If you would like to register to be consulted for this project, please respond to this letter by no later **Monday 26 February 2018**. Please note that the details of registered Aboriginal parties will be forwarded to OEH and the Karuah Local Aboriginal Land Council (TLALC). Please advise us if you would not like these details released.

In accordance with the consultation requirements, please note that the applicant is Wedgerock Pty Ltd however; the relevant contact for this project is:

Robert Corkery
Principal/Managing Director, RW Corkery & Co. Pty Ltd
Level 1, 12 Dangar Road
PO Box 239, Brooklyn NSW 2083
Tel: (02) 9985 8511
rob@rwcorkery.com

Biosis Pty Ltd
Wollongong Resource Group

8 Tate Street
Wollongong NSW 2500

Phone: 02 4201 1090
Fax: 03 9646 9242

ACN 006 175 097
ABN 65 006 175 097

Email: wollongong@biosis.com.au

biosis.com.au



All correspondence regarding provision of names and contact details of Aboriginal people who may hold cultural knowledge relevant to the study area should be provided in writing to:

Amy Butcher
Biosis Pty Ltd
8 Tate Street
Wollongong NSW 2500
abutcher@biosis.com.au

If you have any queries regarding the study area please don't hesitate to contact me on the details below.

Yours sincerely,

A handwritten signature in black ink, appearing to be "Amy Butcher", with a long horizontal line extending to the right.

Amy Butcher
Research Assistant
abutcher@biosis.com.au
0437 689 734
(02) 9101 8715



09 February 2018

Crimson-Rosie
6 Eucalypt Avenue
Muswellbrook NSW 2333

Ph: (02) 6543 4791

Dear Jeffery Matthews

RE: Aboriginal cultural heritage assessment at Kiely's Karuah Quarry, Karuah NSW

Our Ref: Matter 26512

An Aboriginal cultural heritage assessment is required in support of development application (DA) under Part 4.1 of the *Environmental Planning and Assessment Act 1979* to develop and operate Kiely's Karuah Quarry at Lot 11 DP 1024564, Pacific Highway, Karuah, New South Wales (NSW).

Biosis Pty Ltd is assisting Wedgerock Pty Ltd with consultation with the Aboriginal community in accordance with the *Aboriginal Cultural Heritage Consultation Requirements for Proponents 2010* (DECCW 2010). The purpose of the Aboriginal community consultation is to provide sufficient information for the assessment of Aboriginal cultural heritage values and to inform the Aboriginal Cultural Heritage Assessment and to assist the Chief Executive of OEH in his or her consideration of the development application.

We wish to identify Aboriginal people who may have an interest in the proposed study area and hold cultural knowledge relevant to determining the cultural significance of Aboriginal objects and/or Places in the Karuah area. In accordance with the consultation requirements, individuals or groups are invited to register their interest in writing to participate in the Aboriginal Cultural Heritage Assessment and consultation process for the proposal. If you would like to register to be consulted for this project, please respond to this letter by no later **Monday 26 February 2018**. Please note that the details of registered Aboriginal parties will be forwarded to OEH and the Karuah Local Aboriginal Land Council (TLALC). Please advise us if you would not like these details released.

In accordance with the consultation requirements, please note that the applicant is Wedgerock Pty Ltd however; the relevant contact for this project is:

Robert Corkery
Principal/Managing Director, RW Corkery & Co. Pty Ltd
Level 1, 12 Dangar Road
PO Box 239, Brooklyn NSW 2083
Tel: (02) 9985 8511
rob@rwcorkery.com

Biosis Pty Ltd
Wollongong Resource Group

8 Tate Street
Wollongong NSW 2500

Phone: 02 4201 1090
Fax: 03 9646 9242

ACN 006 175 097
ABN 65 006 175 097

Email: wollongong@biosis.com.au

biosis.com.au



All correspondence regarding provision of names and contact details of Aboriginal people who may hold cultural knowledge relevant to the study area should be provided in writing to:

Amy Butcher
Biosis Pty Ltd
8 Tate Street
Wollongong NSW 2500
abutcher@biosis.com.au

If you have any queries regarding the study area please don't hesitate to contact me on the details below.

Yours sincerely,

A handwritten signature in black ink, appearing to read "Amy Butcher", with a long horizontal line extending to the right.

Amy Butcher
Research Assistant
abutcher@biosis.com.au
0437 689 734
(02) 9101 8715



09 February 2018

Didge Ngunawal Clan
7 Siskin Street
Quakers Hill NSW 2763
didgengunawaldan@yahoo.com.au
Ph: 0426 823 944

Dear Paul Boyd and Lilly Carroll

RE: Aboriginal cultural heritage assessment at Kiely's Karuah Quarry, Karuah NSW
Our Ref: Matter 26512

An Aboriginal cultural heritage assessment is required in support of development application (DA) under Part 4.1 of the *Environmental Planning and Assessment Act 1979* to develop and operate Kiely's Karuah Quarry at Lot 11 DP 1024564, Pacific Highway, Karuah, New South Wales (NSW).

Biosis Pty Ltd is assisting Wedgerock Pty Ltd with consultation with the Aboriginal community in accordance with the *Aboriginal Cultural Heritage Consultation Requirements for Proponents 2010* (DECCW 2010). The purpose of the Aboriginal community consultation is to provide sufficient information for the assessment of Aboriginal cultural heritage values and to inform the Aboriginal Cultural Heritage Assessment and to assist the Chief Executive of OEH in his or her consideration of the development application.

We wish to identify Aboriginal people who may have an interest in the proposed study area and hold cultural knowledge relevant to determining the cultural significance of Aboriginal objects and/or Places in the Karuah area. In accordance with the consultation requirements, individuals or groups are invited to register their interest in writing to participate in the Aboriginal Cultural Heritage Assessment and consultation process for the proposal. If you would like to register to be consulted for this project, please respond to this letter by no later **Monday 26 February 2018**. Please note that the details of registered Aboriginal parties will be forwarded to OEH and the Karuah Local Aboriginal Land Council (TLALC). Please advise us if you would not like these details released.

In accordance with the consultation requirements, please note that the applicant is Wedgerock Pty Ltd however; the relevant contact for this project is:

Robert Corkery
Principal/Managing Director, RW Corkery & Co. Pty Ltd
Level 1, 12 Dangar Road
PO Box 239, Brooklyn NSW 2083
Tel: (02) 9985 8511
rob@rwcorkery.com

Biosis Pty Ltd
Wollongong Resource Group

8 Tate Street
Wollongong NSW 2500

Phone: 02 4201 1090
Fax: 03 9646 9242

ACN 006 175 097
ABN 65 006 175 097

Email: wollongong@biosis.com.au

biosis.com.au



All correspondence regarding provision of names and contact details of Aboriginal people who may hold cultural knowledge relevant to the study area should be provided in writing to:

Amy Butcher
Biosis Pty Ltd
8 Tate Street
Wollongong NSW 2500
abutcher@biosis.com.au

If you have any queries regarding the study area please don't hesitate to contact me on the details below.

Yours sincerely,

A handwritten signature in black ink, appearing to read "Amy Butcher", with a long horizontal line extending to the right.

Amy Butcher
Research Assistant
abutcher@biosis.com.au
0437 689 734
(02) 9101 8715



09 February 2018

Divine Diggers Aboriginal Cultural Consultants
6 Ashleigh street
Heddon Greta NSW 2321
dedemaree3@hotmail.com
Ph: (02) 4937 4573

Dear Deidre Perkins,

RE: Aboriginal cultural heritage assessment at Kiely's Karuah Quarry, Karuah NSW
Our Ref: Matter 26512

An Aboriginal cultural heritage assessment is required in support of development application (DA) under Part 4.1 of the *Environmental Planning and Assessment Act 1979* to develop and operate Kiely's Karuah Quarry at Lot 11 DP 1024564, Pacific Highway, Karuah, New South Wales (NSW).

Biosis Pty Ltd is assisting Wedgerock Pty Ltd with consultation with the Aboriginal community in accordance with the *Aboriginal Cultural Heritage Consultation Requirements for Proponents 2010* (DECCW 2010). The purpose of the Aboriginal community consultation is to provide sufficient information for the assessment of Aboriginal cultural heritage values and to inform the Aboriginal Cultural Heritage Assessment and to assist the Chief Executive of OEH in his or her consideration of the development application.

We wish to identify Aboriginal people who may have an interest in the proposed study area and hold cultural knowledge relevant to determining the cultural significance of Aboriginal objects and/or Places in the Karuah area. In accordance with the consultation requirements, individuals or groups are invited to register their interest in writing to participate in the Aboriginal Cultural Heritage Assessment and consultation process for the proposal. If you would like to register to be consulted for this project, please respond to this letter by no later **Monday 26 February 2018**. Please note that the details of registered Aboriginal parties will be forwarded to OEH and the Karuah Local Aboriginal Land Council (TLALC). Please advise us if you would not like these details released.

In accordance with the consultation requirements, please note that the applicant is Wedgerock Pty Ltd however; the relevant contact for this project is:

Robert Corkery
Principal/Managing Director, RW Corkery & Co. Pty Ltd
Level 1, 12 Dangar Road
PO Box 239, Brooklyn NSW 2083
Tel: (02) 9985 8511
rob@rwcorkery.com

Biosis Pty Ltd
Wollongong Resource Group

8 Tate Street
Wollongong NSW 2500

Phone: 02 4201 1090
Fax: 03 9646 9242

ACN 006 175 097
ABN 65 006 175 097

Email: wollongong@biosis.com.au

biosis.com.au



All correspondence regarding provision of names and contact details of Aboriginal people who may hold cultural knowledge relevant to the study area should be provided in writing to:

Amy Butcher
Biosis Pty Ltd
8 Tate Street
Wollongong NSW 2500
abutcher@biosis.com.au

If you have any queries regarding the study area please don't hesitate to contact me on the details below.

Yours sincerely,

A handwritten signature in black ink, appearing to be "Amy Butcher", with a long horizontal line extending to the right.

Amy Butcher
Research Assistant
abutcher@biosis.com.au
0437 689 734
(02) 9101 8715



09 February 2018

Hunters and Collectors
U 211 Walowa Street
Narrabri NSW 2390
tmatthews10@hotmail.com
Ph: 0409 193 612

Dear Tania Matthews,

RE: Aboriginal cultural heritage assessment at Kiely's Karuah Quarry, Karuah NSW
Our Ref: Matter 26512

An Aboriginal cultural heritage assessment is required in support of development application (DA) under Part 4.1 of the *Environmental Planning and Assessment Act 1979* to develop and operate Kiely's Karuah Quarry at Lot 11 DP 1024564, Pacific Highway, Karuah, New South Wales (NSW).

Biosis Pty Ltd is assisting Wedgerock Pty Ltd with consultation with the Aboriginal community in accordance with the *Aboriginal Cultural Heritage Consultation Requirements for Proponents 2010* (DECCW 2010). The purpose of the Aboriginal community consultation is to provide sufficient information for the assessment of Aboriginal cultural heritage values and to inform the Aboriginal Cultural Heritage Assessment and to assist the Chief Executive of OEH in his or her consideration of the development application.

We wish to identify Aboriginal people who may have an interest in the proposed study area and hold cultural knowledge relevant to determining the cultural significance of Aboriginal objects and/or Places in the Karuah area. In accordance with the consultation requirements, individuals or groups are invited to register their interest in writing to participate in the Aboriginal Cultural Heritage Assessment and consultation process for the proposal. If you would like to register to be consulted for this project, please respond to this letter by no later **Monday 26 February 2018**. Please note that the details of registered Aboriginal parties will be forwarded to OEH and the Karuah Local Aboriginal Land Council (TLALC). Please advise us if you would not like these details released.

In accordance with the consultation requirements, please note that the applicant is Wedgerock Pty Ltd however; the relevant contact for this project is:

Robert Corkery
Principal/Managing Director, RW Corkery & Co. Pty Ltd
Level 1, 12 Dangar Road
PO Box 239, Brooklyn NSW 2083
Tel: (02) 9985 8511
rob@rwcorkery.com

Biosis Pty Ltd
Wollongong Resource Group

8 Tate Street
Wollongong NSW 2500

Phone: 02 4201 1090
Fax: 03 9646 9242

ACN 006 175 097
ABN 65 006 175 097

Email: wollongong@biosis.com.au

biosis.com.au



All correspondence regarding provision of names and contact details of Aboriginal people who may hold cultural knowledge relevant to the study area should be provided in writing to:

Amy Butcher
Biosis Pty Ltd
8 Tate Street
Wollongong NSW 2500
abutcher@biosis.com.au

If you have any queries regarding the study area please don't hesitate to contact me on the details below.

Yours sincerely,

A handwritten signature in black ink, appearing to read "Amy Butcher", with a long horizontal line extending to the right.

Amy Butcher
Research Assistant
abutcher@biosis.com.au
0437 689 734
(02) 9101 8715



09 February 2018

Kawul Pty Ltd
619 Main Road
Glendale NSW 2285
wonn1sites@gmail.com
Ph: (02) 4954 7751

Dear Arthur Fletcher,

RE: Aboriginal cultural heritage assessment at Kiely's Karuah Quarry, Karuah NSW
Our Ref: Matter 26512

An Aboriginal cultural heritage assessment is required in support of development application (DA) under Part 4.1 of the *Environmental Planning and Assessment Act 1979* to develop and operate Kiely's Karuah Quarry at Lot 11 DP 1024564, Pacific Highway, Karuah, New South Wales (NSW).

Biosis Pty Ltd is assisting Wedgerock Pty Ltd with consultation with the Aboriginal community in accordance with the *Aboriginal Cultural Heritage Consultation Requirements for Proponents 2010* (DECCW 2010). The purpose of the Aboriginal community consultation is to provide sufficient information for the assessment of Aboriginal cultural heritage values and to inform the Aboriginal Cultural Heritage Assessment and to assist the Chief Executive of OEH in his or her consideration of the development application.

We wish to identify Aboriginal people who may have an interest in the proposed study area and hold cultural knowledge relevant to determining the cultural significance of Aboriginal objects and/or Places in the Karuah area. In accordance with the consultation requirements, individuals or groups are invited to register their interest in writing to participate in the Aboriginal Cultural Heritage Assessment and consultation process for the proposal. If you would like to register to be consulted for this project, please respond to this letter by no later **Monday 26 February 2018**. Please note that the details of registered Aboriginal parties will be forwarded to OEH and the Karuah Local Aboriginal Land Council (TLALC). Please advise us if you would not like these details released.

In accordance with the consultation requirements, please note that the applicant is Wedgerock Pty Ltd however; the relevant contact for this project is:

Robert Corkery
Principal/Managing Director, RW Corkery & Co. Pty Ltd
Level 1, 12 Dangar Road
PO Box 239, Brooklyn NSW 2083
Tel: (02) 9985 8511
rob@rwcorkery.com

Biosis Pty Ltd
Wollongong Resource Group

8 Tate Street
Wollongong NSW 2500

Phone: 02 4201 1090
Fax: 03 9646 9242

ACN 006 175 097
ABN 65 006 175 097

Email: wollongong@biosis.com.au

biosis.com.au



All correspondence regarding provision of names and contact details of Aboriginal people who may hold cultural knowledge relevant to the study area should be provided in writing to:

Amy Butcher
Biosis Pty Ltd
8 Tate Street
Wollongong NSW 2500
abutcher@biosis.com.au

If you have any queries regarding the study area please don't hesitate to contact me on the details below.

Yours sincerely,

A handwritten signature in black ink, appearing to read "Amy Butcher", with a long horizontal line extending to the right.

Amy Butcher
Research Assistant
abutcher@biosis.com.au
0437 689 734
(02) 9101 8715



09 February 2018

Lakkari NTCG
C/- 4/39 Short Street
Forster NSW 2428
doowakee@gmail.com
Ph: 0402 751 584

Dear Mick Leon

RE: Aboriginal cultural heritage assessment at Kiely's Karuah Quarry, Karuah NSW
Our Ref: Matter 26512

An Aboriginal cultural heritage assessment is required in support of development application (DA) under Part 4.1 of the *Environmental Planning and Assessment Act 1979* to develop and operate Kiely's Karuah Quarry at Lot 11 DP 1024564, Pacific Highway, Karuah, New South Wales (NSW).

Biosis Pty Ltd is assisting Wedgerock Pty Ltd with consultation with the Aboriginal community in accordance with the *Aboriginal Cultural Heritage Consultation Requirements for Proponents 2010* (DECCW 2010). The purpose of the Aboriginal community consultation is to provide sufficient information for the assessment of Aboriginal cultural heritage values and to inform the Aboriginal Cultural Heritage Assessment and to assist the Chief Executive of OEH in his or her consideration of the development application.

We wish to identify Aboriginal people who may have an interest in the proposed study area and hold cultural knowledge relevant to determining the cultural significance of Aboriginal objects and/or Places in the Karuah area. In accordance with the consultation requirements, individuals or groups are invited to register their interest in writing to participate in the Aboriginal Cultural Heritage Assessment and consultation process for the proposal. If you would like to register to be consulted for this project, please respond to this letter by no later **Monday 26 February 2018**. Please note that the details of registered Aboriginal parties will be forwarded to OEH and the Karuah Local Aboriginal Land Council (TLALC). Please advise us if you would not like these details released.

In accordance with the consultation requirements, please note that the applicant is Wedgerock Pty Ltd however; the relevant contact for this project is:

Robert Corkery
Principal/Managing Director, RW Corkery & Co. Pty Ltd
Level 1, 12 Dangar Road
PO Box 239, Brooklyn NSW 2083
Tel: (02) 9985 8511
rob@rwcorkery.com

Biosis Pty Ltd
Wollongong Resource Group

8 Tate Street
Wollongong NSW 2500

Phone: 02 4201 1090
Fax: 03 9646 9242

ACN 006 175 097
ABN 65 006 175 097

Email: wollongong@biosis.com.au

biosis.com.au



All correspondence regarding provision of names and contact details of Aboriginal people who may hold cultural knowledge relevant to the study area should be provided in writing to:

Amy Butcher
Biosis Pty Ltd
8 Tate Street
Wollongong NSW 2500
abutcher@biosis.com.au

If you have any queries regarding the study area please don't hesitate to contact me on the details below.

Yours sincerely,

A handwritten signature in black ink, appearing to read "Amy Butcher", with a long horizontal line extending to the right.

Amy Butcher
Research Assistant
abutcher@biosis.com.au
0437 689 734
(02) 9101 8715



09 February 2018

Lower Hunter Aboriginal Incorporated
5 Killara Drive
Cardiff South NSW 2285
lowerhunterai@gmail.com
Ph: 0421 329 520

Dear David Ahoy,

RE: Aboriginal cultural heritage assessment at Kiely's Karuah Quarry, Karuah NSW
Our Ref: Matter 26512

An Aboriginal cultural heritage assessment is required in support of development application (DA) under Part 4.1 of the *Environmental Planning and Assessment Act 1979* to develop and operate Kiely's Karuah Quarry at Lot 11 DP 1024564, Pacific Highway, Karuah, New South Wales (NSW).

Biosis Pty Ltd is assisting Wedgerock Pty Ltd with consultation with the Aboriginal community in accordance with the *Aboriginal Cultural Heritage Consultation Requirements for Proponents 2010* (DECCW 2010). The purpose of the Aboriginal community consultation is to provide sufficient information for the assessment of Aboriginal cultural heritage values and to inform the Aboriginal Cultural Heritage Assessment and to assist the Chief Executive of OEH in his or her consideration of the development application.

We wish to identify Aboriginal people who may have an interest in the proposed study area and hold cultural knowledge relevant to determining the cultural significance of Aboriginal objects and/or Places in the Karuah area. In accordance with the consultation requirements, individuals or groups are invited to register their interest in writing to participate in the Aboriginal Cultural Heritage Assessment and consultation process for the proposal. If you would like to register to be consulted for this project, please respond to this letter by no later **Monday 26 February 2018**. Please note that the details of registered Aboriginal parties will be forwarded to OEH and the Karuah Local Aboriginal Land Council (TLALC). Please advise us if you would not like these details released.

In accordance with the consultation requirements, please note that the applicant is Wedgerock Pty Ltd however; the relevant contact for this project is:

Robert Corkery
Principal/Managing Director, RW Corkery & Co. Pty Ltd
Level 1, 12 Dangar Road
PO Box 239, Brooklyn NSW 2083
Tel: (02) 9985 8511
rob@rwcorkery.com

Biosis Pty Ltd
Wollongong Resource Group

8 Tate Street
Wollongong NSW 2500

Phone: 02 4201 1090
Fax: 03 9646 9242

ACN 006 175 097
ABN 65 006 175 097

Email: wollongong@biosis.com.au

biosis.com.au



All correspondence regarding provision of names and contact details of Aboriginal people who may hold cultural knowledge relevant to the study area should be provided in writing to:

Amy Butcher
Biosis Pty Ltd
8 Tate Street
Wollongong NSW 2500
abutcher@biosis.com.au

If you have any queries regarding the study area please don't hesitate to contact me on the details below.

Yours sincerely,

A handwritten signature in black ink, appearing to be "Amy Butcher", with a long horizontal line extending to the right.

Amy Butcher
Research Assistant
abutcher@biosis.com.au
0437 689 734
(02) 9101 8715



09 February 2018

Lower Hunter Wonnarua Cultural Services
51 Bowden Street
Heddon Greta NSW 2321
tn.miller@southernphone.com.au
Ph: (02) 4937 2694

Dear Lea-Anne Ball and Uncle Tommy Miller,

RE: Aboriginal cultural heritage assessment at Kiely's Karuah Quarry, Karuah NSW
Our Ref: Matter 26512

An Aboriginal cultural heritage assessment is required in support of development application (DA) under Part 4.1 of the *Environmental Planning and Assessment Act 1979* to develop and operate Kiely's Karuah Quarry at Lot 11 DP 1024564, Pacific Highway, Karuah, New South Wales (NSW).

Biosis Pty Ltd is assisting Wedgerock Pty Ltd with consultation with the Aboriginal community in accordance with the *Aboriginal Cultural Heritage Consultation Requirements for Proponents 2010* (DECCW 2010). The purpose of the Aboriginal community consultation is to provide sufficient information for the assessment of Aboriginal cultural heritage values and to inform the Aboriginal Cultural Heritage Assessment and to assist the Chief Executive of OEH in his or her consideration of the development application.

We wish to identify Aboriginal people who may have an interest in the proposed study area and hold cultural knowledge relevant to determining the cultural significance of Aboriginal objects and/or Places in the Karuah area. In accordance with the consultation requirements, individuals or groups are invited to register their interest in writing to participate in the Aboriginal Cultural Heritage Assessment and consultation process for the proposal. If you would like to register to be consulted for this project, please respond to this letter by no later **Monday 26 February 2018**. Please note that the details of registered Aboriginal parties will be forwarded to OEH and the Karuah Local Aboriginal Land Council (TLALC). Please advise us if you would not like these details released.

In accordance with the consultation requirements, please note that the applicant is Wedgerock Pty Ltd however; the relevant contact for this project is:

Robert Corkery
Principal/Managing Director, RW Corkery & Co. Pty Ltd
Level 1, 12 Dangar Road
PO Box 239, Brooklyn NSW 2083
Tel: (02) 9985 8511
rob@rwcorkery.com

Biosis Pty Ltd
Wollongong Resource Group

8 Tate Street
Wollongong NSW 2500

Phone: 02 4201 1090
Fax: 03 9646 9242

ACN 006 175 097
ABN 65 006 175 097

Email: wollongong@biosis.com.au

biosis.com.au



All correspondence regarding provision of names and contact details of Aboriginal people who may hold cultural knowledge relevant to the study area should be provided in writing to:

Amy Butcher
Biosis Pty Ltd
8 Tate Street
Wollongong NSW 2500
abutcher@biosis.com.au

If you have any queries regarding the study area please don't hesitate to contact me on the details below.

Yours sincerely,

A handwritten signature in black ink, appearing to read "Amy Butcher", with a long horizontal line extending to the right.

Amy Butcher
Research Assistant
abutcher@biosis.com.au
0437 689 734
(02) 9101 8715



09 February 2018

Murra Bidgee Mullangari Aboriginal Corporation
PO Box 246
Seven Hills NSW 2147
murrabidgeemullangari@yahoo.com.au
Ph: 0497 983 332

Dear Ryan Johnson and Darleen Johnson-Carroll,

RE: Aboriginal cultural heritage assessment at Kiely's Karuah Quarry, Karuah NSW
Our Ref: Matter 26512

An Aboriginal cultural heritage assessment is required in support of development application (DA) under Part 4.1 of the *Environmental Planning and Assessment Act 1979* to develop and operate Kiely's Karuah Quarry at Lot 11 DP 1024564, Pacific Highway, Karuah, New South Wales (NSW).

Biosis Pty Ltd is assisting Wedgerock Pty Ltd with consultation with the Aboriginal community in accordance with the *Aboriginal Cultural Heritage Consultation Requirements for Proponents 2010* (DECCW 2010). The purpose of the Aboriginal community consultation is to provide sufficient information for the assessment of Aboriginal cultural heritage values and to inform the Aboriginal Cultural Heritage Assessment and to assist the Chief Executive of OEH in his or her consideration of the development application.

We wish to identify Aboriginal people who may have an interest in the proposed study area and hold cultural knowledge relevant to determining the cultural significance of Aboriginal objects and/or Places in the Karuah area. In accordance with the consultation requirements, individuals or groups are invited to register their interest in writing to participate in the Aboriginal Cultural Heritage Assessment and consultation process for the proposal. If you would like to register to be consulted for this project, please respond to this letter by no later **Monday 26 February 2018**. Please note that the details of registered Aboriginal parties will be forwarded to OEH and the Karuah Local Aboriginal Land Council (TLALC). Please advise us if you would not like these details released.

In accordance with the consultation requirements, please note that the applicant is Wedgerock Pty Ltd however; the relevant contact for this project is:

Robert Corkery
Principal/Managing Director, RW Corkery & Co. Pty Ltd
Level 1, 12 Dangar Road
PO Box 239, Brooklyn NSW 2083
Tel: (02) 9985 8511
rob@rwcorkery.com

Biosis Pty Ltd
Wollongong Resource Group

8 Tate Street
Wollongong NSW 2500

Phone: 02 4201 1090
Fax: 03 9646 9242

ACN 006 175 097
ABN 65 006 175 097

Email: wollongong@biosis.com.au

biosis.com.au



All correspondence regarding provision of names and contact details of Aboriginal people who may hold cultural knowledge relevant to the study area should be provided in writing to:

Amy Butcher
Biosis Pty Ltd
8 Tate Street
Wollongong NSW 2500
abutcher@biosis.com.au

If you have any queries regarding the study area please don't hesitate to contact me on the details below.

Yours sincerely,

A handwritten signature in black ink, appearing to read "Amy Butcher", with a long horizontal line extending to the right.

Amy Butcher
Research Assistant
abutcher@biosis.com.au
0437 689 734
(02) 9101 8715



09 February 2018

Worimi Local Aboriginal Land Council
2163 Nelson Bay Road
Williamstown NSW 2314
reception@worimi.org.au
Ph: (02) 40338800

Dear Worimi Local Aboriginal Land Council

RE: Aboriginal cultural heritage assessment at Kiely's Karuah Quarry, Karuah NSW
Our Ref: Matter 26512

An Aboriginal cultural heritage assessment is required in support of development application (DA) under Part 4.1 of the *Environmental Planning and Assessment Act 1979* to develop and operate Kiely's Karuah Quarry at Lot 11 DP 1024564, Pacific Highway, Karuah, New South Wales (NSW).

Biosis Pty Ltd is assisting Wedgerock Pty Ltd with consultation with the Aboriginal community in accordance with the *Aboriginal Cultural Heritage Consultation Requirements for Proponents 2010* (DECCW 2010). The purpose of the Aboriginal community consultation is to provide sufficient information for the assessment of Aboriginal cultural heritage values and to inform the Aboriginal Cultural Heritage Assessment and to assist the Chief Executive of OEH in his or her consideration of the development application.

We wish to identify Aboriginal people who may have an interest in the proposed study area and hold cultural knowledge relevant to determining the cultural significance of Aboriginal objects and/or Places in the Karuah area. In accordance with the consultation requirements, individuals or groups are invited to register their interest in writing to participate in the Aboriginal Cultural Heritage Assessment and consultation process for the proposal. If you would like to register to be consulted for this project, please respond to this letter by no later **Monday 26 February 2018**. Please note that the details of registered Aboriginal parties will be forwarded to OEH and the Karuah Local Aboriginal Land Council (TLALC). Please advise us if you would not like these details released.

In accordance with the consultation requirements, please note that the applicant is Wedgerock Pty Ltd however; the relevant contact for this project is:

Robert Corkery
Principal/Managing Director, RW Corkery & Co. Pty Ltd
Level 1, 12 Dangar Road
PO Box 239, Brooklyn NSW 2083
Tel: (02) 9985 8511
rob@rwcorkery.com

Biosis Pty Ltd
Wollongong Resource Group

8 Tate Street
Wollongong NSW 2500

Phone: 02 4201 1090
Fax: 03 9646 9242

ACN 006 175 097
ABN 65 006 175 097

Email: wollongong@biosis.com.au

biosis.com.au



All correspondence regarding provision of names and contact details of Aboriginal people who may hold cultural knowledge relevant to the study area should be provided in writing to:

Amy Butcher
Biosis Pty Ltd
8 Tate Street
Wollongong NSW 2500
abutcher@biosis.com.au

If you have any queries regarding the study area please don't hesitate to contact me on the details below.

Yours sincerely,

A handwritten signature in black ink, appearing to be "Amy Butcher", with a long horizontal line extending to the right.

Amy Butcher
Research Assistant
abutcher@biosis.com.au
0437 689 734
(02) 9101 8715

From: [Ashleigh Keevers-Eastman](#)
To: [Dr Amanda Markham](#)
Subject: FW: 26512 - Kiely's Quarry - Karuah - Aboriginal Cultural Heritage Assessment - Survey
Date: Tuesday, 1 May 2018 2:01:38 PM
Attachments: [image001.png](#)

Hey Amanda,

Please find below Karuah LALC's response to our request for the availability to two cultural officers to come out and survey.

Did you have any suggestions for the date?

I am back from Toorale on the 14th of May. I can check other peoples availability as well.

From: Admin [mailto:admin@karuahaboriginal.com.au]
Sent: Tuesday, 1 May 2018 12:52 PM
To: Ashleigh Keevers-Eastman
Cc: ceo@karuahaboriginal.com.au; 'fiona manton'
Subject: RE: 26512 - Kiely's Quarry - Karuah - Aboriginal Cultural Heritage Assessment - Survey
Hi Ashleigh,

Thank you for your email in regards to site survey work at Kielys Quarry Karuah.

Our office was closed yesterday as our CEO is currently out of the country.

We have site surveyors available to do the field work for you for the month of May. Are you able to suggest some possible dates so I can organise which individuals?

KLALC QUOTE for 1 DAY SITE SURVEY

Min 2x Cultural Officers @ Min 8 hours per day

Total \$1936 GST INCL

I am happy to provide the quote formally to you if you wish.

Thanks, I look forward to hearing from you.

Kelly Drinkwater

Administration Manager

Karuah Local Aboriginal Land Council

Address: 16 Mustons Road, Karuah NSW | **Postal:** P.O Box 30 Karuah NSW

Phone: (02) 4997 5733 | **Fax:** (02) 4997 750

From: Ashleigh Keevers-Eastman [<mailto:AKeevers-Eastman@biosis.com.au>]
Sent: Tuesday, 1 May 2018 10:43 AM
To: 'admin@karuahaboriginal.com.au' <admin@karuahaboriginal.com.au>
Subject: FW: 26512 - Kiely's Quarry - Karuah - Aboriginal Cultural Heritage Assessment - Survey
Dear Kelly,

Thank you for speaking with me this morning.

Below is the email I sent through yesterday. At this stage we are trying to organise a day to survey and will need to know Karuah LALC's availability to participate in the survey.

A quote of your fees would also be helpful so that we can arrange to have a services agreement drawn up.

We look forward to hearing back from you soon.

Kind regards,

Ashleigh.

From: Ashleigh Keevers-Eastman
Sent: Monday, 30 April 2018 2:48 PM
To: 'admin@karuahaboriginal.com.au' <admin@karuahaboriginal.com.au>
Subject: 26512 - Kiely's Quarry - Karuah - Aboriginal Cultural Heritage Assessment - Survey
Dear Karuah LALC,

I tried to call earlier today but had no answer.

Biosis is currently organizing the undertaking of a survey at Kiely's Quarry, Karuah, NSW, as part of an Aboriginal Cultural Heritage Assessment.

Would you please be able to inform Biosis of the upcoming availability of two members from the Karuah LALC that would be able to assist Biosis in May, 2018?

The survey is scheduled for 1 day of fieldwork.

Would you also be able to provide a quote detailing fees, so that a services agreement may be drawn up.

If you have any further enquires or wish to discuss availabilities, please do not hesitate to contact me on the following:

M: 0428 175 025

D: (02) 4911 4042

E: akeevers-eastman@biosis.com.au

Kind regards,

Ashleigh.

Ashleigh Keevers-Eastman

Research Assistant - Heritage

M: 0428 175 025

D: (02) 4911 4042

E: akeevers-eastman@biosis.com.au

Biosis Logo



Leaders in Ecology and Heritage Consulting

The information transmitted including attachments is intended only for the person or entity to which it is addressed and may contain copyright material, or information that is confidential or is exempt from disclosure by law. Any review, retransmission, dissemination or other use of, or taking of any action in reliance upon this information by persons or entities other than the intended recipient is strictly prohibited. If you received this in error, please contact the sender and delete the material from your computer. The views expressed in this email are those of the sender except where the sender expressly and with authority states them to be the views of Biosis Pty Ltd. Biosis Pty Ltd does not represent that this email is free of errors, viruses or interference. When using email to communicate with Biosis Pty Ltd, access to that information by Biosis Pty Ltd personnel is strictly limited and controlled.

From: [Dr Amanda Markham](#)
To: ["admin@karuahaboriginal.com.au"](mailto:admin@karuahaboriginal.com.au)
Cc: [Taryn Gooley](#); [Rob Corkery](#)
Subject: Rates & Insurances - Logistics - Karuah Quarry
Date: Tuesday, 15 May 2018 2:03:44 PM
Attachments: [Taryn Gooley.vcf](#)
[image001.jpg](#)
[image4e76c2.PNG](#)

Hi Kelly,

Thanks for taking my call.

We've had a call from the client, RW Corkery & Co., requesting rates and copies of insurances for the members attending the survey at Kiely's Karuah Quarry on Thursday. Would you be able to supply these to us so that we can pass them on? Also, at the end of the survey (following completion of the report and review by RAPs/LALC), the client has requested a letter of support from the LALC. We can discuss this later, but I thought it best to give you a heads up.

In regards to arrangements for Thursday, Taryn has to meet the landowner at the site at 8am for the key. Would it be possible for the RAPs to meet Taryn there?

Taryn's contact details are:

Taryn Gooley



Please contact me if you require any further information.

Cheers,

Amanda

Dr Amanda Markham

Senior Archaeologist

M: 0400 988 963

D: (02) 9101 8719

E: amarkham@biosis.com.au

[Biosis Logo](#)



Leaders in Ecology and Heritage Consulting

The information transmitted including attachments is intended only for the person or entity to which it is addressed and may contain copyright material, or information that is confidential or is exempt from disclosure by law. Any review, retransmission, dissemination or other use of, or taking of any action in reliance upon this information by persons or entities other than the intended recipient is strictly prohibited. If you received this in error, please contact the sender and delete the material from your computer. The views expressed in this email are those of the sender except where the sender expressly and with authority states them to be the views of Biosis Pty Ltd. Biosis Pty Ltd does not represent that this email is free of errors, viruses or interference. When using email to communicate with Biosis Pty Ltd, access to that information by Biosis Pty Ltd personnel is strictly limited and controlled.

Annexure 4

**Stage 2: Presentation of
information about the
Proposed Project**

**Stage 3: Gathering
information about
cultural significance**

(Total No. of pages including blank pages = 26)

This page has intentionally been left blank



2 March 2018

Didge Ngunawal Clan
7 Siskin Street
Quakers Hill NSW 2763
didgengunawalclan@yahoo.com.au
Ph: 0426 823 944

Dear Paul Boyd and Lilly Carroll ,

RE: Project Information Aboriginal Cultural Heritage Assessment: Kiely's Karuah Quarry, Karuah NSW

Our Ref: Matter 25612

Thank you for your registration of interest in this project. The following project information has been provided by Biosis on behalf of RW Corkery & Co Pty Limited and is in accordance with the *Aboriginal cultural heritage consultation requirements for proponents 2010* (DECCW 2010b). The aim of this document is to provide the Registered Aboriginal Parties with information about the scope of the proposed project.

Study Area

The study area is within the Great lakes Local Government Area (LGA), Parish of Karuah, County of Gloucester, located at Lot 11 DP 1024564, Blue Rock Close, Karuah, NSW. The study area comprises 18 hectares of land adjacent to the Pacific Highway, approximately 4 kilometres north east of Karuah and 40 kilometres north of Newcastle. The proposed quarry is located immediately south of the existing Karuah Hard Rock Quarry and southwest of Karuah East Quarry, both operated by Hunter Quarries Pty Ltd.

Project

Biosis has been engaged by RW Corkery & Co Pty Limited to undertake an Aboriginal Cultural Heritage Assessment (ACHA) as part of a Secretary's Environmental Assessment Requirements (SEARs) for State Significant Development (SSD 17_8795), to be assessed under Part 5.1 of the *Environmental Planning and Assessment Act*.

Biosis Pty Ltd
Wollongong Resource Group

8 Tate Street
Wollongong NSW 2500

Phone: 02 4229 5222
Fax: 03 9646 9242

ACN 006 175 097
ABN 65 006 175 097

Email: wollongong@biosis.com.au

biosis.com.au



Aboriginal Cultural Heritage Assessment Process

The assessment process includes the following tasks:

Background Research

This task will identify known Aboriginal sites, areas of potential archaeological sensitivity and previous disturbance, and inform the predictive modelling for the assessment/study area. The following steps will be undertaken:

- A search of the Aboriginal Heritage Information Management System (AHIMS) will be completed to identify registered sites in the vicinity of the assessment/study area. The results of the AHIMS search will be used to obtain relevant site cards and relevant previously completed Aboriginal cultural heritage assessments.
- Review of relevant reports identified through the AHIMS search.
- Review of aerial photographs and other resources to gauge the existing landscape and previous history of land disturbance.
- Review of the historical heritage databases.
- A brief summary of the historical uses of the study areas.

Consultation with the Aboriginal Community

This task will allow the Aboriginal community the opportunity to participate in decisions regarding the management of their cultural heritage by providing proponents information regarding cultural significance and inputting into management options.

Aboriginal community consultation will be undertaken in accordance with *the Aboriginal cultural heritage consultation requirements for proponents (2010b)*, which includes:

- **COMPLETED.** Biosis ascertained the names of Aboriginal people or groups who may hold cultural knowledge relevant to determining the significance of Aboriginal objects and/ or Places within the proposed study area.
- **COMPLETED.** Aboriginal stakeholders were provided with notification by email of the proposed project on 16 January 2018 via Biosis and given the opportunity to be involved in consultation.
- This document outlines the details of the proposed project.
- Biosis will provide details of the project methodology for the archaeological assessment and test excavations to the registered parties. The registered Aboriginal parties must be given an opportunity to review and provide feedback to the proponent within a minimum of **28 days** of Biosis providing the methodology document.
- The DRAFT Aboriginal Cultural Heritage Assessment Report (ACHAR) and Archaeological Report (AR) will be provided to all registered Aboriginal parties for comment – the proponent must allow **28 days** for comment. All comments and correspondence sent and received regarding the project will be included in the final report in an Appendix.
- Representatives of the registered Aboriginal parties will be invited to participate in any archaeological excavations which will take place within the study area(s).



Field Survey

An inspection of the assessment area will be undertaken in order to identify any previously unknown Aboriginal objects or Places, should they be present. If identified, these will be recorded to the required standard.

Any known sites identified by the AHIMS search which are within the assessment area will be inspected to determine their current condition. Registered sites in the near vicinity will be visited to ensure they will not be impacted by the proposed works. Areas of potential archaeological deposit (PAD) identified by previous assessments will also be inspected.

This task will assist in the assessment of disturbance and with predictive modelling will define areas of potential archaeological deposit and assessment of whether the proposed works are likely to impact on undiscovered Aboriginal artefacts.

Mapping will be undertaken in ArcGIS and/or MapInfo Professional.

Reporting

A draft ACHAR and AR report will be prepared in accordance with the *Code of Practice for Archaeological Investigations of Aboriginal Objects in NSW (2010a)* and will include:

- Background and project description.
- A summary and analysis of the findings including the presence and location of registered or undiscovered Aboriginal artefacts or heritage items within proximity of the study areas.
- A summary of any other relevant studies or surveys which have relevance to the assessment area.
- A summary of the landscape features of the site which may indicate a history of Aboriginal activity.
- A summary of previous land use that may have affected the retention of intact Aboriginal archaeology in the landscape.
- The potential or likelihood for the proposed works to uncover or expose potential undiscovered Aboriginal objects.
- Legislative implications of the proposed works.
- Recommendations and justification for further assessment (if required).
- Mitigation measures (if any) required for the works to proceed.
- Mapping will be carried out to show the location of registered and newly located (if any) Aboriginal sites in relation to the proposed works.

As part of this methodology registered Aboriginal parties will be provided with the draft report for comment and allowed **28 days** for review.

The final report will incorporate all comments.



Project schedule

The schedule and time allocations for the project are summarised below.

Action	Timeframe	Notes
Commencement of Aboriginal community Consultation	Completed	Notices sent to registered Aboriginal stakeholders
Provision of DRAFT Methodology Document to registered Aboriginal stakeholders for review and comment – these methods will form the basis for all archaeological and cultural heritage work.	4 Weeks	28 days review time allowed under OEH Aboriginal community consultation guidelines.
Information gathering	Ongoing	Until finalisation of report.
Site inspection with selected representatives of the registered Aboriginal parties	TBC ¹	
Test excavations with selected representatives of the registered Aboriginal parties (only if required)	TBC	Only if required
Review of the draft report	TBC	28 days review time allowed under OEH Aboriginal community consultation guidelines.
Final Report	TBC	

¹ TBC = to be confirmed.



Responsibilities and roles

As part of the consultation process registered Aboriginal parties are expected to respond to requests for cultural information and comment on draft reporting, as appropriate in accordance with their role specified in the guidelines (DECCW 2010b).

Biosis and RW Corkery & Co Pty Limited, in accordance with their role under the guidelines, will consult with the Aboriginal community by supplying suitable project information and providing the opportunity for Aboriginal stakeholders to provide input into the heritage management process.

Each section of the methodology will be undertaken in consultation with the Aboriginal stakeholders. Biosis invites Aboriginal stakeholders to provide culturally appropriate information via mail, email or phone with regards to this project.

Cultural information provided will be recorded in the Aboriginal consultation log and discussed in the report. If the information is regarded as too sensitive to be made public then the Aboriginal stakeholder should advise Biosis and identify the nature of the sensitivity. Biosis will then arrange for the recording of the information in accordance with its sensitivity. Documents which hold sensitive information will clearly list, on the front cover, who can have access to the document. These documents will be stored securely.

If you have any queries regarding the Project or the information in this letter, please don't hesitate to contact me in the office on (02) 4201 1056.

Yours sincerely,

A handwritten signature in blue ink, appearing to read "Amanda Atkinson", written over a light blue rectangular background.

Amanda Atkinson
Senior Archaeologist
0409 199 785
aatkinson@biosis.com.au



References

Department of Environment, Climate Change and Water. 2010a. *Code of practice for Archaeological Investigation of Aboriginal Objects in New South Wales 2010*. NSW Department of Environment, Climate Change and Water, Sydney NSW.

Department of Environment, Climate Change and Water. 2010b. *Aboriginal cultural heritage consultation requirements for proponents 2010*. NSW Department of Environment, Climate Change and Water, Sydney NSW.



Figure 1 **Location of the Karuah Quarry study area**



Figure 2 **Overview of the Karuah Quarry study area**



2 March 2018

Divine Diggers Aboriginal Cultural Consultants
6 Ashleigh street
Heddon Greta NSW 2321
dedemaree3@hotmail.com
Ph: (02) 4937 4573

Dear Dierdre,

RE: Project Information Aboriginal Cultural Heritage Assessment: Kiely's Karuah Quarry, Karuah NSW

Our Ref: Matter 25612

Thank you for your registration of interest in this project. The following project information has been provided by Biosis on behalf of RW Corkery & Co Pty Limited and is in accordance with the *Aboriginal cultural heritage consultation requirements for proponents 2010* (DECCW 2010b). The aim of this document is to provide the Registered Aboriginal Parties with information about the scope of the proposed project.

Study Area

The study area is within the Great lakes Local Government Area (LGA), Parish of Karuah, County of Gloucester, located at Lot 11 DP 1024564, Blue Rock Close, Karuah, NSW. The study area comprises 18 hectares of land adjacent to the Pacific Highway, approximately 4 kilometres north east of Karuah and 40 kilometres north of Newcastle. The proposed quarry is located immediately south of the existing Karuah Hard Rock Quarry and southwest of Karuah East Quarry, both operated by Hunter Quarries Pty Ltd.

Project

Biosis has been engaged by RW Corkery & Co Pty Limited to undertake an Aboriginal Cultural Heritage Assessment (ACHA) as part of a Secretary's Environmental Assessment Requirements (SEARs) for State Significant Development (SSD 17_8795), to be assessed under Part 5.1 of the *Environmental Planning and Assessment Act*.

Biosis Pty Ltd
Wollongong Resource Group

8 Tate Street
Wollongong NSW 2500

Phone: 02 4229 5222
Fax: 03 9646 9242

ACN 006 175 097
ABN 65 006 175 097

Email: wollongong@biosis.com.au

biosis.com.au



Aboriginal Cultural Heritage Assessment Process

The assessment process includes the following tasks:

Background Research

This task will identify known Aboriginal sites, areas of potential archaeological sensitivity and previous disturbance, and inform the predictive modelling for the assessment/study area. The following steps will be undertaken:

- A search of the Aboriginal Heritage Information Management System (AHIMS) will be completed to identify registered sites in the vicinity of the assessment/study area. The results of the AHIMS search will be used to obtain relevant site cards and relevant previously completed Aboriginal cultural heritage assessments.
- Review of relevant reports identified through the AHIMS search.
- Review of aerial photographs and other resources to gauge the existing landscape and previous history of land disturbance.
- Review of the historical heritage databases.
- A brief summary of the historical uses of the study areas.

Consultation with the Aboriginal Community

This task will allow the Aboriginal community the opportunity to participate in decisions regarding the management of their cultural heritage by providing proponents information regarding cultural significance and inputting into management options.

Aboriginal community consultation will be undertaken in accordance with *the Aboriginal cultural heritage consultation requirements for proponents (2010b)*, which includes:

- **COMPLETED.** Biosis ascertained the names of Aboriginal people or groups who may hold cultural knowledge relevant to determining the significance of Aboriginal objects and/ or Places within the proposed study area.
- **COMPLETED.** Aboriginal stakeholders were provided with notification by email of the proposed project on 16 January 2018 via Biosis and given the opportunity to be involved in consultation.
- This document outlines the details of the proposed project.
- Biosis will provide details of the project methodology for the archaeological assessment and test excavations to the registered parties. The registered Aboriginal parties must be given an opportunity to review and provide feedback to the proponent within a minimum of **28 days** of Biosis providing the methodology document.
- The DRAFT Aboriginal Cultural Heritage Assessment Report (ACHAR) and Archaeological Report (AR) will be provided to all registered Aboriginal parties for comment – the proponent must allow **28 days** for comment. All comments and correspondence sent and received regarding the project will be included in the final report in an Appendix.
- Representatives of the registered Aboriginal parties will be invited to participate in any archaeological excavations which will take place within the study area(s).



Field Survey

An inspection of the assessment area will be undertaken in order to identify any previously unknown Aboriginal objects or Places, should they be present. If identified, these will be recorded to the required standard.

Any known sites identified by the AHIMS search which are within the assessment area will be inspected to determine their current condition. Registered sites in the near vicinity will be visited to ensure they will not be impacted by the proposed works. Areas of potential archaeological deposit (PAD) identified by previous assessments will also be inspected.

This task will assist in the assessment of disturbance and with predictive modelling will define areas of potential archaeological deposit and assessment of whether the proposed works are likely to impact on undiscovered Aboriginal artefacts.

Mapping will be undertaken in ArcGIS and/or MapInfo Professional.

Reporting

A draft ACHAR and AR report will be prepared in accordance with the *Code of Practice for Archaeological Investigations of Aboriginal Objects in NSW (2010a)* and will include:

- Background and project description.
- A summary and analysis of the findings including the presence and location of registered or undiscovered Aboriginal artefacts or heritage items within proximity of the study areas.
- A summary of any other relevant studies or surveys which have relevance to the assessment area.
- A summary of the landscape features of the site which may indicate a history of Aboriginal activity.
- A summary of previous land use that may have affected the retention of intact Aboriginal archaeology in the landscape.
- The potential or likelihood for the proposed works to uncover or expose potential undiscovered Aboriginal objects.
- Legislative implications of the proposed works.
- Recommendations and justification for further assessment (if required).
- Mitigation measures (if any) required for the works to proceed.
- Mapping will be carried out to show the location of registered and newly located (if any) Aboriginal sites in relation to the proposed works.

As part of this methodology registered Aboriginal parties will be provided with the draft report for comment and allowed **28 days** for review.

The final report will incorporate all comments.



Project schedule

The schedule and time allocations for the project are summarised below.

Action	Timeframe	Notes
Commencement of Aboriginal community Consultation	Completed	Notices sent to registered Aboriginal stakeholders
Provision of DRAFT Methodology Document to registered Aboriginal stakeholders for review and comment – these methods will form the basis for all archaeological and cultural heritage work.	4 Weeks	28 days review time allowed under OEH Aboriginal community consultation guidelines.
Information gathering	Ongoing	Until finalisation of report.
Site inspection with selected representatives of the registered Aboriginal parties	TBC ¹	
Test excavations with selected representatives of the registered Aboriginal parties (only if required)	TBC	Only if required
Review of the draft report	TBC	28 days review time allowed under OEH Aboriginal community consultation guidelines.
Final Report	TBC	

¹ TBC = to be confirmed.



Responsibilities and roles

As part of the consultation process registered Aboriginal parties are expected to respond to requests for cultural information and comment on draft reporting, as appropriate in accordance with their role specified in the guidelines (DECCW 2010b).

Biosis and RW Corkery & Co Pty Limited, in accordance with their role under the guidelines, will consult with the Aboriginal community by supplying suitable project information and providing the opportunity for Aboriginal stakeholders to provide input into the heritage management process.

Each section of the methodology will be undertaken in consultation with the Aboriginal stakeholders. Biosis invites Aboriginal stakeholders to provide culturally appropriate information via mail, email or phone with regards to this project.

Cultural information provided will be recorded in the Aboriginal consultation log and discussed in the report. If the information is regarded as too sensitive to be made public then the Aboriginal stakeholder should advise Biosis and identify the nature of the sensitivity. Biosis will then arrange for the recording of the information in accordance with its sensitivity. Documents which hold sensitive information will clearly list, on the front cover, who can have access to the document. These documents will be stored securely.

If you have any queries regarding the Project or the information in this letter, please don't hesitate to contact me in the office on (02) 4201 1056.

Yours sincerely,

A handwritten signature in blue ink, appearing to read "Amanda Atkinson", written over a light blue rectangular background.

Amanda Atkinson
Senior Archaeologist
0409 199 785
aatkinson@biosis.com.au



References

Department of Environment, Climate Change and Water. 2010a. *Code of practice for Archaeological Investigation of Aboriginal Objects in New South Wales 2010*. NSW Department of Environment, Climate Change and Water, Sydney NSW.

Department of Environment, Climate Change and Water. 2010b. *Aboriginal cultural heritage consultation requirements for proponents 2010*. NSW Department of Environment, Climate Change and Water, Sydney NSW.



Figure 1 **Location of the Karuah Quarry study area**



Figure 2 **Overview of the Karuah Quarry study area**



2 March 2018

Karuah Aboriginal Land Council
C/- Kelly Drinkwater
16 Munstons Road
KARUAH NSW 2324

Dear Kelly,

RE: Project Information Aboriginal Cultural Heritage Assessment: Kiely's Karuah Quarry, Karuah NSW

Our Ref: Matter 25612

Thank you for your registration of interest in this project. The following project information has been provided by Biosis on behalf of RW Corkery & Co Pty Limited and is in accordance with the *Aboriginal cultural heritage consultation requirements for proponents 2010* (DECCW 2010b). The aim of this document is to provide the Registered Aboriginal Parties with information about the scope of the proposed project.

Study Area

The study area is within the Great lakes Local Government Area (LGA), Parish of Karuah, County of Gloucester, located at Lot 11 DP 1024564, Blue Rock Close, Karuah, NSW. The study area comprises 18 hectares of land adjacent to the Pacific Highway, approximately 4 kilometres north east of Karuah and 40 kilometres north of Newcastle. The proposed quarry is located immediately south of the existing Karuah Hard Rock Quarry and southwest of Karuah East Quarry, both operated by Hunter Quarries Pty Ltd.

Project

Biosis has been engaged by RW Corkery & Co Pty Limited to undertake an Aboriginal Cultural Heritage Assessment (ACHA) as part of a Secretary's Environmental Assessment Requirements (SEARs) for State Significant Development (SSD 17_8795), to be assessed under Part 5.1 of the *Environmental Planning and Assessment Act*.

Biosis Pty Ltd
Wollongong Resource Group

8 Tate Street
Wollongong NSW 2500

Phone: 02 4229 5222
Fax: 03 9646 9242

ACN 006 175 097
ABN 65 006 175 097

Email: wollongong@biosis.com.au

biosis.com.au



Aboriginal Cultural Heritage Assessment Process

The assessment process includes the following tasks:

Background Research

This task will identify known Aboriginal sites, areas of potential archaeological sensitivity and previous disturbance, and inform the predictive modelling for the assessment/study area. The following steps will be undertaken:

- A search of the Aboriginal Heritage Information Management System (AHIMS) will be completed to identify registered sites in the vicinity of the assessment/study area. The results of the AHIMS search will be used to obtain relevant site cards and relevant previously completed Aboriginal cultural heritage assessments.
- Review of relevant reports identified through the AHIMS search.
- Review of aerial photographs and other resources to gauge the existing landscape and previous history of land disturbance.
- Review of the historical heritage databases.
- A brief summary of the historical uses of the study areas.

Consultation with the Aboriginal Community

This task will allow the Aboriginal community the opportunity to participate in decisions regarding the management of their cultural heritage by providing proponents information regarding cultural significance and inputting into management options.

Aboriginal community consultation will be undertaken in accordance with *the Aboriginal cultural heritage consultation requirements for proponents (2010b)*, which includes:

- **COMPLETED.** Biosis ascertained the names of Aboriginal people or groups who may hold cultural knowledge relevant to determining the significance of Aboriginal objects and/ or Places within the proposed study area.
- **COMPLETED.** Aboriginal stakeholders were provided with notification by email of the proposed project on 16 January 2018 via Biosis and given the opportunity to be involved in consultation.
- This document outlines the details of the proposed project.
- Biosis will provide details of the project methodology for the archaeological assessment and test excavations to the registered parties. The registered Aboriginal parties must be given an opportunity to review and provide feedback to the proponent within a minimum of **28 days** of Biosis providing the methodology document.
- The DRAFT Aboriginal Cultural Heritage Assessment Report (ACHAR) and Archaeological Report (AR) will be provided to all registered Aboriginal parties for comment – the proponent must allow **28 days** for comment. All comments and correspondence sent and received regarding the project will be included in the final report in an Appendix.
- Representatives of the registered Aboriginal parties will be invited to participate in any archaeological excavations which will take place within the study area(s).



Field Survey

An inspection of the assessment area will be undertaken in order to identify any previously unknown Aboriginal objects or Places, should they be present. If identified, these will be recorded to the required standard.

Any known sites identified by the AHIMS search which are within the assessment area will be inspected to determine their current condition. Registered sites in the near vicinity will be visited to ensure they will not be impacted by the proposed works. Areas of potential archaeological deposit (PAD) identified by previous assessments will also be inspected.

This task will assist in the assessment of disturbance and with predictive modelling will define areas of potential archaeological deposit and assessment of whether the proposed works are likely to impact on undiscovered Aboriginal artefacts.

Mapping will be undertaken in ArcGIS and/or MapInfo Professional.

Reporting

A draft ACHAR and AR report will be prepared in accordance with the *Code of Practice for Archaeological Investigations of Aboriginal Objects in NSW (2010a)* and will include:

- Background and project description.
- A summary and analysis of the findings including the presence and location of registered or undiscovered Aboriginal artefacts or heritage items within proximity of the study areas.
- A summary of any other relevant studies or surveys which have relevance to the assessment area.
- A summary of the landscape features of the site which may indicate a history of Aboriginal activity.
- A summary of previous land use that may have affected the retention of intact Aboriginal archaeology in the landscape.
- The potential or likelihood for the proposed works to uncover or expose potential undiscovered Aboriginal objects.
- Legislative implications of the proposed works.
- Recommendations and justification for further assessment (if required).
- Mitigation measures (if any) required for the works to proceed.
- Mapping will be carried out to show the location of registered and newly located (if any) Aboriginal sites in relation to the proposed works.

As part of this methodology registered Aboriginal parties will be provided with the draft report for comment and allowed **28 days** for review.

The final report will incorporate all comments.



Project schedule

The schedule and time allocations for the project are summarised below.

Action	Timeframe	Notes
Commencement of Aboriginal community Consultation	Completed	Notices sent to registered Aboriginal stakeholders
Provision of DRAFT Methodology Document to registered Aboriginal stakeholders for review and comment – these methods will form the basis for all archaeological and cultural heritage work.	4 Weeks	28 days review time allowed under OEH Aboriginal community consultation guidelines.
Information gathering	Ongoing	Until finalisation of report.
Site inspection with selected representatives of the registered Aboriginal parties	TBC ¹	
Test excavations with selected representatives of the registered Aboriginal parties (only if required)	TBC	Only if required
Review of the draft report	TBC	28 days review time allowed under OEH Aboriginal community consultation guidelines.
Final Report	TBC	

¹ TBC = to be confirmed.



Responsibilities and roles

As part of the consultation process registered Aboriginal parties are expected to respond to requests for cultural information and comment on draft reporting, as appropriate in accordance with their role specified in the guidelines (DECCW 2010b).

Biosis and RW Corkery & Co Pty Limited, in accordance with their role under the guidelines, will consult with the Aboriginal community by supplying suitable project information and providing the opportunity for Aboriginal stakeholders to provide input into the heritage management process.

Each section of the methodology will be undertaken in consultation with the Aboriginal stakeholders. Biosis invites Aboriginal stakeholders to provide culturally appropriate information via mail, email or phone with regards to this project.

Cultural information provided will be recorded in the Aboriginal consultation log and discussed in the report. If the information is regarded as too sensitive to be made public then the Aboriginal stakeholder should advise Biosis and identify the nature of the sensitivity. Biosis will then arrange for the recording of the information in accordance with its sensitivity. Documents which hold sensitive information will clearly list, on the front cover, who can have access to the document. These documents will be stored securely.

If you have any queries regarding the Project or the information in this letter, please don't hesitate to contact me in the office on (02) 4201 1056.

Yours sincerely,

A handwritten signature in blue ink, appearing to read "Amanda Atkinson", written over a light blue rectangular background.

Amanda Atkinson
Senior Archaeologist
0409 199 785
aatkinson@biosis.com.au



References

Department of Environment, Climate Change and Water. 2010a. *Code of practice for Archaeological Investigation of Aboriginal Objects in New South Wales 2010*. NSW Department of Environment, Climate Change and Water, Sydney NSW.

Department of Environment, Climate Change and Water. 2010b. *Aboriginal cultural heritage consultation requirements for proponents 2010*. NSW Department of Environment, Climate Change and Water, Sydney NSW.



Figure 1 **Location of the Karuah Quarry study area**



Figure 2 **Overview of the Karuah Quarry study area**

Annexure 5

Stage 4: Review of draft cultural heritage assessment report

(Total No. of pages including blank pages = 4)

This page has intentionally been left blank

SPECIALIST CONSULTANT STUDIES*Part 7a: Aboriginal Cultural Heritage Assessment Report***WEDGEROCK PTY LTD***Karuah South Quarry**Report No. 958/03*

Contact		Contacted by					Additional comments
Organisation	Person	Organisation	Person	Date	Method	Notes	
Karuah LALC	Kelly Drinkwater	Biosis Pty Ltd	Ashleigh Keevers-Eastman	11/12/2018	Email	Sent draft ACHA and AR for review	No comments received
Didge Ngunawal	Lilly Caroll	Biosis Pty Ltd	Ashleigh Keevers-Eastman	11/12/2018	Email	Sent draft ACHA and AR for review	No comments received
Divine Diggers	Deidre Perkins	Biosis Pty Ltd	Ashleigh Keevers-Eastman	11/12/2018	Email	Sent draft ACHA and AR for review	No comments received
Biosis Pty Ltd	Ashleigh Keevers-Eastman	Divine Diggers	Deidre Perkins	11/12/2018	Email	Undeliverable	N/A
Divine Diggers	Deidre Perkins	Biosis Pty Ltd	Ashleigh Keevers-Eastman	11/12/2018	Email	Sent draft ACHA and AR for review via hightail	No comments received

This page has intentionally been left blank

Annexure 6

Archaeological Report

(Total No. of pages including blank pages = 64)

This page has intentionally been left blank

Karuah South Quarry

Archaeological Report

Prepared by

Biosis Pty Ltd

October 2018

Specialist Consultant Studies Compendium
Part 7a – Annexure 6

This page has intentionally been left blank

Wedgerock Pty Ltd

ABN: 15 099 038 123

Archaeological Report

Prepared for: R.W. Corkery & Co. Pty Limited
1st Floor, 12 Dangar Road
PO Box 239
BROOKLYN NSW 2083

Tel: (02) 9985 8511
Email: brooklyn@rwcorkery.com

On behalf of: Wedgerock Pty Ltd
PO Box 59
KARUAH NSW 2324

Tel: (02) 4997 5583
Email: wedgerock@aapt.net.au

Prepared by: Biosis Pty Ltd
8/27 Annie Street
WICKHAM NSW 2293

Tel: (02) 4911 4040
Email: newcastle@biosis.com.au

Ref No: 26512

October 2018

This Copyright is included for the protection of this document

COPYRIGHT

© Biosis Pty Ltd 2018

and

© Wedgerock Pty Ltd 2018

All intellectual property and copyright reserved.

Apart from any fair dealing for the purpose of private study, research, criticism or review, as permitted under the Copyright Act, 1968, no part of this report may be reproduced, transmitted, stored in a retrieval system or adapted in any form or by any means (electronic, mechanical, photocopying, recording or otherwise) without written permission. Enquiries should be addressed to Biosis Pty Ltd.

CONTENTS

	Page
COMMONLY USED ACRONYMS	7A-131
executive summary	7a-133
1. introduction	7a-135
1.1 PROJECT BACKGROUND	7a-135
1.2 STUDY AREA	7a-135
1.3 PLANNING APPROVALS.....	7a-138
1.4 OBJECTIVES OF THE INVESTIGATION	7a-138
1.5 INVESTIGATORS AND CONTRIBUTORS	7a-139
2. PROPOSED DEVELOPMENT	7a-142
3. DESKTOP ASSESSMENT	7a-144
3.1 INTRODUCTION	7a-144
3.2 LANDSCAPE CONTEXT	7a-144
3.2.1 Topography, Geology and Hydrology	7a-144
3.2.2 Soil Landscapes	7a-146
3.2.3 Landscape Resources	7a-148
3.2.4 Land Use History.....	7a-150
4. ABORIGINAL CONTEXT	7a-152
4.1 ETHNOHISTORY	7a-152
4.2 PREVIOUS ARCHAEOLOGICAL WORK.....	7a-153
4.2.1 Regional Context.....	7a-153
4.2.2 Local Context	7a-155
4.3 AHIMS SITE ANALYSIS	7a-156
4.3.1 Predictive statements.....	7a-158
5. ARCHAEOLOGICAL SURVEY	7a-161
5.1 ARCHAEOLOGICAL SURVEY OBJECTIVES	7a-161
5.2 ARCHAEOLOGICAL SURVEY METHODOLOGY	7a-161
5.2.1 Sampling Strategy.....	7a-161
5.2.2 Survey Methods	7a-161
5.3 ARCHAEOLOGICAL SURVEY RESULTS	7a-162
5.3.1 Survey Constraints.....	7a-162
5.3.2 Discussion of Archaeological Survey Results.....	7a-167
6. ANALYSIS AND DISCUSSION.....	7a-169
7. SCIENTIFIC VALUES AND SIGNIFICANCE ASSESSMENT	7a-170
7.1 INTRODUCTION TO THE ASSESSMENT PROCESS.....	7a-170
7.2 ARCHAEOLOGICAL (SCIENTIFIC SIGNIFICANCE) VALUES	7a-171
7.2.1 Statements of Archaeological Significance.....	7a-174
7.2.2 Cultural (Social) Significance	7a-174

8. IMPACT ASSESSMENT	7a-175
8.1 PREDICTED PHYSICAL IMPACTS.....	7a-175
8.2 MANAGEMENT AND MITIGATION MEASURES	7a-175
9. RECOMMENDATIONS	7a-176
REFERENCES	7a-177

ATTACHMENTS

Attachment 1 AHIMS results	7a-181
----------------------------------	--------

FIGURES

Figure 1 Location of the Study Area	7a-136
Figure 2 Study Area Detail	7a-137
Figure 3 Indicative Site Layout	7a-143
Figure 4 Geological Units within the Vicinity of the Study Area	7a-145
Figure 5 Mitchell Landscapes within the Study Area	7a-147
Figure 6 AHIMS Records near the Study Area	7a-157
Figure 7 Landforms Surveyed	7a-163
Figure 8 Survey Results	7a-164

TABLES

Table 1 Investigators and Contributors	7a-139
Table 2 Gan Gan Soil Landscape Characteristics	7a-148
Table 3 Nungra Soil Landscape Characteristics	7a-149
Table 4 AHIMS Search Results	7a-158
Table 5 AHIMS Site Type Frequency	7a-158
Table 6 Aboriginal Site Prediction Statements	7a-159
Table 7 Survey Coverage	7a-168
Table 8 Landform Summary	7a-168
Table 9 Site Contents Ratings used for Archaeological Sites	7a-172
Table 10 Site Condition Ratings used for Archaeological Sites	7a-172
Table 11 Site Representativeness Ratings used for Archaeological Sites	7a-173
Table 12 Scientific Significance Ratings used for Archaeological Sites	7a-173

CONTENTS

	Page
PLATES	
Plate 1	Diagram showing Strahler Stream Order..... 7a-146
Plate 2	1954 Aerial Photograph showing Approximate Location of the Study Area, Highlighted in Orange 7a-151
Plate 3	1993 Aerial Photograph showing Approximate Location of Study Area (indicative only) (Source: NSW LPI 2018)..... 7a-151
Plate 4	Dense Vegetation and Disturbance from Clearing, View to South West..... 7a-165
Plate 5	Steep Slope and Dense Vegetation, View to West..... 7a-165
Plate 6	Steep Slope showing Disturbances from Graded Tracks and Shed 7a-166
Plate 7	Steep Slope showing Disturbances from Graded Tracks and Shed 7a-166
Plate 8	Disturbance and Exposure from Gravel and Concrete Spoil 7a-167

This page has intentionally been left blank

COMMONLY USED ACRONYMS

ACHA	Aboriginal Cultural Heritage Assessment report
AHIMS	Aboriginal Heritage Information Management System
Consultation requirements	<i>Aboriginal cultural heritage consultation requirements for proponents 2010 (DECCW 2010a)</i>
DECCW	Department of Environment, Climate Change and Water (now OEH)
DP	Deposited Plan
GSV	Ground Surface Visibility
ICOMOS	International Council on Monuments and Sites
LALC	Local Aboriginal Land Council
LEP	Local Environmental Plan
LGA	Local Government Area
NPW Act	<i>National Parks and Wildlife Act 1974</i>
NPWS	National Parks and Wildlife Service
NSW	New South Wales
OEH	Office of Environment and Heritage
PAD	Potential Archaeological Deposit
Study Area	Defined as a portion of the southern section of Lot 11 DP 1024564
RAP	Registered Aboriginal Party
SEPP	State Environmental Planning Policy
Study Area	The area of impact for the proposed Project defined as the southern section of Lot 11 DP 1024564, beyond the area of disturbance associated with the Karuah Quarry
The code	<i>Code of Practice for Archaeological Investigation of Aboriginal Objects in NSW (DECCW 2010)</i>

This page has intentionally been left blank

EXECUTIVE SUMMARY

Biosis Pty Ltd was commissioned by RW Corkery & Co. Pty Ltd on behalf of Wedgerock Pty Ltd to undertake an Aboriginal cultural heritage assessment for a proposed hard rock Quarry, on the southern part of Lot 11 DP 1024564, Karuah, New South Wales (NSW) (the Study Area). The Study Area is located in bushland approximately 4 kilometres northeast of Karuah and approximately 40 kilometres north of the Newcastle central business district (CBD). There are 12 Aboriginal cultural heritage sites registered with the Aboriginal Heritage Information Management System (AHIMS) a 5 x 5 kilometre area surrounding the Study Area, however, none of these are located within the Study Area.

The Aboriginal community was consulted regarding the heritage management of the proposed Project throughout its lifespan. Consultation has been undertaken in accordance with the process outlined in the Department of Environment, Climate Change, and Water (DECCW) document, *Aboriginal cultural heritage consultation requirements for proponents 2010* (DECCW 2010a) (consultation requirements). The survey was conducted on 17 May 2018. The overall effectiveness of the survey for examining the ground for Aboriginal sites was deemed low. This was attributed to vegetation cover restricting ground surface visibility (GSV) combined with a low amount of exposures. No previously unrecorded Aboriginal cultural heritage sites were identified during the field survey. No areas of (archaeological) sensitivity were identified. The proposed Project will therefore not impact on Aboriginal cultural heritage values.

Strategies have been developed based on the archaeological (significance) of cultural heritage relevant to the Study Area. The strategies also take into consideration:

- predicted impacts to Aboriginal cultural heritage;
- the planning approvals framework; and
- current best conservation practice, widely considered to include:
 - ethos of the Australia International Council on Monuments and Sites (ICOMOS) Burra Charter; and
 - the *Code of Practice for Archaeological Investigation of Aboriginal Objects in NSW* (DECCW 2010) (the code).

The recommendations that resulted from the consultation process are provided below.

Management recommendations

Prior to any development impacts occurring within the Study Area, the following is recommended:

Recommendation 1: Discovery of Unanticipated Aboriginal Objects

All Aboriginal objects and places are protected under the *National Parks and Wildlife Act 1974* (NPW Act). It is an offence to knowingly disturb an Aboriginal site without a consent permit issued by the Office of Environment and Heritage (OEH). Should any Aboriginal objects be encountered during works associated with this proposal, works must cease in the vicinity and the find should not be moved until assessed by a qualified archaeologist. If the find is determined to be an Aboriginal object the archaeologist will provide further recommendations. These may include notifying the OEH and Aboriginal stakeholders.

Recommendation 2: Discovery of Aboriginal Ancestral Remains

Aboriginal ancestral remains may be found in a variety of landscapes in NSW, including middens and sandy or soft sedimentary soils. If any suspected human remains are discovered during any activity you must:

1. Immediately cease all work at that location and not further move or disturb the remains
2. Notify the NSW Police and OEH's Environmental Line on 131 555 as soon as practicable and provide details of the remains and their location
3. Not recommence work at that location unless authorised in writing by OEH.

Recommendation 3: Continued consultation with the registered Aboriginal stakeholders

In accordance with the consultation requirements (DECCW 2010), it is recommended that the Applicant provides a copy of this report to the Registered Aboriginal Parties (RAPs) and considers all comments received. The Applicant should continue to inform these groups about the management of Aboriginal cultural heritage sites within the Study Area throughout the life of the Project.

Recommendation 4: Lodgement of Final Report

A copy of the final report will be sent to:

- the three RAPs; and
- the AHIMS database.

1. INTRODUCTION

1.1 PROJECT BACKGROUND

Biosis Pty Ltd was commissioned by RW Corkery & Co. Pty Ltd on behalf of Wedgerock Pty Ltd (the Applicant) to undertake an Aboriginal cultural heritage assessment and archaeological report for the proposed Karuah South Quarry, a hard rock Quarry located on the southern part of Lot 11 DP 1024564, Karuah, NSW (**Figure 1**). The proposed Project involves the extraction and processing of hard rock resources and is classified as a State Significant Development under Schedule 1 of the *State Environmental Planning Policy (State and Regional Development) 2011* (State and Regional Development SEPP). This archaeological report has been prepared to support an *Environmental Impact Statement* to address the relevant requirements documented in the Secretary's Environmental Assessment Requirements (SEARs).

This investigation has been carried out under Part 6 of the NPW Act and for the proposed Project undertaken in accordance with the code (DECCW 2010b). The code has been developed to support the process of investigating and assessing Aboriginal cultural heritage by specifying the minimum standards for archaeological investigation undertaken in NSW under the NPW Act. The archaeological investigation must be undertaken in accordance with the requirements of the code.

The *Environmental Planning and Assessment Act 1979* (EP&A Act) includes provisions for local government authorities to consider environmental impacts in land use planning and decision making. Each Local Government Area (LGA) is required to create and maintain an LEP that includes Aboriginal and historical heritage items. Local Councils record items that are of significance within their LGA, and these items are listed on heritage schedules in the local LEP and are protected under the EP&A Act and *Heritage Act 1977*.

1.2 STUDY AREA

The Study Area (the Site) is located approximately 4 kilometres northeast of the town of Karuah and approximately 40 kilometres north of the Newcastle CBD (**Figure 1**). It encompasses approximately 18 hectares of private land adjacent to the Pacific Highway. An existing Quarry (the Karuah Quarry) occupies the northern part of Lot 11 DP 1024564.

The Study Area is within the:

- Mid-Coast LGA;
- Parish of Gloucester; and
- County of Tarean.

Figure 2 shows the Study Area is located immediately south of the Karuah Quarry and southwest of Karuah East Quarry, both operated by Hunter Quarries Pty Ltd. It is bounded in the south by the Pacific Highway, in the west by Lot 12 DP 1024654, which is owned by Hunter Quarries Pty Ltd.

The northern part of the Site covers the southern part of the Karuah Quarry which is fully disturbed and not required to be included in the Study Area.

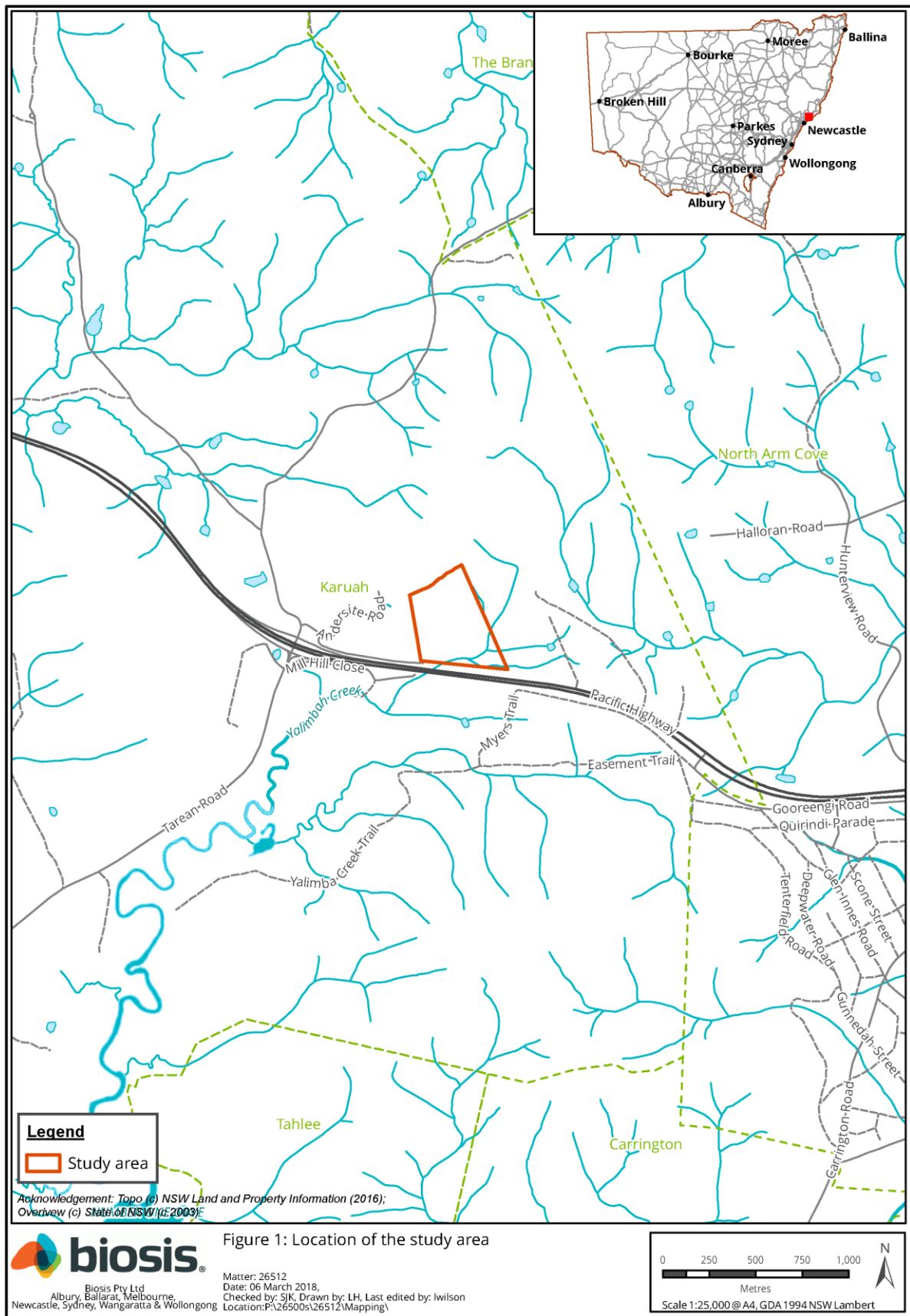
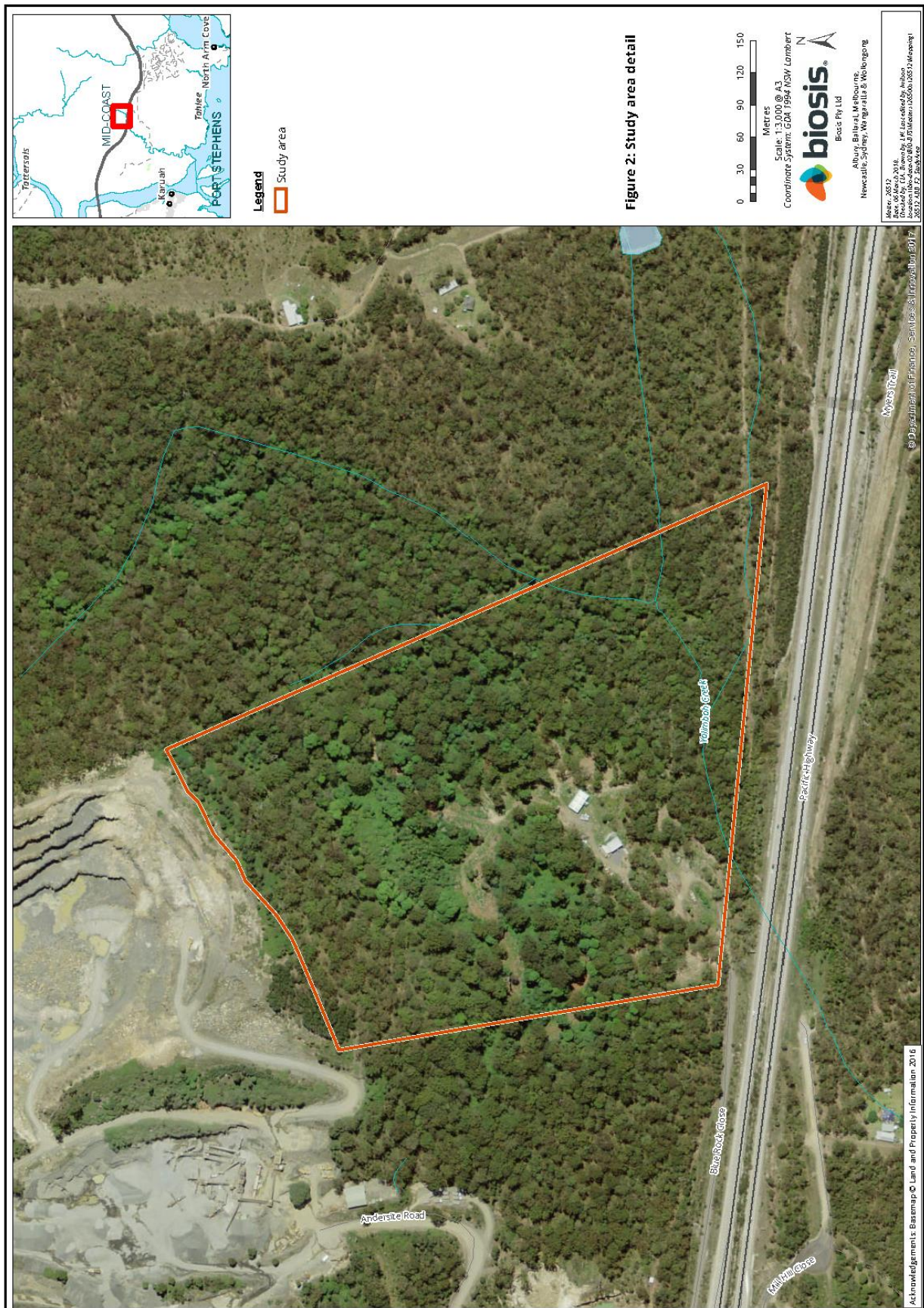


Figure 1 Location of the Study Area



1.3 PLANNING APPROVALS

The proposed development will be assessed against Part 4 (Division 4.7) of the EP&A Act. Other relevant legislation and planning instruments that will inform this assessment include:

- Commonwealth *Environment Protection and Biodiversity Conservation Act 1999*
- NPW Act
- *NSW National Parks and Wildlife Amendment Act 2010*
- Infrastructure SEPP 2007
- Great Lakes Local Environmental Plan 2014 (LEP).

1.4 OBJECTIVES OF THE INVESTIGATION

The objectives of the investigation can be summarised as follows.

- To identify and consult with any registered Aboriginal stakeholders and the Karuah Local Aboriginal Land Council (LALC).
- To conduct additional background research in order to recognise any identifiable trends in site distribution and location.
- To search statutory and non-statutory registers and planning instruments to identify listed Aboriginal cultural heritage sites within or surrounding the Study Area.
- To highlight environmental information considered relevant to past Aboriginal occupation of the locality and associated land use and the identification and integrity/preservation of Aboriginal sites.
- To summarise past Aboriginal occupation in the locality of the Study Area using ethnohistory and the archaeological record.
- To formulate a model to broadly predict the type and character of Aboriginal sites likely to exist throughout the Study Area, their location, frequency and integrity.
- To conduct a field survey of the Study Area to locate unrecorded or previously recorded Aboriginal sites and to further assess the archaeological potential of the Study Area.
- To assess the significance of any known Aboriginal sites in consultation with the Aboriginal community.
- To identify the impacts of the proposed development on any known or potential Aboriginal sites within the Study Area.
- To recommend strategies for the management of Aboriginal cultural heritage within the context of the proposed Project.

1.5 INVESTIGATORS AND CONTRIBUTORS

The roles, previous experience and qualifications of the Biosis Project team involved in the preparation of this archaeological report are described below in **Table 1**.

Table 1
Investigators and Contributors

Page 1 of 3

Name and Qualifications	Experience Summary	Project Role
<p>Amanda Atkinson BA (Hons) , GDip</p>	<p>Amanda has ten years' archaeological consulting experience across south-eastern and western Australia. She is experienced in all aspects of heritage consulting with specialisation in Aboriginal archaeology. Amanda has extensive experience in the successful completion of Aboriginal and historical assessments, archaeological surveys, excavations, permits and management plans. She is accomplished in obtaining approvals under the NPW Act.</p> <p>Amanda has primarily undertaken projects in south-eastern Australia and the Pilbara region of Western Australia and has a detailed understanding of heritage values within the Sydney Basin, Cumberland Plain and Hunter Valley. Amanda specialises in the archaeology of central and far western NSW, with particular research interests in riverine and lacustrine environments. Amanda specialises in water infrastructure and linear projects having undertaken heritage assessment for many of the major water infrastructure projects in NSW.</p> <p>She has operated as the heritage consultant within large multidisciplinary teams tasked with delivering Environmental Impact Statements (EIS) under the EP&A Act,</p> <p>Amanda is a diligent and highly experienced heritage consultant with extensive experience in Project management. She is easily able to develop excellent working relationships with Project stakeholders and manage and negotiate the relationship between Aboriginal stakeholders, government regulators and clients.</p>	<ul style="list-style-type: none"> • Lead cultural heritage advisor • Quality control

Table 1 (Cont'd)
Investigators and Contributors

Page 2 of 3

Name and Qualifications	Experience Summary	Project Role
<p>Dr Amanda Markham BA Hons, PhD (Anthropology), Grad. Cert (Archaeology)</p>	<p>Amanda Markham has over 20 years' experience in Anthropology and Archaeology throughout Australia, including extensively in remote outback Australia. Her Project experience includes working for Aboriginal representative bodies, mining and exploration companies, Commonwealth, state and territory government agencies, community groups and Indigenous stakeholder groups. Over her career Amanda has developed a deep understanding of Aboriginal people and culture and has extensive experience providing advice on Aboriginal cultural heritage management. Amanda's particular areas of expertise include cultural heritage management field work in remote areas with Aboriginal Traditional Owners, conducting heritage assessments under state and territory legislation, skeletal remains assessment and conducting archaeological and anthropological surveys and assessments. Amanda has proven staff and Project management skills and ability to simultaneously oversee multiple large complex projects to deliver client outcomes within tight time frames and budget constraints. Amanda's excellent communication and negotiation skills have seen her easily managing and building relationships between Aboriginal people and senior government and corporate figures.</p>	<ul style="list-style-type: none"> • Project management • Report writing
<p>Taryn Gooley BA/Sci (Hons) Archaeology</p>	<p>Taryn is a consultant archaeologist with seven years' experience across south eastern NSW and Western Australia. Taryn has a particular interest in Aboriginal archaeology of North Western NSW, and the Hunter Valley and Newcastle regions. Taryn has experience in the successful completion of Aboriginal Cultural Heritage assessments, archaeological surveys, test excavations, and salvage excavations, as well as Aboriginal community consultation. She is also accomplished in obtaining approvals under the NPW Act and Heritage Act 1977.</p>	<ul style="list-style-type: none"> • Field investigations

Table 1 (Cont'd)
Investigators and Contributors

Page 3 of 3

Name and Qualifications	Experience Summary	Project Role
<p>Ashleigh Keevers-Eastman</p> <p>BA (Hons) Ancient History and Classical Languages</p>	<p>Ashleigh has recently joined Biosis at the Newcastle Office as a Research Assistant. She completed her Honours in Ancient History and Classical Languages in 2016, having written a comparative study on the Imperial models for civic patronage during the Age of Augustus within Rome and Pompeii. Ashleigh possesses experience in desktop research as a Volunteer Research Assistant for the Cultural Collections at the University of Newcastle. Her research with the Cultural collections involved the location and transcription of Aboriginal sites in the NSW region. Ashleigh has also undertaken field work in Gotland, Sweden, as a volunteer. She excavated a site known as Paviken III to obtain evidence that would support or oppose the presence of Viking settlement and harbour side/trade activity within the area in relation to previous excavations carried out within the area (Paviken I, Paviken II). She is now looking forward to developing her professional career with Biosis with an interest in Aboriginal Cultural Heritage and Archaeology.</p>	<ul style="list-style-type: none"> • Project management support • Background research

2. PROPOSED DEVELOPMENT

Figure 3 displays the following principal components of the Project that would be located on the Site.

- Extraction Area - Stage 1

The Stage 1 extraction area would cover approximately 4.9ha with its footprint typically between approximately 30m AHD and 75m AHD (to a floor with an elevation of 8m AHD).

- Extraction Area - Stage 2

The Stage 2 extraction area would cover approximately 5.9ha with its footprint typically between 75m AHD and 120m AHD (to a sloping floor from an elevation of 8m to 12m AHD).

- Quarry Infrastructure Area

The Quarry infrastructure area would be located on the southern side of the extraction area and would incorporate the product stockpiling area, ancillary components area and mobile processing plant.

- Product Stockpiling Area

The product stockpiling area would be located on the northern section of the Quarry infrastructure area during Stage 1. This area would be expanded to cover northern, southern and western portions of the Quarry infrastructure area during Stage 2.

- Mobile Processing Plant

The mobile processing plant would incorporate a range of crushers and screens and would be located on the western section of the Quarry infrastructure area during Stage 1. During Stage 2, the mobile processing plant would be relocated to the eastern section of the Quarry infrastructure area to minimise product haulage distances.

- Internal Roads

A network of roads to provide access for off-road haul trucks between the extraction and processing area.

- Quarry Access Road

The inclined, sealed section of road extending from the Quarry entrance to the southern side of the Quarry infrastructure area.

- Sediment Basins

Two sediment basins (Western and Southern), each with a with pre-treatment pond, would be constructed to collect sediment laden runoff from the disturbed sections of the Quarry.

- Diversion Drains

Two clean water diversion (CWD) drains (CWD East and CWD West) would be constructed to direct runoff from undisturbed areas upslope of the extraction area.

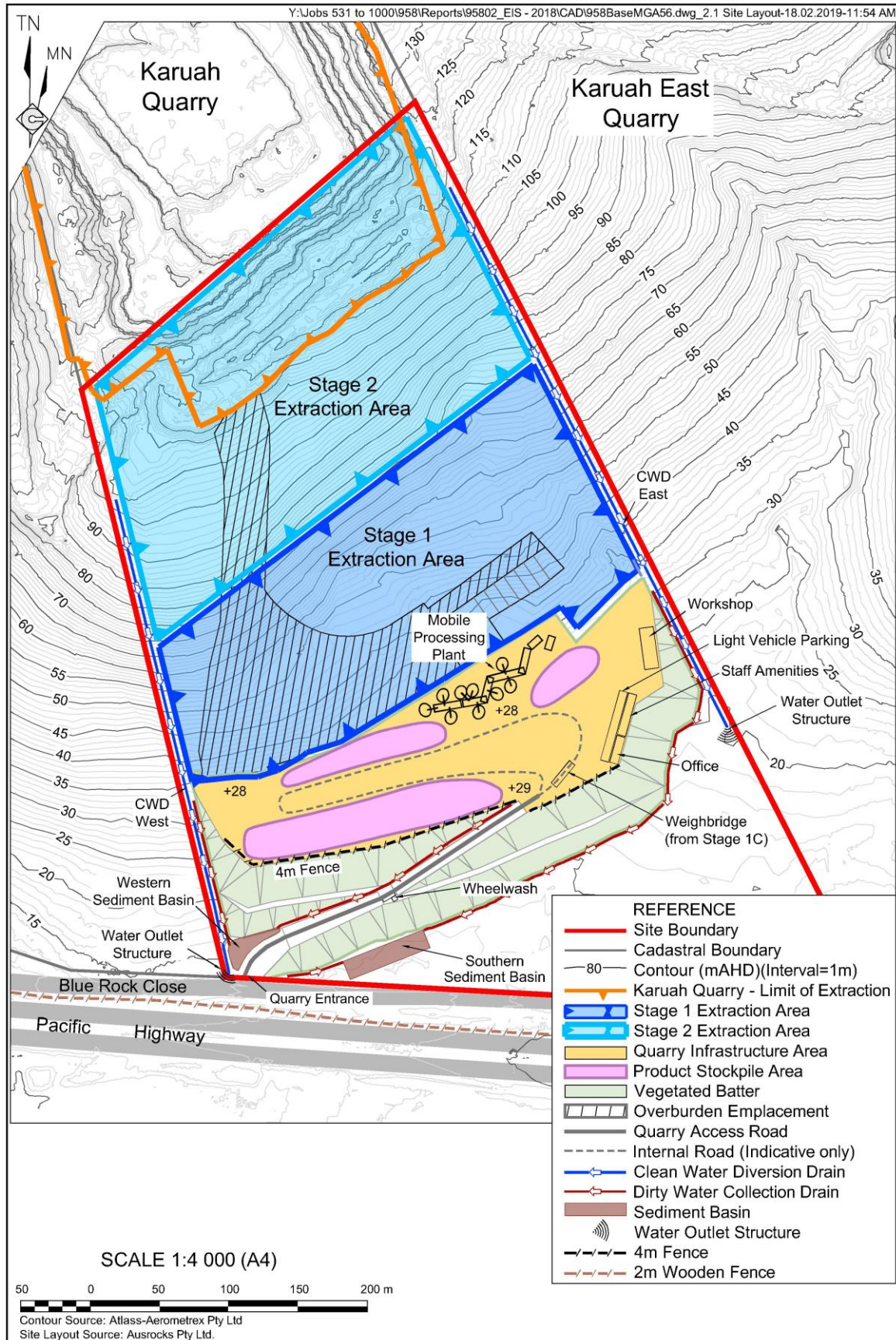


Figure 3 Indicative Site Layout

Quarry products would be despatched by road using the existing road network with access to the Site via a new entrance to Lot 11 DP 1024564 from Blue Rock Close. The location of the Quarry entrance would be close to the existing entrance to the property and would be constructed to accommodate quad-dog trailers and semi-trailers.

The overall footprint of the operation would be kept as small as possible during all stages of operation, with vegetation and soil removed immediately prior to the progressive extension of operations. Progressive rehabilitation would be undertaken as soon as practicable following disturbance.

3. DESKTOP ASSESSMENT

3.1 INTRODUCTION

The desktop assessment involves researching and reviewing existing archaeological studies and reports relevant to the Study Area and surrounding region. This information is combined to develop an Aboriginal site prediction model for the Study Area, and to identify known Aboriginal sites and/or places recorded in the Study Area. This Desktop Assessment has been prepared in accordance with requirements 1 to 4 of the *Code of practice for the archaeological investigation of Aboriginal objects in NSW* (DECCW 2010b).

3.2 LANDSCAPE CONTEXT

It is important to consider the local environment of the Study Area any heritage assessment. The local environmental characteristics can influence human occupation and associated land use and consequently the distribution and character of cultural material. Environmental characteristics and geomorphological processes can affect the preservation of cultural heritage materials to varying degrees or even destroy them completely. Lastly landscape features can contribute to the cultural significance that places can have for people.

3.2.1 Topography, Geology and Hydrology

The Study Area is located within the southern portion of the New England Fold belt within the Nerong Volcanics (**Figure 4**). The Nerong Volcanics consists of carboniferous siliceous flows of rhyolitic and dacitic ignimbrites, with occasional interbeds of tuffaceous sandstone and conglomerate (RW Corkery 2017). The formation extends across the wider local area, and originates from a volcanic ignimbrite eruption in the Carboniferous Period (approximately 359 Ma) (Geological Survey of NSW, 2014). The geology described above suggests the potential for Aboriginal cultural heritage materials such as stone tools manufactured from the harder ignimbrites and rhyolite raw material resources to be present within the Study Area.

Topographically, the Study Area is located on a steep south-south-eastern slope of a hill typical of the Gan Gan landscape. The Study Area slopes steeply from north to south, with an area of lesser slope adjacent to a minor drainage line (Yalimbah Creek) in the southernmost part of the lot. The steep inclination combined with the high relief of the area would put the Study Area in a system of sharply undulating rises to undulating hills (Speight 2009, p. 47). Common landform elements within these systems include maximal upper slopes, waning lower slopes and open depressions.

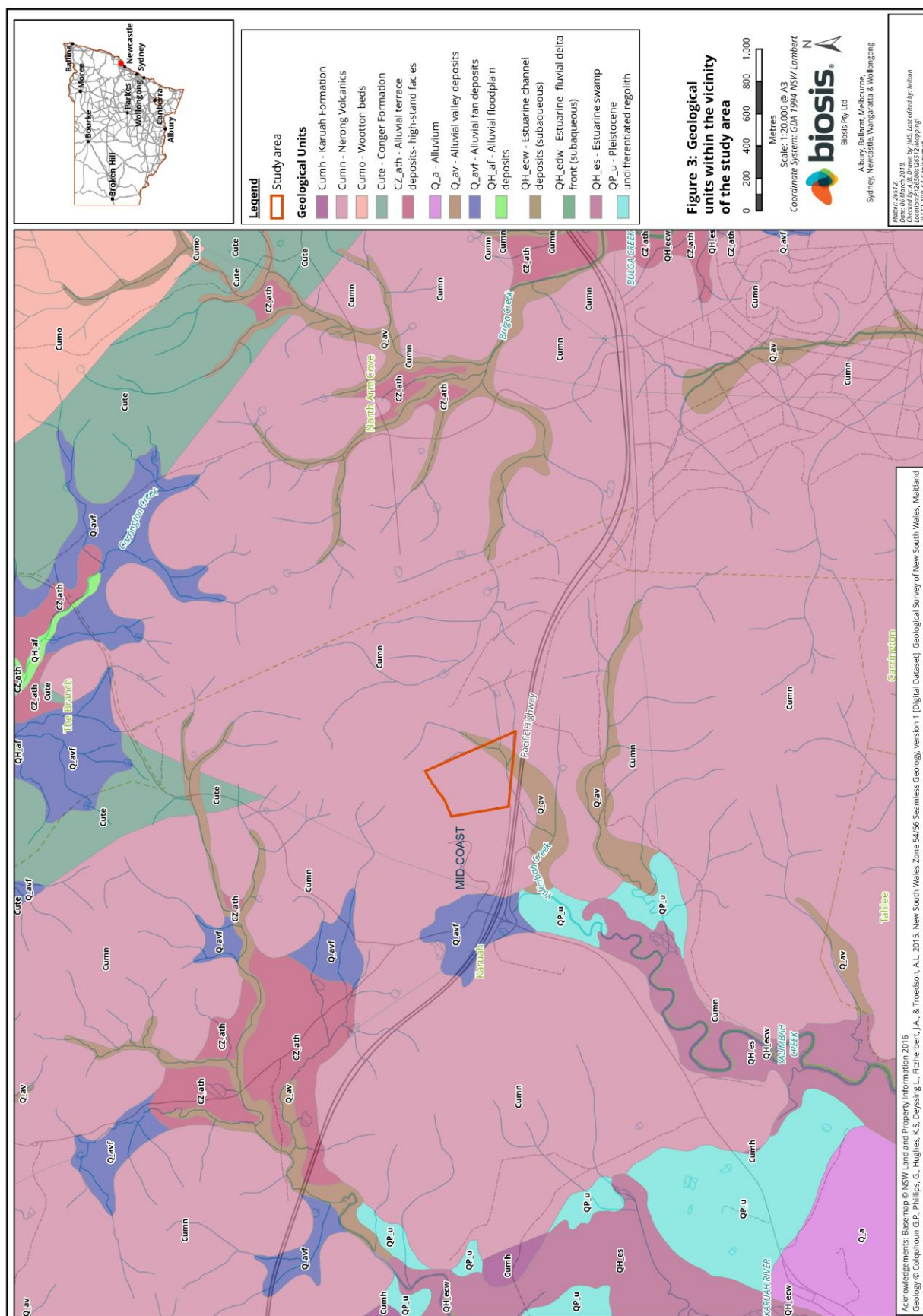


Figure 4 Geological Units within the Vicinity of the Study Area

Stream order is recognised as a factor which assists the development of predictive modelling in Aboriginal archaeology, and has seen extensive use throughout south eastern NSW, most notably by Jo McDonald Cultural Heritage Management in the Sydney Basin (JMCHM 2000, 2005a, 2005b, 2006). Predictive models which have been developed for the Port Stephens region have a tendency to favour higher order streams as having a high potential for campsites as these types of streams would have been more likely to provide a stable source of water and by extension, other resources which would have been used by Aboriginal groups.

The stream order system used for this assessment was originally developed by Strahler in 1952 (1964). It functions by adding two streams of equal order at their confluence to form a higher order stream, as shown in **Plate 1**. As stream order increases, so does the likelihood that the stream would be a perennial source of water.

The southern border of the Study Area is located immediately adjacent to and partially inclusive of head waters of Yalimbah Creek. Within the Study Area, Yalimbah Creek comprises an ephemeral, second order stream, fed by a series of first order drainage channels. Whilst this section of Yalimbah Creek may have provided fresh water during times of higher rainfall, during the current survey it was dry, narrow and overgrown with vegetation.

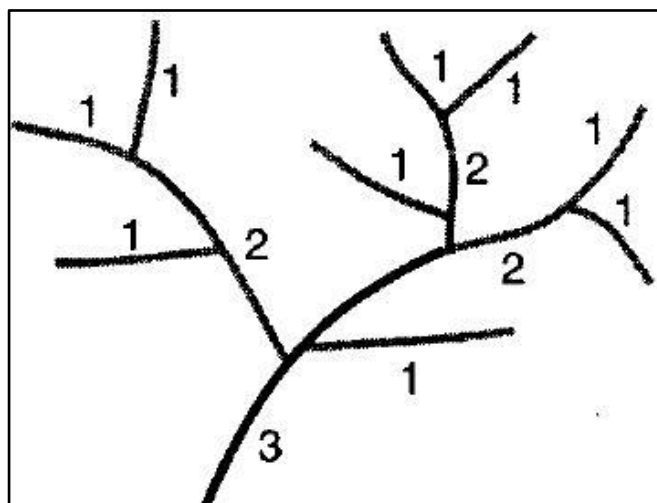


Plate 1 Diagram showing Strahler Stream Order
(Ritter et al 1995, p. 151)

3.2.2 Soil Landscapes

Soil landscapes have distinct morphological and topographic characteristics that result in specific archaeological potential. Because they are defined by a combination of soils, topography, vegetation and weathering conditions, soil landscapes are essentially terrain units that provide a useful way to summarise archaeological potential and exposure. The Study Area is divided between the Gan Gan and Gan Gan variant, A soil landscape which spans most of the Study Area, with a small section of the Nungra soil landscape in the lots southern part (**Figure 4**).

The Gan Gan soil landscape is characterised by very steep, conical hills, with gradients >25%, uneven slopes and reliefs of between 100 to 200 metres. Hill crests are typically peaked, with occasional rocky, narrow precipices, cliffs, scarps and rocky outcrops. Drainage lines are often deeply incised and narrow, forming a radial pattern around volcanic peaks (Matthei, 1995). The soil characteristics are described in **Table 2** and represented in **Figure 5**.



Table 2
Gan Gan Soil Landscape Characteristics

Soil material	Description
gg1 —Stony brownish black weakly pedal sandy loam	This is a stony brownish-black weakly pedal sandy loam with weakly pedal, subangular blocky (10–20 mm) structure and rough-faced porous ped fabric. This material occurs as topsoil (A ₁ horizon). Soil colour is brownish black (10YR 2/2, 10YR 3/2) to greyish yellow brown (10YR 4/2). Gravel- to boulder-sized substrate rock fragments are abundant. Roots are common.
gg2—Bleached stony hardsetting light sandy clay loam	This is a bleached, stony, hardsetting sandy clay loam. It occurs as an A ₂ horizon. The texture is light sandy clay loam to sandy clay loam, occasionally increasing to a sandy clay with depth, with a massive to weakly pedal, 20–50 mm sub-angular blocky. Soil colour is greyish yellow brown (10YR 5/1, 10YR 5/2, 10YR 6/2) moist, bleached light grey (10YR 8/1, 10YR 7/1) to dull yellow orange (10YR 7/2) dry. Few faint orange mottles occasionally present. Gravel- to boulder-sized substrate rock fragments are abundant. Roots are rare.
gg3—Whole coloured well-structured light clay	This is a light clay, occasionally sandy clay loam with strong prismatic, 50–100 mm peds breaking down to 20–50 mm angular blocky and smooth-faced dense ped fabric. This material usually occurs as subsoil (B horizon). Colours include orange (7.5YR 6/8), yellowish brown (10YR 6/8) and dull yellowish brown (10YR 5/3). Angular substrate rock fragments are occasionally encountered, along with fine to coarse roots.
Source: Murphy 1995, pp. 52-54	

The Nungra soil landscape is characterised by long, smooth, gently inclined footslopes with elevations of up to 40 metres, gradients less than 3% and a relief of less than 10 metres. Footslopes may be quite long (up to 2000 metres) with wide, ill-defined drainage lines with empty into broader drainage plains (Murphy, 1995) (**Table 3**).

3.2.3 Landscape Resources

The Karuah area was a part of Worimi Country and would have generally provided a number of resources used by Aboriginal inhabitants. Sokoloffnov (1977) notes that the exploitation of land resources by the Worimi would have been directly relatable to the seasonal availability and relative abundance of certain food sources. Terrestrial resources would have been utilised in the winter months by Worimi tribes, whilst coastal resources would have been more readily available in the warmer seasons.

Though the Gan Gan soil landscape contains generally poor soils, it supports a range of flora species within an uncleared, low open-forest and shrub understorey. Common tree species can include *Angophora costata* (Smooth-barked Apple), *Eucalyptus punctata* (Grey Gum), *E. acmenoides* (White Mahogany), *E. signata* (Scribbly Gum), *E. gummifera* (Red Bloodwood), *Allocasuarina torulosa* (Forest Oak), *E. microcorys* (Tallowwood), *E. maculata* (Spotted Gum) and *E. paniculata* (Grey Ironbark). The shrub understorey commonly contains contain *Banksia spinulosa* var. *collina* (Hill Banksia), *Lambertia Jormosa* (Mountain Devil), *Xanthorrhoea* spp.

(Black Boy), *Doryanthes excelsa* (Gynea Lily), *Dillwynia* spp. (Eggs and Bacon), *Persoonia* spp. (Geebung), *Pteridium esculentum* (Bracken), and *Hakea* spp. *Themeda australis* (Kangaroo grass) may occur as a herb layer (Murphy, 1995).

Table 3
Nungra Soil Landscape Characteristics

Soil material	Description
ng1 —Greyish yellow brown weakly pedal silty loam	This is a weak to moderately pedal silty loam to clay loam, with a 5-20mm subangular blocky weak to moderate structure, with rough-faced, porous peds. This material occurs as topsoil (A ₁ horizon). The colour is greyish yellow brown (10YR 4/2) or brownish black (10YR 3/2). Fine, gravel sized charcoal fragments are sometimes present, with fine roots being common throughout.
ng2—Bleached hardsetting silty clay loam	This is a silty clay to rarely sandy clay loam, hardsetting when exposed with a massive structure. It occurs as a subsoil (A ₂ horizon). This material is water repellent when extremely dry. Soil colour is brownish grey (10YR 4/1, 10YR 5/1, 10YR 6/1) or greyish yellow brown (10YR 4/2, 10YR 5/2) moist, light grey (10YR 7/1) or dull yellow orange (10YR 7/2) dry, orange mottles common along root traces. Fine, gravel sized charcoal fragments are sometimes present, with fine roots being common throughout.
ng2—Greyish yellow brown mottled silty clay	This is typically silty clay, occasionally light medium or medium clay. The structure is described as massive to weakly pedal, 50–200mm prismatic breaking down to 10–50mm angular blocky, occasionally moderate to strong structure present on medium clay textures. It occurs as subsoil, B horizon. Soil colour is commonly greyish yellow brown (10YR 5/2, 10YR 4/2) but ranges from brownish grey (10YR 5/1) to light grey (10YR 7/1), distinct orange mottles common. Fine, gravel sized charcoal fragments are sometimes present, with fine roots being common throughout.
Source: Murphy 1995, pp.92-94	

The Nungra soil landscape contains many similar tree species to the Gan Gan soil landscape, however along drainage lines and in poorly drained areas, *Melaleuca* spp (Paperbark) dominate, whilst on lower portions of drainage flats, *Casuarina glauca* (Swamp Oak) is common.

Aboriginal people used plant resources in a variety of ways. Fibres were twisted into string, which was used for many purposes, including the weaving of nets, baskets and fishing lines. String was also used for personal adornment. Bark was used in the provision of shelter; a large sheet of bark being propped against a stick to form a gunyah (Attenbrow 2002). Robert Dawson, an agent of the Australian Agricultural company in 1825, notes the *Xanthorrhoea* (grass tree) was used for a variety of purposes. The stalks of the grass tree were used in the manufacturing of spears, and a wax-like gum could be extracted from the grass tree and used as a glue for various implements. When flowering the grass tree also acted as a sweet food source (Dawson in Haslam 1984). The grass tree was also used in the making of fire sticks. Fire sticks were an important tool that would be carried from place to place and used in daily life and sacred ceremonies (Scott in Haslam 1984). Sokoloffnov notes that the 'firing' of vegetation at periodic intervals, also allowed the Worimi to influence the environment and available resources.

Various types of eucalypts were used by Aboriginal people and were a valuable resource. Stringybark in particular, was used in the construction of canoes by the Worimi. A single sheet of its bark would form the hull of a single canoe according to Scott (in Haslam 1984). The bark from eucalypts could also be used in the construction of shelters (*gunyers*), and in the fashioning other objects used in everyday life. The fragrant oil-bearing leaves were further used for medicinal purposes, whilst the seeds, barks, nectar, galls, sap, water and manna of certain species could be eaten (Percival & Stewart 1997).

Kangaroo, wallaby, possum, flying fox, koala, kangaroo-rat and the echidna were also abundant traditional terrestrial food sources for the Worimi and would have been valuable sources of fat and protein during the colder months. As well as being important food sources, animal products were also used for tool making and fashioning a myriad of utilitarian and ceremonial items. For example, tail sinews are known to have been used to make fastening cord, while 'bone points', which would have functioned as awls or piercers, are often an abundant part of the archaeological record (Attenbrow 2002).

3.2.4 Land Use History

Recorded European land use in the Karuah area dates from 1816 onwards, with a timber cutting and logging industry established in the area. In 1824, the Australian Agricultural Company was granted a half million acres, with extensive land clearing taking place in some areas of the grant. The only recorded land use of the area is selective logging, the clearing of logging trails and the building of several sheds and associated structures noted during the site inspection undertaken by Biosis staff in May 2018 for the current report. A historic aerial of the Study Area from 1954 (**Plate 2**) shows the Study Area and surrounding land covered in dense vegetation. No buildings are present within the Study Area, although a small Quarry or borrow pit is located just outside the south-western boundary of the Study Area. The Pacific Highway is visible to the direct south beyond its current alignment.

By 1993 (see **Plate 3**) the Study Area appears to have been fenced along the eastern boundary, and a small clearing made where the current shed structures are located. Some areas of selective logging appear to have taken place on the steeper slopes above the cleared area. A Quarry is visible to the west of the Study Area, whilst the Pacific Highway is again located to the south.

In 2002, a hard rock Quarry was established on the northern part of Lot 11 DP 1024564, and on sections of Lot 21 DP 1024564, adjoining to the west. With the exception of the construction of several rural sheds and logging trails, no other developments have occurred within the Study Area.



Plate 2 1954 Aerial Photograph showing Approximate Location of the Study Area, Highlighted in Orange
(Source: NSW LPI 2018)



Plate 3 1993 Aerial Photograph showing Approximate Location of Study Area (indicative only) (Source: NSW LPI 2018)

4. ABORIGINAL CONTEXT

4.1 ETHNOHISTORY

Aboriginal people have occupied the Hunter Valley for at least 20,000 years according to Koetigg (1987). Karuah is part of the Port Stephens area, located within lands traditionally inhabited by the Worimi people. Worimi territory extended from north of the Hunter River to Forster near Cape Hawke, along the coastline, encompassing Port Stephens and stretching inland close to Gresford, and as far south as Maitland (Tindale 1974).

The Worimi were considered to be hunter-gatherers and Sokoloffnov (1977) argues that the territories of the Worimi were established to include a variety of habitats rich in raw materials and food resources. Trade, intermarriage, and the sharing of ceremonial places were central to the Worimi nation's interaction with neighbouring tribal groups, such as the Awabakal, Kamilaroi, Gringai, Wanaruah, and other tribes of the region. Little is known about the size of the population of the Worimi tribe within Port Stephens before white settlement, however it is agreed that numbers declined rapidly after contact (Pam Dean- Jones 1990). Sources from the early 1800s to the 1840s vary in their estimates, from 120 at a single campsite (Ebsworth 1826), to 500 Worimi individuals within the Port Stephens Area in 1837. Threkeld even reports that by 1839, the population of the Awabakal People around the Lake Macquarie area, to the south of Worimi territory had declined to as low as 20 (in Pam Dean- Jones 1990). Exposure to diseases brought by white settlers, the destruction of food resources, and instances of hostile relations between white settlers/Europeans and the Worimi people would have contributed significantly to this decline.

The earliest account of contact between Europeans and the Worimi is recorded by David Collins. It was reported that five convicts who had escaped from Parramatta in 1790 were shipwrecked at Port Stephens. The convicts lived among the Worimi for 5 years until they were recaptured (Bramble 1981). Following this, a small garrison of soldiers was established in the 1820's at a place now known as Soldiers Point to aid in the recapture of convicts who had escaped from Port Macquarie.

According to Bramble, relations between escaped convicts and local tribes were good natured, and signified the introduction of products of European civilisation. Colonel Paterson upon exploring the Hunter region in 1801 commented upon the possible use of European axes by Aboriginal tribes, and perhaps convicts who lived among them, to cut down trees (in Bramble 1981). This introduction to European resources would have led to the establishment of more fruitful relations between the Aboriginal people of the Hunter region and European penal authorities, in aiding in the recapture of escaped convicts.

Hostile relations between Europeans and the Worimi tribes of Port Stephens seemed to have originated from early interactions with timber-getters exploiting good quality cedar along the coastal regions of NSW. Accounts of hostilities between timber-getters and the Aboriginal people in the region are recorded from as early as 1804. Dawson, having arrived in Newcastle in 1825 after free-settlement was made available in the Hunter region in 1820, comments upon the hostile relations which existed between European timber-getters and the Worimi Tribe of Port Stephens.

This consequently set a precursor to relations between Europeans or white settlers and local tribes within the Port Stephens Area:

'The timber-cutting parties... were the first people who came in contact with the natives in the neighbourhood of the sea; and as they were composed of convicts and other people not remarkable either for humanity or honesty, the communication was not at all to the advantage of the poor natives, or subsequently to the settlers who succeeded those parties. The consequence of the behaviour of the cedar getters was, that the natives inflicted vengeance upon almost every white man they came in contact with, and as convicts were frequently running away from the penal settlement of Port Macquarie to Port Stephens ...numbers of them were intercepted by the natives and sometimes detained whilst those who fell into their hands and escaped with life, were uniformly stripped of their clothes.' (Dawson 1831)

The non-Indigenous cultural heritage of this area is defined mostly by the Hunter Regions economic development in terms of pastoral, agriculture and mining industries. In 1804 a penal settlement had been established in Newcastle, and its primary source of industry was coal production. Natural coal deposits of the Newcastle and Tomago regions were exploited, disturbing Worimi and Awabakal territories.

4.2 PREVIOUS ARCHAEOLOGICAL WORK

A large number of cultural heritage surface (surveys) and sub-surface (excavations) investigations have been conducted throughout the Newcastle, Hunter and Port Stephens areas in the past 30 years. There has been an increasing focus on cultural heritage assessments in NSW due to ever increasing development, along with the legislative requirements for this work and greater cultural awareness of Aboriginal cultural heritage. The majority of Aboriginal sites in the broader Hunter region (inclusive of the current Study Area) date to the last 5,000 years when the sea-level stabilised following the end of the last Ice Age (Bonhomme, 1999). Prior to this, sea levels were lower and the coast was located about 14 kilometres to the east of its current position. Coastal sites older than 6,000 years are rare, as most are likely to have been inundated by the rising sea.

4.2.1 Regional Context

A number of Aboriginal cultural heritage investigations have been conducted for the Hunter and Port Stephens area. Models for predicting the location and type of Aboriginal sites with a general applicability to the Port Stephens area and thus relevant to the Study Area have also been formulated, some as a part of these investigations and others from cultural heritage investigations for relatively large developments, such as fibre optic cables and electricity transmission lines.

Pam Dean Jones (1990) undertook an extensive and systematic survey of the Newcastle Bight, an area highly regarded for its archaeological significance and potential. The Newcastle Bight lies within the Port Stephens LGA (aside from its far southern end at Stockton) and is located 25 kilometres south of the Study Area. The purpose of the study was to establish a representative sample of the region's cultural heritage, in order to ensure that sufficient constraints to developments within the area could be identified. Seventy Aboriginal sites had previously been identified within the Newcastle Bight area. The results of the survey doubled the number of known sites within the Newcastle Bight area, and clarified the distribution of Aboriginal sites within the coastal landscape. Sites of Aboriginal occupation comprised of shell middens and

stone artefact scatters. A total of 110 artefact scatters were recorded and an additional 40-50 middens were also noted. Areas of greatest archaeological sensitivity within the Central Lowlands of the Hunter Valley were considered to be within the vicinity of creek flats, the banks of large rivers and creeks, and within alluvial terraces. Minor watercourses were also considered to be areas of archaeological potential. Within the Coastal Margin and Plain landscape, middens were considered to be the most common site type along the coast and estuarine margins. Open campsites were most likely to occur on level, well drained grounds, adjacent to fresh water sources, or on relatively level ground upon crests and ridgelines. Scarred trees were contained within remnant forests, and burials were generally found in areas characterised by deep profiles of soft sediments and Aeolian sand and Alluvium, or within midden sites.

Navin & Officer (1994) were contracted by Sinclair Knight and Partners to provide a preliminary cultural heritage assessment on behalf of Optus, for the proposed cable route to be installed from Sydney to Newcastle, and onwards to Orange, 41 kilometres south of the Study Area. The purpose of the assessment was to provide a predictive model for site locations within the Study Area that would influence the cable route. Within the report the archaeological sensitivity of five landforms (Sandstone Ranges of the Sydney Basin, Central Lowlands of the Hunter Valley, Cumberland Plain, the Coastal Margin and Plain, Western Rangelands) were assessed, and a predicted site location criteria was provided for each landform.

Australian Museum Business Services (AMBS) (2005) conducted an Aboriginal Heritage Study for the Newcastle LGA, in order to provide a greater understanding of the Aboriginal Heritage of the Newcastle Area (approximately 42 kilometres south of the Study Area), and to develop a framework for the strategic conservation and management of local Aboriginal Cultural Heritage. A desktop assessment revealed that areas where a wide range of available subsistence resources or stone materials occurred, such as the Hunter Estuary Delta, Hexham Swamp, Stockton Bight, and Black Hill Spur were found to be key locations in relation to the Aboriginal occupation of the area. A landscape model of the archaeological sensitivity of the Newcastle area also indicated that the density of archaeological sites varies between different landscape contexts, with sites more frequently identified in association with wetlands and watercourses.

Umwelt (2009) were contracted by Mackas Sand Pty Ltd to prepare an Environmental Assessment of the sand extraction operations from Lot 218 (DP1044608) and Lot 220 (DP1049608) including an assessment of the Aboriginal cultural significance of the area. This site is located just outside of Newcastle, 25 kilometres south of the Study Area. An ACHA was included within the report. 160 sites had been previously identified within an area of 16 x 15 km surrounding and including the lots intended for future sand extraction. Of these 160 sites 113 were middens, 39 were isolated artefacts and artefact scatters, three were burial sites, two were culturally scarred trees, two were resource gathering sites, and one was a Potential Archaeological Deposit (PAD). Archaeological surveys were undertaken in July 2008. The survey identified one PAD (Mackas1) in Lot 218 which contained 5 stone artefacts and fish bone and shell fragments. Three middens were also identified within Lot 220. Two of the three middens from within Lot 220 had been previously recorded in an archaeological assessment carried out by Umwelt in 2004 (sites known as MFMS1 and MFMS2). It was noted that the sites consisting of fragmented shell material had become considerably sparser. The third site identified (MFMS3), was situated in the central portion of Lot 220 and was considered a PAD. It was concluded that MFMS3 would be impacted by the proposed operations. Mackas 1 was also considered to be at risk as the proposed sand extraction activity would disturb the stabilised soils present at the site, and therefore any archaeological material contained within. An Aboriginal Cultural Heritage Management Plan (ACHMP) was recommended for Lot 218 and 220, and screening operations were to be undertaken daily on Lot 220 from a sample of reject material.

Umwelt (2010) was commissioned by Ausgrid (previously known as EnergyAustralia) to undertake an archaeological survey a 20 metre corridor of the proposed route for an 11 kV feeder that extends approximately 3.5 kilometres along Medowie Road from Williamtown Royal Australian Air Force (RAAF) base. This site is located just outside of Newcastle, 23 kilometres south of the Study Area. Two sites were identified during the assessment. Site #38-4-1206 was identified during the survey effort, and site #38-4-0256 was a previously recorded site from 1990 that was not visible due to high levels of ground surface disturbance. It was concluded that low relief dunes with gently inclined slopes within close proximity to localised fresh water sources within swales and adjacent to swamp landforms were of high archaeological sensitivity. Five PADs were identified pertaining to this assessment of archaeological sensitivity were also recorded.

4.2.2 Local Context

A number of Aboriginal cultural heritage investigations have been conducted within the local area (within approximately 15 kilometres of the Study Area). Most of these investigations were undertaken as part of development applications and included surface and sub-surface investigations. These investigations are summarised below.

Smith (1988) undertook an Aboriginal and historic cultural heritage assessment of the Tomago to Karuah Section of the Tomago to Taree 132kV Transmission Line, 34 kilometres south west of the Study Area. A foot survey was conducted with three sites being recorded. No areas of PAD were noted. Smith created a predictive model that is applicable to the current Study Area, suggesting that:

- midden sites would be expected along major, estuarine creeks;
- open sites were likely on dry flat landforms, with their size decreasing with increased distance to fresh water sources;
- burials may occur in sand beds; and
- scarred (modified) trees and stone arrangements could occur anywhere within the Study Area unaffected by clearing and construction activities.

Davies (1993) carried out a large-scale assessment for ten proposed Inter Exchange Network Fibre Optic cable routes extending from Woy Woy to Wauchope. Route 6, comprising Medowie to the Pacific Highway, is located in the vicinity of the Study Area. Davies created a predictive model for the area which predicted the following site types were likely along the length of all 10 routes: artefact scatter (open sites), shell middens, axe grinding grooves, quarries, scarred trees, earthen circles (Bora rings), stone arrangements, rock engravings, burials, mythological (Dreaming) sites, and contact period sites. Following a foot survey, Davies identified no sites or areas of PAD within Route 6. Davies found that the results of the survey broadly supported the predictive model, concurring with Smith's (1988) assessment that levels of past disturbance impacted upon the presence of sites within the area.

ERM (2003) undertook an archaeological survey for the proposed upgrade of power lines from Tomago to Tomaree, 15 kilometres south east of the Study Area. The survey incorporated investigations of the Inner Pleistocene Barrier System, the Outer Holocene Barrier System and the interbarrier Depression. Nine new sites were recorded during the survey effort. Seven areas of potential archaeological potential were also identified within the Inner Pleistocene Barrier

System, and the Outer Holocene Barrier System. Four previously recorded sites were also located. Of these four sites, three were recorded as shell middens, and were reassessed by ERM to be natural shell deposits. The geographical location of sites indicated that Aboriginal occupation focused on the dune areas overlooking the Interbarrier Depression, which would have formerly been a lagoon. The Interbarrier Depression itself was assessed as having low archaeological potential. The proximity of freshwater sources was also an important factor in site location.

Biosis Pty Ltd (2011) conducted a Due Diligence Assessment for Ausgrid at two locations at Oyster Cove, Port Stephens, 12 kilometres south of the Study Area. The results of an AHIMS search within a 2 km by 2 km search area presented 10 previously recorded sites. Of the sites previously recorded, five were middens, four were artefact scatters, and one was an isolated find. Three of the 10 sites had been reported as destroyed prior to the study. A site inspection was carried out at the two locations proposed for signage to be installed. No Aboriginal objects or sites were identified within the proposed development areas.

RPS (2011) was commissioned by Karuah East Quarries Pty Ltd to undertake an AHCHA for a proposed hard rock Quarry on Lots 12 and 13 DP 1024564, directly to the east the current Study Area. The report examined the spatial distribution of Aboriginal cultural heritage sites in the local area, and agrees with other regional and local studies that the majority of sites in the vicinity of Karuah are located adjacent to major fresh water sources (i.e. the Karuah River) or resource gathering locations such as the Port Stephens shoreline. RPS undertook a foot survey in the company of Aboriginal RAPs, with no sites identified.

OzArk (2012) undertook a combined Aboriginal heritage and ecological assessment for a proposed Telstra optic fibre cable in an area directly south of the Study Area. A foot survey was undertaken, but no Aboriginal cultural heritage sites were identified. A previously recorded site, AHIMS #38-4-0637, a modified tree was located in the impact area of the proposed fibre optic cable, however, this tree was unable to be re-located during OzArk's survey, and it was noted that the tree had possibly been removed (OzArk, 2012, p.50). The site record for the tree is located more than 1100 metres west of the current (Karuah South Quarry) Study Area (refer to **Figure 6** below).

4.3 AHIMS SITE ANALYSIS

A search of the OEH AHIMS database (Client Service ID: 342451) identified 12 Aboriginal archaeological sites within a 5 x 5 kilometre search area, centred on the Study Area (**Table 4**). None of these registered sites are located *within* the Study Area (**Figure 6**). AHIMS search results are provided in Attachment 1. **Table 5** provides the frequencies of Aboriginal site types in the vicinity of the Study Area. The mapping coordinates recorded for these sites were checked for consistency with their descriptions and location on maps from Aboriginal heritage reports where available. These descriptions and maps were relied where notable discrepancies occurred.

It should be noted that the AHIMS database reflects Aboriginal sites that have been officially recorded and included on the list. Large areas of NSW have not been subject to systematic, archaeological survey; hence AHIMS listings may reflect previous survey patterns and should not be considered a complete list of Aboriginal sites within a given area.

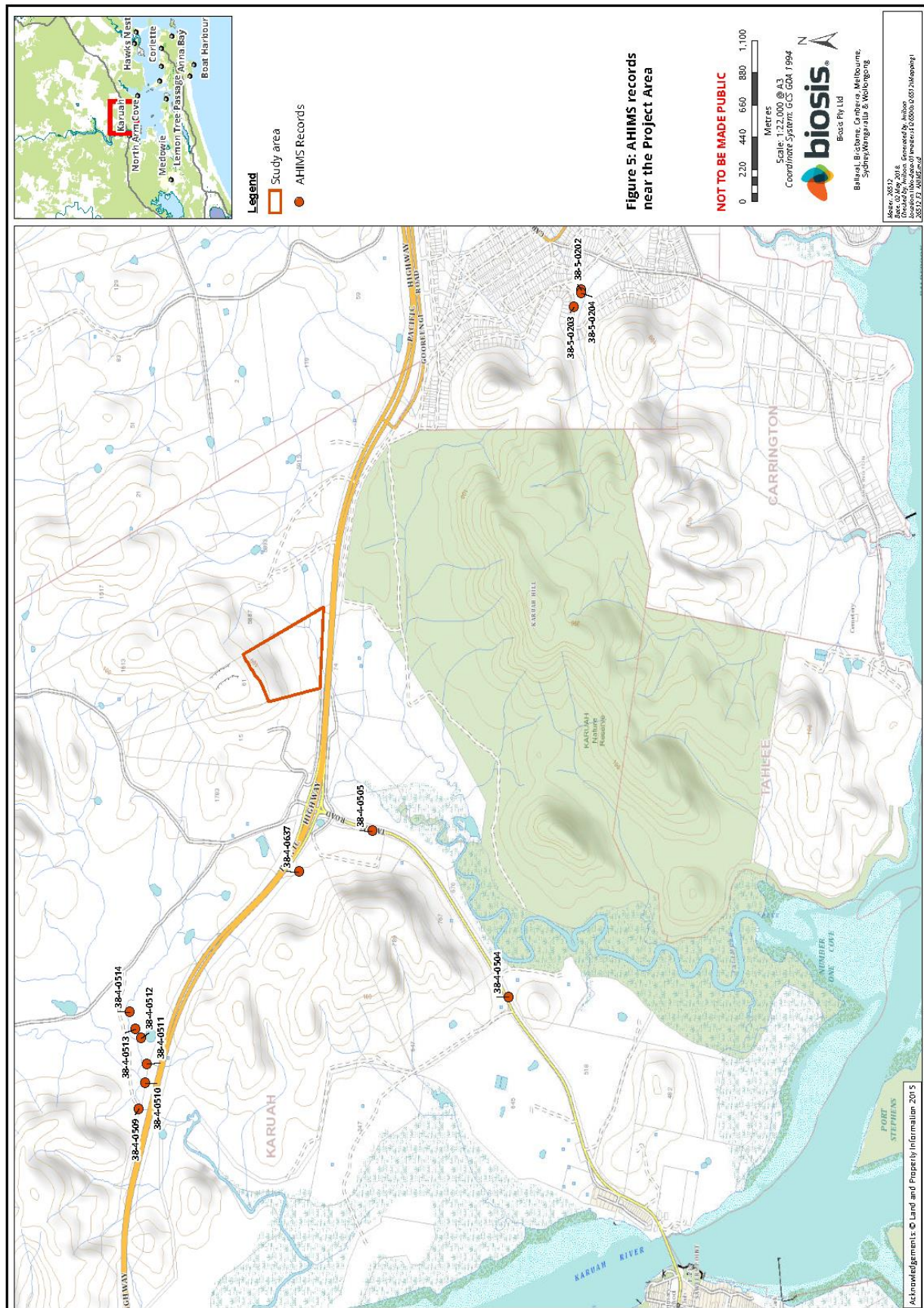


Figure 6 AHIMS Records near the Study Area

Table 4
AHIMS Search Results

AHIMS site no.	Site name	Site type
38-5-0202	MT Karuah/Carrington 1	Artefact
38-5-0203	NT Karuah/Carrington 2	Modified Tree (Carved or Scarred)
38-5-0204	MT Karuah/Carrington 3	Modified Tree (Carved or Scarred)
38-4-0637	KA28	Modified Tree (Carved or Scarred)
38-4-0504	KA 7	Artefact
38-4-0505	KA 8	Artefact
38-4-0509	KA 12	Artefact
38-4-0510	KA 13	Artefact
38-4-0511	KA 14	Artefact
38-4-0512	KA 15	Artefact
38-4-0513	KA 16	Artefact
38-4-0514	KA 17	Artefact

Table 5
AHIMS Site Type Frequency

Site type	Number of occurrences	Frequency (%)
Artefact	9	75
Modified tree	3	25
Total	12	100

A simple analysis of the Aboriginal cultural heritage sites registered within the 5 x 5 kilometre surrounding the Study Area indicates that the dominant site type is artefacts representing 75% (n=9), with middens comprising 25% (n=3). All sites are located within close proximity to reliable sources of water, or were exposed by land clearing.

4.3.1 Predictive statements

A series of predictive statements have been formulated to broadly predict the type and character of Aboriginal cultural heritage sites likely to exist throughout the Study Area and where they are more likely to be located. These statements are based on:

- site distribution in relation to landscape descriptions within the Study Area;
- consideration of site type, raw material types and site densities likely to be present within the Study Area;
- findings of the ethnohistorical research on the potential for material traces to present within the Study Area;

- potential Aboriginal use of natural resources present or once present within the Study Area; and
- consideration of the temporal and spatial relationships of sites within the Study Area and surrounding region **Table 6** outlines the site types most likely to be encountered during the survey and subsequent sub-surface investigations across the Study Area. The definition of each site type is described firstly, followed by the predicted likelihood of this site type occurring within the Study Area.

Table 6
Aboriginal Site Prediction Statements

Page 1 of 2

Site type	Site description	Potential
Flaked stone artefact scatters and isolated artefacts	Artefact scatter sites can range from high-density concentrations of flaked stone and ground stone artefacts to sparse, low-density 'background' scatters and isolated finds.	Moderate: Stone artefact sites have been previously recorded within the Port Stephens region across a wide range of landforms within the Karuah area; they have a moderate potential to be present in undisturbed areas within the Study Area.
Modified trees	Trees with cultural modifications	Moderate: Scarred/modified trees have been previously recorded in local area, and have the potential to exist in areas of mature remnant vegetation within the Study Area
Shell middens	Deposits of shells accumulated over either singular large resource gathering events or over longer periods of time.	Low: There is a low potential of shell middens being present within the lower southern part of the Study Area, and low potential for this type of site to occur on steep slopes and ridges.
Quarries	Raw stone material procurement sites.	Low: There is no record of any quarries being within or surrounding the Study Area nor is there significant rocky outcrops.
PADs	Potential sub surface deposits of cultural material.	Low: PADs have not been previously recorded in the region on similar steep, simple slope landforms.
Axe grinding grooves	Grooves created in stone platforms through ground stone tool manufacture.	Low: The geology of the Study Area lacks suitable horizontal sandstone rock outcrops for axe-grinding grooves. Therefore there is low potential for axe grinding grooves to occur in the Study Area.
Burials	Aboriginal burial sites.	Low: Aboriginal burial sites are generally situated within deep, soft sediments, caves or hollow trees. Areas of deep sandy deposits will have the potential for Aboriginal burials. The soil profiles associated with the Study Area are not commonly associated with burials.

Table 6 (Cont'd)
Aboriginal Site Prediction Statements

Page 2 of 2

Site type	Site description	Potential
Rock shelters with art and / or deposit	Rock shelter sites include rock overhangs, shelters or caves, and generally occur on, or next to, moderate to steeply sloping ground characterised by cliff lines and escarpments. These naturally formed features may contain rock art, stone artefacts or midden deposits and may also be associated with grinding grooves.	Low: The sites will only occur where suitable sandstone exposures or overhangs possessing sufficient sheltered space exist, which are not present in the Study Area.
Aboriginal ceremony and dreaming Sites	Such sites are often intangible places and features and are identified through oral histories, ethnohistoric data, or Aboriginal informants.	Low: There are currently no recorded mythological stories for the Study Area.
Post-contact sites	These are sites relating to the shared history of Aboriginal and non-Aboriginal people of an area and may include places such as missions, massacre sites, post-contact camp sites and buildings associated with post-contact Aboriginal use.	Low: There are no post-contact sites previously recorded in the Study Area and historical sources do not identify one.
Aboriginal places	Aboriginal places may not contain any 'archaeological indicators of a site, but are nonetheless important to Aboriginal people. They may be places of cultural, spiritual or historic significance. Often they are places tied to community history and may include natural features (such as swimming and fishing holes), places where Aboriginal political events commenced or particular buildings.	Low: There are currently no recorded Aboriginal historical associations for the Study Area.

5. ARCHAEOLOGICAL SURVEY

A field survey of the Study Area was undertaken on 17 May 2018 by Biosis archaeologist, Taryn Gooley in the company of Aboriginal RAPs, Ron Tisdell and Colleen Perry from the Karuah LALC. The field survey sampling strategy, methodology and a discussion of results are provided below.

5.1 ARCHAEOLOGICAL SURVEY OBJECTIVES

The objectives of the survey were to:

- provide RAPs an opportunity to view the Study Area and to discuss previously identified Aboriginal object(s) and/or place(s) in or within close proximity to the Study Area;
- to undertake a systematic survey of the Study Area targeting areas with the potential for Aboriginal heritage sites;
- identify and record Aboriginal archaeological sites visible on the ground surface; and
- identify and record areas of PADs.

5.2 ARCHAEOLOGICAL SURVEY METHODOLOGY

The survey methods were designed to assess and understand the landforms and to determine whether any archaeological material from Aboriginal occupation or land use exists within the Study Area.

5.2.1 Sampling Strategy

The survey effort targeted all landforms within the Study Area. Particular attention was given to stands of remnant native vegetation with the potential to contain modified trees and areas of higher visibility such as tracks and areas of disturbance around buildings.

5.2.2 Survey Methods

The archaeological survey was conducted on foot and by vehicle with a field team of three members. The pedestrian survey followed the random meander method, and target areas of visibility such as access tracks, vegetation clearings, and areas of erosion. Recording during the survey followed the archaeological survey requirements of the code and industry best practice methodology. Information that was recorded during the survey included:

- Aboriginal objects or sites present in the Study Area during the survey;
- survey coverage;
- any resources that may have potentially been exploited by Aboriginal people;
- landform;

- photographs of the site indicating landform;
- evidence of disturbance; and
- Aboriginal artefacts, culturally modified trees or any other Aboriginal sites.

Where possible, identification of natural soil deposits within the Study Area was undertaken. Photographs and recording techniques were incorporated into the survey including representative photographs of survey units, landform, vegetation coverage, GSV and the recording of soil information for each survey unit were possible. Any potential Aboriginal objects observed during the survey were documented and photographed. The locations of Aboriginal cultural heritage and points marking the boundary of the landform elements were recorded using a hand-held Global Positioning System and the Map Grid of Australia (94) coordinate system.

5.3 ARCHAEOLOGICAL SURVEY RESULTS

A total of four random transects were walked across the three landforms present within the Study Area (**Figure 7**). The three surveyors walked two metres apart (**Figure 8**). Access tracks were driven to points of exposure. This follows the methodology set out in Burke and Smith (2004, p. 65) which states that a single person can only effectively visually survey an area of two linear metres. No Aboriginal sites or PADs were identified in the Study Area. The results from the field survey have been summarised in **Table 7** and full transect details are provided in **Figure 8**. Generally, the survey was restricted by poor GSV and narrow survey transects in most areas due to dense vegetation.

5.3.1 Survey Constraints

The Study Area comprised a very steep hillside covered largely in dense vegetation with visibility across most of the site being 0% (**Plate 4** and **Plate 5**). Opportunities to examine the ground surface primarily occurred along old logging and graded tracks and occasional cleared patches in the proximity of two sheds on the lot (**Plate 6**). Areas of exposure, within which visibility approached 60-100%, were targeted for their increased potential to contain visible Aboriginal cultural features. The majority of these exposures had been subject to, and were created by, some disturbance from clearing, grading, excavation or building construction.

Disturbance in the Study Area was associated with both natural and human agents. Natural agents generally affect small areas and include the burrowing and scratching in soil by animals, such as foxes, rabbits and kangaroos, and sometimes exposure from slumping or scouring. Human disturbances within the Study Area included previous logging, the grading of access tracks, building of sheds and other small structures, areas of gravel and fill (**Plate 6**, **Plate 7** and **Plate 8**).

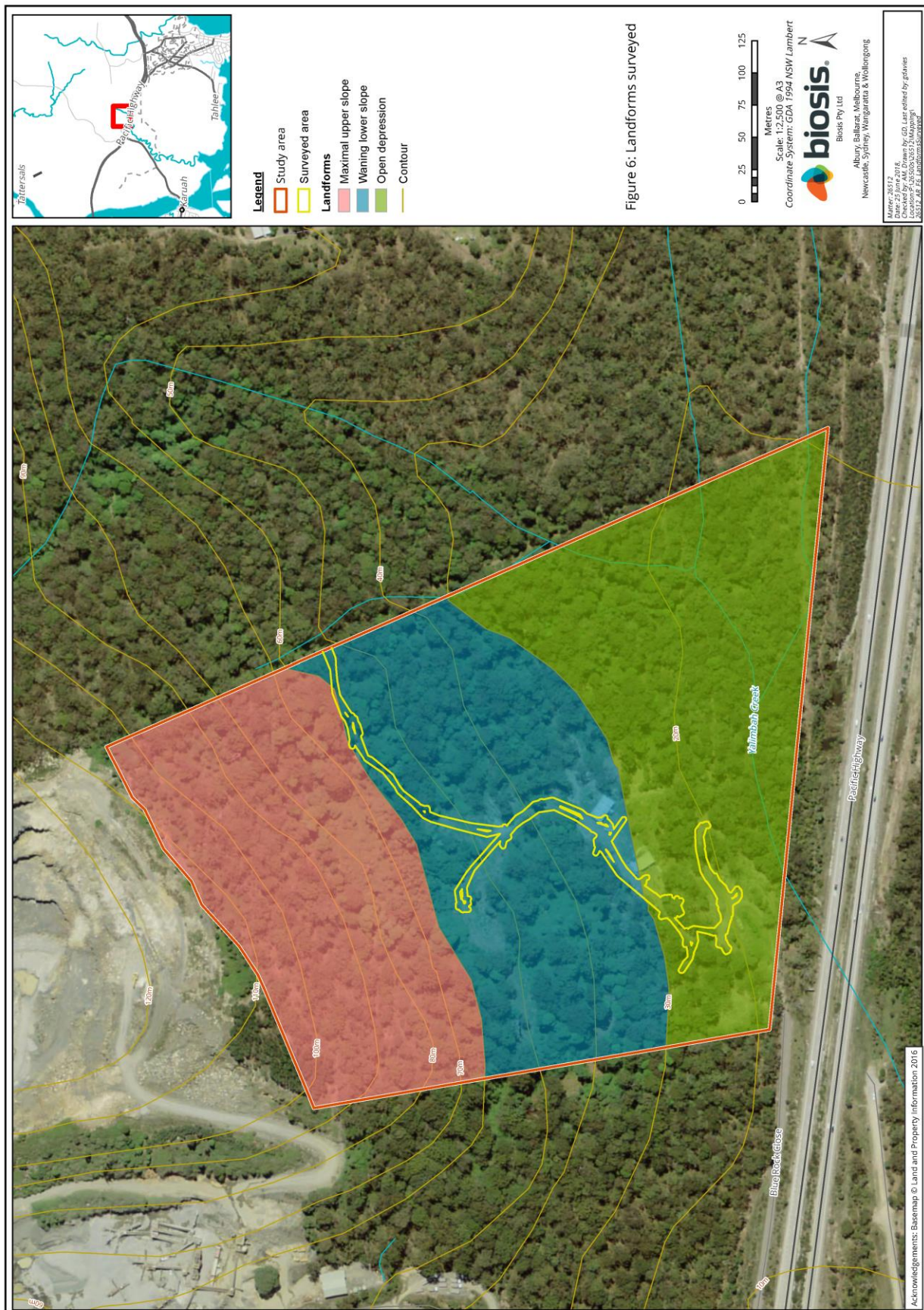


Figure 7 Landforms Surveyed

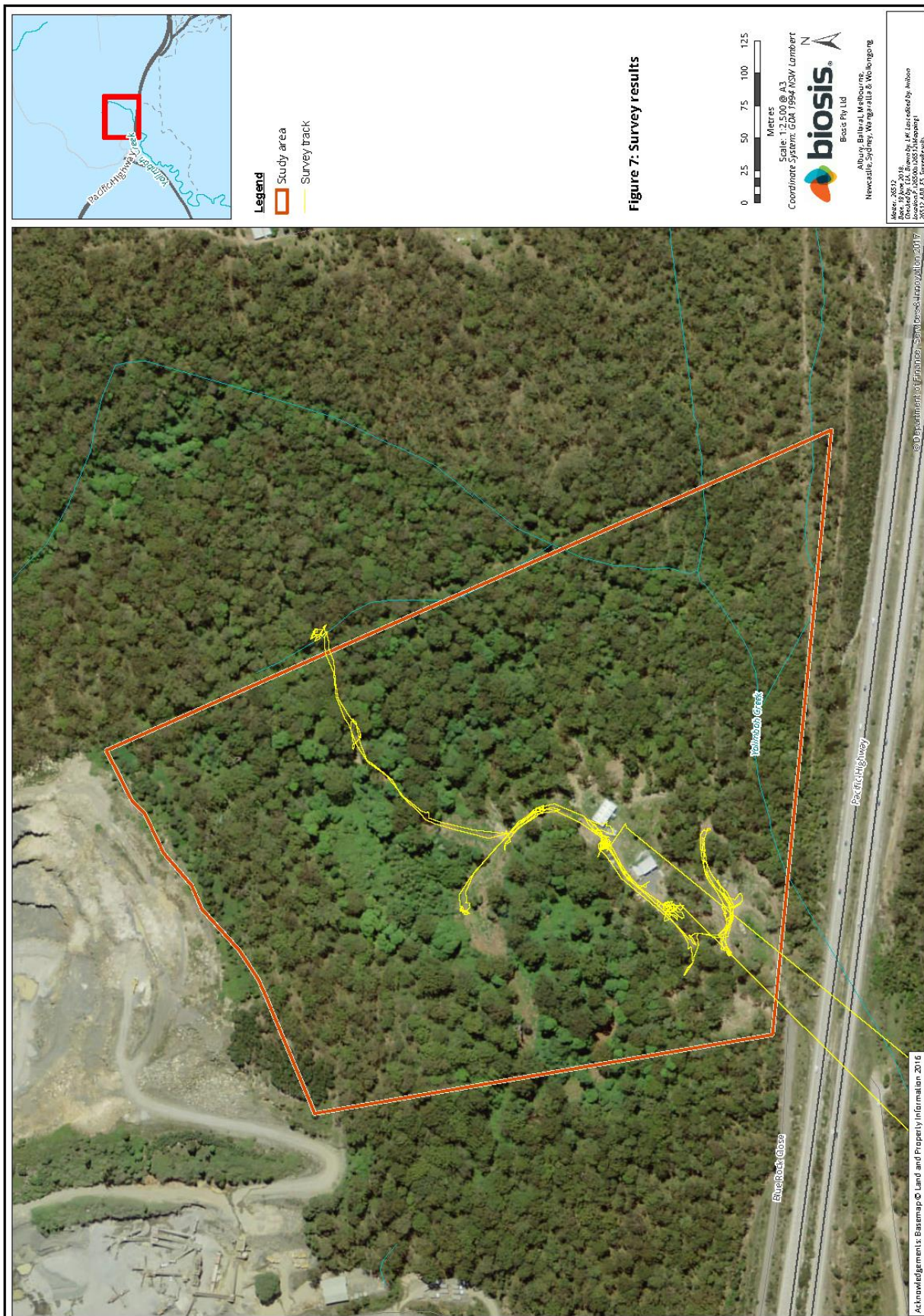


Figure 8 Survey Results



Plate 4 Dense Vegetation and Disturbance from Clearing, View to South West



Plate 5 Steep Slope and Dense Vegetation, View to West



Plate 6 Steep Slope showing Disturbances from Graded Tracks and Shed



Plate 7 Steep Slope showing Disturbances from Graded Tracks and Shed



Plate 8 Disturbance and Exposure from Gravel and Concrete Spoil

5.3.2 Discussion of Archaeological Survey Results

The archaeological survey was conducted in one day with a field team of three members. A total of four transects were walked across the three landforms across the Study Area (**Figure 7**). The survey was hampered by poor surface visibility across its entirety, and did not identify any Aboriginal sites, modified trees or PADs within the Study Area. The landforms surveyed and results are summarised in **Table 7** and **Table 8**.

As the landform and dense vegetation was uniform across the entire Study Area, the survey effort was targeted on areas of increased visibility such as tracks, gravel scapes, logged areas, and other exposures. The results of the survey are expected to be representative of the entire Study Area, and it is concluded that Aboriginal heritage sites are unlikely to occur within the Study Area. This conforms broadly with the predictive model, where Aboriginal sites are more likely to occur in areas adjacent to permanent fresh water sources and other resource gathering sites. Given the absence of the features in the landscape, it is likely that Aboriginal people did not intensively use the Study Area.

Lastly, the soil profiles in both the Gan Gan and Nungra soil landscapes are generally shallow, and given that activities such as logging and land clearance have historically taken place within the Study Area, there is limited opportunity for subsurface archaeological deposit to have survived.

Table 7
Survey Coverage

Survey Unit	Landform	Survey unit area (m ²)	Visibility (%)	Exposure (%)	Effective coverage area (m ²)	Effective coverage (%)
1	Maximal upper slope	53505	5%	5%	35	0.06
2	Waning lower slope	58520	5%	5%	3378	5.7
3	Open depression	66972	5%	5%	1938	3
TOTAL		178818	-	-	5352	3

Table 8
Landform Summary

Landform	Landform area (m ²)	Area effectively surveyed (m ²)	Landform effectively surveyed (%)	No. of Aboriginal sites	No. of artefacts or features
Maximal upper slope	53505	35	0.06	0	0
Waning lower slope	58520	3378	5.7	0	0
Open depression	66972	1938	3	0	0

6. ANALYSIS AND DISCUSSION

An AHIMS search encompassing 5 x 5 kilometres centred on the Study Area returned 12 previously recorded Aboriginal sites, none of which were located within the Study Area. The predominant site types in the search area comprise artefact scatters and scarred (modified) trees. The majority of these sites are located adjacent to watercourses, most notably the Karuah River, but also along minor fresh watercourses and in resource-rich areas such as the Port Stephens coast. The closest previously recorded sites are an isolated artefact and a modified (scarred) tree, approximately 1.1 kilometres and 1.5 kilometres south-east, respectively, of the Study Area, nearer to water sources. Both sites are situated in low-lying areas near either swamps or watercourses.

The results of the archaeological survey remain broadly consistent with the predictive statements made for this assessment, with artefact sites of higher density being located in closer proximity to higher stream order creek lines and scarred (modified) trees being present where land clearing and logging have not taken place, or selected mature trees bearing scars have survived such activities. Other sites such as shell middens have been located adjacent to coastal areas. Areas of steep, hilly country were predicted to have low potential for Aboriginal sites to be present.

The results of the survey of the Study Area are similar to other previous archaeological investigations undertaken in the Karuah area indicating that, whilst Aboriginal people visited and utilised the area, areas of hilly country were not intensively occupied. In particular, RPS (2011) undertook archaeological investigations on Lots 12 and 13, DP 1024564, directly adjacent to the current Study Area, within no Aboriginal cultural sites being identified. The survey carried out by RPS was on a similar landform comprising a steep, simple slope, densely vegetated and subject to disturbance from logging and land clearing. RPS also noted patterns of traditional land use by Aboriginal people, land disturbance and poor visibility as potential explanations for the lack of sites. The current Study Area has been similarly subject to disturbance from land clearing and logging, with dense regrowth of vegetation hampering visibility. Finally, as the Study Area is located on a steep, simple slope almost 1 kilometre from a reliable water source, the lack of cultural material fits broadly into the patterns of occupation described both above and within Section 4 of this report.

7. SCIENTIFIC VALUES AND SIGNIFICANCE ASSESSMENT

The two main values addressed when assessing the significance of Aboriginal sites are cultural values to the Aboriginal community and archaeological (scientific) values. This report assesses scientific values while the Aboriginal Cultural Heritage Assessment (ACHA) report will detail the cultural values of Aboriginal sites in the Study Area.

7.1 INTRODUCTION TO THE ASSESSMENT PROCESS

Heritage assessment criteria in NSW fall broadly within the significance values outlined in the Australia ICOMOS Burra Charter (Australia ICOMOS 2013). This approach to heritage has been adopted by cultural heritage managers and government agencies as the set of guidelines for best practice heritage management in Australia. These values are provided as background and include the following.

- **Historical significance** (evolution and association) refers to historic values and encompasses the history of aesthetics, science and society, and therefore to a large extent underlies all of the terms set out in this section. A place may have historic value because it has influenced, or has been influenced by, an historic figure, event, phase or activity. It may also have historic value as the site of an important event. For any given place the significance will be greater where evidence of the association or event survives in situ, or where the settings are substantially intact, than where it has been changed or evidence does not survive. However, some events or associations may be so important that the place retains significance regardless of subsequent treatment.
- **Aesthetic significance** (Scenic/architectural qualities, creative accomplishment) refers to the sensory, scenic, architectural and creative aspects of the place. It is often closely linked with social values and may include consideration of form, scale, colour, texture, and material of the fabric or landscape, and the smell and sounds associated with the place and its use.
- **Social significance** (contemporary community esteem) refers to the spiritual, traditional, historical or contemporary associations and attachment that the place or area has for the present-day community. Places of social significance have associations with contemporary community identity. These places can have associations with tragic or warmly remembered experiences, periods or events. Communities can experience a sense of loss should a place of social significance be damaged or destroyed. These aspects of heritage significance can only be determined through consultative processes with local communities.
- **Scientific significance** (Archaeological, industrial, educational, research potential and scientific significance values) refers to the importance of a landscape, area, place or object because of its archaeological and/or other technical aspects. Assessment of scientific value is often based on the likely research potential of the area, place or object and will consider the importance of the data involved, its rarity, quality or representativeness, and the degree to which it may contribute further substantial information.

The cultural and archaeological significance of Aboriginal and historic sites and places is assessed on the basis of the significance values outlined above. As well as the ICOMOS Burra Charter significance values guidelines, various government agencies have developed formal criteria and guidelines that have application when assessing the significance of heritage places within NSW. Of primary interest are guidelines prepared by the Commonwealth Department of the Environment and Energy, OEH and the Heritage Branch, NSW Department of Planning and Environment. The relevant sections of these guidelines are presented below.

These guidelines state that an area may contain evidence and associations which demonstrate one or any combination of the ICOMOS Burra Charter significance values outlined above in reference to Aboriginal heritage. Reference to each of the values should be made when evaluating archaeological and cultural significance for Aboriginal sites and places.

In addition to the previously outlined heritage values, the OEH *Guidelines to investigating, assessing and reporting on Aboriginal cultural heritage in NSW* (OEH 2011) also specify the importance of considering cultural landscapes when determining and assessing Aboriginal heritage values. The principle behind a cultural landscape is that 'the significance of individual features is derived from their inter-relatedness within the cultural landscape'. This means that sites or places cannot be 'assessed in isolation' but must be considered as parts of the wider cultural landscape. Hence the site or place will possibly have values derived from its association with other sites and places. By investigating the associations between sites, places, and (for example) natural resources in the cultural landscape the stories behind the features can be told. The context of the cultural landscape can unlock 'better understanding of the cultural meaning and importance' of sites and places.

Although other values may be considered – such as educational or tourism values – the two principal values that are likely to be addressed in a consideration of Aboriginal sites and places are the cultural/social significance to Aboriginal people and their archaeological or scientific significance to archaeologists. The determinations of archaeological and cultural significance for sites and places should then be expressed as statements of significance that preface a concise discussion of the contributing factors to Aboriginal cultural heritage significance.

7.2 ARCHAEOLOGICAL (SCIENTIFIC SIGNIFICANCE) VALUES

Archaeological significance (also called scientific significance, as per the ICOMOS Burra Charter) refers to the value of archaeological objects or sites as they relate to research questions that are of importance to the archaeological community, including indigenous communities, heritage managers and academic archaeologists. Generally, the value of this type of significance is determined on the basis of the potential for sites and objects to provide information regarding the past life-ways of people (Burke and Smith 2004, p. 249, NPWS 1999). For this reason, the National Parks and Wildlife Service (NPWS) summarises the situation as 'while various criteria for archaeological significance assessment have been advanced over the years, most of them fall under the heading of archaeological research potential' (NPWS 1999, p. 26). The NPWS criteria for archaeological significance assessment are based largely on the ICOMOS Burra Charter.

Research potential

Research potential is assessed by examining site content and site condition. Site content refers to all cultural materials and organic remains associated with human activity at a site. Site content also refers to the site structure – the size of the site, the patterning of cultural materials within the site, the presence of any stratified deposits and the rarity of particular artefact types. As the site contents criterion is not applicable to scarred trees, the assessment of scarred trees is outlined separately below. Site condition refers to the degree of disturbance to the contents of a site at the time it was recorded. **Table 9** and **Table 10** outline the site content and site condition ratings used.

Table 9
Site Contents Ratings used for Archaeological Sites

Rating	Description
0	No cultural material remaining.
1	Site contains a small number (e.g. 0–10 artefacts) or limited range of cultural materials with no evident stratification.
2	Site contains a larger number, but limited range of cultural materials; and/or some intact stratified deposit remains; and/or are or unusual example(s) of a particular artefact type.
3	Site contains a large number and diverse range of cultural materials; and/or largely intact stratified deposit; and/or surface spatial patterning of cultural materials that still reflect the way in which the cultural materials were deposited.

Table 10
Site Condition Ratings used for Archaeological Sites

Rating	Description
0	Site destroyed.
1	Site in a deteriorated condition with a high degree of disturbance; lack of stratified deposits; some cultural materials remaining.
2	Site in a fair to good condition, but with some disturbance.
3	Site in an excellent condition with little or no disturbance. For surface artefact scatters this may mean that the spatial patterning of cultural materials still reflects the way in which the cultural materials were laid down.

Pearson and Sullivan (1995) note that Aboriginal archaeological sites are generally of high research potential because ‘they are the major source of information about Aboriginal prehistory’ (1995, p. 149). Indeed, the often great time depth of Aboriginal archaeological sites gives them research value from a global perspective, as they are an important record of humanity’s history. Research potential can also refer to specific local circumstances in space and time – a site may have particular characteristics (well preserved samples for absolute dating, or a series of refitting artefacts, for example) that mean it can provide information about certain aspects of Aboriginal life in the past that other less or alternatively valuable sites may not (Burke and Smith 2004, p. 247-8). When determining research potential value particular emphasis has been placed on the potential for absolute dating of sites.

Where sites are recorded, an assessment of their significance of sites follows the process outlined above. This includes a statement of significance based on the categories defined in the Burra Charter. These categories include social, historic, scientific, aesthetic and cultural (in this case archaeological) landscape values. Nomination of the level of value—high, moderate, low or not applicable—for each relevant category is also proposed. Where suitable the determination of cultural (archaeological) landscape value is applied to both individual sites and places (to explore their associations) and also to the study area being investigated as a whole.

Representativeness

Representativeness refers to the regional distribution of a particular site type. Representativeness is assessed by whether the site is common, occasional, or rare in a given region. Assessments of representativeness are subjectively biased by current knowledge of the distribution and number of archaeological sites in a region. This varies from place to place depending on the extent of archaeological research. Consequently, a site that is assigned low significance values for contents and condition, but a high significance value for representativeness, can only be regarded as significant in terms of knowledge of the regional archaeology. Any such site should be subject to re-assessment as more archaeological research is undertaken.

Assessment of representativeness also takes into account the contents and condition of a site. For example, in any area there may only be a limited number of sites of any type that have suffered minimal disturbance. Such sites would therefore be given a high significance rating for representativeness, although they may occur commonly within the area. **Table 11** outlines the site representativeness ratings used.

Table 11
Site Representativeness Ratings used for Archaeological Sites

Rating	Description
1	Common occurrence.
2	Occasional occurrence.
3	Rare occurrence.

Overall scientific significance ratings for sites, based on a cumulative score for site contents, site integrity and representativeness are provided in **Table 12**.

Table 12
Scientific Significance Ratings used for Archaeological Sites

Rating	Description
1-3	Low scientific significance.
4-6	Moderate scientific significance.
7-9	High scientific significance.

Each site is given a score on the basis of these criteria – the overall scientific significance is determined by the cumulative score.

7.2.1 Statements of Archaeological Significance

No Aboriginal sites or PADs were identified within the Study Area and no previously recorded sites are located within, or in close proximity to the Study Area. The archaeological potential of the entire Study Area has been assessed as low. There is a low likelihood of Aboriginal cultural heritage with archaeological (scientific) value occurring within the Study Area. The scientific significance of the entire Study Area is therefore assessed as low.

7.2.2 Cultural (Social) Significance

Cultural significance of Aboriginal cultural heritage can only be assessed by the Aboriginal community. Registered Aboriginal stakeholders were given the opportunity to review the draft archaeological report and comment on the significance of cultural heritage relevant to the Study Area. Any comments received are attached in Annexure 6 to the final ACHA report.

8. IMPACT ASSESSMENT

As previously outlined in Section 2, the Project proposes the establishment of a hard rock Quarry for the extraction and processing of rhyodacitic ignimbrite, a hard rock resource. The proposed Project comprises the construction, use and ongoing maintenance of six components:

- an extraction area of approximately 11 hectares;
- internal haul roads from the extraction area to the processing area;
- a mobile processing plant and related infrastructure located immediately south of the extraction area;
- an ancillary components area, including a weighbridge, office, staff amenities, and workshop;
- a product stockpiling area; and
- a Quarry access road extending from the Quarry entrance to the Quarry infrastructure area.

8.1 PREDICTED PHYSICAL IMPACTS

Approximately 78% of the Study Area is likely to be impacted by the proposed Project. However, no Aboriginal sites or PADs were identified within the Study Area and no previously recorded sites are located within, or in close proximity to the Study Area. The archaeological potential of the entire Study Area has been assessed as low. Accordingly, impacts to Aboriginal sites or areas of archaeological potential as a result of the proposed works are unlikely.

8.2 MANAGEMENT AND MITIGATION MEASURES

Ideally, heritage management involves, wherever possible, conservation of identified sites through the preservation and conservation of fabric and context within a framework of '*doing as much as necessary, as little as possible*' (Marquis-Kyle and Walker 1994, p. 13). In cases where conservation is not practical, several options for management are available. For sites, management often involves the salvage of features or artefacts, retrieval of information through excavation or collection (especially where impact cannot be avoided) and interpretation.

Avoidance of impact to archaeological and cultural heritage sites through design of a proposed Project is the primary mitigation and management strategy, and should be implemented where practicable. This assessment has determined that the proposed Project will not impact on any Aboriginal sites or objects. Further management and mitigation measures are therefore not required.

9. RECOMMENDATIONS

Strategies have been developed based on the archaeological (significance) of cultural heritage relevant to the Study Area and influenced by:

- predicted impacts to Aboriginal cultural heritage;
- the planning approvals framework; and
- current best conservation practice, widely considered to include:
 - ethos of the Australia ICOMOS Burra Charter; and
 - the code.

In order to avoid any adverse impacts on any not yet identified Site(s) within the Site, the following is recommended:

Recommendation 1: Discovery of Unanticipated Aboriginal Objects

All Aboriginal objects and Places are protected under the NPW Act. It is an offence to knowingly disturb an Aboriginal site without a consent permit issued by the OEH. Should any Aboriginal objects be encountered during works associated with this proposal, works must cease in the vicinity and the find should not be moved until assessed by a qualified archaeologist. If the find is determined to be an Aboriginal object the archaeologist will provide further recommendations. These may include notifying the OEH and Aboriginal stakeholders.

Recommendation 2: Discovery of Aboriginal Ancestral Remains

Aboriginal ancestral remains may be found in a variety of landscapes in NSW, including middens and sandy or soft sedimentary soils. If any suspected human remains are discovered during any activity you must:

1. immediately cease all work at that location and not further move or disturb the remains;
2. notify the NSW Police and OEH's Environmental Line on 131 555 as soon as practicable and provide details of the remains and their location; and
3. not recommence work at that location unless authorised in writing by OEH.

Recommendation 3: Continued consultation with the registered Aboriginal stakeholders

In accordance with the consultation requirements (DECCW 2010), it is recommended that the Applicant provides a copy of this report to the RAPs and considers all comments received. The Applicant should continue to inform these groups about the management of Aboriginal cultural heritage sites within the Study Area throughout the life of the Project.

Recommendation 4: Lodgement of Final Report

A copy of the final report will be sent to:

- the three RAPs; and
- the AHIMS database.

REFERENCES

- Australia ICOMOS. 2013. Australia ICOMOS Charter for the Conservation of Places of Cultural Significance (the Burra Charter), revised edition. Australia ICOMOS, Canberra.
- Australian Museum Business Services. 2005. *Aboriginal Heritage Study: Newcastle Local Government Area*.
- Attenbrow, V. 2002. *Sydney's Aboriginal Past: Investigating the archaeological and historical records*. University of New South Wales Press Ltd, Sydney.
- Biosis Pty Ltd. 2011. *Aboriginal Due Diligence Assessment: Proposed Water Crossing Signage Upgrade, Oyster Cove, Port Stephens*. Project no.13825.
- Bonhomme, T. 1999. 'Shell middens on the central coast of New South Wales: a discussion of problems in distinguishing natural shell deposits from cultural accumulations'. *Australian Coastal Archaeology, Research Papers in Archaeology and Natural History* (31): 229-234.
- Burke, H. and Smith, C. 2004. *The Archaeologist's Field Handbook*. Allen Unwin, Crows Nest, Sydney, Australia.
- Bramble, C. M. 1981. *Relations Between Aborigines and White Settlers in Newcastle and the Hunter District 1804– 1841: With Special Reference to the Influence of the Penal Establishment*. CSIRO Publishing & National Committee on Soil and Terrain (Australia), 2009. *Australian soil and land survey field handbook, 3rd ed*, CSIRO Publishing, Collingwood, Vic.
- Davies. S.J. 1993. *An Archaeological Assessment of ten Telecom Optic Fibre Cable Routes located between Gosford and Wauchope, Central Coast, NSW*. Report to Telecom Australia.
- Dawson, R. 1831. *The Present State of Australia: A Description of the Country, its advantage and prospects, with reference to Emigration: and a particular account of the manners, customs, and condition of its Aboriginal Inhabitants*, Second ed., London, Smith, Elder & Co.
- Dean-Jones, P. 1990. *Newcastle Bight Aboriginal Sites Study: A Report to the NSW National Parks and Wildlife Service and National Estate Grants Committee*.
- Department of Environment, Climate Change and Water. 2010a. *Aboriginal cultural heritage consultation requirements for proponents 2010*. NSW Department of Environment, Climate Change and Water, Sydney NSW.
- Department of Environment, Climate Change and Water. 2010b. *Code of Practice for the Archaeological Investigation of Aboriginal Objects in NSW*. NSW Department of Environment, Climate Change and Water, Sydney NSW.
- Ebsworth, H. T. 1826. *A Letter Book, Kept at Sydney and Port Stephens*. ML. MS. B852.
- ERM. 2003. *Indigenous Cultural Heritage Assessment. Annex D, Tomago to Tomaree Electricity Supply Upgrade Environment Impact Statement*. A report to EnergyAustralia.
- Geological Survey of New South Wales. 2014. *Geology of the Lower Hunter Valley New South Wales*. NSW Trade and Investment, Sydney.
- Haslam, P. and New South Wales. Ministry of Aboriginal Affairs & New South Wales. Department of Education. Hunter Region & Hunter Social Studies Association (N.S.W.). 1984. *Aborigines of the Hunter Region*, Department of Education, Hunter Region, Newcastle.
- Jo McDonald CHM Pty Ltd. 2000. *Archaeological Survey for Aboriginal sites: Proposed Light Industrial Subdivision 'Austral Site'- Mamre Road, Erskine Park, NSW*. Report prepared for

Gunninah Environmental Consultants on behalf of Austral Brick Company care of the Hanover Property Group.

Jo McDonald CHM Pty Ltd. 2005a. Archaeological Salvage Excavation of Site RTA-G1 109-113 George Street Parramatta, NSW. Report prepared for Landcom.

Jo McDonald CHM Pty Ltd. 2005b. Archaeological Salvage Excavation of Site CG1 (NPWS #45-5-2648), at the corner of Charles and George Streets, Parramatta, NSW. Report prepared for Meriton Apartments Pty. Ltd.

Jo McDonald CHM Pty Ltd. 2006. Archaeological Salvage Excavation of the Colebee Release Area, Schofields, NSW. Report prepared for Medallist Golf Holdings Pty Ltd.

Koetigg, M. 1987. *Preliminary Assessment of Aboriginal Archaeological Sites in the Proposed Sand Extraction Area at Nelson Bay Road, Newcastle Bight.*

Matthei, L.E. 1995. *Soil Landscapes of the Newcastle 1:100 000 Sheet.* Report, Department of Land and Water Conservation, Sydney.

Murphy, C.L. 1995. *Soil Landscapes of the Port Stephens 1:100 000 Sheet.* Report, Department of Land and Water Conservation, Sydney.

Navin K. & Officer K. 1994. *Preliminary Cultural Heritage Overview: Optus – Sydney, Newcastle, Orange.*

National Parks and Wildlife Service. 1999. *Aboriginal Cultural Heritage: Standards and Guidelines Kit.* NSW National Parks and Wildlife Service, Hurstville.

Office of Environment and Heritage. 2011. *Guide to Investigating, assessing and reporting on Aboriginal cultural heritage in NSW.* Office of Environment and Heritage, Sydney. NSW.

OzArk Environmental & Heritage Management. 2012. *Ecological and Aboriginal Heritage Assessment: Proposed Cable Karuah, Port Stephens LGA, NSW.* Report prepared for Telstra.

Pearson, M. and Sullivan, S. 1995. *Looking After Heritage Places: The Basics of Heritage Planning for Managers, Landowners and Administrators.* Melbourne University Press, Melbourne.

Percival, B. and Stewart, K. 1997. *Bush foods of New South Wales: A botanic record and an Aboriginal oral history.* Royal Botanic Gardens, Sydney.

Resource Planning Pty Ltd. 1992. *Investigation if Archaeological site at ML 1070 and ML 1078, Moffats Dune, Newcastle Bight.*

RPS. 2011. *Cultural Heritage Assessment, Karuah East Hard Rock Quarry, Pacific Highway, Karuah.* A report for Karuah East Quarries.

Resource Planning Pty Ltd. 1993. *Archaeological Testing of the RZM Pty Ltd Plant 9 Planned Sand Mine Adjacent to Moffats Swamp, Richardson Road, Medowie, ML 1067.*

Ritter, D.F., Kochel, R.C., Miller, J.R. 1995. *Process Geomorphology.* Waveland Press Inc., Long Grove.

R.W. Corkery & Co. Pty Ltd. 2017. Preliminary Environmental Assessment for Kiely's Karuah Quarry. Report to Wedgerock Pty Ltd. Brooklyn NSW.

Smith, L. 1988. *Archaeological Survey of the Tomago to Karuah Section of the Tomago to Taree 132kv Transmission Line.* Report for RTA.

Sokoloffnov, B. 1977. *The Worimi: Hunter-gatherers at Port Stephens.*

Speight, J.G. 2009. *Australian Soil and Land Survey Field Handbook.* CSIRO, Collingwood.

Strahler, A. 1964. 'Quantitative geomorphology of drainage basins and channel networks' in Chow, V.T. (eds.), *Handbook of Applied Hydrology*. McGraw-Hill, New York.

Tindale, N.B. 1974. *Aboriginal Tribes of Australia*. Australian National University, Canberra.

Umwelt Pty Ltd. 2009. *Environmental Assessment of Sand Extraction Operations from Lot 218 DP1044608 and Lot 220 DP1049608, Salt Ash*. Report No. 1646/RO6/FINAL.

Umwelt Pty Ltd. 2010. *Aboriginal Cultural Heritage Assessment Report – Archaeological Investigations undertaken under AHIP#3271, Medowie Road, Williamtown*. Report prepared for Ausgrid.


This page has intentionally been left blank

Attachment 1

AHIMS results

(Total No. of pages including blank pages = 4)

This page has intentionally been left blank



Office of
Environment
& Heritage

AHIMS Web Services (AWS)

Extensive search - Site list report

Your Ref/PO Number : 26512

Client Service ID : 342451

SiteID	SiteName	Datum	Zone	Easting	Northing	Context	Site Status	SiteFeatures	SiteTypes	Reports
38-5-0202	MT KARUAH/CARRINGTON 1	AGD	56	408750	6387050	Open site	Valid	Artefact : -		
	Contact			Brad Welsh						
38-5-0203	NT KARUAH/CARRINGTON 2	AGD	56	408650	6387100	Open site	Valid	Modified Tree (Carved or Scarred) :	Permits	
	Contact			Brad Welsh,Carol Ridgeway Bisset						
38-5-0204	MT KARUAH/CARRINGTON 3	AGD	56	408730	6387050	Open site	Valid	Modified Tree (Carved or Scarred) :	Permits	
	Contact			Brad Welsh						
38-4-0637	KA28	AGD	56	405370	6388950	Open site	Valid	Modified Tree (Carved or Scarred) :	Permits	102741
	Contact			Navin Officer Heritage Consultants Pty Ltd						
38-4-0504	KA 7	AGD	56	404660	6387510	Open site	Valid	Artefact : -	Permits	Open Camp Site
	Contact			Kerry Navin,Mr.Kelvin Officer						
38-4-0505	KA 8	AGD	56	405610	6388450	Open site	Valid	Artefact : -	Permits	Open Camp Site
	Contact			Kerry Navin,Mr.Kelvin Officer						
38-4-0509	KA 12	AGD	56	403990	6390030	Open site	Valid	Artefact : -	Permits	Open Camp Site
	Contact			Kerry Navin,Mr.Kelvin Officer						
38-4-0510	KA 13	AGD	56	404140	6388990	Open site	Valid	Artefact : -	Permits	Open Camp Site
	Contact			Kerry Navin,Mr.Kelvin Officer						
38-4-0511	KA 14	AGD	56	404250	6389980	Open site	Valid	Artefact : -	Permits	Open Camp Site
	Contact			Kerry Navin,Mr.Kelvin Officer						
38-4-0512	KA 15	AGD	56	404400	6390020	Open site	Valid	Artefact : -	Permits	Open Camp Site
	Contact			Kerry Navin,Mr.Kelvin Officer						
38-4-0513	KA 16	AGD	56	404450	6390060	Open site	Valid	Artefact : -	Permits	Isolated Find
	Contact			Kerry Navin,Mr.Kelvin Officer						
38-4-0514	KA 17	AGD	56	404550	6390100	Open site	Valid	Artefact : -	Permits	Isolated Find
	Contact			Kerry Navin,Mr.Kelvin Officer						

Report generated by AHIMS Web Service on 02/05/2018 for Samantha Keats for the following area at Datum : GDA, Zone : 56, Eastings : 403953 - 408953, Northings : 6386491 - 6391491 with a Buffer of 0 meters. Additional Info : To be used in an ACHA. Number of Aboriginal sites and Aboriginal objects found is 12

This information is not guaranteed to be free from error omission. Office of Environment and Heritage (NSW) and its employees disclaim liability for any act done or omission made on the information and consequences of such acts or omission.

This page has intentionally been left blank