Taylors Lane (Lot 1 DP949932)

Aboriginal cultural heritage assessment report

FINAL REPORT

Prepared for Cardno

6 July 2018

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Acknowledgements

Biosis gratefully acknowledges the contributions of the following people and organisations in preparing this report:

- Daniel Thompson (Cardno)
- Shaqui Tungai (Tungai Tonghi representative)
- James Davis (Wodi Wodi representative)

Biosis staff involved in this project were:

- Lauren Harley (GIS and mapping)
- Taryn Gooley (Quality assurance)

Contents

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Glossary

ACHAR	Aboriginal Cultural Heritage Assessment Report
AHIMS	Aboriginal Heritage Information Management System
AHIP	Aboriginal Heritage Impact Permit
DA	Determining Authority
DECCW	Department of Environment, Climate Change and Water (now OEH)
DP	Deposited Plan
EPA	Environment Planning and Assessment
GDA	Geocentric Datum of Australia
GPS	Global Positioning System
GSV	Ground Surface Visibility
ICOMOS	International Council on Monuments and Sites
LALC	Local Aboriginal Land Council
LEP	Local Environmental Plan
LGA	Local Government Area
MGA	Map Grid of Australia
NHL	National Heritage List
NPW Act	National Parks and Wildlife Act
NPWS	National Parks and Wildlife Service
NSW	New South Wales
NTSCORP	Native Title Services Corporation
OEH	NSW Office of Environment and Heritage
PAD	Potential Archaeological Deposit
RAP	Registered Aboriginal Party
REF	Review of Environmental Factors
REP	Regional Environmental Plan
SEPP	State Environmental Planning Policy
NNTT	National Native Title Tribunal
ICOMOS	International Council on Monuments and Sites

Summary

Biosis Pty Ltd was commissioned by Cardno to undertake an Aboriginal cultural heritage assessment of a proposed subdivision at Taylors Lane (Lot 1 DP949932). The study area is located in farmland approximately 4 kilometres west of Bomaderry and approximately 5.5 kilometres north-west of Nowra central business district (CBD)

There are 104 Aboriginal cultural heritage sites registered with the Aboriginal Heritage Information Management System (AHIMS) register in the vicinity of the study area.

Shoalhaven City Council is the Determining Authority (DA) and will assess the Development Application (DA) to determine if the proposed development is likely to have a significant effect on the environment, including Aboriginal cultural heritage.

Consultation

The Aboriginal community was consulted regarding the heritage management of the 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 placed in the South Coast Register (18/04/2018), which resulted in the following Aboriginal organisations registering their interest:

- Biamanga
- Cullendulla
- Darug Land Observations
- Goobah Development Pty Ltd
- Guunamaa Dreaming and Sites Surveying and Consulting
- Gulaga
- Leanne Tungai
- James Davis
- Murramarang
- Noel Webster
- Thoorga Nura
- Tungai Tonghi
- Three Ducks Dreaming Surveying and Consulting
- Warra Bingi Nunda Gurri

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 National Native Title Tribunal listed four 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 proposal provided in the project methodology document. The registered Aboriginal parties participated in the fieldwork and provided comment on the study area with regard to the proposal, noting that it may have been used as a travel route. Responses from the Registered Aboriginal Parties (RAPs) are included in Appendix 3.

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

Results

The ACHA assessment undertook background research for the proposed study area. Background research identified one archaeological site, Moss Vale Road Aft 1, which had been identified by KNC; although, no details, including photos or descriptions of the site were provided by KNC in their report submitted for the DA, nor was the site registered on AHIMS by KNC.

In response to the initial letter submitted with the DA of the study area, OEH indicated that test excavation of the site was required. Biosis undertook an archaeological survey within the study area, and subsurface test excavations at Moss Vale Road Aft 1. No Aboriginal sites or objects were identified during the survey and test excavations. The results of the Biosis assessment indicate the study area has low subsurface archaeological potential. As site Moss Vale Road Aft 1 was identified during the KNC assessment and could not be relocated during the Biosis assessment due to very low levels of surface visibility, the following recommendations have been made (Table 1):

Table 1 Site details

Site name	Site type	Significance	Type of harm before mitigated	Consequence of unmitigated harm	Consequence of mitigated harm	Site specific recommendations
Moss Vale Road Aft 1	Artefact	Low	Direct	Total loss	Impact cannot be avoided.	Apply for an AHIP to destroy to allow impacts to Moss Vale Road Aft 1.

Management recommendations

Prior to any development impacts occurring within the study area, the following is recommended:

Recommendation 1: Obtain an Aboriginal Heritage Impact Permit (AHIP) for Moss Vale Road Aft 1

The proposed works will result in direct impacts, with a total loss of value to Moss Vale Road Aft 1. It is recommended that Cardno apply to the OEH for an area wide AHIP covering the entirety of the study area for a term of 20 years. The AHIP should allow for the following:

- Impact to the recorded Aboriginal cultural heritage site Moss Vale Road Aft 1
- Impact within the limits of the area wide AHIP for any further Aboriginal objects encountered during construction, unless human remains are identified.

A site impact recording form for Moss Vale Road Aft 1should also be completed and submitted to the OEH following impacts to the site.

Advice preparing AHIPs

An AHIP is required for any activities likely to have an impact on Aboriginal objects or places or cause land to be disturbed for the purposes of discovering an Aboriginal object. The Office of Environment and Heritage (OEH) issues AHIPs under Part 6 of the National Parks and Wildlife Act 1974 (NPW Act).

AHIPs should be prepared by a qualified archaeologist and lodged with the OEH. Once the application is lodged processing time can take between 8 and 12 weeks. It should be noted that there will be an application fee levied by the OEH for the processing of AHIPs, which is dependent on the estimated total cost of the development project.

Where there are multiple sites within one study area an application for an AHIP to cover the entire study area is recommended.

Recommendation 3: Discovery of Unanticipated Historical Relics

Relics are historical archaeological resources of local or state significance and are protected in NSW under the *Heritage Act 1977*. Relics cannot be disturbed except with a permit or exception/exemption notification. Should unanticipated relics be discovered during the course of the project, work in the vicinity must cease and an archaeologist contacted to make a preliminary assessment of the find. The Heritage Council will require notification if the find is assessed as a relic.

Recommendation 4: 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 in the vicinity and not further move or disturb the remains.
2. Notify the Coroners Office and NSW Police immediately. Following this, contact OEH's Environmental Line on 131 555 as soon as practicable and provide details of the remains and their location. The find must also be reported to the Aboriginal parties.
3. Not recommence work at that location unless authorised in writing by OEH.

Recommendation 5: Continued consultation with the registered Aboriginal stakeholders

As per the consultation requirements, it is recommended that the proponent provides a copy of this draft report to the Aboriginal stakeholders and considers all comments received. The proponent 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 6: Lodgment of final report

A copy of the final report will be sent to the client, registered Aboriginal stakeholders, OEH and the AHIMS register.

1 Introduction

1.1 Project background

Biosis Pty Ltd was commissioned by the Cardno to undertake an Aboriginal cultural heritage assessment for the proposed residential subdivision at Lot 1 DP949932 between Moss Vale Road and Taylors Lane, Cambewarra, NSW. This assessment will be used to support an application for an Aboriginal Heritage Impact Permit (AHIP) for the project and includes background research and archaeological test excavations.

This investigation has been carried out under Part 6 of the *National Parks and Wildlife Act 1974* (NPW Act). It has been undertaken in accordance with the *Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales* (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. The archaeological investigation must be undertaken in accordance with the requirements of the code.

It is stated in section 1.2 of the code that where the Aboriginal cultural heritage assessment concludes that the proposed activity will result in harm to Aboriginal objects or declared Aboriginal Places, an application for an Aboriginal Heritage Impact Permit (AHIP) will be required. This application must be supported by an Aboriginal Cultural Heritage Assessment Report (ACHAR).

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 identify 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 is located approximately 4 kilometres west of Bomaderry and approximately 5.5 kilometres north-west of the Nowra CBD (Figure 1). It encompasses 12 hectares of rural land located between Moss Vale Road and Taylors Lane.

The study area is within the:

- Shoalhaven Local Government Area (LGA).
- Parish of Illaroo
- County of Camden

The study area is consists of Lot 1 DP9499321 and is bounded by Moss Vale Road to the north, Lot 122 DP 3060 to the east, Lot 3 DP 851823 to the west and Taylors Lane to the south(Figure 2).

1.3 Proposed development

The proposed development comprises a subdivision of R1 zoned land located across the study area (Figure 3). Works as part of the project will include:

- Subdivision of the study area into residential lots

- Construction of associated amenities including roads, and drainage and electrical services

1.4 Planning approvals

The proposed development will be assessed against Part 4 of the *Environmental Planning and Assessment Act 1979* NSW (EP&A Act). Other relevant legislation and planning instruments that will inform this assessment include:

- Commonwealth *Environmental Protection and Biodiversity Conservation Act 1999.*
- NSW *National Parks and Wildlife Act 1974* (NPW Act).
- NSW *National Parks and Wildlife Amendment Act 2010.*
- Infrastructure State Environmental Planning Policy 2007.
- Shoalhaven Local Environmental Plan 2014 (LEP).
- Shoalhaven Development Control Plan *2014*

1.5 Restricted and confidential information

Appendix 1 in the Archaeological Report contains AHIMS information which is confidential and not to be made public. This is clearly marked on the title page for the Attachment.

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, and the NSW area, according to Bowler *et al* (2003), for over 42,000 years. These dates are subject to continued revision as further evidence of Aboriginal cultural heritage is discovered and more research conducted, for example 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

Without being part of the Aboriginal culture and the production of this culture, it is not possible for non-Aboriginal people to fully understand their meaning 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 / 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:

- 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)
  - Link between the present and the past (DECCW 2010a p.iii).
- As a learning tool to teach Aboriginal culture to younger Aboriginal generations and the general public (DECCW 2010a p.3).
- As 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).

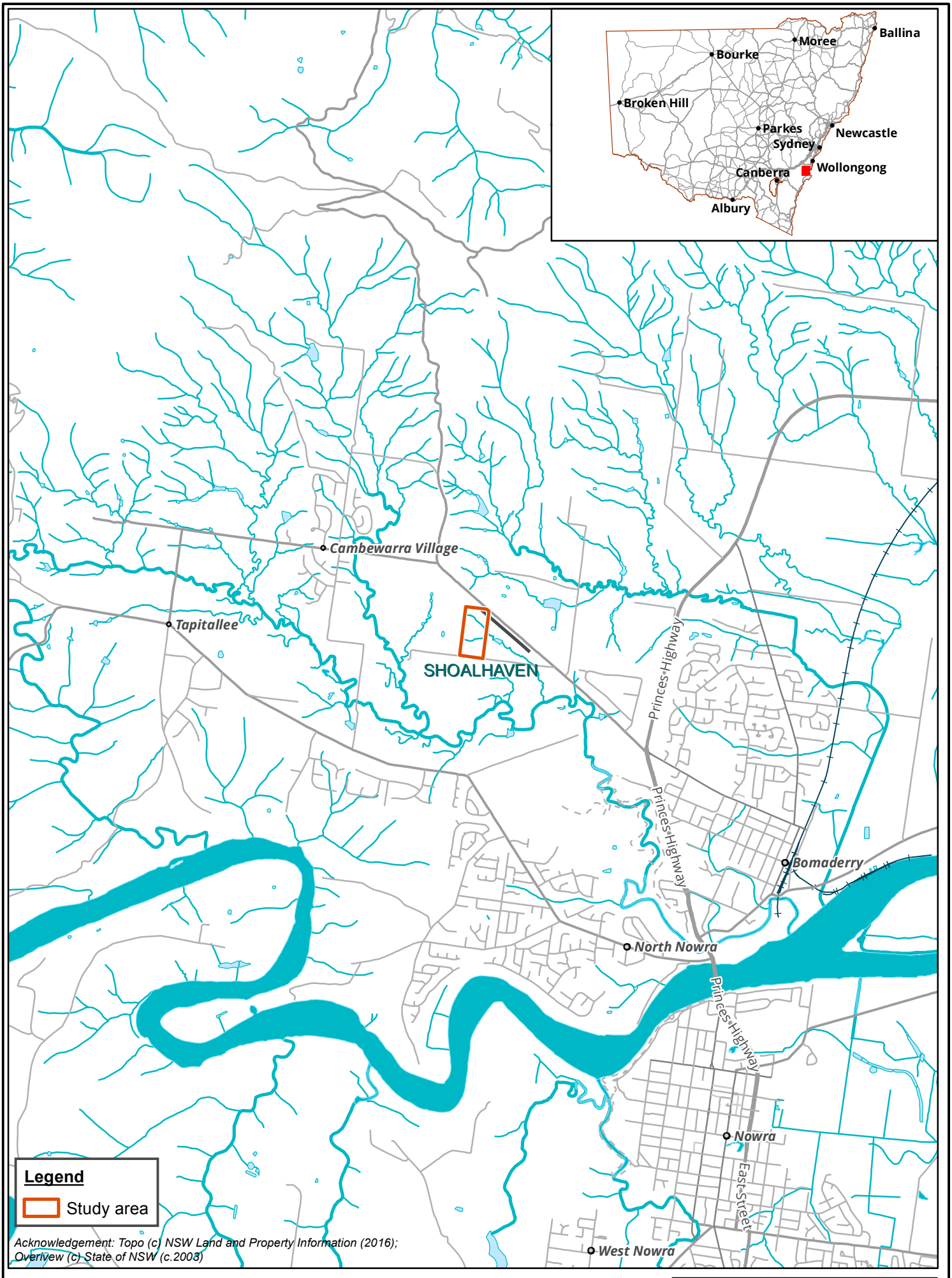

Figure 1: Location of the study area

Biosis Pty Ltd
Albury, Ballarat, Melbourne,
Newcastle, Sydney, Wangaratta & Wollongong

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Date: 02 July 2018,
Checked by: MJS, Drawn by: DK, Last edited by: dkazemi
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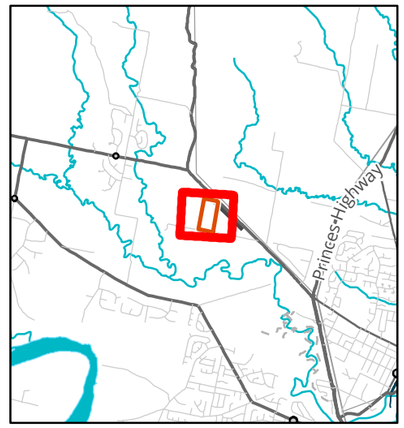
Metres
N
Scale 1:50,000 @ A4, GDA 1994 MGA Zone 56



Legend

Study area

F2 Study area detail

0 30 60 90 120 150

Metres
Scale: 1:2,500 @ A3
Coordinate System: GDA 1994 MGA Zone 56

N

Biosis Pty Ltd

Albury, Ballarat, Melbourne,
Newcastle, Sydney, Wangaratta & Wollongong

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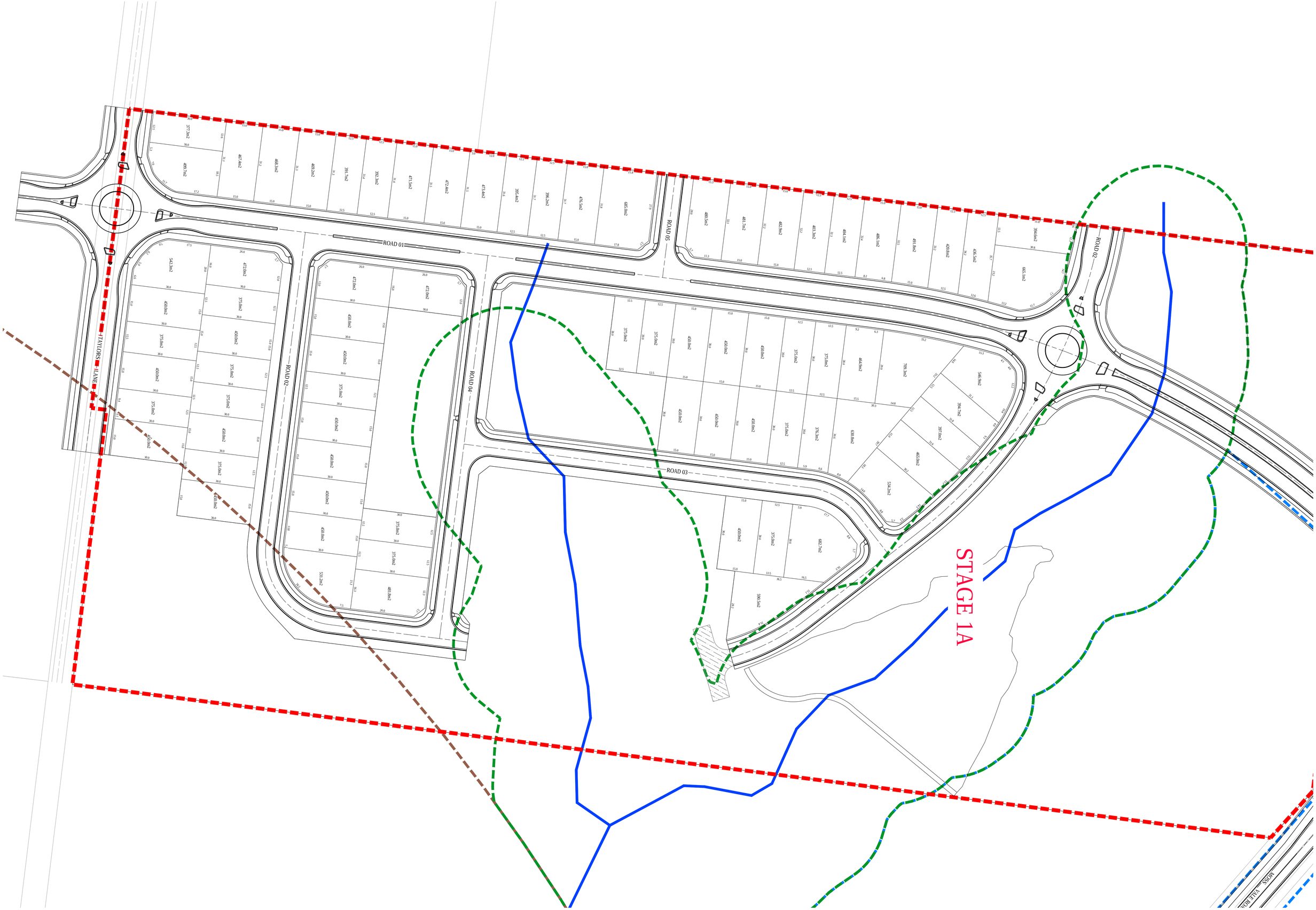

ROAD 01
ROAD 02
ROAD 03
ROAD 04
ROAD 05
ROAD 02
TAYLORS LANE
STAGE 1A
MOSS VALE ROAD

2 Study area context

This section discusses the study area in regards to its landscape, environmental and Aboriginal cultural heritage context. This section should be read in conjunction with the archaeological report attached in Appendix 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).

2.1 Topography and hydrology

The study area is situated partly within three geological formations. The south section of the study area is contained within the quaternary alluvial floodplain deposits geological formation. This formation is less than 2.5 million years old and contains current and recent mud, silt, sand and gravel deposited by river systems (Troedson and Hashimoto 2013). The northern section of the study area features the Permian Berry Siltstone formation, which is aged between 264 and 265 million years (Troedson and Hashimoto 2013). This formation contains siltstones and shelf deposits of fluvial sands and gravel. The third formation is located in the western edge of the study area and consists of Quaternary alluvial and colluvial fan deposits containing sand silt, gravel and clay (Troedson and Hashimoto 2013).

Topographically, the study area is located almost entirely on hillslopes. These hillslopes are bisected by two first order, non-perennial drainage lines.

Stream order is recognised as a factor which helps the development of predictive modelling in Aboriginal archaeology in NSW. The stream order system used for this assessment was originally developed by Strahler (1964). It functions by adding two streams of equal order at their confluence to form a higher order stream. As stream order increases, so does the likelihood that the stream would be a perennial source of water. Predictive models which have been developed for the region have a tendency to favour permanent water courses as the locations of campsites as they 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. Given that the water sources within the study area consist of first order, non-perennial sources and are sloped as they are located on the hillslope landform, they will not provide a reliable source of water. This suggests that they are unlikely to have been utilised intensively by Aboriginal people.

2.2 Soil landscapes

Two soil landscapes are present within the study area, the Coolangatta landscape, which overlies the slopes and crest of the northern half of the study area, and the Shoalhaven landscape, which overlies alluvial flats in the southern section of the study area (Table 2).

The Coolangatta soil landscape is an erosional landscape characterised by undulating to rolling low hills. It contains broad crests and ridges with moderately inclined (5-20%) slopes and incised drainage lines. Soils consist of brown loams overlying bedrock to a depth of less than 20 centimetres on crests and upper slopes. Mid slopes contain brown loams overlying sandy clay loams, while lower slopes and drainage lines feature hard setting brown loamy fine sands overlying sandy clays to depths less than 200 centimetres (Hazelton 1992, p. 50). A summary of the Coolangatta soil profiles is presented in Table 2.

Table 2 Coolangatta soil landscape characteristics (Hazelton 1992, p. 50)

Dominant soil material	Characteristics
Co1	hard setting dull brown loam/fine sandy (topsoil)
Co2	friable dark brown loam (topsoil)
Co3	mottled dull reddish brown weakly pedal sand clay (subsoil)
Co4	brown Weakly pedal sandy clay loam (subsoil)

The Shoalhaven soil landscape is an alluvial landscape characterised by level to gently undulating terrace surfaces of the Shoalhaven River. It is an active floodplain with small levees, minor depressions and backwater swamps. The complex soil pattern is 50 to 100 centimetres deep and consists of prairie soils on levees, red earths and yellow and red podzoilic soils on terraces, and alluvial soils and gleyed podzolic soils on the floodplain. The local relief is around 5 metres, with slope gradients of less than 3% (Hazelton 1992, p. 68). A summary of the characteristics of these soils is presented in Table 3.

Table 3 Shoalhaven soil landscape characteristics (Hazelton 1992, p. 69)

Dominant soil material	Characteristics
sf1	hard setting brownish black fine sandy loam (topsoil)
sf2	brown weakly pedal light sandy clay loam (subsoil)
sf3	dull yellowish brown massive sandy clay (subsoil)
sf4-	dull reddish brown moderately pedal light medium clay (subsoil)

2.3 Climate and rainfall

The Nowra region, which the study area is contained within, features annual mean rainfalls of 972.9 milimetres, with approximately 118.2 days out of the year containing rainfalls. This is moderate to high rainfall for Australia and would result in reliable sources of water and possible floods in higher order drainage lines.

2.4 Landscape resources

The study area is located within areas that have been cleared with a pocket of vegetation regrowth present. Remnant vegetation is located to the south of the study area along Good Dog creek and provides some insight into what vegetation the study area would have contained. The remnant vegetation is defined as Illawarra Gully Wet Forest and is characterised by an overstorey of blackbutt and sub canopy of maiden's wattle. Beneath this, the ground cover includes bracken, mat-rush, and cogon grass. Within the wider region there are also surviving areas of Currambene-Batemans Lowlands Forest that consist of sweet pittosporum, two-veined hickory, hairy clerodendrum, cheese tree, tree violet and common silkpod (Tozer 2010).

The wider Nowra landscape has also been extensively cleared but still retains stands of tall open-forest that include turpentine, grey gum, scribbly gum, spotted gum, Sydney peppermint, thin-leaved stringybark, red bloodwood, forest oak and blackbutt. Understorey species comprise of flaky-barked tea-tree, hairpin banksia, pine-leaf geebung, burrawang, decorative paperbark, it is likely that these species would also have been found in the study area prior to clearance.

The vegetation species present in the region would have provided a range of resources for Aboriginal people. Food, tools, shelter and ceremonial items were derived from floral resources, with the locations of many

campsites predicated on seasonal availability. Tea trees provided resources for shelter, insect repellent, medicine and provided an indicator when shellfish was in season (Wesson 2009, Stewart and Percival 1997). Mat-rush was used as a food source, to make string and medicine and was often a habitat for small marsupials and reptiles (Wesson 2009, Stewart and Percival 1997). Stringybark Eucalypts provided material for making shelters and fire starting while turpentine was used to make tools and weapons and also as a source of food with edible seeds and flowers (Wesson 2009). Many of the plants found within the vicinity of the study area were important to Aboriginal people and were used for numerous purposes.

Native fauna that would have been present in the vicinity of the study area include: Kangaroos, eastern snake-neck turtle, red-bellied black snake, short-beaked echidna, brush-tail possum, sugar glider, common wombat, frog, bats, cockatoos, kookaburra, and ducks (Wesson 2009). 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 from Kangaroos 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 (Wesson 2009). Animals such as brush-tailed possums were highly prized for their fur, with possum skin cloaks worn fastened over one shoulder and under the other (Attenbrow 2002).

2.5 European land use history

The study area was originally alienated as part of the 'Cumbewarra Farm' grant to Alexander Berry. This grant of 1,280 acres was originally promised to Charles Staples in January 1830, but was instead granted to Berry in May 1838. Berry was an early landholder in the region, and gave his name to the modern town of Berry, north of the study area. This grant formed a small part of his holdings, which totalled to 57,000 acres (NOHC 2013, p. 16).

The study area has primarily been used for agricultural purposes including cattle grazing. There is expected to be some disturbance in the uppermost profiles, caused by hooved animals; however the majority of the study area appears to be relatively undisturbed. At present the study area has been used for cattle grazing with fence lines the only visible disturbances.

3 Aboriginal cultural heritage context

3.1 Ethnohistory

Despite a proliferation of known indigenous sites there is considerable ongoing debate about the nature, territory and range of pre-contact Indigenous language groups in the region. These debates have arisen largely due to the lack of ethnographic and linguistic information recorded at the time of European contact. By the time colonial diarists, missionaries and proto-anthropologists began making detailed records of indigenous people in the late 19th century; pre-European Indigenous groups had been broken up and reconfigured by European settlement activity.

The study area is located close to the boundary of the Wodi Wodi and Wandandian tribal areas as defined by Tindale (1974), who identified the Shoalhaven River as a natural boundary between the groups, with Wodi Wodi territory extending north into the Illawarra and up to Wollongong, and Wandandian territory extending south to Ulladulla. The areas inhabited by each of the groups are considered to be indicative only and would have changed through time and possibly also depending on circumstances (i.e. availability and distribution of resources). Interactions between different types of social groupings would have varied with seasons and resource availability.

The first interaction between Aboriginal people and Europeans in the Shoalhaven area occurred in 1770, when explorers Cook and Banks saw camp fires on the Murramarang shore. (Organ 1990)

In 1838, Alexander Berry conducted a census of Aboriginal people in close proximity to his estate, which includes the current study area. The census produced the following results (NOHC 2007, p. 12):

Aborignal Group	Number of individuals
Broughton Creek	26
Gerongong Tribe	21
Jervis Bay	62
Numba Tribe	25
Shoalhaven Tribe	39
Uurro Tribe	24
Wooragee Tribe	45.

Throughout the 1830s and 1840s, large portions of the area were taken up by land grants, forcing the local Aboriginal population into fringe camps adjacent to European settlements or in to the rough mountainous country to the west.

3.2 Aboriginal heritage located in the study area

The archaeological assessment of the study area identified the following Aboriginal sites in the study area (Figure 4):

- AHIMS pending – Moss Vale Road Aft 1

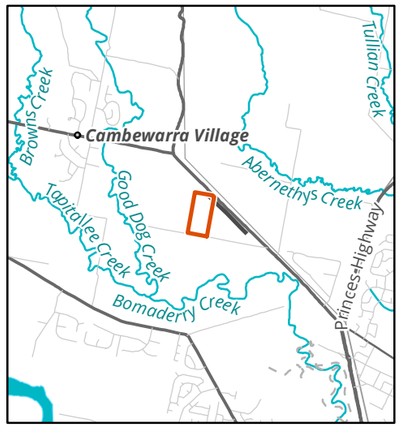
The archaeological report attached in Appendix 6 provides details for Aboriginal sites identified during the archaeological assessment. A brief description of each site is provided below.

Moss Vale Road Aft 1

Moss Vale Road AFT 1 was originally recorded by Kelleher Nightingale Consulting as part of an assessment of Aboriginal Cultural heritage for a DA application of the study area. The site was identified within the study area by KNC but no details about the site were provided within the report. Additionally, no site cards have been submitted to the AHIMS for this site, so information about the artefacts identified by KNC were not obtainable. A survey and test excavation of the site undertraken by Biosis identified that the site was located on hillslopes and a portion of the site was within a first order drainage line, with shallow erosion prone soils. No artefacts were identified on the surface of the site or in sub-surface soil profile.

3.3 Interpretation of past Aboriginal land use

The lack of artefacts identified within Moss Vale Road Aft 1 by Biosis suggest that the artefacts originally identified by KNC were isolated or low in density or were disturbed or washed away at some point between the KNC and Biosis assessments. The site is located on a hillslope landform and within a first order non-perennial drainage line, indicating it falls within Clarke and Kuskies (2006) 'areas outside primary and secondary resource zones.' The results of Biosis's assessment support this interpretation and suggest that occupation of the study area was likely to have involved sporadic and very short duration hunting and/or gathering (without camping) activities and transitory movement.



Legend

Study area

Archaelogical Site

Moss Vale Road Aft 1

F4 Aboriginal sites within study area

0 30 60 90 120 150

Metres

Scale: 1:2,500 @ A3

Coordinate System: GDA 1994 MGA Zone 56

Biosis Pty Ltd

Albury, Ballarat, Melbourne,
Newcastle, Sydney, Wangaratta & Wollongong

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4 Aboriginal community consultation

Consultation with the Aboriginal community has been undertaken in accordance with the consultation requirements as detailed below. A consultation log of all communications with RAPs is provided in Appendix 1.

4.1 Stage 1: Notification of project proposal and registration of interest

4.1.1 Identification of relevant Aboriginal stakeholders

In accordance with the consultation guidelines, Biosis Pty Ltd notified the following bodies regarding the Proposal:

- Shoalhaven Shire Council
- NSW Office of Environment and Water.
- NSW Native Title Services Corporation Limited (NTSCORP Limited).
- Office of the Registrar, Aboriginal Land Rights Act 1983 of Aboriginal Owners.
- National Native Title Tribunal (NNTT).
- Southern Rivers Local Land Services.
- Nowra Local Aboriginal Land Council (NLALC).

A list of known Aboriginal stakeholders in the Illawarra was provided by OEH (a copy of this/these responses are provided in Appendix 2 and include:

- Badu
- Batesman Bay Local Aboriginal Land Council
- Biamanga
- Bilinga
- Bilinga Cultural Heritage Technical Services
- Cullendulla
- Dharug
- Gadhu Dreaming
- Goobah Development Pty Ltd
- Gundungurra Tribal Technical Services
- Gunyuu
- Gunyuu Cultural Heritage Technical Services
- Guunamaa Dreamin Sites and Surveying
- Jerringong
- Jerrinja Local Aboriginal Land Council
- Jerrinja Consultants Pty Ltd
- Karrial
- Merrimans Local Aboriginal Land Council
- Minnamunnung
- Mr Lionel P Mongata
- Munyunga Cultural Heritage Technical Services
- Murramarang
- Murrumbul
- Murrumbul Cultural Heritage Technical Services
- Nowra Local Aboriginal Land Council
- Nundagurri

- Pemulwuy
- Shoalhaven Elders and Friends Organisation
- Three Ducks Dreaming Surveying and Consulting
- Ulladulla Local Aboriginal Land Council
- Walbunja
- Walgalu
- Warra Bingi Nunda Gurri
- Wingikara
- Wingikara Cultural Heritage Technical Services
- Wullung
- Yerramurra.

Shoalhaven City Council suggested Biosis contact Nowra Local Aboriginal Land Council. A search conducted by the National Native Title Tribunal provided four native title claims, It was determined that three of these claims did not exist, while the fourth has currently been accepted for registrations but not determined. The remaining agencies did not provide a response.

4.1.2 Public notice

In accordance with the consultation guidelines, a public notification was placed in the following newspapers:

- South Coast Register (18/04/2018)

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 Appendix 2.

4.1.3 Registration of Aboriginal parties

Aboriginal groups identified in Section 4.1.1 were sent a letter on the 8/05/2018 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 in the vicinity of the study area. In response to the letters and public notice, a total of 14 groups registered their interest in the project. Registrations from Aboriginal parties are provided in Appendix 3. A full list of Aboriginal parties who registered for consultation is provided below:

- Biamanga
- Cullendulla
- Darug Land Observations
- Goobah Development Pty Ltd
- Guunamaa Dreaming and Sites Surveying and Consulting
- Gulaga
- Leanne Tungai
- James Davis
- Murramarang
- Noel Webster
- Thoorga Nura
- Tungai Tonghi
- Three Ducks Dreaming Surveying and Consulting
- Warra Bingi Nunda Gurri

4.2 Stage 2: Presentation of information about the proposed project

On 23/05/2018 Biosis provided RAPs with details about the proposed development works (project information pack). A copy of the project information pack is provided in Appendix 3.

4.3 Stage 3: Gathering information about cultural significance

4.3.1 Archaeological assessment methodology information pack

On 23/05/2018 Biosis provided each RAP with a copy of the project methodology pack outlining the proposed Aboriginal cultural heritage assessment 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 Appendix 4.

Comments were received from Leanne Tungai and Three Ducks Dreaming who both indicated they were in support of the proposed methodology.

4.3.2 Information gathered during fieldwork

Test excavations for this project were conducted over three-consecutive days between 20 and 22 June 2018 with the participation of representatives from Tungai Tonghi and James Davis. No comments were received at this stage of consultation.

4.4 Stage 4: Review of draft Aboriginal cultural heritage assessment report (TBC)

TBC following end of stage 4 consultation

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 Appendix 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:

- **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. 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 (DECCWa 2010 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 (DECCWa 2010 p.3).
- A learning tool to teach Aboriginal culture to younger Aboriginal generations and the general public (DECCWa 2010 p.3).
- further evidence of Aboriginal occupation prior to European settlement for people who do not understand the magnitude to which Aboriginal people occupied the continent (DECCWa 2010 p.3).

It is acknowledged that Aboriginal people are the primary determiners of the cultural significance of Aboriginal cultural heritage.

5.3 Historic values

Historical 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 was originally alienated as part of the 'Cumbewarra Farm' grant to Alexander Berry. This grant of 1,280 acres was originally promised to Charles Staples in January 1830, but granted to Berry in May 1838. Berry was an early landholder in the

region, and gave his name to the modern town of Berry. This grant formed a small part of his holdings, which totalled to 57,000 acres (NOHC 2013, p. 16). This association is assessed as having low significance.

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 (Appendix 6).

The following archaeological significance assessment is based on Requirement 11 of the code. Using the assessment criteria detailed in scientific values and significance assessment, an assessment of significance was determined and a rating for each site was determined. The results of the archaeological significance assessment are provided in Table 4 and Section 5.6.

Table 4 Scientific significance assessment of archaeological sites recorded within the study area

AHIMS site no	Site name	Site content	Site condition	Representativeness	Scientific significance
Pending	Moss Vale Road Aft 1	1	1	1	3- Low

5.5 Aesthetic values

The study area is located on hillslopes and contains a first order drainage line that has been modified with the installation of a dam. This aesthetic value has been detracted from by development in the area over the past 150 years, most notably the scattered residential development surrounding the study area and extensive vegetation clearance of the study area to facilitate its use as agricultural and grazing land. This association is assessed as having low significance.

5.6 Statement of significance

The significance of Moss Vale Road Aft 1 is assessed in accordance with the following criteria:

- Requirements of the Code
- The Burra Charter
- Guide to Investigating and reporting on Aboriginal Heritage.

The combined use of these guidelines is widely considered to represent the best practice for assessments of Aboriginal cultural heritage. The identification and assessment of cultural heritage values includes the four values of the Burra Charter: social, historical, scientific and aesthetic values. The resultant statement of significance has been constructed for the study area based on the significance ranking criteria assessed in Table 5.

5.6.1 Statement of significance for Moss Vale Road Aft 1

Moss Vale Road Aft 1 was originally recorded by Kelleher Nightingale Consulting who did not provide any details regarding the site. A site survey by Biosis identified that the site identified by KNC was located on

hillslopes next to first order, non-perennial drainage lines as well within the drainage lines. The site had been entirely cleared of remnant vegetation in the past. Complete grass cover and lack of information in the form of AHIMS site cards, or details included in the KNC report made it impossible to relocate any surface artefacts identified by KNC. Test excavations undertaken by Biosis did not identify any sub-surface deposits in the study area. Moss Vale Road Aft 1 has therefore been assessed with low significance.

Table 5 Significance assessment criteria

Site name	Criteria	Ranking
Moss Vale Road Aft 1	Cultural – discussions with the local Aboriginal communities reflect that the site is moderate in value.	Low
	Historical – the site is not connected to any historical event or personage.	Low
	Scientific – the site possesses a low density of artefacts which are common throughout the Illawarra region	Low
	Aesthetic – the site is located on the slopes overlooking a dam. It has been impacted by tree clearance for grazing.	Low

6 Development limitations and mitigation measures

Within the study area there is one Aboriginal site which will be subject to harm. It is expected that the potential of harm to Aboriginal archaeological sites from residential development in the study area is high. Strategies to avoid or minimise harm to Aboriginal heritage in the study area are discussed below.

A summary of the impacts that this development will have on Aboriginal sites within the study area is provided in Table 6.

Table 6 Summary of potential archaeological impact

AHIMS site no.	Site name	Significance	Type of harm	Degree of harm	Consequence of harm
Pending	Moss Vale Road Aft 1	Low	Direct	Total	Total loss of value

6.1 Potential risks to Aboriginal cultural heritage

The current proposed works within the study area include activities detailed below, which could impact one Aboriginal heritage site:

- Construction of residential buildings and associated amenities

Left unmitigated, these activities have potential to completely remove or disturb archaeological deposits and Aboriginal objects.

6.2 Avoiding harm to Aboriginal heritage

The development was not able to be altered to avoid the site Moss Vale Road Aft 1, as a design change was not feasible given the size of the site and relation to study area size. Instead mitigation measures in the form of a program of test excavations was undertaken in the study area to characterise the site and obtain as much information about it as possible.

6.3 Management and mitigation measures

Ideally, heritage management involves conservation of sites through the preservation and conservation of fabric and context within a framework of "doing as much as necessary, as little as possible" (Australian ICOMOS 2013). 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 the design of the development is the primary mitigation and management strategy, and should be implemented where practicable.

In the instance of this project it is not feasible for the development design plans to be altered to avoid impacts to the study area. As impacts to the site could not be avoided, Biosis undertook a program of test excavations to Moss Vale Road Aft 1. The results of these excavations contributed to and increased our knowledge of Aboriginal archaeology in the region. This benefits future generations in line with ecological sustainable

development and intergenerational equity principles, with the collection of data from the test excavations being placed on the AHIMS register where it can then be accessed by the public and future generations.

7 Recommendations

The recommendations below respond specifically to the wishes of the registered Aboriginal parties. Recommendations regarding the archaeological value of the site, and the subsequent management of Aboriginal cultural heritage is provided in the archaeological report (Appendix 6).

Recommendation 1: Obtain an Aboriginal Heritage Impact Permit (AHIP) for Moss Vale Road Aft 1

The proposed works will result in direct impacts, with a total loss of value to Moss Vale Road Aft 1. It is recommended that Cardno apply to the OEH for an area wide AHIP covering the entirety of the study area for a term of 20 years. The AHIP should allow for the following:

- Impact to the recorded Aboriginal cultural heritage site Moss Vale Road Aft 1
- Impact within the limits of the area wide AHIP for any further Aboriginal objects encountered during construction, unless human remains are identified.

A site impact recording form for Moss Vale Road Aft 1should also be completed and submitted to the OEH following impacts to the site.

Advice preparing AHIPs

An AHIP is required for any activities likely to have an impact on Aboriginal objects or places or cause land to be disturbed for the purposes of discovering an Aboriginal object. The Office of Environment and Heritage (OEH) issues AHIPs under Part 6 of the National Parks and Wildlife Act 1974 (NPW Act).

AHIPs should be prepared by a qualified archaeologist and lodged with the OEH. Once the application is lodged processing time can take between 8 and 12 weeks. It should be noted that there will be an application fee levied by the OEH for the processing of AHIPs, which is dependent on the estimated total cost of the development project.

Where there are multiple sites within one study area an application for an AHIP to cover the entire study area is recommended.

Recommendation 3: Discovery of Unanticipated Historical Relics

Relics are historical archaeological resources of local or state significance and are protected in NSW under the *Heritage Act 1977*. Relics cannot be disturbed except with a permit or exception/exemption notification. Should unanticipated relics be discovered during the course of the project, work in the vicinity must cease and an archaeologist contacted to make a preliminary assessment of the find. The Heritage Council will require notification if the find is assessed as a relic.

Recommendation 4: 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:

4. Immediately cease all work in the vicinity and not further move or disturb the remains.
5. Notify the Coroners Office and NSW Police immediately. Following this, contact OEH's Environmental Line on 131 555 as soon as practicable and provide details of the remains and their location. The find must also be reported to the Aboriginal parties.

6. Not recommence work at that location unless authorised in writing by OEH.

Recommendation 5: Continued consultation with the registered Aboriginal stakeholders

As per the consultation requirements, it is recommended that the proponent provides a copy of this draft report to the Aboriginal stakeholders and considers all comments received. The proponent 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 6: Lodgment of final report

A copy of the final report will be sent to the client, registered Aboriginal stakeholders, OEH and the AHIMS register.

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Appendices

Appendix 1 Consultation log

A1.1 Stage 1 – Notification of project proposal and registration of interest

Step 1- Identification of Aboriginal people/parties with an interest in the proposed study area.

Organisation contacted	Date and type of contact	Date and type of response	Response details
Shoalhaven City Council	16/4/2018 - email	02/05/2018 - email	Provided Nowra LALC contact details
NSW Office of Environment and Heritage (OEH)	16/4/2018 - email	16/04/2018 - email	Provided Biosis with a list of potential stakeholders within the Shoalhaven LGA.
National Native Title Tribunal	16/4/2018 - email	17/04/2018 - email	Responded with the results of the native title search. There were three native title claims but the determined outcome found that native title did not exist
Native Title Services Corporation Limited	16/4/2018 - email	No response	N/A
Office of the Registrar, Aboriginal Land Rights Act 1983 of Aboriginal Owners	16/4/2018 - email	No response	N/A
Nowra Local Aboriginal Land Council (LALC)	16/4/2018 - email	No response	N/A
South East Local Land Services	16/4/2018 - email	No response	N/A

Step 2- Public advertisement

The public notice was published in the South Coast Register on the 18/04/2018. A copy of the advertisement is provided in Appendix 2.

Step 3- Registration of interest.

The registration period ran from the 8/05/2018 to 22/05/2018. Leeway was given to Aboriginal parties/groups who provided responses shortly after the close of this period and they have been registered as Aboriginal parties for consultation.

Organisation contacted	Date and type of contact	Date and type of response	Response details
Badu (Murrin Clan/Peoples	8/05/2018 - email	No response	n/a
Biamanga (Murrin Clan/Peoples)	8/05/2018 - email	18/05/2018 - email	Registered Interest

Organisation contacted	Date and type of contact	Date and type of response	Response details
Bilinga (Murrin Clan/Peoples)	8/05/2018 - email	No response	n/a
Bilinga Cultural Heritage Technical Services (Mirramajah)	8/05/2018 - email	No response	n/a
Cullendulla (Murrin Clan/Peoples)	8/05/2018 - email	18/05/2018 - email	Registered Interest
Darug Land Observations	8/05/2018 - email	10/05/2018 - email	n/a
Dharug (Murrin Clan/Peoples)	8/05/2018 - email	No response	n/a
Gadhu Dreaming	8/05/2018 - email	No response	n/a
Goobah Development Pty Ltd (Murrin Clan/Peoples)	8/05/2018 - email	18/05/2018 - email	Registered Interest
Gundungurra Tribal Technical Services	8/05/2018 - email	No response	n/a
Gundungurra Tribal Technical Services	8/05/2018 - email	No response	n/a
Gundungurra Tribal Technical Services	8/05/2018 - email	No response	n/a
Gundungurra Tribal Technical Services	8/05/2018 - email	No response	n/a
Gundungurra Tribal Technical Services	8/05/2018 - email	No response	n/a
Gundungurra Tribal Technical Services	8/05/2018 - email	No response	n/a
Gundungurra Tribal Technical Services	8/05/2018 - email	No response	n/a
Gunyuu (Murrin Clan/Peoples)	8/05/2018 - email	No response	n/a
Gunyuu Cultural Heritage Technical Services (Mirramajah)	8/05/2018 - email	No response	n/a
Guunamaa Dreaming Sites and Surveying	8/05/2018 - email	16/05/2018 - email	Registered Interest
Jerinja Local Aboriginal Land Council	8/05/2018 - email	No response	n/a
Jerringong (Murrin Clan/People	8/05/2018 - email	No response	n/a

Organisation contacted	Date and type of contact	Date and type of response	Response details
Karrial (Murrin Clan/Peoples)	8/05/2018 - email	No response	n/a
Minnamunnung	8/05/2018 - email	No response	n/a
Munyunga (Murrin Clan/Peoples)	8/05/2018 - email	No response	n/a
Munyunga Cultural Heritage Technical Services (Mirramajah)	8/05/2018 - email	No response	n/a
Murramarang (Murrin Clan/Peoples)	8/05/2018 - email	18/05/2018 - email	Registered Interest
Murrumbul (Murrin Clan/Peoples)	8/05/2018 - email	No response	n/a
Murrumbul Cultural Heritage Technical Services (Mirramajah)	8/05/2018 - email	No response	n/a
Nowra Local Aboriginal Land Council	8/05/2018 - email	No response	n/a
Nundagurri (Murrin Clan/Peoples)	8/05/2018 - email	No response	n/a
Pemulwuy (Murrin Clan/Peoples)	8/05/2018 - email	No response	n/a
Three Ducks Dreaming Surveying and Consulting	8/05/2018 - email	8/05/2018 - email	Registered Interest
Tungai Tonghi	8/05/2018 - email	8/05/2018 – phone/email	Registered Interest
Ulladulla Local Aboriginal Land Council	8/05/2018 - email	No response	n/a
Walbunja (Murrin Clan/Peoples)	8/05/2018 - email	No response	n/a
Walgalu (Murrin Clan/Peoples)	8/05/2018 - email	No response	n/a
Warra Bingi Nunda Gurri	8/05/2018 - email	8/05/2018 - email	Registered Interest
Wingikara (Murrin Clan/Peoples)	8/05/2018 - email	No response	n/a
Wingikara Cultural Heritage Technical Services (Mirramajah)	8/05/2018 - email	No response	n/a
Wullung (Murrin Clan/Peoples)	8/05/2018 - email	No response	n/a

Organisation contacted	Date and type of contact	Date and type of response	Response details
Gary Caines	8/05/2018 - email	No response	n/a
Noel Butler	8/05/2018 - email	No response	n/a
Noel Webster	8/05/2018 - email	8/05/2018 - email	n/a
Leanne Tungai	8/05/2018 - email	8/05/2018 - email	Registered Interest
Gayle Watts	8/05/2018 - email	No response	n/a
Batemans Bay Local Aboriginal Land Council	8/05/2018 - post	No response	n/a
Ronald Carberry	8/05/2018 - post	No response	n/a
Shoalhaven Elders and Friends Organisation	8/05/2018 - post	No response	n/a
South West Rocks Corporation	8/05/2018 - post	No response	n/a
Yerramurra (Murrin Clan/Peoples	8/05/2018 - post	No response	n/a
James Davis	n/a	8/05/2018 - phone	Registered Interest

A1.2 Stage 2 – Presentation of information about the proposed project

Step 1- Provision of project information pack

A copy of the information pack is provided in Appendix 3and a copy of the covering email is provided following.

Organisation contacted	Date and type of contact	Date and type of response	Response details
Tungai Tonghi	23/05/2018 - email	No response	n/a
Warra Bingi Nunda Gurri	23/05/2018 - email	No response	n/a
Three Ducks Dreaming Surveying and Consulting	23/05/2018 - email	No response	n/a
Guunamaa Dreaming Sites and Surveying	23/05/2018 - email	No response	n/a
Leanne Tungai	23/05/2018 - email	No response	n/a

Organisation contacted	Date and type of contact	Date and type of response	Response details
Biamanga (Murrin Clan/Peoples)	23/05/2018 - email	No response	n/a
Cullendulla (Murrin Clan/Peoples)	23/05/2018 - email	No response	n/a
Goobah Development Pty Ltd (Murrin Clan/Peoples)	23/05/2018 - email	No response	n/a
Murramarang (Murrin Clan/Peoples)	23/05/2018 - email	No response	n/a
James Davis	23/05/2018 - email	No response	n/a
Nowra LALC	23/05/2018 - email	No response	n/a

A1.3 Stage 3 – Gathering information about cultural significance

Step 1- Provision of project methodology pack and consultation meeting

A copy of the methodology pack is provided in Appendix 4 and a copy of the covering email is provided following. The methodology was sent out to RAPs on the 23 May 2018 with the period of consultation ending on the 20 June 2018.

Organisation contacted	Date and type of contact	Date and type of response	Response details
Tungai Tonghi	23/05/2018 - email	No response	n/a
Warra Bingi Nunda Gurri	23/05/2018 - email	No response	n/a
Three Ducks Dreaming Surveying and Consulting	23/05/2018 - email	23/05/2018 - email	Supported methodology
Guunamaa Dreaming Sites and Surveying	23/05/2018 - email	23/05/2018 - email	Supported methodology
Leanne Tungai	23/05/2018 - email	23/05/2018 - email	Supported methodology
Biamanga (Murrin Clan/Peoples)	23/05/2018 - email	18/06/2018 - email	Supported methodology
Cullendulla (Murrin Clan/Peoples)	23/05/2018 - email	18/06/2018 - email	Supported methodology
Goobah Development Pty Ltd (Murrin Clan/Peoples)	23/05/2018 - email	18/06/2018 - email	Supported methodology
Murramarang (Murrin Clan/Peoples)	23/05/2018 - email	18/06/2018 - email	Supported methodology
James Davis	23/05/2018 - email	No response	n/a
Nowra LALC	23/05/2018 - email	No response	n/a

A1.4 Stage 4 – Review of draft report

Step 1- Provision of draft report for review

A copy of the draft report was provided to RAPs on the XXXX with the period of consultation ending on the XXXX. Repsonses received are provided in Appendix 5.

Organisation contacted	Date and type of contact	Date and type of response	Response details

Appendix 2 Stage 1: Notification of project proposal and registration of interest

Appendix 3 Stage 2: Presentation of information about the proposed project

Appendix 4 Stage 3: Gathering information about cultural significance

Appendix 5 Stage 4: Review of draft cultural heritage assessment report

Appendix 6 Archaeological report

Taylors Lane (Lot 1 DP949932)
Archaeological Report

FINAL REPORT

Prepared for Cardno

5 July 2018

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Client

- Daniel Thompson (Cardno)

Biosis

- Lauren Harley for mapping
- Taryn Gooley for quality assurance

Contents

Tables

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Glossary

ACHAR	Aboriginal Cultural Heritage Assessment Report
AHIMS	Aboriginal Heritage Information Management System
Consultation requirements	*Aboriginal cultural heritage consultation requirements for proponents 2010* (DECCW 2010a)
DA	Determining Authority
DECCW	Department of Environment, Climate Change and Water (now OEH)
DP	Deposited Plan
EPA	Environment Planning and Assessment
GDA	Geocentric Datum of Australia
GPS	Global Positioning System
GSV	Ground Surface Visibility
ICOMOS	International Council on Monuments and Sites
KNC	Kelleher Nightingale Consulting
LEP	Local Environmental Plan
LGA	Local Government Area
MGA	Map Grid of Australia
NPW Act	National Parks and Wildlife Act
NPWS	National Parks and Wildlife Service
NSW	New South Wales
NTSCORP	Native Title Services Corporation
OEH	NSW Office of Environment and Heritage
PAD	Potential Archaeological Deposit
Study area	Defined as Lot 102 DP120192
The code	*Code of Practice for Archaeological Investigation of Aboriginal Objects in NSW* (DECCW 2010)

Summary

Biosis Pty Ltd was commissioned by Cardno to undertake an Aboriginal cultural heritage assessment of a proposed subdivision at Taylors Lane (Lot 1 DP949932) following recommendations from OEH. The study area is located in farmland approximately 4 kilometres west of Bomaderry and approximately 5.5 kilometres north-west of Nowra central business district (CBD). Shoalhaven City Council is the Determining Authority and is assessing the Development Application (DA) to determine if the proposed development is likely to have a significant effect on the environment, including Aboriginal cultural heritage.

Archaeological results

There are 104 Aboriginal cultural heritage sites registered with the Aboriginal Heritage Information Management System (AHIMS) register in a 10 x 10 kilometre search area centred on the study area. None of the sites recorded on the AHIMS register are located within the study area.

An archaeological survey was conducted on 23 June 2018 by archaeologist Mathew Smith prior to excavations commencing. 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 level of ground exposure. Disturbances identified in the study area were minimal, with shallow surface disturbances associated with cattle grazing and other rural practices observed.

No previously unrecorded Aboriginal cultural heritage sites were identified during the field survey; however, one existing site, Moss Vale Road Aft 1, was originally identified by Kelleher Nightingale Consulting (KNC) as within the site. KNC did not provide any photos or descriptions of the site and have not registered the site on AHIMS. It is assumed the site is an artefact scatter given KNC's naming convention. The site was visited by Biosis and was found to be located on hillslopes and within a drainage line that has been heavily disturbed. The artefacts identified by KNC could not be relocated.

Test excavations at Moss Vale Road Aft 1 were conducted under the *Code of Practice for Archaeological Investigation of Aboriginal Objects in NSW* (DECCW 2010b) (the code) following recommendations by OEH in regards to the study area Development Application. Excavations ran from 21 June to 22 June 2018, with a team of one archaeologist and two Registered Aboriginal Parties (RAP's). A total of 14 test pits were excavated across Moss Vale Road Aft 1. Test excavations did not identify any sub-surface sites within Moss Vale Road Aft 1.

There is potential for development activities associated with the proposed residential subdivision to any surface artefacts making up Moss Vale Road Aft 1.

Management recommendations

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
- Current best conservation practice, widely considered to include:
  - Ethos of the Australia International Council on Monuments and Sites (ICOMOS) Burra Charter

- The *Code of Practice for Archaeological Investigation of Aboriginal Objects in NSW*(DECCW 2010) (the code)

The recommendations that resulted from the archaeological survey are provided below.

Prior to any development impacts occurring within the study area, the following is recommended:

Recommendation 1: Obtain an Aboriginal Heritage Impact Permit (AHIP) for Moss Vale Road Aft 1

The proposed works will result in direct impacts, with a total loss of value to Moss Vale Road Aft 1. It is recommended that Cardno apply to the OEH for an area wide AHIP covering the entirety of the study area for a term of 20 years. The AHIP should allow for the following:

- Impact to the recorded Aboriginal cultural heritage site Moss Vale Road Aft 1
- Impact within the limits of the area wide AHIP for any further Aboriginal objects encountered during construction, unless human remains are identified.

A site impact recording form for Moss Vale Road Aft 1 should also be completed and submitted to the OEH following impacts to the site.

Advice preparing AHIPs

An AHIP is required for any activities likely to have an impact on Aboriginal objects or places or cause land to be disturbed for the purposes of discovering an Aboriginal object. The Office of Environment and Heritage (OEH) issues AHIPs under Part 6 of the National Parks and Wildlife Act 1974 (NPW Act).

AHIPs should be prepared by a qualified archaeologist and lodged with the OEH. Once the application is lodged processing time can take between 8 and 12 weeks. It should be noted that there will be an application fee levied by the OEH for the processing of AHIPs, which is dependent on the estimated total cost of the development project.

Where there are multiple sites within one study area an application for an AHIP to cover the entire study area is recommended.

Recommendation 3: Discovery of Unanticipated Historical Relics

Relics are historical archaeological resources of local or state significance and are protected in NSW under the *Heritage Act 1977*. Relics cannot be disturbed except with a permit or exception/exemption notification. Should unanticipated relics be discovered during the course of the project, work in the vicinity must cease and an archaeologist contacted to make a preliminary assessment of the find. The Heritage Council will require notification if the find is assessed as a relic.

Recommendation 4: 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 in the vicinity and not further move or disturb the remains.
2. Notify the Coroners Office and NSW Police immediately. Following this, contact OEH's Environmental Line on 131 555 as soon as practicable and provide details of the remains and their location. The find must also be reported to the Aboriginal parties.
3. Not recommence work at that location unless authorised in writing by OEH.

Recommendation 5: Continued consultation with the registered Aboriginal stakeholders

As per the consultation requirements, it is recommended that the proponent provides a copy of this draft report to the Aboriginal stakeholders and considers all comments received. The proponent 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 6: Lodgment of final report

A copy of the final report will be sent to the client, registered Aboriginal stakeholders, OEH and AHIMS.

1 Introduction

1.1 Project background

Biosis Pty Ltd was commissioned by the Cardno to undertake an Aboriginal cultural heritage assessment (ACHA) and archaeological report (AR) for the proposed residential subdivision at Lot 1 DP949932 between Moss Vale Road and Taylors Lane, Cambewarra, NSW (Figure 1). This assessment will be used to support an application for an Aboriginal Heritage Impact Permit (AHIP) for the project and includes background research and archaeological excavations.

This investigation has been carried out under Part 6 of the *National Parks and Wildlife Act 1974* (NPW Act). It has been undertaken in accordance with the *Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales* (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. The archaeological investigation must be undertaken in accordance with the requirements of the code.

It is stated in section 1.2 of the code that where the Aboriginal cultural heritage assessment concludes that the proposed activity will result in harm to Aboriginal objects or declared Aboriginal Places, an application for an Aboriginal Heritage Impact Permit (AHIP) will be required. This application must be supported by an Aboriginal Cultural Heritage Assessment Report (ACHAR).

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 identify 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 is located approximately 4 kilometres west of Bomaderry and approximately 5.5 kilometres north-west of the Nowra CBD (Figure 1). It encompasses 12 hectares of rural land located between Moss Vale Road and Taylors Lane.

The study area is within the:

- Shoalhaven Local Government Area (LGA).
- Parish of Illaroo
- County of Camden

The study area is consists of Lot 1 DP9499321 and is bounded by Moss Vale Road to the north, Lot 122 DP 3060 to the east, Lot 3 DP 851823 to the west and Taylors Lane to the south(Figure 2).

1.3 Planning approvals

The proposed development will be assessed against Part 4 of the *Environmental Planning and Assessment Act 1979* NSW (EP&A Act). Other relevant legislation and planning instruments that will inform this assessment include:

- Commonwealth *Environmental Protection and Biodiversity Conservation Act 1999.*
- NSW *National Parks and Wildlife Act 1974* (NPW Act).
- NSW *National Parks and Wildlife Amendment Act 2010.*
- Infrastructure State Environmental Planning Policy 2007.
- Shoalhaven Local Environmental Plan 2014 (LEP).
- Shoalhaven Development Control Plan 2014

1.4 Objectives of the investigation

The objectives of the investigation can be summarised as follows:

- To conduct 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 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 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 development.

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

Name and qualifications	Experience summary	Project role
Mathew Smith BA/BSc (Hons) Archaeology	Mathew is a field archaeologist with Biosis Wollongong office. Mathew has over two year of experience as an archaeologist, and specialises in lithics analysis. In addition to this, Mathew has well developed skills in archaeological survey and test excavation, as well as Aboriginal community consultation and background research.	Report author Field team

Lauren Harley (BSc/BA)	Lauren has over 7 years' experience in the field of GIS and has worked on a diverse range of projects within both the private and public sectors. Lauren has provided technical and expert advice for a wide range of land and property information matters and trained staff in the use of GIS and related systems. Since joining Biosis, Lauren's experience with the preparation and production of high quality maps and plans and her proficiency across a wide range of technical skills including georeferencing, data conversion, data extracts, digitising, spatial analysis and data management has been demonstrated.	GIS mapping
Taryn Gooley BA /Sci (Hons) Archaeology	Taryn is a consultant archaeologist with 7 years of 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 NSW National Parks and Wildlife Act 1974 and NSW Heritage Act 1977	Quality Assurance

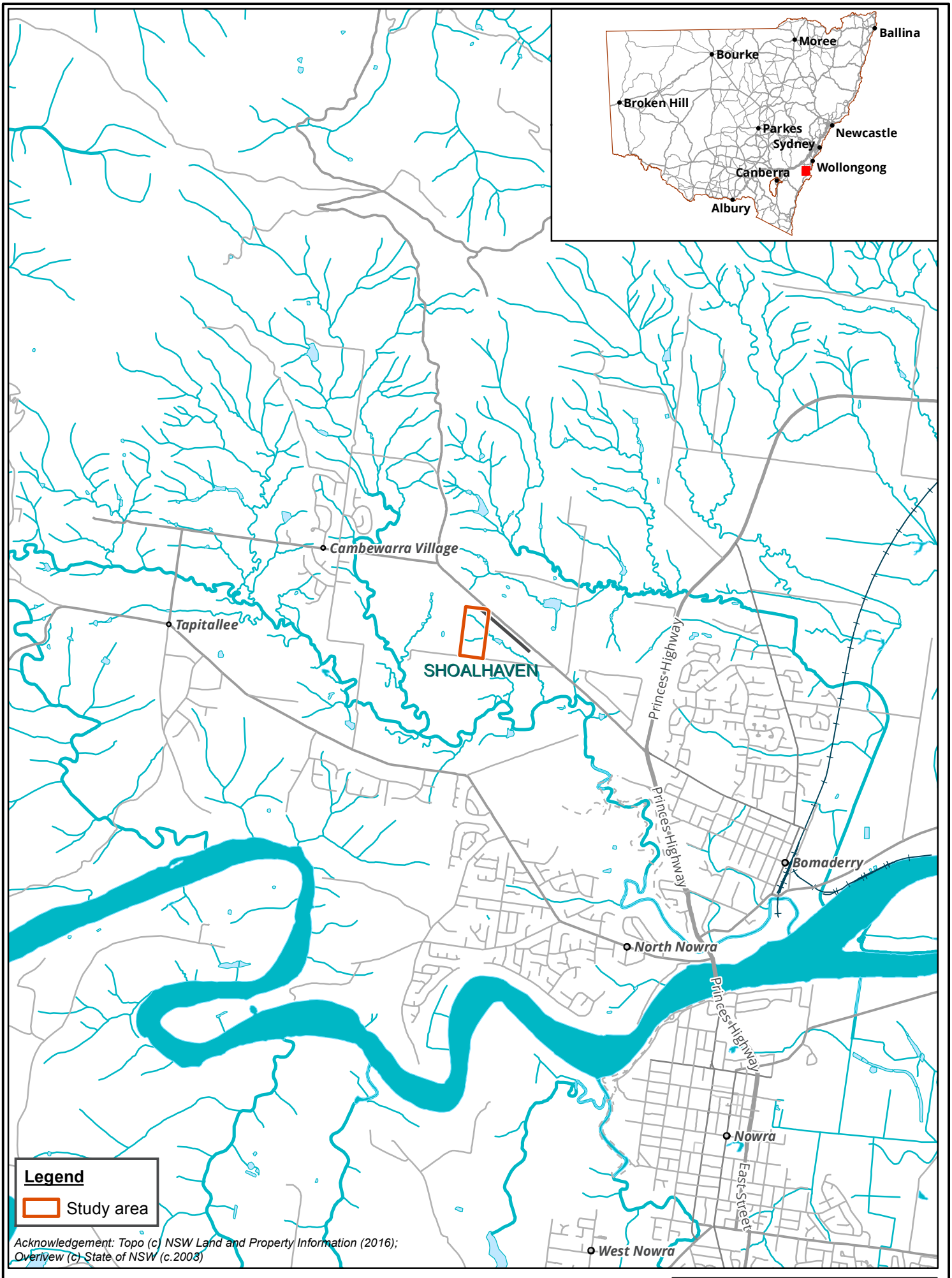

Figure 1: Location of the study area

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Newcastle, Sydney, Wangaratta & Wollongong

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Date: 02 July 2018,
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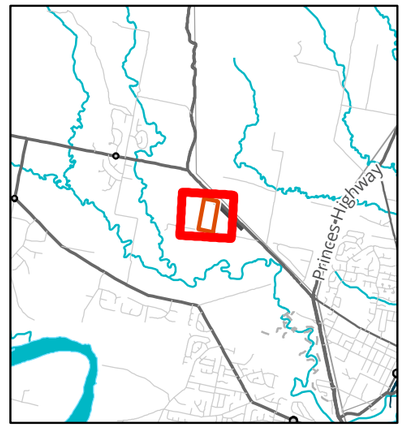
Scale 1:50,000 @ A4, GDA 1994 MGA Zone 56



Legend

Study area

F2 Study area detail

0 30 60 90 120 150

Metres
Scale: 1:2,500 @ A3
Coordinate System: GDA 1994 MGA Zone 56

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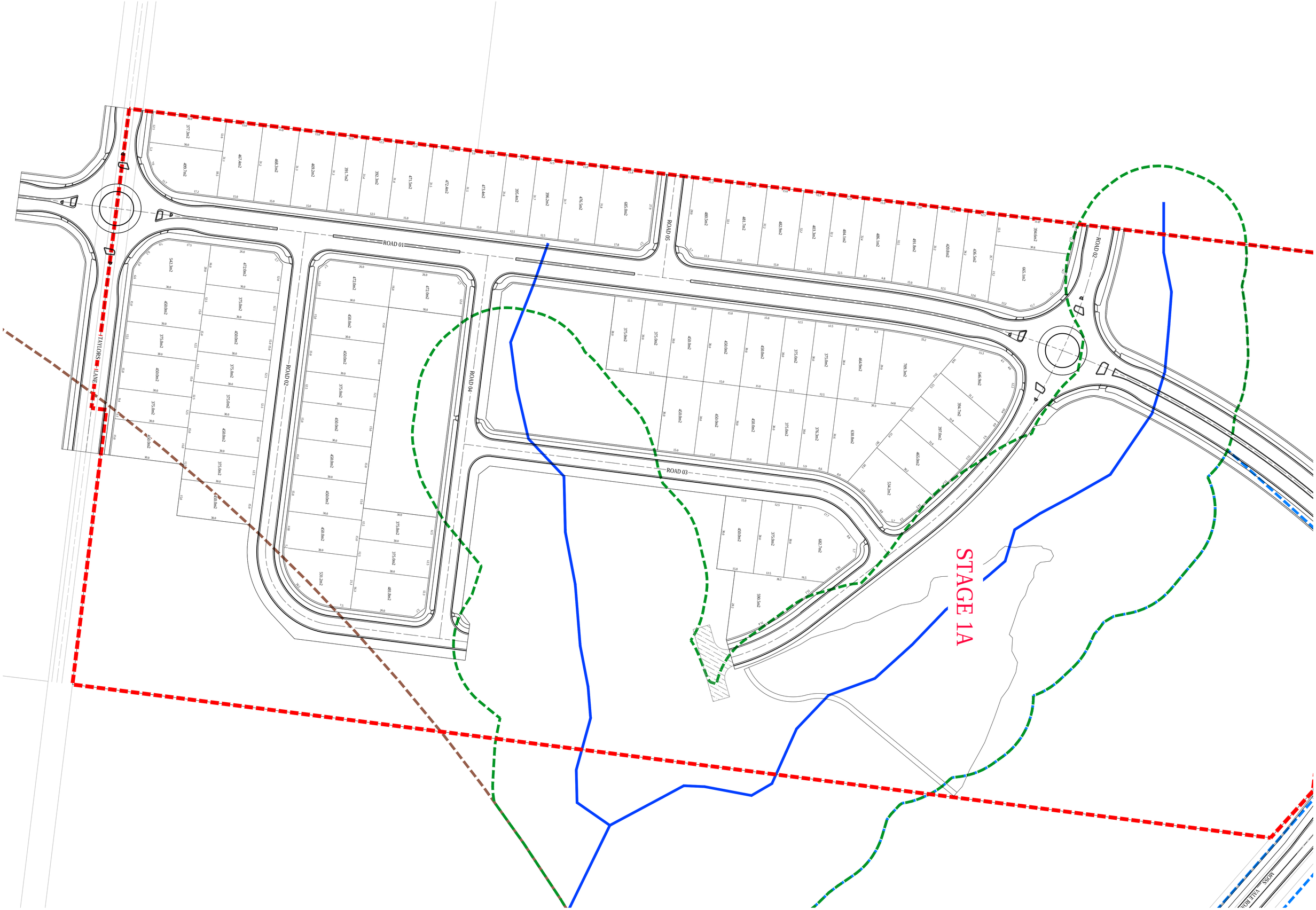
2 Proposed development

The proposed development comprises a subdivision of R1 zoned land located across the study area (Figure 3). Works as part of the project will include:

- Subdivision of the study area into residential lots
- Construction of associated amenities including roads, and drainage and electrical services


ROAD 01
ROAD 02
ROAD 03
ROAD 04
ROAD 05
ROAD 02
TAYLORS LANE
STAGE 1A
MOSS VALE ROAD

3 Desktop assessment

The desktop assessment involves researching and reviewing existing archaeological studies and reports relevant to the study area. 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.

3.1 Landscape context

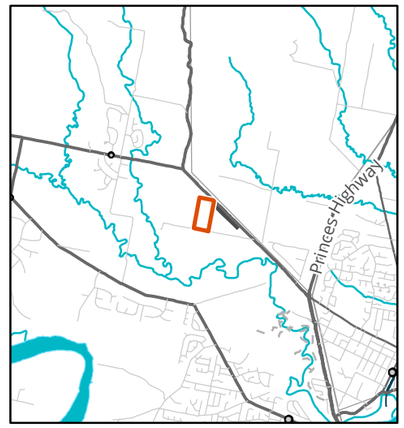
It is important to consider the local environment of the study area any heritage assessment. The local environmental characteristics can influence human occupation and associated land use and consequently the distribution and character of cultural material. Environmental characteristics and geomorphological 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.

3.1.1 Topography, geology and hydrology

The study area is situated partly within three geological formations. The south section of the study area is contained within the quaternary alluvial floodplain deposits geological formation (Figure 4). This formation is less than 2.5 million years old and contains current and recent mud, silt, sand and gravel deposited by river systems (Troedson and Hashimoto 2013). The northern section of the study area features the Permian Berry Siltstone formation, which is aged between 264 and 265 million years (Troedson and Hashimoto 2013). This formation contains siltstones and shelf deposits of fluvial sands and gravel. The third formation is located in the western edge of the study area and consists of Quaternary alluvial and colluvial fan deposits containing sand silt, gravel and clay (Troedson and Hashimoto 2013).

Topographically, the study area is located almost entirely on hillslopes. These hillslopes are bisected by two first order, non-perennial drainage lines.

Stream order is recognised as a factor which helps the development of predictive modelling in Aboriginal archaeology in NSW. The stream order system used for this assessment was originally developed by Strahler (1964). It functions by adding two streams of equal order at their confluence to form a higher order stream. As stream order increases, so does the likelihood that the stream would be a perennial source of water. Predictive models which have been developed for the region have a tendency to favour permanent water courses as the locations of campsites as they 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. Given that the water sources within the study area consist of first order, non-perennial sources and are sloped as they are located on the hillslope landform, they will not provide a reliable source of water. This suggests that they are unlikely to have been utilised intensively by Aboriginal people.



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Study area

Geological Units

- CZuc1 - Illaroo lamprophyre
- CZuc2 - Meroo lamprophyre
- P__ga - Cambewarra Latite Member
- Pshb - Berry Siltstone
- Pshn - Nowra Sandstone
- Pshr - Broughton Formation
- Q_ab - Alluvial backswamp deposits
- Q_acb - Alluvial channel deposits-in-channel bar
- Q_acw - Alluvial channel deposits-subaqueous
- Q_af - Alluvial floodplain
- Q_al - Alluvial levee/overbank deposits
- Q_ap - Alluvial palaeochannel deposits
- Q_av - Alluvial valley
- Q_avf - Alluvial fan
- QH_af - Alluvial floodplain
- QP_at - Alluvial terrace

F4 Geological units of the study area

0 200 400 600 800 1,000

Metres

Scale: 1:20,000 @ A3

Coordinate System: GDA 1994 MGA Zone 56

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3.1.2 Soil landscapes

Two soil landscapes are present within the study area, the Coolangatta landscape, which overlies the slopes and crest of the northern half of the study area, and the Shoalhaven landscape, which overlies alluvial flats in the southern section of the study area (Figure 5)

The Coolangatta soil landscape is an erosional landscape characterised by undulating to rolling low hills. It contains broad crests and ridges with moderately inclined (5-20%) slopes and incised drainage lines. Soils consist of brown loams overlying bedrock to a depth of less than 20 centimetres on crests and upper slopes. Mid slopes contain brown loams overlying sandy clay loams, while lower slopes and drainage lines feature hard setting brown loamy fine sands overlying sandy clays to depths less than 200 centimetres (Hazelton 1992, p. 50). A summary of the Coolangatta soil profiles is presented in Table 2. Given the shallow nature of soils within this landform and its high erodability, sub-surface deposits are unlikely to be intact within this landform.

Table 2 Coolangatta soil landscape characteristics (Hazelton 1992, p. 50)

Dominant soil material	Characteristics
Co1	hard setting dull brown loam/fine sandy (topsoil)
Co2	Friable dark brown loam (topsoil)
Co3	Mottled dull reddish brown weakly pedal sand clay (subsoil)
Co4	Brown Weakly pedal sandy clay loam (subsoil)

The Shoalhaven soil landscape is an alluvial landscape characterised by level to gently undulating terrace surfaces of the Shoalhaven River. It is an active floodplain with small levees, minor depressions and backwater swamps. The complex soil pattern is 50 to 100 centimetres deep and consists of prairie soils on levees, red earths and yellow and red podzolic soils on terraces, and alluvial soils and gleyed podzolic soils on the floodplain. The local relief is around 5 metres, with slope gradients of less than 3% (Hazelton 1992, p. 68). A summary of the characteristics of these soils is presented in Table 3. These soils are likely to preserve sub-surface deposits provided they are located in areas outside of flood prone areas.

Table 3 Shoalhaven soil landscape characteristics (Hazelton 1992, p. 69)

Dominant soil material	Characteristics
sf1	hard setting brownish black fine sandy loam (topsoil)
sf2	brown weakly pedal light sandy clay loam (subsoil)
sf3	C dull yellowish brown massive sandy clay (subsoil)
sf4-	dull reddish brown moderately pedal light medium clay (subsoil)

3.1.3 Landscape resources

The study area is located within areas that have been cleared with a pocket of vegetation regrowth present. Remnant vegetation is located to the south of the study area along Good Dog creek and provides some insight into what the study area would have contained. The remnant vegetation is defined as Illawarra Gully Wet Forest and is characterised by an overstorey of blackbutt and sub canopy of maiden's wattle. Beneath this, the ground cover includes bracken, mat-rush, and cogon grass. Within the wider region there are also surviving areas of Currambene-Batemans Lowlands Forest that consist of sweet pittosporum, two-veined hickory, hairy clerodendrum, cheese tree, tree violet and common silkpod (Tozer 2010).

The wider Nowra landscape has also been extensively cleared but still retains stands of tall open-forest that include turpentine, grey gum, scribbly gum, spotted gum, Sydney peppermint, thin-leaved stringybark, red bloodwood, forest oak and blackbutt. Understorey species comprise of flaky-barked tea-tree, hairpin banksia, pine-leaf geebung, burrawang, decorative paperbark; it is likely that these species would also have been found in the study area prior to clearance.

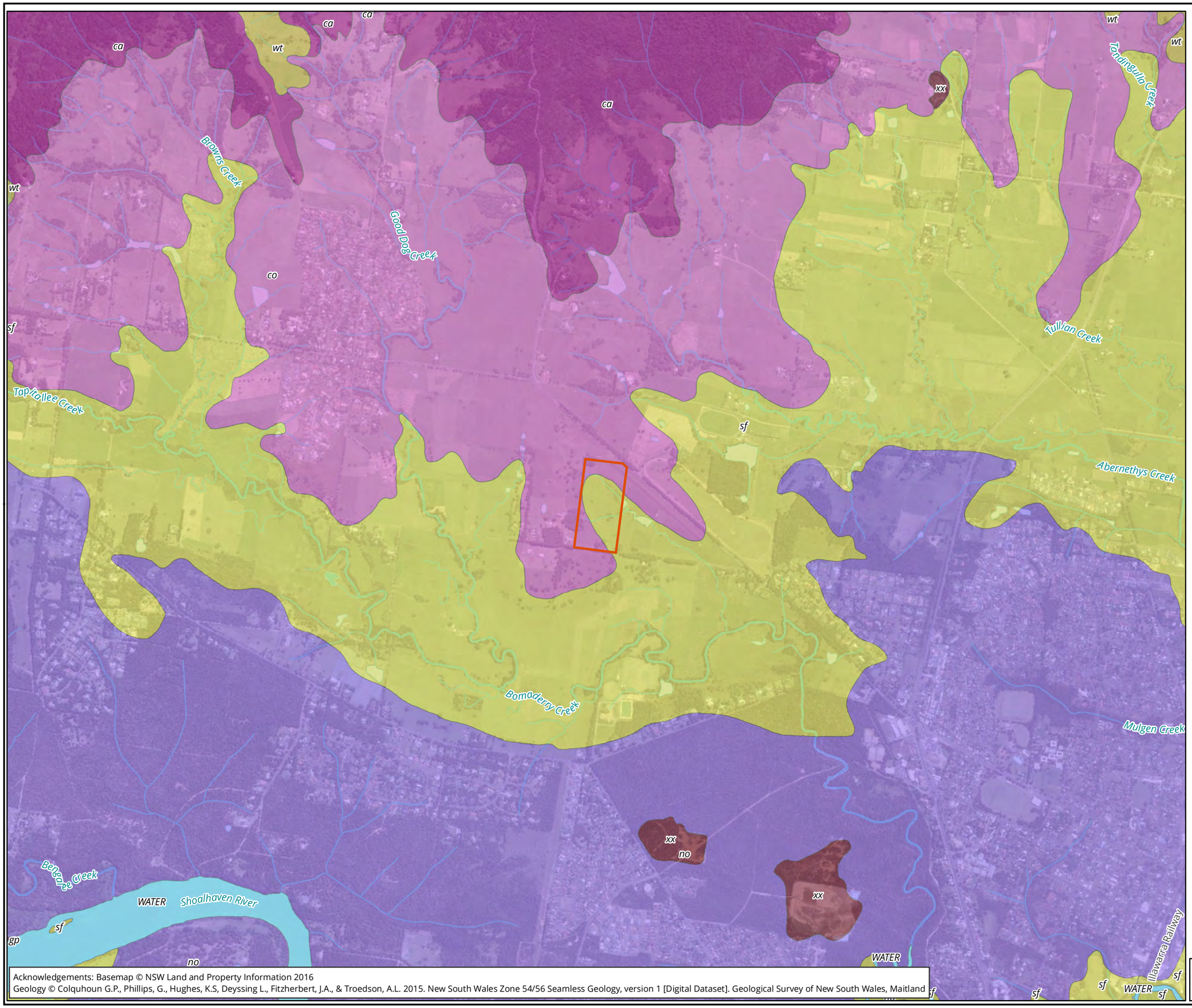
The vegetation species present in the region would have provided a range of resources for Aboriginal people. Food, tools, shelter and ceremonial items were derived from floral resources, with the locations of many campsites predicated on seasonal availability. Tea trees provided resources for shelter, insect repellent, medicine and provided an indicator when shellfish was in season (Wesson 2009, Stewart and Percival 1997). Mat-rush was used as a food source, to make string and medicine and was often a habitat for small marsupials and reptiles (Wesson 2009, Stewart and Percival 1997). Stringybark Eucalypts provided material for making shelters and fire starting while turpentine was used to make tools and weapons and also as a source of food with edible seeds and flowers (Wesson 2009). Many of the plants found within the vicinity of the study area were important to Aboriginal people and were used for numerous purposes.

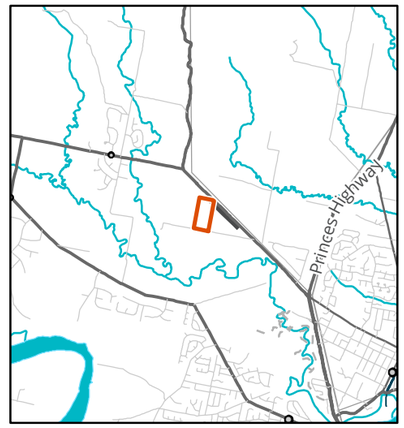
Native fauna that would have been present in the vicinity of the study area include: Kangaroos, eastern snake-neck turtle, red-bellied black snake, short-beaked echidna, brush-tail possum, sugar glider, common wombat, frog, bats, cockatoos, kookaburra, and ducks (Wesson 2009). As well as being important food sources, animal products were also used for tool making and fashioning a myriad of utilitarian and ceremonial items. For example, tail sinews from Kangaroos 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 (Wesson 2009). Animals such as brush-tailed possums were highly prized for their fur, with possum skin cloaks worn fastened over one shoulder and under the other (Attenbrow 2002).

3.1.4 Land use history

The study area was originally alienated as part of the 'Cumbewarra Farm' grant to Alexander Berry. This grant of 1,280 acres was originally promised to Charles Staples in January 1830, but was instead granted to Berry in May 1838. Berry was an early landholder in the region, and gave his name to the modern town of Berry, north of the study area. This grant formed a small part of his holdings, which totalled to 57,000 acres (NOHC 2013b, p. 16).

The study area has primarily been used for agricultural purposes including cattle grazing. There is expected to be some disturbance in the uppermost soil profile, caused by ungulates or historical attempts at cropping. At present the study area is being used for cattle grazing with fence lines and livestock trampling the only visible signs of landuse.





Legend

Study area

NSW_SoilLandscapes_Se...

Soil Landscape units

- ca - CAMBEWARRA
- co - COOLONGATTA
- gp - GREENWELL POINT
- no - NOWRA
- sf - SHOALHAVEN
- WATER - WATER
- wt - WATTAMOLLA ROAD
- xx - DISTURBED TERRAIN

F5 Soil landscapes of study area

0 200 400 600 800 1,000

Metres

Scale: 1:20,000 @ A3

Coordinate System: GDA 1994 MGA Zone 56

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27215 F5 AR Soils

3.2 Previous archaeological work

A large number of cultural heritage surface (surveys) and sub-surface (excavations) investigations have been conducted throughout the South Coast of New South Wales 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 south coast Aboriginal sites date to the last 6,000 years when the sea-level stabilised following the end of the last Ice Age. Prior to this, sea levels were lower and the current coastline was located much further inland, about 14 kilometres to the east of its current position. Coastal sites older than 6,000 years are rare, as most would have been most likely inundated by the rising sea. Pleistocene-age Aboriginal sites on the south coast include a rock shelter at Burrill lake which has been dated to 20,830±810BP (ANU-138) (Lampert 1971, p. 122) and a coastal midden at Bass Point dated to 17,010±650BP (ANU-536) (Bowdler 1976, p. 254).

3.2.1 Regional overview

Sefton (1980) completed the first regional review of Aboriginal archaeological sites and relics within the Illawarra Region. Geographic areas included in the survey include the catchment areas of the Port Hacking, Wingecarribee, Wollondilly, and Nattai Rivers, water catchment areas, northern Illawarra Escarpment, Bass point, Kangaroo Valley, Nowra and the lower reaches of the Shoalhaven River, Jervis bay, McDonald State Forest, the upper reaches of the Clyde River, and Murramurang Aboriginal Area (Sefton 1980, p. 2). The report recommended the regional mapping and sampling of coastal shell middens within the area, due to their increasingly endangered status.

Clarke and Kuskie (2006) undertook a study to create a predictive model for archaeological sites in the Lower Shoalhaven Region. The assessment involved background research, predictive modelling, and field survey. The predictive modelling undertaken suggested that the area could be divided into two resource zones, with the expected occupation patterns in each zone shown in Table 4.

Table 4 Resource zones in the Lower Shoalhaven (Clarke and Kuskie 2006, p. ii)

Resource zone	Description
Primary	Primary resource zones were defined in terrain units in close proximity to the major Shoalhaven and Crookhaven Rivers. These zones have higher probability of containing evidence for a wide range of occupation types including congregations of large groups of people, community base camps, nuclear / extended family base camps, camping by small hunting and/or gathering (without camping) and transitory movement. Occupation is likely to have been regular and potentially longer in duration in the primary zones.
Secondary	Secondary resource zones were defined in terrain units in close proximity to higher order creeks and/or wetlands, including Bomaderry, Mundamia, Calymea, Flat Rock, Bengalee and Sandy Creeks and their associated flats, slopes and terraces. These secondary zones have a high probability of containing evidence of nuclear / extended family base camps, camping by small and/or gathering parties, hunting and/or gathering (without camping) and transitory movement. Occupation is likely to have been sporadic and relatively short in duration in secondary zones.
Areas outside Primary and Secondary zones	Areas outside the primary and secondary resource zones included terrain units distant from higher order creeks and/or wetlands, such as lower order drainage depressions and associated slopes and crests. Occupation in these areas is likely to have involved hunting

Resource zone	Description
	and/or gathering (without camping) and transitory movement and is likely to have been sporadic and very short in duration'.

South East Archaeology (Kuskie 2012) undertook an assessment for a subdivision at West Culburra, around 12 kilometres south-east of Nowra. The assessment involved background research, Aboriginal consultation, and field survey. Predictive modelling undertaken by Kuskie indicated the potential for shell midden and artefact sites to be present within the area. The potential for all other site types to occur within the area was considered low, due to the underlying geology and landforms, as well as disturbances within the study area.

The survey identified three open artefact scatters immediately adjacent to the investigation area, containing a total of eight artefacts between them. The artefacts were primarily comprised of silcrete, acidic volcanic, quartz, and rhyolite, and contained one microblade core.

Based on the results of the survey, the predictive modelling conducted by Kuskie was reassessed. It was considered that within a zone extending potentially up to 200 metres from the Crookhaven River, there was a high potential for subsurface archaeological deposits to be present.

3.2.2 Local overview

A number of Aboriginal cultural heritage investigations have been conducted within an approximately 10 kilometre buffer of the study area. Most of these investigations were development driven and include surface and sub-surface investigations.

Navin Officer Heritage Consultants (NOHC 2006) conducted a program of subsurface testing for the Gerroa Sand Mine Extension. The program of testing was conducted using a mechanically driven auger, and included a total of 51 pits, 36 of which were 'primary' pits (40-45 centimetres in diameter) and 16 of which were 'secondary' pits (10 centimetres in diameter). Secondary pits were excavated where there was a concentration of material from the primary pits, and were used to find the boundaries of the concentration. The depth of spits ranged between 20 and 50 centimetres, with the preferred depth being 30 centimetres. Final pit depths ranged between 130 and 170 centimetres.

A total of 39 stone artefacts were recovered from five of the test pits, and shell material was recovered from 26 of the test pits. The recovered artefact assemblage was dominated by complete and broken flakes, with other artefact types being rare. In terms of raw material, the assemblage comprised mostly silcrete, quartz, and chert, with sandstone, chalcedony, and volcanic materials also present.

Kelleher Nightingale Consulting (KNC 2010) conducted an archaeological assessment for Roads and Maritime Services ahead of the proposed North Nowra Link Road. The assessment involved Aboriginal consultation, background research, and survey of three proposed route options.

The survey identified a total of 28 Aboriginal sites along the course of the three proposed routes. These included four artefact scatters, two isolated finds, one midden site, one grinding groove site, 19 rock shelter sites and one non-Aboriginal scarred tree, recorded to avoid confusion at a later date.

Kayandel Archaeological Services (Kayandel 2011) completed an Aboriginal heritage assessment for the Shoalhaven Starches Gas Pipeline Scheme, to the north and east of the current study area. The predictive modelling undertaken by Kayandel drew primarily on the work conducted by Clarke and Kuskie (2006), noting that artefact scatters are the most common site type across the region, with grinding grooves and rock shelters also occurring frequently. It was stated that the presence of

water courses and the landforms in the area would determine the type and extent of Aboriginal occupation, with occupation occurring in association with reliable sources of water.

All areas surveyed as a part of the project were considered to be highly impacted by current land use, with the visibility considered negligible. The surveyed areas were all located on a low lying floodplain, which was not considered conducive to Aboriginal occupation. As such, it was assessed that there was a low potential for stone artefacts to be present within the area, and that the potential for all other forms of Aboriginal occupation was negligible.

NOHC (2007, 2012, and 2013a) completed a series of assessments for the Princes Highway Upgrade between Gerringong and Bomaderry between 2007 and 2013 north- east of the current study area. These assessments are the most comprehensive conducted in the local area, and include community consultation, literature review, survey, and test excavation along the proposed alignment.

Initial works consisted of a preliminary Aboriginal and historical assessment of the proposed alignment in order to map potential heritage constraints to the works. This consisted of a literature review and predictive modelling being undertaken for the entirety of the alignment between Gerringong and Bomaderry (NOHC 2007).

In creating the predictive modelling for the project, NOHC identified a number of topographic traits which may, alone or in combination, indicate the presence of Aboriginal sites:

- *Low gradient or relatively level ground*
- *A sheltered context from prevailing harsh weather conditions, such as wind or heat*
- *The absence of significant surface rock or gravels*
- *Proximity to a freshwater source*
- *Proximity to resource zones (such as a littoral or freshwater shoreline)*
- *A well-drained and locally elevated context.*

From this assessment, a list of archaeologically sensitive landforms was developed, including:

- *Low gradient basal slopes (including colluvial deposits and alluvial fans) adjacent to the valley floor*
- *The lower elevation or terminal section of major spurs and ridgelines where they adjoin or traverse the valley floor*
- *Level or low gradient ground on the crests of spurs and ridgelines*
- *The downslope margin of alluvial terraces*
- *The banks of rivers and creeks where they are locally elevated and well drained*
- *The locally elevated margins of wetland basins*
- *Locally elevated sand bodies outside of coastal barrier or dune systems, such as fossil beach ridges on the margins and flats of infilled estuaries, and source bordering dunes* (NOHC 2007, p. 49).

Based on this broad scale mapping, the current study area would be situated within an area marked as having high potential as it sits within a riparian corridor and contains alluvial flats and low gradient slopes. The most common predicted sites in this large scale landform were likely to be subsurface artefact occurrences, which were considered likely to occur in varying densities, with the higher densities likely to occur in relative proximity to water (NOHC 2007, p. 57).

In 2012, NOHC conducted further assessment in the form of field survey for the Berry to Bomaderry upgrade, refining their predictive modelling on the basis of investigations conducted between 2007 and 2012 for the Princes Highway upgrades at Gerringong and Foxground to Berry:

- *The valley floors, and in particular the alluvial flats, are generally characterised by intermittent and low incidences of artefacts.*
- *Micro-topographic features such as locally elevated terraces and creek banks, within the broader valley floor context, tend to contain a higher incidence of artefacts.*
- *Valley floor contexts, on alluvium and which are not in the proximity of higher order (3rd or greater) riparian zones are likely to have low archaeological sensitivity.*
- *Locally elevated, well-drained and low gradient micro-topographies within 200 metres of known or predicted former wetland basins are likely to have high archaeological sensitivity.*
- *Higher artefact incidence and/or assemblage richness tends to coincide with major spurlines and low gradient basal slopes above, and set back from, the valley floor.*
- *The ridgeline crests and saddles tend to be characterised by intermittent and low incidences of artefacts, with higher incidences occurring in association with features such as low gradient knoll crests and break of slope interfaces.*
- *The archaeological sensitivity of ridge and spurline crests and slopes requires further investigation, especially with regard to variables such as possible cross-country travel routes and distance from lower catchment wetland basins.*
- *Riparian corridors associated with higher order streams require testing to better define archaeological sensitivity and possible geographical determinates of artefact incidence* (NOHC 2012, p. 44).

The survey recorded 18 Aboriginal sites within the envelope of the proposed upgrade including two artefact scatters and 16 'Potential Archaeologically Sensitive Areas' (PASAs). In addition to this, a number of Aboriginal cultural heritage values were identified, including two large old growth fig trees, and burial sites.

Test excavations of these sites were subsequently carried out by NOHC (2013a). Portions of PASA 1 and PASA 52 were tested as a part of the program. A summary of the results of the testing program are presented in Table 5.

Table 5 Summary of the results for the testing program conducted by NOHC (2013a)

Site	Number of pits excavated	Number of artefacts identified
PASA1	31	8
PASA2	26	9
PASA3	9	4
PASA4	15	15
PASA5	9	50
PASA6	17	18
PASA7	11	2
PASA8	17	30
PASA9	32	30
PASA10	29	54
PASA11	15	6
PASA45	7	0

Site	Number of pits excavated	Number of artefacts identified
PASA46	11	5
PASA47	33	10
PASA51	3	0
PASA52	13	2
Total	**278**	**243**

The majority of identified artefacts were complete and broken flakes (n=177), and flaked pieces (n=40), with small numbers of retouch flakes (n=12) and cores (n=12) found, as well as errailures (n=2) (NOHC 2013a, p. 30). The majority of the assemblage was comprised of chert, with silcrete, quartzite, quartz, and volcanic materials also present in noticeable numbers. Smaller proportions of tuff, siliceous breccia, and siltstone artefacts were present, along with 10 artefacts where the raw material was unidentifiable.

An analysis of the vertical distribution of artefacts is presented in Table 6. It shows that the vast majority of artefacts were identified in the first two spits across all test pits conducted by NOHC, with spits three and four also containing considerable densities. Beyond this point, the densities drop off sharply. This is at least in part due to the method of excavation, with deeper pits being less common.

Table 6 Vertical distribution of artefacts in test pits excavated by NOHC (2013a, p. 39)

Spit	Number of artefacts
1	59
2	103
3	44
4	22
5	7
6	2
7	2
8	0
9	1
10	0
11	0
12	1

Based on the results of the test excavations, the predictive modelling for the area was further revised, suggesting that archaeologically speaking, the most sensitive landforms would be:

- *Locally elevated landforms within valley floor contexts, on alluvium and which are in proximity of major streams and rivers (third order or higher drainage lines).*
- *The lower elevation or terminal section of major spurs and ridgelines where they adjoin or traverse the valley floor.*

- *Level or low gradient ground on the crests of spurs and ridgelines.*
- *The downslope margin of alluvial terraces.*
- *The banks of rivers and creeks where they are locally elevated and well drained.*
- *Locally elevated, well-drained and low gradient micro-topographies within 200 metres of known or predicted former wetland. These criteria may be of particular relevance to the margins of the former 'Meadow' areas (now-drained swamp basins).*
- *Locally elevated sand bodies outside of coastal barrier or dune systems, such as fossil beach ridges on the margins and flats of infilled estuaries, and source bordering dunes* (NOHC 2013a, p. 45).

Based on the results of the test excavations, NOHC identified a number of archaeological deposits within the PASAs. Within PASA1, the sites G2B A59 and G2B A60 were identified, and within PASA52, the site G2B A61 was identified. All of these sites were identified as having low significance within a local context based on the results of the test excavations.

Artefact Heritage (2015) undertook an assessment in advance of the construction of a resource recovery park at West Nowra. Based on the background research undertaken, Artefact developed the following predictive statements relating to site distribution within the area:

- *Stone artefacts/artefact scatters will be the most likely Aboriginal site types*
- *Identification of artefact sites will be dependent on visibility and vegetation density- artefacts will more frequently be identified on eroded surfaces.*
- *Based on the spatial patterning of recorded Aboriginal sites and on findings from previous studies in the area, the highest numbers of sites and sites with the highest densities of artefacts are likely to be located along main waterways.*
- *Modified trees may be identified within the study area if suitable old growth trees remain*
- *Areas of PAD may be identified where suitable depth of deposit exists, in areas that feature a relative lack of disturbance.*
- *It is probable that the only material traces of Aboriginal occupation remaining will be stone artefacts and/or modified trees.*
- *The potential for shelter sites, middens, quarries, rock engravings and axe grinding grooves is limited by the landscape context and historical land use.*
- *Areas of PAD would be dependent on landform and levels of disturbance. Areas of PAD would not be identified across steep slopes or in areas of high disturbance* (Artefact 2015, p. 20).

A total of five transects were walked across the survey area, which was located across a broad crest. The survey did not identify any sites or areas of potential. One of the possible reasons for this was that the survey area was located outside of the primary and secondary resource zones as outlined by Clarke and Kuskie (2006). The survey area was considered to have low archaeological potential.

Biosis Pty Ltd (2017a) conducted an Aboriginal cultural heritage assessment of two areas of PAD located approximately 250 metres south west of the current study area as part of the Moss Vale Road South Urban Release Area. The assessment undertook test excavations of an area of PAD located on a hillcrest and slope overlooking the alluvial floodplain, and on an elevated terrace overlooking a perennial creekline.

Test excavations of PAD 1 located on the hillcrest identified a single backed artefact within the subsurface deposit, while the excavations of PAD on the floodplain terrace did not identify any sub-surface deposits.

The results of the test excavations were similar to other excavations in the region undertaken by Biosis and were indicative of short term sporadic use of the area, consistent with Kuskie's (2006) secondary resource zone.

Biosis Pty Ltd (2017b) undertook an Aboriginal cultural heritage assessment for a proposed residential subdivision and development at C130 Princes Highway, Meroo Meadow, approximately 2.5 kilometres east of the current study area. The assessment undertook test excavations of a PAD located on hill crests and slopes located along Abernathys Creek, a fourth order perennial water source. This PAD, PASA 1, was first identified by NOHC (2012) as part of the Berry to Bomaderry Princes Highway upgrade. PASA 1 was located on both the southeastern and northwestern sides of the Princes Highway, passing through Abernathys Creek.' The site was associated with the banks, flats, and adjacent slopes associated with the creek (NOHC 2012, p. 47). NOHC undertook testing of parts of PASA 1 and identified two low density artefact scatters: G2B A59 which was located on both sides of the highway to the north of Abernethys Creek, and G2B A60 which was located to the south of Abernethys Creek on the western side of the Princes Highway.

The test excavations undertaken by Biosis identified a further two sites in PASA1. These sites consisted of two low density artefact scatters, MM-AD1 and MM-AD2. Site MM-AD1 was located across the crest and uppermost slope landforms and consisted of eight artefacts. MM-AD2 was located across the crest landform and contained four artefacts.

Biosis determined that the results of the test excavations were indicative of short term sporadic Aboriginal utilisation of the area that was consistent with Kuskie's (2006) secondary resource zone and predictive models that favour elevated terrain units in close proximity to higher order creeklines (Biosis 2017, p. 51).

KNC (2017) conducted an assessment of impacts on Aboriginal Cultural heritage in the current study area that was used to support the DA application. KNC identified one Aboriginal archaeological site, which they called Moss Vale Road Aft 1 within the study area. The assessment did not provide any further details about the site nor did it provide photos of the site or any artefacts found. The report also did not indicate whether a survey was undertaken, and reference was only made to a desktop assessment including AHIMS which did not identify any existing sites in the study area. Despite this KNC recommended that an AHIP be applied for following DA approval.

Biosis Pty Ltd (2018) undertook a due diligence assessment approximately 250 metres east of the current study area for Cardno. The assessment included a survey which did not identify any Aboriginal sites or areas of potential. The study area had been subject to past land clearance for agricultural use and cattle grazing and contained shallow, erosion prone soils of the Coolangatta landscape. In addition, much of the study area contained hillslopes and the non-perennial and flood prone nature of the drainage line present in the study area indicated that the study area would not have been an optimal site of potential occupation for Aboriginal people.

3.2.3 AHIMS site analysis

A search of the OEH Aboriginal Heritage Information Management System (AHIMS) database (Client Service ID: 353741) identified 104 Aboriginal archaeological sites within a 10 x 10 kilometre search area, centred on the proposed study area. None of these registered sites are located *within* the study area (Figure 6). AHIMS search results are provided in Appendix 1. The mapping coordinates recorded for these sites were checked for consistency with their descriptions and location on maps from Aboriginal heritage reports where available.

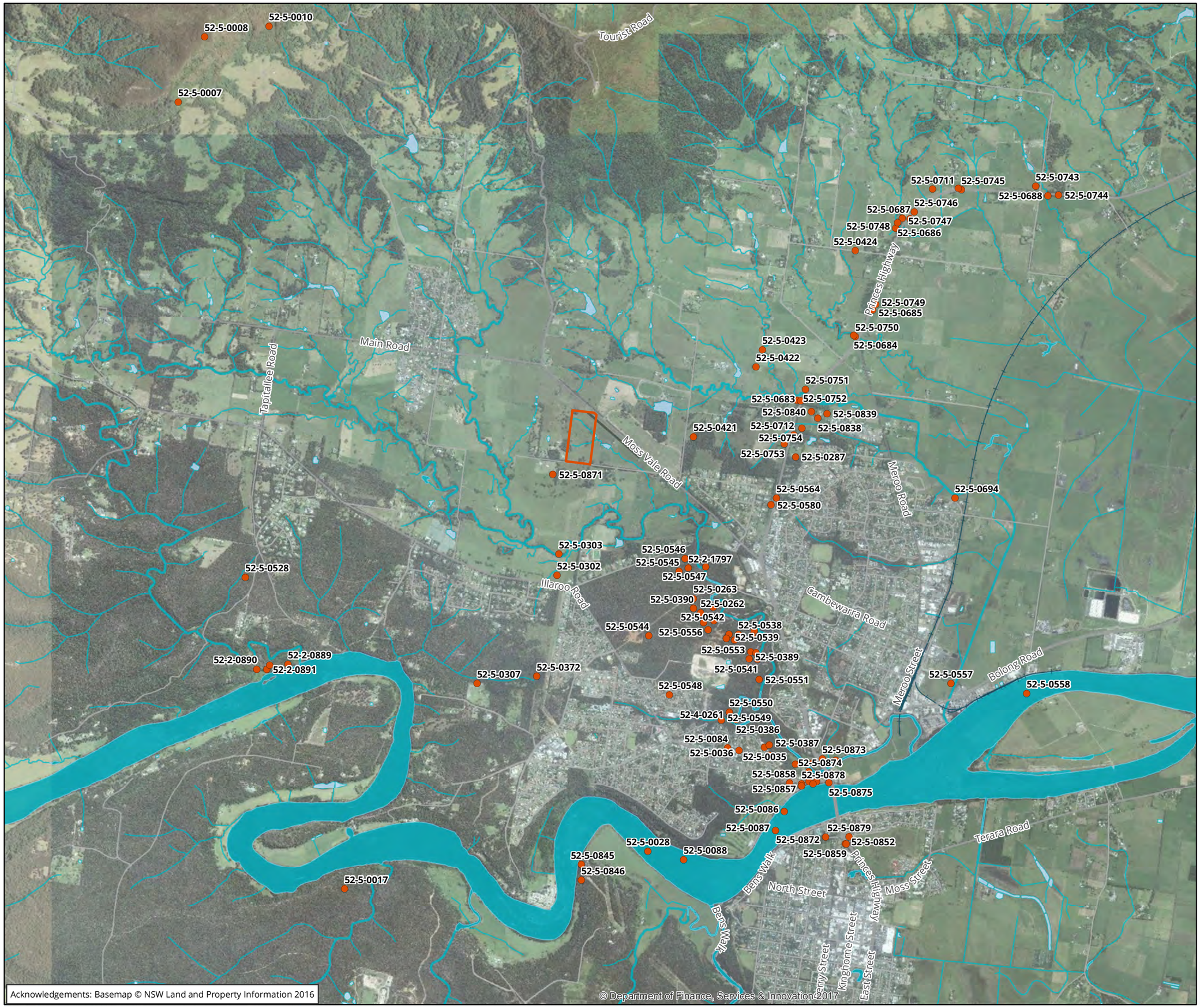
It should be noted that the AHIMS database reflects Aboriginal sites that have been officially recorded and included on the list. Large areas of NSW have not been subject to systematic, archaeological survey; hence AHIMS listings may reflect previous survey patterns and should not be

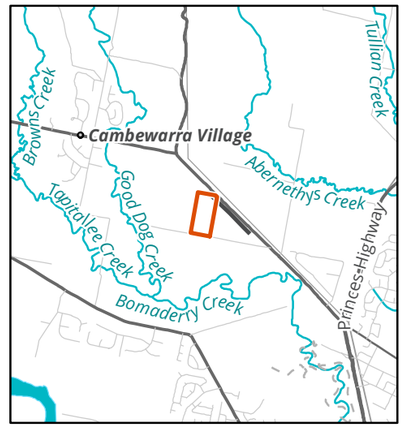
considered a complete list of Aboriginal sites within a given area. Some recorded sites consist of more than one element, for example artefacts and a modified tree, however for the purposes of this breakdown and the predictive modelling, all individual site types will be studied and compared. This explains why there are 124 results presented here, compared to the 104 sites identified in the AHIMS search results (Table 7).

Table 7 AHIMS site type frequency

Site type	Number of occurrences	Frequency (%)
Art (Pigment or Engraved)	9	7
Artefact	74	60
Grinding Groove	6	5
Habitation Structure	6	5
Modified Tree (Carved or Scarred)	2	2
Potential Archaeological Deposit (PAD)	27	22
Total	124	100

A simple analysis of the Aboriginal cultural heritage sites registered within the 10 x 10 kilometre search area centred on the study area indicates that artefact sites are the most frequently recorded site type, representing 60 % (n=74) of recorded sites. PADs were the second most common site type recorded in the region, representing 22 % (n=27) of AHIMS results, followed closely by art (pigment or engraved) sites representing 7 % (n=9), grinding grooves (5 %, n=6), habitation structures, (5 %, n=6), and modified trees (2%, n=2).





Legend

- Study area
- AHIMS sites

F6 AHIMS sites in vicinity of study area

0 400 800 1,200 1,600 2,000

Metres

Scale: 1:35,000 @ A3

Coordinate System: AGD 1966 AMG Zone 56

N

Biosis Pty Ltd

Albury, Ballarat, Melbourne,
Newcastle, Sydney, Wangaratta & Wollongong

Matter: 27215
Date: 02 July 2018,
Checked by: MJS, Drawn by: DK, Last edited by: dkazemi
Location:\\bio-data-01\matters$\27200s\27215\Mapping\27215_F6_AR_AHIMS

3.3 Discussion

The study area is located in what was defined by Clarke and Kuskie (2006) as an area outside primary and secondary resource zones. These areas are likely to contain limited forms of occupation involving hunting and/or gathering (without camping) and transitory movement and is likely to have been sporadic and very short in duration (Clarke and Kuskie 2006, p. ii).

The majority of assessments which have taken place in the local area identify artefact sites as the most likely site type to be present, followed by PADs.

The results of the AHIMS search support the statements made by these studies, with artefact and PAD sites being the most common type in the vicinity of the study area. Grinding groove and shelter sites are also represented in the results; however these are less likely to occur within the study area owing to its underlying geology and its topography, which does not contain sandstone overhangs suitable for shelter or exposed sandstone outcrops which could be used for grinding.

The most extensive predictive modelling undertaken in the area has been carried out by NOHC, who completed a series of assessments including survey and test excavation, along the alignment of the Princes Highway upgrade between Berry and Bomaderry, 2.5 kilometres to the east of the study area. Work undertaken by NOHC suggested that locally elevated landforms in valley floor contexts in close proximity to major streams and rivers, and low gradient areas on the crests of spurs and ridgelines could be considered sensitive landforms (NOHC 2013a, p. 45), both of which are contained within the study area.

As such, the site types most likely to occur within the study area are artefact and PAD sites.

3.3.1 Predictive Statements

A number of predictive statements have been formulated to broadly predict the type and character of Aboriginal cultural heritage sites likely to exist(ed) 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.
- Consideration of the temporal and spatial relationships of sites within the study area and surrounding region.

Based on this information, a predictive model has been developed, indicating the site types most likely to be encountered during the survey and subsequent sub-surface investigations across the present study area (Table 8). The definition of each site type is described firstly, followed by the predicted likelihood of this site type occurring within the study area.

Table 8 Aboriginal site prediction statements

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 in the region, particularly on locally elevated landforms in valley floor contexts in close proximity to major streams and rivers, and low gradient areas on the crests of spurs and ridgelines.
Shell middens	Deposits of shells accumulated over either singular large resource gathering events or over longer periods of time.	Low: Shell midden sites have not been recorded within the study area. There is some potential for shell middens to be located in vicinity of permanent water sources which are not present in the study area. Therefore there is low potential.
Stone arrangements	Stone arrangements consists of deliberately positioned stones to form shapes and patterns	Low: No stone arrangements have been recorded in the region. There is low potential for this site type to occur in the study area due to agricultural disturbances.
Quarries	Raw stone material procurement sites.	Low: There is no record of any quarries being within or surrounding the study area and suitable outcrops of rock are not present.
Potential archaeological deposits (PADs)	Potential sub surface deposits of cultural material.	Moderate: PADs have been previously recorded in the region across a wide range of landforms including locally elevated landforms in valley floor contexts in close proximity to major streams and rivers, and low gradient areas on the crests of spurs and ridgelines
Modified trees	Trees with cultural modifications	Low: A small number of mature native trees have survived within the study area, due to extensive vegetation clearing from the 1800's onwards.
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.

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: These sites will only occur where suitable sandstone exposures or overhangs possessing sufficient sheltered space exist, which are not present in the study area.
Habitation structures	Consist of structures constructed by Aboriginal people for short or long term shelter.	Low: This site has been recorded in the region. There is low potential for this site type to occur in the study area due to agricultural disturbances.
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.

4 Archaeological survey

A field survey of the study area was undertaken on 8 September 2017 by archaeologist Mathew Smith. The field survey sampling strategy, methodology and a discussion of results are provided below.

4.1 Archaeological survey objectives

The objectives of the survey were to:

- To undertake a systematic survey of the study area targeting areas with the potential for Aboriginal heritage.
- Identify and record Aboriginal archaeological sites visible on the ground surface.
- Identify and record areas of potential archaeological deposits (PADs).

4.2 Archaeological survey methodology

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

4.2.1 Sampling strategy

The survey effort targeted all landforms in the study area, with an emphasis on the portions of the study area which were considered to have the highest potential to contain Aboriginal sites. Within the current study area, topographic maps indicated that there was an alluvial flat landform in the southern portion of the study area. The topographic maps also indicated the presence of gentle hill slopes and a crest in the north portion of the study area. These landforms have the potential to contain Aboriginal sites, as they appeared to be of a relatively low gradient, were elevated, and were located in close proximity to a water source.

4.2.2 Survey methods

The archaeological survey was conducted on foot with a field team of one archaeologist. 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 have been exploited by Aboriginal people.
- Landform.
- Photographs of the site indicating landform.
- Evidence of disturbance.

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, ground surface visibility 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 location 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.

4.3 Archaeological survey results

4.3.1 Constraints to the survey

With any archaeological survey there are several factors that influence the effectiveness (the likelihood of finding sites) of the survey. The factors that contributed most to the effectiveness of the survey within the study area were ground surface visibility and exposure. The study area consisted of agricultural farmland used for cattle grazing. A layer of close cropped grass was present across most of the study area making it difficult to identify surface artefacts.

4.3.2 Visibility

In most archaeological reports and guidelines visibility refers to ground surface visibility, and is usually a percentage estimate of the ground surface that is visible and allowing for the detection of (usually stone) artefacts that may be present on the ground surface (NSW NPWS 1997: Appendix 4). Ground surface visibility in the study area was low across all landforms in the study area with approximately 1% of the ground surface visible. The low visibility was due to the high percentage of grass covering the study area (Plate 1). Visibility was higher in localised areas of ground surface exposure caused by cattle and erosion.

Plate 1 East facing photo of study area showing extensive grass coverage.

4.3.3 Exposure

Exposure refers to the geomorphic conditions of the local landform being surveyed, and attempts to describe the relationship between those conditions and the likelihood the prevailing conditions provide for the exposure of (buried) archaeological materials. Whilst also usually expressed as a percentage estimate, exposure is different to visibility in that it is in part a summation of geomorphic processes, rather than a simple observation of the ground surface (Burke and Smith 2004, p. 79; DECCW 2010b). Overall, the study area displayed low levels of exposure at less than 1%. The low levels of exposure were primarily the result of the extensive grass coverage across the study area.

Isolated exposures were present in the study occurring as small areas of erosion on drainage pathways and some areas of scouring on hillslopes (Plate 2 and Plate 3).

Plate 2 South facing photo with areas of exposure within drainage lines (forms part of KNC site Moss Vale Road Aft 1)

Plate 3 Photo showing smalla rea of exposure from surface scouring

4.3.4 Disturbances

Disturbance in the study area is associated with natural and human agents. Natural agents generally affect small areas and include the burrowing and scratching in soil by animals, such as wombats, foxes, rabbits and wallabies, and sometimes exposure from slumping or scouring. Disturbances associated with recent human activity often cover large sections of the land surface. These agents include residential development such as landscaping and construction of residential buildings; farming practices, such as initial vegetation clearance for creation of paddocks, fencing and stock grazing; agricultural practices such as fruit orchards; light industrial practices such as nursery and creation of artificial dams.

The study area displayed minimal observable disturbances. All landforms in the study area showed signs of having been grazed by cattle with areas of animal trampling present around a dam (Plate 4). These disturbances constitute relatively minor impacts to the soil profiles of the study area and so are unlikely to affect potentially deeper sub-surface deposits.

Plate 4 Photo of dam within study area

4.3.5 Moss Vale Road AFT 1 (KNC 2017)

Moss Vale Road AFT 1 was originally recorded by Kelleher Nightingale Consulting as part of an assessment of Aboriginal cultural heritage for a DA application. The site was identified within the study area by KNC but no details about the site were provided within the report. Additionally, no site cards have been submitted to the AHIMS for this site, so information about the artefacts identified by KNC were not obtainable. The survey of this site undertaken by Biosis identified that KNC had identified the site on the slopes of a hill that levelled out to a terrace overlooking a first order, non-perennial drainage line (Plate 5). A portion of the site has also been mapped by KNC within the drainage line in an area of high disturbance (See Plate 2).

No artefacts were identified by Biosis during the survey. Surface visibility within the site boundary outlined as Moss Vale Road Aft 1 by KNC was very low (<5%). This hampered the surveyor's ability to identify any surface artefacts that may have been located within the site.

The landform unit within which the site is located (lower gradient terrace overlooking a first order non-perennial drainage lines), suggested that there was the potential for low density sub-surface deposits or isolated artefacts to be present. This fits in with Clarke and Kuskies (2006) predictive modelling for areas outside primary and secondary resource zone. This site also fits with NOHC (2013a) predictions that sites would occur on level or low gradient basal slopes above, and set back from, the valley floor. The portion of the site that KNC mapped within the drainage line and steeper hill slopes is not likely to contain any sub-surface sites, as this is an area of high disturbance with any soils having been washed out during the formation of the drainage lines.

Soils in the study area are mapped as shoalhaven, however the study area topography consists of hill slopes and is more likely to contain soils of the Coolongatta landscape. As such topsoils will be very shallow (up to 100 milimetres). Given the history of tree clearance and agricultural use of the study area it is likely that soils within the site have been extensively disturbed with any potential sites

unlikely to be intact. The previous assessments within the vicinity of the study area (Biosis 2017a, 2018) suggest that the site will have low archaeological potential for isolated artefacts; however given OEH's response to KNC's assessment, test excavations are required in the boundary of Moss Vale Road Aft 1 as OEH indicated that the grass coverage made it impossible to determine the presence of sub surface deposits.

Plate 5 West facing photo looking towards Moss Vale Road Aft 1 (1 metre scale)

4.4 Discussion of archaeological survey results

Archaeological survey was conducted on 23 June 2018 with a field team of one archaeologist and three RAPs prior to the beginning of excavations, in order to assess the study area and visit previously recorded site, Moss Vale Road AFT 1. The study area was located primarily across one landform consisting hillslopes. No surface sites were identified during the survey although extensive grass coverage made it impossible to identify any surface artefacts that may have been present. Disturbances were also assessed during the field survey with most of the study area displaying shallow observable soil disturbances from cattle grazing and farming practices. A dam has been constructed within the study area at the base of the hill, where the two drainage lines meet and merge, indicating a more intensive but isolated disturbance in that area and several drainage lines were observed which would have removed the shallow soils and destroyed any potential sites within.

A review of previous archaeological studies, surveys, test excavations and regional predictive modelling indicates that all landforms present within the study area were likely utilised to some degree by Aboriginal people in the past. Review of the previous archaeological studies identified that the study area fell into Clarke and Kuskie's (2006) areas outside of primary and secondary resource zones, which would have potentially experienced sporadic or relatively short duration occupation. More recent assessment by Navin Officer (2007, 2012, and 2013a) and Biosis were also analysed. These assessments built on Clarke and Kuskie's predictions and suggested that the most sensitive landforms in the study area would be:

- Locally elevated landforms within valley floor contexts, on alluvium and which are in proximity of major streams and rivers (third order or higher drainage lines)
- Level or low gradient basal slopes above, and set back from, the valley floor
- The lower elevation or terminal section of major spurs and ridgelines where they adjoin or traverse the valley floor
- Level or low gradient ground on the crests of spurs and ridgelines

An excavation by Biosis (2017) less than 200 metres south west of the current study area was undertaken within similar landforms. Biosis (2017) had identified two areas of potential, one located on a hill crest similar to the study area, and one located on an alluvial flat in close proximity to a perennial creekline. The results of the excavations by Biosis identified that the alluvial flats had been regularly inundated with water, possibly as a result of flood events or seasonal waterlogging. No artefacts were identified on the flats and the area was assessed as having low potential. The hill crest landform was also tested, one artefact was identified in this landform consisting of a backed artefact. This was determined to be an example of Clarke and Kuskie's (2006) secondary resource zone and was representative of travel through the study area.

Background research also identified two soil landscapes present within the study area: one erosional soil landscape called the Coolangatta soil landscape, and one fluvial landscape called the Shoalhaven soil landscape. The erosional Coolangatta soils have a high erodability rating and very shallow topsoil, so would therefore be susceptible to frequent soil movement. This erodability and shallow soil levels would result in poor preservation of archaeological material and given the study area has been cleared and used for agricultural purposes any sub-surface deposits are likely to have been disturbed.

No previously unrecorded Aboriginal sites or objects were located during the field survey. The site Moss Vale Road AFT 1, previously recorded by KNC, could not be relocated. It is likely the very low levels of surface visibility impacted on the ability of the surveyor to identify any previously recorded or previously unrecorded Aboriginal objects within the study area. No photographs or descriptions of the artefacts at Moss Vale Road AFT 1 were recorded by KNC and no site card for the site has been submitted to OEH making it difficult to assess the site. The position of a portion of the site on a low gradient basal slope in close proximity to a first

order non-perennial drainage lines suggests there could be potential for low density or isolated sub-surface deposits. KNC also placed a part of the site within a system of drainage lines which is unlikely to contain intact soils do heavy water disturbance, especially given that soils are both shallow and highly susceptible to erosion. The soil types likely to be present in the site and the history of land use will have resulted in the contextual destruction of any potential sub-surface sites.

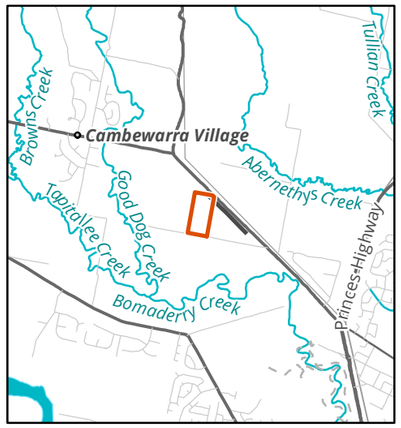
The site would therefore contain low archaeological potential; however, the OEH recommended sub-surface testing as the low GSV makes it difficult to determine the presence of sub-surface deposits.

Table 9 Survey coverage

Survey Unit	Landform	Survey unit area (m²)	Visibility (%)	Exposure (%)	Effective coverage area (m²)	Effective coverage (%)
1	Hill crest	4224	1	1	0.4224	0.01
2	Hill slope	98396	1	1	9.8396	0.01
3	Drainage line	18380	1	1	1.838	0.01

Table 10 Landform summary

Landform	Landform area (m²)	Area effectively surveyed (m²)	Landform effectively surveyed (%)	No. of Aboriginal sites	No. of artefacts or features
Hill crest	4224	0.4224	0.01	0	0
Hill slope	98396	9.8396	0.01	1	0
Drainage line	18380	1.838	0.01	1	0



Legend

Study area

Archaeological Site

Moss Vale Road
Aft 1 (PAD)

F7 Survey results

0 30 60 90 120 150

Metres

Scale: 1:2,500 @ A3

Coordinate System: GDA 1994 MGA Zone 56

Biosis Pty Ltd

Albury, Ballarat, Melbourne,
Newcastle, Sydney, Wangaratta & Wollongong

Matter: 27215
Date: 02 July 2018,
Checked by: MJS, Drawn by: DK, Last edited by: dkazemi
Location:\\bio-data-01\matters$\27200s\27215\Mapping\27215_F7_AR_SurveyResult

5 Test excavation

Following the results of the field survey a test excavation program was undertaken to characterise the extent, nature and archaeological (scientific) value of Aboriginal cultural heritage within identified areas of PAD. The sampling strategy, methodology and results of the test excavation program are discussed below

5.1 Test excavation objectives

The principle objectives of the test excavations are to identify and understand the nature, extent and significance of any areas of potential archaeological deposit within the study area. This will further our knowledge of Aboriginal archaeological site patterning within the study area and enable the predictive model to be further tested and refined.

The aims of the testing program are to:

- Determine whether sub-surface archaeological deposits exist within the study area and to establish the extent and nature of such deposits
- Identify if any archaeological material occurs in an intact, undisturbed context, by examining the soil profile and stratigraphy
- Analyse and interpret any archaeological finds (such as stone artefacts, hearths, etc.) recovered during the testing program
- Inform current knowledge of Aboriginal occupation and land use models of the region
- Provide management and mitigation measures for Aboriginal archaeological objects located during the subsurface testing program
- Test the predictive model and answer the research questions developed as part of this assessment

5.2 Test excavation methodology

Test excavations were conducted in accordance with Requirement 16a of the Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales (DECCW 2010b).

Test excavations across the study area conformed to the following methodology:

- Test excavations were conducted in 50 x 50 centimetre units
- The test pits were excavated by hand (inclusive of trowels, spades and other hand tools) along transects at intervals of between 10 – 20 metres or other justifiable and regular spacing (being no smaller than five metres)
- The first test excavation unit was excavated and documented in 5 centimetre spits. Based on the evidence of the first excavation unit, 10 centimetre spits or sediment profile/stratigraphic excavation (whichever is smaller) will then be implemented
- The Code of Practice dictates that the maximum surface area of all test excavation units must be no greater than 0.5% of the PAD or area being investigated
- All excavated soil was sieved in 3mm sieves

- For each test pit that was excavated, the following documentation was be taken:
  - Unique test pit identification number
  - GPS coordinate of each test pit
  - Munsell soil colour, texture and pH
  - Amount and location of cultural material within the deposit
  - Nature of disturbance where present
  - Stratigraphy
  - Archaeological features (if present)
  - Photographic records
  - Spit records
- Test excavation units were backfilled as soon as practicable

5.3 Test excavation results

A total of 14 test pits were excavated within Moss Vale Road Aft 1 (see Plate 6, Plate 7 and Plate 8, and Figure 7). Individual test pit and soil analysis results are provided in Appendix 3. Results by site are shown in Table 11 and a detailed discussion of results is provided below.

Table 11 Test excavation results for Moss Vale Road Aft 1

Landform	PAD area (m^2)	Area tested (m^2)	PAD effectively tested (%)	No. of sites	No. of artefacts
Hill slope/drainage line	8183	3.5	0.04	0	0

Fourteen test pits were excavated in three transects across Moss Vale Road Aft 1. Pits were excavated in 20 metre intervals in order to determine the presence, extent and nature of any potential sub-surface deposits at the site. Soil stratigraphy was also recorded across the site. Soils were relatively homogenous across the entirety of Moss Vale Road Aft 1. Soils consisted of a dark brown clayey loam A1 horizon that extended to depths between 50 millimetres and 200 milimetres before transitioning into a brown to reddish brown clay B2 context. This context constituted the base context of the soil profile (Plate 9 and Plate 10, Plate 11). These soils displayed some evidence of mixing, with grass roots present to only shallow depths and a layer of compaction within the A1 horizon that may be the result of ploughing. The soils observed across Moss Vale Road Aft 1 conform to the Coolangatta soil landscape as opposed to the shoalhaven landscape which current mapping (Hazelton 1992) suggested would be present. This was expected following the survey as Moss Vale Aft 1 was found to have been recorded on hill slopes next to first order drainage lines that were unlikely to deposit fluvial sediments.

No artefacts were identified in Moss Vale Road Aft 1.

Plate 6 Transect 1, Test Pit 6

Plate 7 Transect 2, Test Pit 2

Plate 8 Transect 3, Test Pit 1

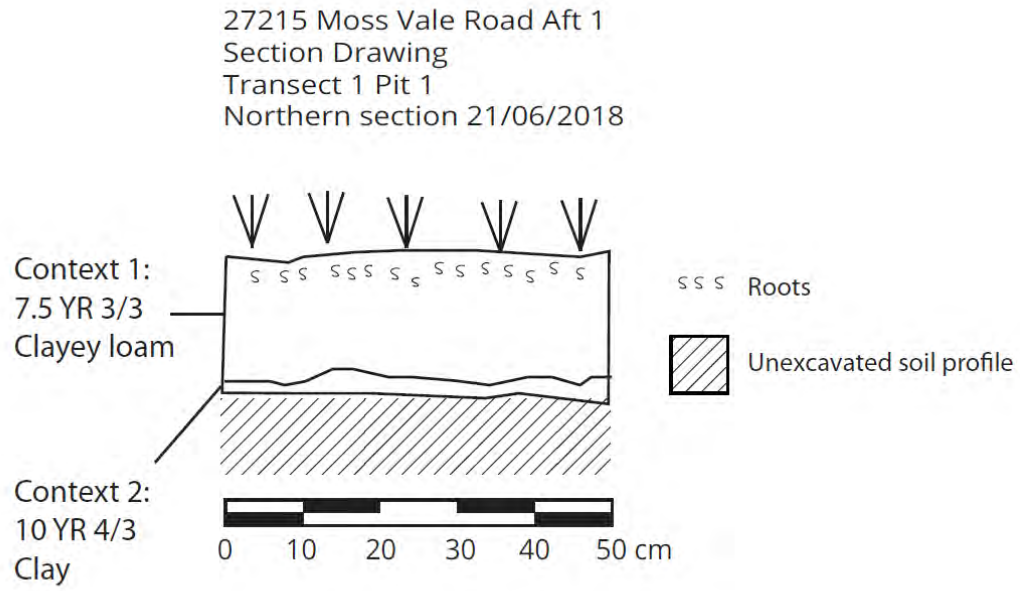


Plate 9 Soil profile of Transect 1, Test Pit 1

Plate 10 Soil profile of Transect 2, Test Pit 6

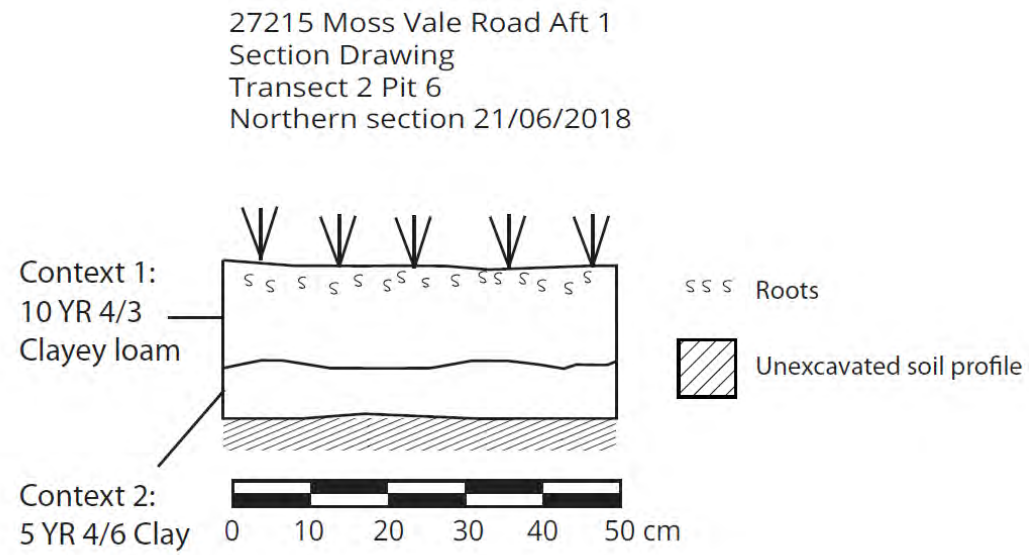
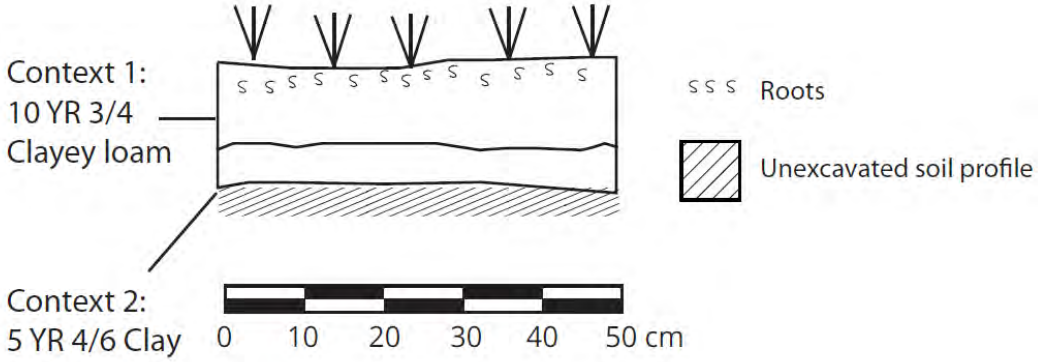
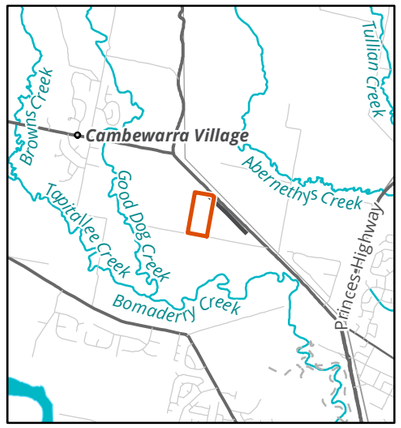


Plate 11 Soil Profile of Transect 3, Test Pit 1





Legend

Study area

Test pits (No artefact found)

F8 Test excavation results

0 30 60 90 120 150

Metres

Scale: 1:2,500 @ A3

Coordinate System: AGD 1966 AMG Zone 56

N

Biosis Pty Ltd

Albury, Ballarat, Melbourne,
Newcastle, Sydney, Wangaratta & Wollongong

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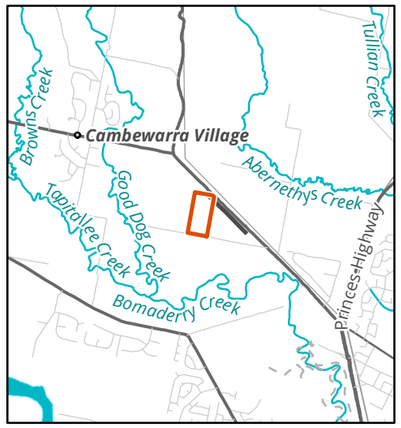
Date: 02 July 2018,
Checked by: MJS, Drawn by: DK, Last edited by: dkazemi
Location:\\bio-data-01\matters$\27200s\27215\Mapping
27215 F8 AR Test excavation

5.4 Discussion

Moss Vale Aft 1 was recorded as a site by KNC; however, they have not provided any descriptions or information on this site in their assessment nor have they submitted the site to the AHIMS database. As part of the DA application for the study area, OEH recommended sub-surface testing of this site due to the presence of the previously recorded site Moss Vale Aft 1 and heavy grass coverage present during the field survey which hampered efforts to relocate the site.

No artefacts were identified on the surface of Moss Vale Road Aft 1 during the Biosis survey, and the site was found to be located on a hillslope landform in proximity to a first order drainage line. A portion of the site identified by KNC was located within a drainage line which would have experienced high levels of disturbance from water movement. The location of the site on the hillslope fits into NOHC's (2013a) predictive modelling which suggested sites would be found on level or low gradient basal slopes above, and set back from, the valley floor.

Fourteen test pits were excavated across this site in three transects. Soils within the site consisted of shallow clayey loams overlying a clay base context. The soil profile in these pits displayed some evidence of disturbance in the form of mixing between the topsoil and clay base context. It is likely that either the agricultural use of the study area or the sites location on an inclined landform with highly erodible soils has resulted in the disturbance of any potential sub-surface deposits that may have been present in the study area. No artefacts were identified during test excavations of this site suggesting that the site was not used for Aboriginal occupation but was instead used as a travel route in line with Clarke and Kuskie's (2006) areas outside of primary and secondary resource zones, which would account for the surface artefact or artefacts originally identified by KNC.



Legend

Study area

Archaelogical Site

Moss Vale Road Aft 1

F9 Aboriginal sites within study area

0 30 60 90 120 150

Metres

Scale: 1:2,500 @ A3

Coordinate System: GDA 1994 MGA Zone 56

Biosis Pty Ltd

Albury, Ballarat, Melbourne,
Newcastle, Sydney, Wangaratta & Wollongong

Matter: 27215
Date: 02 July 2018,
Checked by: MJS, Drawn by: DK, Last edited by: dkazemi
Location:\\bio-data-01\matters$\27200s\27215\Mapping\27215_F9-4 AR-ACHAR_AboriginalSites

Acknowledgements: Basemap © NSW Land and Property Information 2016

6 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 will assess scientific values while the Aboriginal Cultural Heritage Assessment Report will detail the cultural values of Aboriginal sites in the study area.

6.1 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 (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:

- **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 Guide (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.

6.2 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 1997). For this reason, the 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 1997, 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. The site content ratings used for archaeological sites are provided in Table 12. Site condition refers to the degree of disturbance to the contents of a site at the time it was recorded. The site condition ratings used for archaeological sites are provided in Table 13.

Table 12 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

Rating	Description
	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 13 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 note that Aboriginal archaeological sites are generally of high research potential because 'they are the major source of information about Aboriginal prehistory' (Pearson and Sullivan1995, 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.

The following sections provide statements of significance for the Aboriginal archaeological sites recorded during the sub-surface testing for the assessment. The significance of each site follows the assessment 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 as a whole. The nomination levels for the archaeological significance of each site are summarised below.

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 region 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 region. . The representativeness ratings used for archaeological sites are provided in Table 14.

Table 14 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 15.

Table 15 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. This scoring procedure has been applied to the Aboriginal archaeological sites identified during this assessment. The results are in Table 16.

6.2.1 Statements of archaeological significance

The following archaeological significance assessment is based on Requirement 11 of the Code. Using the assessment criteria detailed in Scientific Values and Significance Assessment, an assessment of significance was determined and a rating for each site was determined. The results of the archaeological significance assessment are given in Table 16 and Table 17 below.

Table 16 Scientific significance assessment of archaeological sites recorded within the study area.

Site Name	Site Content	Site Condition	Representativeness	Scientific Significance
Moss Vale Road Aft 1	1	1	1	3

Table 17 Statements of scientific significance for archaeological sites recorded within the study area.

Site Name	Statement of Significance
Moss Vale Road Aft 1	Moss Vale Road Aft 1 was originally recorded by Kelleher Nightingale Consulting who did not provide any details regarding the site in their report. An AHIMS site card was also not submitted to the AHISM database. A site survey by Biosis identified that the site was located on hillslopes next to first order, non-perennial drainage lines as well within the drainage lines, according to the KNC letter report, and was entirely cleared of remnant vegetation in the past. Complete grass cover and lack of information made it impossible to relocate any potential surface artefacts identified by KNC, while test excavations undertaken by Biosis also did not identify any sub-surface deposits in the study area. Given that no surface artefacts were identified by Biosis during the survey and test excavations, Moss Vale Road Aft 1 has been assessed with low significance.

7 Impact assessment

As previously outlined, the Project proposes to subdivide the study area into residential lots with construction of associated amenities including roads, electrical and water infrastructure.

7.1 Predicted physical impacts

The residential development of the study area will have the potential to impact upon Moss Vale Road Aft 1.

A summary of impacts is provided below in Table 18.

Table 18 Summary of potential archaeological impacts

AHIMS Site No.	Site Name	Significance	Type Of Harm	Degree Of Harm	Consequence Of Harm
Pending	Moss Vale Road Aft 1	Low	Direct	Total	Total loss of value

7.2 Management and mitigation measures

Ideally, heritage management involves conservation of sites through the preservation and conservation of fabric and context within a framework of "doing as much as necessary, as little as possible" (Australian ICOMOS 2013). 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 the design of the development is the primary mitigation and management strategy, and should be implemented where practicable.

In the instance of this project it is not feasible for the development design plans to be altered to avoid impacts to the study area. As impacts to the site could not be avoided, Biosis undertook a program of test excavations at Moss Vale Road Aft 1. The results of these excavations contributed to and increased our knowledge of Aboriginal archaeology in the region. This benefits future generations in line with ecologically sustainable development and intergenerational equity principles, with the collection of data from the test excavations being placed on the AHIMS register where it can then be accessed by the public and future generations and built on further.

8 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.
- Current best conservation practise, widely considered to include:
  - Ethos of the Australia ICOMOS Burra Charter
  - The Code

Prior to any impacts occurring within the study area, the following is recommended:

Recommendation 1: Obtain an Aboriginal Heritage Impact Permit (AHIP) for Moss Vale Road Aft 1

The proposed works will result in direct impacts, with a total loss of value to Moss Vale Road Aft 1. It is recommended that Cardno apply to the OEH for an area wide AHIP covering the entirety of the study area for a term of 20 years. The AHIP should allow for the following:

- Impact to the recorded Aboriginal cultural heritage site Moss Vale Road Aft 1
- Impact within the limits of the area wide AHIP for any further Aboriginal objects encountered during construction, unless human remains are identified.

A site impact recording form for Moss Vale Road Aft 1 should also be completed and submitted to the OEH following impacts to the site.

Advice preparing AHIPs

An AHIP is required for any activities likely to have an impact on Aboriginal objects or places or cause land to be disturbed for the purposes of discovering an Aboriginal object. The Office of Environment and Heritage (OEH) issues AHIPs under Part 6 of the National Parks and Wildlife Act 1974 (NPW Act).

AHIPs should be prepared by a qualified archaeologist and lodged with the OEH. Once the application is lodged processing time can take between 8 and 12 weeks. It should be noted that there will be an application fee levied by the OEH for the processing of AHIPs, which is dependent on the estimated total cost of the development project.

Where there are multiple sites within one study area an application for an AHIP to cover the entire study area is recommended.

Recommendation 3: Discovery of Unanticipated Historical Relics

Relics are historical archaeological resources of local or state significance and are protected in NSW under the *Heritage Act 1977*. Relics cannot be disturbed except with a permit or exception/exemption notification. Should unanticipated relics be discovered during the course of the project, work in the vicinity must cease and an archaeologist contacted to make a preliminary assessment of the find. The Heritage Council will require notification if the find is assessed as a relic.

Recommendation 4: 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:

4. Immediately cease all work in the vicinity and not further move or disturb the remains.
5. Notify the Coroners Office and NSW Police immediately. Following this, contact OEH's Environmental Line on 131 555 as soon as practicable and provide details of the remains and their location. The find must also be reported to the Aboriginal parties.
6. Not recommence work at that location unless authorised in writing by OEH.

Recommendation 5: Continued consultation with the registered Aboriginal stakeholders

As per the consultation requirements, it is recommended that the proponent provides a copy of this draft report to the Aboriginal stakeholders and considers all comments received. The proponent 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 6: Lodgment of final report

A copy of the final report will be sent to the client, registered Aboriginal stakeholders, OEH and the AHIMS register.

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Appendices

Appendix 1 AHIMS results

THE FOLLOWING APPENDIX IS NOT TO BE MADE PUBLIC

Appendix 2 Test pit data