

WARRA WARRA ROAD, SOUTH NOWRA, NSW

ABORIGINAL CULTURAL HERITAGE ASSESSMENT REPORT

Report to Lysand Pty Ltd & Lyrock Pty Ltd

LGA: Shoalhaven

May 2026





Apex Archaeology acknowledges and pays respect to the past, present and future Traditional Custodians and Elders of this nation and in whose land this assessment took place, and to the continuation of cultural, spiritual and educational practices of Aboriginal and Torres Strait Islander peoples.

DOCUMENT CONTROL

The following register documents the development and issue of the document entitled 'Warra Warra Road, South Nowra, NSW: Aboriginal Cultural Heritage Assessment Report', prepared by Apex Archaeology in accordance with its quality management system.

Revision	Prepared by	Reviewed by	Comment	Issue Date
1 – Draft	Leigh Bate & Amy Sandkuhl	Jenni Bate	Client review	21 Aug 2024
2 – Draft	Jenni Bate	JBTP	RAP review	26 Aug 2024
3 – Final	Jenni Bate	RAPs	Issue of final	19 Nov 2024
4 – Final	Jenni Bate	Heritage NSW	Minor updates	20 Apr 2026
5 – Final	Jenni Bate	JBTP	Minor updates	19 May 2026



EXECUTIVE SUMMARY

Apex Archaeology have been engaged to assist Jervis Bay Town Planning (JBTP) on behalf of Lysand Pty Ltd & Lyrock Pty Ltd to undertake an Aboriginal Cultural Heritage Assessment (ACHA) for the proposed rezoning of land along Warra Warra Road, South Nowra, NSW. The project is located within the Shoalhaven Local Government Area (LGA).

This ACHA has been prepared in accordance with the *Guide to investigating, assessing and reporting on Aboriginal cultural heritage in NSW* (April 2011); the *Aboriginal Cultural Heritage Consultation Requirements for Proponents 2010* (DECCW, April 2010) (the ACHCRs), and the *Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales* (September 2010) (the Code of Practice). It details the results of the archaeological assessment completed in accordance with the Code of Practice and the consultation undertaken with the Aboriginal community in accordance with the ACHCRs.

This assessment has been undertaken to inform a Planning Proposal (PP) for the study area. It is proposed to alter the land use zones applicable to the site (Lot 2 DP 1126288 and Lot 224 DP 755952). Currently, all of the land is zoned E3 Productivity Support. The proposal aims to introduce a residential zone and a mixed use zone to part of the site, whilst retaining a significant portion as E3. Further to this, it is proposed to introduce a conservation zone to part of the site that has important environmental attributes (riparian land).

The proposed land use zones are:

- 5.13HA General Residential (R1) (60 lots).
- 12.8HA Mixed Use (MU1)
- 4.392HA (Employment Support (E3))
- 9.2HA Environmental Conservation (C2)

A total of 11 Aboriginal people and organisations registered an interest in being consulted for the project. The following list comprises the registered Aboriginal parties (RAPs) for the project:

- Nowra Local Aboriginal Land Council
- South Coast People
- Djirringanj Elders Federation
- Girragirra Murun
- Goobah Cultural Heritage Service
- Kalthi Consultancy
- Sonione Wakabut Rogers
- South Coast Culture and Heritage
- Thoorga Nura



- Eora Heritage Group
- Woronora Plateau Gundungara Elders Council

Consultation with the RAPs has been conducted in accordance with the ACHCRs.

No previous archaeological investigations have been conducted within the current study area, however, many have taken place within the broader Shoalhaven region.

An archaeological survey was conducted on the 25th of June 2024 with Leigh Bate, Jenni Bate and Jason Barr of Apex Archaeology, assisted by Trudy Trindall of Nowra Local Aboriginal Land Council (LALC).

No surface sites were identified within the study area during the pedestrian survey. No areas of sub-surface archaeological potential were identified within the study area. Disturbance across the study area was noted as high and was related to the construction of powerlines through the area, along with the construction of gravel roads and access tracks, historical vegetation clearance, landscape modification, four wheel driving/motor bike use of the area, camping and extensive dumping of construction material and refuse across the site. The GSV across the study area was noted to be low to moderate (30% overall), and high in some areas which had been exposed due to heavy machinery clearance and four wheel driving/motorbike activity along with erosion of topsoils from sheet wash.

Further, the swampy nature of the area meant the site is unlikely to have been utilised for camping or habitation, although it is noted that prior to colonisation the area may have been utilised as a resource gathering area. Predictive modelling and the results of the site inspection suggest the site is unlikely to retain any archaeological sites or potential.

Based on the results of the cultural heritage and archaeological assessments, the following recommendations have been made for the project:

RECOMMENDATION 1: NO FURTHER ARCHAEOLOGICAL ASSESSMENT REQUIRED

This report details the Aboriginal archaeological potential of the Warra Warra Road study area which has been assessed as negligible. No further archaeological assessment is required for the site prior to the commencement of proposed development activities. No application for an Aboriginal Heritage Impact Permit (AHIP) is necessary for the project.

RECOMMENDATION 2: DEVELOPMENT BOUNDARIES

The proposed development works must be contained within the assessed boundaries for this project. If there is any alteration to the boundaries of the proposed development to include areas not assessed as part of this archaeological investigation, further investigation of those areas should be completed to assist in managing Aboriginal objects and places which may be present in an appropriate manner.



RECOMMENDATION 3: STOP WORK PROVISION

Should unanticipated Aboriginal archaeological material be encountered during site works, all work must cease in the vicinity of the find and an archaeologist contacted to make an assessment of the find and to advise on the course of action to be taken. Further archaeological assessment and Aboriginal community consultation may be required prior to the recommencement of works. Any objects confirmed to be Aboriginal in origin must be reported to Heritage NSW.

In the unlikely event that suspected human remains are identified during construction works, all activity in the vicinity of the find must cease immediately and the find protected from harm or damage. The NSW Police and the Coroner's Office must be notified immediately. If the finds are confirmed to be human and of Aboriginal origin, further assessment by an archaeologist experienced in the assessment of human remains and consultation with both Heritage NSW and the RAPs for the project would be required.

This recommendation should be included in any Construction Environmental Management Plan (CEMP) developed for the site.

RECOMMENDATION 4: REPORTING

One digital copy of this report should be forwarded to Heritage NSW for inclusion on the Aboriginal Heritage Information Management System (AHIMS).

One copy of this report should be forwarded to each of the registered Aboriginal stakeholders for the project.



GLOSSARY OF TERMS

Aboriginal Object	An object relating to the Aboriginal habitation of NSW (as defined in the NPW Act), which may comprise a deposit, object or material evidence, including Aboriginal human remains.
ACHA	Aboriginal Cultural Heritage Assessment
ACHAR	Aboriginal Cultural Heritage Assessment Report
ACHCRs	<i>Aboriginal cultural heritage consultation requirements for proponents 2010</i>
AHIMS	Aboriginal Heritage Information Management System maintained by Heritage NSW, detailing known and registered Aboriginal archaeological sites within NSW
AHIP	Aboriginal Heritage Impact Permit
ASIRF	Aboriginal Site Impact Recording Form
BP	Before Present, defined as before 1 January 1950.
Code of Practice	The DECCW September 2010 <i>Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales</i>
Consultation	Aboriginal community consultation in accordance with the DECCW April 2010 <i>Aboriginal cultural heritage consultation requirements for proponents 2010</i> .
DA	Development Application
DCCEEW	Department of Climate Change, Energy, the Environment and Water
DECCW	The Department of Environment, Climate Change and Water (now Heritage NSW)
Disturbed Land	If land has been subject to previous human activity which has changed the land's surface and are clear and observable, then that land is considered to be disturbed
Due Diligence	Taking reasonable and practical steps to determine the potential for an activity to harm Aboriginal objects under the <i>National Parks and Wildlife Act 1974</i> and whether an application for an AHIP is required prior to commencement of any site works, and determining the steps to be taken to avoid harm
Due Diligence Code of Practice	The DECCW Sept 2010 <i>Due Diligence Code of Practice for the Protection of Aboriginal Objects in New South Wales</i>
GIS	Geographical Information Systems
GSV	Ground Surface Visibility
Harm	To destroy, deface or damage an Aboriginal object; to move an object from land on which it is situated, or to cause or permit an object to be harmed
Heritage NSW	Heritage NSW within the Department of Climate Change, Energy, the Environment and Water; responsible for overseeing heritage matters within NSW
ka	Kiloannus, a unit of time equating to 1,000 years
LALC	Local Aboriginal Land Council
LGA	Local Government Area
NPW Act	<i>NSW National Parks and Wildlife Act 1974</i>
NPWS	National Parks and Wildlife Service
OEH	The Office of Environment and Heritage (now Heritage NSW)
PAD	Potential Archaeological Deposit
RAPs	Registered Aboriginal Parties



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1.0 INTRODUCTION

Apex Archaeology have been engaged to assist Jervis Bay Town Planning on behalf of Lysand Pty Ltd & Lyrock Pty Ltd to undertake an Aboriginal Cultural Heritage Assessment (ACHA) for the proposed rezoning of land along Warra Warra Road, South Nowra, NSW. The project is located within the Shoalhaven Local Government Area (LGA).

This report has been prepared in accordance with the *Guide to investigating, assessing and reporting on Aboriginal cultural heritage in NSW* (April 2011); the *Aboriginal Cultural Heritage Consultation Requirements for Proponents 2010* (DECCW, April 2010) (the ACHCRs); and the *Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales* (September 2010) (the Code of Practice). It details the results of the archaeological assessment completed in accordance with the Code of Practice and the consultation undertaken with the Aboriginal community in accordance with the ACHCRs.

1.1 STUDY AREA

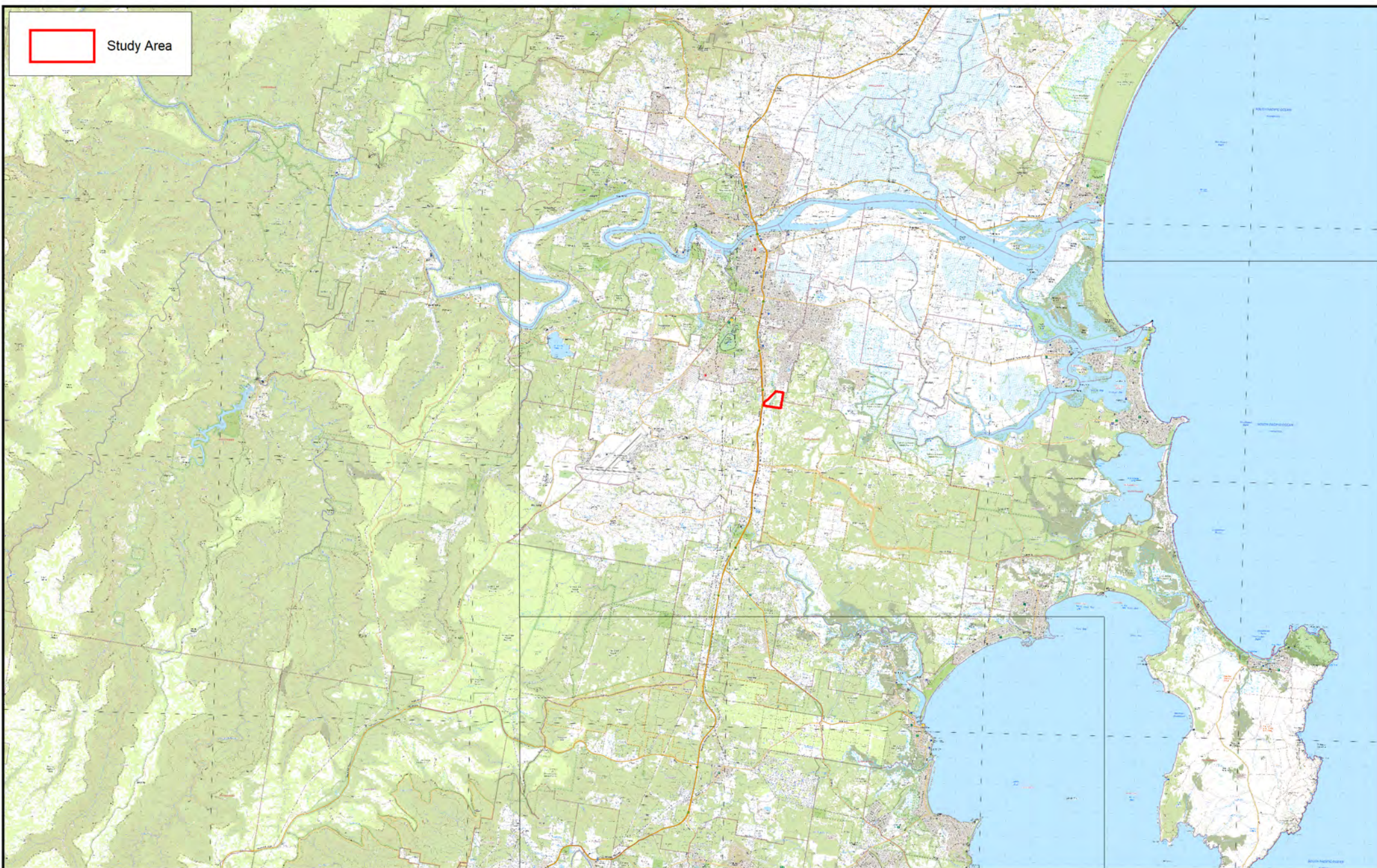
The study area is located within the Shoalhaven LGA along Warra Warra Road, South Nowra. The study area is legally known as Lot 2 DP 1126288 and Lot 224 DP 755952. The project area is located approximately 58km north of Ulladulla and 6km south of Nowra. The study area is approximately 32 hectares in size and is of irregular shape, bound by Warra Warra Road along the southern boundary, undeveloped land to the east, partially developed land to the north, and a vegetation corridor along the western boundary (Figure 1 and Figure 2).

1.2 PROJECT BRIEF

This assessment has been undertaken to inform a Planning Proposal (PP) for the study area. It is proposed to alter the land use zones applicable to the site (Lot 2 DP 1126288 and Lot 224 DP 755952). Currently, all of the land is zoned E3 Productivity Support. The proposal aims to introduce a residential zone to part of the site, whilst retaining a significant portion as E3. Further to this, it is proposed to introduce a conservation zone to part of the site that has important environmental attributes.

The proposed land use zones are:

- 16.2HA General Residential (R1).
- 6.7HA Employment Support (E3)
- 9.3HA Environmental Conservation (C2)





Study Area



Hydrology



Lot Boundaries



PO Box 236
NOWRA
NEW SOUTH WALES 2541

0

280

560



metres

Projection:
MGA Zone 56 (GDA 94)
Base Map:
Near Maps 2024
Image Date:
20/06/2024
Final - Version 1

Figure 2: Study area in its local context.





Warra Warra Road, South Nowra, NSW – ACHA



1.3 OBJECTIVES OF THE ABORIGINAL CULTURAL HERITAGE ASSESSMENT

The archaeological investigation was undertaken to meet the requirements of the Code of Practice and ACHCRs.

The purpose of the archaeological investigation is to understand and establish the potential harm the proposed development may have on Aboriginal cultural heritage within the study area, both tangible and intangible.

Aboriginal community consultation was undertaken for the project with the aim of:

- Identifying the Aboriginal community members who can speak for Country within which the study area is located;
- Involving the Aboriginal community in making decisions about the management of their cultural heritage;
- Identifying, assessing and recording Aboriginal heritage values within the study area;
- Preparing an assessment of the cultural heritage values in consultation with the Aboriginal community;
- Identifying the potential impact of the proposed development on the assessed cultural heritage values; and
- Developing conservation and mitigation strategies for these values, with the aim of minimising impacts to cultural heritage wherever possible.

In addition, this report provides a significance assessment of the identified Aboriginal heritage values, as defined by the registered Aboriginal stakeholders (RAPs) for the project. Aboriginal people are the primary determinants of the significance of their cultural heritage and therefore Apex Archaeology cannot make a determination on the cultural significance without the input of the RAPs.

Any development works which disturb the ground surface have the potential to impact Aboriginal archaeological deposits and therefore an assessment of whether the study area contains such deposits is required prior to the commencement of construction works. An assessment of whether the proposed development would impact these deposits (if present) is also necessary, and identification of to what extent the deposits would be impacted is also required. The degree of impact which may be allowable is determined, in part, with consideration of the level of cultural significance attributed to the cultural values of the study area, both tangible and intangible.

This assessment considers existing and newly identified sites within the study area and determination of whether these could be avoided by any further works within the study area, as well as detailing consultation with the Aboriginal community in order to determine the cultural significance of the area.



1.4 PROJECT PROPONENT

The proponent for the project was originally Texi Pty Ltd but was amended to Lysand Pty Ltd and Lyrock Pty Ltd. The project manager for this project was Lee Carmichael, Director of Jervis Bay Town Planning.

1.5 INVESTIGATORS AND CONTRIBUTORS

This archaeological assessment was commissioned by Jervis Bay Town Planning on behalf of Lysand Pty Ltd and Lyrock Pty Ltd. Apex Archaeology thanks Lee Carmichael and Nowra LALC for their assistance with the project. Thanks are also extended to the registered Aboriginal groups for their participation and assistance with the project.

This report has been prepared by Amy Sandkuhl, Graduate Archaeologist with Apex and Leigh Bate, Director and Archaeologist with Apex Archaeology. The report was reviewed by Jenni Bate, Director and Archaeologist with Apex Archaeology. Leigh and Jenni have over eighteen years of archaeological consulting experience within NSW. Project team roles and qualifications are shown in Table 1.

Table 1: Project team roles and qualifications

Name	Role	Qualifications
Leigh Bate	Project Manager; Report Author; Field Inspection; GIS.	B.Archaeology; Grad. Dip. CHM
Jenni Bate	Field Inspection, Report Review	B.Archaeology; Grad. Dip. Arch; Dip. GIS
Amy Sandkuhl	Report Author	B. Arts (Hons)
Jason Barr	Field Inspection	BA (Hons 1), PhD

1.6 LIMITATIONS

This report relies in part on previously recorded archaeological and environmental information for the wider region. This includes information from the Aboriginal Heritage Information Management System (AHIMS), which is acknowledged to be occasionally inaccurate, due to inaccuracies in recording methods. No independent verification of the results of external reports has been made as part of this report.

Field investigations for this report included pedestrian survey. The results are considered to be indicative of the nature and extent of Aboriginal archaeological remains within the study area, but it should be noted that further Aboriginal objects and sites which have not been identified as part of this assessment may be present within the wider study area.

It is recognised that Aboriginal people are the primary determinants of the significance of their cultural heritage, and as such, Apex Archaeology have relied on the Aboriginal community to provide cultural knowledge regarding the site, where they are willing and able to share such knowledge. However, there may be occasions where RAPs are unwilling or unable to share cultural knowledge regarding the site and thus our assessment of significance relies on scientific assessment only.



This report assesses Aboriginal cultural heritage matters only. No assessment of historical heritage has been made as part of this ACHA.

1.7 REPORT STRUCTURE

This report addresses the requirements of the *Guide to Investigating, Assessing and Reporting on Aboriginal Cultural Heritage in NSW* (The Guide), the Code of Practice and the ACHCRs. The Guide provides guidance as to what must be contained in an ACHAR. The following tables outline the requirements of both the Guide and the Code of Practice, and how they have been addressed in this report.

Table 2: Required contents of an ACHAR and where met in this report

Report requirements	Where met
Description of the Aboriginal objects and declared Aboriginal places located within the area of the proposed activity	Section 4.4.1
Description of the cultural heritage values, including the significance of the Aboriginal objects and declared Aboriginal places, that exist across the whole area that will be affected by the proposed activity	Section 6
The significance of the above values for the Aboriginal people who have a cultural association with the land	Section 6.3
How requirements for consultation with Aboriginal people have been met (as specified in clause 80C of the NPW Regulation)	Section 3
The views of those Aboriginal people regarding the likely impact of the proposed activity on their cultural heritage	Section 3; Section 6.3 & 6.4
Actual or likely harm posed to the Aboriginal objects or declared Aboriginal places from the proposed activity, with reference to the cultural heritage values identified	Section 7
Any practical measures that may be taken to protect and conserve those Aboriginal objects or declared Aboriginal places	Section 8

Table 3: Requirements of Code of Practice and where met in this report

Requirement #	Where met
1 – Review previous archaeological work	Section 4.4
2 – Review the landscape context	Section 4
3 – Summarise and discuss the local and regional character of Aboriginal land use and its material traces	Section 4
4 – Predict the nature and distribution of evidence	Section 4.5
5 – Undertake an archaeological survey	Section 5
5a/b/c – Prepare an archaeological survey sampling strategy	Section 5.1; Appendix E
6 – Define identified sites	Mapping; Section 4.4.1
8 – Location information and geographic reporting	Report Figures
9 – Record survey coverage data	Section 5.3
10 – Analyse survey coverage	Section 5.3
Analysis and discussion	Sections 6-8
Significance Assessment	Section 6
Impact Assessment	Section 7
Management and Mitigation Measures	Section 8
Recommendations	Section 10



2.0 STATUTORY CONTEXT

Heritage in Australia, including both Aboriginal and non-Aboriginal heritage, is protected and managed under several different Acts. The following section presents a summary of the applicable Acts which provide protection to cultural heritage within NSW.

2.1 COMMONWEALTH LEGISLATION

2.1.1 ABORIGINAL AND TORRES STRAIT ISLANDER HERITAGE PROTECTION ACT 1984

This Act provides for the preservation and protection of injury and/or desecration of areas and objects in Australia and its waters that are of significance to Aboriginal people, in accordance with Aboriginal tradition.

Under this Act, the responsible Minister has provision to make both temporary and/or long-term declarations, in order to provide protection to areas and objects which are at threat of injury or desecration. In some instances, this Act can override State or Territory provisions, or be invoked if State or Territory provisions are not enforced. An Aboriginal or Torres Strait Islander individual or organisation must invoke the Act.

No items within the study area are listed or protected under this Act.

2.1.2 ENVIRONMENT PROTECTION AND BIODIVERSITY CONSERVATION ACT 1999

The EPBC Act provides protection to environmental sites of national significance, including places with cultural heritage values that contribute to Australia's national identity. The Act aims to respect the role of Indigenous peoples in the conservation and ecologically sustainable use of Australia's biodiversity, and to enhance the protection and management of important natural and cultural places. Additionally, the Act is designed to promote the use of Indigenous peoples' knowledge of biodiversity with the involvement of, and in cooperation with, the owners of the knowledge.

The National Heritage List (NHL) provides a listing of natural, historic and Indigenous places of outstanding significance to the nation, while the Commonwealth Heritage List (CHL) details the Indigenous, historic and natural places owned or controlled by the Australian Government.

The Register of the National Estate (RNE) is a former statutory register that is no longer in force; however listings can still be searched. The listings on the RNE did not automatically transfer to the NHL.

Under the EPBC Act, approvals are required if any action is proposed that will have (or is likely to have) a significant impact on the National Heritage values of a National Heritage place. Therefore, actions must be referred to the Australian Government Minister for the Environment and Heritage. A decision will be made as to whether the



proposed action will have a significant impact on any matters of national significance.

A search of both the NHL and the CHL did not identify any items within the study area.

2.1.3 NATIVE TITLE ACT 1993

The *Native Title Act 1993*, as amended, provides protection and recognition for Native title. Native title is recognised where the rights and interests of over land or waters where Aboriginal and Torres Strait Islander practiced traditional laws and customs prior to the arrival of European settlers, and where these traditional laws and customs have continued to be practiced.

The National Native Title Tribunal (NNTT) was established to mediate native title claims made under this Act. Three registers are maintained by the NNTT, as follows:

- National Native Title Register
- Register of Native Title Claims
- Register of Indigenous Land Use Agreements.

Searching the NNTT registers allows identification of potential Aboriginal stakeholders who may wish to participate in consultation.

An online search of the National Native Title Tribunal (NNTT) identified a Native Title Application over the study area on behalf of the South Coast People. The application has been accepted for registration but not yet determined (**Error! Reference source not found.**).

2.2 NEW SOUTH WALES LEGISLATION

2.2.1 NATIONAL PARKS AND WILDLIFE ACT 1974

The *National Parks and Wildlife Act 1974* provides protection for all Aboriginal objects and places within NSW. Aboriginal objects are defined as the material evidence of the Aboriginal occupation of NSW, while Aboriginal Places are defined as areas of cultural significance to the Aboriginal community. All Aboriginal objects are protected equally under the Act, regardless of their level of significance. Aboriginal Places are gazetted if the Minister is satisfied that the location was and/or is of special significance to Aboriginal people.

Following amendments to the NPW Act in 2010, approval to impact Aboriginal cultural heritage sites is only granted under a Section 90 Aboriginal Heritage Impact Permit (AHIP), which is granted by Heritage NSW of the Department of Climate Change, Energy, the Environment and Water.



2.2.2 NATIONAL PARKS AND WILDLIFE REGULATION 2019

Part 5, Division 2 of the *National Parks and Wildlife Regulation 2019* addresses Aboriginal objects and places in relation to the NPW Act 1974 and outlines how compliance with relevant codes of practice can be met.

Clause 58(1) outlines the defence of low impact acts or omissions to the offence of harming Aboriginal objects, which includes maintenance works on existing roads and fire trails, farming and land management work, grazing of animals, activities on land that has been disturbed that is exempt or complying development, mining exploration work, removal of vegetation (aside from Aboriginal culturally modified trees), seismic surveying or groundwater monitoring bores on disturbed ground, or environmental rehabilitation work (aside from erosion control or soil conservation works such as contour banks).

Clause 58(4) outlines the definition of 'disturbed land', as land that "has been the subject of a human activity that has changed the land's surface, being changes that remain clear and observable".

Clause 59 relates to the notification of Aboriginal objects and sites and Clause 60 relates to the requirements for the consultation process to support an AHIP application. The regulation sets out the requirements broadly in line with those outlined in the ACHCRs.

2.2.3 ENVIRONMENTAL PLANNING & ASSESSMENT ACT 1979

Under the EP&A Act, it is necessary to consider environmental impacts, including impact to cultural heritage, as part of the land use process. Local Environmental Plans (LEPs) and Development Control Plans (DCPs) are also required to be prepared by Local Government Areas (LGAs) in order to provide guidance on the applicable level of environmental assessment. LGAs are required to maintain a list of locally significant heritage items as part of their LEP.

Under the EP&A Act, Part 3 describes the planning instruments at both local and regional levels; Part 4 relates to development assessment and consent processes, and Part 5 refers to infrastructure and environmental impact assessment.

The current proposal comprises a Planning Proposal, which would be considered under Part 4 of the EP&A Act.

2.2.4 SHOALHAVEN LOCAL ENVIRONMENTAL PLAN 2014

The *Shoalhaven Local Environmental Plan (LEP) 2014* is the overarching planning instrument applicable to the Shoalhaven LGA.

Clause 5.10(2) (e) identifies that no buildings may be erected on land within a heritage conservation area or which contains an Aboriginal object, without first obtaining development consent. Further, Clause 5.10(2) (c) states that archaeological sites may not be disturbed or excavated without development

consent. Exceptions to the requirement for development consent are detailed by Clause 5.10(3) and include low impact activities, or activities for the maintenance of a heritage item. Clause 5.10(8) requires that the effect of any development on an Aboriginal place of heritage significance must be considered, and the Aboriginal community must be notified of any proposed developments.

There are no known items of Aboriginal heritage significance identified within the LEP that fall within the current study areas (Figure 4). There are no 'General' non-Aboriginal heritage items listed in the SLEP 2014 close to the study area (Figure 3). The absence of nearby Aboriginal heritage items does not mean that the land has low Aboriginal cultural heritage significance.



Figure 4: Detail of Shoalhaven LEP 2014 Heritage Map. Study area outlined in red (Source: Shoalhaven LEP 2014 Heritage Map Sheet HER_013F).



3.0 ABORIGINAL CONSULTATION PROCESS

This section details the Aboriginal community consultation undertaken to assist in the heritage assessment of the study area. Aboriginal consultation in accordance with the *Aboriginal cultural heritage consultation requirements for proponents 2010* (ACHCRs) was undertaken by Apex Archaeology for this project.

Aboriginal community consultation is a requirement in order to make assessments of Aboriginal cultural values, as Aboriginal people are the primary determinants of the significance of their cultural heritage and therefore Apex Archaeology cannot make a determination on the cultural significance without the input of the RAPs. Aboriginal people often have a strong connection to their Country, and to their ancestors, both past and present.

Material evidence of past Aboriginal occupation of an area is a tangible link to the intangible traditions, lore, customs, beliefs and history. These intangible values provide a sense of belonging for Aboriginal people, and cultural heritage and cultural practices are kept alive through being incorporated into everyday life, which helps maintain a connection to the past and to the present. It is a vital part of the identity of Aboriginal people.

Therefore, it is important that Aboriginal people are afforded the opportunity to understand, comment on and have input into projects that may impact areas which may be culturally sensitive, or damage items of cultural significance. The process of Aboriginal community consultation provides this opportunity, and this ACHAR details the results of the consultation undertaken for this project.

3.1 THE CONSULTATION PROCESS

The ACHCRs provide the process for undertaking consultation with the Aboriginal community. This process includes identification, registration, engagement and consultation with those Aboriginal people who may have cultural knowledge which is relevant to determining the cultural significance of Aboriginal objects and places which may be within the study area.

The ACHCRs detail a number of stages for consultation, as follows:

- Identification of those people who should be consulted for the project
- Inviting Aboriginal people to register their interest in being consulted for the project
- Providing information regarding the nature and scope of the project to the Aboriginal people who have registered an interest in being consulted – the registered Aboriginal parties (RAPs)
- Providing opportunities for RAPs to comment on the proposed methodology for cultural heritage consultation
- Presenting information about the potential impacts of the proposed development for the RAPs to comment on



- Providing opportunities for RAPs to comment on the cultural significance of the proposed development area
- Providing opportunities for RAPs to comment on the draft reports detailing the results of the archaeological and cultural assessments for the project

A log of all correspondence undertaken as part of the assessment must be maintained. This log is attached as Appendix A.

3.2 STAGE 1 CONSULTATION: COMMENCEMENT

Stage 1 requires a list of Aboriginal people who may have cultural knowledge relevant to the area to be prepared from several sources of information. The first step requires enquiries to be made of certain statutory bodies regarding whether they are aware of Aboriginal people or organisations that may have an interest in the study area, and their contact details. Any Aboriginal people or organisations identified in this step must be contacted and invited to register an interest in the project. In addition, a notification must be placed in local print media requesting Aboriginal people or organisations to register their interest in the project. A list of those who register an interest must be compiled. A minimum of 14 days from the date of the letter or newspaper advertisement must be allowed for registrations of interest.

As a result of the Stage 1 activities, a list of Aboriginal people who wish to be consulted for the project is developed. These Aboriginal people become the registered Aboriginal parties – the RAPs – for the project.

Letters requesting the details of Aboriginal people who may hold cultural knowledge relevant to the study area and who may wish to be consulted for the project were sent to several statutory agencies on 8 April 2024. Copies of these letters and responses are attached in Appendix B. These Step 1 letters were sent to the following agencies:

- Heritage New South Wales (Heritage NSW)
- Southeast Local Land Services (SELLS)
- Shoalhaven Council (SCC)
- Nowra Local Aboriginal Land Council (NLALC)
- Office of the Registrar, *Aboriginal Land Rights Act 1983 (NSW)* (ORALRA)
- Native Title Services Corp (NTSCorp)

Responses were received from all of the statutory agencies replied. Heritage NSW provided a list of Aboriginal stakeholders for the Shoalhaven LGA, SELLS advised to contact Heritage NSW, SCC replied with an auto-generated email advising the email had been received and will be referred to the appropriate Council Officer for action. NLALC registered and advised they would be expected to be consulted should any sites work be conducted in the area, ORALRA suggested to contact the Joint Management Coordinators for Biamanga and Gulaga National Parks, and NTSCorp



requested that the South Coast People registered native title claimants be registered for the project. These individuals and organisations identified in the above step were invited to participate in consultation for the project.

An online search of the National Native Title Tribunal (NNTT) identified a Native Title Application over the study area on behalf of the South Coast People (NC2017/003). The application has been accepted for registration but not yet determined.

The Aboriginal people and organisations identified during this initial stage were contacted via letter (email if provided or via post if no email address given) on 22 April 2024, inviting them to register an interest in the project. Registrations were accepted until 6 May 2024. This is Step 2 of Stage 1 of consultation. Copies of these letters are attached in Appendix C.

In addition, an advertisement was placed in the *South Coast Register* on 17 April 2024, inviting registrations of interest from people who may have cultural knowledge of the project area to register by the 7 May 2024. A copy of the advertisement is attached in Appendix D.

A total of eleven Aboriginal people and organisations registered an interest in being consulted for the project. The following list comprises the registered Aboriginal parties (RAPs) for the project:

- Nowra Local Aboriginal Land Council
- South Coast People
- Djirringanj Elders Federation
- Girragirra Murun Aboriginal Corporation
- Goobah Cultural Heritage Service
- Kalthi Consultancy
- Sonione Wakabut Rogers
- South Coast Culture and Heritage
- Thoorga Nura
- Eora Heritage Group
- Woronora Plateau Gundungara Elders Council



3.3 STAGE 2 & 3 CONSULTATION: PRESENTATION AND GATHERING OF INFORMATION

During Stage 2, information about the proposed project is provided to the RAPs, including location, scale, proposed development plans, timeframes, methodologies and any other relevant details relating to the project. This information can be provided in writing or at a meeting (or both), and an opportunity for the RAPs to visit the site may also be provided.

During Stage 3, RAPs are invited to share information about the cultural significance of the study area, which can assist in the assessment of the cultural significance of the Aboriginal objects and/or places within the study area. The cultural heritage assessment informs and integrates with the scientific assessment of significance and therefore can assist in the development of mitigation and management measures for the project. A methodology detailing how this information will be gathered must be provided to the RAPs for comment and a minimum of 28 days must be allowed for responses to be received. Any feedback must be considered and implemented as appropriate into the methodology.

Stage 2 and 3 can be undertaken concurrently. The information about the project and the methodology for seeking cultural knowledge can be provided in the same written documentation or at the same meeting.

Details of the proposed project and the proposed methodology for undertaking the cultural heritage and archaeological assessments for the project were provided in writing to each of the RAPs on 7 May 2024. Comments were accepted until 4 June 2024. Only one response was received. This was from Jodie at Girragirra Murun on the 14 June 2024 advising the group does not have any comments and would like to be considered for field work. Rebecca Bryant from Apex Archaeology replied on 18 June thanking Jodie for her reply and advised that she has noted that Girragirra would like to be involved in fieldwork.

No alternatives to our methodology were suggested or requested. The RAP responses are attached in Appendix E and are detailed in Table 4.

Table 4: RAP responses to Information and Methodology document

RAP	RAP Response	Apex Archaeology Response
Girragirra Murun	Good evening, Girragirra have no comments to add and would like to be considered for fieldwork	Hi Jodie, Thank you for your reply. I have noted that you would also like to be involved in fieldwork. Warm regards, Rebecca



No other comments were received from any of the other RAPs for the project, and no specific cultural information pertaining to the study area was received from any of the RAPs for the project during this stage of consultation.

3.4 STAGE 4: REVIEW OF DRAFT REPORT

Stage 4 sees the preparation of the draft ACHAR, which details the results of the cultural heritage assessment. The draft is provided to the RAPs for their review and comment. A minimum of 28 days to comment on the ACHAR must be allowed. All comments must be addressed in the final document and the proponent's response to RAP comments must be included. Copies of any submissions received from RAPs must be included in the final ACHAR.

The draft report was provided to all RAPs for their comment and review on 26 August 2024. Comments were accepted until 24 September 2024. No responses were received from any of the RAPs for the project. Copies of the consultation correspondence are attached as Appendix F.



4.0 ABORIGINAL CULTURAL HERITAGE

An analysis of previous archaeological work within the study area assists in the preparation of predictive models for the area, through understanding what has been found previously. By compiling, analysing and synthesising the previous archaeological work, an indication of the nature and range of the material traces of Aboriginal land use is developed. An understanding of the context in which the archaeological assessment is vital, as development does not occur within a vacuum, but within a wider cultural landscape, and this must be considered during any archaeological assessment in order to develop appropriate mitigation and management recommendations.

This section presents information about both the physical and cultural landscape in which the study area is located, based on previous archaeological and ethnohistorical studies, to provide context and background to the existing knowledge of Aboriginal culture in the area.

4.1 EXISTING ENVIRONMENT

The study area is located within the geological structure known as the Sydney Basin, which is roughly bounded by the Great Dividing Range to the west, the coast to the east, Newcastle to the north and Durras, near Batemans Bay, to the south. The current study area consists of a low-lying alluvial flood plain that is located to the south east of the Worrigeer Nature Reserve.

The majority of the study area has been highly disturbed, historical impacts such as vegetation clearance across the entire site, earth works and illegal dumping across the site along with unauthorised four wheel driving activity, camping and motor bike use of the area have left clear and noticeable impacts across the area.

4.1.1 GEOLOGY

The underlying geology of the majority of the study area comprises gravel, sand, silt and clay derived mainly from sandstone and shale overlying buried estuarine sediments. Small sections in the west and south are mapped as being within the Nowra Sandstone formation which comprises medium to coarse-grained quartz sandstones that contain rounded pebbles scattered throughout the beds.

4.1.2 SOIL LANDSCAPES

The Nowra soil landscape overlays the study area, it is a depositional landscape characterised by moderately to gently undulating rises to low hills with broad drainage areas and deeply incised channels. Bench sandstone tends to outcrop adjacent to drainage lines. Soils are moderately deep at 50-100 cm occurring on crests and upper slopes. The colours and texture can vary from yellowish brown sand to dark reddish-brown fine-sandy loam (A1) topsoil. This overlays a hard-setting gravelly massive yellowish brown clayey sand with a mottled dull reddish to brown (A2) subsoil, or dark olive sandy clay.

4.1.3 HYDROLOGY

Browns Creek runs north-south through the central portion of the study area. Browns Creek is a tributary to Nowra Creek, and runs from Hillcrest Avenue, South Nowra approximately 2.7km north of the study area. Nowra Creek is located on the opposite side of the Princes Highway, approximately 320m west of the study area, and is classified as a third order watercourse. Nowra Creek is a tributary of the Shoalhaven River. Rotten Creek is also within close proximity to the study area, approximately 350m east of the eastern boundary. It is classified as a second order watercourse. Rotten Creek feeds into the Crookhaven River (fourth order watercourse), which is located approximately 5km east of the project area. Several additional unnamed creeks and ephemeral waterways are also located to the west, south and east of the study area.

Watercourse classification ranges from first order through to fourth order (and above), with first order being the lowest, i.e., a minor creek or ephemeral watercourse, and fourth or above being a large watercourse such as a river (**Error! Reference source not found.**), as defined by the Department of Planning and Environment (DPE). This classification is recognised as a factor which helps the development of predictive modelling in Aboriginal archaeology in NSW. Browns Creek and Rotten Creek are considered to be second order water courses, which may not have provided a continuous freshwater supply for Aboriginal people. Nowra Creek is considered a third order water course. The Crookhaven River, which is a fourth order water course, would most probably have been brackish considering its proximity to the sea on the coastline. The Shoalhaven River is also a fourth order watercourse, but is located approximately 6.5km north of the study area. Many other sites in closer proximity to the Shoalhaven River are likely to have been more desirable for Aboriginal people in the past.

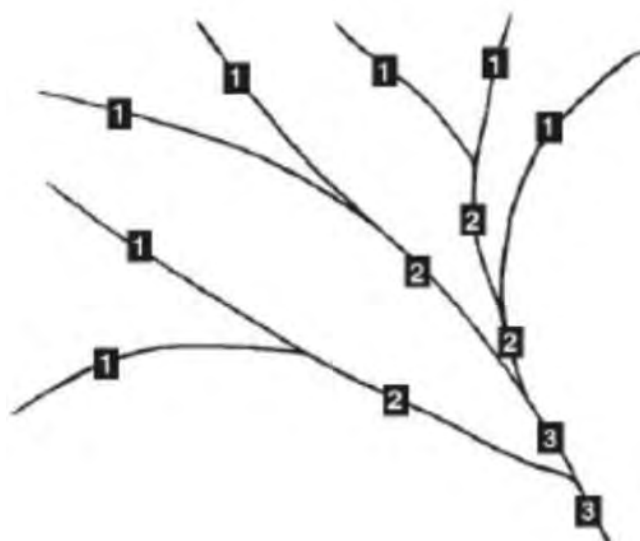


Figure 5: The Strahler system (Source: Department of Planning and Environment 2016).



4.1.4 FLORA AND FAUNA

The original vegetation within the area would have consisted scattered open woodland with occasional shrubs. Common species include turpentine (*Syncarpia glomulifera*), grey gum (*Eucalyptus punctata*), scribbly gum (*Eucalyptus sclerophylla*), Sydney peppermint (*Eucalyptus piperita*), thin leaved stringybark (*Eucalyptus eugenioides*), red bloodwood (*Eucalyptus gummifera*), forest oak (*Allocasuarina torulosa*) and blackbutt (*Eucalyptus pilularis*) with an understorey of flaky-barked tea-tree (*Leptospermum attenuatum*). Mountain devil (*Lambertia formosa*), hairpin banksia (*Banksia spinulosa*), pine-leaf geebung (*Persoonia pinifolia*) and burrawang (*Macrozamia communis*) spotted gum (*Eucalyptus maculata*), blackbutt (*Eucalyptus pilularis*), blue-leaved stringybark (*Eucalyptus agglomerata*), cabbage tree palm (*Livistona australis*), illawarra flame tree (*Brachychiton acerifolium*), wattle (*Acacia* sp.). Decorative paperbark (*Melaleuca decora*) would have also occurred in the drainage lines and terraces, along with swamp oak (*Casuarina glauca*), Illawarra flame tree (*Brachychiton acerifolium*), and various reeds in swamps.

Animals within the study area and surrounds would have included birds, possums, wombats, kangaroos, wallabies, snakes, lizards, frogs, and fish in the creeks.

Most of these natural resources would have provided resources for Aboriginal people, either for dietary needs or to provide tools and implements. For example; nuts from the burrawang plant would have first been leached of toxins then ground into a flour for food; the various Eucalypts would have provided wood for shields, canoes and coolamons; gum from the wattle trees would have been collected and mixed with ash to make a strong resin to attach stone tools to wooden handles for spears and axes; fur from possums would have been sewn together using a needle made from animal bones and thread made from the sinew of animals muscles.

4.2 ETHNOHISTORY

Ethnohistorical evidence is based on the reports of colonisers and do not tend to include the Aboriginal perspective, leading to a Eurocentric view of Aboriginality. Additionally, historical records can be contradictory and incomplete regarding the exact tribal boundaries and locations of ceremonial or domiciliary activities of Aboriginal people pre-contact within the South Coast region. Boot (2002:58) notes:

The problem associated with ethnohistoric documents include their tendency to record unusual, rather than everyday events, and their focus on religious behaviour to the exclusion of woman and children (Attenbrow 1976:34).

As a result, there are several versions of the Aboriginal history prior to colonisation, mostly due to differing records made in the historical period. Howitt (1904) defined the Yuin tribal area as extending from Cape Howe in the south to the Shoalhaven River in the north.



In contrast, other historical records made by early colonists indicate the study area is located within lands traditionally occupied by the Wodi Wodi people (Tindale 1974). The Shoalhaven River was considered to be a border between the Wodi Wodi and the Wandandian people. The Wodi Wodi spoke Dharawal, and the Wandandian spoke Dhurga. It is noted that the Wandandian people were considered to have occupied an area extending from the Shoalhaven River south to Ulladulla (Tindale 1974) while the Wodi Wodi lived in the area between the Shoalhaven River north to Wollongong, and as far inland as Moss Vale.

However, some members of the Aboriginal community dispute these associations and claim the area falls within the lands of the Jerrinja tribe, which extends from Crooked River in the north to the Clyde River in the south. The Jerrinja tribe have been referred to as the “Saltwater people of the Shoalhaven” (Penfold 2017).

As such, it is difficult to make definitive claims regarding the history of the people who once inhabited the area. However, it is acknowledged that a thriving Aboriginal population inhabited the area prior to colonisation, and the arrival of European settlers dramatically and negatively impacted the Aboriginal people of Australia.

Regardless of the specific identity of the original inhabitants of the area, Aboriginal society in general was constructed of a hierarchy of social levels and groups, with fluid boundaries (Peterson 1976), with the smallest group comprising a family of a man and his wife/wives, children and some grandparents, referred to as a ‘clan’ (Attenbrow 2010). The next level consists of bands, which were small groups of several families who worked together for hunting and gathering purposes (Attenbrow 2010). The third level comprised regional networks with a number of bands, and these bands generally shared a common language dialect and/or had a belief in a common ancestor. Networks would come together for specific ceremonial purposes. The highest level is described as a tribe, which is usually described as a linguistic unit with flexible territorial boundaries (Peterson 1976); although Attenbrow (2010) argues that “these groups were not tribes in the current anthropological sense of the word”.

The traditional lifestyles of Aboriginal groups depended largely on the environment in which they lived. Whilst coastal groups utilised marine and estuarine resources, hinterland groups relied on freshwater and terrestrial animals and plants. Worrigeer falls within the hinterland region. Within the hinterland, small animals such as wallabies, kangaroos, possums, small birds, fresh water fish and water birds would have formed part of the Aboriginal peoples’ diet (Attenbrow 2010) as well as berries, tubers, seeds, leaves and nectar. Plant resources were available year-round, and within the Shoalhaven region a number of important fruits were available in the autumn and winter months, with a greater variety available all year round (Kohen in Attenbrow 2010).



4.2.1 RAW MATERIALS

A wide range of raw materials were selected by Aboriginal people for flaking to create stone implements. Material types ranged from high quality to poor quality for flaking purposes, depending on the geology of the area and readily available material types. The following is a description of a range of raw material types known to have been utilised by Aboriginal people for the creation of stone artefacts.

BRECCIA

Breccias are coarse, angular volcanic fragments cemented together by a finer grained tuffaceous matrix.

CHALCEDONY

Chalcedony is a microcrystalline, siliceous rock which is very smooth and can be glossy. Introduction of impurities can produce different coloured versions of chalcedony, including yellow/brown (referred to as carnelian), brown (sard), jasper (red/burgundy) and multicoloured agate. It flakes with a sharp edge and was a prized material type for the creation of stone artefacts in parts of Australia (Kuskie & Kamminga 2000: 186).

CHERT

Chert is a highly siliceous sedimentary rock, formed in marine sediments and also found within nodules of limestone. Accumulation of substances such as iron oxide during the formation process often results in banded materials with strong colours. Chert is found in the Illawarra Coal Measures and also as pebbles and colluvial gravels. It flakes with durable, sharp edges and can range in colour from cream to red to brown and grey.

PETRIFIED WOOD

Petrified wood is formed following burial of dead wood by sediment and the original wood being replaced by silica. Petrified wood is a type of chert and is a brown and grey banded rock and fractures irregularly along the original grain.

QUARTZ

Pure quartz is formed of silicon dioxide, and has a glossy texture and is translucent. Introduction of traces of minerals can lead to colouration of the quartz, such as pink, grey or yellow. The crystalline nature of quartz allows for minute vacuoles to fill with gas or liquid, giving the material a milky appearance.

Often quartz exhibits internal flaws which can affect the flaking quality of the material, meaning that in general it is a low-quality flaking material (Kuskie & Kamminga 2000: 186). However, quartz is an abundant and widely available material type and therefore is one of the most common raw materials used for artefact manufacture in Australia. Flaking of quartz can produce small, very sharp flakes which can be used for activities such as cutting plant materials, butchering and skinning.



QUARTZITE

Formed from sandstone, quartzite is a metamorphic stone high in silica that has been heated or had silica infiltrate the voids found between the sand grains. Quartzite ranges in colour from grey to yellow and brown.

SILCRETE

Silcrete is a siliceous material formed by the cementing of quartz clasts with a matrix. These clasts may be very fine grained to quite large. It ranges in colour from grey to white, brown, red or yellow. Silcrete flakes with sharp edges and is quite durable, making silcrete suitable for use in heavy duty woodworking activities and also for spear barbs (Kuskie & Kamminga 2000:184).

TUFF/INDURATED MUDSTONE

There is some disagreement relating to the identification of lithic materials as tuff or indurated mudstone. The material is a finely textured, very hard yellow/orange/reddish-brown or grey rock. Kuskie and Kamminga (2000: 6, 180) describe that identification of lithic materials followed the classification developed by Hughes (1984), with indurated mudstone described as a common stone material in the area. However, Kuskie and Kamminga's analysis, which included x-ray diffraction, identified that lithics identified as 'indurated mudstone' was actually rhyolitic tuff, with significant differences in mineral composition and fracture mechanics between the stone types. They define mudstone as rocks formed from more than 50% clay and silt with very fine grain sizes and then hardened.

The lithification of these mudstones results in shale (Kuskie & Kamminga 2000: 181) and thus 'indurated mudstone', in the opinion of Kuskie and Kamminga, do not produce stones with the properties required for lithic manufacture.

In 2011, Hughes, Hiscock and Watchman undertook an assessment of the different types of stones to determine whether tuff or indurated mudstone is the most appropriate terminology for describing this lithic material. The authors undertook thin section studies of a number of rocks and determined that the term 'indurated mudstone' is appropriate, with an acknowledgment that some of this material may have been volcanic in origin. They also acknowledge that precise interpretation of the differences between material types is difficult without detailed petrological examination, and suggest that artefacts produced on this material are labelled as 'IMT' or 'indurated mudstone/tuff'.

BASALT

Basalt, which is commonly referred to as 'blue metal', is solidified lava that was produced by now extinct volcanoes and diatremes that are spread-out within the Sydney Basin. If the lava cools quickly it results in fine-grained basalt that is easily flaked or ground to make tools, implements or weapons. Tuff forms from the tiny ash particles that are also released during volcanic explosions. When it cools it hardens into a fine-grained rock called 'tuff', as discussed above.



Basalt would have been either collected from the primary deposits formed during the eruption, which would require pieces to be broken off (quarried) or it was collected in cobble-form from a creek bed or shoreline. Cobbles are referred to as secondary sources as they are formed from pieces of rock that have been dislodged from their primary source and end up in creeks and/or river systems (Petrequin 2016; Attenbrow et al. 2017). The flow of water moves them around and smooths them into water-rolled cobbles that can be transported considerable distance from the original source. Basalt was often used to make axes which were either flaked into the desired shape from quarried stone, or from cobbles which quite often only required only one end to be ground into a sharp working edge.

Basalt cobbles can be found along the banks of rivers, and in bedrock quarries within the Hunter Region. Recent research undertaken by the Australian Museum and University of New England using portable XRF technology demonstrated that a number of stone axes held at the Australian Museum from the Hunter Valley area have been traced to these sources (Attenbrow et al. 2017).

4.2.2 PROCUREMENT

Assemblage characteristics are related to and dependent on the distance of the knapping site from raw materials for artefact manufacture, and different material types were better suited for certain tasks than other material types. Considerations such as social or territorial limitations or restrictions on access to raw material sources, movement of groups across the landscape and knowledge of source locations can influence the procurement behaviour of Aboriginal people. Raw materials may also have been used for trade or special exchange between different tribes.

4.2.3 MANUFACTURE

A range of methodologies were used in the manufacture of stone artefacts and tools, through the reduction of a stone source. Stone may have been sourced from river gravels, rock outcrops, or opportunistic cobble selection. Hiscock (1988:36-40) suggests artefact manufacture comprises six stages, as follows:

1. The initial reduction of a selected stone material may have occurred at the initial source location, or once the stone had been transported to the site.
2. The initial reduction phase produced large flakes which were relatively thick and contained high percentages of cortex. Generally the blows were struck by direct percussion and would often take advantage of prominent natural ridges in the source material.
3. Some of these initial flakes would be selected for further reduction. Generally only larger flakes with a weight greater than 13-15 grams would be selected for further flaking activities.
4. Beginning of 'tranchet reduction', whereby the ventral surface of a larger flake was struck to remove smaller flakes from the dorsal surface, with this retouch applied to the lateral margins to create potential platforms, and to



the distal and proximal ends to create ridges and remove any unwanted mass. These steps were alternated during further reduction of the flake.

5. Flakes were selected for further working in the form of backing.
6. Suitable flakes such as microblades were retouched along a thick margin opposite the chord to create a backed blade.

Hiscock (1986) proposed that working of stone materials followed a production line style of working, with initial reduction of cores to produce large flakes, followed by heat treatment of suitable flakes before the commencement of tranchet reduction. These steps did not necessarily have to occur at the same physical location, but instead may have been undertaken as the opportunity presented.

Although probably less common than the process of flaking stone to modify it, the grinding technique was used within the Sydney Basin. This has been documented by early settlers particularly in the manufacture of axe heads where the end of a cobble was ground to achieve a working edge (Corkill 2005).

4.3 LAND USE HISTORY

4.3.1 INDIGENOUS OCCUPATION

When Aboriginal occupation of Australia is likely to have first commenced, around 60,000 years ago (Mulvaney and Kamminga 1999; Bowdler *et al* 2003; Attenbrow 2010), sea levels were around 30-35m lower than present levels, and this further decreased to up to 130m lower than present sea levels (Attenbrow 2010). Sea levels stabilised around 7-6,500 years ago, and as a result many older coastal sites would have been inundated with increasing sea levels. It is possible that areas that are now considered “coastal” would once have limited resources available to Aboriginal people, and as such would have been less likely to have been occupied or used for repeated habitation sites.

Archaeological work at the Madjedbebe site in Arnhem Land in the Northern Territory revealed evidence confidently dated to the period before 45-46 ka and possibly up to 50-55 ka (Clarkson *et al* 2015). In NSW, there is strong evidence available to support Aboriginal occupation of the Cumberland Plain region in the Pleistocene period (approximately 40 ka) and possibly earlier. Work in Cranebrook Terrace was dated to 41,700 years BCE by Stockton and Holland (1974), and a site in Parramatta within deep sandy deposits was dated to 25-30 ka (JMcDCHM 2005). Kohen’s 1984 assessment of Shaws Creek in the Blue Mountain foothills yielded ages of 13 ka, while Loggers Shelter at Mangrove Creek was dated to 11 ka by Attenbrow (1987). Deeply stratified occupation deposits at Pitt Town were dated to 39ka (Apex Archaeology 2018). These ages are obtained from both radiocarbon and optically stimulated luminescence (OSL) dating.

Some experts have cast doubt onto the assessment of the items from Cranebrook Terrace as artefactual (Mulvaney & Kamminga 1999; McDonald 2008), although they do not doubt the results of the radiocarbon dates – it is the association of the

artefacts with the dated deposits that is problematic, and Mulvaney and Kamminga (1999) consider that there are better examples of sites with more robust identification of age available. There has certainly been a great deal of research undertaken within the Sydney region in the intervening years.

Aboriginal people have occupied the NSW South Coast for at least 20,000 years (Boot 2002). Occupation sites dating to the Pleistocene period have been dated to c.20,000 Before Present (BP) at Burrill Lake (Lampert 1971) and c.17,000 BP at Bass Point (Bowdler 1970; 1976), with investigations suggesting a very low site occupation intensity during the Pleistocene era, with intensification of occupation commencing approximately 7,000 BP. The evidence at Burrill Lake came from a rockshelter, while Bass Point comprised an open context site on the gentle slopes of a ridgeline. Generally, the Pleistocene occupation of the South Coast is considered to have been sporadic and of low intensity, due to the low population levels postulated during this time (McDonald 2005).

Changing sea levels resulted in the ecological systems of the hinterland areas changing too, resulting in differing resources becoming available. This led to an increase in evidence of habitation of areas from around 6,500 BP, although it is unclear whether this relates to the survivability of more recent sites, or an increase in population. Hughes and Lampert (1982) suggested that a population increase is the only plausible explanation for the exponential increase in Holocene sites from 6,000 BP.

During the Holocene period around 6.5ka, sea levels increased and stabilised, which led to those groups on the coastal fringes turning inland (McDonald 2008). Around 5ka a change in archaeological assemblages can be seen, with an emphasis on the use of locally available stone for artefact production. Around 4,000 years ago people began to decrease their residential mobility and inhabit certain biogeographic zone on a permanent basis (McDonald 2008).

4.3.2 POST CONTACT OCCUPATION

Following the establishment of the first European settlement at Sydney Cove, the need for additional agricultural land was identified, as Sydney Cove was considered unsuitable for farming. By November 1788, food supplies were running low for the settlement, and an expedition led by Governor Philip set off up the Parramatta River in search of arable land. An area known as Rose Hill (now Parramatta) was settled by a small group of 11 soldiers and 10 convicts. The grain crops at Sydney Cove failed, and the settlement at Rose Hill was ordered to be used for agriculture. These crops were luckily successful, and a further settlement comprising a convict farm was established at Toongabbie.

Exploration of the wider region continued, and in 1791, expeditions travelled the Hawkesbury and Nepean areas, identifying them as likely spots for agriculture. The Shoalhaven region had been sighted by Captain Cook in April of 1770, when he



observed a protected bay which was later named Port Jervis, and he recorded evidence of smoke along the shoreline just before dark, which may have been related to Aboriginal campfires near the area now known as Bass Point.

Lieutenant James Grant recorded an account of an early meeting of Europeans and local Aboriginal people as being amicable (Grant 1801), with the Aboriginal people they encountered described as 'more robust than Sydney Blacks'.

James Meehan reached the Shoalhaven River in 1805 as part of his exploration of the region, and noted the extensive stands of red cedar along the lower reaches of the river (Antill 1982). The first official shipment of cedar left the Shoalhaven in 1811, and by the following year seven ships were transporting cedar out of the Shoalhaven.

The Cambewarra and Illawarra Ranges were first explored by Europeans in 1812, by surveyor George Evans. This included a survey of the Jervis Bay foreshores and Evans intended to return overland to Appin, but the difficulty of the terrain led to him abandoning this plan (Griffith 1978). In 1818, James Meehan and Charles Throsby were commissioned to find an overland route between Sydney and Jervis Bay, and a route through Kangaroo Valley was identified with the assistance of two Aboriginal people from the Lake Illawarra region.

Alexander Berry explored the Shoalhaven River environs over several days in 1822, and, together with his business partner Edward Wollonstonecraft, was later granted 10,000 acres on the northern side of the Shoalhaven River with the aim of establishing a permanent settlement. Berry's settlement was located on elevated land at the foot of a hill now known as Coolangatta. By 1840, the estate had increased to around 32,000 acres, and was more than 40,000 acres by 1863 (Australian Dictionary of Biography 2022).

Dairying expanded in the Shoalhaven district throughout the 1850s, particularly from 1855 onwards when men began returning from the goldfields. Many of the farmers were tenants on the Berry Estate, but other landholders also kept dairy herds. Dairy farmers also kept pigs as an additional source of income. The pigs were fed on whey left over from the butter making process. Wheat, maize and potatoes were also cultivated by some of the smaller farmers. By the end of the 1850s, there was little productive land that was not occupied by farms, though not all of it was cleared (Bennett 2003).

Small villages in the Shoalhaven district were settled in the 1850s. Alexander Berry set aside land at Numbaa for a village and by 1855 there was a courthouse, church, post office, store, schoolhouse and a few houses. Nowra was the only government-planned town in the area. The first sale of land there occurred on April 2, 1855. By January 1857, it consisted of seven dwellings and forty-three inhabitants. A steam mill was also constructed in that year. In February 1859, there were sixteen buildings in the village. Later in the year, the Shoalhaven Municipality was established at Nowra, and at the end of the 1850s, there were three other villages close by,



including Worrigeer, Terara and Bomaderry (Bennet 2003:197). Worrigeer was formerly known as 'Boston', which derived from the name "Boss Town" and named after Etienne de Mestre, who was the 'boss' to many people. It was situated on the southern end of the de Mestre grant of 1300 acres, also known as the Terara Estate. It is believed the name Worrigeer is from the Aboriginal word meaning "Peppermint Tree" (Florence 2006).

In 1872 Mr Merriman, an Aboriginal man who was given the title of "King Merriman" by white authorities on the South Coast, began making formal submissions to secure land. In 1877 some land was registered by the colonial government as an Aboriginal reserve and was the first successful land claim on the South Coast. A subsequent 32 reserves were created in NSW between 1861 and 1884. Most of these reserves were set up before 1883 when the Aborigines Protection Board (APB) was established and recommended that a small amount of Crown land be reserved throughout NSW to which Aboriginal people were encouraged to move. Initially, the reserves were mainly managed by the people themselves, not by any church, and they were not controlled by the Protection Board but were "overseen" by the local policemen (Donaldson et al 2017).

The reserves operated by the APB provided rations for the children and the elderly. They consisted of flour, sugar, tea and sometimes meat, and were seldom sufficient to feed a household and fulfill basic nutritional needs. However, the rations were regular and made life a little easier, particularly during the Depression of the 1890s. Over the subsequent years quite a few people tired of the authoritarian nature of the APB reserves and walked off to set up their own camps. Free communities existed at the Cricket Ground at Wallaga Lake, at Currumbine Creek near Huskisson, at Worrigeer near Nowra and at Salt Pan Creek near Revesby. They were a refuge for those who could no longer live under dictatorial white management (Donaldson et al 2017).

Research undertaken by Chittick and Fox (1997) and Florence (2006) detailed below, and a review of the Numbaa Parish historical map (1935), suggests the camp was built close to Greenwell Point Road on one of the former Lamond Estates, approximately 3.8 km north east of the current study.

At that time there was the bean picking all around, and peas. They started up in 1932 along the coast. Like, a big farm at Nowra was Lamond's and the main one was Bo Campbell...And this is when Worrigeer was set up because the Lamond's wanted someone to do their pickin'. So they gave 'em that bit of property there at Worrigeer. The Lamond's lived down Terara Lane and they got that land for the Littles around that time, and for the Hickeys and Williams. So we stayed there for a while at Worrigeer, and other people came too (Chittick & Fox 1997:89).

Florence (2006) states:



...the well for water still exists - it being the water for the Aboriginal families who occupied, and built more huts and houses.

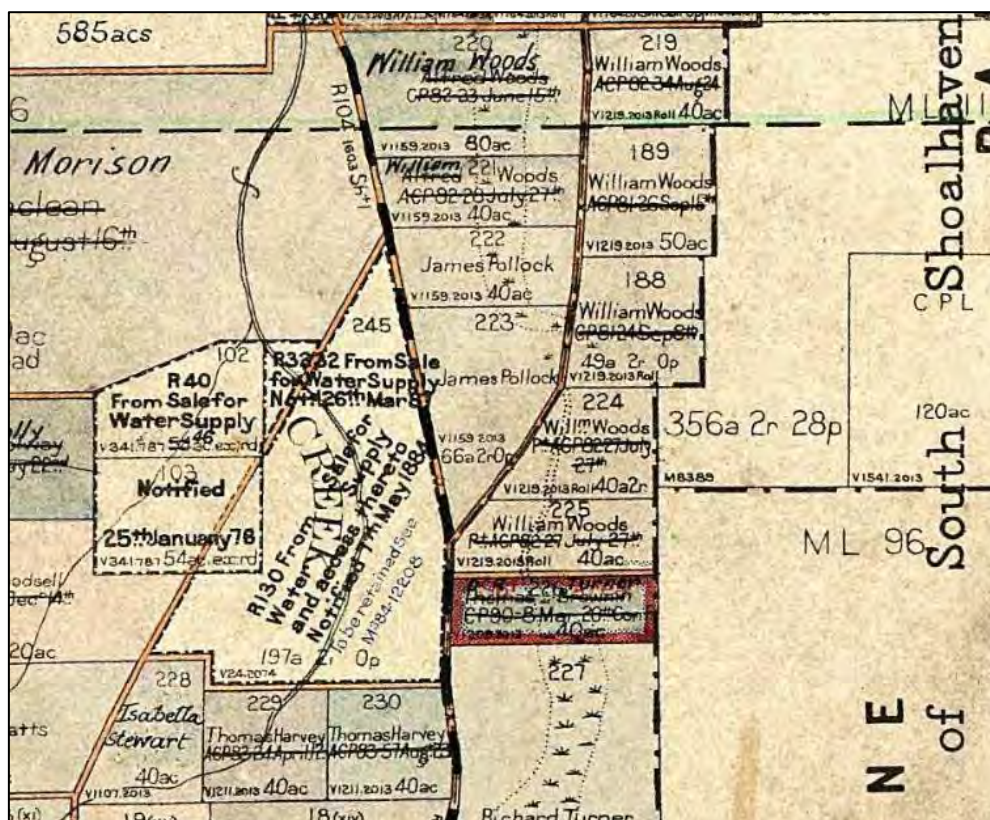
And

A fairly large population of Aboriginal people camped for years and were a source of labour for the surrounding farms as ploughmen, pea and bean pickers. It was here that old Mrs Hickey ruled with an iron hand and even built a church. It was also here that the Aboriginal singer Jimmy Little got his start singing.

In 1962 the Shoalhaven Council appointed an Aboriginal Welfare Committee to investigate the welfare of Aboriginal people living in the area. Investigators were appointed to make inspections of places where Aboriginal families were being housed, including Roseby Park, Brown's Flat and Worrigea. As a result, it appears that Aboriginal people were forced to move from Worrigea to the Brown's Flat camp in the 1960s. In the late 1960s the president of Shoalhaven Shire worked with an Aboriginal elder and activist Percy Mumbler and others to have cottages that had been built for the Snowy Mountains Scheme relocated and erected on council land at Brown's Flat. Most of the houses were built in Mumbulla Street and were referred to by Aboriginal people as 'Silver City'. The introduction of new housing saw the end of Worrigea camp with people moved to 'Mumbler Street', approximately 1.5 km to the north of the current study area (Chittick and Fox 1997:195, cited in Feary and Moorcroft 2011).

4.3.3 DOCUMENTARY EVIDENCE

Historic parish maps were reviewed relating to the study area and were found dating from 1903 to 1978, all prior to the available aerial imagery for the project area. Plate 1 shows that by the time the parish map was cancelled the entirety of the study area was under the ownership of William Woods, in addition to several parcels of land in the surrounding area. Plates 2 to 4 also show that the land was under the ownership of William Woods, (listed in the map notes from plate 4) throughout this period of time. Plate 3 relates to a parish map which was cancelled in 1944 and shows that Warra Warra Road was considered a public road by this time. No further additional information regarding the historic use of the study area could be inferred from these maps.



Warra Warra Road, South Nowra, NSW – ACHA



Plate 2: County of St Vincent, Parish of Nowra, Historic Map cancelled 1921 8th edition (Source: NSW HLRV).

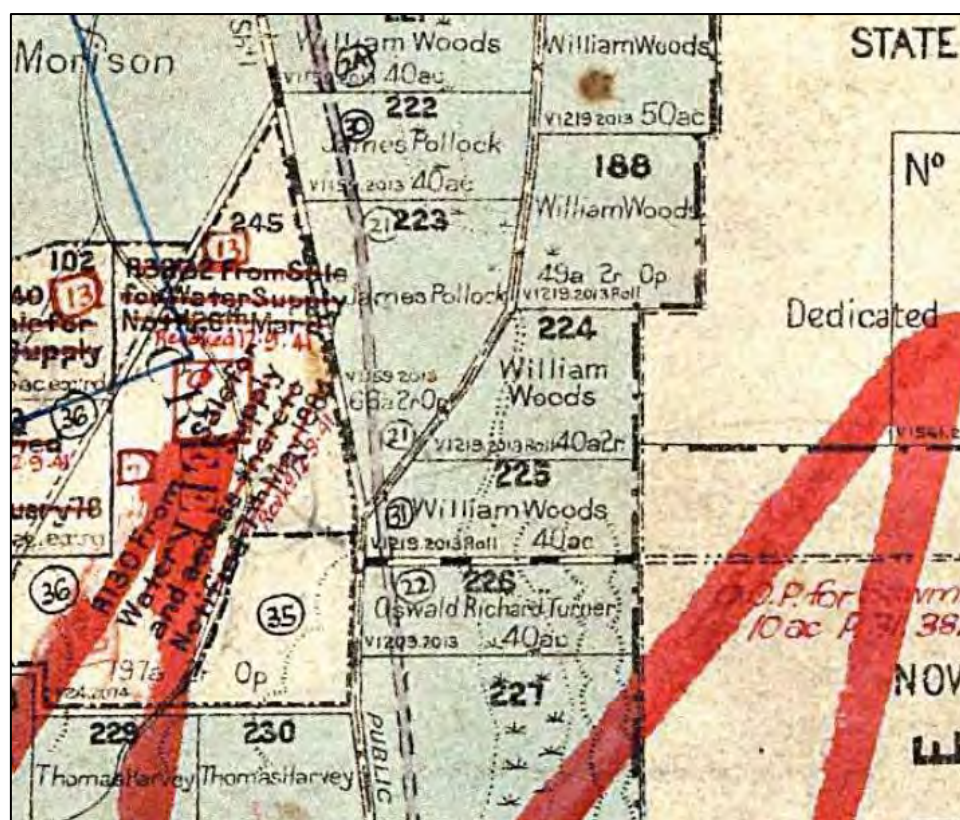


Plate 3: County of St Vincent, Parish of Nowra, Historic Map cancelled 1944 8th edition (Source: NSW HLRV).

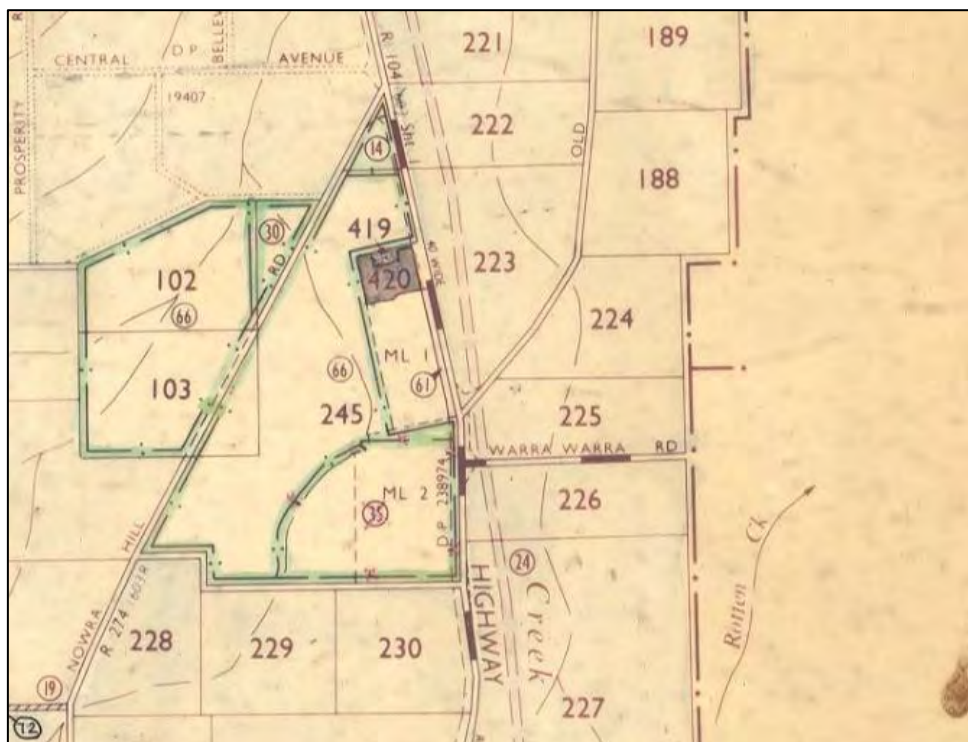


Plate 4: County of St Vincent, Parish of Nowra, Historic Map 1978 11th edition (Source: NSW HLRV).

To assess the disturbance that may have resulted from historical occupation, a series of historical aerial photographs dating back to the mid-twentieth century were reviewed. An image from 1969 (Plate 1) shows Browns Creek traversing the middle of the study area from north to south. The majority of the study area appears to have been cleared of vegetation, except for along the riparian corridor of Browns Creek. Warra Warra Road had been established by 1969 along the southern boundary of the study area. A track also appears to form the western boundary of the study area. To the northwest of the study area, some development has taken place on adjoining land.

Aerial imagery from 1978 shows that the study area has been further cleared, with very few trees remaining within the study area, except for along the riparian corridor (Plate 2). By 1983 it appears that some tracks had been made within the southeastern corner of the study area, although no other major changes are clearly visible (Plate 3). Plate 4 shows the study area in 2000, significant vegetation growth is visible across the majority of the study area, except for a small portion in the western corner.

The imagery also shows more defined tracks in the southeastern corner, and a possible track along the western boundary of the study area. Vegetation along the corridor of Warra Warra Road is also prevalent. By 2005 (Plate 5) extensive vegetation clearance within the southern portion of the study area had occurred, and the southwestern corner has a larger portion of dirt track exposed which lacks any vegetation entirely. The northern portion of the study area still maintained a

significant amount of vegetation (which appears to be predominantly scrubland with few larger trees) by 2005, although additional dirt tracks have been exposed and are clear within the relevant imagery through the central portion and the western portion of the study area. Dirt roads (including Warra Warra Road) are clearly defined along each border of the study area. In all imagery, additional development is clear on the properties located to the west and north of the study area.



Plate 5: Aerial imagery from 1969 showing the study area outlined in red (source: NSW Spatial Services image tile 1600_5N_204).



Plate 6: Aerial imagery from 1978 showing the study area outlined in red (source: NSW Spatial Services image tile 2783_07_016).



Plate 7: Aerial imagery from 1983 showing the study area outlined in red (source: NSW Spatial Services image tile 3389_07_198).



Plate 8: Aerial imagery from 2000 showing the study area outlined in red (source: NSW Spatial Services image tile 4536_06_035).



Plate 9: Aerial imagery from 2005 showing the study area outlined in red (source: NSW Spatial Services image tile 4959_06_086).



4.4 PREVIOUS ARCHAEOLOGICAL ASSESSMENTS

Previous archaeological assessments assist in understanding the archaeological context of the area and in forming predictions for the location of Aboriginal cultural material within a landscape. This includes searching the AHIMS database for previously registered sites and a review of previously completed archaeological assessments.

4.4.1 AHIMS RESULTS

A basic search of the study area was conducted on the AHIMS register on 19 March 2024 using the Lot and DP of the property with a 1km buffer. No sites were identified within or close to the study area. No previous AHIPS have been issued for the study area to the best of our knowledge. A copy of the Basic Search is attached in Appendix G.

4.4.2 LITERATURE REVIEW

A review of previous archaeological work within the surrounding region of the study area was undertaken. A number of reports were identified from background research and the AHIMS database. These include a predictive modelling report for the Shoalhaven area and discrete assessments. They are summarised below, with detailed summaries presented below.

Table 5: Previous heritage assessments undertaken by archaeological consultants in the region

Consultant	Date	Sites Identified	Region
Corkill	1986	Numerous	Shoalhaven
Navin Officer	1992	Two	Nowra
Lampert and Steele	1993	One	Bomaderry
Clarke, E. and Kuskie, P. (South East Archaeology)	2006	76 (in. 69 previous recorded ones)	Lower Shoalhaven
Kuskie, P (South East Archaeology)	2008	None	Bomaderry near Nowra
Feary and Moorcroft	2011	None	Bundanong
Kuskie (southeast Archaeology)	2012	None	West Culburra
GML Heritage	2017	Five	Worrigee
Biosis	2018	One	Cambewarra
Artefact	2018	Seven	Nowra Bridge
Kelleher Nightingale Consulting	2020	None	Nowra Bridge
Kelleher Nightingale Consulting	2020	Five previously identified sites salvaged.	Nowra Bridge
Austral	2021	Two	Cambewarra
Artefact	2021	One artefact scatter and 2 areas of PAD	Falls Creek, NSW
Austral	2022	Eleven	Cambewarra
Apex Archaeology	2023	Five previously identified – test excavation recovered 112 artefacts.	Worrigee



Consultant	Date	Sites Identified	Region
Apex Archaeology	2024	Five sites (27 lithics recovered from 30 test pits)	Meroo Meadow

The archaeological work previously completed within the wider region is summarised here. Although there does not appear to be a specific archaeological assessment undertaken for the current area, there have been archaeological assessments completed across the surrounding areas, including a range of academic assessments, resource management studies and development impact assessments. All of these assist in informing the archaeological assessment of sites within the region.

4.4.3 PREVIOUS REGIONAL HERITAGE ASSESSMENTS

CORKILL 1986

Corkill's honours dissertation 'Gaining Ground: A predictive model for Holocene infill areas on the south coast of New South Wales' (cited in GML 2017) focused on the formulation of a predictive model for Holocene aged sites. Her research identified that within the Shoalhaven area sites were most commonly identified along Holocene estuarine shoreline ridges, dune sands and gravels. The study area included a survey to the north east of the current study area and an Aboriginal site, AHIMS #52-0-0204, was identified during part of this survey. It comprised an isolated artefact found within the ditch bank of an eroded drainage channel near the northern section of Brundee Swamp. The Brundee Swamp is located approximately 4km from the current project area.

NAVIN OFFICER ARCHAEOLOGICAL RESOURCE MANAGEMENT 1992

Navin Officer Archaeological Resource Management undertook an archaeological investigation for a development proposal at the Shoalhaven Mill site on the Shoalhaven River in Nowra. The investigation included a review of previous archaeological reports and the register for Aboriginal sites, which at the time was managed by the National Parks and Wildlife Service. A pedestrian survey was undertaken with a representative of the Nowra Local Aboriginal Land Council. Approximately 40% of the area was surveyed and only about 10% of the whole area had adequate surface visibility. The ground was noted to have been previously disturbed by agricultural practices and was prone to waterlogging. Two isolated finds were recorded; one was a ground-edged hatchet head made from a river cobble of fine-grained volcanic stone located within a drainage channel, and the other was a pebble with flake scars found in the same drainage channel. It was recommended that an application to permit the collection of the hatchet head be made as soon as possible to the National Parks and Wildlife Service. No other sites were found, nor were further recommendations made.



LAMPERT AND STEELE 1993

Lampert and Steele 1993 undertook an analysis of stone, shell, plant, and animal bones found during excavations within a rockshelter at Bomaderry Creek. The site is located approximately 800m north of the Shoalhaven River to the north west of the current study area. The results found that the shelter was occupied at about 1,900 years ago and again at about 1,400 years ago. A variety of stone tools were found including backed artefacts, eloueras, scrapers, fabricators, axes, hammerstones, bone points. Utilised and unmodified flakes were also recovered. Apart from the basalt used for axes, the stone tools were made mainly from quartz, chert, and to a lesser extent, silcrete. The researchers proposed that the quartz can be found locally as isolated pebbles and in the sandstone bands; the chert can be found as cobbles in the creeks like Tapitallee Creek that rises in the Cambewarra range; and the silcrete can be found locally or around Ulladulla region some 45 km to the south.

Seventeen species of land animals were also identified, from mainly mammals, along with a variety of shellfish. Seed husks from the highly toxic *Macrozamia* plant that requires particular processing to eat was found, and resin from the *Xanthorrhoea* tree used to attach stone, shell or bone tools to wooden handles, was also found. The analysis demonstrated that the Aboriginal people that used the shelter utilised a large range of natural resources. They acquired the animal and plants locally, and the stones were procured both locally and further afield.

CLARKE AND KUSKIE (SOUTH EAST ARCHAEOLOGY) 2006

South East Archaeology undertook a staged Aboriginal Heritage and Cultural Mapping Project in the Lower Shoalhaven River Valley. Stage 4A of the project comprised archaeological predictive modelling for Aboriginal heritage sites within the Nature Reserves and Regional Park in the Lower Shoalhaven region. The aim of the project was to develop a spatial predictive model that included Aboriginal cultural values, including archaeological sites within the Shoalhaven region. The investigation included a review of 69 archaeological sites, as well as a large-scale pedestrian survey with members of the Aboriginal community. Seven conservation areas including the Brundee Swamp and Worrigee Nature Reserve, which are located to the east and the north west of the current study area respectively, were included in the study. An additional 7 sites were also recorded during the survey. Clarke and Kuskie proposed that there were two main types of resource zones. This was determined through consideration of the geology, available natural resources, identified sites, previous archaeological and survey results. The resource zones are as follows:

- Primary resource zones that were in close proximity to the major Shoalhaven and Crookhaven Rivers had a higher probability of containing evidence for a wide range of occupation types including congregations of large groups of people, community base camps and nuclear/extended family camps.



Occupation was likely to have been regular and potentially longer in duration in the primary zones.

- Secondary resource zones were defined in terrain units close in proximity to higher order creeks and/or wetlands, and their associated flats, slopes and terraces. These would have a high probability of containing evidence of nuclear/extended family base camps, camping by small hunting and /or gathering parties and transitory movement. Occupation is likely to have been sporadic and relatively short in duration.

Areas outside the primary and secondary resource zones included terrain units distant from higher order creek and /or wetlands, such as lower order drainage depressions and associated slopes and crests. Occupation in these areas is likely to have involved hunting and/or gathering and transitory movement and is likely to have been sporadic and very short in duration.

The study identified a large variety of sites within the Shoalhaven area including isolated stone artefacts, stone artefact scatters, art, burial, shell middens stone arrangements, scarred trees. However, the most common site type is stone artefact scatters and there is a potential for these to occur across virtually the entire study area, albeit typically in low density consistent with background discard, interspersed by occasional areas of higher density in which localised activity areas have occurred. With regards to rockshelter and grinding grooves which require outcropping sandstone to be present. It was predicted that these occur relatively frequently and larger rockshelters in close proximity to wide variety of resources may have served as base camps. Art sites and grinding grooves may occur in areas with suitable surfaces. Art sites may comprise several forms including paintings, drawings, pecked engravings and stencils. It was also predicted that burial, mythological/traditional, scarred/carved trees, lithic quarries and stone arrangement sites have either a low to very low potential to occur or to be readily identified within the study area.

It was suggested that further surveys be undertaken to cover a wider range of contexts in order to gain a more complete understanding of heritage resources potentially present in the area and further refine the predictive model.

KUSKIE (SOUTH EAST ARCHAEOLOGY) 2008

South East Archaeology was engaged to undertake an ACHA for a proposed Ethanol Plant Upgrade in Bomaderry. The study area was located on a 1,000 ha property that operated as an environmental farm. The assessment included a review of previous archaeological assessments within the Shoalhaven LGA and surrounding areas, a review of the Aboriginal Heritage Information and Management System, and a pedestrian survey. The survey investigated the areas of proposed works including along the river Levee. The area was found to be heavily disturbed by previous earth and drainage works, construction activities and flooding. No previous Aboriginal heritage sites were identified, and none were found during the investigation. The assessment concluded that the potential for stone artefacts was



low and other forms of Aboriginal heritage was negligible. It was recommended that provisions relating to Aboriginal heritage (should any be found during construction) be included in an Environmental Management Plan for the project.

FEARY AND MOORCROFT 2011

Feary and Moorcroft were commissioned by the Bundanon Trust to produce a cultural heritage management plan for the protection and management of Aboriginal cultural heritage of the Bundanon Trust Properties. The plan included the archaeological evidence, the spiritual significance, associated memories, storylines and cultural traditions of Aboriginal people. The plan used main themes of cosmology, traditional life, cross cultural connections and contemporary life and demonstrated how they were expressed at Bundanon.

A survey was undertaken in partnership with the Shoalhaven catchment to identify any archaeological sites as none had been previously identified. No new sites were found and it was suggested that this part of the Shoalhaven catchment did not support a large Aboriginal population pre-contact. It was proposed that this may have been due to the location of the properties at the tidal limit of the river and close to a topographic boundary.

A review of the ethnographic and ethnohistoric literature demonstrates a substantial indigenous presence in the area at the time of European contact. Aboriginal workers had a critical role in the labour force on pastoral properties, particularly bean and pea picking. Farmers would transport pickers to and from reserves and fringe camps to their farms during picking time and seasonal work reached a peak in the 1950s and 1960s. However, harvesting machinery introduced in the 1970s, combined with a downturn in the coastal bean market, caused the work to gradually cease. According to Chittick and Fox (1997), the Aboriginal settlement at Worrigee included various Aboriginal families, who lived in tents and 'little shacks'.

KUSKIE (SOUTH EAST ARCHAEOLOGY) 2012

Southeast Archaeology was engaged to undertake an Aboriginal Cultural Heritage Assessment for a mixed-use subdivision at West Culburra approximately 16 km to the southeast of the current study area. The investigation area covered approximately 100 ha of land and the principal aims were to identify and record evidence of Aboriginal occupation and cultural values within the investigation area and assess the potential impacts.

A field investigation was undertaken with representatives from the Jerrinja Local Aboriginal Land Council and Jerrinja Traditional Owners Corporation to investigate the area for Aboriginal heritage evidence. No Aboriginal heritage sites were identified within the study area but three sites were identified immediately adjacent to the study area.

It was concluded that the study area was outside of primary or secondary resource zones and potable sources were absent. As such it was suggested that the Aboriginal



occupation of much of the investigation area would have generally been of a low intensity and probably relate to transitory movement through the landscape and hunting/gathering by small groups of people.

ARTEFACT HERITAGE 2013

Artefact Heritage were engaged to prepare an Aboriginal and non-Indigenous heritage assessment in advance of the construction of the proposed Nowra 33kV feeder line 7501/1. The study area covered an area approximately 7km by 15m. Four previously registered sites were identified within the vicinity of the easement for the power line. Two of these sites comprised rockshelters, and it was determined that these sites would not be impacted by the proposed works. Two previously recorded artefact scatters were also identified within the easement, although no artefacts were located during the survey. It was recommended that the location of these sites should be fenced during works to prevent any potential impact to the sites.

GML HERITAGE 2017

GML completed an Aboriginal due diligence assessment located at 369 Worrigee Road, Worrigee, NSW in December 2017. Their assessment included a review of previous archaeological investigations surrounding the Worrigee area as well as a review of a previous assessment undertaken by New South Wales Archaeology within the current study area in 2017. GML's research also included a search of the Aboriginal Heritage Information Management Systems (AHIMS) for registered sites, an in-depth analysis of previous land use, along with a pedestrian field survey.

GML noted that the previous assessment undertaken by NSW Archaeology in August 2017 identified artefact scatters and potential archaeological deposits (PADs). However, NSW Archaeology did not register the sites on AHIMS and they did not use historical photographs to assess previous disturbances and the impact these would have had on the PADs. NSW Archaeology concluded that apart from areas around buildings, vehicle tracks, modified drainage channels and trees, the disturbance would be unlikely extend below the top 10 – 20 cm of the ground surface.

GML undertook a field survey to relocate the sites identified by Dibden and Parkes (2017) and to inspect the condition and integrity of the study area and its associated landforms. They then confirmed the analysis through historical aerial photography and the results of geological testing carried out across the study area. The investigation found that the majority of the study area had been subjected to profound natural and man-made impacts. These included estuarine flooding, erosion, and swamp formation, along with vegetation removal, sand mining and contouring of the golf course. As a result, 42.2% of the study area was assessed as being subject to disturbance and 40.6% had been subjected to high disturbance. These disturbances would have involved the removal and addition of soil, sand and fill and would have impacted the natural soil profile.



A total of six sites were identified and registered with AHIMS. The report noted that the area is located within a landscape which has the potential for deep, stratified and old soil profiles. It was also noted that the study area is on the edge of a late Holocene swamp landscape, with alluvial terraces, that would have been attractive for Aboriginal habitation activities.

MARY DALLAS CONSULTING ARCHAEOLOGISTS 2018

Mary Dallas Consulting Archaeologists (MDCA) undertook an ACHA in advance of the proposed rezoning of a 75 hectare lot in North Nowra. The site was considered to have been subject to considerable historical disturbance likely to have reduced any potential for intact Aboriginal archaeological deposits to nil. Two disturbed low density artefact concentrations were identified within the lots and were not considered to have any subsurface potential. The two sites identified within the lot were not likely to be impacted by the proposed development and it was recommended that the proposed works could proceed with caution, although it was noted that any impact to the identified sites would require approval in the form of an AHIP.

BIOSIS PTY LTD 2018

Biosis was engaged to undertake an ACHA of a proposed subdivision at Taylors Lane in Cambewarra, located approximately 12km north of the current study area. Their background research identified one archaeological site (Moss Vale Road AFT1) in a report previously submitted by Kelleher Nightingale Consultancy as part of a DA. However, no details, including photos or descriptions were provided by KNC, nor was the site registered. In response to the DA, the Office of Environment and Heritage (OEH) advised Biosis that a test excavation was required. The site was found to have been heavily disturbed by landscaping, construction of buildings, farming practices and creation of artificial dams. A total of 14 test pits measuring 50 cm x 50 cm were excavated around the AHIMS #52-5-0880 site. The soil stratigraphy was found to be a relatively homogenous shallow clayey loam overlaying a clay base. The top layer was noted to be compacted which Biosis proposed was a result of ploughing.

No Aboriginal sites or objects were identified during the survey and test excavations. It was recommended that an AHIP be applied for to cover the entire study area for 20 years, and that a site impact recording form for the stone artefact that could *not* be relocated be submitted to OEH.

ARTEFACT HERITAGE 2018

Artefact Heritage was engaged to undertake an ACHA for a new bridge on the A1 Princes Highway over the Shoalhaven River. A previous archaeological survey also undertaken by Artefact Heritage identified five Aboriginal sites and five areas of PAD. Test excavation of the PADs was conducted over 13 days, and as a result four new artefact scatters and one habitation site/artefact scatter were identified within the study area. The results showed that all sites within the test excavation had been highly disturbed, and it was concluded that additional excavations would not yield



meaningful results with regard to informing the distribution of artefacts across the study area.

However, five sites including a rock shelter, grinding grooves, scarred tree, and artefacts scatters with a diversity of material and artefact types, were considered to be of high archaeological significance and part of the same archaeological complex. Another previously registered site (Graham Lodge) was also considered to be a highly significant 'contact site,' as Aboriginal artefacts made from European glass had been found and are considered very rare. It was recommended that all of these sites should be avoided, and if this is not possible an AHIP be sought for targeted salvage excavations, along with an Aboriginal Heritage Management Plan to manage potential heritage constraints.

KNC 2020

Kelleher Nightingale Consulting (KNC) were engaged to undertake an archaeological salvage and community collection of stone artefacts for a new bridge on the A1 Princes Highway over the Shoalhaven River at Nowra, NSW. The excavated area included 113m² and comprised four of the previously identified sites in the ACHA undertaken by Artefact Heritage in 2018. The sites were located on both sides of the Shoalhaven River. The sites were located across a variety of landforms including a raised flat area, clifftop, rockshelter and an alluvial floodplain. A total of 13,019 stone artefacts were collected and salvaged from the surface and subsurface excavations.

The highest number of stone artefacts (7,400) were excavated from two open areas within the Nowra Bridge 2 site (AHIMS #52-5-0853) on the clifftop. The next highest amount of stone artefacts excavated (4,958) was from the Nowra Bridge 8 (AHIMS #52-5-0876) site situated on the alluvial floodplain on the eastern side of Bomaderry Creek. Both these sites are located on the north side of Shoalhaven River. There were 61 artefacts retrieved from the rockshelter Nowra Bridge 7 (AHIMS #52-5-0875) site, and only 14 stone artefacts were collected from the surface within the Nowra Bridge 1 (AHIMS# 52-5-0852) site, which is the only site on the south side of the river. The lowest artefact concentration of only eight artefacts were retrieved from Nowra Bridge 9 (AHIMS #52-5-0874) on the western side of Bomaderry Creek.

Three primary types of raw material were recovered from the salvage excavation: jasper (45%), quartz (25%), silcrete (11.5%), and to a lesser extent chert (8.7%). The majority of stone artefacts were identified as angular fragments (11,182) which KNC proposed was a result of using the bipolar reduction method and site disturbance. There were 73 cores and 131 artefacts that were identified as tools. These tools including 53 backed artefacts, eight scrapers and one hammerstone/anvil. There were 54 artefacts that had signs of usewear and eight had evidence they had been retouched (additional flaking).



The assessment concluded that the amount and type of artefacts found are consistent with land use models which predict that areas within coastal lowlands and hill environments will have larger and more complex sites that are in close proximity to primary resource zones, including large rivers such as the Shoalhaven and Crookhaven Rivers, along with higher order creeks. The area was considered to have been used over time for regular and/or long periods.

KNC 2020

KNC were engaged to undertake an Aboriginal due diligence assessment for a proposed boundary adjustment to support the construction of the Nowra Bridge. The study area consisted of a small area (approx. 50m x 100m) near the intersection of the Princes Highway and Bolong Road. No Aboriginal sites were identified and the area was considered to have been extensively modified with a very low likelihood of any intact archaeological deposit remaining within the study area. No further archaeological investigations were recommended.

AUSTRAL ARCHAEOLOGY 2021

Austral Archaeology undertook an ACHA at 126 Taylors Lane, Cambewarra, approximately 13 km to the north of the current study area, for a proposed residential subdivision. No previous Aboriginal cultural sites had been previously identified, but a site survey undertaken in conjunction with a sites officer from Nowra LALC identified two chert lithics in the northern portion of the study area (AHIMS #52-5-1047). Three additional stone artefacts were identified 10m to the east of this site but outside the study area, and an isolated stone artefact (AHIMS #52-5-1048) was located on sloping land near the middle of the eastern boundary. Based on these sites, two areas of potential archaeological deposit (PAD) were identified. One was considered 'high potential' around AHIMS #52-5-1047, and the other 'low potential', around AHIMS #52-5-1048. A subsequent test excavation was undertaken within these areas. Ten test pits were excavated in the 'High Potential' area and two test pits were excavated in the 'Low Potential' area. A total of 92 flaked stone artefacts were recovered and analysed, with 88 from the excavation and four from the surface.

The excavated artefacts were from five artefact-bearing test pits near AHIMS #52-5-1047. The majority of these were recovered from spit 1 (73%) and the remaining from spit 2. Over 80% of the artefacts were recovered from a single test pit with the next highest frequency of artefacts (9.85%) recovered from the adjacent test pit. Only one artefact was recovered in the 'Low Potential' area. The artefact analysis found that the assemblage was dominated by debitage which indicates an *in situ* knapping event. The assemblage comprised a variety of flake debitage, a single core, four complete backed artefacts and one distal fragment of a backed artefact. The presence of a broken backed specimen in association with a high frequency of debitage of the same material (chert) and the absence of macroscopic signs of use indicates that the backed artefacts were likely manufactured on-site and discarded



due to breakage and/or not meeting design requirements for inclusion in tool kits. A quarter of the assemblage (n=23, 25%) preserved evidence of post-depositional impacts in the form of pot-lidding (caused by fire) and/or crazing on their ventral and/or dorsal surfaces.

It was proposed that the presence of backed artefacts means that it can be typologically dated to the mid-to-late Holocene (<5,000 years ago). However, the paucity of cores in the assemblage, the limited range of raw materials present, and the amount of debitage indicates the artefacts are likely the result of short-term use of the site for an isolated manufacturing episode.

The area was assessed as being made up of unsuitable landforms for longer stays, except in the northern section that was flat and may have been comfortable for a more permanent stay as evidenced by the *in situ* knapping event. The study area was also assessed as having been impacted by past land use primarily in the top horizons with only minor impacts in the lower horizons. As the proposed works will impact on the registered sites it was recommended that an AHIP be applied for to salvage the 126 Taylors Lane AS (AHIMS #52-5-1047) and that the artefacts be reburied on site at a nominated location.

ARTEFACT HERITAGE 2021

Artefact Heritage were engaged by Arcadis on behalf of Transport NSW to prepare an Aboriginal archaeological survey report for the proposed upgrades to the intersection of Jervis Bay Road and the Princes Highway, in Falls Creek, located approximately 10km south of the current study area. The investigation identified one surface artefact scatter and two areas of PAD. It was recommended that test excavation should be undertaken at JBR PAD01 as this was determined to be the only area of archaeological sensitivity which would be impacted by the works. Test excavation was conducted over two days in December of 2020 and comprised a total of 14 excavated 50cm squared pits. The subsurface investigations recovered one artefact from the site, and as a result it was recommended that an AHIP should be acquired to permit impact to the site (AHIMS ID #52-5-0982).

AUSTRAL ARCHAEOLOGY 2022

Austral Archaeology were engaged by Maker ENG to assist with the preparation of an Aboriginal Archaeological and Cultural Heritage Assessment of land located at 49 Hockeys Lane and 41 Main Road, Cambewarra, NSW. Background research did not identify any previously registered sites within the project area, however an area of PAD was identified. The area of PAD comprised an alluvial flat. Test excavation was conducted and a total of 75 test pits were excavated in the area of PAD. A total of 46 artefacts were recovered, resulting in the registration of six artefact scatters and five isolated finds.

The artefacts were predominantly recovered from two test pits and the assemblage comprised flakes, one core, and four identifiable tools (backed geometric microlith,



steep-edge scraper and two bladelets). The raw stone material was mainly chert (84%), followed by silcrete (33 %) then quartz, and one piece of petrified wood. The site was considered to have been disturbed by ploughing leading to an “homogeneous soil profile across the entire study area” with “only small variations occurring with depth of the horizons”. All of the sites were considered to be of ‘low’ Aboriginal cultural heritage value and ‘low’ scientific significance, except for AHIMS #52-5-1039 that was considered to have ‘moderate’ significance on both accounts.

It was concluded that the area generally had suitable landforms for short stays during periods of low rainfall, and that although much of the information that can be obtained from the lithic analysis had already been obtained, a salvage excavation was required to ascertain the true nature and extent of the site. Therefore, as the proposed works would impact on all registered sites, it was recommended that an AHIP be applied for that included all 11 sites and that a salvage be undertaken for the sites that had the highest artefacts count.

APEX ARCHAEOLOGY 2023

Apex Archaeology were engaged to assist Umbene Pty Ltd with the completion of an ACHA for the proposed residential subdivision of 23A Aldous Place and 369 Worrigeer Road, Worrigeer, NSW. The study area had been previously investigated by GML in 2017. Test excavations were undertaken in February and March of 2023 across five areas of PAD. As a result of the test excavations, a total of 112 stone artefacts were retrieved from 114 test pits. The artefacts tended to be concentrated in the northern section of the study area, adjacent to the existing Brundee Swamp, and would have formed a marginal zone to the swamp prior to development occurring. Artefact analysis conducted by Beth White suggested that there was possible stratified *in situ* stone artefact deposit within the northern area that warrants further geomorphological investigation to understand how and when the deposit formed. As a result of the excavations, an application for an AHIP was recommended to undertake surface collection of collection 52-5-0866 (Worrigeer AS+PAD 2), 52-5-0862 (Worrigeer AS+PAD 1) and 52-5-0864 (Worrigeer AS+PAD6), as well as salvage excavations at 52-5-0862 (Worrigeer AS+PAD 1). The AHIP was also recommended to permit unmitigated impact to site 52-5-0863 (Worrigeer AS 3), 52-5-0867 (Worrigeer AS+PAD 4) and 52-5-0865 (Worrigeer AS+PAD 5).

APEX ARCHAEOLOGY (2024, IN PREP)

Apex Archaeology were been engaged to undertake an Aboriginal Cultural Heritage Assessment (ACHA) for a proposed residential subdivision at 191 Bells Lane, Meroo Meadow, NSW. The land had been cleared, except for sections around drainage lines and a creek, and was being used as a dairy farm at the time of the investigation. Thirty test pits were excavated across five areas and a total of 27 stone artefacts were retrieved from 18 of the test pits. The artefacts were made primarily of fine-grained silicious material, but also included some made from silcrete, quartz and quartzite. There was one identifiable tool (backed artefact), a possible broken



backed artefact, and broken core. The remainder were flakes with recognised diagnostic features and five pieces that lacked diagnostics but were believed to have been pieces of broken objects. The analysis did not identify any *in situ* knapping episodes that may represent more permanent campsites and it was proposed that that at least some artefacts were most likely brought in from other areas.

It was suggested that as most artefacts were located in the deeper spits of the test pits, the topsoil had been subject to higher levels of disturbance than the deeper deposits, which were likely to be more intact than the upper spits. It was recommended that an AHIP be sought for areas that could not be conserved within the nominated riparian conservation zone.

4.4.4 SUMMARY

The archaeological investigations which have been conducted within the broader region of the study area appear to confirm the predictive model proposed by Clarke and Kuskie in 2006; that artefactual evidence of more permanent stays by larger groups of Aboriginal people in the Shoalhaven Region will be concentrated closer to primary resources areas. Some of the most suitable primary resource areas are located north of the current study area, closer to Shoalhaven River and along sections of Bomaderry Creek. These areas have outcropping sandstone for rock shelters and platforms for art and grinding grooves. They are also within close proximity to permanent freshwater, marine resources, various types of raw materials for lithic production, and a diversity of flora and fauna.

This is particularly evident in the results of the salvage excavation at Nowra Bridge that uncovered thousands of stone artefacts, and in the analysis undertaken for Aboriginal cultural material remains of the Bomaderry Creek rock shelter which concluded that a wide-range of stone, animal and plant resources were sourced locally. However, as also noted by Clarke and Kuskie 2006, secondary resource areas such as those close to wetlands are also likely to contain evidence of Aboriginal visitation. These past visitations may have included a number of nuclear families camped together for one to several days. There may be evidence of casual knapping, and processing of food and campfires. A reasonably broad range of artefacts and stone types may also have been discarded, although not as diverse as expected at a base camp. Therefore, the most likely material evidence of these visitations within the current study area would be stone artefacts and hearths.

4.5 PREDICTIVE MODEL

4.5.1 REGIONAL SITE PATTERNING

As part of the many archaeological investigations undertaken within NSW, over 5,000 archaeological sites have been recorded and registered on AHIMS. In general, the dominant site types identified within the Shoalhaven region include rock shelters with archaeological deposit (including middens), rock shelters with art, pictographs (rock engravings), artefact concentrations in open contexts, grinding grooves and



middens. The nature and extent of individual sites is closely related to the environmental context in which they are found – for example, rockshelters are found within sandstone escarpments, while middens are generally located close to water bodies including marine, estuarine and freshwater contexts, and grinding grooves are found on flat sandstone platforms in close proximity to water sources.

Based on the results of previous archaeological investigations within the wider region, a number of predictions regarding Aboriginal use of the area can be made. These predictions focus on the nature, extent and integrity of the remaining evidence.

The landscape characteristics of the area influence the prediction of the nature of potential sites within the landscape itself. Disturbance is the predominant factor determining whether or not artefacts are likely to be identified within a landscape.

Surface sites are likely to have been impacted by pedestrian activity, vegetation clearance within the area over the historic period. Natural actions such as erosion and bioturbation are likely to have also impacted not only the surface, but also at least the upper levels of subsurface archaeological deposits. Whilst these actions may impact the integrity of stratigraphy within the deposit, this does not necessarily mean associated archaeological objects will also be disturbed.

In general, Aboriginal use of an area is based on a number of factors, such as:

- Proximity to permanent water sources – generally permanent or areas of repeat habitation are located within approximately 200m of permanent water;
- Proximity to ephemeral water sources – generally sites near ephemeral water sources were utilised for one-off occupation;
- Ease of travel – ridgelines were often utilised for travel during subsistence activities; and
- The local relief – flatter, more level areas were more likely to be utilised for long term or repeat habitation sites than areas of greater relief, especially if the slopes are at a distance from water.

STONE ARTEFACTS

Stone artefacts can be identified on the ground surface or within subsurface deposits. Generally, artefact concentrations are representative of debris from knapping activities, which includes flakes, flake fragments, cores, and pieces likely to have been knapped but with no or inconclusive diagnostic features, referred to as flaked pieces. Modified artefacts can also be identified, including backed artefacts, scrapers, or edge ground axes, although these are generally a smaller proportion of the artefact assemblage. During excavation, very small debris (~3-5mm) can be identified within sieved material, and is referred to as debitage. This is indicative of *in situ* knapping activities.



As the detection of stone artefacts relies on surface visibility, factors such as vegetation cover can prevent their identification. Conversely, areas of exposure can assist in their identification. Artefact scatters and isolated artefact finds occur in the broader region and may be present within the current study area.

QUARRY AND PROCUREMENT

Exposures of stone which can be exploited for the production of lithics are referred to as quarries or procurement sites. Quarries generally have evidence of extraction visible, while procurement sites can be inferred through the presence of artefactual material made from raw material sources present within the area.

Outcrops of suitable stone materials within the study area are considered unlikely to occur, based on consideration of the underlying geology of the area and analysis of aerial imagery of the site.

MIDDENS

Middens are concentrations of shell, and may also contain stone artefacts, bone and sometimes human burials. These sites are generally recorded along coastal areas. Middens are formed through the exploitation of locally available species by humans for resources, and accumulation of the shell material within a specific location. Middens can range in size from small, discrete deposits, to deposits covering a large area.

Generally, middens reflect the species available in the local area. In estuarine regions, estuarine species will dominate the composition of the midden, while around headlands, rock platform species tend to dominate. There is potential for this site type to occur outside of the current study area, however due to the distance of the study area from a major permanent source of freshwater, or the distance of the study area from the coast, this site type is considered unlikely to occur within the study area.

BURIALS

Aboriginal people across Australia utilised a range of burial forms, which depended on the customs of the individual tribes. Common burial practices included inhumation, cremation, desiccation and exposure. Burials are known to occur within sandy contexts in the wider region. These are generally found within coastal Holocene sand bodies, and generally are not identified during field survey as there is usually minimal surface expression of this type of site.

To date, there are no records of burials being identified within the study area but this does not preclude burials from occurring. As discussed, the underlying geology is exposed within areas of the Shoalhaven region, and the landscape comprises of moderate to deep soils (100cm). However, it is considered unlikely to expect burials to occur within the study area. There is potential for this site type to occur outside of the current study area.



ROCK SHELTERS

Rock shelters are formed by rock overhangs which would have provided shelter to Aboriginal people in the past. Often, evidence of this occupation can be found in the form of art and/or artefacts. Shell, midden material, grinding grooves, pictographs (rock engravings), artworks including stencils and paintings, and potential archaeological deposits (PAD) are common features of rock shelter sites.

As rockshelters have been identified within the Shoalhaven region, such as along the Shoalhaven River, there is potential for this site type to occur outside of the current study area. However, it is not considered likely that any suitable rock shelters would occur within the current study area due to the topography.

GRINDING GROOVES

Grinding grooves are formed on sandstone exposures through the creation and maintenance of ground edge tools, such as axes and spears. Usually, stone was ground to form a sharp edge, although bone and shell were also ground to create sharp points.

Generally, fine grained sandstone was favoured for these maintenance activities, and the presence of a water source nearby or overflowing the sandstone was also favoured. Grinding grooves range from individual examples through to hundreds of grooves within an area, sometimes arranged in a specific pattern. Horizontal sandstone was generally preferred, although there are examples of vertical grooves.

No suitable geological exposures are anticipated to be present within the study area. There is the potential for this site type to occur at locations of appropriate sandstone exposures outside of the current study area, however the occurrence of this site type within the current study area is considered unlikely.

SCARRED AND CARVED TREES

Scarred and carved trees are created during the removal of bark from a tree for a range of reasons, both domestic and ceremonial. This type of site can be identified within areas containing trees of the correct species and appropriate age. Deliberately scarred trees can be difficult to differentiate from naturally occurring damage to trees, and specific criteria must be considered when assessing a scar for a cultural origin.

Given the level of historical disturbance and vegetation clearance that have impacted the area in the past, the likelihood of culturally scarred trees remaining within the study areas is considered low. The study area itself has been historically cleared and no trees suitable to retain evidence of cultural modification are expected to remain within the study area. There is potential for this site type to occur outside of the current study area.



CEREMONIAL SITES

Specific places were used for ritual and ceremonial purposes, including initiation and burial practices. Secret rituals were also undertaken at specific places by specific individuals, such as at water holes and by clever men.

The landscape itself was also considered to hold significance to Aboriginal people, and the understanding of this is referred to as a sacred geography. This includes natural features which were associated with spirits or creation beings. The meaning attributed to the landscape provided Aboriginal people with legitimacy regarding their role as guardians of the places which had been created by the spiritual ancestors (Boot 2002).

Many areas along the South Coast of NSW are considered to be sacred to the original inhabitants. There are no known recorded areas within the study area, although this does not preclude these values from existing within this location.

CONTACT SITES

Contact sites contain evidence of Aboriginal occupation concurrent with initial colonisers in an area. This could include evidence such as flaked artefacts formed on glass, or burials containing non-Aboriginal grave goods. Often Aboriginal camps would form around newly built towns, allowing for employment (or exploitation) of the Aboriginal people by the colonists, and also for trade to exist between the two communities. Contact sites can also occur around Aboriginal mission sites, where Aboriginal children were taken from their families to raise in the European manner. Families often camped around the mission boundaries to try to catch a glimpse of their children.

There is no known evidence of initial contact between Aboriginal people and colonists within the study area, although it may have been possible. The probability of evidence of contact sites occurring within the study area is considered low.



5.0 FIELD WORK

5.1 SAMPLING STRATEGY

A sampling strategy was developed and provided to the Registered Aboriginal Parties (RAPs) as part of the consultation process completed for the ACHA. The strategy included assessment of all landforms within the study area that have the potential to be impacted by the proposed development. Areas considered likely to have archaeological potential were closely scrutinised, although the entire study area was considered.

The sampling strategy included consideration of the entirety of the study area due to the nature of the development proposal, in order to provide an accurate assessment of the study area in relation to the proposed impacts.

5.2 SITE INSPECTION

A site survey was undertaken on 26 June 2023 by Leigh Bate, Jenni Bate and Jason Barr of Apex Archaeology, and Trudy Trindall of Nowra LALC.

5.3 SURVEY COVERAGE

The survey was conducted on foot for the purposes of discovering Aboriginal objects within the study area, including areas considered to have potential for subsurface objects to be present. The survey was undertaken in accordance with the sampling strategy prepared for the project and included the entirety of the study area.

The survey was undertaken with four survey participants for the entire survey track length. Each participant was responsible for inspecting a 2m wide portion of the study area inspected. This meant that on each pass an area covering 8m would be observed for archaeological material. Some areas of the site were inaccessible with high grass cover and no visibility, so areas of exposure were targeted as a priority.

Table 6: Survey units

Unit name	Landform Element	Number of participants	Total Length
ATU 1	Flat, GSS, Marsh and Drainage Line/Creek	4	5410m

During the survey completed by Apex Archaeology the study area was inspected for Aboriginal archaeological evidence. An assessment of landform element and slope was made for the study area, with the results presented in Table 7. Mapping of the landform and survey transect is presented in Figure 6.

Table 7: Survey unit results

Survey Area #	Landform Element	Slope	Vegetation	Detection Limiting Factors	Ground Disturbance
ATU 1	Flat, GSS, Marsh and Drainage Line/Creek	Level Gentle >1.45°-5.45°	Cleared (Grassed/Marsh)	Leaf litter, sediment, Exotic grasses, weeds and illegally dumped materials	High

The total survey coverage (meaning the areas physically inspected for archaeological evidence) was approximately 43,280m². The total area of the development impact is approximately 320,000m². A range of factors were considered and recorded during the survey, including the surface visibility (percentage of bare ground within a survey unit); archaeological visibility (amount of bare ground within an area in which artefacts could be expected to be identified if present); exposure type (A or B soil horizon) and calculations of how effective the survey coverage was. The results of the survey coverage are presented in Table 8.

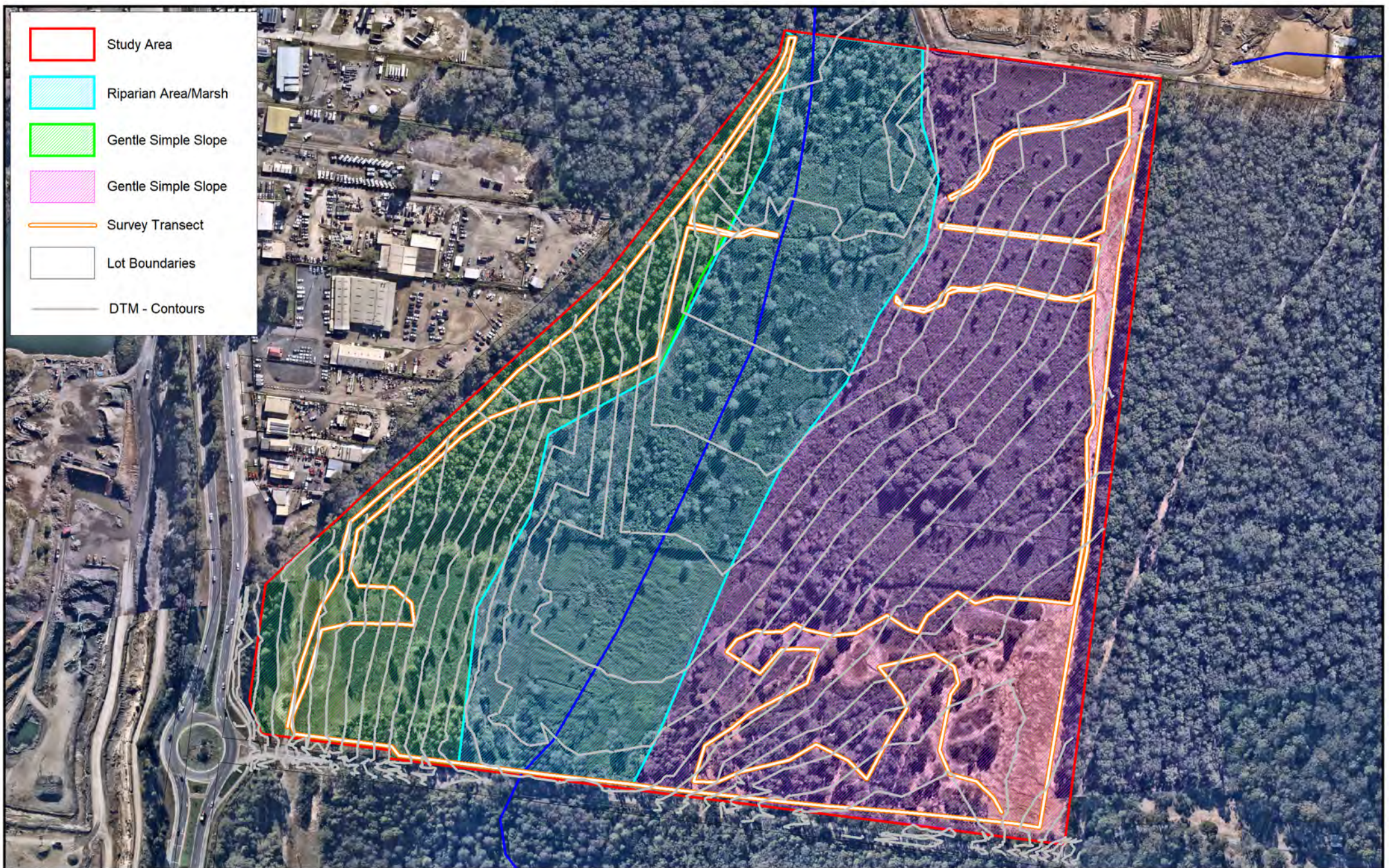
Table 8: Survey coverage results

Survey Area #	Total Area Surveyed (m ²)	Surface Visibility (%)	Arch Vis (%)	Exposure Type (A/B)	Effective Coverage (m ²)	% Total Effective Survey Coverage of Context
ATU 1	43,280	30	5	A	649.2	1.5

Surface visibility across the study areas was limited due to surface vegetation such as exotic pasture grasses, leaf litter and weeds. Total effective survey coverage of the survey transect was 1.5%. Total effective survey coverage for the entire study area was 0.20% (Table 9).

Table 9: Total effective survey coverage results

Survey Area #	Total Area of Study Area (m ²)	Total Area Effectively Surveyed (m ²)	Surface Visibility (%)	Arch Vis (%)	Exposure Type (A/B)	% Effective Survey Coverage of Context (Total Area)
ATU 1	320,000	649.2	30	5	A	0.20





5.4 SURVEY RESULTS

The survey did not identify any sites within the study area, nor any areas of subsurface potential archaeological deposits. Disturbance across the study area was noted as high and was related to the construction of powerlines through the properties, the construction of gravel roads, historical vegetation clearance, landscape modification, four wheel driving/motor bike use of the area, camping and extensive dumping of construction material and garbage across the site. The GSV across the study area was noted to be low to moderate (30% overall), and high in some areas which had been exposed due to heavy machinery clearance and four wheel driving/motorbike activity, along with erosion of topsoils from sheet wash. Significant disturbance was evident in several portions of the site, specifically the south west and south eastern portions of the site, and this is demonstrated in Plates 11 and 24 below.

The landform either side of Browns Creek is swampy and low lying. This area was inaccessible during the site inspection due to vegetation cover and standing water. Swampy, damp areas were highly unlikely to have been utilised for camping or habitation, although would have been opportunistically visited for resource gathering, but were unlikely to retain any evidence of such ephemeral use.

As a result of the site inspection and pedestrian survey, test excavation was not considered to be necessary due to high levels of disturbance across the entirety of the study area, along with no identification of landforms suitable for occupation or activity to occur. The majority of the site was a gentle slope down to the low lying Browns Creek and did not meet predictive modelling for the Nowra region.

The level of disturbance present across the site is considered likely to have resulted in exposure of any subsurface deposits which may have been present within the area. The lack of any identifiable archaeological material within the extensive areas of disturbance is considered to assist in determining the limited use of the area by Aboriginal people prior to colonisation.



Plate 10: Looking north east along western boundary of the study area along the transmission line easement.

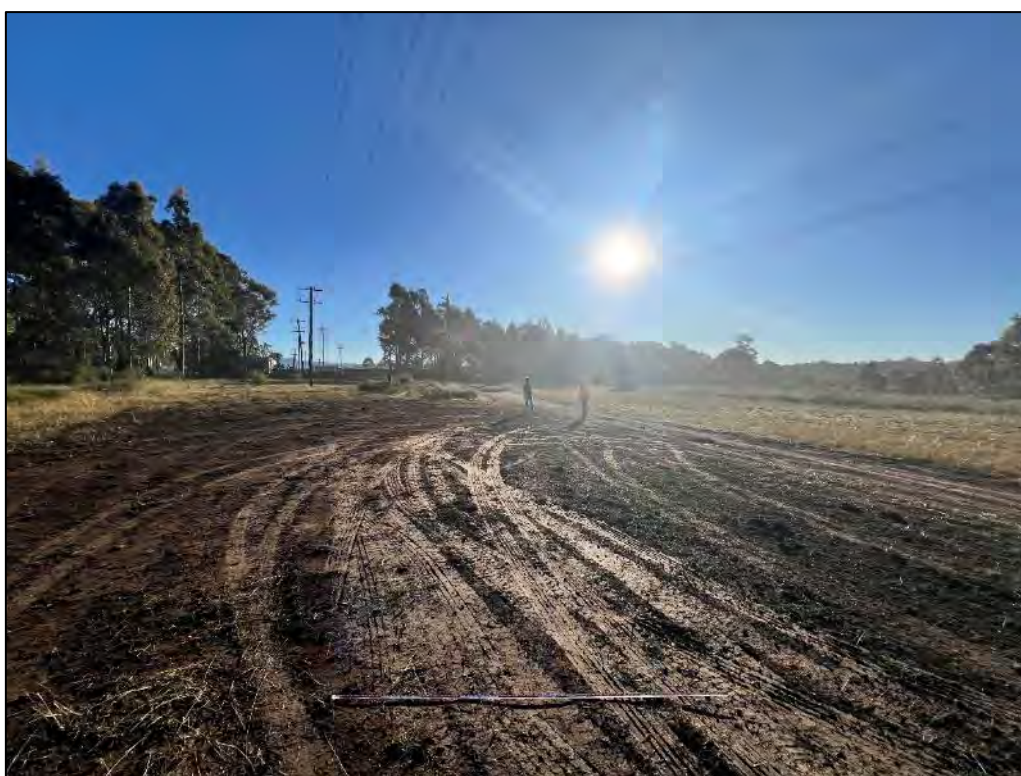


Plate 11: Looking north east along western boundary of the study area along the transmission line easement showing recent four wheel drive activity and disturbance.



Plate 12: Looking north east along western boundary of the study area along the transmission line easement showing further recent four wheel drive activity and disturbance.



Plate 13: Looking north east along eroded access track along the north western boundary of the study area.



Plate 14: Looking north east along access track along the north western boundary of the study area.



Plate 15: Looking east from the access track along the north western boundary of the study area showing extensive dumped material.



Plate 16: Looking across Browns Creek which has been canalised within the central portion of the site.



Plate 17: Looking east along access track within the central portion of the site (majority of the central portion of the site was under water and inaccessible).



Plate 18: Northern end of access track along north western boundary ends in marshy area that was inaccessible.



Plate 19: Dumped material all along the western boundary of the study area.



Plate 20: Looking east across cleared area towards browns creek and low lying marshy area.



Plate 21: Looking east along Warra Warra Road and the southern boundary of the study area.



Plate 22: Looking along the southern boundary of the study area towards the south east corner of the property.



Plate 23: Southern boundary of the site where extensive four wheel drive and motor bike activity has occurred impacting the area.



Plate 24: Looking along the eastern boundary of the site showing extensive impacts from land clearance, four wheel driving and motorbike riding.



Plate 25: Waste dumping piles within the southern portion of the site.



Plate 26: Further ground surface modification and impacts relating to four wheel driving within the south eastern portion of the site.



Plate 27: Rubbish dumping and ground surface impacts along the eastern portion of the study area (note the sheet wash erosion channels from land clearance).



Plate 28: Dumping across the northern boundary of the site.



Plate 29: Further dumping within the central portion of the study area.



Plate 30: Further dumping and ground surface modification within the central portion of the study area.



Plate 31: Further dumping within the central portion of the study area.



6.0 ABORIGINAL CULTURAL HERITAGE SIGNIFICANCE ASSESSMENT

6.1 INTRODUCTION

The *Aboriginal cultural heritage consultation requirements for proponents 2010* acknowledge that:

- Aboriginal people have the right to maintain their culture, language, knowledge and identity
- Aboriginal people have the right to directly participate in matters that may affect their heritage
- Aboriginal people are the primary determinants of the cultural significance of their heritage

Undertaking consultation with Aboriginal people ensures that potential harm to Aboriginal objects and places from proposed developments is identified and mitigation measures developed early in the planning process.

6.2 CRITERIA

The Burra Charter is considered an appropriate framework for the assessment of cultural heritage, which can be made based on the following assessment criteria:

- **Social value:** Also referred to as cultural value, this criterion considers the spiritual, traditional, historical or contemporary associations an area or place has for Aboriginal people
- **Historic value:** the relationship between a place and people, events, phases or activities of importance to the Aboriginal community
- **Scientific value:** assessment under this criterion considered the ability of a landscape, place, area or object to inform scientific research and/or analysis and to assist in answering research questions
- **Aesthetic value:** the ability of a place, area, landscape or object to demonstrate aesthetic characteristics, or possess creative or technical values
- **Representativeness:** this criterion examines if the item is a representative example of that site type, and if it possesses the main characteristics of that site type
- **Rarity:** assesses whether the site is uncommon or endangered within a region and to what extent that site type is found elsewhere

Additionally, archaeological significance is assessed based on the archaeological or scientific values of an area. These values can be defined as the importance of the area relating to several criteria. Criteria used for determining the archaeological significance of an area are as follows:

- **Research potential:** Can the site contribute to an understanding of the area/region and/or the state's natural and cultural history? Is the site able to provide information that no other site or resource is able to do?



- **Representativeness:** is the site representative of this type of site? Is there variability both inside and outside the study area? Are similar site types conserved?
- **Rarity:** is the subject area a rare site type? Does it contain rare archaeological material or demonstrate cultural activities that no other site can demonstrate? Is this type of site in danger of being lost?
- **Integrity/Intactness:** Has the site been subject to significant disturbance? Is the site likely to contain deposits which may possess intact stratigraphy?

Further, an assessment of the grade of significance is made, based on how well the item fulfils the assessment criteria. The Heritage Branch of the Department of Planning (now the Heritage Division of the Department of Planning, Industry and Environment) 2009 guideline *Assessing Significance for Historical Archaeological Sites and 'Relics'* defines the grading of significance as follows:

Table 10: Grading of significance, from Heritage Branch 2009

Grading	Justification
Exceptional (E)	Rare or outstanding item of local or State significance. High degree of intactness. Item can be interpreted relatively easily.
High (H)	High degree of original fabric. Demonstrates a key element of the item's significance. Alterations do not detract from significance.
Moderate (M)	Altered or modified elements. Elements with little heritage value but which contribute to the overall significance of the item.
Little (L)	Alterations detract from significance. Difficult to interpret.
Intrusive (I)	Damaging to the item's heritage significance.

Whilst this was developed for the assessment of significance of historical items, the criteria are applicable to Aboriginal significance assessments as well. It is important to note that the below assessment is specific to Aboriginal cultural heritage and does not consider the non-Aboriginal significance of the site.

6.3 SIGNIFICANCE ASSESSMENT

No sites were located within the study area, and the archaeological significance of the study area is considered to be low. Discussion around the significance assessment for the study area as a whole is outlined below.

SOCIAL VALUE

The Aboriginal community are best placed to make a determination of the social or cultural value of the study areas. No specific comments regarding the social value of the areas to Aboriginal people have been received from the RAPs to date, although it is noted that all areas with evidence of Aboriginal occupation hold significance to Aboriginal people, and can be considered cultural landscapes.



HISTORIC VALUE

The study area is not known to be associated with any historically important Aboriginal people or events, and as such is not considered to have significance under this criterion.

SCIENTIFIC VALUE

The study area itself is considered to have very low to nil scientific value. Evidence of Aboriginal cultural material is not located on the ground surface, and no areas were considered to contain potential subsurface archaeological deposits. It is possible that areas of PAD exist outside of the current study area.

AESTHETIC VALUE

Generally, aesthetic value is determined by the response evoked by a setting. The study area is considered to hold limited aesthetic significance with regards to Aboriginal heritage, based on its context within a relatively flat landscape, often without significant views and vistas, or a clear permanent source of freshwater.

RESEARCH POTENTIAL

The study area is not considered to possess research potential regarding Aboriginal heritage, due to high levels of disturbance across the entirety of the study area. It is acknowledged that undisturbed deposits outside of the study area are likely to have greater research potential.

REPRESENTATIVENESS

The study area is not considered to hold significance under this criterion.

RARITY

Archaeological sites with predominantly intact deposit are relatively rare within the South Coast region. The study area is considered to have low value under this criterion due to the high level of disturbance present and the lack of artefactual material within the study area. The study area is not considered rare within the Shoalhaven region.

INTEGRITY/INTACTNESS

The study area is considered to be highly disturbed and thus is not considered to be intact or to have significant integrity under this criterion.

6.4 CULTURAL SIGNIFICANCE ASSESSMENT

Generally, all Aboriginal sites are of high significance and importance to the Aboriginal community, both locally and more broadly. The Aboriginal social or cultural value of the study area can only be determined by the Aboriginal community and to date, no comments have been received regarding the specific social significance of the study area.

It is acknowledged that the overall significance of a site is determined by both the cultural and scientific values of the area; with cultural values potentially extending



beyond a specific study area and incorporating cultural landscapes in many cases. The cultural significance of an area can only be determined by the Traditional Owners of that area. Generally, all sites with evidence of Aboriginal occupation are considered significant to Aboriginal people as part of a larger cultural landscape.

6.5 STATEMENT OF ARCHAEOLOGICAL SIGNIFICANCE

The study area is considered to have low archaeological significance based on its low historic value, scientific value, aesthetic value, research potential, representativeness, rarity and integrity. No surface artefacts were observed during the survey and no areas of PAD were identified across the study area. Overall, the potential for the site to contribute a greater understanding of the archaeological record is considered to be negligible.



7.0 IMPACT ASSESSMENT

7.1 PROPOSED DEVELOPMENT

This assessment has been undertaken to support a Planning Proposal (PP) for the study area by changing the Zone and Minimum Lot Size Provisions of Lot 2 DP 1126288 and Lot 224 DP 755952 from E3 Productivity Support to R1 General Residential, R3 Medium Density Residential and MU1 Mixed Use in part, in addition to leaving the western portion of the study area as zoned E3 Productivity Support. The project is anticipated to yield 60 general residential lots, 88 terrace house lots and 128 on street parking spaces. A total of 9,573m² will be dedicated to multi-dwelling housing, 26,901m² to commercial and shop top housing area, and parkland area comprising 8,420m².

7.2 POTENTIAL IMPACT

No known or potential Aboriginal sites are considered likely to be impacted by the proposed development.

7.3 ECOLOGICALLY SUSTAINABLE DEVELOPMENT (ESD)

It is a requirement of Section 2A(2) of the NPW Act to apply the principles of Ecologically Sustainable Development (ESD) when considering any impact to Aboriginal objects and places. ESD integrates economic and environmental considerations, which includes cultural heritage, into decision-making processes. In general, ESD can be achieved through consideration and implementation of two key principles, being intergenerational equity and the precautionary principle.

Intergenerational equity refers to the present generation having consideration for the health, diversity and productivity of the environment for those generations to come. In terms of Aboriginal cultural heritage, this relates to cumulative impacts to Aboriginal objects and places within a region. Intergenerational equity therefore relies on the understanding that a reduction in the number of Aboriginal objects and places within a region results in fewer opportunities for Aboriginal people to access their cultural heritage in the future. Thus, it is essential to understand what comprises the Aboriginal heritage resource, both known and potential, when assessing intergenerational equity within a region.

The precautionary principle relates to threats of serious or irreversible environmental damage, and that lack of scientific certainty regarding the degree of potential damage should not be a reason to postpone adequate reasonable measures to prevent harm to the environment. Regarding Aboriginal cultural heritage, the precautionary principle relates to where a proposed development may seriously or irreversibly impact Aboriginal objects or places, or their significance; and where there may be uncertainty relating to the integrity, rarity or representativeness of Aboriginal cultural values. The Code of Practice outlines that a precautionary approach should be taken to avoid or reduce damage to Aboriginal objects or places, with cost-effective measures implemented wherever possible. Additionally,



a cumulative impact assessment should be completed to determine how the proposed development would impact the cultural resource in the wider region.

Consideration should be given to the significance of the sites present within an area, and whether they are able to transmit cultural information to future generations, or to act as teaching aids.

The study area is assessed as being of negligible archaeological significance.

7.3.1 INTERGENERATIONAL EQUITY

As no Aboriginal cultural material was identified within the study area, it is considered that the impact of the development of this site would be negligible with regards to the ongoing transmission of cultural knowledge to future generations. The proposal is not considered to impact on intergenerational equity.

7.3.2 CUMULATIVE IMPACTS

The cumulative impact of the project on the Aboriginal cultural resource must be considered as part of an assessment and managed appropriately and sensitively. Avoidance of impact is the best practice approach wherever possible, particularly for sites that are intact, contain high numbers of artefacts, or are considered significant to the community.

In terms of cumulative impact, the site does not contain evidence of Aboriginal occupation.

Overall, it is considered that the proposal would have no impact on the Aboriginal cultural heritage of the region. As such, it is considered that the cumulative impact of the proposed project on Aboriginal cultural heritage would be minimal.

7.4 ABORIGINAL COMMUNITY INPUT

Consultation with the Aboriginal community has been undertaken for this project in accordance with the *Aboriginal cultural heritage consultation requirements for proponents 2010*. The Aboriginal community will be afforded an opportunity to provide feedback regarding the proposed works and their potential impact on Aboriginal cultural heritage, and the views of the community, where shared, have been incorporated into the final ACHA.



8.0 MANAGEMENT, MITIGATION AND RECOMMENDATIONS

8.1 GUIDING PRINCIPLES

Wherever possible and practicable, it is preferred to avoid impact to Aboriginal archaeological sites. In situations where conservation is not possible or practicable, mitigation measures must be implemented.

The Burra Charter: The Australia ICOMOS Charter for Places of Cultural Significance, 2013 (The Burra Charter) provides guidance for the management of culturally sensitive places. The Burra Charter is predominantly focussed on places of built heritage significance, but the principles are applicable to other places of significance as well.

The first guiding principle for management of culturally significant sites states that “places of cultural significance should be conserved” (Article 2.1). A cautious approach should be adopted, whereby only “as much as necessary but as little as possible” (Article 3.1) should be changed or impacted.

Mitigation measures depend on the significance assessment for the site. Cultural significance of sites should also be considered in consultation with the Aboriginal community during community consultation.

8.2 HARM AVOIDANCE

The study area does not contain any previously registered Aboriginal sites and none were found during the investigation. As such, no harm avoidance and mitigation measures for this site are necessary.



9.0 RECOMMENDATIONS

The following recommendations are made on the basis of:

- The statutory requirements of the NP&W Act 1974;
- The requirements of Heritage NSW;
- The results of the cultural and archaeological assessment;
- An assessment of the likely impacts of the proposed development; and
- The interests of the registered Aboriginal stakeholders and the cultural heritage record.

It was found that:

- There were no previously registered sites within the study area.
- No surface artefacts were identified during the survey.
- No areas considered to have potential for subsurface archaeological deposits were identified within the study area.
- The area was considered to be disturbed throughout due to historical clearance, land use practices and ongoing disturbance factors.
- The site is not considered to contain potential for Aboriginal cultural material to be present.

Based on the results of the cultural heritage and archaeological assessments, the following recommendations have been made for the project:

RECOMMENDATION 1: NO FURTHER ARCHAEOLOGICAL ASSESSMENT REQUIRED

This report details the Aboriginal archaeological potential of the Warra Warra Road study area which has been assessed as negligible. No further archaeological assessment is required for the site prior to the commencement of proposed development activities. No application for an Aboriginal Heritage Impact Permit (AHIP) is necessary for the project.

RECOMMENDATION 2: DEVELOPMENT BOUNDARIES

The proposed development works must be contained within the assessed boundaries for this project. If there is any alteration to the boundaries of the proposed development to include areas not assessed as part of this archaeological investigation, further investigation of those areas should be completed to assist in managing Aboriginal objects and places which may be present in an appropriate manner.

RECOMMENDATION 3: STOP WORK PROVISION

Should unanticipated Aboriginal archaeological material be encountered during site works, all work must cease in the vicinity of the find and an archaeologist contacted to make an assessment of the find and to advise on the course of action to be taken. Further archaeological assessment and Aboriginal community consultation may be



required prior to the recommencement of works. Any objects confirmed to be Aboriginal in origin must be reported to Heritage NSW.

In the unlikely event that suspected human remains are identified during construction works, all activity in the vicinity of the find must cease immediately and the find protected from harm or damage. The NSW Police and the Coroner's Office must be notified immediately. If the finds are confirmed to be human and of Aboriginal origin, further assessment by an archaeologist experienced in the assessment of human remains and consultation with both Heritage NSW and the RAPs for the project would be required.

This recommendation should be included in any Construction Environmental Management Plan (CEMP) developed for the site.

RECOMMENDATION 4: REPORTING

One digital copy of this report should be forwarded to Heritage NSW for inclusion on the Aboriginal Heritage Information Management System (AHIMS).

One copy of this report should be forwarded to each of the registered Aboriginal stakeholders for the project.



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