123 Golden Valley Way, Jamberoo, NSW: Aboriginal Cultural Heritage Assessment Report

FINAL REPORT

Prepared for TCG Planning, on behalf of Branko Simicic

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Abbreviations

AHIMS	Aboriginal Heritage Information Management System
AMBS	Australian Museum Business Services
ANU	Australian National University
BP	Before Present
DA	Determining Authority
DECCW	Department of Environment, Climate Change and Water
DoP	Department of Planning
DP	Deposited Plan
DV	Distance Visibility
EPA	Environment Planning and Assessment
FT	Fig tree
GDA	Geocentric Datum of Australia
GPS	Global Positioning System
GSV	Ground Surface Visibility
ha	Hectare
ICOMOS	International Council on Monuments and Sites
ILALC	Illawarra Local Aboriginal Land Council
LGA	Local Government Area
m	metre
mya	million years ago
NPW	National Parks and Wildlife
NSW	New South Wales
OEH	Office of Environment and Heritage
PAD	Potential Archaeological Deposit
RAPs	Registered Aboriginal Parties
REF	Review of Environmental Factors
TP	Test Pit

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Summary

Biosis Pty Ltd has been commissioned by TCG Planning (TCG), on behalf of Branko Simicic, to undertake an Aboriginal cultural heritage assessment to accompany their lodgement of a Planning Proposal (PP) for the proposed rezoning of land from Rural Landscape (RU2) to Low Density Residential (R2) at 123 Golden Valley Way, Jamberoo (the project area) (Lot 2, DP 626183).

The Aboriginal cultural heritage assessment 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 *Aboriginal cultural heritage consultation requirements for proponents 2010* (DECCWa 2010) and *Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales* (DECCWb 2010) (the Code).

Two new Aboriginal sites were registered during test excavations on the Aboriginal Heritage Information Management System (AHIMS) as Jamberoo PAD and AS 1 (AHIMS 52-5-0832) and Jamberoo PAD and AS 2 (AHIMS 52-5-0833). There is a potential for development activities to impact on both registered Aboriginal sites.

The Aboriginal community has been consulted about the heritage management of the project throughout its lifespan. The appropriate government bodies were notified and advertisements placed in the *Illawarra Mercury* on 28 November 2015, which resulted in the following Aboriginal organisations registering their interest:

- Illawarra Local Aboriginal Land Council
- Kullila Site Consultants
- National Koorie Site Management
- Biamanga
- Gulaga
- Cullendulla
- Murramarang
- Goobah
- Gundungurra Tribal Technical Services
- Korewal Elouera Jerrungurah Tribal Elders Council
- Minnamunnung
- Peter Falk Consultancy
- Three Ducks Dreaming Surveying and Consulting
- Gary Caines
- Wodi Wodi Traditional Owners
- Woronora Plateau Gundungara Elders Council
- La Perouse Botany Bay Corporation
- Woronora Plateau Gundungara Elders Group

A search conducted by the other relevant agencies listed no Aboriginal Traditional Owners/Stakeholders of the land within the project area.

Upon registration the Aboriginal parties were invited to provide their knowledge on the Project Area and proposal provided in the Methodology Pack (Appendix 4). The responses did not identify any particular area of significance. Responses from the registered Aboriginal parties are included in Appendix 3 .

The selected Aboriginal parties participated in the test excavations. No specific comments were received on the outcomes of the assessment.

The outcome of the consultation process was that the registered Aboriginal parties considered the Project Area to have a moderate level of cultural significance, although that significance was not clearly defined and specific examples were not provided. The results of the consultation process are included within this document.

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

Recommendation 1: The proposed re-zoning should proceed

Based on the findings of the Aboriginal cultural heritage assessment, it is recommended that the proposed re-zoning can proceed. The development has identified two sites Jamberoo PAD 1 and Jamberoo PAD 2 which have been assessed as possessing high and low scientific significance respectively. Should a future development propose to impact partially or wholly the extent of Jamberoo PAD 1, this would be consistent with impacts proposed by many other development projects in the region. Although the first option considered is always to preserve Aboriginal heritage where possible, there is no inherent reason why an Aboriginal Heritage Impact Permit (AHIP) for impact to the full extent of Jamberoo PAD 1, should not be sought, particularly on archaeological grounds.

The current level of assessment is considered adequate to support a Development Application to Kiama Municipal Council and AHIP application to the Office of Environment and Heritage (OEH). This is assuming that Recommendation 2 is adhered to. The Development Consent and AHIP conditions should include provision for the works outlined in Recommendation 3 to be implemented.

Recommendation 2: Continued consultation with the Registered Aboriginal Parties

It is recommended that consultation continues to inform RAPs about the management of Aboriginal cultural heritage sites in the project area throughout the life of the project. This is in line with the *Aboriginal cultural heritage consultation requirements for proponents 2010* (DECCW). Biosis is able to undertake this consultation, however if no longer engaged on the project the responsibility will fall to the landowner. A period of no longer than 6 months between contact with the Aboriginal stakeholders must be upheld for the consultation to be considered 'continuous'. If a period of longer than 6 months occurs between contact with the Aboriginal stakeholders, consultation will need to be re-started.

Recommendation 3: Application for an Aboriginal Heritage Impact Permit for the entire project area of proposed development including salvage.

If at the time of development, the proposed development cannot avoid harm to registered sites Jamberoo PAD and AS 1 (AHIMS 52-5-0832) and Jamberoo PAD and AS 2 (AHIMS 52-5-0833), it is recommended that Biosis, on behalf of Branko Simicic, applies to the OEH for an area based AHIP to:

- Undertake archaeological salvage of site Jamberoo PAD and AS 1. The archaeological salvage should not exceed 10m² and should be undertaken to maximise the recovery of cultural material.

- Impact the recorded Aboriginal sites Jamberoo PAD and AS 1 (AHIMS 52-5-0832) and Jamberoo PAD and AS 2 (AHIMS 52-5-0833).
- Impact within the limits of the area based destruction AHIP for any further Aboriginal objects encountered during construction unless human remains are involved (as shown in Figure 11).
- Determine a long-term management of Aboriginal objects recovered during test excavations with close consultation with RAPs.

Advice preparing AHIPs

AHIPs should be prepared by a qualified archaeologist (Biosis) and lodged with the OEH. Once the application is lodged processing time can take between 8 - 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.

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 NPW Act.

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

1 Introduction

1.1 Project background

Biosis Pty Ltd has been commissioned by TCG Planning (TCG), on behalf of Branko Simicic, to undertake an Aboriginal Cultural Heritage Assessment (ACHA) to accompany their lodgement of a Planning Proposal (PP) for the proposed rezoning of land from Rural Landscape (RU2) to Low Density Residential (R2) at 123 Golden Valley Way, Jamberoo (the project area) (Lot 2, DP 626183).

The ACHA has been carried out under Part 6 of the *National Parks and Wildlife Act 1974* (NPW Act). It has been undertaken in accordance the *Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales* (DECCWb 2010) ('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 to be undertaken in NSW under the NPW Act.

Previously, Biosis Pty Ltd has completed an assessment in accordance with the *Due Diligence Code of Practice for the Protection of Aboriginal Objects in New South Wales (DECCW 2010) (*'the Due Diligence code'*)* for the project area in order to inform responsibilities with regards to Aboriginal cultural heritage in the area. In addition to the basic tasks required for a cultural heritage due diligence assessment, an extended background review, as well as an archaeological survey in accordance with the Code was conducted, in order adequately map areas of high, moderate and low archaeological sensitivity. Based upon the desktop assessment and archaeological survey Biosis was able to identify two areas of high archaeological potential, which are associated with the upper hill crest and a small terrace on the lower hills slope in the valley, in close proximity to the two natural springs. Recommendations were made to undertake further Aboriginal cultural heritage and archaeological assessment that involve test excavations. This is in line with Step 2b of the *Due Diligence Code of Practice for Protection of Aboriginal Objects in New South Wales 2010* (11-12).

This report details the investigation, consultation and assessment of Aboriginal cultural heritage undertaken for the project area.

1.2 Project Area

The project area covers an area of approximately 4.2 hectares and is located within the Kiama Local Government Area (LGA), Parish of Jamberoo and the County of Camden (Figure 1). The project area incorporates Lot 2, DP 626183 and is shown in Figure 2. The project area overlooks Colyers Creek which is located to the east. The western edge of the project area is bounded by Golden Valley Road.

1.3 Proposed Development

The project will involve rezoning of land from Rural Landscape (RU2) to Low Density Residential (R2) at 123 Golden Valley Way, Jamberoo.

1.4 Planning Approvals

The proposed development will be assessed against Part 3 of the *Environmental Planning and Assessment Act 1979* NSW. Other relevant legislation and planning instruments that will inform this assessment include:

- *Environmental Planning and Assessment Act 1979* (NSW)

- *National Parks and Wildlife Act 1974* (NSW)
- *National Parks and Wildlife Amendment Act 2010* (NSW)
- *Kiama Local Environmental Plan 2011*.

1.5 Restricted and confidential information

No information in this report is restricted due to cultural sensitivities. Attachment 2 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

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 as more research of this evidence is conducted.

Without being part of the Aboriginal culture and the productions 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 2010: 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 2010: iii).

Aboriginal people's interpretation of cultural value is based on their "traditions, observance, lore, customs, beliefs and history" (DECCW 2010: 3). The things associated with Aboriginal cultural heritage are continually / actively being defined by Aboriginal people (also see DEC 2005: 1; DECCW 2010: 3). These things can be associated with traditional, historical or contemporary Aboriginal culture (also see DEC 2005: 1, 3; DECCW 2010: 3).

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)

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 2010: 3).

Statutory

Currently Aboriginal cultural heritage, as statutorily defined by the *National Parks and Wildlife Act 1974*, consists of objects and places.

Aboriginal objects are defined as:

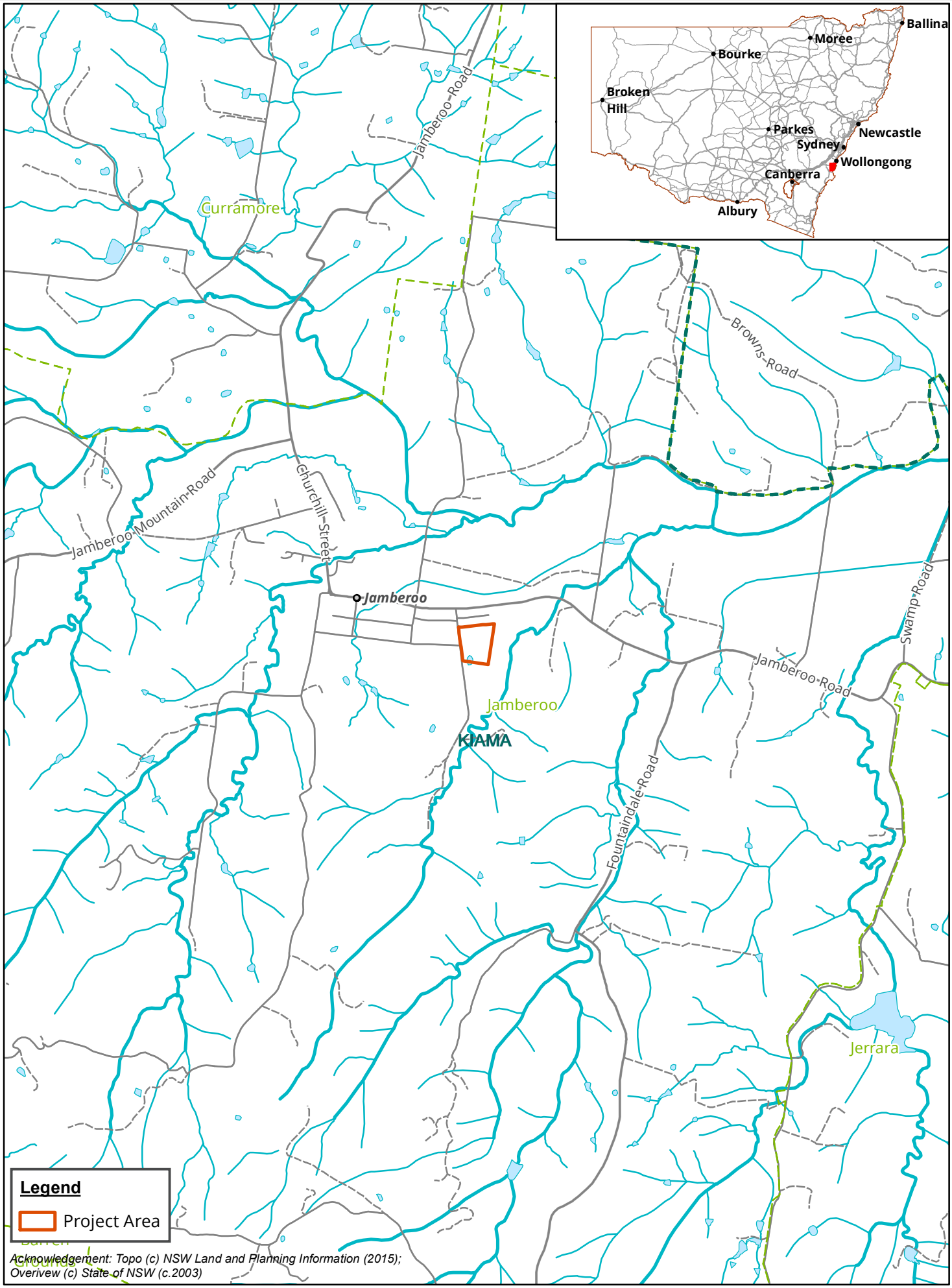
> *"any deposit, object or material evidence…relating to the Aboriginal habitation of the area that comprises NSW, being habitation before or concurrent with (or both) the occupation of that area by persons of non-Aboriginal extraction, and includes Aboriginal remains"*

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 1974*.

Values

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 (also see DEC 2005: 1, 3; DECCW 2010: iii). More specifically it is used:

- To provide a:
  - "*connection and sense of belonging to Country*" (DECCW 2010: iii)
  - Link between the present and the past (DECCW 2010: iii)
- As a learning tool to teach Aboriginal culture to younger Aboriginal generations and the general public (DECCW 2010: 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 (see also DECCW 2010: 3).



Acknowledgement: Topo (c) NSW Land and Planning Information (2015); Overivew (c) State of NSW (c.2003)

Figure 1: Location of the project area

Biosis Pty Ltd
Ballarat, Brisbane, Canberra, Melbourne, Newcastle, Sydney, Wangaratta & Wollongong

Matter: 21189
Date: 16 March 2016,
Checked by: SAS, Drawn by: LH, Last edited by: lharley
Location:P:\21100s\21189\Mapping\

0 300 600 900 1,200
Metres

N

Scale 1:30,000 @ A4, GDA 1994 MGA Zone 56

Legend

Project Area

BestImageryDates

Figure 2: Aerial of the project area

0 10 20 30 40 50

Metres

Scale: 1:1,200 @ A3

Coordinate System: GDA 1994 MGA Zone 55

Biosis Pty Ltd

Ballarat, Brisbane, Canberra, Melbourne, Sydney, Wangaratta & Wollongong

Acknowledgements: Imagery (c) Nearmap 2015; Topo (c) NSW Land and Planning Information

Matter: 21189,
Date: 16 March 2016,
Checked by: SAS, Drawn by: LH, Last edited by: lharley
Location:P:\21100s\21189\Mapping\21189_F2_ProjectArea.mxd

2 Project Area context

This section discusses the Project 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 5.

2.1 Topography, Geology and Hydrology

The project area is located within Wollongong (Coastal) Plain physiographic region (Hazelton 1992: 2). It consists of the gentle rises of the Illawarra Coal Measures, rolling to steep low hills of volcanic materials and undulating Budgong Sandstone and Quaternary alluvium. The Wollongong Plain is located between the sea and the Escarpment. This physiographic unit has formed from the gradual recession, westward, of the Plateau (Bowman 1971). The Coastal Plain is characterised as a mosaic of foothills, ridges, spurs, hillocks and floodplains with slopes varying from very gently inclined to steep with the occasional low cliff. The Coastal Plain is dissected by easterly flowing streams at intervals that become more frequent towards the north (Fuller 1982:18). The Permian (299-251 million years ago) Illawarra Coal Measures are underlain by Permian Shoalhaven Group which includes within the project area Budgong Sandstone geological formation. Budgong Sandstone consists of red, brown and grey volcanic sandstones, which outcrops on the lower slopes of the Jamberoo Valley (Hazelton 1992: 3).

There are a number of hydrological features surrounding the project area, primarily in the form of small creeks and streams. Streams and creeks on the gently sloping coastal plains are unconfined by topography and have extensive floodplains.

Colyers Creek is a third order stream, approximately 130 metres east of the project area, and is a permanent water source. Colyers Creek flows into Fountaindale Creek, which flows into Minnamurra River. The Minnamurra River is one of the major water systems that empties into the South Pacific Ocean and incorporates numerous minor creek systems which originate at the base of the Illawarra Escarpment. These creeks include Jerrara Creek, Hyams Creek and Turpertine Creek, all within two kilometres of the current project area. Within the project area there are a two natural springs and a man-made dam. The dam was most likely created at the location of another natural spring.

Landforms are recognisable, naturally formed features on the Earth's surface. Landform units described in this report reflect landform patterns and landform elements used by Speight (2009). In this technique for describing landforms, the whole land surface is viewed as a mosaic of tiles of odd shapes and sizes. To impose order, the mosaic is treated as if the tiles are of two distinct sizes: the larger ones being themselves mosaics of the smaller ones. The larger tiles, which are more than 600 metres across, are called landform pattern, and include for example flood plain, dune field and hills. The smaller tiles which form mosaics within landform patterns are about 40 metres across and are called landform elements.

Applying Speights landform analysis methods, the project area is identified as lying within low hills landform pattern. Low hills is a landform pattern of low relief (30-90 metres) and gentle to very steep slopes, typically with fixed, erosional stream channels which form a non-directional, convergent, integrated tributary pattern (Speight 2009: 66). Hillcrest, hillslope and valley flat are landform elements associated with low hills landform pattern that are present within the project area (Figure 4). These are defined as:

- **Hillcrest** is very gentle inclined to steep crest, smoothly convex, eroded mainly by creep and sheet wash.

- **Hillslope** is a gently inclined to precipitous slope, commonly simple and maximal, eroded by sheet wash, creep or water-aided mass movement.
- **Valley flat** is small, gently inclined to level flat, aggraded or sometimes eroded by channelled or overbank stream flow, typically enclosed by hillslopes; a miniature alluvial flat landform.

2.2 Landscape Resources

The project area is located within areas that have been cleared or retain pockets of disturbed native vegetation, with intact remnant vegetation situated along the creek line corridors. This surviving vegetation is defined as Coastal Grassy Red Gum Forest (NPWS 1999). Within the wider region, Moist Box-Red Gum Foothills Forest vegetation class is present that would have been exploited by local people. Each community class is described below with the dominant species occurring.

Coastal Grassy Red Gum Forest is characterised by the dominance of Forest red gum *Eucalyptus tereticornis* and Narrow-leaf stringybark *Eucalyptus eugenoides*. Coastal grey box *Eucalyptus bosistoana* is unique to this community. A grassy understorey and the presence of species such as Tick-trefoil *Desmodium varians*, Weeping grass *Microlaena stipoides var. stipoides*, Scurvy weed *Commelina cyanea*, Tussock *Poa labillardieri var. labillardieri*, Hedgehog grass *Echinopogon ovatus*, Paddock lovegrass *Eragrostis leptostachya*, Windmill grass *Chloris divaricata var. divaricata*, Bluegrass *Bothriochloa decipiens* and Chocolate Lily *Dichopogon strictus*.

Acacia Scrubs include a number of Acacia species that recolonised cleared or heavily disturbed native vegetation. On the foot slopes of the Escarpment where tall most forests once existed, *Acacia mearnsii* are distinctive. Acacia scrubs also regularly occur in combination with native species such as Turpentine *Syncarpia glomulifera*.

Moist Box-Red Gum Foothills Forest is dominated by Forest red gum *Eucalyptus tereticornis*, White box *Eucalyptus quadrangulata* and occasionally Blue gum *Eucalyptus salignaXbotryoides*. Shrub understoreys include Grey Myrtle *Backhousis myrtifolia* as a key species with Red olive plum *Cassine australis*, Native cascarilla *Croton verreauxii*) and low densities of Whalebone tree *Streblus brunonianus*.

These species 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 the seasonal availability of resources. Many of the plants found within the project area were important to Aboriginal people and were used for numerous purposes. Based on the known species that occur within each of the community classes, Table 5 below summarises how some of those plants were utilised by Aboriginal people in the past. The list is not exhaustive, and is provided as an example of the cultural values associated with plants in the past and the present (Attenbrow 2010; Stewart and Percival 1997).

Table 1 Traditional Aboriginal plant resources and use within the project area and its close proximity

Species present	Known Aboriginal resource use
Acacia Trees	Seeds were collected and grinded for the flour for seed cake. Sweet gum was edible. The wood was used to make weapons as well as into walking and snake sticks.
Stringybark Species *Eucalyptus spp*.	Bark was used to make cloaks and huts/shelters; may have been used for making canoes. Wood is used to make tools, dishes and bowls. Gums were applied directly to sores or abrasions or boiled in water and used as a wash. Water and manna from certain species can be eaten. Leaves were steamed or crushed to be inhaled for treating colds, headaches and fevers; infused into tea for coughs or diarrhoea; poulticed to be placed on sores, abrasions and boils.

Species present	Known Aboriginal resource use
Turpentine ***Syncarpia glomulifera***	Flowers and seeds were eaten. Weapons and tools were made from the very hard wood. Sap was used to colour and stain weapons and tools. Resin was used to patch cracked or broken items.
Whalebone Tree ***Streblus brunonianus***	Small sweet fruits were eaten raw.

The various fauna species present within the Project Area would have provided a range of resources for Aboriginal people. Terrestrial and avian resources were not only used for food, but also provided a significant contribution to the social and ceremonial aspects of Aboriginal life through their use as ritual implements or even simply through fashioning as personal adornments (Attenbrow 2010:107-10). Mammals such as kangaroos and wallabies and arboreal mammals such as possums were used as a food source and also for tool making. Bones and teeth were used as points or barbs for hunting spears and fishing spears. Tail sinews are known to have been used as a fastening cord, whilst 'bone points' frequently occur in rock shelters (Attenbrow 2010: 99). Animal skin, fur and sinews were also used for personal adornment and in making cloaks.

Aquatic species such as freshwater crayfish would have been easily accessible in larger waterways. Aquatic vertebrates, fish and eels, would also have been present within larger creeks and waterways. Fishing spears were described as being barbed with fish teeth as wells a fish bones (Attenbrow 2010: 117).

2.3 European land use history

In 1816, the first surveyors and timber getters arrived in the area around Kiama to clear timber. By 1819, the cutting, possessing or removing of cedar was deemed a felony.

Surveyor general John Oxley surveyed the coast by sea and called the place 'Kiarami'. In 1921 David Smith arrived and built the first European settlement at Kiama. The area around Jamberoo Mountain is noted as having some of the densest woods in the country. In 1925 Surveyor McBrien surveyed and mapped the Minnamurra River.

Mapping of the district by Robert Dixon showed Michael Hyams land grant where Jamberoo now is, which was noted as a thriving hustling village, with stores and a blacksmith. Micheal Hyam arrived and secured his grant of 1280 acres at Jamberoo and in 1837 opened the Harp Inn. The 'Jamberoo Village' was laid out by Surveyor Goodhall on Hyam's Creeks, a tributary of the Minnamurra River. The Australian advertised the "Village of Jamberoo" for sale and it was bought by R.H. Owen. A flour and timber mill was erected in Jamberoo on the estate of John Ritchie by Captain J. G. Collins. He named it the Woodstock Mill. Cedar by now was almost extinct in the area and land owners decide to remove remanding timber to make farmlands.

In 1841 the Kiama to Jamberoo Road was built by convicts. The Woodstock Mill was also under the new management of Henry Heathorne by 1844, and a brewery was then added to the mill. The mill was a cooperage where barrels were made and included a piggery, bacon factory and a two-story barn. The road from Shellharbour to Kiama, prior to 1860, was via Jamberooo and in 1861, a punt was established. In 1855 the Aboriginal man Micky Johnsons encampment is noted near the Minnamurra Bridge.

The current project area has been used in the recent past for grazing purposes with no significant land modifications except the building of a dam in the south-western section. This small portion of the project area has gone previous significant disturbance that most likely would cause destruction and /or removal of any possible Aboriginal cultural material. Other parts of the project area had only limited surface disturbance.

Clearance of land has a direct impact on the preservation of scarred trees that are known to occur only in areas with remnant mature native vegetation. Open camp sites can also be affected by land clearing activities through disturbance to the upper soil horizons. Cultural material is most likely to be present within topsoils that are within the project area relatively shallow and extend to a maximum of about 300 millimetres. Spatial and stratigraphic movements of cultural material can be expected to occur, but this process does not remove or destroy archaeological material. Removal of vegetation accelerates natural erosion, so some post-depositional movements of artefacts can occur. Pastoral landscapes are considered to be of high terrain integrity as grazing does not require extensive impacts to the soil profile (AMBS 2006: 50).

3 Aboriginal cultural heritage context

3.1 Ethnohistory

It is generally accepted that Aboriginal peoples have inhabited Australia for the last 50,000 years (Allen and O'Connell 2003). 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 greater Sydney 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 following information relating to Indigenous people on the Illawarra is based on such early detailed records.

Despite conflicting views between historical sources of the exact boundaries of tribal groups in the region, the linguistic evidence does identify distinct language groups at the time of European contact. Based on this information it appears that the project area was situated within the Tharawal (also Dharawal, Darawal, Carawal, Turawal, Thurawal) linguistic group. The named groups (often referred to as 'clans', 'bands' or 'tribes') belonging to the Tharawal / Dharawal language group included the following: Gweagal, Norongerraga, Illawarra, Threawal, Tagary, Wandeandega, Wodi Wodi and Ory-ang-ora (Tindale 1974).

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. It has been noted that interactions between the groups inhabiting the many resource zones of the Sydney Basin (coastal and inland) would have varied but were continuous. This is reflected in the relatively homogenous observable cultural features such as art motifs, technology and resource use (McDonald 1992).

Many of the modern place names around the project area have been derived from traditional Aboriginal names. In 1896, George Thornton published in the Illawarra Mercury a list of local Aboriginal place names. Within this article he noted that the word Illawarra came from a traditional word meaning a 'pleasant place'. The town of Kiama name was derived from the traditional name Kiaremia, which meant 'the place that fish can be caught from the rocks'.

The Minnamurra River, which is located north of the project area and the name, derives from the traditional name Min Murra, which meant 'plenty of fish'. In 1820, Surveyor General John Oxley reported to Governor Lachlan Macquarie the Aboriginal name for the Minnamurra River;

'The District of Illawarra is naturally bounded in the south by a high range of rocky hills, in which the waters, falling southerly into Shoals Haven River, have their source; these rocky hills terminate on the coast, a small salt water creek, called by the natives Meme Mora, dividing them at the point from the granted lands in the Illawarra district...' (Organ 1990: 107).

The project area is located within the town of Jamberoo. Early European pioneers settled around the head of the Minnamurra River as the valley of Jamberoo was known for its dense vegetation.

3.2 Aboriginal Heritage Located in the Project Area

The archaeological assessment of the project area identified the following Aboriginal sites in the project area:

- (AHIMS 52-5-0832) Jamberoo PAD and AS 1
- (AHIMS 52-5-0833) Jamberoo PAD and AS 2

The Archaeological Report attached in Appendix 5 provides details for Aboriginal sites identified during the archaeological assessment and shown on Figure 3. A brief description of each site is provided below.

AHIMS 52-5-0832 Jamberoo PAD and AS 1

Site 52-5-0832is located on a hillcrest on a ridgeline in association with the Clyers Creek and extends to the valley of its junction with Foundatindale Creek and Minnamurra River. The site is bounded by the hill crest and it does not extend to its upper slopes. Total of 59 artefacts were recovered from the entire tested landform that have characteristics of other artefacts from the region. They were identified in clayey loams and were subject to vertical movements and are not in situ. The site 52-5-0832 is a moderate density artefact scatter that is located on a within the ridgeline with expansive views and the passing corridor to the valley of the Minnamurra River and further to the coast from the Escarpment, it is presumed the area was frequently used. The site is most likely remnant of dispersed frequent small scale occupation events, rather than a remnant of a permanent, extensive site with a high number and range of cultural material present.

(AHIMS 52-5-0833) Jamberoo PAD and AS 2

Jamberoo PAD and AS2 is located within the valley flat, a miniature terrace, associated with a small spring and is approximately 150 meters west of the Colyers Creek. The site does not extends across the entre landform. It consists of two artefacts recovered from clayey loams that were subject to water movements. it is most likely that site Jamberoo PAD and AS 2 represents a very low density artefact background scatter of the bigger site Jamberoo PAD and AS 1 located on the hillcrest above. Two artefacts present at site Jamberoo PAD and AS 2 are most likely lost or discarded material during one or more visiting events to the area.

3.3 Interpretation of past Aboriginal land use

The Wollongong Plain of the Illawarra region generally provides a number of resources used by Aboriginal inhabitants. Lithic resources would have been accessible in the outcrops of Budgong Sandstone geological formation consisting of volcanic sandstones (Hazelton 1992: 3). Stone was used by Aboriginal people for a variety of purposes as tools or in the social information exchange as symbols or indexes, for example, stone markers.

A number of edible plant species would have been available. Considering the existing environment and soil conditions, it is most likely that a number of vegetation communities were present within the project area and its immediate surroundings prior to European use. Many species within these vegetation classes would have been extensively utilised by Aboriginal people. The wider area includes several distinct ecotones including open forest, woodland, alluvial swamp and floodplain communities. Aboriginal inhabitants of the region would have had access to a wide range of avian, terrestrial and marine fauna and repeated firing of the vegetation would have opened up the foliage allowing ease of access through and between different resource zones.

As suggested by Sefton (1984) although resources in the Wollongong plains would have been attractive, they were probably not sufficient to allow for the locality to be economically self-contained. The area was probably used in conjunction with the resources from the coastal zone and Lake Illawarra.

The project area is located within hillcrest that is part of one of the ridgelines that extends towards the valley of Clyers Creek and its junction with Fountaindale Creek and the Minnamurra River. Clyers Creek is approximately 150 meters east of the project area and is one of the major tributary creeks to the Minnamurra River. It would have provided reliable permanent source of water and would have sustained a variety of flora and fauna species extensively used by Aboriginal people in the past. *Fountaindale* soil landscape that is present within the project area is described as shallow clayey loams (Hazelton 1992). Since these soils are depositional, they would preserve any cultural material very well. However, since they can rapidly accumulate, cultural deposits would not be of a significant age.

The project area has not been a subject to previous significant disturbances. Land is used for grazing purposes and only disturbances would be extensive land clearings. Clearance of land has a direct impact on the preservation of scarred trees that are known to occur only in areas with remnant mature native vegetation. Open camp sites can also be affected by land clearing activities through disturbance to the upper soil horizons.

Figure 3: Aboriginal archaeological sites within the project area

Biosis Pty Ltd

Ballarat, Brisbane, Canberra, Melbourne, Sydney, Wangaratta & Wollongong

Matter: 21189,
Date: 18 March 2016,
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4 Aboriginal community consultation

Consultation with the Aboriginal community has been undertaken in compliance with the *Aboriginal cultural heritage consultation requirements for proponents 2010* (DECCW 2010) as detailed below. A consultation log of all communications with registered Aboriginal parties (RAPs) is provided in Appendix 1. It should be noted that some of the consultation documents in this appendix refer to a 'seniors housing complex' being a part of the proposed development. This this has occurred in error as the proposed development will involve rezoning of land from Rural Landscape (RU2) to Low Density Residential (R2) at 123 Golden Valley Way, Jamberoo and will not include a seniors housing complex. Nevertheless the consultation undertaken for the project meets the consultation requirements.

4.1 Stage 1 Notification of project proposal and registration of interest

Identification of relevant Aboriginal stakeholders

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

- Kiama Municipal Council (KMC)
- NSW Office of Environment and Heritage (OEH)
- NSW Native Title Services Corporation Limited (NTSCORP Limited)
- Office of the Registrar, Aboriginal Land Rights Act 1983 of Aboriginal Owners
- National Native Title Tribunal
- South East Local Land Services (SELLS)
- Illawarra Local Aboriginal Land Council (ILALC)

A list of known Aboriginal stakeholders in the Illawarra was provided by OEH on 4 December 2015 (a copy of this/these responses are provided in Appendix 2) and include:

- Illawarra Local Aboriginal Land Council (ILALC)
- Badu (Murrin Clan/Peoples)
- Bellambi Indigenous Corporation Gandangara Traditional Owners
- Bilinga
- Gary Caines
- Coomaditchie United Aboriginal Corporation
- Dharug (Murrin Clan/Peoples)
- James Davis
- Ken Foster
- Gadhu Dreaming
- Goobah Development Pty Ltd (Murrin Clan/Peoples)

- Gundungurra Tribal Technical Services
- Gunyuu
- Guunamaa Dreamin Sites and Surveying
- Illawarra Aboriginal Corporation
- Jerringong (Murrin Clan/Peoples)
- Karrial (Murrin Clan/Peoples)
- Korewal Elouera Jerrungurah Tribal Elders Council
- Kulila Site Consultants and Koori Site Management
- La Perouse Botany Bay Corporation
- Minnamunnung
- Munyunga
- Murrumbul
- NIAC
- Nundagurri (Murrin Clan/Peoples)
- Pemulwuy (Murrin Clan/Peoples)
- Peter Falk Consultancy
- Norma Simms
- Three Ducks Dreaming Surveying and Consulting
- The Wadi Wadi Coomaditchie Aboriginal Corporation
- Walbunja (Murrin Clan/Peoples)
- Walgalu (Murrin Clan/Peoples)
- Wingikara
- The Wodi Wodi Elders Corporation
- Woronora Plateau Gundungara Elders Council
- Wullung (Murrin Clan/Peoples)
- Yerramurra (Murrin Clan/Peoples)

A search conducted by other authorities listed no Traditional Aboriginal Owners/Stakeholders with land within the project area (Appendix 2).

Public Notice

In accordance with the consultation guidelines, a public notification was placed in the Illawarra Mercury on Saturday, 28 November 2015. The advertisements 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 Project Area. A copy of the public notice is provided in Appendix 2 .

Registration of Aboriginal parties

Aboriginal groups identified in Section 0 were sent a letter inviting them to register their interest in a process of community consultation to provide assistance in determining the significance of Aboriginal object(s) and/or places in the vicinity of the project area. Of those groups invited to register, 18 replied to indicate they wished to be involved in the consultation process. In response to the public notice, five Aboriginal groups registered for consultation. Two Aboriginal stakeholder groups expressed they did not want to be involved in the consultation process. Responses to registration from Aboriginal parties are provided in Appendix 3 and consultation log is in Appendix 1. A full list of Aboriginal parties who registered for consultation is provided below:

- Illawarra Local Aboriginal Land Council
- Kullila Site Consultants
- National Koorie Site Management
- Biamanga
- Gulaga
- Cullendulla
- Murramarang
- Goobah
- Gundungurra Tribal Technical Services
- Korewal Elouera Jerrungurah Tribal Elders Council
- Minnamunnung
- Peter Falk Consultancy
- Three Ducks Dreaming Surveying and Consulting
- Gary Caines
- Wodi Wodi Traditional Owners
- Woronora Plateau Gundungara Elders Council
- La Perouse Botany Bay Corporation
- Woronora Plateau Gundungara Elders Group

4.2 Stage 2 Presentation of information about the proposed project

On 15 January 2015 Biosis provided RAPs with details about the proposed development works (Project Information Pack). A copy of the Project Information Pack is provided in Appendix 4 .

4.3 Stage 3 Gathering information about cultural significance

Archaeological assessment methodology pack

On 15 January 2015, Biosis provided each RAP with a copy of the Project Methodology Pack outlining the proposed Aboriginal cultural heritage assessment process and methodology for test excavations. 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 .

On 15 February 2016, Biamanga, Cullendulla, Goobah, Gulaga and Murramarang sent an e-mail expressing their support for the proposed methodology. They have also stated they would like to be kept informed about further development.

Information gathered during fieldwork

No specific areas of cultural significance were identified during the test excavations. General comments were brought out about the ridgeline and tits importance as a passing corridor. Natural landscape was noted and the fact it is one of the examples how it used to look in the past despite extensive land clearings. RAPs noted very high cultural significance of al the recovered artefacts.

4.4 Stage 4 Review of draft Aboriginal cultural heritage assessment report

On 14 June 2016 Biosis provided each RAP with draft copies of the Aboriginal cultural heritage assessment report. RAPS were given 28 days to review and provide feedback on the draft report.

No comments were received from registered Aboriginal parties in relation to the Aboriginal cultural heritage Assessment report.

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 Project Area. Details of the scientific significance assessment of Aboriginal sites in the Project Area are provided in Appendix 5.

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* (Australia ICOMOS 1999). 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, Water, Heritage and the Arts (DEWHA), the OEH and the

Heritage Branch, NSW Department of Planning. The relevant sections of these guidelines are presented below.

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

In addition to the previously outlined heritage values, the OEH Guidelines (DECC 2006) 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.

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 (also see DECC 2005: 1, 3; DECCW 2010: iii). More specifically it provides a:

- "*connection and sense of be*longing to Country" (DECCW 2010: iii);
- Link between the present and the past (DEC 2005: 2-3; and DECCW 2010: 3);
- A learning tool to teach Aboriginal culture to younger Aboriginal generations and the general public (DECCW 2010: 3); and,
- further evidence of Aboriginal occupation prior to European settlement for people who do not understand the magnitude to which Aboriginal people occupied the continent (also see DECCW 2010: 1; DECCW 2010: 3).

It is broadly acknowledged that Aboriginal people are the primary determiners of the cultural significance of Aboriginal cultural heritage. During consultation the following information was provided by RAPs in regards to the cultural values of the Project Area.

- Ridgeline would have been used in the past as it provided views and passing corridor between different resource areas. The landscape holds high cultural significances it is one of the remainder of cultural landscapes, although the area is extensively altered by past land clearance.
- All artefacts have very high cultural significance as they are remnants of past Aboriginal activities in the area and should be kept for future generations.

5.3 Historic values

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

5.4 Archaeological (Scientific Significance) values

An archaeological scientific assessment was undertaken for the Project Area and is presented in detail as part of the attached Archaeological Report (Appendix 5)

Scientific significance of site Jamberoo PAD and AS 1 (AHIMS 52-5-0832) is assessed as high. It has higher number but limited range of cultural material. The site is in good condition but does not have stratified deposits and it is common site type in the region.

Scientific significance of site Jamberoo PAD and AS 2 (AHIMS 52-5-0833) is assessed as low. It has small number and limited range of cultural material, is in a fair condition but lacks stratified deposits, and is a common site type in the region.

5.5 Aesthetic values

The project area is partially disturbed by the recent land use but have remained in a moderately undisturbed, natural context and landscape. The landscape of the project area is closely linked with Aboriginal cultural values and provides a context for Aboriginal sites that gives a strong sense of place, specifically expansive views from the hill crest towards the Escarpment and the creek and Minnamurra River valleys. The Illawarra Aboriginal community strongly identifies with the landscape of the Project Area.

5.6 Statement of significance

Statement of significance for Jamberoo PAD and AS 1 (AHIMS 52-5-0832)

Site is located within the hillcrest of the ridgeline that extends to the valley of junction of Colyers and Foundtaindale creeks and further to the Minnamurra River. A Moderate density artefact scatter was identified scattered throughout the entire hillcrest with pockets of high density area at its central part. Results of artefact analysis regarding their raw material and artefact types indicate that some sort of tool maintenance was taking place, but areas of concentrated activity, such as knapping floors, could not be established; no archaeological features were identified. One glass artefact was recovered from the test excavation; glass artefacts provide significant information regarding the changing lifeways of Aboriginal people post-contact. The ridgeline would have provided an easy access corridor from the escarpment to the river valley and further to the coast and was most likely frequently visited by Aboriginal people in the past. Results of test excavations point out that no permanent, high density occupation deposits are present, but rather the site represents remnants of multiple short-term visits throughout most likely last millennium. Considering that some level of the natural context of landscape is still present, it holds may strong aesthetic value to local Aboriginal people. Site 52-5-0832 does not hold any historical associations and has a high scientific significance.

Statement of Significance for Jamberoo PAD and AS 2 (AHIMS 52-5-0833)

Site is located within the valley flat associated with a small natural spring and the drainage line that empties into the Colyers Creek, approximately 150 meters to the west. A low density artefact scatter was identified within a part of the landform. Two artefacts were located in clayey loams that have been through water movement, and are most likely not in situ. Considering a very low number of artefacts and their nature, it is most likely that site Jamberoo PAD and AS 2 represents a very low density artefact background scatter of the bigger site Jamberoo PAD and AS 1 located on the hillcrest above. Two artefacts present at site Jamberoo PAD and AS 2 are most likely to have been displaced from Jamberoo PAD and AS1 through ongoing taphonomic processes and have relocated at the base of the hillslope onto the small terrace.

Table 2 Significance assessment criteria

Site Name	Criteria	Ranking
Jamberoo PAD and AS 1 AHIMS (AHIMS 52-5-0832)	Cultural – discussions with the local Aboriginal communities reflect that the site is high in value.	High
	Historical – the site contains a glass artefact which can provide information about the changing lifeways of Aboriginal people in the historic period.	Moderate
	Scientific – the site possesses high archaeological values as it contain lithology rare for the region and a glass artefact. .	High
	Aesthetic – the site is located on the ridgeline with expansive views and extends to the valley of the Minnamurra River. It has been impacted by the past land clearings which would have slightly changed the original, natural landscape.	Moderate
Jamberoo PAD and AS 2 AHIMS (AHIMS 52-5-0833)	Cultural – discussions with the local Aboriginal communities reflect that the site is high in value.	High
	Historical – the site is not connected to any historical event or personage.	Low
	Scientific – the site possesses low archaeological values.	Low
	Aesthetic – the site is within the valley flat and does not have any aesthetic value. Natural spring has ben impacted by the past land use.	Low

The significance of sites was assessed in accordance with the following criteria:

- Requirements of the DECCW *Code of Practice for Archaeological Investigation of Aboriginal Objects in NSW 2010*, and the
- '*Australia International Council on Monuments and Sites (ICOMOS) Burra Charter*' (Australia ICOMOS 1999).

Use of these guidelines in combination 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 Project Area based on the significance ranking criteria assessed in Table 2.

6 Proposed development limitations and mitigation measures

Within the Project Area, there are two recorded Aboriginal sites that may be subject to harm. As discussed in Section 5.2, it is expected that the potential of harm to Aboriginal archaeological sites from the proposed development in the project area ranges from negligible to low. Strategies to avoid or minimise harm to Aboriginal heritage in the Project Area are discussed below.

A summary of the potential archaeological impact of the proposal on known Aboriginal sites within the project area is provided in Table 3.

Table 3 Summary of potential archaeological impact

AHIMS Site No.	Site name	Significance	Type of harm	Degree of harm	Consequence of harm
52-5-0832	Jamberoo PAD and AS 1	High	Direct	Total	Total loss of value
52-5-0833	Jamberoo PAD and AS 2	Low	Direct	Total	Total loss of value

6.1 Potential risks to Aboriginal cultural heritage

The future proposal for the development will include the following activities that could impact Aboriginal heritage:

- Heavy vehicle movement within project area with potential compaction of surface soils.
- Bulk earthworks, which will involve the removal of topsoil and subsoil.

These activities have potential to completely remove or disturb archaeological deposits and Aboriginal objects through earthworks and construction activities.

6.2 Avoiding harm to Aboriginal heritage

Avoidance of impact to archaeological and cultural heritage sites through design of the development is the primary mitigation and management strategy, and should be implemented where practicable. Considerations should be made regarding incorporating Aboriginal sites into the parklands or recreational areas.

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*" (Marquis-Kyle and Walker 1994: 13). In cases where conservation is not practical, several options for management are available. For sites, management often involves the salvage of features or artefacts, retrieval of information through excavation or collection (especially where impact cannot be avoided) and interpretation.

Site Jamberoo PAD and AS 1 is a moderate density and site Jamberoo Pad and As 2 is a low density artefact scatter. They are located within hill crest and valley flat associated with the Colyers Creek and the small natural spring. Both sites lack stratified deposits but are in a fair condition with no significant previous

disturbances observed. Considering the number and range of cultural material, lack of stratified deposits and its representativeness in the region, site Jamberoo PAD and AS 1 is assessed as having moderate scientific significance , and site Jamberoo PAD and As 2 as having low scientific significance. It is recommended that the long-term curation of artefacts recovered from test excavations be established in agreement with Registered Aboriginal Parties (RAPs). If design of the proposed development cannot avoid impacts to two Aboriginal sites, an AHIP will be required to be obtained from OEH. Management recommendations for the impact of the sites are detailed in the following section.

6.4 Sustainable development principles

Intergenerational equity is maintained by the continued dissemination of cultural knowledge and ability to visit cultural sites into the future. It is considered detrimental to future generations if cultural knowledge is lost by the current generation. Any destruction of cultural heritage sites runs the risk of negatively impacting in the future. This issue has been addressed by discussion of the significance of the sites and whether they would play any part in teaching the next generation about cultural traditions. Responses to this question were that the sites were common, that the use of the area was well known (as was that it was shared country) and this would continue to be passed on.

Developments are occurring in the Jamberoo region – the project area is surrounded by residential area to its east. Cumulative impacts by the continued destruction of sites is of concern to the community and should be addressed by continued assessments and focus on preserving sites that are either intact, contain many artefacts, or are significant to the community.

7 Recommendations

The recommendation below incorporate responses from the registered Aboriginal parties. They have been developed in conjunction with the archaeological value of the sites.

Recommendation 1: The proposed re-zoning should proceed

Based on the findings of the Aboriginal cultural heritage assessment, it is recommended that the proposed re-zoning can proceed. The development has identified two sites Jamberoo PAD 1 and Jamberoo PAD 2 which have been assessed as possessing high and low scientific significance respectively. Should a future development propose to impact partially or wholly the extent of Jamberoo PAD 1, this would be consistent with impacts proposed by many other development projects in the region. Although the first option considered is always to preserve Aboriginal heritage where possible, there is no inherent reason why an AHIP for impact to the full extent of Jamberoo PAD 1, should not be sought, particularly on archaeological grounds.

The currently level of assessment is considered adequate to support a Development Application to Kiama Municipal Council and AHIP application to OEH. This is assuming that Recommendation 2 is adhered to. The Development Consent and AHIP conditions should include provision for the works outlined in Recommendation 3 to be implemented.

Recommendation 2: Continued consultation with the Registered Aboriginal Parties

It is recommended that consultation continues to inform RAPs about the management of Aboriginal cultural heritage sites in the project area throughout the life of the project. This is in line with the *Aboriginal cultural heritage consultation requirements for proponents 2010* (DECCW). Biosis is able to undertake this consultation, however if no longer engaged on the project the responsibility will fall to the landowner. A period of no longer than 6 months between contact with the Aboriginal stakeholders must be upheld for the consultation to be considered 'continuous'. If a period of longer than 6 months occurs between contact with the Aboriginal stakeholders, consultation will need to be re-started.

Recommendation 3: Application for an Aboriginal Heritage Impact Permit for the entire project area of proposed development including salvage.

If at the time of development, the proposed development cannot avoid harm to registered sites Jamberoo PAD and AS 1 (AHIMS 52-5-0832) and Jamberoo PAD and AS 2 (AHIMS 52-5-0833), it is recommended that Biosis, on behalf of Branko Simicic, applies to OEH for an area based AHIP to:

- Undertake archaeological salvage of site Jamberoo PAD and AS 1. The archaeological salvage should not exceed 10m² and should be undertaken to maximise the recovery of cultural material.
- Impact the recorded Aboriginal sites Jamberoo PAD and AS 1 (AHIMS 52-5-0832) and Jamberoo PAD and AS 2 (AHIMS 52-5-0833).
- Impact within the limits of the area based destruction AHIP for any further Aboriginal objects encountered during construction unless human remains are involved (as shown in Figure 11).
- Determine a long-term management of Aboriginal objects recovered during test excavations with close consultation with RAPs.

Advice preparing AHIPs

AHIPs should be prepared by a qualified archaeologist (Biosis) and lodged with the OEH. Once the application is lodged processing time can take between 8 - 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.

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 NPW Act.

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

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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 Project Area.

Organisation Contacted	Date and Type of Contact	Date and Type of Response	Response Details
OEH Wollongong Office	Letter – 24 November 2015	Letter – 4 December 2015	OEH identified 37 Aboriginal people/parties who have an interest in the project.
Illawarra Local Aboriginal Land Council	Letter – 24 November 2015	No Response	N/A
Native Title Services CORP Limited	E-mail – 26 November 2015	No response	N/A
Wollongong City Council	Letter – 24 November 2015	No Response	N/A
National Native Title Tribunal	Letter – 24 November 2015	Letter – 1 December 2015	NNTT did not identified any Aboriginal people/parties who may have an interest in the project.
Office of the Registrar, Department of Aboriginal Affairs	Letter – 24 November 2015	Letter – 27 November 2015	Did not identify any Aboriginal Owners. Suggested to contact ILALC
South East Local Land Services	Letter – 24 November 2015	Letter – 27 November 2015	Stated that SELLS was not the primary source for contacting or managing contact lists for Aboriginal communities. Suggested to contact OEH in Queanbeyan
Kiama Municipal Council	Letter – 24 November 2015	No response	N/A

Step 2- Public Advertisement

Public notices were published in the *Illawarra Mercury* on the 28 November 2015. Copies of the advertisements are provided in Appendix 2 .

Step 3- Registration of Interest.

The registration period ran from the 28 November 2015 to the 11 January 2016. 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)	Email – 25 December 2015	No Response	N/A
Bilinga	Email – 25 December 2015	No Response	N/A
Gary Caines	Email – 25 December 2015	E-mail – 13 January 2016	Registered for consultation. Enquired about previous due diligence assessment for the area.
Dharug (Murrin Clan/Peoples)	Email – 25 December 2015	No Response	N/A
James Davis	N/A	Phone call – 5 December 2015 E-mail – 9 December 2015	Registered for consultation, as a representative of Wodi Wodi Traditional Owners group
Illawarra Local Aboriginal Land Council	N/A	Phone call – 11 January 2016	Registered for consultation.
Gadhu Dreaming	Email – 25 December 2015	No Response	N/A
NIAC	Email – 25 December 2015	Email – 26 December 2015	Not registered for consultation.
The Wadi Wadi Coomaditchie Aboriginal Corporation (represented by NIAC)	Email – 25 December 2015	No Response	N/A
Korewal Elouera Jerrungurah Tribal Elders Council	N/A	Phone call – 7 Dec 2015	Registered for consultation.
La Perouse Botany Bay Corporation	Email – 25 December 2015	Email – 26 December 2015	Registered for consultation, including La Perouse and Woronora Plateau Gundungara Elders Council (Norma Simms)
Woronora Plateau Gundungara Elders Council	Email – 25 December 2015	E-mail – 8 December 2015	Registered for consultation.
Ken Foster	Email – 25 December 2015	No Response	N/A
Coomaditchie United Aboriginal Corporation	Email – 25 December 2015	E-mail – 11 January 2016	Not registered for consultation.
Wodi Wodi Elders Corporation	Email – 25 December 2015	Email – 14 Dec 2011	Registered for consultation as Wodi Wodi Traditional Owners represented by James Davis

Organisation Contacted	Date and Type of Contact	Date and Type of Response	Response Details
Bellambi Indigenous Corporation Gandangara Elders Group	Email – 25 December 2015	No Response	N/A
Illawarra Aboriginal Corporation	Email – 25 December 2015	No Response	N/A
Goobah Developmnet Pty Ltd (Murrin Clan/Peoples)	Email – 25 December 2015	E-mail – 5 Jan 2016	Registered for consultation
Gundungurra Tribal Technical Services	Email – 25 December 2015	Phone call – 11 Jan 2016	Registered for consultation; requested all the documents to be sent via regular mail, no e-mail
Gunyuu	Email – 25 December 2015	No Response	N/A
Guunamaa Dreamin Sites and Surveying	Email – 25 December 2015	No Response	N/A
Jerringong (Murrin Clan/Peoples)	Email – 25 December 2015	No Response	N/A
Karrial (Murrin Clan/Peoples)	Email – 25 December 2015	No Response	N/A
Peter Falk Consultancy	Email – 25 December 2015	E-mail – 26 Dec 2015	Registered for consultation.
Kulila Site Consultants and National Koori Site Management	N/A	Phone Call – 2 Dec 2015	Registered for consultation.
La Perouse Botany Bay Corporation	Email – 25 December 2015	Email – 26 Dec 2015	Registered for consultation with Aunty Norma Simms representing Woronora Plateau Gundungara Elders Group
Minnamunnung	Email – 25 December 2015	Phone call – 7 Jan 2016	Registered for consultation.
Muyunga	Email – 25 December 2015	No Response	N/A
Murrumbul	Email – 25 December 2015	No response	N/A
Nundagurri (Murrin	Email – 25	No response	N/A

Organisation Contacted	Date and Type of Contact	Date and Type of Response	Response Details
Clan/Peoples)	December 2015		
Pemulwuy (Murrin Clan/Peoples)	Email – 25 December 2015	No response	N/A
Norma Simms	Email – 25 December 2015	Email – 26 Dec 2015	Registered by La Perouse Botany Corporation
Three Ducks Dreaming Surveying and Consulting	Email – 25 December 2015	E-mail – 27 Dec 2015	Registered for consultation
Walbunja (Murrin Clan/Peoples)	Email – 25 December 2015	No response	N/A
Walgalu (Murrin Clan/Peoples)	Email – 25 December 2015	No response	N/A
Wingikara	Email – 25 December 2015	No response	N/A
Wullung (Murrin Clan/Peoples)	Email – 25 December 2015	No response	N/A
Yerramurra (Murrin Clan/Peoples)	Email – 25 December 2015	No response	N/A
Murramarang	N/A	E-mail – 5 Jan 2016	Registered for consultation
Biamanga	N/A	E-mail – 5 Jan 2016	Registered for consultation
Cullendulla	N/A	E-mail – 5 Jan 2016	Registered for consultation
Gulaga	N/A	E-mail – 5 Jan 2016	Registered for consultation

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 4 and a copy of the covering email is provided to the following RAPs:

Organisation Contacted	Date and Type of Contact	Date and Type of Response	Response Details
Illawarra Local Aboriginal Land Council	E-mail – 15 Jan 2016	No response	N/A
Korewal Elouera	Registered mail – 19	No response	N/A

Organisation Contacted	Date and Type of Contact	Date and Type of Response	Response Details
Jerrungurah Tribal Elders Council	Jan 2016		
Murramarang	E-mail – 15 Jan 2016	No response	N/A
Biamanga	E-mail – 15 Jan 2016	No response	N/A
Cullendulla	E-mail – 15 Jan 2016	No response	N/A
Gulaga	E-mail – 15 Jan 2016	No response	N/A
Three Ducks Dreaming Surveying and Consulting	E-mail – 15 Jan 2016	No response	N/A
Minnamunnung	E-mail – 15 Jan 2016	No response	N/A
La Perouse Botany Bay Corporation and Aunty Norma Simms (Woronora Plateau Gundungara Elders Group)	E-mail – 15 Jan 2016	No response	N/A
Kulila Site Consultants and National Koori Site Management	E-mail – 15 Jan 2016	No response	N/A
Peter Falk Consultancy	E-mail – 15 Jan 2016	No response	N/A
Gundungurra Tribal Technical Services	Registered mail – 19 Jan 2016	No response	N/A
Goobah Developmnet Pty Ltd (Murrin Clan/Peoples)	E-mail – 15 Jan 2016	No response	N/A
Wodi Wodi Traditional Owners	E-mail – 15 Jan 2016	No response	N/A
Woronora Plateau Gundungara Elders Council	E-mail – 15 Jan 2016	No response	N/A
Gary Caines	E-mail – 15 Jan 2016	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.

Organisation Contacted	Date and Type of Contact	Date and Type of Response	Response Details
Illawarra Local Aboriginal Land Council	E-mail – 15 Jan 2016	No response	N/A
Korewal Elouera Jerrungurah Tribal Elders Council	Registered mail – 19 Jan 2016	No response	N/A
Murramarang	E-mail – 15 Jan 2016	E-mail – 15 Feb 2016	Supports the methodology
Biamanga	E-mail – 15 Jan 2016	E-mail – 15 Feb 2016	Supports the methodology
Cullendulla	E-mail – 15 Jan 2016	E-mail – 15 Feb 2016	Supports the methodology
Gulaga	E-mail – 15 Jan 2016	E-mail – 15 Feb 2016	Supports the methodology
Three Ducks Dreaming Surveying and Consulting	E-mail – 15 Jan 2016	No response	
Minnamunnung	E-mail – 15 Jan 2016	No response	N/A
La Perouse Botany Bay Corporation and Aunty Norma Simms (Woronora Plateau Gundungara Elders Group)	E-mail – 15 Jan 2016	No response	N/A
Kulila Site Consultants and National Koori Site Management	E-mail – 15 Jan 2016	No response	N/A
Peter Falk Consultancy	E-mail – 15 Jan 2016	No response	N/A
Gundungurra Tribal Technical Services	Registered mail – 19 Jan 2016	No response	N/A
Goobah Developmnet Pty Ltd (Murrin Clan/Peoples)	E-mail – 15 Jan 2016	E-mail – 15 Feb 2016	Supports the methodology
Wodi Wodi Traditional Owners	E-mail – 15 Jan 2016	No response	N/A
Woronora Plateau Gundungara Elders Council	E-mail – 15 Jan 2016	No response	N/A
Gary Caines	E-mail – 15 Jan 2016	No response	N/A

Step 2- Test excavation

Organisation Contacted	Date and Type of Contact	Date and Type of Response	Response Details
Illawarra Local Aboriginal Land Council	E-mail – 18 Feb 2016	Test Excavations 22 and 24 Feb 2016	Participated in test excavations
Kulila Site Consultants and National Koori Site Management	E-mail – 19 Feb 2016	Test Excavations 23 Feb 2016	Participated in test excavations
Wodi Wodi Traditional Owners	Phone call – 19 Feb 2016	Test Excavations 22 Feb 2016	Participated in test excavations

A1.4 Stage 4 – Review of Draft Report

Step 1- Provision of Draft Report for Review.

Organisation Contacted	Date and Type of Contact	Date and Type of Response	Response Details
Illawarra Local Aboriginal Land Council	E-mail –14 June 2016	No response	N/A
Korewal Elouera Jerrungurah Tribal Elders Council	Registered mail – 14 June 2016	No response	N/A
Murramarang	E-mail –14 June 2016	No response	N/A
Biamanga	E-mail –14 June 2016	No response	N/A
Cullendulla	E-mail –14 June 2016	No response	N/A
Gulaga	E-mail –14 June 2016	No response	N/A
Three Ducks Dreaming Surveying and Consulting	E-mail –14 June 2016	No response	N/A
Minnamunnung	E-mail –14 June 2016	No response	N/A
La Perouse Botany Bay Corporation and Aunty Norma Simms (Woronora Plateau Gundungara Elders Group)	E-mail –14 June 2016	No response	N/A

Organisation Contacted	Date and Type of Contact	Date and Type of Response	Response Details
Kulila Site Consultants and National Koori Site Management	E-mail –14 June 2016	No response	N/A
Peter Falk Consultancy	E-mail –14 June 2016	No response	N/A
Gundungurra Tribal Technical Services	Registered mail –14 June 2016	No response	N/A
Goobah Developmnet Pty Ltd (Murrin Clan/Peoples)	E-mail –14 June 2016	No response	N/A
Wodi Wodi Traditional Owners	E-mail –14 June 2016	No response	N/A
Woronora Plateau Gundungara Elders Council	E-mail –14 June 2016	No response	N/A
Gary Caines	E-mail –14 June 2016	No response	N/A

Appendix 2 Register Searches Results and Public Notice

Notification to Authorities

National Native Title Tribunal

Request for search of Tribunal register information

What is a request for search of Tribunal register information?

The Native Title Registrar maintains three registers: the Register of Native Title Claims, the National Native Title Register and the Register of Indigenous Land Use Agreements[1]. The Tribunal also maintains a schedule of native title applications which includes claims which have not been registered. Persons or organisations can request a search of the register and schedule information to find out whether an area of land or water is covered by a native title determination, application or indigenous land use agreement (ILUA). A search against the Registers and schedule (or an 'overlap analysis') is a search to ascertain whether there is a native title determination, claim or land use agreement over a specified area. Further information about searches can be found on the Tribunal's **website**.

When will the Tribunal search the Registers?

The Tribunal and the Registrar have a number of powers and functions under the *Native Title Act 1993*, including providing assistance to people in matters related to a proceeding (e.g. a native title determination application or other relevant application). Assistance may also be provided that is ancillary to the performance of functions or exercise of powers of the Tribunal and Registrar. This may take the form of searches of register and schedule information to assist a person who may not be a party to a native title proceeding but who is required, under the *Native Title Act* or other relevant state-based legislation, to identify native title interests (e.g. an applicant for a minerals tenement or a developer complying with cultural heritage legislation). There is no charge for these register searches.

How long will the search take?

It may take up to three working days to provide you with register extracts and attachments if you provide an application number. It may take up to five working days to conduct a search against the Registers and databases. The Tribunal will contact you if a result cannot be provided within this timeframe.

Search results

Search results will normally be sent via email. However, if results are too large to email, they will be sent via mail unless alternative arrangements are made.

[1] **Note**: the Register of Indigenous Land Use Agreements can be viewed or searched through the NNTT website. Click here.

Your details	Name: Ana Jakovljevic
	Position: Archaeologist
	Company/organisation: Biosis Pty Ltd
	Postal address: 8 Tate Street Wollongong NSW 2500
	Your reference: 21189 123 Golden Valley Way, Jamberoo, NSW, Rezoning
	Email address: ajakovljevic@biosis.com.au
	Telephone No.: 4201 1051
	Fax No.: 03 9646 9242
	Date of request: 26/11/2015
Reason for search request	☐ **I am a party to a native title proceeding** – please specify Federal Court/Tribunal file number/application name: ☒ I need to identify existing native title interests to comply with the NTA or other State/Territory legislation – please provide details: Aboriginal Cultural Heritage Assessment (*National Parks and Wildlife Act 1979*).
Details of the area to be searched Please complete the relevant description fields (fields marked with an asterisk must be completed) **or** provide a clear map of the area including landmarks	**Mining Tenure:** *State/Territory: *Mining/ exploration details: Tenement number(s) (i.e. EL No or MCN No) or block/sub block description:
	Other Land Tenure: *State/Territory: NSW Land parcels: *Lot number(s)*: Lot 2 DP626183 *Tenure type (*e.g. agricultural lease*): Rural Property name: Pastoral Lease number or name: *Local Government Area(s): Kiama County: Camden Parish: Kiama Town: Jamberoo Section: Hundred: Northern Territory Portion:
	Other details: (additional information may be attached): Map

Note: Search requests cannot be processed if insufficient detail is supplied.

Note: Map coordinates that form part of the attachments to a search result will not be sent with results unless specifically requested. Maps and any other formal attachments will be sent.

Submitting your search request

Search requests can be sent to your local registry by mail, email or fax.

Tribunal contact details

Brisbane Office
Level 30, Hitachi Building
239 George Street
Brisbane Qld 4000

GPO Box 9973

Brisbane Qld 4001

Telephone: (07) 3307 5000
Freecall: 1800 640 501
Fax: (07) 3307 5050

Email: *qldenquiries@nntt.gov.au*

Cairns Office
Level 14, Cairns Corporate Tower
15 Lake Street
Cairns Qld 4870

GPO Box 9973

Cairns Qld 4870

Telephone: (07) 4046 9000
Freecall: 1800 640 501
Fax: (07) 4046 9050

Email: qldenquiries@nntt.gov.au

Melbourne Office

** The Melbourne Office serves clients in Victoria, Tasmania and Northern Territory.*

Level 6, Commonwealth Law Courts Building

305 Williams Street

Melbourne VIC 3000
GPO Box 9973

Melbourne VIC 3001
Telephone: (03) 9920 3000

Freecall: 1800 640 501

Fax (03) 9606 0680
Email: vicandtasenquiries@nntt.gov.au

Perth Office
Level 5, Commonwealth Law Courts Building
1 Victoria Ave

Perth WA 6000
GPO Box 9973

Perth WA 6848

Telephone: (08) 9425 1000
Freecall: 1800 640 501
Fax: (08) 9425 1199

Email: waenquiries@nntt.gov.au

Sydney Office
** The Sydney Office serves clients in New South Wales, the Australian Capital Territory and South Australia.*

Level 16, Law Courts Building

Queens Square

Sydney NSW 2000

GPO Box 9973

Sydney NSW 2001

Telephone: (02) 9227 4000

Freecall: 1800 640 501

Facsimile: (02) 9227 4030

Email: nswenquiries@nntt.gov.au

South Australia and Northern Territory
** Please direct all South Australian and Northern Territory enquiries to the contact details below:*

Telephone: (02) 9227 4000 (South Australia enquiries only)

Telephone: (03) 9920 3000 (Northern Territory enquiries only)

Freecall: 1800 640 501

Email: sa_and_ntenquiries@nntt.gov.au

24 November 2015

Illawarra Local Aboriginal Land Council
Derek Hardman
3 Ellen Street
Wollongong NSW 2500

Dear Derek,

RE: Proposed Residential Development at 123 Extension of Fowlers Road in West Dapto, NSW
Our Ref: Matter 21189

TCG Planning (TCG), on behalf of Branco Simicic, is preparing lodgement of a Development Application (DA) for the proposed rezoning of land from RU2 Rural Landscape to R2 Low Density Residential at 123 Golden Valley Way, Jamberoo (the Project Area) (Lot 2, DP 626183), Kiama Local Government Area. It is bounded by Golden Valley Road to the west and Colyers Creek to the east (see the attached figure). The Project will involve the construction of a seniors housing complex, with approximately 50 residential dwellings. The dwellings will have a maximum building height of 8.5 metres and a maximum floor space ratio of 0.45:1. The proposed development will be assessed against Part 4 of the *Environmental Planning and Assessment Act 1979*.

Biosis Pty Ltd completed an assessment in accordance with the *Due Diligence Code of Practice for the Protection of Aboriginal Objects in New South Wales(DECCW 2010) ('the Due Diligence code')* for the Project Area in order to inform responsibilities with regards to Aboriginal cultural heritage in the area. In addition to the basic tasks required for a due diligence assessment, an extended background review, as well as an archaeological survey in accordance with the *Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales 2010* (the Code) was conducted, in order adequately map areas of high, moderate and low archaeological sensitivity. Based upon the desktop assessment and archaeological survey Biosis has been able to identify two areas of high archaeological potential (Jamberoo PAD 1 and 2), which are associated with the upper crest and a small terrace on the lower hills slope, in close proximity to the two natural springs. Recommendations have been made to undertake further Aboriginal cultural heritage and archaeological assessment that will involve test excavations. This is in line with Step 2b of the *Due Diligence Code of Practice for Protection of Aboriginal Objects in New South Wales 2010* (11-12).

An Aboriginal Cultural Heritage Assessment will be undertaken which will include test excavations in accordance with the *Code of Practice for Archaeological Investigations of Aboriginal Objects in New South Wales* (DECCW 2010). Biosis Pty Ltd is assisting TCG Planning with consultation with the Aboriginal community in accordance with the *Aboriginal Cultural Heritage Consultation Requirements for Proponents 2010* (DECCW 2010). The purpose of the Aboriginal community consultation will be to inform the Aboriginal Cultural Heritage Assessment, and to provide the Chief Executive Officer of the Office of Environment and Heritage (OEH) with sufficient information for the consideration and determination of an AHIP application, if it is required.

TCG Planning on behalf of Branco Simicic wishes to identify Aboriginal people who may have an interest in the proposed Project Area and hold cultural knowledge relevant to determining the cultural significance of

Aboriginal objects and/or Places in the Jamberoo area. If you could please provide contact details for any such Aboriginal people or organisations of which you are aware it would be greatly appreciated. Please provide these details by **5pm on December 8, 2015**.

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

Branco Simicic

Tel: 0417 776 711

PO Box 5489

Wollongong NSW 2520

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

Ana Jakovljevic

Biosis Pty Ltd

8 Tate Street

Wollongong NSW 2500

ajakovljevic@biosis.com.au

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

Yours sincerely,

Ana Jakovljevic
Archaeologist
0428 175 025
02 4201 1051
ajakovljevic@biosis.com.au

24 November 2015

General Menager
Kiama Municipal Council
PO Box 75
Kiama NSW 2533

Dear Sirs,

RE: Proposed Residential Development at 123 Extension of Fowlers Road in West Dapto, NSW
Our Ref: Matter 21189

TCG Planning (TCG), on behalf of Branco Simicic, is preparing lodgement of a Development Application (DA) for the proposed rezoning of land from RU2 Rural Landscape to R2 Low Density Residential at 123 Golden Valley Way, Jamberoo (the Project Area) (Lot 2, DP 626183), Kiama Local Government Area. It is bounded by Golden Valley Road to the west and Colyers Creek to the east (see the attached figure). The Project will involve the construction of a seniors housing complex, with approximately 50 residential dwellings. The dwellings will have a maximum building height of 8.5 metres and a maximum floor space ratio of 0.45:1. The proposed development will be assessed against Part 4 of the *Environmental Planning and Assessment Act 1979*.

Biosis Pty Ltd completed an assessment in accordance with the *Due Diligence Code of Practice for the Protection of Aboriginal Objects in New South Wales(DECCW 2010) ('the Due Diligence code')* for the Project Area in order to inform responsibilities with regards to Aboriginal cultural heritage in the area. In addition to the basic tasks required for a due diligence assessment, an extended background review, as well as an archaeological survey in accordance with the *Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales 2010* (the Code) was conducted, in order adequately map areas of high, moderate and low archaeological sensitivity. Based upon the desktop assessment and archaeological survey Biosis has been able to identify two areas of high archaeological potential (Jamberoo PAD 1 and 2), which are associated with the upper crest and a small terrace on the lower hills slope, in close proximity to the two natural springs. Recommendations have been made to undertake further Aboriginal cultural heritage and archaeological assessment that will involve test excavations. This is in line with Step 2b of the *Due Diligence Code of Practice for Protection of Aboriginal Objects in New South Wales 2010* (11-12).

An Aboriginal Cultural Heritage Assessment will be undertaken which will include test excavations in accordance with the *Code of Practice for Archaeological Investigations of Aboriginal Objects in New South Wales* (DECCW 2010). Biosis Pty Ltd is assisting TCG Planning with consultation with the Aboriginal community in accordance with the *Aboriginal Cultural Heritage Consultation Requirements for Proponents 2010* (DECCW 2010). The purpose of the Aboriginal community consultation will be to inform the Aboriginal Cultural Heritage Assessment, and to provide the Chief Executive Officer of the Office of Environment and Heritage (OEH) with sufficient information for the consideration and determination of an AHIP application, if it is required.

Biosis Pty Ltd
Wollongong Resource Group

8 Tate Street
Wollongong NSW 2500

Phone: 02 4229 5222
Fax: 02 4229 5500

ACN 006 175 097
ABN 65 006 175 097

Email: wollongong@biosis.com.au

biosis.com.au

TCG Planning on behalf of Branco Simicic wishes to identify Aboriginal people who may have an interest in the proposed Project Area and hold cultural knowledge relevant to determining the cultural significance of Aboriginal objects and/or Places in the Jamberoo area. If you could please provide contact details for any such Aboriginal people or organisations of which you are aware it would be greatly appreciated. Please provide these details by **5pm on December 8, 2015**.

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

Branco Simicic

Tel: 0417 776 711

PO Box 5489

Wollongong NSW 2520

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

Ana Jakovljevic

Biosis Pty Ltd

8 Tate Street

Wollongong NSW 2500

ajakovljevic@biosis.com.au

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

Yours sincerely,

Ana Jakovljevic
Archaeologist
0428 175 025
02 4201 1051
ajakovljevic@biosis.com.au

24 November 2015

George Tonna – Land and Notifications Officer
Native Title Services Corporation Limited
PO Box 2105
Strawberry Hills NSW 2012

Dear George,

RE: Proposed Residential Development at 123 Extension of Fowlers Road in West Dapto, NSW
Our Ref: Matter 21189

TCG Planning (TCG), on behalf of Branco Simicic, is preparing lodgement of a Development Application (DA) for the proposed rezoning of land from RU2 Rural Landscape to R2 Low Density Residential at 123 Golden Valley Way, Jamberoo (the Project Area) (Lot 2, DP 626183), Kiama Local Government Area. It is bounded by Golden Valley Road to the west and Colyers Creek to the east (see the attached figure). The Project will involve the construction of a seniors housing complex, with approximately 50 residential dwellings. The dwellings will have a maximum building height of 8.5 metres and a maximum floor space ratio of 0.45:1. The proposed development will be assessed against Part 4 of the *Environmental Planning and Assessment Act 1979*.

Biosis Pty Ltd completed an assessment in accordance with the *Due Diligence Code of Practice for the Protection of Aboriginal Objects in New South Wales(DECCW 2010) ('the Due Diligence code')* for the Project Area in order to inform responsibilities with regards to Aboriginal cultural heritage in the area. In addition to the basic tasks required for a due diligence assessment, an extended background review, as well as an archaeological survey in accordance with the *Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales 2010* (the Code) was conducted, in order adequately map areas of high, moderate and low archaeological sensitivity. Based upon the desktop assessment and archaeological survey Biosis has been able to identify two areas of high archaeological potential (Jamberoo PAD 1 and 2), which are associated with the upper crest and a small terrace on the lower hills slope, in close proximity to the two natural springs. Recommendations have been made to undertake further Aboriginal cultural heritage and archaeological assessment that will involve test excavations. This is in line with Step 2b of the *Due Diligence Code of Practice for Protection of Aboriginal Objects in New South Wales 2010* (11-12).

An Aboriginal Cultural Heritage Assessment will be undertaken which will include test excavations in accordance with the *Code of Practice for Archaeological Investigations of Aboriginal Objects in New South Wales* (DECCW 2010). Biosis Pty Ltd is assisting TCG Planning with consultation with the Aboriginal community in accordance with the *Aboriginal Cultural Heritage Consultation Requirements for Proponents 2010* (DECCW 2010). The purpose of the Aboriginal community consultation will be to inform the Aboriginal Cultural Heritage Assessment, and to provide the Chief Executive Officer of the Office of Environment and Heritage (OEH) with sufficient information for the consideration and determination of an AHIP application, if it is required.

Biosis Pty Ltd
Wollongong Resource Group

8 Tate Street
Wollongong NSW 2500

Phone: 02 4229 5222
Fax: 02 4229 5500

ACN 006 175 097
ABN 65 006 175 097

Email: wollongong@biosis.com.au

biosis.com.au

TCG Planning on behalf of Branco Simicic wishes to identify Aboriginal people who may have an interest in the proposed Project Area and hold cultural knowledge relevant to determining the cultural significance of Aboriginal objects and/or Places in the Jamberoo area. If you could please provide contact details for any such Aboriginal people or organisations of which you are aware it would be greatly appreciated. Please provide these details by **5pm on December 8, 2015**.

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

Branco Simicic

Tel: 0417 776 711

PO Box 5489

Wollongong NSW 2520

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

Ana Jakovljevic

Biosis Pty Ltd

8 Tate Street

Wollongong NSW 2500

ajakovljevic@biosis.com.au

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

Yours sincerely,

Ana Jakovljevic
Archaeologist
0428 175 025
02 4201 1051
ajakovljevic@biosis.com.au

24 November 2015

Office of Environment and Heritage
Regional Operations South Branch / Illawarra
PO Box 513
Wollongong NSW 2520

Dear Sirs,

RE: Proposed Residential Development at 123 Extension of Fowlers Road in West Dapto, NSW
Our Ref: Matter 21189

TCG Planning (TCG), on behalf of Branco Simicic, is preparing lodgement of a Development Application (DA) for the proposed rezoning of land from RU2 Rural Landscape to R2 Low Density Residential at 123 Golden Valley Way, Jamberoo (the Project Area) (Lot 2, DP 626183), Kiama Local Government Area. It is bounded by Golden Valley Road to the west and Colyers Creek to the east (see the attached figure). The Project will involve the construction of a seniors housing complex, with approximately 50 residential dwellings. The dwellings will have a maximum building height of 8.5 metres and a maximum floor space ratio of 0.45:1. The proposed development will be assessed against Part 4 of the *Environmental Planning and Assessment Act 1979*.

Biosis Pty Ltd completed an assessment in accordance with the *Due Diligence Code of Practice for the Protection of Aboriginal Objects in New South Wales(DECCW 2010) ('the Due Diligence code')* for the Project Area in order to inform responsibilities with regards to Aboriginal cultural heritage in the area. In addition to the basic tasks required for a due diligence assessment, an extended background review, as well as an archaeological survey in accordance with the *Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales 2010* (the Code) was conducted, in order adequately map areas of high, moderate and low archaeological sensitivity. Based upon the desktop assessment and archaeological survey Biosis has been able to identify two areas of high archaeological potential (Jamberoo PAD 1 and 2), which are associated with the upper crest and a small terrace on the lower hills slope, in close proximity to the two natural springs. Recommendations have been made to undertake further Aboriginal cultural heritage and archaeological assessment that will involve test excavations. This is in line with Step 2b of the *Due Diligence Code of Practice for Protection of Aboriginal Objects in New South Wales 2010* (11-12).

An Aboriginal Cultural Heritage Assessment will be undertaken which will include test excavations in accordance with the *Code of Practice for Archaeological Investigations of Aboriginal Objects in New South Wales* (DECCW 2010). Biosis Pty Ltd is assisting TCG Planning with consultation with the Aboriginal community in accordance with the *Aboriginal Cultural Heritage Consultation Requirements for Proponents 2010* (DECCW 2010). The purpose of the Aboriginal community consultation will be to inform the Aboriginal Cultural Heritage Assessment, and to provide the Chief Executive Officer of the Office of Environment and Heritage (OEH) with sufficient information for the consideration and determination of an AHIP application, if it is required.

Biosis Pty Ltd
Wollongong Resource Group

8 Tate Street
Wollongong NSW 2500

Phone: 02 4229 5222
Fax: 02 4229 5500

ACN 006 175 097
ABN 65 006 175 097

Email: wollongong@biosis.com.au

biosis.com.au

TCG Planning on behalf of Branco Simicic wishes to identify Aboriginal people who may have an interest in the proposed Project Area and hold cultural knowledge relevant to determining the cultural significance of Aboriginal objects and/or Places in the Jamberoo area. If you could please provide contact details for any such Aboriginal people or organisations of which you are aware it would be greatly appreciated. Please provide these details by **5pm on December 8, 2015**.

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

Branco Simicic

Tel: 0417 776 711

PO Box 5489

Wollongong NSW 2520

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

Ana Jakovljevic

Biosis Pty Ltd

8 Tate Street

Wollongong NSW 2500

ajakovljevic@biosis.com.au

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

Yours sincerely,

Ana Jakovljevic
Archaeologist
0428 175 025
02 4201 1051
ajakovljevic@biosis.com.au

24 November 2015

Tabatha Dantoine – Administration Officer
Office of the Registrar, *Aboriginal Land Rights Act (1983)*
PO Box 112
Glebe NSW 2037

Dear Tabatha,

RE: Proposed Residential Development at 123 Extension of Fowlers Road in West Dapto, NSW
Our Ref: Matter 21189

TCG Planning (TCG), on behalf of Branco Simicic, is preparing lodgement of a Development Application (DA) for the proposed rezoning of land from RU2 Rural Landscape to R2 Low Density Residential at 123 Golden Valley Way, Jamberoo (the Project Area) (Lot 2, DP 626183), Kiama Local Government Area. It is bounded by Golden Valley Road to the west and Colyers Creek to the east (see the attached figure). The Project will involve the construction of a seniors housing complex, with approximately 50 residential dwellings. The dwellings will have a maximum building height of 8.5 metres and a maximum floor space ratio of 0.45:1. The proposed development will be assessed against Part 4 of the *Environmental Planning and Assessment Act 1979*.

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

Branco Simicic

Tel: 0417 776 711

PO Box 5489

Wollongong NSW 2520

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

Ana Jakovljevic

Biosis Pty Ltd

8 Tate Street

Wollongong NSW 2500

ajakovljevic@biosis.com.au

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

Yours sincerely,

Ana Jakovljevic
Archaeologist
0428 175 025
02 4201 1051
ajakovljevic@biosis.com.au

24 November 2015

South East Local Land Services
Wollongong Office
PO Box 3095
Wollongong NSW 2500

Dear Sirs,

RE: Proposed Residential Development at 123 Extension of Fowlers Road in West Dapto, NSW
Our Ref: Matter 21189

TCG Planning (TCG), on behalf of Branco Simicic, is preparing lodgement of a Development Application (DA) for the proposed rezoning of land from RU2 Rural Landscape to R2 Low Density Residential at 123 Golden Valley Way, Jamberoo (the Project Area) (Lot 2, DP 626183), Kiama Local Government Area. It is bounded by Golden Valley Road to the west and Colyers Creek to the east (see the attached figure). The Project will involve the construction of a seniors housing complex, with approximately 50 residential dwellings. The dwellings will have a maximum building height of 8.5 metres and a maximum floor space ratio of 0.45:1. The proposed development will be assessed against Part 4 of the *Environmental Planning and Assessment Act 1979*.

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

Branco Simicic

Tel: 0417 776 711

PO Box 5489

Wollongong NSW 2520

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

Ana Jakovljevic

Biosis Pty Ltd

8 Tate Street

Wollongong NSW 2500

ajakovljevic@biosis.com.au

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

Yours sincerely,

Ana Jakovljevic
Archaeologist
0428 175 025
02 4201 1051
ajakovljevic@biosis.com.au

Responses from Authorities

National
Native Title
Tribunal

Sydney Office, Operations East
Level 16, Law Courts Building
Queens Square
Sydney NSW 2000
GPO Box 9973
Sydney NSW 2001
Telephone (02) 9227 4000
Facsimile (02) 9227 4030

1 December 2015

Ana Jakovljevic
Archaeologist
Biosis Pty Ltd
Email: ajakovljevic@biosis.com.au

Our Ref: 0595-15NM

Dear Ms Jakovljevic

Native Title Search Results for the Council of the Municipality of Kiama Local Government Area

Thank you for your search request received on 26 November 2015 in relation to the above area.

Search Results
The results provided are based on the information you supplied and are derived from a search of the following Tribunal databases:

Register Type	**NNTT Reference Numbers**
Schedule of Applications (unregistered claimant applications)	Nil.
Register of Native Title Claims	Nil.
National Native Title Register	Nil.
Register of Indigenous Land Use Agreements	Nil.

At the time this search was carried out, there were **no relevant entries** in the above databases.

Please note: There may be a delay between a native title determination application being lodged in the Federal Court and its transfer to the Tribunal. As a result, some native title determination applications recently filed with the Federal Court may not appear on the Tribunal's databases.

Tribunal accepts no liability for reliance placed on enclosed information
The enclosed information has been provided in good faith. Use of this information is at your sole risk. The National Native Title Tribunal makes no representation, either express or implied, as to

the accuracy or suitability of the information enclosed for any particular purpose and accepts no liability for use of the information or reliance placed on it.

If you have any further queries, please do not hesitate to contact me on the numbers listed below.

Yours sincerely

Nicole Maher | REGIONAL COORDINATOR
National Native Title Tribunal | Sydney Office
Level 16, Federal Law Courts Building, Queens Square, Sydney, New South Wales 2000
Telephone (02) 9227 4008 | Facsimile (02) 9227 4030 | Email nicole.maher@nntt.gov.au
Freecall 1800 640 501 | www.nntt.gov.au
Shared country, shared future.

Searching the NNTT Registers in New South Wales

Search service
On request the National Native Title Tribunal may search its public registers for you. A search may assist you in finding out whether any native title applications (claims), determinations or agreements exist over a particular area of land or water.

In New South Wales native title cannot exist on privately owned land including family homes or farms.

What information can a search provide?
A search can confirm whether any applications, agreements or determinations are registered in a local government area. Relevant information, including register extracts and application summaries, will be provided.

Most native title applications do not identify each parcel of land claimed. They have an external boundary and then identify the areas not claimed within the boundary by reference to types of land tenure e.g., freehold, agricultural leasehold, public works.

What if the search shows no current applications?
If there is no application covering the local government area this only indicates that at the time of the search either the Federal Court had not received any claims in relation to the local government area or the Tribunal had not yet been notified of any new native title claims.

It does not mean that native title does not exist in the area.

Native title may exist over an area of land or waters whether or not a claim for native title has been made.

Where the information is found
The information you are seeking is held in three registers and on an applications database.

National Native Title Register
The National Native Title Register contains determinations of native title by the High Court, Federal Court and other courts.

Register of Native Title Claims
The Register of Native Title Claims contains applications for native title that have passed a registration test.

Registered claims attract rights, including the right to negotiate about some types of proposed developments.

Register of Indigenous Land Use Agreements
The Register of Indigenous Land Use Agreements contains agreements made with people who hold or assert native title in an area.

The register identifies development activities that have been agreed by the parties.

Schedule of Native Title Claims
The Schedule of Native Title Claims contains a description of the location, content and status of a native title claim.

This information may be different to the information on the Register of Native Title Claims, e.g., because an amendment has not yet been tested.

How do I request a native title search?
Download the Search Request Form from the Tribunal's website at - http://www.nntt.gov.au/assistance/Pages/Searches-and-providing-Register-information.aspx

Email to: NSWEnquiries@nntt.gov.au
Post to: GPO Box 9973 Sydney NSW 2001
For additional enquiries: 02 9227 4000

NSW GOVERNMENT | Office of Environment & Heritage

4 December 2015

Ms Ana Jakovljevic
Archaeologist, Biosis Pty Ltd
8 Tate Street
WOLLONGONG NSW 2042

By email: ajakovljevic@biosis.com.au

Dear Ms Jakovljevic Ana,

REQUEST FOR INFORMATION ABOUT POTENTIAL ABORIGINAL STAKEHOLDERS AS REQUIRED UNDER OEH ABORIGINAL CULTURAL HERITAGE CONSULTATION REQUIREMENTS FOR PROPONENTS 2010

RE: Aboriginal cultural heritage assessment, 123 Golden Valley Way, Jamberoo

Thank you for your letter dated 24 November 2015 to the Office of Environment and Heritage (OEH) regarding the above matter. Attached is a list of known Aboriginal parties for the Kiama Local Government Area. OEH believes these groups and individuals are likely to have an interest in the project.

The consultation process involves getting the views of, and information from, Aboriginal people and reporting on these. It is not to be confused with other field assessment processes involved in preparing a proposal and an application. Consultation does not include the employment of Aboriginal people to assist in field assessment and/or site monitoring. Aboriginal people may provide services to proponents through a contractual arrangement, however, this is separate from consultation. The proponent is not obliged to employ those Aboriginal people registered for consultation. Consultation as per the requirements will continue irrespective of potential or actual employment opportunities for Aboriginal people.

This list is not necessarily an exhaustive list of all interested Aboriginal parties and does not remove the requirement of a proponent/ consultant to advertise in local print media and contact other groups in accordance with the *Aboriginal Cultural Heritage Consultation Requirements for Proponents 2010* (April 2010).

The contact details in the attached list are provided solely for the purpose of contacting people about this project. The contact details must remain private and must not be reproduced in publically available reports or other documents.

Under Section 4.1.6. of the Consultation Requirements you must also provide a copy of the names of each Aboriginal person who registered an interest to the relevant OEH regional office and Local Aboriginal Land Council (LALC) within 28 days from the closing date for registering an interest.

Please note that the contact details in the list provided by OEH may be out of date as the list relies on Aboriginal parties advising OEH when their details need changing. If you are aware of any incorrect contact details on the list please contact OEH. AHIP applicants should make a note of any group they are unable to contact as part of their consultation record.

If you wish to discuss any of the above matters further please contact Rose O'Sullivan on 4224 4177.

Yours sincerely

for: **Chris Page**
Senior Team Leader Planning – Illawarra
Regional Operations Group
Office of Environment and Heritage

Enclosure: Attachment 1

NSW GOVERNMENT | Office of Environment & Heritage

Attachment 1.

Organisation/ Name	Contact Person	Address	Telephone and / or Email contact details	Additional information
Badu (Murrin Clan/Peoples. This group states that their boundaries extend from the Hawkesbury River to the Snowy River.)	Karia Lea Bond	11 Jeffery Place, Moruya, NSW 2537	Mob: 0476381207 Email: baduchts@gmail.com	
Bellambi Indigenous Corporation Gandangara Traditional Owners	Ms Kim Moran	21 Clematis Street Barrack Heights NSW 2528	Mob: 0456 099 808 Email: kimmoran@hotmail.com	
Bilinga	Wandai Kirkbright Simalene Carriage		Email: bilingachts@gmail.com	There are currently internal organisational issues amongst the Murrin groups. Both contacts for this group will be included on the OEH list until these issues are resolved.
Individual	Gary Caines	28 Gowan Brae Avenue, Mt Ousley, NSW 2519	Ph:(02) 4227 2690 Email: grc04@live.com.au	
Coomaditchie United Aboriginal Corporation	Lorraine Brown	PO Box 160, Warrawong NSW 2502	Ph: 02 4274 7477	
Dharug (Murrin Clan/Peoples. This group states that their boundaries extend from the Hawkesbury River to the Snowy River.)	Andrew Bond		Email: dharugchts@gmail.com	
Individual	James Davis	2 Poplar Ave, Unanderra NSW 2526	Mob: 0423 715 395 Email: jvdcorp@hotmail.com	

Organisation/ Name	Contact Person	Address	Telephone and / or Email contact details	Additional information
Individual	Ken Foster	68 Australia St Matraville NSW	Mob: 0411 818 091	
Gadhu Dreaming	Gordon Campbell		Email: gordy2540@hotmail.com	
Goobah Development PTY LTD (Murrin Clan/Peoples. This group states that their boundaries extend from the Hawkesbury River to the Snowy River.)	Basil Smith	66 Grantham Road Batehaven NSW 2536	Mob: 0405995725; email: bunjilsmith@gmail.com	
Gundungurra Tribal Technical Services	David Bell	67 Dickens Road, AMBERVALE NSW 2560	Mob: 0450 124 891 Email: gundungurratectribsevices@gmail.com	
	Pimmy Johnson Bell	67 Dickens Road, AMBERVALE NSW 2560	Mob: 0425 066 100 Email: gundungurratectribsevices@gmail.com	
	Peter Foster	4 Tuppal Way, AIRDS NSW 2560	Mob: 0432 590 289 Email: gundungurratectribsevices@gmail.com	
	Teangi Mereki Foster	1/6 Central Avenue, OEK FLATS NSW 2529	Mob: 0420 978 969 Email: gundungurratectribsevices@gmail.com	
	Larry Hoskins	2/3 Colville Place, ROSEMEADOW NSW 2560	Mob: 0478 009 879 Email: gundungurratectribsevices@gmail.com	
	Christopher Payne	9/15-22 Burns Road, LEUMEAH NSW 2560	Mob: 0466 975 437 Email: gundungurratectribsevices@gmail.com	
	Sam Wickman		Email: gundungurratectribsevices@gmail.com	
Gunyuu	Darlene Hoskins-McKenzie Kylie Ann Bell		Email: gunyuuchts@gmail.com	There are currently internal organisational issues amongst the Murrin groups. Both contacts for this group will be included on the OEH list until these issues are resolved.
Guunamaa Dreamin Sites and Surveying. Contact: Richard Campbell	Richard Campbell	2 Minda Crescent Oakflats NSW 2529	Mob: 0499 688 663 Email: richardcampbell123@outlook.com	

Organisation/ Name	Contact Person	Address	Telephone and / or Email contact details	Additional information
Illawarra Aboriginal Corporation	Rhonda Cruse	22 Kenny Street, Wollongong, NSW 2500	Ph: 02 4228 1585	
Illawarra Local Aboriginal Land Council	Derek Hardman CEO	3 Ellen Street, Wollongong, NSW 2500	Ph: (02) 4226 3338	
Jerringong (Murrin Clan/Peoples. This group states that their boundaries extend from the Hawkesbury River to the Snowy River.)	Jodi Anne Stewart	2/10 Burnett Avenue Gerringong NSW 2534	Mob: 0422 800 184 Email: jerringong@gmail.com	
Karrial (Murrin Clan/Peoples. This group states that their boundaries extend from the Hawkesbury River to the Snowy River.)	Karrial Johnson		Email: karrialchts@gmail.com	
Korewal Elouera Jerrungurah Tribal Elders Council	Uncle Rueben Brown	86 Hertford Street, Berkeley NSW 2506	Ph: (02) 4271 3069	
Kullila Site Consultants and Koori Site Management	Paul Charles	14 Werang Road, Primbee, NSW 2502	Mob: 0423 795 389	
La Perouse Botany Bay Corporation	Yvonne Simms	10 Murrong Place, La Perouse NSW 2036	Mob: 0466 094 491 Fax: 9311 3440	
Minnamunnung	Aaron Broad	1 Waratah Avenue ALBION PARK RAIL NSW 2527	Mob: 0402 526 888 (do not publish)	
Munyunga	Robert Brown Kaya Dawn Bell		Email: munyungachts@gmail.com	There are currently internal organisational issues amongst the Murrin groups. Both contacts for this group will be included on the OEH list until these issues are resolved.
Murrumbul	Levi McKenzie-Kirkbright Mark Henry		Email: murrumbul@gmail.com	There are currently internal organisational issues amongst the Murrin groups. Both contacts for this group will be included on the OEH list until these issues are resolved.

Organisation/ Name	Contact Person	Address	Telephone and / or Email contact details	Additional information
NIAC		PO Box 595 Moss Vale NSW 2577	Ph: 4883 6639	
Nundagurri (Murrin Clan/Peoples. This group states that their boundaries extend from the Hawkesbury River to the Snowy River.)	Newton Carriage		Email: nundagurri@gmail.com	
Pemulwuy (Murrin Clan/Peoples. This group states that their boundaries extend from the Hawkesbury River to the Snowy River.)	Pemulwuy Johnson		Email: pemulwuyd@gmail.com	
Peter Falk Consultancy	Peter Falk Duncan Falk	Po Box 1018 Mittagong NSW 2575	(PF) 0401 938 060 (DF) 0406 610 644; Email: kanga26@live.com.au	
Individual	Norma Simms	10 Murrong Place, La Perouse NSW 2036	Mob: 0466 094 491	
Three Ducks Dreaming Surveying and Consulting	Leonard Wright	40 Tuggerah Circuit FLINDERS 2529	Ph: 0422 382 950 Email: lbjwright1977@hotmail.com	
The Wadi Wadi Coomaditchie Aboriginal Corporation (correspondence via NIAC)		PO Box 595 Moss Vale NSW 2577	Ph: 02 4283 3009	
Walbunja (Murrin Clan/Peoples. This group states that their boundaries extend from the Hawkesbury River to the Snowy River.)	Hika Te Kowhai	15 Renee Crescent Moruya Heads NSW 2537	Mob: 0475 352 499 Email: Walbunja@gmail.com	
Walgalu (Murrin Clan/Peoples. This group states that their boundaries extend from the Hawkesbury River to the Snowy River.)	Ronald Stewart		Email: walgaluchts@gmail.com	

Organisation/ Name	Contact Person	Address	Telephone and / or Email contact details	Additional information
Wingikara	Suzanne McKenzie Hayely Bell		Email: wingikarachts@gmail.com	There are currently internal organisational issues amongst the Murrin groups. Both contacts for this group will be included on the OEH list until these issues are resolved.
The Wodi Wodi Elders Corporation	Rosina Davis (also Muriel Davis, Joyce Donavon, Sandra Donavon)	7 O'Donnell Drive Figtree NSW 2525 (also 484 Northcliffe Drive, Berkeley, NSW 2506)	Ph: 4244 3340 (also 4271 8088)	
Woronora Plateau Gundungara Elders Council	Paul Cummins and Kayla Williamson	11 Garnet Grove Flinders 2529	(PC) 0418 971 660 (KW) 0414 438 744 Email: kayla_87_@hotmail.com	
Wullung (Murrin Clan/Peoples. This group states that their boundaries extend from the Hawkesbury River to the Snowy River.)	Lee-Roy James Boota	54 Blackwood Street Gerringong NSW 2534	Mob: 0403 703 942 Email: wullunglb@gmail.com	
Yerramurra (Murrin Clan/Peoples. This group states that their boundaries extend from the Hawkesbury River to the Snowy River.)	Robert Parsons		Email: yerramurra@gmail.com	

OFFICE OF THE REGISTRAR
ABORIGINAL LAND RIGHTS ACT 1983 (NSW)

11-13 Mansfield Street
Glebe NSW 2037
PO Box 112, Glebe NSW 2037
P. 02 9562 6327 F. 02 9562 6350

Friday, 27 November 2015

Ana Jakovljevic
Biosis Pty Ltd
8 Tate Street
WOLLONGONG NSW 2500

Dear Ana

Re: Request - Search for Registered Aboriginal Owners

I refer to your letter dated 24th November 2015 regarding Aboriginal Cultural Heritage Assessment within Jamberoo in NSW.

I have searched the Register of Aboriginal Owners and the project area described *does not appear* to have Registered Aboriginal Owners pursuant to Division 3 of the *Aboriginal Land Rights Act* 1983 (NSW).

I suggest that you contact the Illawarra Local Aboriginal Land Council on 02 4226 3338. They will be able to assist you in identifying other Aboriginal stakeholders for this project.

Yours sincerely

Kelly Bashford
Directorate Support Officer
Office of the Registrar, *Aboriginal Land Rights Act 1983*

Local Land Services
South East

27 November 2015

Ana Jakovljevic
Biosis Pty Ltd
8 Tate Street
Wollongong NSW 2500

Dear Sir /Madam

Re: Proposed Residential Development at 123 Extension of Fowlers Road in West Dapto NSW
Ref: 21189

Thank you for your letter dated 27th November 2015, requesting assistance with identifying Aboriginal stakeholder groups or persons who may have an interest in your project area.

South East Local Land Service acknowledges that Local Land Services have been listed in *Section 4.1.2 (g)* of the *Aboriginal cultural heritage consultation requirements for proponents 2010,* under *Part 6, National Parks and Wildlife Act 1974* as a source of information to obtain the "names of Aboriginal people who may hold cultural knowledge relevant to determining the significance of Aboriginal *objects* and/or *places*".

South East Local Land Service is a partner with many Aboriginal communities in the region on many natural resource management (NRM) projects. However, South East Local Land Service is not the primary source for contacting or managing contact lists for Aboriginal communities or persons that may inform or provide comment on planning issues. South East Local Land Service considers cultural heritage issues that relate to land-use planning in general and only considers culture and heritage issues in the context of NRM.

We strongly recommend that you make contact with the Office of Environment and Heritage (OEH), Cultural Heritage Division, Queanbeyan for all-inclusive contact lists of persons and organisations that may assist with your investigation.

South East Local Land Services
PO Box 3095
Wollongong NSW 2500
Tel: 02 42249700 | Fax: 02 42249669 | www.lls.nsw.gov.au

Note: Southern Rivers Catchment Management Authority no longer exists. All work previously carried out by SRCMA in now delivered by South East Local Land Services

Should you wish to discuss this matter further, please contact myself at South East Local Land Services on (02) 42249714 or 0427 072 763.

Yours sincerely,

Ken Davies
Senior Land Services Officer (Aboriginal Communities)

Public Notice

TCP PLANNING NOTIFICATION AND REGISTRATION OF ABORIGINAL INTERESTS

TCG Planning is preparing lodgement of a Development Application for the proposed rezoning of land at 123 Golden Valley Way, in Jamberoo, NSW. The project Area is bounded by Golden Valley Road to the west and Colyers Creek to the east, within Kiama Municipal Local Govemment Area.

An Aboriginal Cultural Heritage Assessment will be undertaken which may result in an application for an Aboriginal Heritage Impact Permit (AHIP).

TCG Planning on behalf of the developer invites Aboriginal people who hold cultural knowledge in determining the significance of Aboriginal object(s) andr places in the vicinity of the above area to register their interest in a process of community consultation.

The purpose of the Aboriginal community consultation will be to inform the Aboriginal Cultural Heritage Assessment, assist in the preparation of an AHIP application, if required, and assist the Chief Executive Officer of the Office of Environment and Heritage in consideration and determination of the AHIP application. For more information and to register in writing please contact:

Ana Jakovljevic
Biosis Pty. Ltd. 8 Tate Street, Wollongong NSW 2500
Tel: (02) 4201 1051 Fax: (03) 9646 9242

REGISTRATIONS MUST BE RECEIVED BEFORE 5.00pm 14 December 2015

From:	jacqueline.labajo@fairfaxmedia.com.au
To:	Ana Jakovljevic
Subject:	AW1838127 - TCP PLANNING NOTIFICATION AND REGISTRATI
Date:	Thursday, 26 November 2015 10:16:15 AM
Attachments:	1838127_656309068.jpg

ADVERTISING PROOF

Ref no: AW1838127 Printed: 26/11/2015 10:15:19 (PGSRV)
Attention: ANA JAKOVLJEVIC
Company: BIOSIS PTY LTD

BOOKING DETAILS

Name:	BIOSIS PTY LTD
Address:	8 TATE STREET
City:	WOLLONGONG
State:	NSW
Postcode:	2520
Authorised by:	ANA JAKOVLJEVIC
PO Number:	
Cost:	$732.88
Size:	8 x 3
Class / section:	Public Notices (628)
Ad description:	TCP PLANNING NO

APPEARANCE DETAILS

28/11/2015	Illawarra Mercury	$732.88 inc GST

AUTHORISATION

I have checked all details contained in the advertisement (including phone numbers and spelling) and authorise you to proceed as per the booking details above.
Please advise if the advertisement is to proceed as is or if any changes are required.

Name:

Signature:

Date:

Comments

Hi, Attached is the proof of the Advert/Notice requested. Please be advised that any alterations must be completed no later than Friday 27/11/15 (27/11/15 before 4:30pm Sydney time) Please note that we are unable to process any payments or alteration requests after the deadline. Thanks Jacky

Once authorised, please reply with 'authorised' in the subject field to jacqueline.labajo@fairfaxmedia.com.au

or fax back to 13 24 25

Please note: If you do not authorise your advertisement by the close of business prior to the publication day, your advertisement will not appear.

Should you have any further enquiries please do not hesitate to contact me.
Regards,
Jacqueline

Notification to RAPS (example only)

25 December 2015

BADU
Karia Lea Bond
11 Jeffery Place
Moruya NSW 2537

Dear Karia,

RE: Proposed Residential Development at 123 Golden Valley Way in Jamberoo, NSW

Our Ref: Matter 21189

TCG Planning (TCG), on behalf of Branco Simicic, is preparing lodgement of a Development Application (DA) for the proposed rezoning of land from RU2 Rural Landscape to R2 Low Density Residential at 123 Golden Valley Way, Jamberoo (the Project Area) (Lot 2, DP 626183), Kiama Local Government Area. It is bounded by Golden Valley Road to the west and Colyers Creek to the east (see the attached figure). The Project will involve the construction of a seniors housing complex, with approximately 50 residential dwellings. The dwellings will have a maximum building height of 8.5 metres and a maximum floor space ratio of 0.45:1. The proposed development will be assessed against Part 4 of the *Environmental Planning and Assessment Act 1979*.

Biosis Pty Ltd completed an assessment in accordance with the *Due Diligence Code of Practice for the Protection of Aboriginal Objects in New South Wales(DECCW 2010) ('the Due Diligence code')* for the Project Area in order to inform responsibilities with regards to Aboriginal cultural heritage in the area. In addition to the basic tasks required for a due diligence assessment, an extended background review, as well as an archaeological survey in accordance with the *Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales 2010* (the Code) was conducted, in order adequately map areas of high, moderate and low archaeological sensitivity. Based upon the desktop assessment and archaeological survey Biosis has been able to identify two areas of high archaeological potential (Jamberoo PAD 1 and 2), which are associated with the upper crest and a small terrace on the lower hills slope, in close proximity to the two natural springs. Recommendations have been made to undertake further Aboriginal cultural heritage and archaeological assessment that will involve test excavations. This is in line with Step 2b of the *Due Diligence Code of Practice for Protection of Aboriginal Objects in New South Wales 2010* (11-12).

An Aboriginal Cultural Heritage Assessment will be undertaken which will include test excavations in accordance with the *Code of Practice for Archaeological Investigations of Aboriginal Objects in New South Wales* (DECCW 2010). Biosis Pty Ltd is assisting TCG Planning with consultation with the Aboriginal community in accordance with the *Aboriginal Cultural Heritage Consultation Requirements for Proponents 2010* (DECCW 2010). The purpose of the Aboriginal community consultation will be to inform the Aboriginal Cultural Heritage Assessment, and to provide the Chief Executive Officer of the Office of Environment and Heritage (OEH) with sufficient information for the consideration and determination of an AHIP application, if it is required.

TCG Planning on behalf of Branco Simicic wishes to identify Aboriginal people who may have an interest in the proposed Project Area and hold cultural knowledge relevant to determining the cultural significance of

Biosis Pty Ltd
Wollongong Resource Group

8 Tate Street
Wollongong NSW 2500

Phone: 02 4229 5222
Fax: 02 4229 5500

ACN 006 175 097
ABN 65 006 175 097

Email: wollongong@biosis.com.au

biosis.com.au

Aboriginal objects and/or Places in the Jamberoo area. **If you would like to register your interest to be consulted for this project, please respond by 5pm on 11 January 2016**.

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

Branco Simicic

Tel: 0417 776 711

PO Box 5489

Wollongong NSW 2520

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

Ana Jakovljevic

Biosis Pty Ltd

8 Tate Street

Wollongong NSW 2500

ajakovljevic@biosis.com.au

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

Yours sincerely,

Ana Jakovljevic
Archaeologist
0428 175 025
02 4201 1051
ajakovljevic@biosis.com.au

Legend

Project Area

Figure 2: Project Area in detail

0 10 20 30 40 50

Metres

Scale: 1:1,200 @ A3

Coordinate System: GDA 1994 MGA Zone 55

N

Biosis Pty Ltd

Ballarat, Brisbane, Canberra, Melbourne, Sydney, Wangaratta & Wollongong

Matter: 20835,
Date: 28 September 2015,
Checked by: SAS, Drawn by: LH, Last edited by: lharley
Location:P:\20800s\20835\Mapping
20835_F2_ProjectArea.mxd

10th June 2016

Seli Storer
Blamanga

Dear Seli,

RE: 123 Golden Valley Way, Jamberoo, NSW – Draft ACHA and AR

Our Ref: Matter 21189

Following up on your registration and the test excavations for the proposed development in Jamberoo, enclosed is the Draft Aboriginal Cultural Heritage Assessment Report.

In accordance with the *Aboriginal Cultural Heritage Consultation Requirements for Proponents* (DECCW 2010), we provide the draft Aboriginal Heritage Assessment Report for your review and feedback.

It would be appreciated if you would provide feedback on the draft report to Biosis Pty Ltd by **5 pm Monday 11 July, 2016** either by email, return mail or a phone call.

Please address feedback on the draft report to:

Amanda Atkinson
Biosis Pty Ltd
8 Tate Street
Wollongong NSW 2500
aatkinson@biosis.com.au

If you have any queries regarding the project area or the information in this letter, don't hesitate to contact me on the numbers below.

Yours Sincerely,

Amanda Atkinson
Senior Archaeologist
0409 199 785

Appendix 3 Responses from RAPs

Responses from RAPS

Shannon Smith

From: Goobah <goobahchts@gmail.com>
Sent: Tuesday, 5 January 2016 7:43 PM
To: Ana Jakovljevic
Subject: Expression of Interest in the Proposed Residential Development at 123 Valley Way Jamberoo.

Follow Up Flag: Follow up
Flag Status: Completed

Please accept this as **Goobah** registration in the Proposed Residential Development at 123 Valley Way Jamberoo.

--

Regards Basil Smith
Chief Executive Officer
Goobah PH 0405995725

Shannon Smith

From: gary caines <grc04@live.com.au>
Sent: Wednesday, 13 January 2016 12:07 PM
To: Ana Jakovljevic
Subject: Branco Simicic & TCG at Golden Valley Way, Jamberoo

Dear Ana,

Could you please register myself in my name as a person who wishes to be consulted for this project at Jamberoo? Would you please also respond with a positive confirmation of my registration ASAP?

i also note your conduct of procedures in accord with the 'due diligence' requirement espoused . . . and as such would appreciate more detail in regards this reference and the background review's desk-top assessment and archaeological field survey undertaken

regards, garyC-.

---

25 December 2015
Gary Caines
28 Gowan Avenue
Mt Ousley NSW 2519
Dear Gary,
RE: Proposed Residential Development at 123 Golden Valley Way in Jamberoo, NSW
Our Ref: Matter 21189
TCG Planning (TCG), on behalf of Branco Simicic, is preparing lodgement of a Development Application (DA)
for the proposed rezoning of land from RU2 Rural Landscape to R2 Low Density Residential at 123 Golden Valley Way, Jamberoo (the Project Area) (Lot 2, DP 626183), Kiama Local Government Area. It is bounded by
Golden Valley Road to the west and Colyers Creek to the east (see the attached figure). The Project will involve the construction of a seniors housing complex, with approximately 50 residential dwellings. The dwellings will have a maximum building height of 8.5 metres and a maximum floor space ratio of 0.45:1. The proposed development will be assessed against Part 4 of the Environmental Planning and Assessment Act
1979.
Biosis Pty Ltd completed an assessment in accordance with the Due Diligence Code of Practice for the Protection of Aboriginal Objects in New South Wales(DECCW 2010) ('the Due Diligence code') for the Project Area
in order to inform responsibilities with regards to Aboriginal cultural heritage in the area. In addition to the basic tasks required for a due diligence assessment, an extended background review, as well as an archaeological survey in accordance with the Code of Practice for Archaeological Investigation of Aboriginal
Objects in New South Wales 2010 (the Code) was conducted, in order adequately map areas of high, moderate and low archaeological sensitivity. Based upon the desktop assessment and archaeological survey Biosis has been able to identify two areas of high archaeological potential (Jamberoo PAD 1 and 2), which are associated with the upper crest and a small terrace on the lower hills slope, in close proximity to

the two natural springs. Recommendations have been made to undertake further Aboriginal cultural heritage and archaeological assessment that will involve test excavations. This is in line with Step 2b of the Due Diligence Code of Practice for Protection of Aboriginal Objects in New South Wales 2010 (11-12).
An Aboriginal Cultural Heritage Assessment will be undertaken which will include test excavations in accordance with the Code of Practice for Archaeological Investigations of Aboriginal Objects in New South Wales
(DECCW 2010). Biosis Pty Ltd is assisting TCG Planning with consultation with the Aboriginal community in accordance with the Aboriginal Cultural Heritage Consultation Requirements for Proponents 2010 (DECCW 2010). The purpose of the Aboriginal community consultation will be to inform the Aboriginal Cultural Heritage Assessment, and to provide the Chief Executive Officer of the Office of Environment and Heritage (OEH) with sufficient information for the consideration and determination of an AHIP application, if it is required.
TCG Planning on behalf of Branco Simicic wishes to identify Aboriginal people who may have an interest in the proposed Project Area and hold cultural knowledge relevant to determining the cultural significance of 2
Aboriginal objects and/or Places in the Jamberoo area. If you would like to register your interest to be consulted for this project, please respond by 5pm on 11 January 2016.
In accordance with the consultation requirements, please note that the relevant contact for this project is:
Branco Simicic
Tel: 0417 776 711
PO Box 5489
Wollongong NSW 2520
All correspondence regarding provision of names and contact details of Aboriginal people who may hold cultural knowledge relevant to the Project Area should be provided in writing to:
Ana Jakovljevic
Biosis Pty Ltd
8 Tate Street
Wollongong NSW 2500
ajakovljevic@biosis.com.au
If you have any queries regarding the Project Area please don't hesitate to contact me on the details below.
Yours sincerely,
Ana Jakovljevic
Archaeologist
0428 175 025
02 4201 1051
ajakovljevic@biosis.com.au

Shannon Smith

From: Cullendulla <cullendullachts@gmail.com>
Sent: Tuesday, 5 January 2016 7:43 PM
To: Ana Jakovljevic
Subject: Expression of Interest in the Proposed Residential Development at 123 Valley Way Jamberoo.

Follow Up Flag: Follow up
Flag Status: Completed

Please accept this as **Cullendulla** registration in the Proposed Residential Development at 123 Valley Way Jamberoo.

--
Kind Regards
Corey Smith
Cultural Heritage Officer
Cullendulla

Shannon Smith

From: Biamanga <biamangachts@gmail.com>
Sent: Tuesday, 5 January 2016 7:43 PM
To: Ana Jakovljevic
Subject: Expression of Interest in the Proposed Residential Development at 123 Valley Way Jamberoo.

Follow Up Flag: Follow up
Flag Status: Completed

Please accept this as **Biamanga** registration in the Proposed Residential Development at 123 Valley Way Jamberoo.

--
Kind Regards
Seli Storer
Chief Executive Officer
Biamanga

Shannon Smith

From: Coomaditchie <admin@cuac.ngo.org.au>
Sent: Monday, 11 January 2016 4:08 PM
To: Ana Jakovljevic
Subject: RE: Notification Letter for Jamberoo

Hi Ana

I don't think so for this one

Unable to speak to Les or Narelle today and I only work Mondays
So we may have to let this one go

Thank you

Sue

From: Ana Jakovljevic [mailto:AJakovljevic@biosis.com.au]
Sent: Monday, 11 January 2016 2:37 PM
To: 'Coomaditchie'
Subject: RE: Notification Letter for Jamberoo
Importance: High

Thanks Sue. Please let me know if you would like to register byl Thursday as I want to send out information and methodology pack on Friday.

Ana

From: Coomaditchie [mailto:admin@cuac.ngo.org.au]
Sent: Monday, 11 January 2016 2:36 PM
To: Ana Jakovljevic
Subject: RE: Notification Letter for Jamberoo

Thanks Ana

I will pass this on to our team

Cheers

Sue Leppan

From: Ana Jakovljevic [mailto:AJakovljevic@biosis.com.au]
Sent: Friday, 25 December 2015 2:25 PM
To: 'Coomaditchie'
Subject: Notification Letter for Jamberoo
Importance: High

Hi Sue,

Please find the letter for your attention. Let me know if you have any questions.

Regards,

Ana

Ana Jakovljevic
Archaeologist

Mobile: 0428 175 025
Direct: (02) 4201 1051
Email: AJakovljevic@biosis.com.au

Leaders in Ecology and Heritage Consulting
8 Tate Street Wollongong NSW 2500
ph: (02) 4201 1090 fax: (03) 9646 9242
biosis.com.au

Shannon Smith

From: Ana Jakovljevic
Sent: Thursday, 24 March 2016 11:44 AM
To: 'gary caines'
Subject: Response to due diligence assessments completed by Biosis

Importance: High

Hi Gary,

Sorry for the late response to your enquiry regarding due diligence assessments carried out at Jamberoo and Wombarra Beach. As you are aware, due diligence assessments are usually completed by our clients at the start of their proposed development in order to inform them of any Aboriginal cultural heritage and archeological constraints, i.e. existing Aboriginal sites or areas of potential. Biosis undertakes these assessments in accordance with the *Due Diligence Code of Practice for the Protection of Aboriginal Objects in New South Wales* (DECCW 2010). Although consultation is not legally required by the Due Diligence (please refer to Section 5 of the Due Diligence Code), Biosis strongly recommends to all the clients that it is undertaken with the relevant Local Aboriginal Land Council. Our site visits would involve a representative of a local LALC (if they are available) accompanying an archaeologist and any comments received from LALC about the cultural heritage management are incorporated in our reports.

Please let me know if you would like to discuss this mater further.

Regards,

Ana

Ana Jakovljevic
Archaeologist
Mobile: 0428 175 025
Direct: (02) 4201 1051
Email: AJakovljevic@biosis.com.au

Leaders in Ecology and Heritage Consulting
8 Tate Street Wollongong NSW 2500
ph: (02) 4201 1090 fax: (03) 9646 9242
biosis.com.au

Shannon Smith

From: Coomaditchie <admin@cuac.ngo.org.au>
Sent: Monday, 11 January 2016 4:08 PM
To: Ana Jakovljevic
Subject: RE: Notification Letter for Jamberoo

Hi Ana

I don't think so for this one

Unable to speak to Les or Narelle today and I only work Mondays
So we may have to let this one go

Thank you

Sue

From: Ana Jakovljevic [mailto:AJakovljevic@biosis.com.au]
Sent: Monday, 11 January 2016 2:37 PM
To: 'Coomaditchie'
Subject: RE: Notification Letter for Jamberoo
Importance: High

Thanks Sue. Please let me know if you would like to register byl Thursday as I want to send out information and methodology pack on Friday.

Ana

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Sent: Monday, 11 January 2016 2:36 PM
To: Ana Jakovljevic
Subject: RE: Notification Letter for Jamberoo

Thanks Ana

I will pass this on to our team

Cheers

Sue Leppan

From: Ana Jakovljevic [mailto:AJakovljevic@biosis.com.au]
Sent: Friday, 25 December 2015 2:25 PM
To: 'Coomaditchie'
Subject: Notification Letter for Jamberoo
Importance: High

Hi Sue,

Please find the letter for your attention. Let me know if you have any questions.

Regards,

Ana

Ana Jakovljevic
Archaeologist

Mobile: 0428 175 025
Direct: (02) 4201 1051
Email: AJakovljevic@biosis.com.au

Leaders in Ecology and Heritage Consulting
8 Tate Street Wollongong NSW 2500
ph: (02) 4201 1090 fax: (03) 9646 9242
biosis.com.au

Shannon Smith

From: Biamanga <biamangachts@gmail.com>
Sent: Tuesday, 5 January 2016 7:43 PM
To: Ana Jakovljevic
Subject: Expression of Interest in the Proposed Residential Development at 123 Valley Way Jamberoo.

Follow Up Flag: Follow up
Flag Status: Completed

Please accept this as **Biamanga** registration in the Proposed Residential Development at 123 Valley Way Jamberoo.

--
Kind Regards
Seli Storer
Chief Executive Officer
Biamanga

Shannon Smith

From: Cullendulla <cullendullachts@gmail.com>
Sent: Tuesday, 5 January 2016 7:43 PM
To: Ana Jakovljevic
Subject: Expression of Interest in the Proposed Residential Development at 123 Valley Way Jamberoo.

Follow Up Flag: Follow up
Flag Status: Completed

Please accept this as **Cullendulla** registration in the Proposed Residential Development at 123 Valley Way Jamberoo.

--
Kind Regards
Corey Smith
Cultural Heritage Officer
Cullendulla

Shannon Smith

From: gary caines <grc04@live.com.au>
Sent: Wednesday, 13 January 2016 12:07 PM
To: Ana Jakovljevic
Subject: Branco Simicic & TCG at Golden Valley Way, Jamberoo

Dear Ana,

Could you please register myself in my name as a person who wishes to be consulted for this project at Jamberoo? Would you please also respond with a positive confirmation of my registration ASAP?

i also note your conduct of procedures in accord with the 'due diligence' requirement espoused . . . and as such would appreciate more detail in regards this reference and the background review's desk-top assessment and archaeological field survey undertaken

regards, garyC-.

---

25 December 2015
Gary Caines
28 Gowan Avenue
Mt Ousley NSW 2519
Dear Gary,
RE: Proposed Residential Development at 123 Golden Valley Way in Jamberoo, NSW
Our Ref: Matter 21189
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Biosis Pty Ltd completed an assessment in accordance with the Due Diligence Code of Practice for the Protection of Aboriginal Objects in New South Wales(DECCW 2010) ('the Due Diligence code') for the Project Area
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Objects in New South Wales 2010 (the Code) was conducted, in order adequately map areas of high, moderate and low archaeological sensitivity. Based upon the desktop assessment and archaeological survey Biosis has been able to identify two areas of high archaeological potential (Jamberoo PAD 1 and 2), which are associated with the upper crest and a small terrace on the lower hills slope, in close proximity to

the two natural springs. Recommendations have been made to undertake further Aboriginal cultural heritage and archaeological assessment that will involve test excavations. This is in line with Step 2b of the Due Diligence Code of Practice for Protection of Aboriginal Objects in New South Wales 2010 (11-12).
An Aboriginal Cultural Heritage Assessment will be undertaken which will include test excavations in accordance with the Code of Practice for Archaeological Investigations of Aboriginal Objects in New South Wales
(DECCW 2010). Biosis Pty Ltd is assisting TCG Planning with consultation with the Aboriginal community in accordance with the Aboriginal Cultural Heritage Consultation Requirements for Proponents 2010 (DECCW 2010). The purpose of the Aboriginal community consultation will be to inform the Aboriginal Cultural Heritage Assessment, and to provide the Chief Executive Officer of the Office of Environment and Heritage (OEH) with sufficient information for the consideration and determination of an AHIP application, if it is required.
TCG Planning on behalf of Branco Simicic wishes to identify Aboriginal people who may have an interest in the proposed Project Area and hold cultural knowledge relevant to determining the cultural significance of 2
Aboriginal objects and/or Places in the Jamberoo area. If you would like to register your interest to be consulted for this project, please respond by 5pm on 11 January 2016.
In accordance with the consultation requirements, please note that the relevant contact for this project is:
Branco Simicic
Tel: 0417 776 711
PO Box 5489
Wollongong NSW 2520
All correspondence regarding provision of names and contact details of Aboriginal people who may hold cultural knowledge relevant to the Project Area should be provided in writing to:
Ana Jakovljevic
Biosis Pty Ltd
8 Tate Street
Wollongong NSW 2500
ajakovljevic@biosis.com.au
If you have any queries regarding the Project Area please don't hesitate to contact me on the details below.
Yours sincerely,
Ana Jakovljevic
Archaeologist
0428 175 025
02 4201 1051
ajakovljevic@biosis.com.au

Shannon Smith

From: Goobah <goobahchts@gmail.com>
Sent: Tuesday, 5 January 2016 7:43 PM
To: Ana Jakovljevic
Subject: Expression of Interest in the Proposed Residential Development at 123 Valley Way Jamberoo.

Follow Up Flag: Follow up
Flag Status: Completed

Please accept this as **Goobah** registration in the Proposed Residential Development at 123 Valley Way Jamberoo.

--

Regards Basil Smith
Chief Executive Officer
Goobah PH 0405995725

Shannon Smith

From: Gulaga <gulagachts@gmail.com>
Sent: Tuesday, 5 January 2016 7:44 PM
To: Ana Jakovljevic
Subject: Expression of Interest in the Proposed Residential Development at 123 Valley Way Jamberoo.

Follow Up Flag: Follow up
Flag Status: Completed

Please accept this as **Gulaga** registration in the Proposed Residential Development at 123 Valley Way Jamberoo.

--
Kind Regards
Wendy Smith
Cultural Heritage Officer
Gulaga

Shannon Smith

From: Jvdcorp <jvdcorp@hotmail.com>
Sent: Wednesday, 9 December 2015 6:52 AM
To: Ana Jakovljevic
Subject: Golden valley way rd jamberoo

Hi anna,
Can you please register me for the testing at golden valley way rd jamberoo

Sent from Samsung Mobile

Ana Jakovljevic <AJakovljevic@biosis.com.au> wrote:

Hello,

Please find attached draft ACHA with updated sections reflecting results of recent test excavations for NBN proposed works at Sandon Point. Your comments regarding the report are much appreciated. Could you please respond by **COB Wednesday 25 November 2015** via e-mail, phone or regular mail.

Second e-mail will follow with archaeological report attached due to the file size. Please note that not all the figures were attached, as they are within the original report prior to test excavations. If you need to review them again, please let me know and I will send them in a separate e-mail.

All the best!

Ana

Ana Jakovljevic
Archaeologist
Mobile: 0428 175 025
Direct: (02) 4201 1051
Email: AJakovljevic@biosis.com.au

Leaders in Ecology and Heritage Consulting
8 Tate Street Wollongong NSW 2500
ph: (02) 4201 1090 fax: (02) 4229 5500
biosis.com.au

Shannon Smith

From: Alexander Beben
Sent: Thursday, 7 January 2016 1:27 PM
To: Ana Jakovljevic
Subject: Jambaroo ACH consultation - EOI

Follow Up Flag: Follow up
Flag Status: Completed

Minnamunnung – Aaron Broad – 0402526888 – Waratah Avenue, Albion Park Rail, NSW 2527 – minnamunnung@gmail.com

Alexander Beben
Senior Archaeologist

Mobile: 0407 808 527
Direct: (02) 4201 1063
Email: abeben@biosis.com.au

Leaders in Ecology and Heritage Consulting
8 Tate Street Wollongong NSW 2500
ph: (02) 4201 1090 fax: (03) 9646 9242
biosis.com.au

Shannon Smith

From: Murramarang <murramarangchts@gmail.com>
Sent: Tuesday, 5 January 2016 7:43 PM
To: Ana Jakovljevic
Subject: Expression of Interest in the Proposed Residential Development at 123 Valley Way Jamberoo.

Follow Up Flag: Follow up
Flag Status: Completed

Please accept this as Murramarang registration in the Proposed Residential Development at 123 Valley Way Jamberoo.

--
Kind Regards
Roxanne Smith
Cultural Heritage Officer
Murramarang

Shannon Smith

From: Peter Falk <kanga26@live.com.au>
Sent: Saturday, 26 December 2015 9:15 AM
To: Ana Jakovljevic; DUNCAN FALK
Subject: Proposed residential Development 123 Golden Valley Way Jamberoo

Hi Ana,
We wish to be registered fro this project as we have Aboriginal Cultural Heritage Knowledge of the area and have worked in this area
Regards
Peter

Peter Falk Consultancy
0401938060
We wish you and crew a Very Merry Xmas and a Happy New Year

Shannon Smith

From: leonard b j wright <lbjwright1977@hotmail.com>
Sent: Sunday, 27 December 2015 10:31 AM
To: Ana Jakovljevic
Subject: Re: Notification Letter for Jamberoo

Hi Ana,

Just getting back to you on the Jambroo project coming up an i thank you for the email its very appreciated. In saying that my self an troy tungai associated with Three Duck's Dreaming S.C. would like to put our expression of interest in for the Jambroo development in all aspects of Aboriginal Cultural relation.

As of our Cultural knowledge of the Jambroo area we no that their are some significant sites within that area an would more then happy to be apart of the selection process to be involved in this development as stake holder within our cultural boundaries an as i said before we are thank you for your gratitude for contacting us to help sustain an protect our Cultural values..

We hope to see you soon..

Thanks Ana..

Lenny an Troy

-------- Original message --------
From: Ana Jakovljevic <AJakovljevic@biosis.com.au>
Date: 25/12/2015 2:57 pm (GMT+10:00)
To: "lbjwright1977 (lbjwright1977@hotmail.com)" <lbjwright1977@hotmail.com>
Subject: Notification Letter for Jamberoo

Hi Lenny,

Please find the letter for your attention. Let me know if you have any questions.

Regards,

Ana

Ana Jakovljevic
Archaeologist

Mobile: 0428 175 025
Direct: (02) 4201 1051
Email: AJakovljevic@biosis.com.au

Leaders in Ecology and Heritage Consulting
8 Tate Street Wollongong NSW 2500
ph: (02) 4201 1090 fax: (03) 9646 9242
biosis.com.au

Shannon Smith

From: Kayla Cummins <Kayla_87_@hotmail.com>
Sent: Tuesday, 8 December 2015 10:29 AM
To: Ana Jakovljevic
Subject: TCP Planning

Hi Ana

I hope all is well.

Woronora Plateau Gundangara Elders Council would like to register an interest in the proposed rezoning of land 123 Golden Valley Way in Jamberoo.

Regards
Kayla

Shannon Smith

From: yvonnesimms6@gmail.com
Sent: Saturday, 26 December 2015 9:33 PM
To: Ana Jakovljevic
Subject: Re: Notification Letter for Jamberoo

Hi Ana I do have an interest in this project
My new mobile is 0473894515
Regards Yvonne

Sent from my iPhone

On 25 Dec 2015, at 2:43 PM, Ana Jakovljevic <AJakovljevic@biosis.com.au> wrote:

> Hi Yvonne,
>
> Please find the letter for your attention. Let me know if you have any questions.
>
> Regards,
>
> Ana

Ana Jakovljevic
Archaeologist

Mobile: 0428 175 025
Direct: (02) 4201 1051
Email: AJakovljevic@biosis.com.au

<image914385.PNG>
Leaders in Ecology and Heritage Consulting
8 Tate Street Wollongong NSW 2500
ph: (02) 4201 1090 fax: (03) 9646 9242
biosis.com.au

<21189.Notification.Letter.LaPerousel.FIN00.20151225.pdf>

Appendix 4 Project Information Pack and Project Methodology Pack

Project Information Pack (example)

15 January 2016

Seli Storer
Biamanga

Dear Seli,

RE: Stage 2: Proposed Residential Development at 123 Golden Valley Way in Jamberoo, NSW

Our Ref: Matter 21189

Thank you for your registration of interest in this project.

The following information has been provided in accordance with the *Aboriginal cultural heritage consultation requirements for proponents 2010* (DECCW 2010). The aim of this document is to provide registered Aboriginal parties (RAPs) with information about the scope of the proposed project and the proposed Aboriginal cultural heritage assessment process.

Project Area

TCG Planning (TCG), on behalf of Branco Simicic, is preparing lodgement of a Development Application (DA) for the proposed rezoning of land from RU2 Rural Landscape to R2 Low Density Residential at 123 Golden Valley Way, Jamberoo (the Project Area) (Lot 2, DP 626183), Kiama Local Government Area. It is bounded by Golden Valley Road to the west and Colyers Creek to the east (Figure 1).

Proposed Development

The Project will involve the construction of a seniors housing complex, with approximately 50 residential dwellings. The dwellings will have a maximum building height of 8.5 metres and a maximum floor space ratio of 0.45:1. The development will include construction works and will involve the following potential impact activities:

- Bulk earthworks which will involve the removal of topsoil and subsoil;
- Heavy vehicle movement within the Project Area with potential compaction of surface soils.

Impact Assessment Process

The impact assessment process will be conducted in line with the requirements of the *Code of Practice for the Investigation of Aboriginal Objects in New South Wales* (DECCW 2010). The objectives of the investigation process are to:

- Conduct heritage register searches to identify previously recorded cultural heritage sites in or within the vicinity of the proposed Project Area. Searches will include the Aboriginal Heritage Information Management System (AHIMS), the National Heritage List, Commonwealth Heritage List, Register of

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the National Estate, State Heritage Register, Local Environmental Plan and National Trust heritage lists
- Conduct additional background research in order to recognise any identifiable regional trends in site distribution and location and provide a site prediction model for the Project Area;
- Undertake a comprehensive survey of the Project Area, identifying any previously recorded sites (on AHIMS)
- Record and assess sites identified during the survey in compliance with the guidelines issued by the OEH
- Assess the scientific significance of all identified Aboriginal cultural heritage sites and places
- Identify impacts to all identified Aboriginal cultural heritage sites and places based on potential ground disturbance from the proposed works, and
- Make recommendations to minimise or mitigate potential impacts of the proposed works upon cultural heritage values within the Project Area.

Consultation with the Aboriginal community

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

Consultation with Aboriginal stakeholders under the DECCW 2010 consultation guidelines is being undertaken to assist Cardno by:

- providing relevant information about the cultural significance and values of the Aboriginal object(s) and/or place(s) within the Project Area
- influencing the design of the method to assess cultural and scientific significance of Aboriginal objects(s) and/or place(s) within the Project Area
- actively contributing to the development of cultural heritage management plan options and recommendations for any Aboriginal object(s) and/or place(s) within the proposed Project Area, and
- commenting on the draft assessment reports before they are submitted by the proponent to the determining authority of the proposed realignment.

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

- **Completed:** Ascertaining the names of Aboriginal people or groups who may hold cultural knowledge relevant to determining the significance of Aboriginal objects and/ or places within the proposed study area. This would include writing to the following:
    - Office of Environment and Heritage (OEH)
    - Local Aboriginal Land Council (LALC)
    - Office of the Registrar (Aboriginal Land Rights Act 1983)
    - National Native Title Tribunal (NNTT)
    - Native Title Services Corporation Limited (NTSCORP Limited)
    - Relevant Local Councils
    - Relevant Catchment Management Authorities

- **Completed:** Biosis completed the 'Placement of Notification' (Public Notice) in the *Mercury Classifieds*, on behalf of Cardno that must include details of the proponent, the project, the exact location, and statement of the purpose of the community consultation in preparation for possible test excavations and Aboriginal Heritage Impact Permits (AHIPs). The Public Notice is also an invitation for Aboriginal people who hold relevant cultural knowledge about the study area. A closing date for the registration must be included and be no less then **14 days**. Public Notice was put in the Illawarra Mercury on Saturday November 28, 2015. Registration closed on 14 December 2015.

- **Completed:** Aboriginal people or groups identified would be provided with notification of the proposed project via Biosis and given the opportunity to be involved in consultation. They should be given 14 days to register their interest. **Registration closed at 5pm on 11 January 2016.**

- A list of Aboriginal people or groups who register an interest in the project will be forwarded to the Office of Environment and Heritage (OEH) and the LALC by Biosis no later than **28 days** following close of registration.

- Biosis will provide details of the project and methodology for the archaeological assessment to the registered parties. The registered Aboriginal parties must be given an opportunity to review and provide feedback to the proponent within a minimum of **28 days** of the Biosis providing the methodology document.

- Selected representatives of the registered Aboriginal parties will be given the opportunity to participate in the field survey and test excavation of the Project Area.

- The DRAFT Aboriginal Cultural Heritage Assessment Report and Archaeological Report will be provided to all registered Aboriginal parties for comment – the proponent must allow **28 days** for comment. All comments and correspondence sent and received regarding the project will be included in the final report in an Appendix.

Field Survey and Test Excavation

Biosis Pty Ltd recently completed Due Diligence Advice for Aboriginal archaeological heritage for the proposed works under the requirements of the *Due Diligence Code of Practice for the Protection of Aboriginal Objects in New South Wales* (DECCW 2010).[1] No Aboriginal archaeological sites were recorded during the assessments. Based upon the desktop assessment and archaeological survey two areas of high archaeological potential (Jamberoo PAD 1 and 2) were identified, which are associated with the upper crest and a small terrace on the lower hills slope, in close proximity to the two natural springs. It was recommended that further Aboriginal cultural heritage assessment be undertaken in these areas if impacts cannot be avoided.

Therefore test excavation will be undertaken in accordance with the guidelines outlined in the *Code of Practice for Archaeological Investigations of Aboriginal Objects in New South Wales* (DECCW 2010) in order to identify any previously unknown Aboriginal objects, sites or places, should they be present. If identified, these will be recorded to the standard set by OEH.

Any known sites identified by the AHIMS search which are within the assessment area will be inspected to determine their current condition. Registered sites in the near vicinity will also be visited to ensure they will not be impacted by the proposed works.

---

[1] Biosis 2015. *123 Golden Valley Way, Jamberoo, NSW: Aboriginal Cultural Heritage Due Diligence Assessment.* Report to TCG Planning. Biosis 2015.

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

Reporting

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

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

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

The final report will incorporate all comments.

Project Schedule

The proposed schedule and broad time allocations for the consultation stages are summarised below.

Action	Timeframe	Notes
Commencement of Aboriginal community consultation – advertising of project, Notification to stakeholders etc.	Completed	Project advertised in the Illawarra Mercury Classifieds on 20 December 2014; notices sent to identified stakeholders Tuesday 6 January 2015.
Aboriginal stakeholder registration period	Completed from 24 November 2015 to 11 January 2016	Notification letters sent to stakeholders on 25 December 2015.
Provision of client-reviewed DRAFT Methodology Document to registered Aboriginal stakeholders for review and comment – these methods will form the basis for all archaeological and cultural heritage work	16 January to 15 February 2016	28 days review time allowed under OEH Aboriginal community consultation guidelines
Completion of field survey and test excavation	February 2016	To be confirmed
Information gathering		Until finalisation of the report
Review of the draft report	TBC	**28 days** review time allowed under OEH Aboriginal community consultation guidelines
Completion and finalisation of report	TBC	

Responsibilities and Roles

As part of the consultation process RAPs are expected to respond to requests for cultural information and comment on draft reporting, as appropriate in accordance with their role specified in the guidelines (DECCW 2010: 16). Biosis and GHD in accordance with their role under the guidelines will consult with the Aboriginal community by supplying suitable project information and providing the opportunity for Aboriginal stakeholders to provide input into the heritage management process (DECCW 2010: 16-17).

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

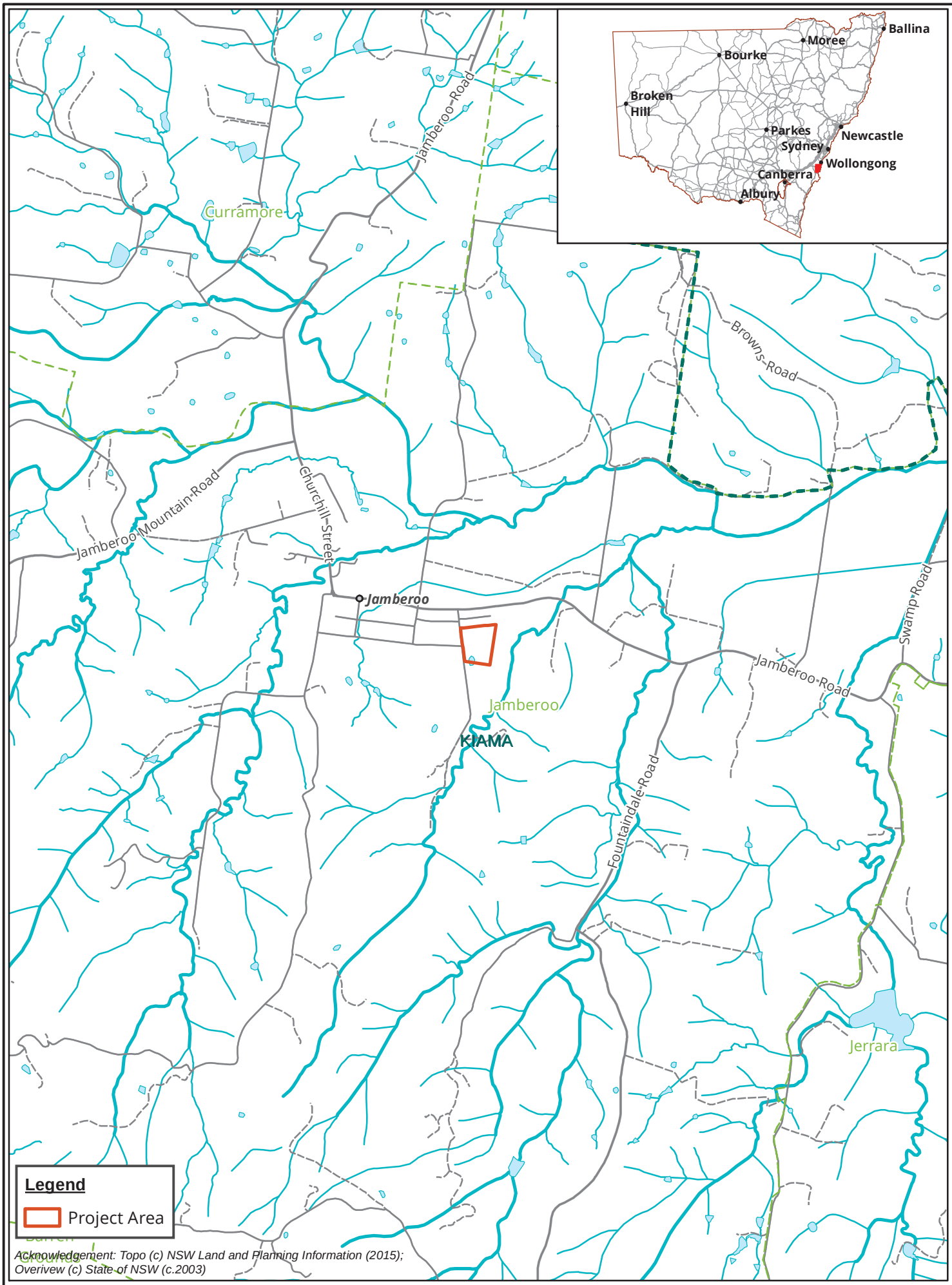
If you have any cultural knowledge that may have a bearing on the project, it is requested that this information is passed on to Biosis as soon as possible so that we can address any issues that may arise.

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

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

Yours sincerely,

Ana Jakovljevic
Archaeologist
0428 175 025
02 4201 1051
ajakovljevic@biosis.com.au



Acknowledgement: Topo (c) NSW Land and Planning Information (2015); Overivew (c) State of NSW (c.2003)

Figure 1: Location of the Project Area

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Location:P:\20800s\20835\Mapping\

0 300 600 900 1,200
Metres
N
Scale 1:30,000 @ A4, GDA 1994 MGA Zone 56

Legend

Project Area

Figure 2: Project Area in detail

0 10 20 30 40 50

Metres

Scale: 1:1,200 @ A3

Coordinate System: GDA 1994 MGA Zone 55

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Methodology Pack (example)

15 January 2016

Seli Storer
Biamanga

Dear Seli,

RE: Stage 3 - Proposed Residential Development at 123 Golden Valley Way in Jamberoo, NSW - Methodology for a Site Survey and Test Excavations
Our Ref: Matter 19228

This letter is being provided to all the Registered Aboriginal Parties (RAPs) who registered their interest in the consultation process for the proposed rezoning of land for residential development in Jamberoo, undertaken by TCG Planning on behalf of Branco Simicic.

In accordance with the *Aboriginal Cultural Heritage Consultation Requirements for Proponents* (DECCW 2010), we provide the proposed methodology for a survey and test excavations for your review and feedback.

It would be appreciated if you would provide feedback on the methodology presented in this letter to Biosis Pty Ltd by **5 pm Monday 15 February 2016** either by email, phone or return mail.

Please address feedback on the methodology to:

Ana Jakovljevic
Biosis Pty Ltd
8 Tate Street
Wollongong NSW 2500
ajakovljevic@biosis.com.au
0428 175 025

Please do not hesitate to contact me if you require additional information or have any queries about the methodology or information provided.

Kind regards,

Ana Jakovljevic
Archaeologist

Stage 3: Proposed Residential development at 123 Golden Valley Way in Jamberoo, Aboriginal Cultural Heritage Assessment: Methodology for Survey and Test Excavations

The following information has been provided in accordance with the *Aboriginal cultural heritage consultation requirements for proponents 2010* (DECCW 2010). The aim of this document is to provide registered Aboriginal parties (RAPs) with the proposed methodology for the cultural heritage and archaeological assessment.

Biosis Pty Ltd recently completed Due Diligence Advice for Aboriginal archaeological heritage for the proposed works under the requirements of the *Due Diligence Code of Practice for the Protection of Aboriginal Objects in New South Wales* (DECCW 2010). Based upon the desktop assessment and archaeological survey Biosis has been able to identify two areas of high archaeological potential (Jamberoo PAD 1 and 2), which are associated with the upper crest and a small terrace on the lower hills slope, in close proximity to the two natural springs. Recommendations have been made to undertake further Aboriginal cultural heritage and archaeological assessment that will involve test excavations.

Accordingly, an Aboriginal Cultural Heritage Assessment will be undertaken that will involve test excavations and a possible application for an Aboriginal Heritage Impact Permit (AHIP). Assessment will include undertaking a site survey prior to test excavations. Methodology is detailed below for both survey and test excavations.

Assessment Methodology

Aims of the Survey

The principle aims of the survey are to:

- Provide RAPs an opportunity to view the Project Area and to discuss previously identified Aboriginal object(s) and/or place(s) in or within close proximity to the Project Area.
- To undertake a systematic survey of the Project Area, while targeting areas with the potential for Aboriginal heritage.
- Identify and record Aboriginal archaeological sites visible on the ground surface.

Survey Methodology

The survey methods are intended to assess and understand the landforms and to determine whether any archaeological material from Aboriginal occupation or land use exists within the Project Area. Identification of natural soil deposits within the Project Area will be undertaken if possible. Photographs and recording techniques will be incorporated into the survey including representative photographs of survey units, landforms, vegetation coverage, ground surface visibility and the recording of soil information for each survey unit. Any Aboriginal objects observed during the survey will be documented and photographed. Since this is purely a survey, no artefacts are to be removed from the site.

Recording during the survey will follow the guidelines of the OEH, in particular the *Code of Practise for Archaeological Investigation of Aboriginal objects in New South Wales* (DECCW 2010a).

Specific information that will be recorded during the survey includes:

- Aboriginal objects or sites present in the Project Area.

- Survey coverage.
- Survey effectiveness.
- Any resources that may have potentially have been exploited by Aboriginal people.
- Landforms and general soil information.
- Photographs of the site indicating landforms.
- Evidence of disturbance.
- Aboriginal artefacts, culturally modified trees, shell middens or any other Aboriginal sites.

Distinguishing landform elements and their association with Aboriginal cultural heritage will assist with the identification of site patterning, though with the awareness of the following limitations:

- The degree of ground surface visibility (GSV) and amount of exposed areas can significantly bias the discovery of surface artefacts.
- Cultural material exposed on the surface is not necessarily representative of the potential extent of the site (either horizontally or vertically).

Information about the presence of potentially exploitable resources helps contribute to predictions of the Aboriginal sites that may occur within the Study Area. Information about GSV, DV and areas of exposures help to provide a general indication of the effectiveness of the survey for identifying Aboriginal cultural heritage exposed to the surface. Observable disturbances are also considered when assessing the integrity of known or potential sites in an area. The location of Aboriginal cultural heritage and points marking the boundary of the landform elements will be recorded using a hand-held Global Positioning System and the Map Grid of Australia (94) coordinate system.

Test Excavation Methodology

Aims of the Sub-surface Test Excavations

The principle objectives of the subsurface test excavations are to identify and understand the nature, extent and significance of any archaeological sites located within areas of archaeological potential.

The aims of the testing program are to:

- Determine whether sub-surface archaeological deposits exist which may be impacted upon by the development.
- If so, to determine the extent and nature of such deposits.
- Identify if the 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, shell midden deposits, 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.

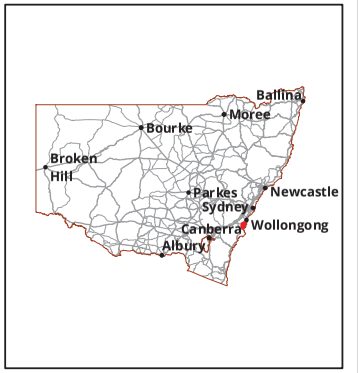
Test Excavation Sampling Strategy

Test excavations across the Project Area will conform to the following methodology:

- Test excavations will be undertaken in areas as identified having high potential to contain Aboriginal cultural material (see the attached figure).
- Total of four transects will be placed and test pits will be systematically gridded at 20m intervals within each transect to provide test excavation units locations (see the attached figure with proposed transects and test pit locations).
- Test excavation units will consist of 50 x 50cm test pits, in order to determine the nature of sub-surface deposit and presence of any possible archaeological deposits.
- Test excavations units must be excavated using hand tools only including spades, handle shovels, and trowels.
- The first test excavation unit will be excavated and documented in 5cm spits. Based on the evidence of the first excavation unit, 10cm spits or sediment profile/stratigraphic excavation (whichever is smaller) will then be implemented.
- All material excavated from the test excavation units must be sieved using nested 5mm aperture wire-mesh sieves.
- Test excavation units must be excavated to at least the base of the identified Aboriginal object-bearing units, and must continue to confirm the soils below are culturally sterile.
- All cultural material will be collected, bagged and clearly labelled. They will be temporarily stored in the Biosis office at 8 Tate Street, Wollongong for analysis.
- For each test pit that is excavated, the following documentation will 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 must be backfilled as soon as practicable due to safety issues.

Following test excavation, an Aboriginal Site Recording form must be completed and submitted to the AHIMS Registrar as soon as practicable, for each AHIMS site that has been identified.

Standard protocol for the discovery of any human remains is to be followed in the event that human remains are discovered.



Legend

- Project Area
- PAD
- Survey tracks

Figure 6: Survey effort and results

0 10 20 30 40 50

Metres

Scale: 1:1,119 @ A3

Coordinate System: GDA 1994 MGA Zone 55

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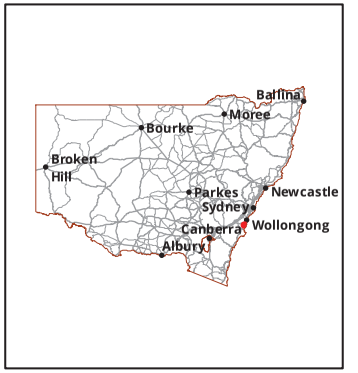

Legend

- Project Area
- Proposed location of test pit
- Transect

Figure 7: Proposed test excavation locations

0 10 20 30 40 50

Metres

Scale: 1:1,200 @ A3

Coordinate System: GDA 1994 MGA Zone 55

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biosis

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Date: 13 January 2016,
Checked by: SAS, Drawn by: ANP, Last edited by: apritchard
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20835_F7_ProposedTestpits.mxd

Appendix 5 Archaeological Report

123 Golden Valley Way, Jamberoo, NSW

Archaeological Report

FINAL

Prepared for TCG Planning, on behalf of Branko Simicic,

1 June 2016

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LGA:	Kiama Municipal Council

Document control

Version	Internal reviewer	Date issued	Issued by
Draft 01	Melanie Thomson	22/03/2016	MT
Draft 02	Asher Ford	27/04/2016	ALA
Final 01	Alexander Beben	20/05/2016	AJB
Final 02	Nicole Castle	01/06/2016	NEC

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Aboriginal community groups

- Biamanga
- Cullendulla
- Gary Caines
- Goobah Development Pty Ltd
- Gulaga
- Gundungurra Tribal Technical Services
- Illawarra Local Aboriginal Land Council
- Korewal Elouera Jerrungarugh Tribal Elders Council
- Kulila Site Consultants
- La Perouse Botany Bay Corporation
- Minnamunnung
- Murramarang
- National Koorie Site Management
- Peter Falk Consultancy
- Three Ducks Dreaming Surveying and Consulting
- Woronora Plateau Gundungara Elders Council
- Wodi Wodi Traditional Owners
- Woronora Plateau Elders Council Group

Client

- Branko Simicic
- Tiana Simicic

Office of Environment and Heritage (OEH)

- Rose O'Sullivan

TCG Planning

- Kylie Fairhall

Biosis

- Ashleigh Pritchard and Lauren Harley for mapping

Abbreviations

AHIMS	Aboriginal Heritage Information Management System
AMBS	Australian Museum Business Services
ANU	Australian National University
BP	Before Present
DA	Determining Authority
DECCW	Department of Environment, Climate Change and Water
DoP	Department of Planning
DP	Deposited Plan
DV	Distance Visibility
EPA	Environment Planning and Assessment
FT	Fig tree
GDA	Geocentric Datum of Australia
GPS	Global Positioning System
GSV	Ground Surface Visibility
ha	Hectare
ICOMOS	International Council on Monuments and Sites
ILALC	Illawarra Local Aboriginal Land Council
LGA	Local Government Area
m	metre
mya	million years ago
NPW	National Parks and Wildlife
NSW	New South Wales
OEH	Office of Environment and Heritage
PAD	Potential Archaeological Deposit
RAPs	Registered Aboriginal Parties
REF	Review of Environmental Factors
TP	Test Pit

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Summary

Biosis Pty Ltd has been commissioned by TCG Planning (TCG), on behalf of Branko Simicic, to undertake an Aboriginal cultural heritage due diligence assessment to accompany their lodgement of a Planning Proposal (PP) for the proposed rezoning of land from Rural Landscape (RU2) to Low Density Residential (R2) at 123 Golden Valley Way, Jamberoo (the project area) (Lot 2, DP 626183).

The Aboriginal Cultural Heritage Assessment (ACHA) has been carried out under Part 6 of the *National Parks and Wildlife Act 1974* (NPW Act). This Archaeological Report (AR) has been prepared in accordance as a stand alone technical report to document archaeological investigations and provide recommendations to inform the ACHA. The AR has been undertaken in accordance with the *Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales* (DECCW 2010) ('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 Aboriginal community has been consulted about 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.*

No previously recorded Aboriginal Heritage Information Management System (AHIMS) Aboriginal cultural heritage sites were located within the project area.

A site inspection was undertaken as part of the Due Diligence assessment with the aim of identifying any Aboriginal heritage objects or areas which would be likely to contain subsurface archaeological deposit. The site inspection was hampered by poor visibility from thick vegetation cover and a low amount of ground surface exposure. During the site inspection, two areas of Aboriginal archaeological potential were identified during the survey, Jamberoo PAD 1 and Jamberoo PAD 2. Jamberoo PAD 1 is located on a hill crest landform and Jamberoo PAD 2 is situated on a terrace on the valley flat. Jamberoo PADs 1 and 2 were subject to test excavations undertaken in accordance with the requirements of the Code. A total of 29 test pits were excavated across six transects. No areas of previous significant disturbance were observed during the test excavations. A total of 61 stone artefacts were recovered from both PADs, 59 from Jamberoo PAD 1 and only two from Jamberoo PAD 2. Two new Aboriginal sites were registered on the AHIMS as Jamberoo PAD and AS 1 (AHIMS 52-5-0832) and Jamberoo PAD and AS 2 (AHIMS 52-5-0833).

The re-zoning of the project area will have no affect on the registered sites; however there is a potential for future development activities to impact on both registered Aboriginal sites, Jamberoo PAD and AS 1 (AHIMS 52-5-0832) and Jamberoo PAD and AS 2 (AHIMS 52-5-0833).

Strategies have been developed based on the archaeological (significance) of cultural heritage relevant to the project 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 lodgement on the DA, the following is recommended:

Recommendation 1: The proposed re-zoning should proceed

Based on the findings of the Aboriginal cultural heritage assessment, it is recommended that the proposed re-zoning can proceed. The development has identified two sites Jamberoo PAD 1 and Jamberoo PAD 2 which have been assessed as possessing high and low scientific significance respectively. Should a future development propose to impact partially or wholly the extent of Jamberoo PAD 1, this would be consistent with impacts proposed by many other development projects in the region. Although the first option considered is always to preserve Aboriginal heritage where possible, there is no inherent reason why an Aboriginal Heritage Impact Permit (AHIP) for impact to the full extent of Jamberoo PAD 1, should not be sought, particularly on archaeological grounds.

The current level of assessment is considered adequate to support a Development Application to Kiama Municipal Council and AHIP application to the Office of Environment and Heritage (OEH). This is assuming that Recommendation 2 is adhered to. The Development Consent and AHIP conditions should include provision for the works outlined in Recommendation 3 to be implemented.

Recommendation 2: Continued consultation with the Registered Aboriginal Parties

It is recommended that consultation continues to inform RAPs about the management of Aboriginal cultural heritage sites in the project area throughout the life of the project. This is in line with the *Aboriginal cultural heritage consultation requirements for proponents 2010* (DECCW). Biosis is able to undertake this consultation, however if no longer engaged on the project the responsibility will fall to the landowner. A period of no longer than 6 months between contact with the Aboriginal stakeholders must be upheld for the consultation to be considered 'continuous'. If a period of longer than 6 months occurs between contact with the Aboriginal stakeholders, consultation will need to be re-started.

Recommendation 3: Application for an Aboriginal Heritage Impact Permit for the entire project area of proposed development including salvage.

If at the time of development, the proposed development cannot avoid harm to registered sites Jamberoo PAD and AS 1 (AHIMS 52-5-0832) and Jamberoo PAD and AS 2 (AHIMS 52-5-0833), it is recommended that Biosis, on behalf of Branko Simicic, applies to OEH for an area AHIP to:

- Undertake archaeological salvage of site Jamberoo PAD and AS 1. The archaeological salvage should not exceed 10 metres squared and should be undertaken to maximise the recovery of cultural material.
- Impact the recorded Aboriginal sites Jamberoo PAD and AS 1 (AHIMS 52-5-0832) and Jamberoo PAD and AS 2 (AHIMS 52-5-0833).
- Impact within the limits of the area based destruction AHIP for any further Aboriginal objects encountered during construction unless human remains are involved.
- Determine a long-term management of Aboriginal objects recovered during the test excavations with close consultation with RAPs.

Advice preparing AHIPs

AHIPs should be prepared by a qualified archaeologist and lodged with the OEH. Once the application is lodged processing time can take between 8 - 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.

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 NPW Act.

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

1. Introduction

1.1 Project Background

Biosis Pty Ltd has been commissioned by TCG Planning (TCG), on behalf of Branko Simicic, to undertake an Aboriginal Cultural Heritage Assessment to accompany their lodgement of a Planning Proposal (PP) for the proposed rezoning of land from Rural Landscape (RU2) to Low Density Residential (R2) at 123 Golden Valley Way, Jamberoo (the project area) (Lot 2, DP 626183).

The Aboriginal Cultural Heritage Assessment (ACHA) has been carried out under Part 6 of the *National Parks and Wildlife Act 1974* (NPW Act). This Archaeological Report (AR) has been prepared in accordance as a stand alone technical report to document archaeological investigations and provide recommendations to inform the ACHA. The AR has been undertaken in accordance with the *Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales* (DECCW 2010) ('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.

Previously, Biosis Pty Ltd has completed an assessment in accordance with the *Due Diligence Code of Practice for the Protection of Aboriginal Objects in New South Wales (*'the Due Diligence code'*)* for the project area in order to inform responsibilities with regards to Aboriginal cultural heritage in the area. In addition to the basic tasks required for a cultural heritage due diligence assessment, an extended background review, as well as an archaeological survey in accordance with the Code was conducted, in order adequately map areas of high, moderate and low archaeological sensitivity. Based upon the desktop assessment and archaeological survey Biosis was able to identify two areas of high archaeological potential, which are associated with the upper hill crest and a small terrace on the lower hills slope in the valley, in close proximity to the two natural springs. Recommendations were made to undertake further Aboriginal cultural heritage and archaeological assessment that involve test excavations. This is in line with Step 2b of the *Due Diligence Code of Practice for Protection of Aboriginal Objects in New South Wales 2010* (11-12).

1.2 Project Area

The project area covers an area of approximately 4.2 hectares and is located within the Kiama Local Government Area (LGA), Parish of Jamberoo and the County of Camden (Figure 1). The project area incorporates Lot 2, DP 626183 and is shown in Figure 2. The project area overlooks Colyers Creek which is located to the east. The western edge of the project area is bounded by Golden Valley Road.

1.3 Planning Approvals

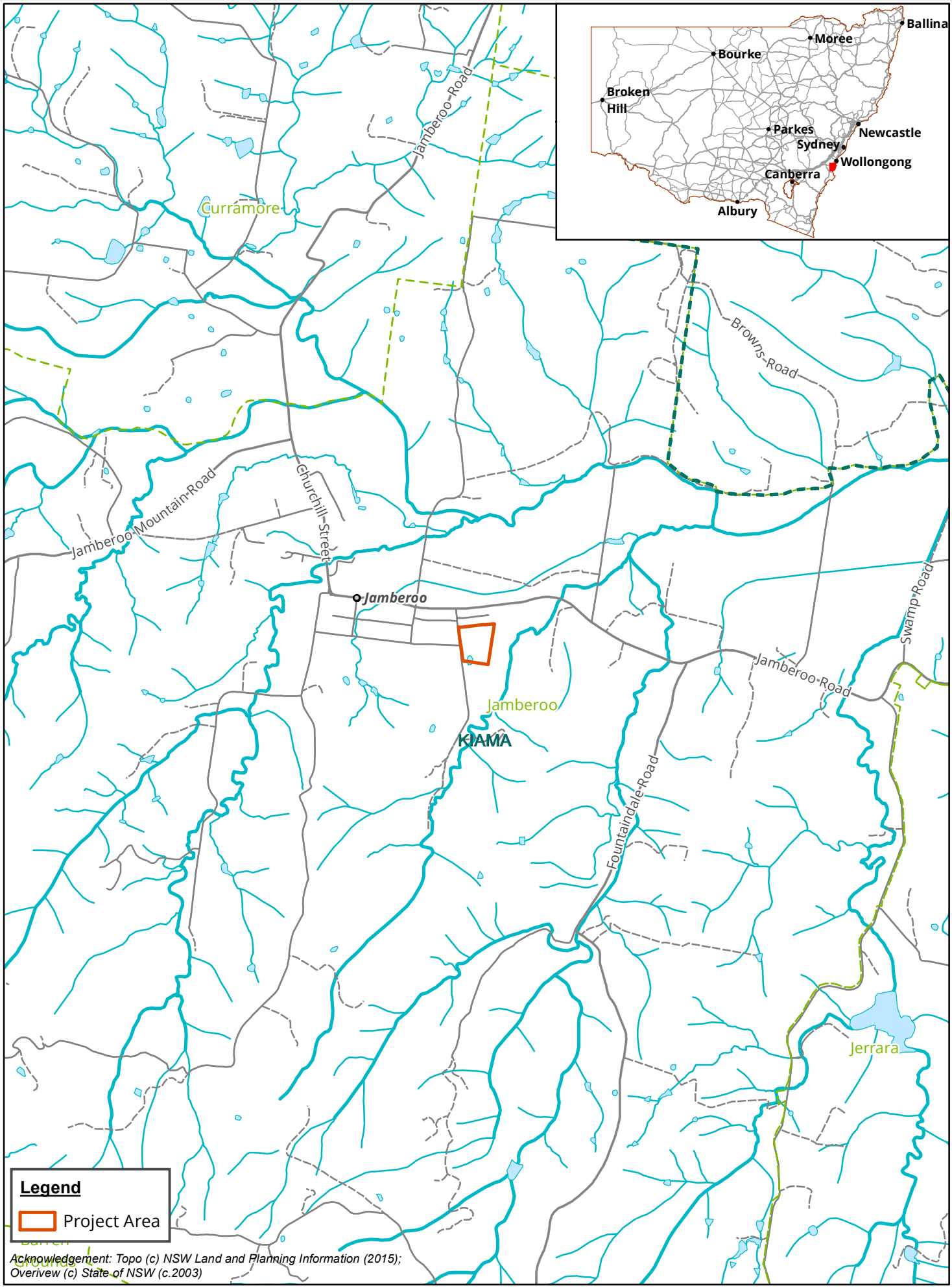
The proposed development will be assessed against Part 3 of the *Environmental Planning and Assessment Act 1979* NSW. Other relevant legislation and planning instruments that will inform this assessment include:

- *Environmental Planning and Assessment Act 1979* (NSW)
- *National Parks and Wildlife Act 1974* (NSW)
- *National Parks and Wildlife Amendment Act 2010* (NSW)
- *Kiama Local Environmental Plan 2011*.

1.4 Assessment Objectives

The following is a summary of the major objectives of the assessment:

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



Acknowledgement: Topo (c) NSW Land and Planning Information (2015); Overivew (c) State of NSW (c.2003)

Figure 1: Location of the project area

Biosis Pty Ltd
Ballarat, Brisbane, Canberra, Melbourne, Newcastle, Sydney, Wangaratta & Wollongong

Matter: 21189
Date: 16 March 2016,
Checked by: SAS, Drawn by: LH, Last edited by: lharley
Location:P:\21100s\21189\Mapping\

0 300 600 900 1,200
Metres

N

Scale 1:30,000 @ A4, GDA 1994 MGA Zone 56

Legend

Project Area

BestImageryDates

Figure 2: Aerial of the project area

0 10 20 30 40 50

Metres

Scale: 1:1,200 @ A3

Coordinate System: GDA 1994 MGA Zone 55

Biosis Pty Ltd

Ballarat, Brisbane, Canberra, Melbourne, Sydney, Wangaratta & Wollongong

Acknowledgements: Imagery (c) Nearmap 2015; Topo (c) NSW Land and Planning Information

Matter: 21189,
Date: 16 March 2016,
Checked by: SAS, Drawn by: LH, Last edited by: lharley
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2. 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

Melanie Thomson	**Ba (Hons)**	**12 years experience**
Melanie is the Team Leader – Cultural Heritage in the Melbourne office of Biosis. Mel has worked as a consultant in archaeology for over 12 years and has been involved in numerous projects in the Illawarra region and throughout NSW and Victoria. Mel has developed strong project management skills and conducted numerous Aboriginal and historical field surveys, community consultations, excavations, impact assessments, significance assessments and management plans. Mel has detailed knowledge of the NSW heritage statutory framework, heritage codes of practice and best practice approaches to managing heritage values.		Project Roles • Technical Review
Ana Jakovljevic	**BA (PostGrad Dip)**	**9 years experience**
Ana Jakovljevic has over eight years experience as an archaeologist which includes archaeological surveys and excavations, documentation and analysis of cultural material and cultural heritage site assessments. Her skills also include site significance assessments and preparing cultural heritage management plans. Ana has also extensive experience during the construction phase of projects implementing recommendations set out as cultural heritage requirements. Working extensively on monitoring programs, Ana has developed excellent technical skills in baseline recording and impact assessments of Aboriginal shelter and grinding grooves sites. She has also worked on and has extensive technical skills in shell midden excavations and analysis. Ana has also authored and co-authored numerous cultural heritage assessment reports, archaeological reports and due diligence assessments.		Project Roles • Lead cultural heritage advisor • Aboriginal community consultation • Test excavations supervisor • Development of recommendations, and • Preparation of the report.
Shannon Smith	**BA (Hons)**	**5 years experience**
She is experienced in all aspects of heritage consulting and has extensive experience in archaeological surveys and excavations, reporting, permit application, grant applications and analysis of cultural material. Shannon specialises in Aboriginal archaeology, with particular research interests in open air-artefacts scatters and shell middens. Shannon has primarily undertaken projects in the Pilbara region of Western Australia and has operated as the heritage consultant within large multidisciplinary teams tasked with managing heritage values. Shannon is a diligent and highly experience heritage consultant with extensive experience in project management. During her career she has worked in collaboration with a number Aboriginal Corporations, Aboriginal stakeholders, development proponents, mining companies and government regulators		Project Roles • Archaeological survey • Test excavations

3. Development proposal

The project will involve rezoning of land from Rural Landscape (RU2) to Low Density Residential (R2) at 123 Golden Valley Way, Jamberoo.

4. Previous archaeological work

Review of the existing archaeological studies for the Project Area and surrounding region have been undertaken. This information together with the review of ethnohistorical studies have been synthesised in order to provide a context and baseline for what is known about Aboriginal cultural heritage in the area. This contributes to the archaeological significance of the proposed works area. Review of previous archaeological work has been prepared in accordance with the Requirement 1 of the *Code of Practice for the Archaeological Investigation of Aboriginal Objects in New South Wales* (DECCW 2010).

4.1 Background

A number of cultural heritage (surveys) and sub-surface (excavations) and archaeological assessments have been conducted throughout the Illawarra and South Coast most of which has been driven by development. 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 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 coast-line was located approximately 14 kilometres to the east of its current position. Coastal sites older than 6,000 years are rare, as most would have been inundated by the rising sea. Pleistocene-aged Aboriginal sites on the south coast include Bass Point, dated at 17,010+/-650 BP (ANU-536) (Bowdler 1976:254) and Burrill Lake rock shelter, dated at 20,830+/-810 BP (ANU-138) (Lampert 1971:122). Test excavations undertaken at the Wollingurry Point midden dated the site to 3360 +/- 90 years BP (Navin 1987: 104). Middens have been noted on many of the headlands along the Wollongong coastline including Bellambi Point, Flagstaff Point, Windang Island and Barrack Point. Middens on sand dunes have been noted at North Beach, Pur Pur Beach (now destroyed) and on the Windang Peninsula and on the McCauley's Beach in Thirroul.

Several studies of site patterns and distribution have been completed for the Illawarra and South Coast. Lampert (1971:114-130) identified three basic groups of site types:

- Specialised foreshore sites focused on exploitation of coastal resources, such as fish, shellfish and marine birds (e.g. Durras North, Wollumboola and Wattamolla). Specialised fishing equipment, including spears tipped with bone points and shell fish hooks were used at such sites.
- Specialised estuarine sites focused on the exploitation of inland resources (e.g. Shoalhaven Creek and Bomaderry Creek). These sites contain evidence of estuarine fish and shellfish exploitation.
- Combination sites located beside creeks or estuaries near the sea shore where a mix of inland and coastal resources was exploited (e.g. Burrill Lake, Currarong and Curracurrang).

In 2000 Navin Officer prepared an Aboriginal Heritage Study for the Shellharbour City Council area, incorporating land north of the project area. Based on examination of background variables, Navin Officer (2000: 51-52) generated a predictive model for site locations that can be applied to the project area due to the fact that it was developed in the light of the results of studies throughout the NSW south coast. Predictive modelling pertinent to open artefact scatters and landform utilisations are included below:

- Sites are likely to occur at varying densities in all broad topographic zones. However, a range of micro-topographic variables can effectively predict topographies that are archaeologically sensitive. These

include: relatively level ground without significant surface rock, proximity to a freshwater source and locally elevated and well-drained ground.

- Sites tend to be situated at or close to ecotones – the areas where different environments meet.
- Artefact occurrences, detected as isolated finds or surface scatters of artefacts and/or subsurface archaeological deposits, are likely to be the most common site type within the region.
- Artefact scatters (also termed open camp sites), are most likely to occur on level, well-drained ground, either adjacent to sources of freshwater and wetlands, or along the crests of spurs and ridgelines.
- Ridge and spurlines, which afford effective through-access relative to the surrounding landscape, will tend to contain more frequent and larger sites.
- The crests of low relief spurs that extend into and across valley floor flats are likely to be a focus for occupation due to their well-drained and elevated context in close proximity to a range of exploitable environments.
- Isolated finds can occur anywhere in the landscape and may represent the random loss, deliberate discard of artefacts, or the remains of dispersed artefact scatters.

4.2 Regional overview

Within the greater area around Kiama a number of Aboriginal heritage studies have been undertaken. These have been development-driven assessments or are research and site-management based investigations. Historically, investigations have been biased towards the coastal area and the occupation sites that frequently occur there. This is reflected in the location and pattern of sites recorded in the region. Aboriginal cultural heritage assessments have recently started to consider the forested hinterland and escarpment foot hills as a significant contributor to Aboriginal resource procurement.

A growing number of archaeological surveys have been conducted between the hinterland and the coast as a result of increased development activities, including the present project area and its immediate surrounds. Considerable survey has been undertaken along the coastal plain of the mid and far NSW south coast and identified the following trends (Byrne 1984, ANU Archaeology honours student research program):

- Significant densities of artefact scatters can occur on major ridgelines.
- Ridgelines may have been used as preferred or convenient travel routes along and across the resource zones of the coast and hinterland.

Furthermore, as requirements for new housing and industry increase in the region, pockets of undeveloped or farming land, in particular the foothills and flats towards the escarpment, are now being targeted for rezoning and development and more archaeological assessments are being undertaken. A number of archaeological assessments were completed east and north of the project area, including Dunmore (Navin 1993, Saunders, Griffiths & Officer 1995, Navin Officer 2004) and Tullimbar Village Development (Navin Officer 2005, Kayandel 2008) and are discussed in more detail below.

Princess Highway Realignment Oak Flats to Dunmore (Navin 1993)

Navin conducted a survey for the proposed Princess Highway upgrade between Oak Flats and Dunmore in 1993. The surveyed area is located approximately 7 kilometers to the north-east form the project area, and encompassed nine kilometers of road easements and associated links and interchanges. No Aboriginal sites were identified during the survey due to the existing previous disturbance.

Lots 15 and 16, Dunmore Cultural Heritage Assessment (Saunders, Griffiths and Officer 1995)

A survey was conducted over 135 hectares for a rezoning development in Dunmore of Lots 15 and 16 DP3710, approximately 7 kilometres north-east of the project area. Due to the levels of previous disturbance there were no Aboriginal sites identified and no constraints to the proposed rezoning development.

Tullimbar Village Development (Navin Officer 2002)

Navin Officer completed Aboriginal cultural heritage assessment for the Tullimbar Village in 2002. The area is within Hazelton Creek valley, located approximately 8 kilometers north of the project area. The surveyed area included valley floor and lower slope terrain, with some locally variable topographies including floodplains, elevated crests of lower spurs and moderate gradient slopes. Two Aboriginal surface low density artefact scatters were identified, HC1 (AHIMS 52-5-0522) on a lower valley slope, and HC 2 (AHIMS 52-5-0441) on a gentle slope/terrace**.**

Shellharbour Urban Fringe Lands (Navin Officer 2004)

Navin Officer completed Aboriginal cultural heritage assessment for Shellharbour City Council's Urban Fringe LEP in order to review the potential for certain lands to be used in rural residential development, approximately 6-8 kilometers north and east of the project area. No Aboriginal sites were identified during the survey, but seven areas of archaeological potential were recorded (SUFA 1-7). These areas of archaeological potential were identified within landforms that were considered sensitive based on the results of previous surveys and excavations relevant to the region and landscape features that were most likely to have been exploited in the past. Four of the identified PADs were located within spur crests and ridgelines above drainage lines (SUFA 3, 5, 6 and 7). Spurlines were defined as archaeologically sensitive as they are obvious pathways to the Escarpment to the rivers and coast, and offer expansive views across creek valleys (Navin Officer 2004: 23). Subsurface test excavations were recommended for all of the seven identified PADs with the consultation with local Aboriginal groups (Navin Officer 2004: 57).

Tullimbar Village Development – Archaeological Testing PAD 3 (Navin Officer 2005)

Following up on the assessment from 2002, Navin Officer completed test excavations at a portion of PAD 3 identified during the subsequent survey (Navin Officer 2005: 1). Total of twelve artefacts were recovered from five test pits located closest to the drainage lines, but none were identified within the confluence of creeks. Artefacts consisted of flakes and flaked pieces made from mostly chert, followed by silcrete, volcanic and tuff (Navin Officer 2005: 9). All of the artefacts were recovered from the first 100 millimetres of soil, which was considered to indicate a recent age for their deposition as they have not moved through the soil profile by natural processes. Considering the low number of artefacts recovered, the site most likely represents a background scatter or low intensity site occupation such as a transient camp or activities peripheral to main area of occupation (Navin Officer 2005: 10).

Tullimbar Village Development – Archaeological Testing PADs 1, 2 and 4 (Kayandel 2008)

Kayandel completed test excavations of four Aboriginal sites identified during Navin Officer's assessment at Tulimbar Village in 2005: sites Tullimbar Village PAD 1 (AHIMS 52-5-0434) located on a gentle slope/terrace above the floodplain, PAD 2 (AHIMS 52-5-0439) located on an elevated flat crest of a minor spurline, and PAD 4 (AHIMS 52-5-0440) located on a floodplain between two watercourses. A total of 26 test pits were excavated across three sites, with a total of 33 artefacts recovered. The majority of the artefacts were identified at site PAD 2 (16 artefacts), followed by PAD 1 (14 artefacts) and PAD 4 (3 artefacts). Artefacts consisted of flakes and flaked pieces including one blade; dominant raw material used for flaking was fine-grained siliceous (13), followed by chert (9 artefacts), silcrete (4 artefacts) and volcanic (3 artefacts); only a few were made from petrified wood, jasper and quartz (Kayandel 2008: 33). Raw material varied between sites, with the majority of

artefacts at PAD 1 being on chert. Considering the low number and range of cultural material, it was assessed that all there sites represent background scatters and are of low archaeological significance (Kayandel 2008: 38). Recommendations were made that proposed application for a permit to destroy sites (Kayandel 2008: 39).

4.3 Local overview

Three Aboriginal cultural heritage and archaeological assessments have been undertaken within very close proximity to the project area and are discussed below.

An Archaeological Assessment of Optical Fibre Route from Kiama to Jamberoo, South Coast New South Wales (Hamm, 1993)

In 1993 Giles Hamm was commissioned by Telecom Australia to undergo a heritage assessment for their proposed installation of an optical fibre cable between Kiama and Jambaroo. The survey area is located approximately 400 metres to the east of the project area, and was carried out on the 17 September 1993 with Mr Jim Davis of the Illawarra Local Aboriginal Land Council. Site prediction model indicated that low density artefact scatters are likely to be present within undisturbed land with quartz and silcrete dominant raw material, and scarred trees within areas of remnant native vegetation. No Aboriginal sites were located along the proposed route, due to the previous land use and farming and residential activities (Hamm 1993: 6). It was recommended that Telecom Australia process with their project, with no further archaeological investigation. Two creek crossings at Spring Creek and Jerrara Creek, however, were recommended to be monitored.

Cedar Grove Estate, Kiama (Saunders 2004)

Aboriginal archaeological assessment was completed by Saunders in 2004 for the proposed residential development known as Cedar Grove Estate on Jamberoo Road, approximately 2.6 kilometers east of the project area. The assessed area was located on a spurt line between Spring Creek and Willow Gully Creek. Sites were expected to occur on terminal spur crests adjacent to wetlands or valley floor drainage corridors. No Aboriginal sites or areas of archaeological potential were identified during the survey. The majority of the surveyed area was located within slopes with only sections within low gradient basal slope/crest that have some archaeological potential (Saunders 2004: 12). These areas have undergone previous land modifications that would have disturbed and/or destroyed any artefact bearing soil deposits. It was considered that lack of sites can be also attributed to the preference for occupation at lagoon approximately 300 meters to the northeast, and marine resources approximately 1 kilometre east of the Cedar Grove Estate area (Saunders 2004: 12). No further archaeological assessment was recommended.

Kiama to Jerrara 33kV Feeder (Navin Officer 2007)

Navin Oficer completed an Aboriginal assessment in 2007 between Kiama Zone Substation and Jerrara Switching Station, an alignment located approximately 2.5 kilometres east of the project area. The site predictive model for the area suggested the following site types to be likely occurring:

- Low number of sites and typically low artefact densities in these sites are to be found in the Western Illawarra foothills.
- Open camp sites (artefact scatters) are most likely to occur on level, well drained ground, either adjacent to sources of freshwater and wetlands, or along crests of ridgelines.
- Ridgelines that afford effective through-access across the landscape will tend to contain more and larger sites.

- Burial sites are generally found in landforms characterized by a relatively deep profile of soft sediment such as aeolian sand and alluvium. Burials can occur in the deposits of occupation sites such as middens.
- Scarred trees may occur in areas of remnant vegetation which contain trees of sufficient age.
- Isolated finds can occur anywhere in the landscape and may represent the random loss or deliberate discard of artefacts, or the remains of dispersed artefact scatter.

No Aboriginal objects were identified during the site survey. Alan Carriage, a representative from NIAC, identified a corroboree ground, its location passed onto him by his mother. The corroboree ground is located on the western basal slope of the unnamed creek, which once formed part of the now drained Terragong Swamp. This area is located west of Jamberoo Road and approximately 750 metres east of Jerrara Creek. It contains a number of fig trees and is within the private property. The site was not recorded on the AHIMS register. It was located outside of the Feeder proposed works area so no further requirements were placed. Aboriginal representatives recommended monitoring during the construction of the Feeder.

4.4 AHIMS Sites

A search of the NSW OEH AHIMS database was conducted on the 25 September 2015. The search identified one Aboriginal archaeological site within a one kilometre search area, centered on the proposed project area (Table 2 and Appendix 1). No registered Aboriginal sites are located within the current project area (Figure 3). A total of three registered Aboriginal archaeological sites were identified outside of the one kilometre search area, but in close enough proximity to be of relevance to the current project (Table 3). The mapping coordinates recorded for these sites were checked for consistency with their descriptions and location on maps from Aboriginal heritage reports where available. These descriptions and maps were relied on where notable discrepancies occurred.

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

Table 2 AHIMS Sites within the one kilometre of the project area

AHIMS site No	Site name	Site type	Site features
52-5-0309	EGP 3 – 33; Minnamurra River; Eastern Gas Pipeline	Open Camp Site	Artefacts

Table 3 AHIMS Sites within the vicinity of the project area

AHIMS site No	Site name	Site type	Site features
52-5-0059	Jamberoo	Stone Arrangement	Stone Arrangement
52-5-0065	Minnamurra River	Axe Grinding Groove	Grinding Grooves
52-5-0066	Minnamurra River	Rock Engraving	Art (Pigment or Engraved)

A wide variety of Aboriginal site types have been recorded within the wider region surrounding the project area. The Aboriginal sites previously recorded include an artefact scatter (25 %), a stone arrangement (25 %), grinding grooves (25 %) and rock engravings (25%). The presence of these site types is linked to the presence

of scattered rock outcrops within the Fountaindale Landscape. Lack of open camp sites and artefact scatters is most likely due to a very small number of archaeological testings completed in the area, and does not indicate lack of this Aboriginal site type.

4.5 Ethnohistory and contact history

It is generally accepted that Aboriginal peoples have inhabited Australia for the last 50,000 years (Allen and O'Connell 2003). 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 greater Sydney 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 following information relating to Indigenous people on the Illawarra is based on such early detailed records.

Despite conflicting views between historical sources of the exact boundaries of tribal groups in the region, the linguistic evidence does identify distinct language groups at the time of European contact. Based on this information it appears that the project area was situated within the Tharawal (also Dharawal, Darawal, Carawal, Turawal, Thurawal) linguistic group. The named groups (often referred to as 'clans', 'bands' or 'tribes') belonging to the Tharawal / Dharawal language group included the following: Gweagal, Norongerraga, Illawarra, Threawal, Tagary, Wandeandega, Wodi Wodi and Ory-ang-ora (Tindale 1974).

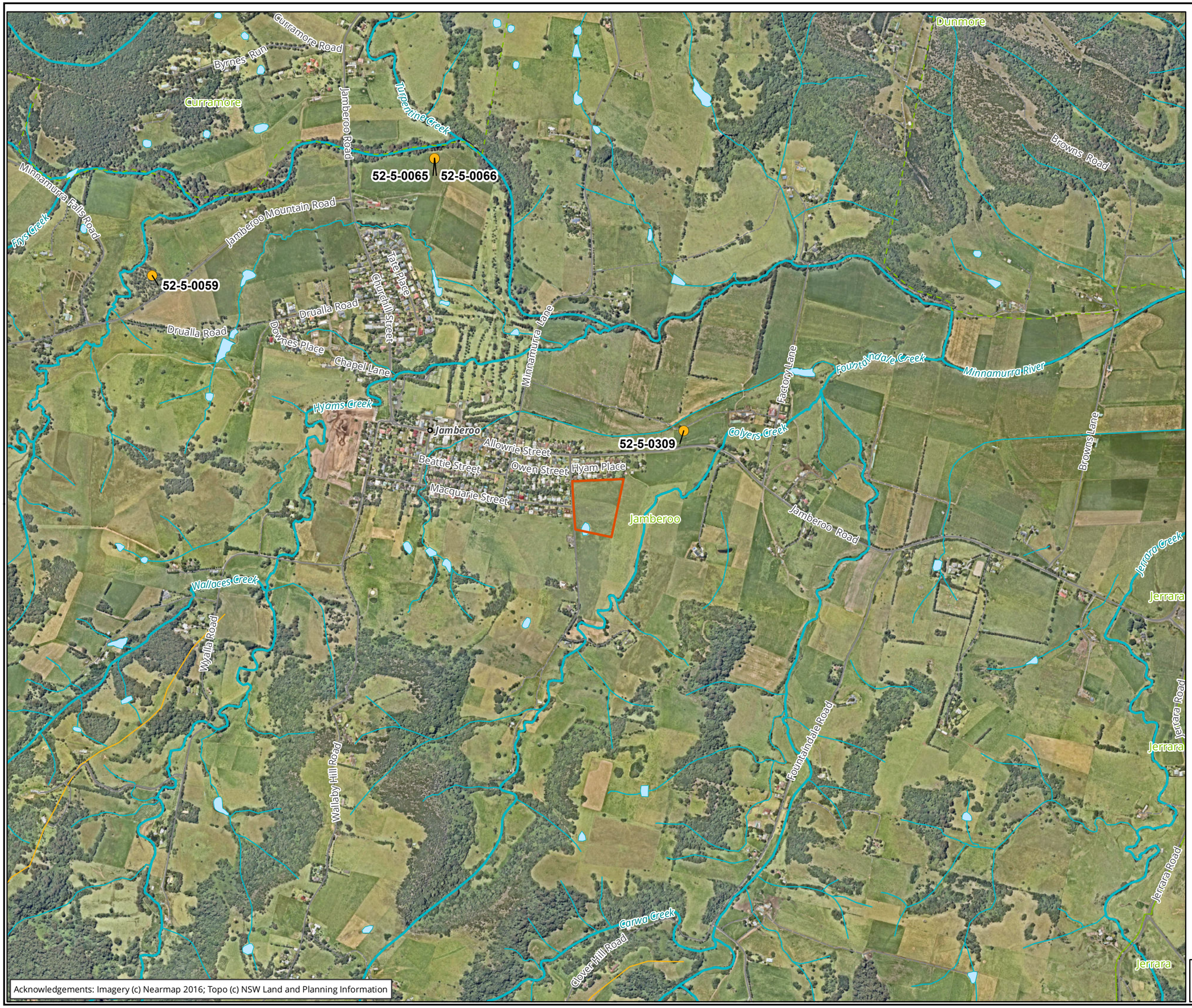
The areas inhabited by each of the groups are considered to be indicative only and would have changed through time and possibly also depending on circumstances (i.e. availability and distribution of resources). Interactions between different types of social groupings would have varied with seasons and resource availability. It has been noted that interactions between the groups inhabiting the many resource zones of the Sydney Basin (coastal and inland) would have varied but were continuous. This is reflected in the relatively homogenous observable cultural features such as art motifs, technology and resource use (McDonald 1992).

Many of the modern place names around the project area have been derived from traditional Aboriginal names. In 1896, George Thornton published in the Illawarra Mercury a list of local Aboriginal place names. Within this article he noted that the word Illawarra came from a traditional word meaning a 'pleasant place'. The town of Kiama name was derived from the traditional name Kiaremia, which meant 'the place that fish can be caught from the rocks'.

The Minnamurra River, which is located north of the project area and the name, derives from the traditional name Min Murra, which meant 'plenty of fish'. In 1820, Surveyor General John Oxley reported to Governor Lachlan Macquarie the Aboriginal name for the Minnamurra River;

'The District of Illawarra is naturally bounded in the south by a high range of rocky hills, in which the waters, falling southerly into Shoals Haven River, have their source; these rocky hills terminate on the coast, a small salt water creek, called by the natives Meme Mora, dividing them at the point from the granted lands in the Illawarra district...' (Organ 1990: 107).

The project area is located within the town of Jamberoo. Early European pioneers settled around the head of the Minnamurra River as the valley of Jamberoo was known for its dense vegetation.



Acknowledgements: Imagery (c) Nearmap 2016; Topo (c) NSW Land and Planning Information

Figure 3: AHIMS Sites within the vicinity of the project area

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Location:P:\21100s\21189\Mapping\21189_F3_AHIMS.mxd

5. Landscape context

It is important to consider the local environment of the project area in 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.

5.1 Topography, Geology and Hydrology

The project area is located within Wollongong (Coastal) Plain physiographic region (Hazelton 1992: 2). It consists of the gentle rises of the Illawarra Coal Measures, rolling to steep low hills of volcanic materials and undulating Budgong Sandstone and Quaternary alluvium. The Wollongong Plain is located between the sea and the Escarpment. This physiographic unit has formed from the gradual recession, westward, of the Plateau (Bowman 1971). The Coastal Plain is characterised as a mosaic of foothills, ridges, spurs, hillocks and floodplains with slopes varying from very gently inclined to steep with the occasional low cliff. The Coastal Plain is dissected by easterly flowing streams at intervals that become more frequent towards the north (Fuller 1982:18). The Permian (299-251 million years ago) Illawarra Coal Measures are underlain by Permian Shoalhaven Group which includes within the project area Budgong Sandstone geological formation. Budgong Sandstone consists of red, brown and grey volcanic sandstones, which outcrops on the lower slopes of the Jamberoo Valley (Hazelton 1992: 3).

There are a number of hydrological features surrounding the project area, primarily in the form of small creeks and streams. Streams and creeks on the gently sloping coastal plains are unconfined by topography and have extensive floodplains.

Colyers Creek is a third order stream, approximately 130 metres east of the project area, and is a permanent water source. Colyers Creek flows into Fountaindale Creek, which flows into Minnamurra River. The Minnamurra River is one of the major water systems that empties into the South Pacific Ocean and incorporates numerous minor creek systems which originate at the base of the Illawarra Escarpment. These creeks include Jerrara Creek, Hyams Creek and Turpertine Creek, all within two kilometres of the current project area. Within the project area there are a two natural springs and a man-made dam. The dam was most likely created at the location of another natural spring.

Landforms are recognisable, naturally formed features on the Earth's surface. Landform units described in this report reflect landform patterns and landform elements used by Speight (2009). In this technique for describing landforms, the whole land surface is viewed as a mosaic of tiles of odd shapes and sizes. To impose order, the mosaic is treated as if the tiles are of two distinct sizes: the larger ones being themselves mosaics of the smaller ones. The larger tiles, which are more than 600 metres across, are called landform pattern, and include for example flood plain, dune field and hills. The smaller tiles which form mosaics within landform patterns are about 40 metres across and are called landform elements.

Applying Speights landform analysis methods, the project area is identified as lying within low hills landform pattern. Low hills is a landform pattern of low relief (30-90 metres) and gentle to very steep slopes, typically with fixed, erosional stream channels which form a non-directional, convergent, integrated tributary pattern (Speight 2009: 66). Hillcrest, hillslope and valley flat are landform elements associated with low hills landform pattern that are present within the project area (Figure 4). These are defined as:

- **Hillcrest** is very gentle inclined to steep crest, smoothly convex, eroded mainly by creep and sheet wash.
- **Hillslope** is a gently inclined to precipitous slope, commonly simple and maximal, eroded by sheet wash, creep or water-aided mass movement.
- **Valley flat** is small, gently inclined to level flat, aggraded or sometimes eroded by channelled or overbank stream flow, typically enclosed by hillslopes; a miniature alluvial flat landform.

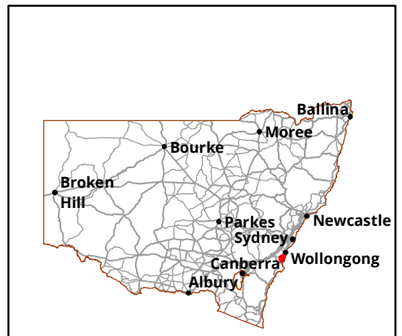
5.2 Soil Landscapes

There is one soil landscape within the project area as defined by Hazelton (1992: 75-77). *Fountaindale Soil Landscape* is associated with rolling low hills with long sideslopes on Budgong Sandstone in the Jamberoo Valley. They are described as moderately deep Brown Podzolic Soils and Yellow Podzolic Soils occurring on relief 40-80 metres and slopes <20 percent. The dominant soil materials of the *Fountaindale* soil landscape are outlined in Table 4. The limitation of this type of soil landscape is the mass movement, water erosion and localised rock outcrop. Erodibility for the topsoil is high (Hazelton 1992: 77).

Table 4 Fountaindale Spoil Landscape Characteristics (Hazelton 1992: 76).

Soil Material	Description
Fountaindale 1 (fo1)	Hard setting weakly pedal brownish black sandy loam (topsoil) to up to 10cm depth. Brownish Black (5YR 3/1) colour
Fountaindale 2 (fo2)	Weakly pedal greyish brown sandy clay loam (subsoil). Greyish brown (7.5YR 3/2) colour, <15cm deep
Fountaindale 3 (fo3)	Brown light medium clay. Colour varies from Brown (7.5 YR 4/3) to dull orange (7.5YR 7/3), <40cm deep
Fountaindale 4 (fo4)	Mottled brown medium clay (subsoil). Brown (7.5YR 4/6) with orange and red mottles (50 %), <40cm deep

Total soil depth of *Fountaindale* soil landscape is <100 centimetres. Occasionally fo2 is absent from the soil stratigraphy. Boundaries vary from clear to gradual. Podzolic soils accumulate subsurface concentrations of aluminium and organics and are often acidic, ashy grey sandy soils. They form more rapidly than other soil types and may take only a few hundred years to form on quartz-rich sands (Rapp and Hill 2006: 42). Since *Fountaindale* soil landscape are depositional soils, they would have high potential to preserve any possible cultural material. However, considering their rapid formation, cultural material would not be of a significant age.



Legend

Project Area

Landform

- Artificial dam
- Hill crest
- Hillslope
- Valley flat

Acknowledgements: Imagery (c) Nearmap 2015; Topo (c) NSW Land and Planning Information

Figure 4: Landforms within the project area

0 10 20 30 40 50

Metres

Scale: 1:1,200 @ A3

Coordinate System: GDA 1994 MGA Zone 55

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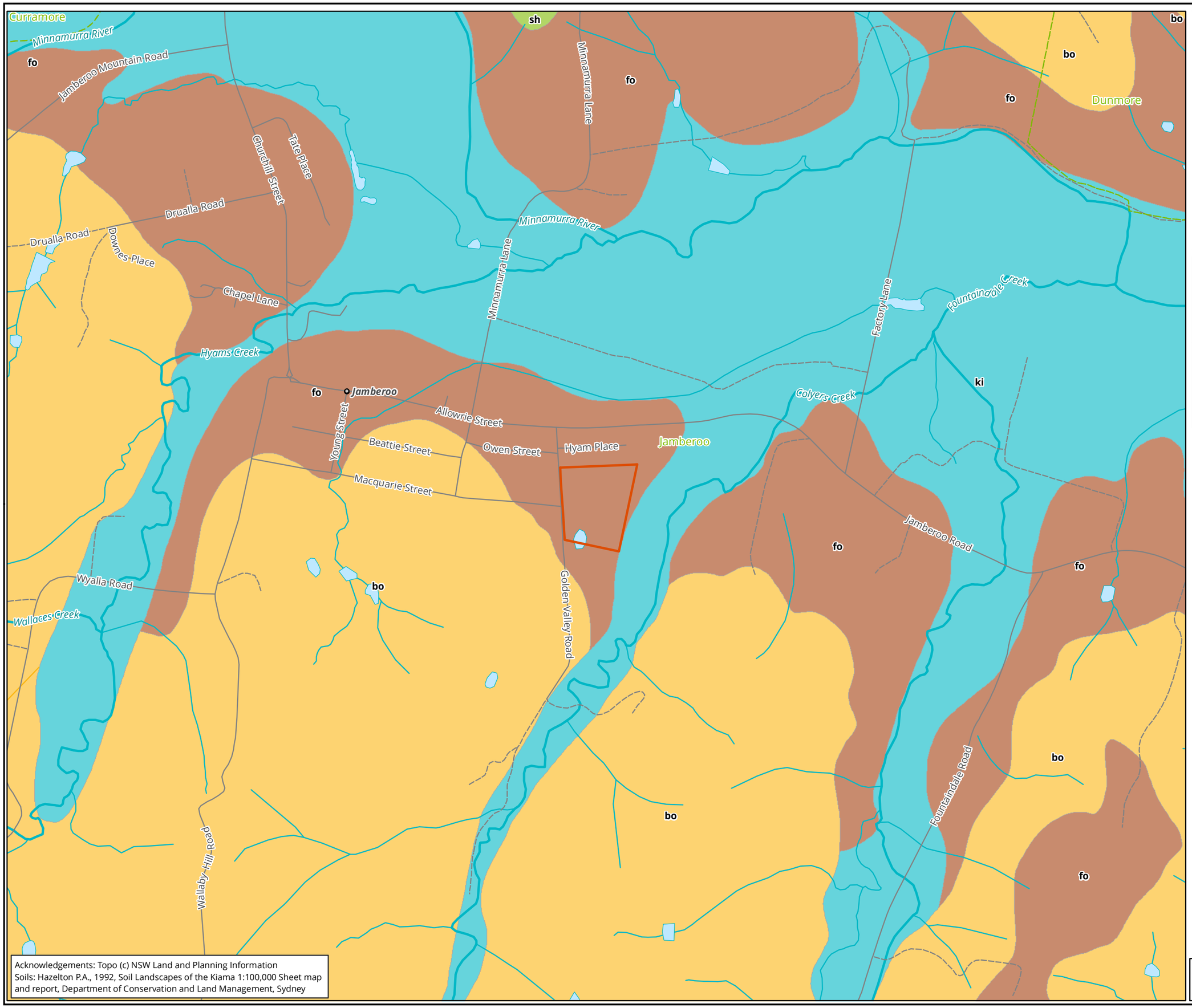

Legend

Project Area

Soil landscape units (1:100,000)

- BOMBO
- FOUNTAINDALE
- KILLALEA
- SHELLHARBOUR

Figure 5: Soil Landscapes within the vicinity of the project area

0 110 220 330 440 550

Metres
Scale: 1:10,000 @ A3
Coordinate System: GDA 1994 MGA Zone 55

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Acknowledgements: Topo (c) NSW Land and Planning Information
Soils: Hazelton P.A., 1992, Soil Landscapes of the Kiama 1:100,000 Sheet map and report, Department of Conservation and Land Management, Sydney

Matter: 21189,
Date: 16 March 2016,
Checked by: SAS, Drawn by: LH, Last edited by: lharley
Location:P:\21100s\21189\Mapping\21189_F5_Soils.mxd

5.3 Flora and Fauna

The project area is located within areas that have been cleared or retain pockets of disturbed native vegetation, with intact remnant vegetation situated along the creek line corridors. This surviving vegetation is defined as Coastal Grassy Red Gum Forest (NPWS 1999). Within the wider region, Moist Box-Red Gum Foothills Forest and Acacia Scrubs are vegetation classes present that would have been exploited by local people. Each community class is described below with the dominant species occurring.

Coastal Grassy Red Gum Forest is characterised by the dominance of Forest red gum *Eucalyptus tereticornis* and Narrow-leaf stringybark *Eucalyptus eugenoides*. Coastal grey box *Eucalyptus bosistoana* is unique to this community. A grassy understorey and the presence of species such as Tick-trefoil *Desmodium varians*, Weeping grass *Microlaena stipoides var. stipoides*, Scurvy weed *Commelina cyanea*, Tussock *Poa labillardieri var. labillardieri*, Hedgehog grass *Echinopogon ovatus*, Paddock lovegrass *Eragrostis leptostachya*, Windmill grass *Chloris divaricata var. divaricata*, Bluegrass *Bothriochloa decipiens* and Chocolate Lily *Dichopogon strictus*.

Acacia Scrubs include a number of Acacia species that recolonised cleared or heavily disturbed native vegetation. On the foot slopes of the Escarpment where tall most forests once existed, *Acacia mearnsii* are distinctive. Acacia scrubs also regularly occur in combination with native species such as Turpentine *Syncarpia glomulifera*.

Moist Box-Red Gum Foothills Forest is dominated by Forest red gum *Eucalyptus tereticornis*, White box *Eucalyptus quadrangulata* and occasionally Blue gum *Eucalyptus salignaXbotryoides*. Shrub understoreys include Grey Myrtle *Backhousis myrtifolia* as a key species with Red olive plum *Cassine australis*, Native cascarilla *Croton verreauxii*) and low densities of Whalebone tree *Streblus brunonianus*.

These species 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 the seasonal availability of resources. Many of the plants found within the project area were important to Aboriginal people and were used for numerous purposes. Based on the known species that occur within each of the community classes, Table 5 below summarises how some of those plants were utilised by Aboriginal people in the past. The list is not exhaustive, and is provided as an example of the cultural values associated with plants in the past and the present (Attenbrow 2010; Stewart and Percival 1997).

Table 5 Traditional Aboriginal plant resources and use within the Project Area and its close proximity.

Species present	Known Aboriginal resource use
Acacia Trees	Seeds were collected and grinded for the flour for seed cake. Sweet gum was edible. The wood was used to make weapons as well as into walking and snake sticks.
Stringybark Species ***Eucalyptus spp*.**	Bark was used to make cloaks and huts/shelters; may have been used for making canoes. Wood is used to make tools, dishes and bowls. Gums were applied directly to sores or abrasions or boiled in water and used as a wash. Water and manna from certain species can be eaten. Leaves were steamed or crushed to be inhaled for treating colds, headaches and fevers; infused into tea for coughs or diarrhoea; poulticed to be placed on sores, abrasions and boils.
Turpentine ***Syncarpia glomulifera***	Flowers and seeds were eaten. Weapons and tools were made from the very hard wood. Sap was used to colour and stain weapons and tools. Resin was used to patch cracked or broken items.
Whalebone Tree ***Streblus brunonianus***	Small sweet fruits were eaten raw.

The various fauna species present within the project area would have provided a range of resources for Aboriginal people. Terrestrial and avian resources were not only used for food, but also provided a significant contribution to the social and ceremonial aspects of Aboriginal life through their use as ritual implements or even simply through fashioning as personal adornments (Attenbrow 2010:107-10). Mammals such as kangaroos and wallabies and arboreal mammals such as possums were used as a food source and also for tool making. Bones and teeth were used as points or barbs for hunting spears and fishing spears. Tail sinews are known to have been used as a fastening cord, whilst 'bone points' frequently occur in rock shelters (Attenbrow 2010: 99). Animal skin, fur and sinews were also used for personal adornment and in making cloaks.

Aquatic species such as freshwater crayfish would have been easily accessible in larger waterways. Aquatic vertebrates, fish and eels, would also have been present within larger creeks and waterways. Fishing spears were described as being barbed with fish teeth as wells a fish bones (Attenbrow 2010: 117).

5.4 Land use history

In 1816, the first surveyors and timber getters arrived in the area around Kiama to clear timber. By 1819, the cutting, possessing or removing of cedar was deemed a felony.

Surveyor general John Oxley surveyed the coast by sea and called the place 'Kiarami'. In 1921 David Smith arrived and built the first European settlement at Kiama. The area around Jamberoo Mountain is noted as having some of the densest woods in the country. In 1925 Surveyor McBrien surveyed and mapped the Minnamurra River.

Mapping of the district by Robert Dixon showed Michael Hyams land grant where Jamberoo now is, which was noted as a thriving hustling village, with stores and a blacksmith. Micheal Hyam arrived and secured his grant of 1280 acres at Jamberoo and in 1837 opened the Harp Inn. The 'Jamberoo Village' was laid out by Surveyor Goodhall on Hyam's Creeks, a tributary of the Minnamurra River. The Australian advertised the "Village of Jamberoo" for sale and it was bought by R.H. Owen. A flour and timber mill was erected in Jamberoo on the estate of John Ritchie by Captain J. G. Collins. He named it the Woodstock Mill. Cedar by now was almost extinct in the area and land owners decide to remove remanding timber to make farmlands.

In 1841 the Kiama to Jamberoo Road was built by convicts. The Woodstock Mill was also under the new management of Henry Heathorne by 1844, and a brewery was then added to the mill. The mill was a cooperage where barrels were made and included a piggery, bacon factory and a two-story barn. The road from Shellharbour to Kiama, prior to 1860, was via Jamberooo and in 1861, a punt was established. In 1855 the Aboriginal man Micky Johnsons encampment is noted near the Minnamurra Bridge.

The current project area has been used in the recent past for grazing purposes with no significant land modifications except the building of a dam in the south-western section. This small portion of the project area has gone previous significant disturbance that most likely would cause destruction and /or removal of any possible Aboriginal cultural material. Other parts of the project area had only limited surface disturbance.

Clearance of land has a direct impact on the preservation of scarred trees that are known to occur only in areas with remnant mature native vegetation. Open camp sites can also be affected by land clearing activities through disturbance to the upper soil horizons. Cultural material is most likely to be present within topsoils that are within the project area relatively shallow and extend to a maximum of about 300 millimetres. Spatial and stratigraphic movements of cultural material can be expected to occur, but this process does not remove or destroy archaeological material. Removal of vegetation accelerates natural erosion, so some post-depositional movements of artefacts can occur. Pastoral landscapes are considered to be of high terrain integrity as grazing does not require extensive impacts to the soil profile (AMBS 2006: 50).

6. Regional character

The Wollongong Plain of the Illawarra region generally provides a number of resources used by Aboriginal inhabitants. Lithic resources would have been accessible in the outcrops of Budgong Sandstone geological formation consisting of volcanic sandstones (Hazelton 1992: 3). Stone was used by Aboriginal people for a variety of purposes as tools or in the social information exchange as symbols or indexes, for example, stone markers.

A number of edible plant species would have been available. Considering the existing environment and soil conditions, it is most likely that a number of vegetation communities were present within the project area and its immediate surroundings prior to European use. Many species within these vegetation classes would have been extensively utilised by Aboriginal people. The wider area includes several distinct ecotones including open forest, woodland, alluvial swamp and floodplain communities. Aboriginal inhabitants of the region would have had access to a wide range of avian, terrestrial and marine fauna and repeated firing of the vegetation would have opened up the foliage allowing ease of access through and between different resource zones.

As suggested by Sefton (1984) although resources in the Wollongong plains would have been attractive, they were probably not sufficient to allow for the locality to be economically self-contained. The area was probably used in conjunction with the resources from the coastal zone and Lake Illawarra.

The project area is located within a hillcrest formation that is part of one of the ridgelines that extends towards the valley of Clyers Creek and its junction with Fountaindale Creek and the Minnamurra River. Clyers Creek is approximately 150 meters east of the project area and is one of the major tributary creeks to the Minnamurra River. It would have provided reliable permanent source of water and would have sustained a variety of flora and fauna species extensively used by Aboriginal people in the past. The *Fountaindale* soil landscape that is present within the project area is described as shallow clayey loams (Hazelton 1992). Since these soils are depositional, they would preserve any cultural material very well..

The project area has not been a subject to previous significant disturbances. The project area is currently vacant and not being utilised for any purpose. The visible disturbances include large scale vegetation clearing and the construction of small dams. Clearance of the vegetation has a direct impact on the preservation of culturally modified scarred trees that are known to occur only in areas with remnant mature native vegetation. Open camp sites can also be affected by land clearing activities through disturbance to the upper soil horizons.

7. Predictive Statements

Predictive statements have been formulated to predict the type and character of Aboriginal cultural heritage sites likely to exist within the project area and where they are more likely to be located.

The statements are based on regional and local distribution of sites as recorded in the AHIMS register and regional and local studies focused on site distribution. Based on this information, predictive statements have been developed, indicating the site types most likely to be encountered during the survey within the project area (Table 6).

The concept of site prediction is certainly not new; the more it is possible to explain what processes took place to create a site, the more this knowledge can be used to say where other sites are likely to occur. Witter argues that 'sites are near water' approach is not prediction in a scientific sense but should be referred to as forecasting (Witter 1992: 279). A predictive model generalises the distribution of Aboriginal heritage sites by looking at the environmental elements, vegetation, physiographic features and soils. These factors influence the human interaction with the environment. It is also important to assess biasing factors (Witter 1992:258).

Table 6 Aboriginal Site Prediction Statements

Site type	Site description	Potential
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.	**High**: This site type has been previously recorded in the region, in close proximity to permanent and semi-permanent water sources. Due to the close proximity to permanent water resources, the potential for artefacts to be present within the project area is assessed as high.
Potential Archaeological Deposits (PADs)	Potential sub surface deposits of cultural material	**Moderate**: PADs have been previously recorded in the wider region across a wide range of landforms. PADs are likely to be present within areas adjacent to water courses or on high points in undisturbed landforms.
Grinding grooves	Grooves created in stone platforms through ground stone tool manufacture.	**Low:** This site type has been recorded previously in the local area. Suitable horizontal sandstone rock outcrops could occur along the drainage lines within the project area.
Rock Engraving	(pigment and engraved)	**Low:** This site type has been recorded previously in the local area. Suitable horizontal sandstone rock outcrops could occur along the drainage lines within the project area.

Site type	Site description	Potential
Stone quarries	Raw stone material procurement sites	**Low**: There is no record of any quarries being within or surrounding the project area. The Geology of the landscape mentioned the presence of rock outcrops, which could have been utilized.
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 vicinity of the project area. The Minnamurra River has been known traditionally for its abundance of marine resources. Because of this fact, there is a medium to low potential for this site type.
Stone Arrangement	Stone arrangements are stones that have been deliberately placed to form shapes or patterns, and can include large circular or linear arrangements.	**Low:** This site type has been recorded previously in the local area. In general this site type is more scares then others also found in the local area.
Modified Trees	Trees with cultural modifications	**Low**: Scarred trees common site type within the region. Due to extensive vegetation clearance no mature native trees have survived within the project area.
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 project 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 project area and historical sources do not identify one. Post contact Aboriginal occupation sites have been recorded near the Minnamurra River Bridge, closer to Kiama.
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 project area.

Site type	Site description	Potential
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 project area are not commonly associated with burials.
Rock shelters with art and / or deposit	Rock shelter sites include rock overhangs, shelters or caves, and generally occur on, or next to, moderate to steeply sloping ground characterised by cliff lines and escarpments. These naturally formed features may contain rock art, stone artefacts or midden deposits and may also be associated with grinding grooves	**Low**: The sites will only occur where suitable sandstone exposures or overhangs possessing sufficient sheltered space.

8. Fieldwork methodology

A field survey of the project area was undertaken on 30 September 2015. Test excavations were completed between 22 and 24 February 2016. The field survey and test excavation sampling strategy, methodology and a discussion of results are provided below.

8.1 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 project area.

8.1.1 Archaeological survey aims

The principle aims of the survey were to:

- To undertake a systematic survey of the project 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)

8.1.2 Sampling strategy

The survey effort targeted those portions of the project area that were proposed to be impacted on. This strategy allowed for the previous disturbance to be assessed and to assess if the proposed works have the potential to impacts on any Aboriginal objects.

8.1.3 Survey methods

The archaeological survey was conducted on foot. Recording during the survey followed the archaeological survey requirements of the code and industry best practice methodology. Information that recorded during the survey included:

- Aboriginal objects or sites present in the project area during the survey.
- Survey coverage.
- Any resources that may have potentially have been exploited by Aboriginal people.
- Landform elements, distinguishable areas of land approximately 40 metres across or with a 20 metre radius (Speight 2009).
- Photographs of the site indicating landform.
- Ground surface visibility (GSV) and areas of exposure.
- Observable past or present disturbances to the landscape from human or animal activities.
- Aboriginal artefacts, culturally modified trees or any other Aboriginal sites.

Where possible, identification of natural soil deposits within the project area was undertaken. Photographs and recording techniques were incorporated into the survey including representative photographs of survey units, landform, vegetation coverage, GSV and the recording of soil information for each survey unit were

possible. Any potential Aboriginal objects observed during the survey were documented and photographed. The 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.

8.1.4 Survey constraints

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 project area were the poor ground surface visibility and the disturbed nature of the area.

Visibility

In most archaeological reports and guidelines visibility refers to GSV, 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). The project area contains two areas of different levels of GSV. Within the disturbed areas associated with the fence, water trough and dam there was a good level of visibility, approximately 50 percent. The majority of the project area, however, had a lower level of visibility, approximately two to five percent, due to the low-lying vegetation.

Overall the GSV within the project area was considered poor.

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: 79, NSW NPWS 1997). Overall, the project area displayed areas of exposure around the fence line and associated gate, the water trough and the dam, where livestock has congregated. There were also small areas of exposure throughout the remainder of the project area and around the two natural springs located within the project area.

Disturbance

Disturbance in the project 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. The project area is currently being used to hold live stock, and as mentioned above, there is substantial disturbance to the soils. Disturbances associated with recent human activities are also prevalent in the project area. The area has been subject to activities related to farming practices including vegetation clearance, large scale earth works associated with the creation of the dam, the construction of the current fencing and stock grazing.

8.1.5 Survey coverage

The archaeological survey was undertaken on 30 September 2015 with two Biosis archaeologists. Since the majority of the project area, particularly its western portion was covered with a very high and thick grass cover, ground surface visibility was extremely low and very limited areas of exposure were observed. It was not possible to survey some areas due to very high and thick grass cover. Cultural heritage was highly unlikely to be identified in these areas by pedestrian survey due to visibility limitations.

8.2 Test excavation methodology

The Biosis cultural heritage due diligence advice for Aboriginal archaeological heritage for 123 Golden Valley Way, Jamberoo (2015), recommended an assessment in accordance with the Code was commenced. As part of this assessment, a test excavation methodology was proposed to test sensitive landforms within the project area.

8.2.1 Aims

The principle objectives of the subsurface test excavations are to identify and understand the nature, extent and significance of any archaeological sites located within areas of archaeological potential.

The aims of the testing program are to:

- Determine whether sub-surface archaeological deposits exist which may be impacted upon by the development.
- If so, to determine the extent and nature of such deposits.
- Identify if the 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, shell midden deposits, 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.

8.2.2 Sampling strategy

The proposed sub-surface test excavation methodology is informed by the code and industry best practice. Test excavation was undertaken within areas identified as having archaeological potential. Based on the results of previous studies, assessments and locations of recorded Aboriginal sites, areas of high archaeological potential were identified on a hillcrest and lower terrace landforms. Other areas were considered to have low archaeological potential. Test excavation units were systematically gridded at 20 metre intervals across four transect.

8.2.3 Test excavation methodology

Test excavations across the project area to following this methodology:

- Test excavations were completed in areas as identified having high potential to contain Aboriginal cultural material (Figure 6).
- Total of four transects will be placed and test pits will be systematically gridded at 20 metre intervals within each transect to provide test excavation units locations.
- Test excavation units will consist of 50 by 50 centimetre test pits, in order to determine the nature of sub-surface deposit and presence of any possible archaeological deposits.
- Test excavations units must be excavated using hand tools only including spades, handle shovels, and trowels.

- The first test excavation unit will be 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.
- All material excavated from the test excavation units must be sieved using nested 5 millimetre aperture wire-mesh sieves.
- Test excavation units must be excavated to at least the base of the identified Aboriginal object-bearing units, and must continue to confirm the soils below are culturally sterile.
- All cultural material will be collected, bagged and clearly labelled. They will be temporarily stored in the Biosis office at 8 Tate Street, Wollongong for analysis.
- For each test pit that is excavated, the following documentation will 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 must be backfilled as soon as practicable due to safety issues.

Following test excavation, an Aboriginal Site Recording form must be completed and submitted to the AHIMS Registrar as soon as practicable, for each AHIMS site that has been identified.

Standard protocol for the discovery of any human remains is to be followed in the event that human remains are discovered.

Legend

- Project Area
- Proposed location of test pit
- Transect

Acknowledgements: Imagery (c) Nearmap 2015; Topo (c) NSW Land and Planning Information

Figure 6: Proposed test pit locations

0 10 20 30 40 50

Metres

Scale: 1:1,200 @ A3

Coordinate System: GDA 1994 MGA Zone 55

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Matter: 21189,
Date: 16 March 2016,
Checked by: SAS, Drawn by: ANP, Last edited by: lharley
Location:P:\21100s\21189\Mapping\21189_F6_ProposedTestpits.mxd

9. Fieldwork results

This section summarises the results of both archaeological survey and test excavation in accordance with Requirement 10 of the Code (DECCW 2010).

9.1 Archaeological survey results

Archaeological survey was conducted on 30 September 2015 with a field team of two members. The weather was overcast and dry. Participants in the field survey included two Biosis archaeologists, Shannon Smith and Amanda Atkinson.

Team members walked approximately one to four metres apart and covered the project area. The survey targeted areas with good ground surface visibility and areas of exposure. Areas of previous disturbance were noted.

A total of four transects were walked across the project area and other areas, like the dam, were subject to spot visits. The results of the field survey have been summarised in Table 7 below and transect locations are provided in Figure 7.

The project area is located on a convex sloped crest, leading to a simple slope and alluvial flats associated with an open depression (Colyers Creek). Soils present are moderately deep and would preserve any archaeological material. Based upon the desktop assessment and archaeological survey Biosis has been able to identify two areas of high archaeological potential (Jamberoo PAD 1 and 2), which are associated with the upper crest and a small terrace on the lower hills slope, in close proximity to the two natural springs.

The field survey did reveal that parts of the project area had been subject to disturbances. Although these processes would displace surface cultural material, it would not affect deeper buried archaeological deposits.

The assessment for areas that have low or high archaeological potential within the project area is based on a number of factors, including environmental conditions, geomorphological processes, past land use activities, results of previous archaeological studies, surveys and test excavations, results of the current survey and site predictive modelling for the region.

Table 7 Aboriginal sites recorded during the survey

Site name	Site description	Site area (m2)
Jamberoo PAD 1	Potential archaeological deposit	8469
Jamberoo PAD 2	Potential archaeological deposit	2523

The detailed survey effort results is summarised in Table 8 below and illustrated on Figure 7.

Table 8 Survey effort.

Landform - Survey Unit: Hillcrest	
Landform Area	1,210 m^2
Total area assessed	1,284 m^2
Notable disturbances	Land clearance
Disturbance levels	Low
Visibility	2%
Notable exposures	Within tracks
Aboriginal sites and PADs	Jamberoo PAD 1
Archaeological potential	Low

Landform - Survey Unit: Hillslope	
Landform Area	2,290 m^2
Total area assessed	3,828 m^2
Notable disturbances	Land clearance
Disturbance levels	Low
Visibility	2%
Notable exposures	Within tracks, around dam and fences
Aboriginal sites and PADs	None
Archaeological potential	Low

Landform - Survey Unit: Valley Flat	
Landform Area	690 m^2
Total area assessed	548 m^2
Notable disturbances	Land clearance
Disturbance levels	Low
Visibility	2%
Notable exposures	Within tracks
Aboriginal sites and PADs	Jamberoo PAD 2
Archaeological potential	High

Table 9 Survey Coverage

Landform	Landform area (m²)	Visibility (%)	Exposure (%)	Area effectively surveyed (m²)	Area effectively surveyed (%)	Aboriginal cultural heritage sites	Number of artefacts or features
Hillcrest	1,210	2%	2%	1,284	0.48	1	0
Hillslope	2,290	2%	2%	548	0.91	0	0
Valley flat	690	2%	2%	3,828	0.27	1	0

Legend

- Project Area
- Survey tracks

Landform

- Artificial dam
- Hill crest
- Hillslope
- Valley flat

Figure 7: Survey effort

0 10 20 30 40 50

Metres

Scale: 1:1,200 @ A3

Coordinate System: GDA 1994 MGA Zone 56

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Date: 18 March 2016,
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Location:P:\21100s\21189\Mapping
21189_F7_SurveyEffort.mxd

Acknowledgements: Imagery (c) Nearmap 2015; Topo (c) NSW Land and Planning Information

Legend

- Project Area
- PAD

Figure 8: Survey results

0 10 20 30 40 50

Metres

Scale: 1:1,200 @ A3

Coordinate System: GDA 1994 MGA Zone 55

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Matter: 21189,
Date: 16 March 2016,
Checked by: SAS, Drawn by: LH, Last edited by: lharley
Location:P:\21100s\21189\Mapping\21189_F8_SurveyResults.mxd

Acknowledgements: Imagery (c) Nearmap 2015; Topo (c) NSW Land and Planning Information

9.2 Test excavation results

This section presents results of test excavations carried out between 22 and 24 February 2016 across three days. The weather stayed sunny and warm throughout the test excavation program.

Participants in the test excavation program included:

- Ana Jakovljevic and Shannon Smith (Biosis archaeologists)
- Paul Charles (Kulila Site Consultants)
- Kirstie Button (National Koori Site Management)
- James Davis (Wodi Wodi Traditional Owners)
- Cody Tungai (Three Ducks Dreaming)
- Troy Tungai (Illawarra Local Aboriginal Land Council)

Test pits were placed using a hand held GPS as shown in Figure 6. A total of six transects were mapped with a total of 29 test pits excavated. Following completion of the first four transects (as planned in the original methodology), additional test pits were excavated in order to establish the site extent. Grass was cut prior to test excavations which facilitated the progress of test excavation program.

Plate 1 Conditions during test excavation program, facing east.

Each test pit was excavated by hand to the subsoil where heavy clays were encountered. The first test pit was excavated in 5 centimetre spits and the subsequent test pits in 10 centimetre spits as similar soil stratigraphy was encountered. Soils recovered were dry sieved through 5 millimetre mesh. All artefacts were collected from the sieve and were preliminary analysed/counted on site. This preliminary counting guided the ongoing excavation and placing of test pits.

All excavated test pits were recorded using recording sheets that contained information about soil texture, depth, colour, compactness, and types and quantity of inclusions. Munsell colour and pH were taken for each context. The photos were taken at the base of each excavated test pit as well as section drawings of representative and distinctive soil stratigraphy. Summaries for each test pit are given in Appendix 2. Although some test pits did recorded charcoal, no samples were collected for dating, as they were deemed not suitable due to their size.

Test excavations were completed within the two PADs identified during the site survey. Jamberoo PAD 1 is located on the hillcrest that is part of a ridgeline, and Jamberoo PAD 2 is located on a terrace within the valley flats landform. Test Excavation Transects 1 to 3 were located within Jamberoo PAD 1 and Transect 4 within Jamberoo PAD 2 (Figure 6). Following completion of Transects 1 to 4, Transect 5 was placed 10 meters south of Transect 3. Two test pits, TP1.5 and TP2.5, were placed 10 meters south of TP3.3 on Transect 3 because it yielded the highest number of artefacts. An additional test pit (TP1.6) was excavated 10 meters south of Transect 5 in order to establish site extent of the Jamberoo PAD 1. Two additional test pits, TP7.2 and TP7.3 were also added on a mid-slope to the west of Transects 2 and 3 to establish if the site continued onto the hillslope. Both of these added test pits, along with TP7.1 and TP6.3 at a similar locality, did not record any artefacts, so it was concluded that Jamberoo PAD 1 did not extent onto the side slope, but was concentrated on the hillcrest.

Results of test excavations within two PADs are given in Table 10 below, and detailed discussion of results provided in the following sections.

All proposed test pits are shown in Figure 9.

Artefacts were analysed and are given in Appendix 3.

Table 10 Test excavation results

Landform	Landform Area (m^2)	PAD Area (m^2)	Area tested (m^2)	% of landform effectively tested	% of the PAD effectively tested	No of sites	No of artefacts
Hillcrest	1,210	1,210	5.25	0.26	0.28	1	58
Hillslope	2,290	350	0.75	0.21	0.03	0	0
Valley Flat	690	570	1.25	0.18	0.21	1	2

9.2.1 Jamberoo PAD 1

Jamberoo PAD 1 is located on a hillcrest landform. It is part of the ridgeline extending from the south-west across the project area and running to the north-east to the valley of Colyers Creek. A total of 24 test pits 500 by 500 millimeters were excavated within this PAD with 59 artefacts recovered (Figure 10). As less artefacts were located in the hillslope landform, it was concluded that it did not not contain further archaeological potential like the remainder of the hilltop.

The deposits of the test pits were generally characterized by three or four well defined context layers. The first context layer varied slightly in colour and thickness but generally consisted of a medium to fine grained dark brown / dark reddish brown loam with organic inclusions, 3 to 12 centimetres in thickness (humic topsoil). The context had a gradual transition, was friable in nature and had a pH range of 5 to 6.5. A total of 27.1 per cent (n=16) of the artefacts were recorded within this context. The second context layer was characterised as a medium grained dark brown loam clay, with varying levels of baked clay inclusions, which ranged in size. Seven of the test pits also recorded small and large charcoal inclusions within this context. This context also had the highest recorded number of artefacts with 54.2 per cent (n=32). The thickness of this

context varied between 3 to 25 centimetres, depending on the position of the test pits. From this context a majority would have a gradual transition onto clay.

Nine test pits were located on Transects 1 and 2. The test pits had a gradual transition into a medium to fine grained dark reddish brown clay loam, some of which either had baked clay inclusions. The dark reddish brown clay loam would occur between 11 – 48 centimetres in depth and had a general thickness of 35 centimetres. The dark reddish brown clay loam tended to be damper and more compact than the preceding humic topsoil and had a gradual transition to a clay context.

The clay context consisted of fine grained dark reddish brown to dark red, damp, compact mottled clay with no inclusions, generally occurring at 30 to 45 centimetres in depth.

TP6.1 within Transect 1 did display unusual stratigraphy with an additional layer following the humic topsoil layer, which was a mottled loam, darker in colour but still had organic material. This was then followed by a thin medium grained lighter loam clay layer with small inclusions. It was not clear if this change to stratigraphy was a result of disturbance (i.e possible imported fill above a natural soil surface), but other evidence for significant disturbance was not observed at any of the excavated test pits other than very shallow topsoil disturbance due to the natural bioturbation processes.

A representative test pit photo and section drawings are shown in Plate 2 and Figure 10. The soil stratigraphy descriptions of all excavated test pits are given in Appendix 2.

Plate 2 Soil stratigraphy at Jamberoo PAD 1, TP2.5, northern section.

Artefacts were primarily manufactured from silcrete and chert, followed by quartzite and chalcedony. Overall artefact densities were relatively low, with the majority of test pits having between 1 to 5 artefacts (Table 11) Artefact type included flakes and flaked pieces with only two cores present. Stratigraphically, the majority of the artefacts (54%) were recorded from the second spit, which was between 10 – 20 centimeters in depth (Table 12). A total of 27% of artefacts were recorded within in Spit 1, and 15% within Spit 3. Two artefacts were recorded from Spit 4 within two test pits on Transect 2.

A detailed lithics analysis is provided in Section 10. No other Aboriginal cultural material was recovered from Jamberoo PAD 1.

Table 11 Number of artefacts per test pit at Jamberoo PAD 1

Density	0	%	1-5	%	6-7	%
No of test pits	4	16.6	16	76.8	4	16.6

Table 12 Number and percentage of artefacts per spit at Jamberoo PAD 1

Spit	Number	Percentage
1	16	27
2	32	54
3	9	15
4	2	4

The site was recorded as an Aboriginal artefact scatter Jamberoo PAD and AS 1 (AHIMS 52-5-0832).

9.2.2 Jamberoo PAD 2

Jamberoo PAD 2 was identified during the archaeological survey, and is located on a terrace at the base of the hillslope, and the valley flat 120 metres west of Colyers Creek.

A single transect, Transect 4, consisting of five test pits 20 meters apart, was excavated within the Jamberoo PAD 2. A total of two artefacts were identified in two test pits, TP3.4 and TP5.4. They consisted of silcrete angular fragments and were recovered from within Spit 4, 30 to 40 centimeters in depth. The deposits of the test pits were generally characterised by three context layers (Figure 10).

The first context layer varied slightly in colour and thickness but generally consisted of a medium to fine grained reddish brown loam clay with organic inclusions, 4 to 10 centimetres in thickness. The context had a sharp transition, was friable in nature and had a pH range of 5 to 6.5. The second context layer was characterised as a medium to fine grained dark reddish brown clay loam, with baked clay and manganese inclusions, which ranged in size. The thickness of this context varied between 15 to 25 centimetres, depending on the position of the test pits. From this context a majority would have a gradual transition onto clay. The clay context consisted of fine grained reddish grey, damp, compact mottled clay with no inclusions, generally occurring at 20 to 30 centimetres in depth.

All excavated test pits revealed slightly different soil stratigraphy from Jamberoo PAD 1. Soils are shallower with a higher clay content. The baked clay inclusions were present but not to the same extent and within the clay loam. Representative test pit section is shown on Plate 3 and the soil stratigraphy of all excavated test pits are given in Appendix 2.

No other Aboriginal cultural material was recovered from Jamberoo PAD 2.

The site was recorded as an Aboriginal artefact scatter Jamberoo PAD and AS 2, and is most likely a background scatter of a larger site Jamberoo PAD and AS 1.

Plate 3 Soil stratigraphy at Jamberoo PAD 2, Transect 4 Test Pit3, northern section.

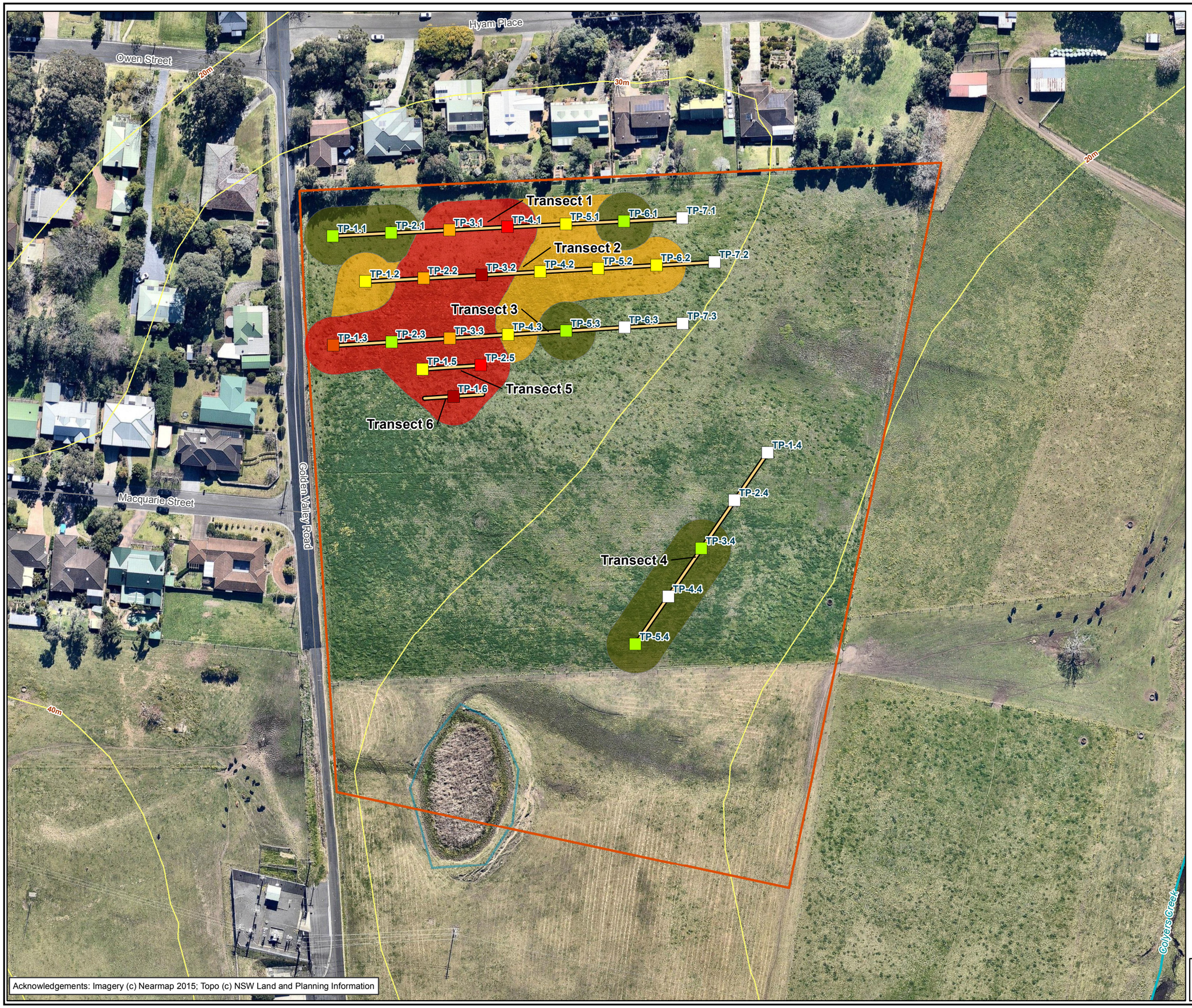
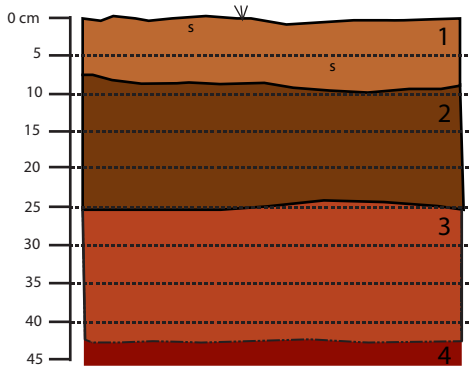


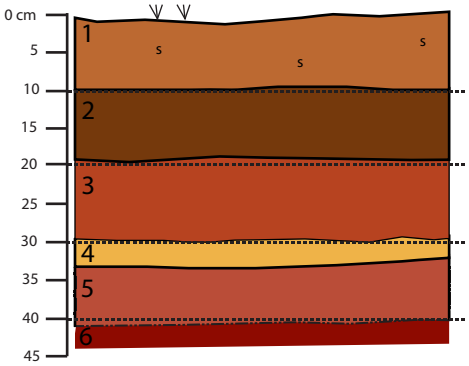
Figure 9: Test Excavation Results

Figure 10 Test Pit Sections

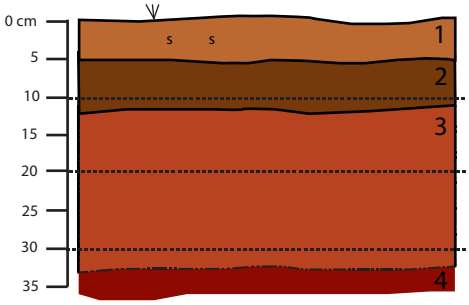
Transect 1 Test Pit 3



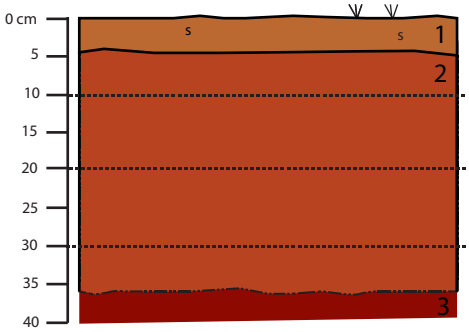
Transect 1 Test Pit 6



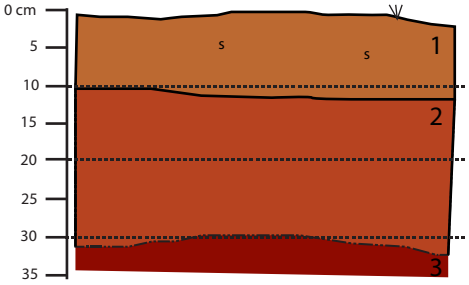
Transect 2 Test Pit 3



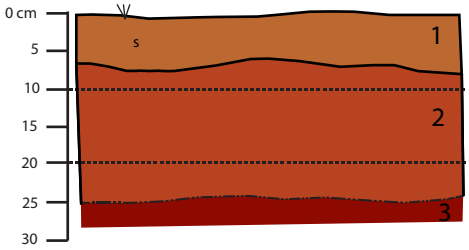
Transect 3 Test Pit 5



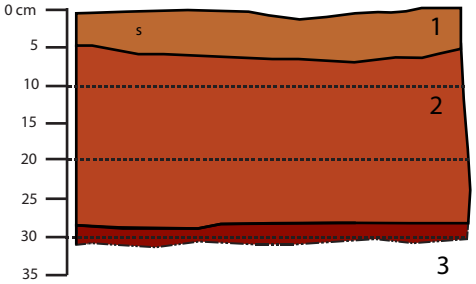
Transect 4 Test Pit 2

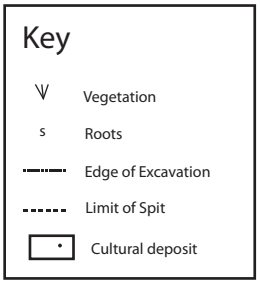


Transect 5 Test Pit 1



Transect 6 Test Pit 1





10. Analysis and discussion

10.1 Archaeological analysis

Two new Aboriginal archaeological sites (Jamberoo PAD 1 and AS1 (AHIMS 52-5-0832) and Jamberoo PAD 2 and AS 2, AHIMS 52-5-0833) were identified during the testing. Their nature and significance was determined and assessed. It is confirmed that hillcrest contains a low density, but extensive site, and the valley flat represents only a background scatter of this site located within 60 metre s of it. Table 13 below shows an overview of recorded Aboriginal sites, their location, content and condition.

Table 13 Aboriginal archaeological sites within the project area

Site Name	AHIMS no	Features	Landform	No of artefacts	Condition
Jamberoo PAD 1	52-5-0832	Artefact Scatter	Hillcrest	58	Fair
Jamberoo PAD 2	52-5-0833	Artefact Scatter	Valley Flat	2	Fair

10.1.1 Lithics analysis

The stone artefact assemblage recovered during test excavations at Jamberoo comprised of a total of 61 artefacts recovered from the two PADs (Appendix 3). Although the artefacts are from two different landforms, and therefore recorded as two separate sites, they have been analysed as a part of the same assemblage due to their vicinity, very low number of artefacts recovered at Jamberoo PAD 2 and the assumption that two artefacts at Jamberoo PAD 2 represent the background scatter of Jamberoo PAD 1. Since there were no archaeological test excavations completed within the close proximity to the project area, comparative analysis to the other sites could not be undertaken. The closest area that was a subject to test excavations located within similar landforms is for Tullimbar Village approximately 7 kilometers to the north of Jamberoo, completed by Navin Officer (2005) and Kayandel (2008). Some parallels could be drawn to these assessments regarding artefact assemblage composition, and interpretation of site occupation and past activities.

Prior to analysis, the artefacts were dry brushed to remove any excess debris and dirt. Some artefacts were also washed in order to determine type of raw material. They were observed under studio lights and using hand held biconvex lenses with magnifications of 10 by 21MM. Measurements were taken in millimeters using digital calipers accurate to a decimal point, and the mass of each artefact was recorded in grams on a scale accurate to two decimal places. Data for each artefact were entered into a database spreadsheet. Each artefact was given a unique number, showing Transect number, followed by the test pit number and then spit number they were recovered from (for example, if three artefacts were recovered from TP4.3, Spit 2. Artefacts raw data are given in Appendix 3.

Spatial and vertical distribution

Table 14 shows distribution of artefacts per test pit. Majority of test pits had either none, one or two artefacts (n=7, 24.1% each), followed by test pits with three artefacts (n=3, 10.3%), and test pits that had six or seven artefacts (n=2, 6.8% each). The average density of artefacts across the entire site was 8.27 per square meter, with two test pits with the highest average density having 28 artefacts per square meter (TP2.3 and Tp6.1). These results point out that the site is a moderate density artefact scatter with some areas possibly used more frequently or used for targeted activities. Test excavation units at Tullimbar Village (Kayandel 2008: 16) were 2 meters by 750 millimeters that yielded highest number of six artefacts in one, and five artefacts in two

test pits. Considering that only a sample of soil was sieved, the highest artefact density was 32.76 per cubic meter in one test pit at Tullimbar Village PAD 1, 52-5-0434. Applying the same method, Jamberoo PAD 1 has the highest average density of 80 artefacts per cubic meter in higher both average density, and the highest number of artefacts per square meter.

Table 14 Distribution of artefacts per test pit; number of test pits in relation to number of artefacts

No of artefacts	0	1	2	3	4	5	6	7
No of test pits	7	7	7	3	1	0	2	2
Frequency (%)	24.1	24.1	24.1	10.3	3.8	0	6.8	6.8

All of the artefacts were recovered from layers 0 -400 millimeters depth. More than half of the artefacts were identified between 100 and 200 millimeters (Table 15) (n=31, 51.6%). Only two artefacts were identified between 300 and 400 millimeters depth (3.5%); these artefacts came from the upper layers of Spit 4, indicating they were in the mottled, transitional layer between Horizons A and B. Slightly more artefacts were recovered from depths between 0 and 100 millimeters (n=16, 26.6%) than between 200 and 300 millimeters (n=11, 18.3%). Majority of the artefacts at Tullimbar Village were also recovered from Spits 1 and 2 (depths between 0 and 200 millimeters), with a very low frequency of artefacts in Spits 3 and 4 (Kayandel 2008: 32).

Table 15 Vertical distribution of artefacts

	Spit 1	Frequency (%)	Spit 2	Frequency (%)	Spit 3	Frequency (%)	Spit 4	Frequency (%)
No of artefacts	16	26.6	31	51.6	11	18.3	2	3.5

Stone procurement

Silcrete was the most common raw material used at Jamberoo PAD and AS 1 and 2 (Table 16) with a half of the assemblage being artefacts made on this raw material. Chert is represented by 30% (n=18), followed by the same representation of chalcedony and quartzite (n=5, 8.3% each), and a low representation of both volcanic and glass, with only one representative each (1.7% each). These results conform to the assemblages in the Tullimbar Village with majority of artefacts being from fine-grained siliceous, chert, silcrete and volcanic (Kayandel 2008, Navin Officer 2005) and a small number of jasper (equivalent to chalcedony in this report) and quartz (Kayandel 2008: 33). Chert and silcrete artefacts were also dominant in the assemblage recovered from the Dunmore site at the beach ridge (Navin Officer 2000), followed by quartz, chalcedony and volcanic, and a small quantity of jasper and quartzite. Assemblage from Jamberoo PAD 1 and AS 1 and Jamberoo PAD 2 and AS 2 conforms to the other assemblages in the region and does not exhibit significant variability.

Table 16 Raw material distribution in the assemblage

Raw material	Total number	Frequency (%)
Silcrete	30	50
Chert	18	30

Raw material	Total number	Frequency (%)
Chalcedony	5	8.3
Quartzite	5	8.3
Volcanic	1	1.7
Glass	1	1.7

The cortex (weathered exterior of a rock) provides information about the origin of stone sources. Artefacts with a rough cortex were acquired from a primary source, such as an *in situ* outcrop. Artefacts with a smooth or water-rolled cortex originate from a secondary source, such as a river cobble from a waterway. The amount of cortex on an artefact often indicates the distance artefacts were transported from the source (Hiscock and Mitchell 1993: 12-17). A high percentage of cortex on an artefact may indicate that the source of stone was nearby; while artefacts with less cortex or no cortex were transported further from the source. As cores are transported away from the source they are typically highly reduced and the flakes from these cores are smaller. Presence of cortex also indicates the initial flaking stage of raw material and early stage of stone manufacturing.

Cortical artefacts were recorded on three raw material types: silcrete, chert and chalcedony (Table 17) which indicates they were procured from the local sources. Greatest frequency of cortex was noticed on chalcedony artefacts, with 60% of a total number having 0-25% of cortex present (Table 18). There was no significant difference between silcrete and chert artefacts containing cortex (23% of silcrete and 38% of chert) (Table 18). Quartzite artefacts did not have any cortex present. Although chalcedony had the same number of artefacts represented in the assemblage as quartzite (n=5), 60% of chalcedony artefacts had a cortex present (Table 18). Considering a very low number of quartzite artefacts identified from Jamberoo PADs 1 and 2, it could not established if this is due to the small sample size or due to the great distance from its source and therefore due to the procurement strategies. It can be assumed that quartzite artefacts were not preferable, or were brought in from greater distances. Chalcedony artefacts were most likely not extensively used.

Table 17 Percentage of cortex on artefacts in relation to the raw material

Raw Material	Total number of artefacts	Total artefacts with cortex (n)	Total artefacts with cortex (%)	0-25% of cortex present (n)	0-25% of cortex present (%)	26-50% of cortex present (n)	26-50% of cortex present (%)	51-75% of cortex present (n)	51-75% of cortex present (%)
Silcrete	30	7	23	4	57	2	28	1	15
Chert	18	7	38	5	70	1	15	1	15
Chalcedony	5	3	60	3	100	-	-	-	-

Assemblage composition

Test excavation at Jamberoo PADs 1 and 2 revealed limited variety of artefact types that included flakes, angular fragments and cores (Table 18). Three silcrete artefacts revealed heat damage with potlid scarring present (Appendix 3). Two artefacts had unifacial retouch, one of them silcrete and the other chalcedony complete flake (Appendix 3). High frequency of flakes and angular fragments indicate that some scale of tool maintenance was occurring at the site. Small number of cores (n=3, 5%) points out that these activities were highly limited.

Table 18 Artefact types representation at the assemblage

Artefact Type	Total number	Frequency (%)
Complete flake	18	30
Proximal flake	4	6.7
Distal flake	2	3.3
Medial flake	4	6.7
Longitudinally split flake	3	5
Angular fragment	14	23.3
Core	3	5

Silcrete has shown to have the most variety of artefact types, which is not surprising considering it is the dominant raw material (Table 19). Quartzite had the highest frequency of cores in relation to other artefact types (n=1) which is 20% of all quartzite artefacts, followed by chert that had core representation of 11.1 per cent of all chert artefacts (n=2). Given a very small assemblage conclusions cannot be drawn about reduction strategies. However, chert artefacts are known to have been extensively used in the region. Quartzite cores are not that common and in other assemblages in the region are represented by only a small proportion (Navin Officer 2000).

Table 19 Artefact types in relation to raw material

Artefact Type	Silcrete	Chert	Chalcedony	Quartzite	Volcanic	Glass
Complete flake	6	6	2	2	1	1
Proximal flake	4	-	-	-	-	-
Distal flake	2	-	-	-	-	-
Medial flake	2	2	-	-	-	
Longitudinally split flake	1	1	-	1	-	-
Angular fragment	14	7	3	1	-	-
Core	1	2	-	1	-	-

10.1.2 Jamberoo PAD and AS 1

This site was identified as a PAD during the archaeological survey. It is located on a hillcrest landform that is part of a ridgeline extending to its north-west. The ridgeline is a corridor that leads to the junction of the Colyers Creek with the Fountaindale Creek and the Minnamurra River. The entire PAD was subject to test excavations where a total of 22 test pits were excavated on a hillcrest and two on hillslope. The site extent was determined by the presence/absence of artefacts. All but one test pit excavated on a hill crest contained stone artefacts. It was established that the site extends across the entire hillcrest landform.

As less artefacts were located in the hillslope landform it was concluded that the hillslope does not contain further archaeological potential. Aboriginal site Jamberoo PAD and AS 1 is oval in shape and is bounded by

the project area borders to the north and west, and by the hillcrest landform to the east and south (Figure 10). The average length of the site is 120 meters and the width is 90 meters covering an area of 1,065 square meters. It is most likely that the site extended throughout the entire ridgeline to the west and north, but it has been destroyed by the residential development.

Jamberoo PAD and AS 1 is located on a high landform with expansive views towards the Escarpment and the Colyers Creek and further to the Minnamurra Rover that is now obscured by the residential development. There are no visible disturbances within site Jamberoo PAD and AS 1 except shallow surface disturbances due to the land clearance and bioturbation processes; the site is in generally good condition. Soils encountered are relatively shallow clayey loams with gravelly transitional layer between topsoil and subsoil clays. Average depth of soils to the subsoil clays are between 320 and 400 millimeters (Appendix 2).

Site Jamberoo PAD and AS 1 is an artefact scatter consisting of 59 artefacts. Density of artefacts varied throughout the site with the majority of test pits containing one or two artefacts (Table 11). Average artefact density across Jamberoo PAD and AS 1 was 2.4 artefacts per square meter. The highest density of artefacts was recorded in two test pits, TP2.3 and 6.1, with seven artefacts, which gives an average of 28 artefacts per square meter. Second highest number of artefacts was retrieved from TP1.4 and TP5.1 that contained six artefacts each, which gives and average of 24 artefacts per square meter. All of the artefact were recovered from clayey loams with a few recovered from a transitional gravelly layer. Silcrete and chert artefacts represent 80 percent of all the artefacts from Jamberoo PAD and AS 1. This conforms to the results of previous archaeological assessments (Navin Officer 2005; Kayandel 2008). Chalcedony and quartzite artefacts were not previously recorded in a great number in the region, which corresponds to the results from test excavations at Jamberoo PAD and AS 1. One glass artefact was also recovered, glass artefacts are representative of post contact heritage sites and are important in understand Aboriginal peoples changing lifeways in the 18th and 19th centuries.

There is a limited artefact type variety identified, with the majority being flakes and angular fragments. There are only three cores recovered, one silcrete and two chert. Since majority of artefacts that contained cortex were made on silcrete and chert, it can be assumed that some level of tool maintenance was occurring across the site, but no specific knapping events could be ascertained from the test excavations.

Locations of the four test pits with the highest number of artefacts (TP1.4, TP2.3, TP5.1 and TP6.1) create a linear form (Figure 9) that can indicate a concentrated activity or is a remnant of a few distinct occupation events. Artefacts analysis from these four test pits with the greatest number of artefacts does not suggest a knapping event, but rather small scale maintenance activity with the range of different raw materials used. It is most likely that the site was visited on a regular basis, but was a permanent occupation site. Considering the location of the site within the ridgeline with expansive views and the passing corridor to the valley of the Minnamurra River and further to the coast from the Escarpment, it is presumed the area was frequently used. The site is most likely remnant of dispersed frequent small scale occupation events, rather than a remnant of a permanent, extensive site with a high number and range of cultural material present.

Plate 4 **Jamberoo PAD and AS 1, hillcrest, facing north-west towards Colyers Creek' valley.**

Plate 5 **Jamberoo PAD and AS 1, hillcrest, facing east.**

10.1.3 Jamberoo PAD and AS 2

This site was identified as a PAD during the archaeological survey. It is located on a valley flat landform that is a small terrace above Colyers Creek. There is an artificial dam approximately 50 meters south-east of the site that is a remnant of a natural spring and the associated drainage line that emptied into the Colyers Creek. Colyers Creek is located approximately 150 meters to the west and is a third order drainage that empties into Foundatindale Creek and then Minnamurra River. The identified PAD was subject to test excavations where a total of five test pits were excavated within valley flat landform. Site extent was determined by the presence/absence of artefacts. Out of five test pits, two contained stone artefacts, one in each test pits (TP4.3 and TP4.5). Aboriginal site Jamberoo PAD and AS 2 is oval in shape and is located within a part of a valley flat landform within the project area (Figure 10). Average length is 60 meters and the width is 20 meters covering a total area of 123 square meters. There are no visible disturbances within site Jamberoo PAD and AS 2 except shallow surface disturbances due to the land clearance and bioturbation processes; the site is in generally good condition. Soils encountered are shallow clayey loams with gravelly transitional layer mottled with the subsoil clays. Average depth of soils to the subsoil clays are between 250 and 300 millimeters (Appendix 2).

Site Jamberoo PAD and AS 2 is an artefact scatter consisting of two artefacts. Two test pits out of five excavated contained two artefacts, one artefact each. Both artefacts were recovered from clayey loams, from the depth between 200 and 250 millimeters. Artefacts were most likely not in situ as their context within soils that included gravel indicated water movements. Both are angular fragments made on silcrete. It is likely that the artefacts are an extension of Jamberoo PAD and AS1; ongoing taphonomic processes mean that through time artefacts move with soils. It is likely that the artefacts have moved downwards on the hillslope from Jamberoo PAD and AS1.

Results of test excavations at Jamberoo PAD and AS 2 conforms to the results of previous archeological excavations in the region, where areas of archaeological sensitivity were identified on relatively level ground close to water sources such as small springs or soaks (Navin Officer 2004: 19). A small natural spring would have provided some water source in the certain times during the year.

Plate 6 Jamberoo PAD and AS 2, facing south.

Plate 7 Jamberoo PAD and AS 2 from the upper slopes, facing south towards the dam.

10.2 Discussion of results

Results of the test excavations within the project area revealed the presence of two Aboriginal sites: moderate density artefact scatter Jamberoo PAD and AS 1, and a low density background scatter Jamberoo PAD and AS 2. Jamberoo PAD and AS 1 is an extensive, widely spread moderate density Aboriginal artefact scatter located within a hillcrest landform that is part of a ridgeline leading into the valley of the Minnamurra River. Jamberoo PAD and AS 2 is a background scatter that is located within a small terrace on the valley flat associated with Colyers Creek and in the vicinity of a natural spring. Jamberoo PAD and AS2 is likely associated with Jamberoo PAD and AS1. Despite a lack of test excavations in the local area, some comparisons could be undertaken with the results of test excavations in the region within very similar environments, landforms and conditions; test excavations completed for a residential development in Tullimbar Village in 2005 (Navin Officer) and 2008 (Kayandel), as well as in Dunmore in 2000 (Navin Officer) allowed for parallels to be drawn on a regional level. The discussion in this section considers artefact distribution and how they relate to tested landforms, as well as the type and range of cultural material in relation to previously identified material in the region in order to determine site occupation patterns and whether they would differ on a local level.

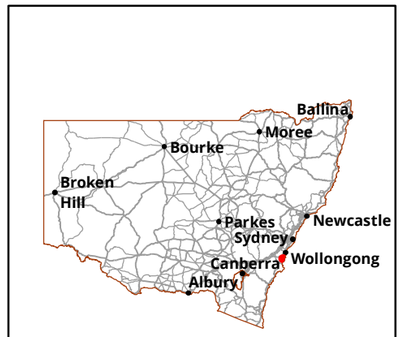
The project area is located within hillcrest, hillslope and valley flat landforms. Hill crest is a part of a ridgeline that extends to the east of the project area and runs to the valley of Colyers and Fountaindale creeks and the Minnamurra River. Colyers Creek is located approximately 150 meters to the east of the project area and is a third order creek that empties into Fountaindale Creek 930 meters to the north-east and then into the Minnamurra River approximately 1.3 kilometers to the north-east. There is one natural spring located at the very south of the project area that has been turned into an artificial dam. The project area has been used for pasture and has land clearing has occurred in the past. No other significant previous disturbances were identified except these shallow surface disturbances due to land modifications. On the terrace, highly mobile alluvial soils are present. On the hillcrest a more stable soil system is present. Background review of previous archaeological assessments in the area did not reveal many excavations in the local area. A site prediction model was established using previous assessments in the region from areas with similar landforms and conditions, such as test excavations at Tullimbar Village (Navin Officer 2005, Kayandel 2008) and Dunmore area (Navin Officer 2000). Aboriginal open camp sites, or artefact scatters were expected to occur on level, well drained ground, either adjacent to freshwater or wetlands, or along crests and ridgelines; ridgelines were expected to contain larger sites as they afford effective access corridors across the landscape (Navin Officer 2007: 19). This site prediction model was confirmed by the presence of previously recorded Aboriginal sites within these landforms, such as: Tullimbar Village PAD 1 (AHIMS 52-5-0434) located on a terrace, valley flat, and Tullimbar Village PAD 2 (AHIMS 52-5-0439) located on a crest of a spurline (Kayandel 2008). These identified sites were low to moderate density, dispersed occupation areas. Artefacts recovered were mainly flakes and cores made of chert and silcrete with a few made of jasper, quartzite and volcanics, all of them being very common raw material in the Illawarra area (Navin Officer 2000: 37).

The archeological survey identified two PADs that were subject to test excavations. They were determined by landform type and their proximity to the natural spring and Colyers Creek. Both sites were subject to test excavations; their site extents were established and they were recorded as artefact scatters Jamberoo PAD and AS 1 and Jamberoo PAD and AS 2. Jamberoo PAD and AS 1 is a moderate density artefact scatter located on a hillcrest, and Jamberoo PAD and AS 2 is a background, very low density artefact scatter associated with the Jamberoo PAD and AS 1, located within valley flats landform. It is likely that the two sites are associated.

The vast majority of artefacts (n=59, 96.7%) were recovered from Jamberoo PAD and AS 1 located on the hillcrest. Upper slope that was also subject to test excavations did not reveal any cultural material. Artefacts were extensively dispersed across the entire landform with the average density of 8.27 artefacts per square meter, with two test pits with the highest average density having 28 artefacts per square meter (TP3.2 and TP1.6). These results point out that the site is a moderate density artefact scatter with some areas possibly used more frequently. Results of analysis of the raw material and artefact types could not establish any

specific and targeted activities that used to be carried out on site, such as knapping events. The site was most likely frequently used, but only for short-term visits when general tool maintenance activities took place. The discard behavior point out that silcrete and chert were the preferable raw material for flaking and were easily accessible. Although chalcedony had the same number of artefacts represented in the assemblage as quartzite (n=5), 60 per cent of chalcedony artefacts had a cortex present (Table 18). Considering a very low number of quartzite artefacts identified from Jamberoo PAD and AS 1 and 2, it could not be established if this is due to the small sample size or due to the great distance from its source and therefore due to the procurement strategies. Chalcedony artefacts were most likely not extensively used. This small percentage of both chalcedony and quartzite conforms to the results of previous excavations in the region, where they represent only a small portion of assemblages (Navin Officer 2000, 2005, Kayandel 2008).

Moderate density site Jamberoo PAD and AS 1 and its associated background scatter Jamberoo PAD and AS 2 represent a remnant of past occupation and foraging activities of local Aboriginal people. The hill crest and the associated ridgeline is an access corridor from the escarpment to the coast, and specifically to the valley of the Minnamurra River, one of the major waterways in the region. The crest was most likely visited frequently due to its expansive views and was used most likely as a short-term camping place when different activities took place including tool maintenance. The area offered a variety of resources, as well as fresh water so it was most likely visited on a regular basis and also as a passing corridor. The site does not represent a permanent large scale camp site, but is rather a representative of dispersed and frequent human activities throughout at least the last millennium. The presence of a glass artefact is indicative of changing Aboriginal lifeways post-contact. Although Jamberoo PAD and AS1 is of moderate density, the lithology of the site (including the glass artefacts) can provide significant information about past Aboriginal people and their lifeways.



Legend

- Project Area
- Jamberoo PAD and AS1
- Jamberoo PAD and AS2

Figure 11: Aboriginal archaeological sites within the project area

0 10 20 30 40 50

Metres

Scale: 1:1,200 @ A3

Coordinate System: GDA 1994 MGA Zone 55

N

Biosis Pty Ltd

Ballarat, Brisbane, Canberra, Melbourne, Sydney, Wangaratta & Wollongong

Matter: 21189,
Date: 18 March 2016,
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11. 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 ACHAR will detail the cultural values of Aboriginal sites in the project area.

11.1 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 1999). 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, Water, Heritage and the Arts (DEWHA), the OEH and the

Heritage Branch, NSW Department of Planning. The relevant sections of these guidelines are presented below.

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

In addition to the previously outlined heritage values, the OEH Guidelines (DECC 2006) 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.

11.2 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: 249, NPWS 1997b). For this reason, the NPWS (part of DECC) 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 1997b: 26). The NPWS criteria for archaeological significance assessment are based largely on the ICOMOS Burra Charter.

Research potential

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

The site contents ratings used for archaeological sites are:

0 - No cultural material remaining.

1 - Site contains a small number (e.g. 0–10 artefacts) or limited range of cultural materials with no evident stratification.

2 - Site contains a larger number, but limited range of cultural materials; and/or some intact stratified deposit remains; and/or are or unusual example(s) of a particular artefact type.

3 - Site contains a large number and diverse range of cultural materials; and/or largely intact stratified deposit; and/or surface spatial patterning of cultural materials that still reflect the way in which the cultural materials were deposited.

The site condition ratings used for archaeological sites are:

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' (1995: 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: 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:

- 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:

- 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 the sub-surface testing. The results are in Table 20.

11.2.1 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 20 below.

Table 20 Scientific significance assessment of archaeological sites recorded within the project area.

Site name	Site content	Site condition	Representativeness	Scientific significance
Jamberoo PAD and AS 1	3	2	2	7 - High
Jamberoo P AD and AS 2	1	1	1	3 - Low

Table 21 Statements of scientific significance for archaeological sites recorded within the project area.

Site Name	Statement of Significance
Jamberoo PAD and AS 1	Jamberoo PAD and AS 1 is a moderate density artefact scatter that has higher number of artefacts and a good range of lithology, different from nearby sites. The site is in good condition and has relatively stable soils. The site type and content is mostly common for the region however the presence of a subsurface glass artefact is rare.
Jamberoo PAD and AS 2	Jamberoo PAD and AS 2 is a very low density artefact scatter with limited number and range of cultural material. It is in a fair condition but does not contain stratified deposits. It is common in the region.

12. Impact assessment

12.1 Proposed development

The project will involve rezoning of land from Rural Landscape (RU2) to Low Density Residential (R2) at 123 Golden Valley Way, Jamberoo.

12.2 Predicted physical impacts

There are two Aboriginal sites within the project area that might be impacted by the proposed development, Jamberoo PAD and AS 1 (AHIMS 52-5-0832) and Jamberoo PAD and AS 2 (AHIMS 52-5-0833).

Test excavations of Jamberoo PAD and AS 1 and Jamberoo PAD and AS 2 established their extents, nature and significance. Sites are low and moderate density artefact scatters that contain limited range of cultural material and represent a common occurrence in the region. There is a potential that proposed works will impact both sites.

A summary of impacts is provided below in Table 14.

Table 22 Summary of potential archaeological impact

AHIMS Site No.	Site Name	Significance	Type Of Harm	Degree Of Harm	Consequence Of Harm
52-5-0832	Jamberoo PAD and AS 1	High	Direct	Total	Total loss of value
Pending	Jamberoo PAD and AS 2	Low	Direct	Total	Total loss of value

12.3 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*" (Marquis-Kyle and Walker 1994: 13). In cases where conservation is not practical, several options for management are available. For sites, management often involves the salvage of features or artefacts, retrieval of information through excavation or collection (especially where impact cannot be avoided) and interpretation.

As this assessment related to re-zoning only, there will be no impact to the project area. The planning proposal for re-zoning should proceed.

At the time of development, avoidance of impact to archaeological and cultural heritage sites through design of the development is the primary mitigation and management strategy, and should be implemented where practicable. However, where avoidance is not practicable an AHIP should be obtained from OEH. Aboriginal stakeholders registered on this project should have input into the long term storage of any artefacts recovered from the project area.

Legend

- Project Area
- Jamberoo PAD and AS1
- Jamberoo PAD and AS2

Figure 12: AHIP area

0 10 20 30 40 50

Metres
Scale: 1:1,200 @ A3
Coordinate System: GDA 1994 MGA Zone 55

N

biosis

Biosis Pty Ltd

Ballarat, Brisbane, Canberra, Melbourne, Sydney, Wangaratta & Wollongong

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13. Recommendations

Strategies have been developed based on the archaeological (significance) of cultural heritage relevant to the project 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

Recommendation 1: The proposed re-zoning should proceed

Based on the findings of the Aboriginal cultural heritage assessment, it is recommended that the proposed re-zoning can proceed. The development has identified two sites Jamberoo PAD 1 and Jamberoo PAD 2 which have been assessed as possessing high and low scientific significance respectively. Should a future development propose to impact partially or wholly the extent of Jamberoo PAD 1 and PAD 2, this would be consistent with impacts proposed by many other development projects in the region. Although the first option considered is always to preserve Aboriginal heritage where possible, there is no inherent reason why an AHIP for impact to the full or partial extent of Jamberoo PAD 1 and PAD 2, should not be sought, particularly on archaeological grounds.

The currently level of assessment is considered adequate to support a Development Application to Kiama Municipal Council and AHIP application to OEH. This is assuming that Recommendation 2 is adhered to. The Development Consent and AHIP conditions should include provision for the works outlined in Recommendation 3 to be implemented.

Recommendation 2: Continued consultation with the Registered Aboriginal Parties

It is recommended that consultation continues to inform RAPs about the management of Aboriginal cultural heritage sites in the project area throughout the life of the project. This is in line with the *Aboriginal cultural heritage consultation requirements for proponents 2010* (DECCW). Biosis is able to undertake this consultation, however if no longer engaged on the project the responsibility will fall to the landowner. A period of no longer than 6 months between contact with the Aboriginal stakeholders must be upheld for the consultation to be considered 'continuous'. If a period of longer than 6 months occurs between contact with the Aboriginal stakeholders, consultation will need to be re-started.

Recommendation 3: Application for an Aboriginal Heritage Impact Permit for the entire project area of proposed development including salvage.

If at the time of development, the proposed development cannot avoid harm to registered sites Jamberoo PAD and AS 1 (AHIMS 52-5-0832) and Jamberoo PAD and AS 2 (AHIMS 52-5-0833), it is recommended that Biosis, on behalf of Branko Simicic, applies to the Office of Environment and Heritage (OEH) for an area based Aboriginal Heritage Impact Permit (AHIP) to:

- Undertake archaeological salvage of site Jamberoo PAD and AS 1. The archaeological salvage should not exceed 10m² and should be undertaken to maximise the recovery of cultural material.

- Impact the recorded Aboriginal sites Jamberoo PAD and AS 1 (AHIMS 52-5-0832) and Jamberoo PAD and AS 2 (AHIMS 52-5-0833).
- Impact within the limits of the area based destruction AHIP for any further Aboriginal objects encountered during construction unless human remains are involved (as shown in Figure 11).
- Determine a long-term management of Aboriginal objects recovered during test excavations with close consultation with RAPs.

Advice preparing AHIPs

AHIPs should be prepared by a qualified archaeologist (Biosis) and lodged with the OEH. Once the application is lodged processing time can take between 8 - 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.

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 NPW Act.

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

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Appendices

Appendix 1 - AHIMS results

THE FOLLOWING APPENDIX IS NOT TO BE MADE PUBLIC

AHIMS Web Services (AWS)

Extensive search - Site list report

Purchase Order/Reference : 20835

Client Service ID : 192162

SiteID	SiteName	Datum	Zone	Easting	Northing	Context	Site Status	SiteFeatures	SiteTypes	Reports
52-5-0309	EGP 3-33;Minnamurra River 1;Eastern Gas Pipline;	AGD	56	297160	6163570	Open site	Valid	Artefact : -	Open Camp Site	99329

Contact **Recorders** Kerry Navin,Mr.Kelvin Officer **Permits**

Report generated by AHIMS Web Service on 25/09/2015 for Shannon Smith for the following area at Lot : 2, DP:DP626183 with a Buffer of 1000 meters. Additional Info : Reporting. Number of Aboriginal sites and Aboriginal objects found is 1

Appendix 2 – Test pit results

Transect 1

Test Pit	Deposit 1				Deposit 2				Deposit 3				Deposit 4				Deposit 5				Deposit 6			
	Texture	Depth (cm)	Munsell	pH	Texture	Depth (cm)	Munsell	pH	Texture	Depth (cm)	Munsell	pH	Texture	Depth (cm)	Munsell	pH	Texture	Depth (cm)	Munsell	pH	Texture	Depth (cm)	Munsell	pH
1	Humic loam soil. Fine grained, friable with organic inclusions	0-10	7.5YR 2.5/2	6	Fine grain loam soil, no organic material, some baked clay inclusions	10-25	7.5YR 2.5/2	6	Clay loam fine grained soil. Large baked clay inclusions	25-40	7.5YR 2.5/2	6	Fine grained, damp, compact mottled clay with no inclusions	40-45	5YR 3/4	6								
2	Humic loam soil. Medium grained, friable with organic inclusions.	0-7	7.5YR 3/2	6.5	Medium grain loam soil, some organic material, no inclusions	7-20	7.5 YR 3/3	6.5	Clay loam medium grained soil. Large baked clay inclusions >30%	20-45	5YR 2.5/2	6	Fine grained, damp, compact clay with no inclusions	END	5YR 2.5/2	6								

	Gradual transition																						
3	Humic loam soil. Medium grained, friable with organic inclusions. Gradual transition	0-7	7.5YR 3/2	6.5	Medium grain loam soil, some organic material, small baked clay inclusions < 5 %.	7-17	7.5 YR 3/3	6.5	Clay loam medium grained soil. Large baked clay inclusions >30%	17-38	5YR 2.5/2	6	Fine grained, damp, compact clay with no inclusions	END	5YR 2.5/2	6							
4	Humic loam soil. Medium grained, friable with organic	0-4	7.5YR 3/2	6.5	Medium grain loam clay soil, some organic material, small baked clay and charcoal	4-14	2.5YR 4/8	6	Clay loam medium grained soil. No inclusions, gradual transition	14-45	5RY 4/6	6	Fine grained, damp, compact clay with no inclusions	END	5YR 4/6	6							

	inclusions. Gradual transition				inclusions. Gradual transition																		
5	Humic loam soil. Medium grained, friable with organic inclusions. Gradual transition	0-4	7.5YR 3/2	6.5	Medium grain clay loam soil, friable, small no inclusions. Some organic material	4-45	7.5YR 3/3	6.5	Fine grained, damp, compact clay with no inclusions	END	5YR 2.5/2	6											
6	Humic loam clay soil. Fine grained, compact with	0-10	5YR 3/3	5	Medium grain loam mottled soil, some organic material	10-18	5YR 3/4	5	Fine grain loam soil, no inclusion	18-30	7.5YR 2.5/2	5	Medium grain loam clay soil, 2 cm inclusion	30-34	5YR 3/4	5	Fine grain compact loam clay soil.	34-40	5YR 2.5/2	5	Fine grained, damp, compact clay with	END	2.5YR 2.5/4	5

	some organic inclusions															No inclusions				no inclusions			
7	Humic loam clay soil. Fine grained, compact with some organic inclusions	0-4	5YR 2.5/2	5	Fine grained compact clay loam soil. Mottled inclusions of baked clay and manganese.	4-34	5YR 2.5/2	5	Fine grained, damp, compact mottled clay with no inclusions	34-40	2.5YR 2.5/4	5											

Transect 2

Test Pit	Deposit 1				Deposit 2				Deposit 3				Deposit 4			
	Texture	Depth (cm)	Munsell	pH	Texture	Depth (cm)	Munsell	pH	Texture	Depth (cm)	Munsell	pH	Texture	Depth (cm)	Munsell	pH
1	Humic loam soil. Fine grained, friable, dry, with organic inclusions	0-6	7.5YR 2.5/2	5	Fine grain clay loam soil, more compact, no organic material, some small baked clay inclusions	6-16	7.5YR 2.5/2	5	Fine grain clay loam soil, more compact, damp, <5cm backed clay inclusions	16-30	7.5YR 2.5/2	6	Fine grained, damp, compact mottled clay with no inclusions	30-35	5YR 3/4	6
2	Humic loam soil. Medium grained, friable with organic inclusions. Gradual transition	0-6	7.5YR 3/2	6.5	Loam soil. Medium grained, friable with well sorted baked clay inclusions <5%. Gradual transition	6-45	7.5YR 3/3	6.5	Fine grained, damp, compact mottled clay with no inclusions	END	5YR 2.5/2	6	-	-	-	-
3	Humic loam soil. Fine grained, friable, with organic inclusions	0-5	5YR 3/4	6	Fine grain loam clay soil, more compact, small <5cm baked clay inclusions and charcoal	5-11	5YR 3/4	6	Fine grain clay loam soil, more compact, baked clay and small charcoal inclusions	11-34	2.5YR 3/4	6	Fine grained, damp, compact mottled clay with no inclusions	34-35	2.5YR 3/6	6
4	Humic loam soil. Fine grained, compact, with organic inclusions	0-6	5YR 3/4	6	Fine grain loam clay soil, compact, no inclusions.	6-15	5YR 3/4	6	Fine grain, compact clay loam with no inclusions	15-39	2.5YR 2.5/4	6	Fine grained, damp, compact mottled clay with no inclusions	39-40	2.5YR 3/6	6

Test Pit	Deposit 1				Deposit 2				Deposit 3				Deposit 4			
	Texture	Depth (cm)	Munsell	pH	Texture	Depth (cm)	Munsell	pH	Texture	Depth (cm)	Munsell	pH	Texture	Depth (cm)	Munsell	pH
5	Humic loam soil. Fine grained, friable, with organic inclusions	0-6	5YR 3/3	6	Fine grain loam clay soil, more compact, no inclusions or organic material.	6-30	5YR 3/3	6	Fine grained, damp, compact mottled clay with no inclusions	END	2.5YR 2.5/4	6	-	-	-	-
6	Humic loam soil. Medium grained, friable with organic inclusions. Gradual transition	0-3	7.5YR 3/2	6.5	Medium grain loam clay soil, some organic material, small baked clay and charcoal inclusions. Gradual transition	3-15	2.5 YR 4/8	6	Clay loam medium grained soil. No inclusions, gradual transition	15-46	5YR 4/6	6	Fine grained, damp, compact mottled clay with no inclusions	END	5YR 4/6	6
7	Humic loam soil. Medium grained, friable with organic inclusions. Gradual transition	0-6	7.5YR 3/2	6.5	Medium grain loam clay soil, some organic material, small baked clay and charcoal inclusions. Gradual transition	6-20	2.5 YR 4/8	6.5	Clay loam medium grained soil. No inclusions, gradual transition	20-38	5YR 4/6	6	Fine grained, damp, compact mottled clay with no inclusions	END	5YR 4/6	6

Transect 3

Test Pit	Deposit 1				Deposit 2				Deposit 3			
	Texture	Depth (cm)	Munsell	pH	Texture	Depth (cm)	Munsell	pH	Texture	Depth (cm)	Munsell	pH
1	Humic loam soil. Medium grained, friable with organic inclusions. Gradual transition	0-7	7.5YR 3/2	6.5	Medium grain loam soil, some organic material, no inclusions	7-34	7.5YR 3/3	6.5	Fine grained, damp, compact mottled clay with no inclusions	END	5YR 4/6	6
2	Humic loam soil. Medium grained, friable with organic inclusions. Gradual transition	0-12	7.5YR 3/2	6.5	Medium grain compact clay loam soil, moderately sorted baked clay inclusions. Gradual transition	12-37	2.5YR 4/8	6	Fine grained, damp, compact mottled clay with no inclusions	END	5YR 4/6	6
3	Humic loam soil. Medium grained, friable with organic inclusions. Gradual transition	0-10	7.5YR 3/2	6.5	Medium grain loam clay soil, some organic material, small baked clay and charcoal inclusions. Gradual transition	10-32	2.5YR 4/8	6	Fine grained, damp, compact mottled clay with no inclusions	END	5YR 4/6	6
4	Humic loam soil. Medium grained, friable with organic inclusions. Gradual transition	0-5	7.5YR 3/2	6.5	Medium grain clay loam soil, friable,no inclusions. Some organic material	5-30	7.5YR 3/3	6.5	Fine grained, damp, compact mottled clay with no inclusions	END	5YR 4/6	6
5	Humic loam soil. Medium grained, friable with organic inclusions. Gradual transition	0-4	7.5YR 3/2	6.5	Medium grain loam clay soil, some organic material, baked clay and large charcoal inclusions. Gradual transition	4-36	2.5YR 4/8	6	Fine grained, damp, compact mottled clay with no inclusions	END	5YR 4/6	6
6	Humic loam soil. Medium grained, friable with organic inclusions. Gradual transition	0-3	7.5YR 3/3	6.5	Medium grain loam clay soil, compact, small baked clay inclusions. Sharp transition	3-24	2.3 YR 4/8	6	Fine grained, damp, compact mottled clay with no inclusions	END	5YR 4/6	6
7	Humic loam soil. Medium grained, friable with organic inclusions. Gradual transition	0-6	7.5YR 3/2	6.5	Medium grain loam clay soil, moderately compact, small – medium baked clay inclusions >5%. Moderate transition	6-30	2.5YR 4/8	6.5	Fine grained, damp, compact mottled clay with no inclusions	END	5YR 2.5/2	6

Transect 4

Test Pit	Deposit 1				Deposit 2				Deposit 3			
	Texture	Depth (cm)	Munsell	pH	Texture	Depth (cm)	Munsell	pH	Texture	Depth (cm)	Munsell	pH
1	Humic loam clay soil. Fine grained, friable with organic inclusions. Gradual transition	0-5	5YR 2.5/1	5	Fine grained clay loam, more compact, getting damper. Inclusions of baked clay and manganese	5-20	5YR 2.5/1	5	Fine grained, damp, compact mottled clay with no inclusions	END	5YR 2.5/2	6
2	Humic loam clay soil. Medium grained, friable with organic inclusions. Sharp transition	0-10	2.5YR 2.5/3	6.5	Medium grained clay loam, moderately compact. Moderately sorted manganese inclusion at 10% and baked clay at 5%. Sticky and a gradual transition.	10-30	2.5YR 3/2	6	Fine grained, damp, compact mottled clay with no inclusions	END	2.5YR 4/6	6
3	Humic loam clay soil. Fine grained, friable with organic inclusions. Gradual transition	0-4	5YR 2.5/1	5	Fine grained clay loam, more compact, getting damper. Inclusions of baked clay and manganese	4-20	5YR 2.5/1	5	Fine grained, damp, compact mottled clay with no inclusions	END	5YR 2.5/2	6
4	Humic loam clay soil. Medium grained, friable with organic inclusions. Sharp transition	0-15	2.5YR 2.5/3	6.5	Medium grained clay loam, moderately compact. Moderately sorted manganese inclusion at 10% and baked clay at 5%. Sticky and a gradual transition.	15-30	2.5YR 3/2	6.5	Fine grained, damp, compact mottled clay with no inclusions	END	2.5YR 4/6	6.5
5	Humic loam clay soil. Medium grained, friable with organic inclusions. Sharp transition	0-10	2.5YR 2.5/3	6.5	Medium grained clay loam, moderately compact. Moderately sorted manganese inclusion at 10% and baked clay at 5%. Sticky and a gradual transition.	10-30	2.5YR 3/4	6.5	Fine grained, damp, compact mottled clay with no inclusions	END	2.5YR 4/6	6

Table 1 Transect 5

Test Pit	Deposit 1				Deposit 2				Deposit 3			
	Texture	Depth (cm)	Munsell	pH	Texture	Depth (cm)	Munsell	pH	Texture	Depth (cm)	Munsell	pH
1	Humic loam clay soil. Fine grained, friable with high levels of organic inclusions. Gradual transition	0-6	7.5YR 3/4	5	Fine grained loam clay, more compact, damper, some organic inclusions. Some large >9 cm baked clay inclusions.	6-25	7.5YR 3/4	5	Fine grained, damp, compact mottled clay with no inclusions	END	5YR 3/4	5
2	Humic loam clay soil. Fine grained, friable with organic inclusions. Gradual transition	0-6	5YR 3/3	5	Fine grained loam clay, more compact, damper and no inclusions except one large rock.	6-35	5YR 3/4	5	Fine grained, damp, compact mottled clay with no inclusions	END	2.5YR 3/6	5

Table 2 Transect 6

Test Pit	Deposit 1				Deposit 2				Deposit 3			
	Texture	Depth (cm)	Munsell	pH	Texture	Depth (cm)	Munsell	pH	Texture	Depth (cm)	Munsell	pH
1	Fine grained humic, compact, loam soil, with organic inclusions.	0-7	7.5yr 3/4	5	Fine grained loam clay. Less compact, damper with small, <5 cm to large > 10 cm baked clay inclusions.	7-28	7.5yr 3/4	5	Fine grained, damp, compact mottled clay with no inclusions	28-30	2.5YR 3/4	5

Appendix 3 – Stone artefact raw data

Artefact ID Transect/TP/Spit	Artefact Type	Raw Material	Munsell Colour	Cortex (%)	Platform Type	Platform Width (mm)	Platform Thickness (mm)	Termination	Length (mm)	Width (mm)	Thickness (mm)	Usewear/ Retouch	Tool Type	Weight (g)	Negative Flake Scars
1/TR1 TP1 Sp1	Angular fragment	Silcrete	Dark greyish brown 10YR 4/2	0-26%	N/A	N/A	N/A	N/A	14	8.6	5.6	N/A	N/A	0.42	1
1/TR1 TP 2 Sp3	Medial Flake	Chert	Yellowish brown 10YR 5/4	A	N/A	N/A	N/A	N/A	14.4	12.4	5.4	N/A	N/A	1.22	1
1/TR1 TP3 Sp2	Complete flake	Chert	Yellowish brown 10YR 5/4	A	Faceted	7.6	0.89	Feather	11.8	7.2	1.7	N/A	N/A	0.18	1
1/TR1 TP3 Sp3	Proximal flake	Silcrete	Brown 7.5YR 4/2	A	Flaked	7.7	2.4	N/A	12.4	10.8	2.6	N/A	N/A	0.46	3
2/TR1 TP3 Sp3	Longitudinally split flake	Quartzite	Brown 7.5YR 5/3	A	Flaked	N/A	N/A	Feather	14.5	6.9	2	N/A	N/A	0.24	1
1/TR1 TP4 Sp1	Longitudinally split flake	Chert	Red 2.5YR 4/6	A	Flaked	N/A	N/A	Feather	27.2	15	7	N/A	N/A	2.96	1
2/TR1 TP4 Sp1	Angular fragment	Silcrete	Dark reddish brown 5YR 3/3	26-51%	N/A	N/A	N/A	N/A	31.5	14.6	7.4	N/A	N/A	3.31	
1/TR1 TP4 Sp2	Multidirectional core	Chert	Weak red 2.5YR 4/2	A	N/A	N/A	N/A	N/A	26.3	16.8	13.7	N/A	N/A	7.26	6
1/TR1 TP4 Sp3	Angular fragment	Chert	Dark grey 7.5YR 4/1	0-26%	N/A	N/A	N/A	N/A	11.4	8.4	4.7	N/A	N/A	0.52	1
2/TR1 TP4	Angular	Chert	Dark	A	N/A	N/A	N/A	N/A	14.3	7.7	4.1	N/A	N/A	0.31	1

Artefact ID Transect/TP/Spit	Artefact Type	Raw Material	Munsell Colour	Cortex (%)	Platform Type	Platform Width (mm)	Platform Thickness (mm)	Termination	Length (mm)	Width (mm)	Thickness (mm)	Usewear/ Retouch	Tool Type	Weight (g)	Negative Flake Scars
Sp3	fragment		grey 7.5YR 4/1												
3/TR1 TP4 Sp3	Complete flake	Silcrete	Dark reddish brown 5YR 3/2	A	Flaked	6.9	2.4	Feather	9.7	9.8	3.7	N/A	N/A	0.35	1
1/TR1 TP5 Sp2	Angular fragment	Chert	Dark grey 7.5YR 4/1	0-26%	N/A	N/A	N/A	N/A	13.1	7.9	3.8	N/A	N/A	0.29	N/A
2/TR1 TP5 Sp2	Complete flake	Silcrete	Dark brown 7.5YR 3/2	A	Flaked	2.2	1.6	Feather	11.4	8.3	1.9	N/A	N/A	0.17	1
1/TR1 TP6 Sp1	Multidirectional core	Quartzite	Reddish brown 2.5YR 5/4	A	N/A	N/A	N/A	N/A	27.3	16.2	10.9	N/A	N/A	3.75	5
1/TR2 TP1 Sp3	Complete flake	Silcrete	Red 2.5YR 4/6	A	Flaked	14.2	4.2	Feather	18.76	10.8	3.7	N/A	N/A	0.99	1
1/TR2 TP1 Sp4	Longitudinally split flake	Silcrete	Red 2.5YR 4/6	0-26%	Flaked	N/A	N/A	Feather	16.3	13.3	3	N/A	N/A	N/A	N/A
1/TR2 TP2 Sp2	Medial flake	Silcrete	Dark brown 7.5YR 3/2	A	N/A	N/A	N/A	N/A	8.8	8.2	2.2	Potlids	N/A	0.22	N/A
1/TR2 TP2 Sp3	Complete flake	Chalcedony	Reddish grey 5YR 5/2	A	Flaked	3	2.5	Hinge	15.8	5.9	2.4	N/A	N/A	0.26	2
1/TR2 TP2	Distal flake	Silcrete	Dark	A	N/A	N/A	N/A	Feather	15.8	15.6	7.2	N/A	N/A	2.96	

Artefact ID Transect/TP/Spit	Artefact Type	Raw Material	Munsell Colour	Cortex (%)	Platform Type	Platform Width (mm)	Platform Thickness (mm)	Termination	Length (mm)	Width (mm)	Thickness (mm)	Usewear/ Retouch	Tool Type	Weight (g)	Negative Flake Scars
Sp4			reddish brown 5YR 3/2												
1/TR2 TP 3 Sp2	Multidirectional core	Silcrete	Reddish brown 5YR 5/4	26-51%	N/A	N/A	N/A	N/A	16.7	16.2	12.1	N/A	N/A	2.48	3
2/TR2 TP 3 Sp2	Distal flake	Silcrete	Dark grey 10YR 4/1	A	N/A	N/A	N/A	Feather	10.6	12.9	1.6	Potlids	N/A	0.31	1
3/TR2 TP 3 Sp2	Complete flake	Silcrete	Dark grey 10YR 4/1	A	Flaked	5.25	1.6	Feather	11.4	8.5	2	Potlids	N/A	0.21	2
4/TR2 TP 3 Sp2	Angular fragment	Silcrete	Dark reddish brown 5YR 3/2	A	N/A	N/A	N/A	N/A	30.5	8.4	5.4	N/A	N/A	1.19	N/A
5/TR2 TP 3 Sp2	Angular fragment	Silcrete	Dark reddish brown 5YR 3/2	A	N/A	N/A	N/A	N/A	8.6	6.9	1.6	N/A	N/A	0.14	N/A
6/TR2 TP 3 Sp2	Medial flake	Silcrete	Dark reddish brown 5YR 3/2	51-76%	N/A	N/A	N/A	N/A	10.8	17.7	2.2	N/A	N/A	0.51	N/A
7/TR2 TP 3 Sp2	Angular fragment	Silcrete	Dark grey 10YR 4/1	A	N/A	N/A	N/A	N/A	11.5	5	4	N/A	N/A	0.29	N/A

Artefact ID Transect/TP/Spit	Artefact Type	Raw Material	Munsell Colour	Cortex (%)	Platform Type	Platform Width (mm)	Platform Thickness (mm)	Termination	Length (mm)	Width (mm)	Thickness (mm)	Usewear/ Retouch	Tool Type	Weight (g)	Negative Flake Scars
1/TR2 TP 4 Sp2	Angular fragment	Chalcedony	Light reddish brown 5YR 6/4	0-26%	N/A	N/A	N/A	N/A	21.7	11.1	8.9	N/A	N/A	2.65	3
2/TR2 TP 4 Sp2	Angular fragment	Chalcedony	Light reddish brown 5YR 6/4	0-26%	N/A	N/A	N/A	N/A	8.6	5.1	4.8	N/A	N/A	0.24	N/A
1/TR2 TP 5 Sp2	Angular fragment	Silcrete	Dark reddish brown 5YR 3/2	A	N/A	N/A	N/A	N/A	9.8	7.4	6	N/A	N/A	0.40	N/A
2/TR2 TP 5 Sp2	Angular fragment	Silcrete	Dark reddish brown 5YR 3/2	A	N/A	N/A	N/A	N/A	13.6	4.8	2.8	N/A	N/A	0.21	N/A
1/TR2 TP 6 Sp2	Complete flake	Proximal flake	Very dark grey 10YR 3/1	A	Flaked	18.2	7.3	N/A	24	39.9	9.8	Unifacial retouch	N/A	14.07	1
2/TR2 TP 6 Sp2	Complete flake	Chert	Dark grey 10YR 4/1	A	Flaked	4.9	1.7	Feather	12.9	9.1	2.6	N/A	N/A	0.27	2
1/TR3 TP 1 Sp1	Complete flake	Quartzite	Light reddish brown 5YR 6/4	A	Flaked	5.1	2.6	Hinge	23.8	8.7	5.6	N/A	N/A	1.39	2
1/TR3 TP 1	Complete flake	Chert	Dark	A	Flaked	5.1	1.3	Feather	4.6	10.7	1.3	N/A	N/A	0.06	1

Artefact ID Transect/TP/Spit	Artefact Type	Raw Material	Munsell Colour	Cortex (%)	Platform Type	Platform Width (mm)	Platform Thickness (mm)	Termination	Length (mm)	Width (mm)	Thickness (mm)	Usewear/ Retouch	Tool Type	Weight (g)	Negative Flake Scars
Sp2			grey 10YR 4/1												
2/TR3 TP 1 Sp2	Complete flake	Volcanic	Black 10YR 2/1	A	Flaked	6.7	2.5	Feather	22.3	12.3	3.4	N/A	N/A	0.79	2
3/TR3 TP 1 Sp2	Angular fragment	Silcrete	Dark reddish brown 5YR 3/2	A	N/A	N/A	N/A	N/A	15.8	11	4.6	N/A	N/A	0.93	
1/TR3 TP 2 Sp2	Complete flake	Glass	Olive brown 2.5YR 4/4	A	Flaked	10	2.1	Feather	17.2	17.2	3.2	N/A	N/A	1.12	
1/TR3 TP 3 Sp2	Multidirectional core	Chert	Dark grey 10YR 4/1	56-71%	N/A	N/A	N/A	N/A	37.5	19.9	13.1	N/A	N/A	11.78	4
2/TR3 TP 3 Sp2	Angular fragment	Silcrete	Reddish brown 2.5YR 4/3	0-26%	N/A	N/A	N/A	N/A	21.8	12.3	8.8	N/A	N/A	2.21	
3/TR3 TP 3 Sp2	Complete flake	Chert	Dark grey 10YR 4/1	A	Faceted	4.5	0.8	Feather	11.2	7.5	1.6	N/A	N/A	0.19	1
1/TR3 TP 4 Sp1	Angular fragment	Silcrete	Reddish brown 5YR 5/4	0-26%	N/A	N/A	N/A	N/A	20.1	14	5.1	N/A	N/A	1.46	1
2/TR3 TP 4 Sp1	Angular fragment	Chert	Dark grey 10YR 4/1	0-26%	N/A	N/A	N/A	N/A	18.9	17.3	8.7	N/A	N/A	3.00	2

Artefact ID Transect/TP/Spit	Artefact Type	Raw Material	Munsell Colour	Cortex (%)	Platform Type	Platform Width (mm)	Platform Thickness (mm)	Termination	Length (mm)	Width (mm)	Thickness (mm)	Usewear/ Retouch	Tool Type	Weight (g)	Negative Flake Scars
1/TR3 TP 5 Sp1	Proximal flake	Silcrete	Very dark grey 10YR 3/1	A	Flaked	4.5	2.1	N/A	9.6	9.5	2.6	N/A	N/A	0.27	2
1/TR4 TP 3 Sp3	Angular fragment	Silcrete	Dark grey 10YR 4/1	A	N/A	N/A	N/A	N/A	19.3	11	4.2	N/A	N/A	0.80	1
1/TR4 TP 5 Sp3	Angular fragment	Silcrete	Reddish grey 5YR 5/2	A	N/A	N/A	N/A	N/A	20.6	10	3.3	N/A	N/A	0.68	1
1/TR5 TP 1 Sp1	Complete flake	Chalcedony	White 2.5YR 8/1	A	Flaked	9.9	4.2	Feather	17.8	12.4	4	Unifacial step retouch		1.37	3
2/TR5 TP 1 Sp1	Angular fragment	Chalcedony	Light grey 7.5YR 7/1	0-26%	N/A	N/A	N/A	N/A	14.7	9.1	3.2	N/A	N/A	0.52	3
1/TR5 TP 2 Sp1	Complete flake	Chert	Light red 2.5YR 6/6	A	Flaked	7.1	2.8	Feather	10.3	9.4	3	N/A	N/A	0.38	1
2/TR5 TP 2 Sp1	Angular fragment	Silcrete	Reddish brown 5YR 5/4	A	N/A	N/A	N/A	N/A	9.1	7.6	3.9	N/A	N/A	0.22	N/A
3/TR5 TP 2 Sp1	Angular fragment	Chert	Dark grey 10YR 4/1	0-26%	N/A	N/A	N/A	N/A	12.3	8.4	3.2	N/A	N/A	0.34	N/A
4/TR5 TP 2 Sp1	Angular fragment	Silcrete	Reddish brown 5YR 4/3	A	N/A	N/A	N/A	N/A	14.3	8.6	5.9	N/A	N/A	0.76	N/A

Artefact ID Transect/TP/Spit	Artefact Type	Raw Material	Munsell Colour	Cortex (%)	Platform Type	Platform Width (mm)	Platform Thickness (mm)	Termination	Length (mm)	Width (mm)	Thickness (mm)	Usewear/ Retouch	Tool Type	Weight (g)	Negative Flake Scars
1/TR5 TP 2 Sp2	Proximal flake	Silcrete	Dark grey 10YR 4/1	A	Flaked	9.8	4.5	N/A	12.6	18.3	7.2	N/A	N/A	2.79	
2/TR5 TP 2 Sp2	Complete flake	Chert	Light red 2.5YR 6/6	A	Crushed	N/A	N/A	Feather	10.4	12.2	3.3	N/A	N/A	0.34	1
1/TR6 TP 1 Sp1	Complete flake	Silcrete	Reddish brown 2.5YR 4/3	A	Flaked	9.5	3.8	Plunge	23.7	20.7	5	N/A	N/A	2.94	N/A
2/TR6 TP 1 Sp1	Proximal flake	Silcrete	Very dark grey 7.5YR 3/1	A	Flaked	4.8	2.6	N/A	14.2	9.3	3	N/A	N/A	0.34	N/A
1/TR6 TP 1 Sp2	Medial flake	Chert	Dark grey 10YR 4/1	0-26%	N/A	N/A	N/A	N/A	17.9	8.6	2.8	N/A	N/A	0.53	N/A
2/TR6 TP 1 Sp2	Complete flake	Quartzite	Dark reddish brown 2.5Yr 3/3	A	Flaked	4.6	2	Feather	11.9	6.3	2	N/A	N/A	0.19	N/A
3/TR6 TP 1 Sp2	Angular fragment	Quartzite	Pale red 2.5YR 6/2	A	N/A	N/A	N/A	N/A	33.2	14.5	10.8	N/A	N/A	4.14	N/A
4/TR6 TP 1 Sp2	Angular fragment	Chert	Dark grey 10YR 4/1	26-51%	N/A	N/A	N/A	N/A	16	11.4	5.7	N/A	N/A	0.59	N/A
1/TR6 TP 1 Sp3	Angular fragment	Chert	Reddish brown 2.5YR 5/4	A	N/A	N/A	N/A	N/A	13.3	8.6	4.5	N/A	N/A	0.63	N/A

Appendix 4 –Artefact photos


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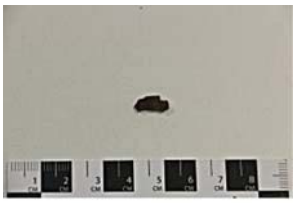
IMG_8070.JPG


IMG_8072.JPG


IMG_8073.JPG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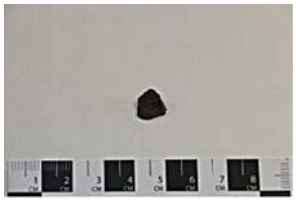
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