

CO2 PROCESSING PLANT, BOMADERRY, NSW

ABORIGINAL CULTURAL HERITAGE ASSESSMENT REPORT

Report to Babbage Consultants on behalf of Air Liquide Australia Solutions Pty Ltd

LGA: Shoalhaven

December 2025





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.

This report contains confidential information which should not be made publicly available.

DOCUMENT CONTROL

The following register documents the development and issue of the document entitled 'CO2 Processing Plant, Bomaderry: Aboriginal Cultural Heritage Assessment Report', prepared by Apex Archaeology in accordance with its quality management system.

Revision	Prepared	Reviewed	Comment	Issue Date
1 – Draft	Marian Bailey and Leigh Bate	Jenni Bate	Client Review	22 Sept 2025
2 – Draft	Marian Bailey	Air Liquide	RAP Review	23 Sept 2025
3 – Final	Marian Bailey	RAPs	Issue of Final	23 Oct 2025
4 – Final	Leigh Bate & Jenni Bate	Client	Minor Updates	19 Dec 2025



EXECUTIVE SUMMARY

Apex Archaeology have been engaged to assist Babbage Consultants on behalf of Air Liquide Australia Solutions Pty Ltd to undertake an Aboriginal Cultural Heritage Assessment (ACHA) for the proposed development of a CO₂ Processing Plant at Bolong Road, Bomaderry NSW. The project is located within the Shoalhaven Local Government Area (LGA).

As the project will be determined as part of a State Significant Development Application (SSDA), preparation of an ACHA is required to inform the Environmental Impact Statement (EIS) for the project to meet the Secretary's Environmental Assessment Requirements (SEARs) for the project. This ACHA has been prepared in accordance with the *Guide to investigating, assessing and reporting on Aboriginal cultural heritage in NSW* (April 2011) (the Guide); 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.

The proposal involves the construction of a Food and Beverage grade Liquid CO₂ processing facility and associated infrastructure at Bolong Road, Bomaderry, NSW. The facility will capture and purify CO₂ generated as a co-product of the Shoalhaven Starches ethanol fermentation process, producing up to 100,000 tonnes per annum of food-grade liquid CO₂. Works will include above- and below-ground pipework, a new underground pipeline linking the Shoalhaven Starches site to the former Australian Pulp and Paper Mills site, installation of processing equipment, access upgrades, and service connections.

It is located at the eastern end of the existing Shoalhaven Starches operations and extends to the former paper mill site to the east. The area is bounded by the Shoalhaven River to the south and Bolong Road to the north, with the preferred pipeline alignment running within a ~0.9 m-wide corridor offset 2 m from the boundary, primarily adjacent to the train line.

A total of 12 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:

- South Coast Culture and Heritage
- Southern Native
- Clive Freeman
- Richard Callaghan
- Thoorga Nura
- Thomas Dahlstrom
- David Carter
- South Coast Gadu
- Sonione Wakabut Rogers



- South Coast People
- Guntawang Aboriginal Resources Inc
- A&K Cultural Heritage

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

This assessment was undertaken to consider the potential impacts of the proposed CO₂ processing plant and associated pipeline works within the Shoalhaven Starches facility at Bomaderry. A field survey of the study area was conducted on 8 August 2025. A representative of Nowra LALC was invited to attend but was not available on the day. No surface artefacts were identified during the survey, no previously registered sites are located within the footprint, and no areas of potential archaeological deposit were identified. Test excavation was therefore not required.

As no Aboriginal sites were identified within the study area, there are no direct impacts to Aboriginal cultural heritage arising from the proposed works. The study area has been subject to extensive disturbance through clearance, industrial construction, and ongoing land use practices, and is not considered to contain potential for intact subsurface archaeological deposits.

No mitigation measures are required as no Aboriginal sites will be impacted by the development. In line with the *National Parks and Wildlife Act 1974*, an Unexpected Finds Protocol must be implemented so that if Aboriginal objects or human remains are identified, works cease immediately and the appropriate authorities and Aboriginal stakeholders are notified.

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 archaeological potential of the site, which has been assessed as negligible. No further archaeological assessment is required for the site prior to the commencement of proposed development activities.

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
the Guide	<i>Guide to investigating, assessing and reporting on Aboriginal cultural heritage in NSW</i>
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



CONTENTS

1.0	Introduction	1
1.1	Study Area	1
1.2	Project Brief	1
1.3	Objectives of the Aboriginal Cultural Heritage Assessment	5
1.4	Project Proponent	6
1.5	Investigators and Contributors	6
1.6	Limitations.....	6
1.7	Report Structure.....	7
2.0	Statutory Context.....	8
2.1	Commonwealth Legislation.....	8
2.1.1	Aboriginal and Torres Strait Islander Heritage Protection Act 1984	8
2.1.2	Environment Protection and Biodiversity Conservation Act 1999	8
2.1.3	Native Title Act 1993.....	9
2.2	NSW Legislation	9
2.2.1	National Parks and Wildlife Act 1974	9
2.2.2	National Parks and Wildlife Regulation 2019	10
2.2.3	Environmental Planning & Assessment Act 1979.....	10
2.2.4	Shoalhaven Environmental Plan 2014	12
2.2.5	State Environmental Planning Policy (Coastal Management) 2018	14
3.0	Aboriginal Consultation Process.....	16
3.1	The Consultation Process	16
3.2	Stage 1 Consultation: Commencement	17
3.3	Stage 2 & 3 Consultation: Presentation and Gathering of Information	20
3.4	Stage 4: Review of Draft Report.....	21
4.0	Aboriginal Cultural Heritage	23
4.1	Existing Environment.....	23
4.1.1	Geology	23
4.1.2	Soil Landscapes.....	24
4.1.3	Hydrology	24
4.1.4	Flora and Fauna	25
4.2	Ethnohistory	26
4.2.1	Raw Materials.....	28



4.2.2	Procurement.....	30
4.2.3	Manufacture	30
4.3	Land Use History	31
4.3.1	Indigenous Occupation	31
4.3.2	Post Contact Occupation	32
4.4	Archaeological Context	39
4.4.1	AHIMS Results	39
4.5	Literature Review	43
4.5.1	Regional Heritage Assessments	43
4.5.2	Local Heritage Assessments.....	55
4.5.3	Summary	59
4.6	Predictive Model	60
4.6.1	Regional Site Patterning.....	60
4.6.2	Application to Study Area	61
5.0	Field Work.....	66
5.1	Sampling Strategy	66
5.2	Site Inspection.....	66
5.3	Survey Coverage.....	66
5.4	Survey Results	69
5.5	Discussion.....	74
6.0	Aboriginal Cultural Heritage Significance Assessment.....	75
6.1	Introduction	75
6.2	Criteria	75
6.3	Significance Assessment.....	76
6.4	Cultural Significance Assessment	78
6.5	Statement of Archaeological Significance	78
7.0	Impact Assessment	79
7.1	Proposed Development.....	79
7.2	Potential Impact	79
7.3	Justification.....	79
7.4	Ecologically Sustainable Development (ESD)	79
7.4.1	Intergenerational Equity.....	80
7.4.2	Cumulative Impacts.....	80



7.5	Aboriginal Community Input	80
8.0	Management, Mitigation and Recommendations	81
8.1	Guiding Principles.....	81
8.2	Harm Avoidance or Mitigation	81
8.3	Restricted Information and Confidentiality.....	81
8.4	Copyright	81
9.0	Recommendations	82
10.0	Bibliography.....	84

APPENDICES

Appendix A: Correspondence Log

Appendix B: Step 1 Letters and Responses

Appendix C: Step 2 Letters and Responses

Appendix D: Advertisement

Appendix E: Methodology, Cover Letters and Responses

Appendix F: Draft Report Emails and Responses

Appendix G: AHIMS Search Results

FIGURES

Figure 1: Study area in its regional context.....	3
Figure 2: Study area in its local context	4
Figure 3: Detail from Shoalhaven LEP 2014 Heritage Map. Study area outlined in red (Source: Shoalhaven LEP 2014 online map viewer)	13
Figure 4: Study area (red dot) within the South Coast People, Tribunal No NC2017/003 Native Title Claim boundary	19
Figure 5: The Strahler system (Source: Department of Planning and Environment 2016).	25
Figure 6 Opening of the Shoalhaven Paper Mill as reported in <i>The Argus</i> , 1956 (Trove)	37
Figure 7 Aerial imagery from 1969 showing the starches/papermill complex as a modestly sized facility with a rural setting.....	38
Figure 8 Aerial imagery from 1974 shows expansion of industrial buildings and infrastructure, though farmland remains dominant.	38
Figure 9 Aerial imagery from 1997 shows substantial enlargement of the industrial footprint with reduced surrounding farmland.....	39
Figure 10 Aerial imagery from 2006 shows the industrial complex is established as the primary land use on the northern riverbank.	39
Figure 11: AHIMS sites within and in close proximity to the study area.....	42
Figure 12: Navin 1992 study area (hatched area)	57
Figure 13: Survey units within the study area	68



1.0 INTRODUCTION

Apex Archaeology have been engaged to assist Babbage Consultants on behalf of Air Liquide Australia Solutions Pty Ltd to undertake an Aboriginal Cultural Heritage Assessment (ACHA) for proposed development of a CO₂ Processing Plant along Bolong Road, Bomaderry. 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 Guide); 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 in Bomaderry, within the Shoalhaven Local Government Area, approximately 70 km south-west of Wollongong (regional context shown in Figure 1). Locally (Figure 2), it is situated at the eastern end of the existing Shoalhaven Starches operations and extends east to the former Australian Pulp and Paper Mills site. The Shoalhaven River lies immediately to the south, and Bolong Road forms the northern boundary.

The study area comprises approximately 2.9 ha and is legally described as comprising part of each of the following lots:

- Lot 143 DP1069758
- Lot 3 DP 3885,
- Lot 1 DP605942,
- Lots 5 and 6 DP544730
- Lot A DP384559

1.2 PROJECT BRIEF

The proposed project will construct a Food and Beverage grade Liquid CO₂ processing facility and associated infrastructure at Bolong Road, Bomaderry. The facility will capture and purify CO₂ generated as a co-product from the Shoalhaven Starches ethanol fermentation process, producing up to 100,000 tonnes per annum of food-grade liquid CO₂ for use in applications such as meat processing, modified atmosphere packaging, beverage carbonation, wine production, water treatment, and hospitality industries.

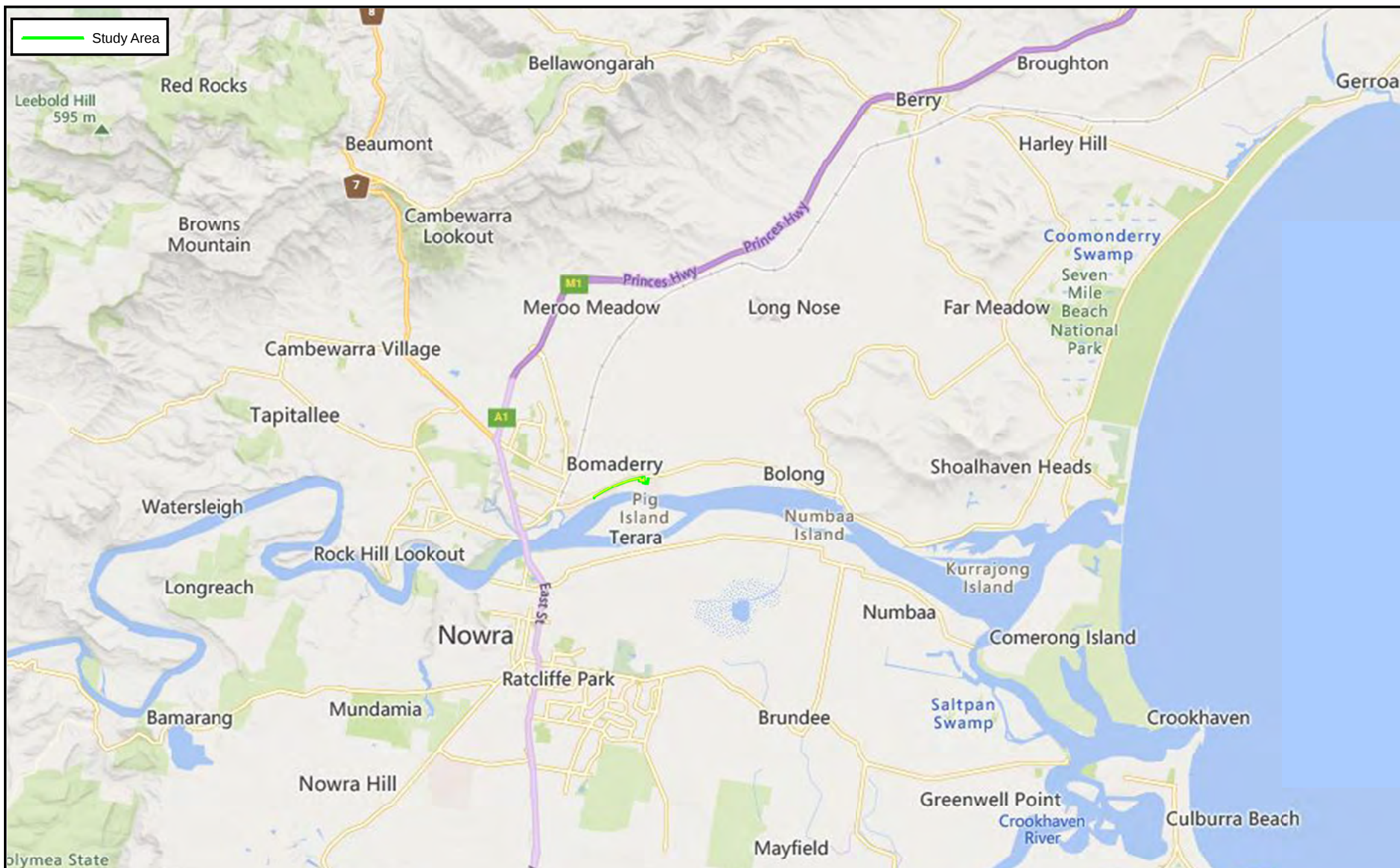
The project responds to ongoing national shortages in food-grade CO₂ supply, a critical component in the Australian food and beverage sector. These shortages



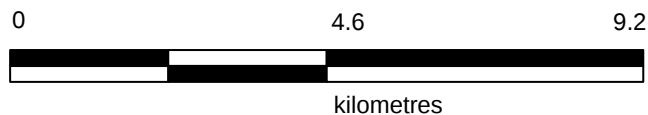
have been exacerbated by the 2024 closure of CO₂ production at the Qenos site in Botany, NSW. By establishing a secure local source, the proposal aims to strengthen the resilience of the food supply chain, reduce reliance on imports, and provide greater supply stability to key industries.

In addition to its role in supporting food security, the project will improve the environmental performance of Shoalhaven Starches by capturing and reusing CO₂ that would otherwise be released to the atmosphere. This will reduce greenhouse gas emissions and support broader regional and state objectives for sustainability and net zero targets.

The assessment will inform a State Significant Development Application (SSD) under Part 4 Division 4.7 of the *Environmental Planning and Assessment Act* 1979. This report has been prepared to inform the Environmental Impact Statement (EIS) required for the project, and to meet the Planning Secretary's Environmental Assessment Requirements (PSEARs) for the project. Specifically, Section 19 of the PSEARs requires preparation of an Aboriginal Cultural Heritage Assessment Report to describe and assess any impacts on any Aboriginal cultural heritage values on the land.



PO Box 236
NOWRA
NEW SOUTH WALES 2541



Projection:
MGA Zone 56 (GDA 94)
Base Map:
Near Maps 2025
Image Date: 05/07/2025
Final - Version 1

Figure 1: Study area in its regional context





PO Box 236
NOWRA
NEW SOUTH WALES 2541

0 0.65 1.3
kilometres

Projection:
MGA Zone 56 (GDA 94)
Base Map:
Near Maps 2025
Image Date: 05/07/2025
Final - Version 1

Figure 2: Study area in its local context





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 is Babbage Consultants on behalf of Air Liquide Australia Solutions Pty Ltd. The project managers were Tim Barrett of Babbage and Sebastian Tauni of Allen Price.

1.5 INVESTIGATORS AND CONTRIBUTORS

This archaeological assessment was commissioned by Babbage Consultants on behalf of Air Liquide Australia Solutions Pty Ltd. Apex Archaeology thanks Louise Egan and Tim Barrett 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 Marian Bailey, Archaeologist with Apex Archaeology and Leigh Bate, Director and Archaeologist with Apex Archaeology. The report was reviewed by Jenni Bate, Director and Archaeologist with Apex Archaeology. Marian has over seven years of archaeological research experience, including four years in archaeological consulting. 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; Report Review	B.Arch; Grad. Dip. Arch; Dip. GIS
Jenni Bate	Report Review	B.Arch; Grad. Dip. CHM
Marian Bailey	Report Author	B. Arts, Archaeology; M.AHM, 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 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, 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. The report has also been prepared in accordance with Requirement 11 of the Code of Practice.

Section 1 of this report outlines the study area, project brief, details of the proponent, and investigators and contributors to this report.

Section 2 outlines the statutory context and applicable legislation to Aboriginal heritage assessment and management.

Section 3 details the consultation undertaken with the Aboriginal community in accordance with the requirements of the ACHCRs and the NPW Regulation 2019.

Section 4 reviews existing knowledge, including landscape context, previous archaeological work, and provides a predictive model of Aboriginal occupation, in accordance with Requirements 2, 3 and 4 of the Code of Practice.

Section 5 provides details of the fieldwork undertaken for the project, in accordance with Requirements 5, 7, 8, 9 and 10 of the Code of Practice.

Section 6 makes an assessment of significance for the project, in accordance with Section 3.4 of the Guide and Section 4.3 of the ACHCRs.

Section 7 details the impact assessment of the proposed works on Aboriginal cultural heritage, in accordance with Section 2.5 of the Guide.

Section 8 provides management and mitigation measures to avoid or minimise harm in accordance with Sections 2.6 and 2.7 of the Guide.

Section 9 details the recommendations made for the project.



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 people 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.

A search of these registers via Native Title Vision identified a claim by the South Coast People (native title determination application NSD1331/003). In August and September 2024 respectively, both the State and Commonwealth agreed that there was sufficient evidence to enter negotiations to settle the matter by way of a consent determination which will recognise native title. This process is ongoing and the South Coast People have been consulted as part of this assessment.

2.2 NSW 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 (DCCEEW), unless the requirement for



an AHIP is ‘turned off’ by specific legislation, such as the EP&A Act 1979, as discussed below.

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.

Part 4, Division 4.7 State Significant Development outlines the requirements for assessment of SSD Projects. Section 4.41 outlines approvals and legislation that does not apply to SSD projects. This clause states:

1. The following authorisations are not required for State significant development that is authorised by a development consent granted after the commencement of this Division (and accordingly the provisions of any Act that prohibit an activity without such an authority do not apply)-
 - a) (repealed)



- b) A permit under section 201, 205 or 219 of the *Fisheries Management Act 1994*
 - c) An approval under Part 4, or an excavation permit under section 139, of the *Heritage Act 1977*
 - d) **An Aboriginal heritage impact permit under section 90 of the *National Parks and Wildlife Act 1997***
 - e) (repealed)
 - f) A bush fire safety authority under section 100B of the *Rural Fires Act 1997*
 - g) A water use approval under section 89, a water management work approval under section 90 or an activity approval (other than an aquifer interference approval) under section 91 of the *Water Management Act 2000*.
2. Division 8 of Part 6 of the *Heritage Act 1977* does not apply to prevent or interfere with the carrying out of State significant development that is authorised by a development consent granted after the commencement of this Division.
3. A reference in this section to State significant development that is authorised by a development consent granted after the commencement of this Division includes a reference to any investigative or other activities that are required to be carried out for the purpose of complying with any environmental assessment requirements under this Part in connection with a development application for any such development.

The EPA Act is administered by the Department of Planning, Housing and Infrastructure and the Minister will determine this project. In accordance with this act, there is no requirement to obtain consent from Heritage NSW under the provisions of s.90 of the NPW Act if impact to Aboriginal cultural heritage values cannot be avoided.

Secretary's Environmental Assessment Requirements (SEARs) have been issued for the project (SSD-80824235), with consideration of Aboriginal Cultural Heritage a key requirement. Specifically, the SEARs require the following with regard to the assessment of Aboriginal Cultural Heritage:

- An Aboriginal Cultural Heritage Assessment Report (ACHAR) prepared in accordance with the Code of Practice for Archaeological Investigation in NSW (DECCW 2010), and guided by the Guide to Investigating, Assessing and Reporting on Aboriginal Cultural Heritage in New South Wales (OEH 2011). The ACHAR must:
 - Identify, describe and assess impacts on the Aboriginal cultural values that exist across the development site
 - Provide evidence and details of consultation with Aboriginal people in accordance with the Aboriginal Cultural Heritage Consultation Requirements for Proponents (DECCW 2010)
 - Include results of a surface survey and any test excavations and an unexpected finds protocol.

This report has been prepared to address this requirement of the SEARs.



2.2.4 SHOALHAVEN ENVIRONMENTAL PLAN 2014

Part 5 of the Shoalhaven Local Environmental Plan 2014 (Shoalhaven LEP 2014) provides specific provisions for the protection of heritage items and relics within the Shoalhaven region 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.

An 'Aboriginal place of heritage significance' is defined in the Shoalhaven LEP 2014 as:

an area of land, the general location of which is identified in an Aboriginal heritage study adopted by the Council after public exhibition and that may be shown on the Heritage Map, that is:

- (a) The site of one or more Aboriginal objects or a place that has the physical remains of pre-European occupation by, or is of contemporary significance to, the Aboriginal people. It may (but need not) include items and remnants of the occupation of the land by Aboriginal people, such as burial places, engraving sites, rock art, midden deposits, scarred and sacred trees and sharpening grooves, or
- (b) A natural Aboriginal sacred site or other sacred feature. It includes natural features such as creeks or mountains of long-standing cultural significance, as well as initiation, ceremonial or story places or areas of more contemporary cultural significance.

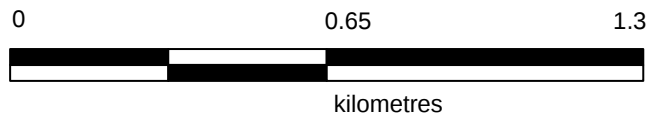
There are several European heritage items that are within the broad vicinity of the study area but none are adjacent or within. There are no known items of Aboriginal heritage significance identified within the LEP that fall within the current study areas (Figure 3). The absence of nearby Aboriginal heritage items does not mean that the land has low Aboriginal cultural heritage significance. Addressing non-Indigenous heritage values is beyond the scope of this report.



- Study Area
- Lot Boundaries
- Heritage Items



PO Box 236
NOWRA
NEW SOUTH WALES 2541



Projection:
MGA Zone 56 (GDA 94)
Base Map:
Near Maps 2025
Image Date: 05/07/2025
Final - Version 1

Figure 3: Heritage Items in relation to the study area.





2.2.5 STATE ENVIRONMENTAL PLANNING POLICY (COASTAL MANAGEMENT) 2018

The *State Environmental Planning Policy (Coastal Management) 2018* (Coastal Management SEPP) applies to land within the coastal zone. The policy aims to manage development within the coastal zone to ensure environmental assets of the coast are protected, while establishing a framework for land use planning to guide decision making in the coastal zone.

Applicable to the current project are Division 3 Coastal environment area, and Division 4 Coastal use area.

Division 3 Coastal Environment area requires the following to be considered:

13 Development on land within the coastal environment area

(1) Development consent must not be granted to development on land that is within the coastal environment area unless the consent authority has considered whether the proposed development is likely to cause an adverse impact on the following—

(f) Aboriginal cultural heritage, practices and places,

(2) Development consent must not be granted to development on land to which this clause applies unless the consent authority is satisfied that—

(a) the development is designed, sited and will be managed to avoid an adverse impact referred to in subclause (1), or

(b) if that impact cannot be reasonably avoided—the development is designed, sited and will be managed to minimise that impact, or

(c) if that impact cannot be minimised—the development will be managed to mitigate that impact.

Division 4 Coastal use area requires the following to be considered:

14 Development on land within the coastal use area

(1) Development consent must not be granted to development on land that is within the coastal use area unless the consent authority—

(a) has considered whether the proposed development is likely to cause an adverse impact on the following—

(iv) Aboriginal cultural heritage, practices and places,

(b) is satisfied that—

(i) the development is designed, sited and will be managed to avoid an adverse impact referred to in paragraph (a), or

(ii) if that impact cannot be reasonably avoided—the development is designed, sited and will be managed to minimise that impact, or



(iii) if that impact cannot be minimised—the development will be managed to mitigate that impact, and

(c) has taken into account the surrounding coastal and built environment, and the bulk, scale and size of the proposed development.

This report has been prepared to consider this requirement.



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 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 23 June 2025. Copies of these letters and responses are attached in Appendix B. These Step 1 letters were sent to the following agencies:

- Heritage NSW
- Local Land Services (LLS)
- Shoalhaven Council
- Nowra Local Aboriginal Land Council (Nowra LALC)
- Office of the Registrar, *Aboriginal Land Rights Act 1983 (NSW)* (ORALRA)
- Native Title Services Corp (NTSCorp)

Responses were received from Heritage NSW, Shoalhaven Council, ORALRA and NTSCorp. Heritage NSW provided a list of Aboriginal people and organisations; Shoalhaven Council suggested contacting Nowra LALC; ORALRA stated there were no Registered Aboriginal Organisations for the area and to contact Nowra LALC; and NTSCorp stated that the study area fell within the South Coast People's native title claim. 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 that a claim by the South Coast People (Figure 4) has been accepted for registration but not yet determined (NSD1331/003). In August and September 2024 respectively, both the State and Commonwealth agreed that there was sufficient evidence to enter negotiations to settle the matter by way of a consent determination which will recognise native title.

While the South Coast claim is being settled, members of the claim group have native title rights and interests in the claim area by virtue of their registered claim.

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 06 June 2025, inviting them to register an interest in the project. Registrations were accepted until 21 June 2025. 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 07 June 2025, inviting registrations of interest from people who may have cultural knowledge of the project area. A copy of the advertisement is attached in Appendix D.

A total of 12 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:

- A&K Cultural Heritage
- Clive Freeman
- David Carter
- Guntawang Aboriginal Resources Inc
- Richard Callaghan
- Sonione Wakabut Rogers
- South Coast Gadu
- South Coast Culture and Heritage
- South Coast People
- Southern Native
- Thomas Dahlstrom
- Thoorga Nura



Figure 4: Study area (red dot) within the South Coast People, Tribunal No NC2017/003 Native Title Claim boundary



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 23 June 2025. Comments were accepted until 21 July 2025. Responses were received from Guntawang Aboriginal Resources Inc and Southern Native.

All responses were favourable and endorsed our proposed methodology. No alternatives to our methodology were suggested or requested. Brendon Carberry of Southern Native identified that his family occupied the Shoalhaven River and surrounds for thousands of years, with his siblings and him still gathering seafood within the study area. Guntawang stated they could not offer any further information as it is difficult to determine what the area was used for before early settlement until excavation takes place. The RAP responses are attached in Appendix E and are detailed in Table 2.

Table 2: RAP responses to Information and Methodology document

RAP	RAP Response	Apex Archaeology Response
Southern Native	The methodology looks good and I would like to be considered for any field work that takes place. This area is of cultural significance to myself and my family.	Noted with thanks



	I am from the Jerrinja community and my people have occupied the Shoalhaven River and surrounds for thousands of years. My siblings and I still gather seafood within the study area regularly and have a close connection to country here.	
Guntawang Aboriginal Resources Inc	Guntawang supports the Project information and methodology for the ACHA at Bolong Rd Bomaderry. We have no other information to offer, until we are included in excavation it is difficult to determine what this area was used for before early settlement in Australia.	Noted with thanks

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 on 23 September 2025, with comments accepted until 21 October 2025. Comments were received from:

- Guntawang Aboriginal Resources Inc
- South Coast Gadu
- Sonione Wakabut Rogers

These comments are detailed further in Table 3 below.



Table 3: Responses regarding draft report

Group	Comment	Response
Guntawang Aboriginal Resources Inc	Thanks for the ACHA Report. The report does not say that it's a Draft it's only in the header of the email. We understand our obligations of registration and will continue to contribute to the reports. We accept the recommendations of the report.	Noted with thanks, and clarified the current version is issued as a “Draft for RAP review” which is noted in the document control section on page 2.
South Coast Gadu	Thank you for your email Marian. I will read through the draft and get back to you as soon as possible.	Noted with thanks.
Sonione Wakabut Rogers	Thank you for the update	Noted with thanks.

Consultation with the Aboriginal community for this project has been conducted in accordance with the ACHCRs. A log of all correspondence is presented in Appendix A of this ACHAR. Copies of all correspondence are included in 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 Sydney Basin Bioregion and falls in the Illawarra geological subregion on the northern floodplain of the Shoalhaven River. The local environment is characterised by a broad estuarine floodplain with levees, terraces, and low-lying swampy ground, intersected by drainage channels and subject to periodic inundation. Quaternary alluvial sediments dominate the land surface, overlying Permian sandstones and siltstones of the Shoalhaven Group.

Prior to industrial development, the floodplain would have supported extensive riparian and wetland vegetation communities associated with the Shoalhaven River and Bomaderry Creek, providing an abundant resource base for Aboriginal people. The combination of permanent water, diverse flora, and faunal habitats would have made the landscape an attractive location for occupation and resource exploitation.

The study area has, however, been heavily disturbed by historical and contemporary land use. Activities including the operation of the Australian Pulp and Paper Mill, ongoing Shoalhaven Starches industrial development, large-scale earthworks, the deposition of imported fill, and the installation of services have significantly altered the natural land surface. As a result, while the environmental context demonstrates why Aboriginal sites are often found in floodplain and riverine settings, the present landscape has a reduced potential for intact archaeological deposits to survive.

4.1.1 GEOLOGY

The study area is underlain by sedimentary units of the Sydney Basin, specifically the Shoalhaven Group sandstones and siltstones of Permian age. These bedrock formations are overlain in the low-lying areas by Quaternary alluvial deposits derived from the Shoalhaven River system. The alluvium consists of clay-rich



floodplain sediments interbedded with lenses of sand and gravel, reflecting repeated cycles of deposition during flood events.

Geology is directly relevant to archaeological preservation and resource use. The sandstone formations in the wider region were historically important as raw material sources for grinding, flaking, and shelter formation, while alluvial sediments can preserve archaeological deposits by burying cultural material beneath successive layers of sediment. Within the present study area, however, these geological units have been substantially modified by industrial development, which has obscured the natural stratigraphy.

4.1.2 SOIL LANDSCAPES

The study area is located within the Shoalhaven soil landscape. This landscape comprises moderately deep Prairie Soils (50–100 cm deep) on levees, while Red Earths and Yellow and Red Podzolic Soils occur on adjacent terraces. The floodplain itself contains Alluvial and Gleyed Podzolic Soils, which are typically poorly drained and subject to seasonal waterlogging. The floodplain is also prone to scour or sheet and rill erosion during flood events and may be covered by varying depths of alluvial material as waters recede.

From an archaeological perspective, these soil landscapes are important because they directly influence preservation potential. Levee soils may contain intact cultural material preserved beneath successive alluvial layers, while terrace contexts offer more stable settings where artefacts may remain in situ within podzolic profiles. In contrast, floodplain soils are more vulnerable to disturbance from erosion and sediment reworking, which can displace or obscure archaeological deposits. In the present study area, this natural stratigraphy has been heavily impacted by historical industrial development, including the deposition of fill, compaction, and truncation of profiles, greatly reducing the likelihood that intact deposits survive.

4.1.3 HYDROLOGY

The study area lies within the lower Shoalhaven River catchment, immediately north of the river itself. The Shoalhaven River is classified as a fourth-order watercourse under the Strahler system, and forms the southern boundary of the project area and represents the nearest permanent freshwater source. Bomaderry Creek, a tributary of the Shoalhaven, joins the main channel approximately one kilometre west of the study area.

Watercourse classification ranges from first order through to fourth order (and above) with first order being the lowest, ie a minor creek or ephemeral watercourse, and fourth or above being a large watercourse such as a river, as defined by the Department of Planning and Environment (DPE; Figure 5).

Flooding is a key hydrological characteristic of the study area. Periodic inundation of the floodplain results in both erosion and sediment deposition, processes which

can alternately disturb or bury archaeological deposits. These geomorphic processes, combined with industrial modification of the riverbank and floodplain, have shaped both the landscape and its archaeological potential. Further, floodplains were unlikely to have been utilised for repeated or long term occupation, but rather would have been opportunistically visited as conditions allowed access.

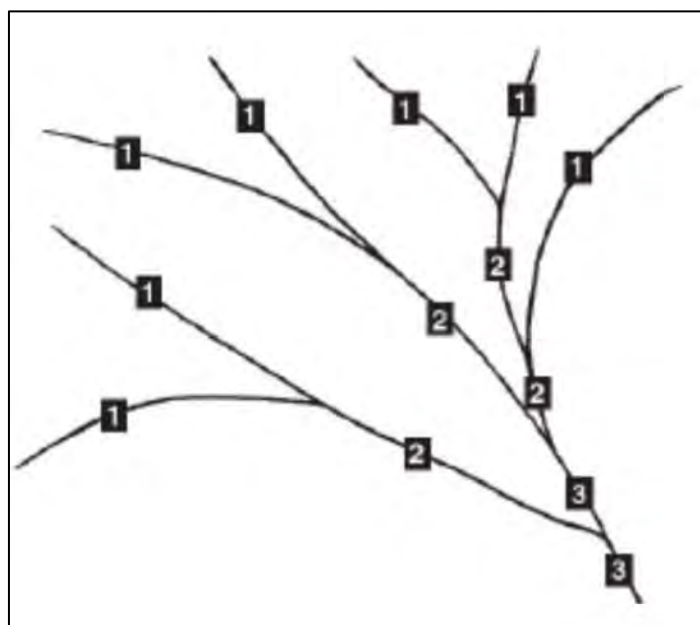


Figure 5: The Strahler system (Source: Department of Planning and Environment 2016).

4.1.4 FLORA AND FAUNA

The vegetation within the area consists of remnant riparian and floodplain species, alongside highly modified industrial and regrowth vegetation. Prior to clearing and disturbance, the floodplain would have supported communities of swamp oak (*Casuarina glauca*), river oak (*Casuarina cunninghamiana*), eucalypt species such as forest red gum (*Eucalyptus tereticornis*), and paperbarks (*Melaleuca* spp.). The adjoining escarpments and higher ground supported species including spotted gum (*Corymbia maculata*), blackbutt (*Eucalyptus pilularis*), and turpentine (*Syncarpia glomulifera*). During the early years of European exploration and settlement in the Shoalhaven, vegetation was recorded as comprising “rainforest, brush cedar, softwoods, coachwood, blackbutt, sassafras, flametrees, brushes, palms, ferns, vines, orchids, eucalyptus and casuarinas” (Meehan 1805 quoted in Bayley 1975). Many of these would have provided resources for Aboriginal people, either for dietary needs or to provide tools, or to feed fauna that were hunted.

These species would have supported a range of fauna species. Both floral and faunal resources would have been exploited by the Aboriginal people in the area. Plants would have provided wood for tools and implements such as canoes, shields and coolamons to carry water, and the plants would have provided berries, tubers, seeds, leaves and nectar for food.



The diet of Aboriginal people also relied on the native wildlife which varied, depending on the animal resources that were available to them within their surrounding environment, or perhaps may have obtained through trade. There would have been abundant food sources, including fish from the river and creeks, as well as small animals such as wallabies, possums, small birds, amphibians and reptiles.

In its current condition, the vegetation of the immediate study area has been extensively cleared and modified by industrial activity, with large parts of the ground surface covered by buildings, hardstand, and imported fill. However, remnant riparian corridors remain along the Shoalhaven River and Bomaderry Creek, retaining patches of native vegetation and providing ecological continuity with the broader floodplain and riverine environment.

4.2 ETHNOHISTORY

Ethnohistorical evidence is based on the reports of colonisers and does 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; Sullivan 1983:12.4).

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.



Regardless of the specific identity of the original inhabitants of the area, Aboriginal society in general was understood to be 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, also known as a 'band' (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 hinterland groups relied on freshwater and terrestrial animals and plants, coastal groups utilised marine and estuarine resources.

Bomaderry falls within the coastal region, with access to both marine and inland resources. Animals such as kangaroos, wallabies, possums, gliders, bandicoots, wombats, quolls, fruit bats, echidnas, native rats and mice, emus, ducks, tortoises, snakes and goannas (Attenbrow, 2010), played a major role in the subsistence of coastal groups, while other resources included shellfish such as oysters, crustacea such as crayfish and crabs, and marine animals including dolphins, dugongs, fish, shark, eel, seals and whales (Boot 1994). Fishing was conducted from canoes with spears, or collected along the shore (Tench in Attenbrow 2010). Beached whales were eaten, as observed by the British settlers in the late 18th century.

The different environments of the Bomaderry area contain a diverse range of plant and animal species. On creek banks and surrounds, a wide variety of game would have been found. The vegetation communities along the creeks and gullies, primarily woodlands, would have provided shelter for numerous animal and plant species that could be eaten or used for other purposes such as providing shelter and medicines.

The Aboriginal people of the area would have utilised a range of hunting and gathering equipment, including fishing and hunting spears made of wood and barbed with shell, flaked stone blades, shark teeth, or sharpened bone; boomerangs and spear-throwers; fishing hooks made from bird talons, bone, wood and shell; ground stone axes; anvils and pounders; stone tools including blades and scrapers; shields, clubs and digging sticks made from wood; baskets made from bark; and wooden canoes (Attenbrow 2010).

Shelter is a basic need for any humans and historical records report either rockshelters or huts constructed from bark, branches and leaves were utilised for shelter. There is some discussion regarding whether Aboriginal people moved



regularly from place to place, or whether they lived at one campsite for a longer period of time and ranged out for resources, returning to their home base as necessary, with Penfold providing oral histories stating the Jerrinja peoples tended to have multiple home bases for different seasons, and relied on gunyahs for shelter (Penfold 2017).

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. Tuff, however, forms from the tiny ash particles that are also released during volcanic explosions. When it cools it hardens into a fine-grained rock.

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.

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).

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'.

European incursion into the Shoalhaven region began in the early 19th century. 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.

In 1822 Scottish entrepreneur Alexander Berry explored the Shoalhaven River environs over several days, and, together with his business partner Edward Wollonstonecraft, was later granted 10,000 acres on the northern side of the Shoalhaven River, becoming the first European settler in Shoalhaven (SCHS, n.d.). Berry established the Coolangatta Estate on the south side of the Shoalhaven River, using convict labour to develop agriculture and even cutting a canal to improve the river's navigability for shipping. By mid-century, Berry's holdings expanded north of the river: the Bomaderry area on the north bank became part of his Shoalhaven Estate after Berry had a road built to it in 1858s (SCHS, n.d.). This rudimentary road (likely involving a ferry crossing before any bridge) linked his Coolangatta Estate to the northern side, opening Bomaderry's fertile land for colonial farming. During this early period, land use in what is now Bomaderry was predominantly rural: cleared for pasture and crops under Berry's tenure, with assistance from Aboriginal people and convicts. Permanent European population remained sparse on the north side through the mid-1800s, as the main settlement focus was on the south bank (the village of Terara, and later Nowra).

The 1850s–1860s saw critical infrastructure laid that set the stage for growth. In 1857, a government survey reserved a site for a future town at Nowra on the south bank (The Shoalhaven Telegraph, 1887). A ferry service provided the first regular crossing of the Shoalhaven River, until the Nowra Bridge was completed in 1881 (NSW Heritage Database, n.d.). This wrought-iron Whipple truss bridge, the largest in New South Wales at its time, carried the main south coast road (now the Princes Highway) over the Shoalhaven (NSW Heritage Database, n.d.). It joined Nowra to the Bomaderry side, fostering closer integration of the north bank lands into the colonial



economy. After the devastating floods of 1870 destroyed Terara, Nowra (on higher ground) became the region's commercial centre (The Shoalhaven Telegraph, 1887). With the new bridge, Bomaderry's once-remote paddocks were only a short cart ride from Nowra's markets and wharf. By the early 1880s, larger portions of the Berry estate on the north side were being eyed for closer settlement and development.

Late 19th Century Township Development

In 1882, a township of Bomaderry was formally surveyed and established on the north side of the rivers (SCHS, n.d.). The name "Bomaderry" came from an Aboriginal word meaning either "fighting ground" or "running water" (SCHS n.d.), reflecting Indigenous heritage in the area (though Aboriginal presence would soon be overshadowed by colonial industries). The Berry estate continued to control most of the land at this time. Only after the death of Alexander's brother David Berry in 1889 did the estate finally break up. In 1892, hundreds of acres on the north side were subdivided and auctioned for sale (Illawarra Mercury, 1889). This land sale, timed just ahead of the railway's arrival, allowed many new settlers and businesses to acquire parcels around Bomaderry. The South Coast railway line extension from Kiama was completed to Bomaderry in June 1893, making Bomaderry the permanent rail terminus for the line (Clark & Florance, 2017). Plans to continue the railway further south stalled, so the line stopped at Bomaderry on the river's north bank, opposite Nowra.

With the railway's debut in 1893, Bomaderry gained strategic importance as the transport hub for the district's north side (Clark & Florance, 2017). A railway station (originally called "Nowra" station before the name was changed to Bomaderry) was built alongside a yard with sidings and sheds to handle freight. Because no rail bridge crossed the Shoalhaven, Bomaderry became the railhead where goods were transferred to road or river transport for Nowra and beyond (Clark & Florance, 2017). The new connectivity spurred growth: a small village nucleus formed west of the rail line on the subdivided estate lands (Clark & Florance, 2017). The Nowra Bridge and the railway together meant that farmers on both sides of the river could ship produce by rail from Bomaderry or drive it directly into Nowra's markets. By the turn of the century, this once thinly populated area was emerging as a minor town with transport links, workers' housing, and the first stirrings of industry.

Early 20th Century Land Use and Industry

Around 1900, Bomaderry evolved from a rural appendage of the Berry estate into an agro-industrial village. Taking advantage of the rich dairying country of the Shoalhaven, several processing factories opened near the railhead. In 1900 the Denham Brothers established a bacon and ham factory in Bomaderry (The Sydney Mail and NSW Advertiser, 1901). It processed local pigs and likely used the railway to send meat to Sydney. The following year, 1901, a condensed milk factory was built – initially beside the railway station for convenience, then later relocated closer to



the Shoalhaven River at Bolong Road (The Shoalhaven Telegraph, 1926). This move to a riverbank site (near where large factories would later cluster) may have been to secure ample water supply and easier access for dairy farmers. By 1912 the Nowra Co-operative Dairy Company had also set up a milk depot in Bomaderry (The Daily Telegraph, 1912). These establishments indicate that land use was shifting from pure agriculture to agro-industry: the milk, bacon and butter factories on the north side became key outlets for regional farmers, and they concentrated development around Bolong Road and the rail yards. The presence of the railway influenced their siting – for instance, a dedicated “dairy siding” was added to Bomaderry Station in 1921 to serve dairy freight (The Shoalhaven News and South Coast Districts Advertiser, 1937). Similarly, a weighbridge and other rail facilities were installed by the 1920s, underscoring Bomaderry’s role as a shipping point for farm produce (The Shoalhaven News and South Coast Districts Advertiser, 1937).

The British-founded Horlicks company began operations in Bomaderry in the 1930s, initially with a pilot plant producing malted milk powder in 1934 (The Border Star, 1934). By 1937 Horlicks had expanded, and between 1949 and 1952 it built a large modern factory – a three-story brick building on Bolong Road – to increase production (Slipstream, 1959). The Horlicks factory processed local milk, grain and malted barley to make the famous Horlicks powder, and even produced condensed milk and infant food by-products (Slipstream, 1959). By mid-century this plant employed roughly 100 workers and was a major feature of Bomaderry’s industrial landscape (Slipstream, 1959) It stood near the banks of the Shoalhaven River along Bolong Road, firmly entrenching industrial land use in an area that had been dairy pasture a generation earlier.

Mid-20th Century Industrial Expansion

During the mid-20th century, Bomaderry’s Bolong Road corridor transformed into a hub of large-scale manufacturing. World War II and post-war development brought new industries to regional New South Wales. One landmark project was the establishment of a paper mill to produce fine specialty papers. In 1953, British companies Wiggins Teape and William Nash (London-based paper manufacturers) purchased a 54-acre dairy farm site along Bolong Road, Bomaderry (South Coast Register, 2015). There they constructed the Shoalhaven Paper Mill, a £1.5 million facility (The Argus, 1956) designed to make high-grade paper for documents like bank cheques, passports, and birth certificates (ABC 2015). The first paper machines were small by world standards – ideal for specialty runs rather than mass commodity paper (Jamieson, 2011). The mill commenced production by 1956, breaking the Tasmanian monopoly on fine paper manufacturing in Australia (Jamieson, 2011). Rail infrastructure was extended to support the operation: in 1956 the existing Horlicks rail spur was lengthened directly into the new paper mill’s site, allowing paper reels and raw materials to move by rail (Jamieson, 2011). The Shoalhaven Paper Mill was a major employer and investment in the region, costing about £3



million by its completion and providing dozens of skilled jobs. It was also part of a broader pattern of industrial decentralisation in the 1950s, which saw rural towns like Bomaderry host significant manufacturing plants.

By the late 1950s, the Bomaderry industrial precinct along Bolong Road included the large Horlicks malted milk factory and the adjacent Wiggins Teape & Nash paper mill, both fronting the river. Surrounding land use changed accordingly: former farmland was occupied by factory buildings, warehouses, settling ponds and rail sidings. Residential development in Bomaderry expanded westward away from the industrial zone, while Bolong Road became busier with factory workers and freight. In 1969, a new Princes Highway bypass (on the current alignment through Bomaderry/North Nowra) was completed, funnelling through-traffic slightly west of Bolong Road but increasing accessibility to the area.

The 1960s–1970s also saw corporate changes and new industries. In 1970, Wiggins Teape Australia merged into the Australian company Associated Pulp and Paper Mills (APPM) (Jamieson 2011). APPM took over the Shoalhaven paper mill, and Wiggins Teape in turn became a major shareholder in APPM (Jamieson 2011). Under APPM (and later Australian Paper), the Shoalhaven Mill continued making specialty security paper for decades. The Horlicks malted milk factory, on the other hand, was acquired in 1970 by a rising Australian agribusiness, Manildra Group (South Coast Register, 2013). Manildra's founder, Dick Honan, made a strategic move to buy the disused Horlicks starch plant and malting infrastructure, which had been Australia's first Horlicks facility (South Coast Register, 2013). Manildra converted and expanded this site into Shoalhaven Starches, pivoting Bomaderry's industry from malted milk to grain processing and ethanol production. By the early 1970s, Manildra had established a wheat starch plant and a glucose syrup plant on the old Horlicks premises, extracting starch and gluten from flour on a large scale (Manildra Group, n.d.). This marked the birth of what would become one of the world's largest wheat-processing facilities.

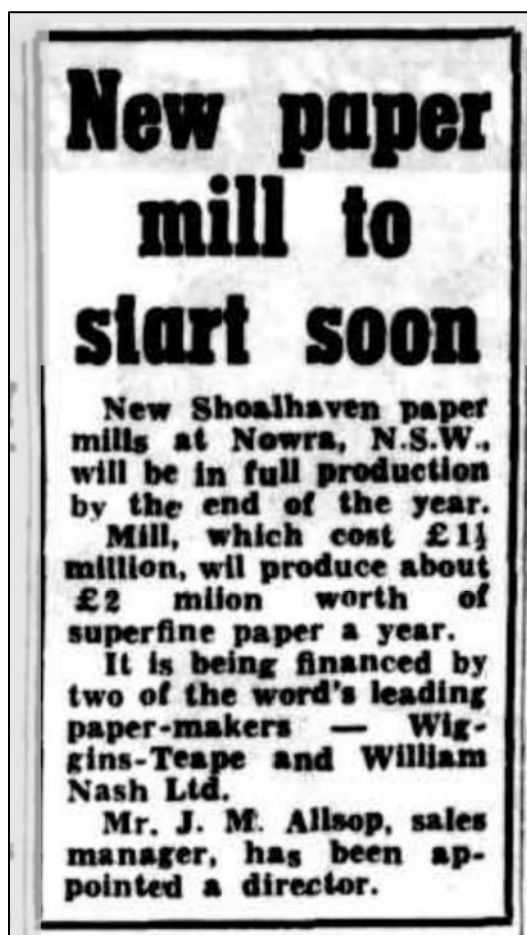


Figure 6 Opening of the Shoalhaven Paper Mill as reported in *The Argus*, 1956 (Trove)

The aerial imagery shows the progressive expansion of the Manildra Group starches and papermill complex at Bomaderry and the corresponding reduction of surrounding agricultural land between 1969 and 2006. In 1969 (Figure 7) the facility is relatively small and embedded within a rural landscape, but by 1974 (Figure 8) additional built structures and service areas are visible. By 1997 (Figure 9) the plant has expanded significantly, with large processing areas, storage and treatment facilities clearly established, while Bomaderry's urban footprint extends closer to the industrial zone. By 2006 (Figure 10) the factory dominates the northern bank of the Shoalhaven River, with associated infrastructure replacing most of the former farmland and defining the land use of the area.



Figure 7 Aerial imagery from 1969 showing the starches/papermill complex as a modestly sized facility with a rural setting.



Figure 8 Aerial imagery from 1974 shows expansion of industrial buildings and infrastructure, though farmland remains dominant.



Figure 9 Aerial imagery from 1997 shows substantial enlargement of the industrial footprint with reduced surrounding farmland.



Figure 10 Aerial imagery from 2006 shows the industrial complex is established as the primary land use on the northern riverbank.

4.4 ARCHAEOLOGICAL CONTEXT

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 18 June 2025 using the Lot and DP of the property with a 1km buffer. A subsequent extensive



search identified six sites close to the study area (Figure 11). Copies of the AHIMS Searches are attached in Appendix G.

Table 4: AHIMS sites within search area

Site ID	Site name	Site status	Site features	Recorder
52-5-0289	APPM Isolated Find 1	Valid	Artefact	Kerry Navin, Mr. Kelvin Officer
52-5-0558	BCRP 027 Feather Termination Shelter	Valid	Artefact: 1	Kelleher Nightingale Consulting Pty Ltd
52-5-0290	APPM Isolated Find 2	Valid	Artefact	Kerry Navin, Mr. Kelvin Officer
52-5-0557	BCRP 026 Rock Fall Canyon Shelter	Valid	Artefact: 1	Kelleher Nightingale Consulting Pty Ltd
52-5-0288	APPM Shoalhaven; IF1	Valid	Artefact	Kerry Navin, Mr. Kelvin Officer, M Hill
52-5-0969	Bolong-IA-1	Destroyed	Artefact	Samantha Keats, Biosis

Table 5: AHIMS site features within search area

Site Feature	Number of sites	Percentage
Artefact	6	100%
Total	6	100%

The site card descriptions for the sites within 1km of the study area state the following:

APPM SHOALHAVEN IF1/ AHIMS ID: 52-5-0288

This site is noted to be located in a drainage ditch opposite the paper mill, and comprised a fine grained volcanic alluvial pebble, broken at one end, which has been bilaterally ground at one, naturally tapered end. The artefact was recorded as being 106mm x 63mm x 27mm. The associated report for the site notes that it was located on the northern side of Bolong Road, outside of the study area.

APPM ISOLATED FIND 1/ AHIMS ID: 52-5-0289

This site is noted to be located in a drainage channel opposite the APPM mill and is recorded as a hatchet head located in a drainage channel, approx 30cm below the present ground level. The artefact comprised a fine grained alluvial pebble with round crystalline inclusions which has been broken at one end. The pebble was noted to have been bilaterally ground at one, naturally tapered end, with striations visible on two lateral surfaces. Some unifacial flaking was noted to be present on the broken end of the artefact, which was recorded as being 106 mm x 63mm x 27mm. This site is assumed to be a duplicate of 52-5-0288, given the description of the artefact and its identical size. Additionally, one site card (52-5-0228) is handwritten,



while the site card for 52-5-0289 is typed. It is considered likely that the site was double registered in error. The associated report for the project only notes the identification of two new sites in the area, but three are registered with AHIMS.

APPM ISOLATED FIND 2/ AHIMS ID: 52-5-0290

This site is noted to be located in a drainage channel adjacent to Bolong Road and opposite the existing APPM mill. It comprises a broken alluvial pebble 60mm x 50mm x 5mm. although not included in the site card, the site shown in associated reporting to be located on the northern side of Bolong Road, outside of the current study area.

BCRP 026 ROCK FALL CANYON SHELTER/ AHIMS ID: 52-5-0557

This sandstone rock shelter is mapped as being located just north of the current study area, along the canalised Abernethys Creek. However, it is recorded as being a large rockshelter of 18.4m x 9.4m x 20m, and there is no evidence of such a large rockshelter at this location. It is also noted to be on the eastern side of Bomaderry Creek gorge, and thus is well outside the current study area. The site will not be impacted by the proposed works.

BCRP 027 FEATHER TERMINATION SHELTER/ AHIMS ID: 52-5-0558

The coordinate location for this site is incorrect on AHIMS. The coordinate location places it on the banks of the Shoalhaven River, immediately south of the current study area. The site is recorded as a rockshelter in proximity to Bomaderry Creek. There are no rockshelters in proximity to the coordinate location from AHIMS, and the exact location of the site is not clear. However, based on the site card, the rockshelter is a significantly large one (36m long, 7m deep and 20m high) and is certainly not located at its recorded location. Its actual location is not clear from the site card, which does not include a map of the site, although it is noted to be in proximity to Bomaderry Creek, on the eastern side of Bomaderry Creek gorge. As such, this site will not be impacted by the currently proposed works, as this is well outside the current study area.

BOLONG-IA-1/AHIMS ID: 52-5-0969

Site 52-5-0969 (Bolong-IA-1) is located in close proximity to the current study area and has had an Aboriginal Heritage Impact Permit (AHIP) issued for the site. This site is listed as destroyed on AHIMS and is no longer considered valid. No further archaeological work is necessary for this site. The site originally comprised a single chert artefact recovered from a test pit during assessment undertaken by Biosis in 2020 for a concrete batching plant.

None of these sites are located within the study area, or likely to be impacted by the proposed works.



Figure 11: AHIMS sites within and in close proximity to the study area.

Figure not included in public report.



4.5 LITERATURE REVIEW

The archaeological work previously completed within the wider region is summarised here. 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.

A number of previous archaeological assessments have also been undertaken in the immediate vicinity and within the current study area.

4.5.1 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' 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 project included a survey of an 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.

LAMPERT 1971

In 1971, Lampert published the results of excavations within rock shelters at Burrill Lake and Currarong on the South Coast of NSW. Initial excavations at Burrill Lake in 1931 were considered to be less than ideal, with a large mesh size used to sieve significant amounts of deposit, and thus unlikely to capture smaller backed blades and other items. As a result, Lampert undertook additional excavations in 1967 to re-examine the deposit, including a sandy deposit which was initially considered to be sterile. Deposits within the shelter were dated to approximately 20,000 years ago. A range of mammals, birds, fish, and shell fish remains were identified, along with a range of stone tools.

At Currarong, three rock shelters were excavated. While artefactual deposit was recovered from all three, only Shelter 1 contained sufficient stone for detailed statistical analysis, with a two phase industrial sequence identified at the site. There was limited evidence to suggest that artefactual material was modified at the site. A number of bone and shell artefacts were also identified at the site. Human skeletal remains were also identified within Shelter 1, with three individuals identified.

Overall, both shelter sites were considered to be similarly situated, within sheltered wooded valleys with streams of fresh water nearby. Estuarine conditions are within close proximity to both shelter sites and provided resources. The assemblage was considered to "represent the activities of a group or groups of people who practised a mixed economy, exploiting the resources of land, estuary and sea-shore". The



activities at both sites were dated to commence approximately 20,000 years ago, with a relatively continuous sequence of occupation through to the relative present. Three distinct phases of occupation were identified, considered to parallel McCarthy's Eastern Regional Sequence to an extent, albeit with some differences.

The earliest phase was considered to be characterised by crude, amorphous scrapes, although some finely dentated saws were also identified from these early deposits. A second phase was considered to commence around 5,000 years ago which was characterised by more specific stone implement types, including backed blades such as Bondi points and geometric microliths, thumbnail scrapers and eloueras. The third phase was characterised by a reduction in backed blades and an increase in bipolar flaking technology. Overall, it was considered that the results from these excavations demonstrated that the archaeological record within south eastern NSW is a dynamic record, with 'culture centres' forming where similar changes in archaeological evidence were deposited in similar but spatially different sites.

KERRY NAVIN 1991

Kerry Navin completed an archaeological survey for the North Nowra Link Road (option 2) on behalf of Shoalhaven City Council. It was concluded that even though two Aboriginal sites (Bomaderry Creek 4 and 5) were in the vicinity of this route option that there were no archaeological constraints to route option 2 and it was the preferred option.

LAMPERT & STEELE 1993

Lampert and Steele undertook excavations within a rock shelter adjacent to Bomaderry Creek in 1970. Well preserved organic remains, including shell, bone, plant fibres and resin, were identified within the deposit, along with a range of stone artefacts. The rockshelter was formed from sandstone on the southern side of a steep-walled gully above Bomaderry Creek, and faces due north, allowing the site to be protected from strong winds and rain. The interior of the cave has a ceiling of up to 5.5m high and is sheltered by blocks of sandstone at the entry, allowing the shelter to remain cool on hot summer days. The shelter had a sandy base and flaked stone and blackened macropod bones, suggesting use of the shelter by Aboriginal people in the past. The shelter was located in close proximity to the Shoalhaven River.

The excavation revealed that occupation deposit was very shallow, extending no deeper than 40cm. The majority of artefacts were made from chert and reef quartz, with a small amount of silcrete, considered to have been transported from the Bendalong-Ulladulla region 45km to the south. A range of artefact types, including eloueras, flakes, scrapers, cores, backed blades, an edge ground axe, and other unmodified flakes were recorded within the site.



Based on the results of the assemblage assessment, it was concluded that Aboriginal people utilised the immediate environment to support themselves. There was evidence of preparation and consumption of food resources within the shelter itself, along with stone tool manufacture. Materials for stone tool manufacture were sourced from both the local environment and from distant locations. There was evidence of use of marine resources, despite being located approximately 12km inland. Much of the deposit appeared to be similar to that identified at Currarong and Burrill Lake rockshelters and suggested similar use of the landscape despite the spatial distance between the sites.

BOOT 2001

Boot undertook a comprehensive desktop assessment of the known archaeological sites within the Bomaderry Creek Bushland region at the time; highlighting the need for further comprehensive survey and assessment within the bushland area surrounding Bomaderry Creek and extensive consultation with the local Aboriginal community regarding the cultural resource within the area. The report noted that to date little formal consultation had been undertaken by archaeologists completing assessments within the area. It further recommended that better approaches to Aboriginal cultural heritage management were necessary to ensure no further unauthorised impacts occurred to as yet unrecorded sites within the Bomaderry Creek Regional Park.

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, that border the current study area, 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 area 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 & INGRAM 2007

Kuskie and Ingram undertook an assessment for the proposed Wondalga Sporting Facilities adjacent to the existing Lyrebird Park, in East Nowra. No Aboriginal sites or archaeological potential was identified within the area, and Kuskie concluded that “the primary factor in the absence of items was the geomorphological history of the area. For virtually the entire Holocene period (last 10,000 years) the area had been inundated with water and had therefore not been conducive to Aboriginal occupation”. Kuskie inferred that “the only Aboriginal use of the area was likely to have involved exploitation of subsistence resources, initially from an estuarine environment and later in the Holocene period from brackish swamps, for which negligible evidence would remain”.



KELLEHER NIGHTINGALE CONSULTANTS 2010

In 2010, Kelleher Nightingale Consulting undertook an Aboriginal heritage assessment in advance of the proposed North Nowra Link Road project, within the Bomaderry Creek Regional Park. The study area was located within a landscape dominated by sandstone escarpments and overhangs. A total of 28 sites were identified during the assessment, and 20 of these were newly recorded. The predominant site type identified was occupation shelters. Twenty one of the sites were considered to have low archaeological significance and six were considered to exhibit moderate archaeological significance.

FEARY AND MOORECROFT 2011

Feary and Moorecroft prepared a cultural heritage management plan for the Bundanon Trust Properties in 2011. Whilst not an assessment as such, the management plan included details of cultural sites and oral histories of significant stories related to the Nowra area and the Shoalhaven River in particular. Themes were developed to examine the main aspects of Aboriginal culture, including cosmology, traditional life, cross-cultural connections and contemporary life, and how these were demonstrated and expressed at Bundanon. The development of the management plan included a literature review and details relating to the Aboriginal cultural heritage of Mundamia Creek were outlined.

NOHC 2012

In 2012, Navin Officer Heritage Consultants were engaged to prepare an Aboriginal Cultural Heritage Assessment for the Shaolin Temple Foundation (Australia) in advance of the proposed development of an approximate 1200-hectare area of land at Comberton Grange. Nine previously recorded sites were located within the study area, and three of these were relocated during survey of the study area. An additional five new sites were recorded. Sites identified within the study area consisted of artefact concentrations, with scarred trees, isolated finds, and a rock shelter. Sites were recorded along slopes associated with creek lines, or along crest or ridgeline landforms.

KUSKIE (SOUTH EAST ARCHAEOLOGY) 2012

South East Archaeology was engaged to undertake an ACHA for mixed-use subdivision at West Culburra. The investigation area covered approximately 100 ha of land and the principal aims were to identify and record and Aboriginal evidence or 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 (JLALC) 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 2012

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.

MDCA (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.

ARTEFACT 2018

Artefact undertook an ACHA for the proposed construction of a new bridge over the Shoalhaven River at Nowra. Ten Aboriginal sites were identified within the area, including five artefact sites and five areas of PAD. As part of the assessment, Artefact undertook test excavations within the study area and identified an additional five sites, and confirmed that one artefact site and two PADs were not valid Aboriginal sites, and these were deregistered.

Test excavation was undertaken within Test Area 4, undertaken over a site known as 'Nowra Bridge PAD 3 Cliff & Rockshelter Complex'. This site is located on the northern side of the Shoalhaven River, between the river itself and Illaroo Road, and includes a gently sloping upper area on the clifftop, and a number of rockshelters within the cliffline itself. Test excavation within this area recovered low concentrations of artefacts on the upper clifftop. A single test pit was excavated within a rockshelter with identified deposit on the cliffline. The results of the archaeological testing identified the investigation area as being disturbed and further archaeological



investigation was not recommended as it “would not yield meaningful results” (Artefact 2018:52). Importantly, the areas immediately adjacent to the Shoalhaven River were not identified as having archaeological potential.

Potential for subsurface deposits was identified due to the proximity of a number of shelters suitable for habitation, along with the elevated position above the river. In this location, the cliffline directly borders the river, with no floodplain or similar between the river and the cliffline itself.

It was recommended that an application for an AHIP should be submitted to permit surface collection within two sites, along with targeted salvage excavation within four sites. Development of an Aboriginal Heritage Management Plan and a Heritage Interpretation Strategy were also recommended.

KNC 2020A

Kelleher Nightingale Consulting (KNC) was 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 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.

The highest amount 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 considered to be a particular tool-type 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 (additionally flaking).

The assessment concluded that the amount, and type of artefacts found, are consistent with land use models that 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 2020b

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.

NICHE ENVIRONMENT AND HERITAGE 2020

Niche were engaged to prepare an Aboriginal Due Diligence Assessment for the proposed development of a concrete batch plant at 340 Bolong Road. Although there were no previously registered sites listed on AHIMS within the study area, three sites were located within 200m. The study area was considered to have been disturbed in some areas associated with localised disturbance, but the subsurface soil profile was considered to remain undisturbed and thus retain potential for archaeological deposits to be present.

Test excavation was recommended within the portions of the site determined to have archaeological sensitivity, along with preparation of an ACHAR to support any required AHIP.

AUSTRAL ARCHAEOLOGY 2021

Austral Archaeology undertook an ACHA at 126 Taylors Lane, Cambewarra, 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 stone in the northern area of the study area (AHIMS #52-5-1047). Three additional stone artefacts were identified 10m to the east of this area 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 artefacts overall 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 generally 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 evident 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.

Biosis 2021

Biosis were engaged to prepare an ACHA for the concrete batch plant originally assessed by Niche in 2020. The recommended test excavation was undertaken, with 12 test pits excavated. One artefact was recovered and named Bolong-IA-1 (AHIMS #52-5-0969). The test pit was located within the central northern portion of the site, closer to Bolong Road. This site was assessed as being of low archaeological significance and was considered representative of a transitory site or to be associated with resource gathering activities within proximity to the Shoalhaven River.

As an artefact was identified within the study area, application for an AHIP to impact this item was recommended. The artefact was recommended to be reburied on site and no further archaeological assessment was recommended for the subject lot. The artefact was recommended to be reburied within the northern portion of the site, adjacent to the proposed driveway, although it does not yet appear on AHIMS and thus does not appear to have been reburied yet.



APEX ARCHAEOLOGY 2021A

Apex Archaeology prepared an ACHA in advance of the proposed construction of a materials recycling facility at Flat Rock Road, Mundamia. A number of sites were recorded within the study area, but assessment of the relevant site cards confirmed incorrect coordinates were listed on AHIMS for the sites, and that the sites were actually outside of the study area. The proposed works were identified as being located within a highly disturbed context and no potential for archaeological sites within the study area was noted. The works were recommended to proceed without the need for an AHIP.

APEX ARCHAEOLOGY 2021B

Apex Archaeology were engaged to prepare an Aboriginal due diligence assessment in advance of a proposed development on the Shoalhaven River, at Coorong Road in North Nowra. It was proposed to construct an elevated road from the escarpment above the river to provide access to the river frontage. Although the upper level above the escarpment was considered to be highly disturbed through the construction of an existing dwelling, the escarpment itself was assessed to have been subject to less disturbance. However, the extreme slope associated with the escarpment, as well as the impact of seasonal flooding in the area, resulted in the impact area being assessed as have minimal potential for Aboriginal sites to be present. The proposed works were recommended to proceed with caution.

APEX ARCHAEOLOGY 2022A

Apex Archaeology were engaged to undertake an ACHA for a proposed residential subdivision at 191 Bells Lane, Merroo Meadow. 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 diagnostics 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.



AUSTRAL ARCHAEOLOGY 2022

Austral Archaeology undertook an Aboriginal archaeological and cultural heritage assessment of land situated at 49 Hockeys Lane and 41 Main Road, Cambewarra for a proposed subdivision development. Initial background research did not identify previously registered sites and none were identified during the field survey. However, an area on an alluvial flat was considered to have PAD and subsequent test excavations were undertaken that consisted of 75 test pits dispersed over three areas along 10 transects. A total of 46 artefacts were recovered, with six new artefact scatters and five isolated finds identified and registered as sites on AHIMS.

The artefacts were mainly retrieved 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 2023A

An Aboriginal due diligence assessment was undertaken by Apex Archaeology in June 2023 for 133-143 Albatross Road, Nowra Hill, NSW. The assessment included a review of previous archaeological investigations in the surrounding areas, considerations of the natural environment, previous land-use history, and a pedestrian archaeological survey. The investigation confirmed the land appeared to have been only moderately disturbed from past and current land use practices. Two new archaeological sites were identified during the survey and were registered on AHIMS. Two areas of potential archaeological deposits (PADs) were also identified during the survey.

As impacts to these sites could not be avoided by the proposed works, it was recommended that the sites should be subject to archaeological test excavations and an application made for an Aboriginal Heritage Impact Permit (AHIP) to permit impact to the sites.



APEX ARCHAEOLOGY 2023B

Apex Archaeology was engaged to undertake an ACHA for a proposed residential subdivision at 23A Aldous Place and 369 Worrigea Road, NSW, approximately 9 km southeast of the current study area. Although the majority of the area was found by a previous investigation to be highly disturbed through estuarine flooding and swamp formation, along with historical impacts such as sand mining, gravel mining, flood mitigation and construction of a golf course, a number of PADs were identified.

An extensive series of test excavations were subsequently undertaken across five areas of PADs. A total of 112 stone artefacts were retrieved from 144 test pits. The artefacts tended to be concentrated in the northern section of the study area which is adjacent to the existing Brundee Swamp and would have formed a marginal zone to the swamp prior to development occurring.

The stone artefacts were analysed by lithic specialist Dr Beth White who established that they were made primarily of duller silcrete/quartzite and glossier silcrete/quartzite (probably heat treated), but also included artefacts made from quartz, fine-grained silicious, chert, jasper, tuff and chalcedony. There were identifiable tools (backed artefacts), along with a small number of cores. The remainder were flakes with recognised diagnostics, and pieces that lacked diagnostics but were believed to have been pieces of broken objects. White proposed 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. It was recommended that an application for an AHIP be submitted for the collection of the surface artefacts and an archaeological salvage excavation be undertaken on the site with the highest artefact densities.

APEX ARCHAEOLOGY 2023C

Apex Archaeology were engaged to undertake an ACHA and test excavation for a proposed residential subdivision at 133-143 Albatross Road, Nowra Hill, NSW, subsequent to preparation of a due diligence assessment requiring further archaeological assessment of the site. An additional area of PAD was identified during the survey for this assessment in the northwest section of the study area which was not assessed as a part of the previous due diligence assessment. This area was not subjected to archaeological testing as no works were proposed to be undertaken within this area for this current project.

An additional isolated find was also identified during the test excavations which was registered as NH-IF-01 (AHIMS # 58-4-1465). The assessment confirmed that this site could be avoided by the proposed works.

A total of 101 test pits were excavated within two separate areas within the study area, with a total of 29 artefacts recovered from the test pits. No artefacts were recovered from the area originally named NH-PAD-02 and this area was not



considered to have archaeological deposit. However, this area would not be impacted as part of the proposed works.

The 29 artefacts were recovered from the area originally known as NH-PAD-01 and were noted to comprise three distinct, discontinuous artefact deposits. The subsurface deposit was considered to be of a lower density than may have been expected, given the landscape context, and was overall assessed as being of low scientific significance.

APEX ARCHAEOLOGY 2024

Apex Archaeology was engaged to prepare an ACHA for the replacement of a pedestrian bridge walkway within Bomaderry Creek Regional Park, Shoalhaven LGA. The works involved replacing the existing steel walkway surface and reconstructing two pier footings damaged by flooding, all within the footprint of the existing bridge. The ACHA was required to address potential impacts to Aboriginal cultural heritage as part of the environmental approvals process.

The assessment identified one previously recorded Aboriginal site within the study area (AHIMS #52-5-0542), a rock shelter. In addition, the survey and ground inspection identified a new Aboriginal site, BC-AS-01 (AHIMS #52-5-1149), consisting of a small surface artefact scatter located adjacent to the bridge. The scatter included a silcrete flake of probable knapping origin.

Due to the restricted and disturbed nature of the development footprint, no additional PADs were identified, and no test excavation was undertaken. However, the presence of artefacts confirmed Aboriginal use of the Bomaderry Creek corridor.

The report recommended that, as the bridge works could not entirely avoid BC-AS-01, mitigation measures should include the collection and repatriation of the artefact scatter under an AHIP, and monitoring during ground disturbance near the bridge footings. The rock shelter site was to be avoided by the proposed works.

The study concluded that while the cultural material identified was limited, the area retains broader significance as part of the Bomaderry Creek cultural landscape.

4.5.2 LOCAL HERITAGE ASSESSMENTS

NAVIN 1992

This investigation was undertaken in advance of proposed expansion works at the APPM Shoalhaven Paper Mill, located on Bolong Road, Bomaderry, immediately adjacent to the study area in the present ACHA. The proposed development encompassed approximately 72.6 hectares of land including floodplain, drainage channels, and areas of elevated ground on the northern bank of the Shoalhaven River.



The study area was situated within the estuarine floodplain of the Shoalhaven River and was characterised by low-lying, poorly drained Quaternary sediments. The landscape had been subject to significant historic disturbance through agriculture, channel engineering, and industrial works, including the dumping of fly ash and rubble. These processes were found to have severely affected surface visibility and archaeological integrity across the site.

The archaeological assessment included a review of previous research and a pedestrian survey conducted under waterlogged conditions. Survey coverage was estimated at approximately 40%, with surface visibility averaging 20% in ploughed areas but falling below 5% elsewhere. No previously recorded Aboriginal sites were located within the study area, nor were any new sites identified during the survey. However, two isolated artefacts were recovered. The first, a ground-edge hatchet head manufactured from fine-grained volcanic stone, was found within a drainage channel north of Bolong Road, approximately 30 cm below the surface. The second, a broken volcanic pebble with flake scars, was located nearby on the present ground surface. These isolated finds were interpreted as background scatter rather than indicators of concentrated activity.

Several native *Melaleuca* trees exhibited scarring, but all were assessed as resulting from natural processes. No middens, artefact scatters, PADs, or other site types were identified. The absence of more extensive cultural material was attributed to the area's low-lying topography, heavy disturbance, and sediment deposition, which were considered likely to have destroyed or obscured any archaeological evidence, particularly along the riverbank margins where occupation might otherwise be expected.

The study concluded that the archaeological sensitivity of the area was low and that no further archaeological investigation was warranted. A permit was recommended for the collection and recording of the hatchet artefact. While the investigation did not identify any formal sites, the recovery of stone artefacts confirms Aboriginal use of the floodplain landscape and highlights the potential for subsurface material in less disturbed areas. These findings are directly relevant to the CO2 Bomaderry study area, reinforcing the need to consider riverine edge contexts and disturbed visibility conditions when developing the site's predictive model.

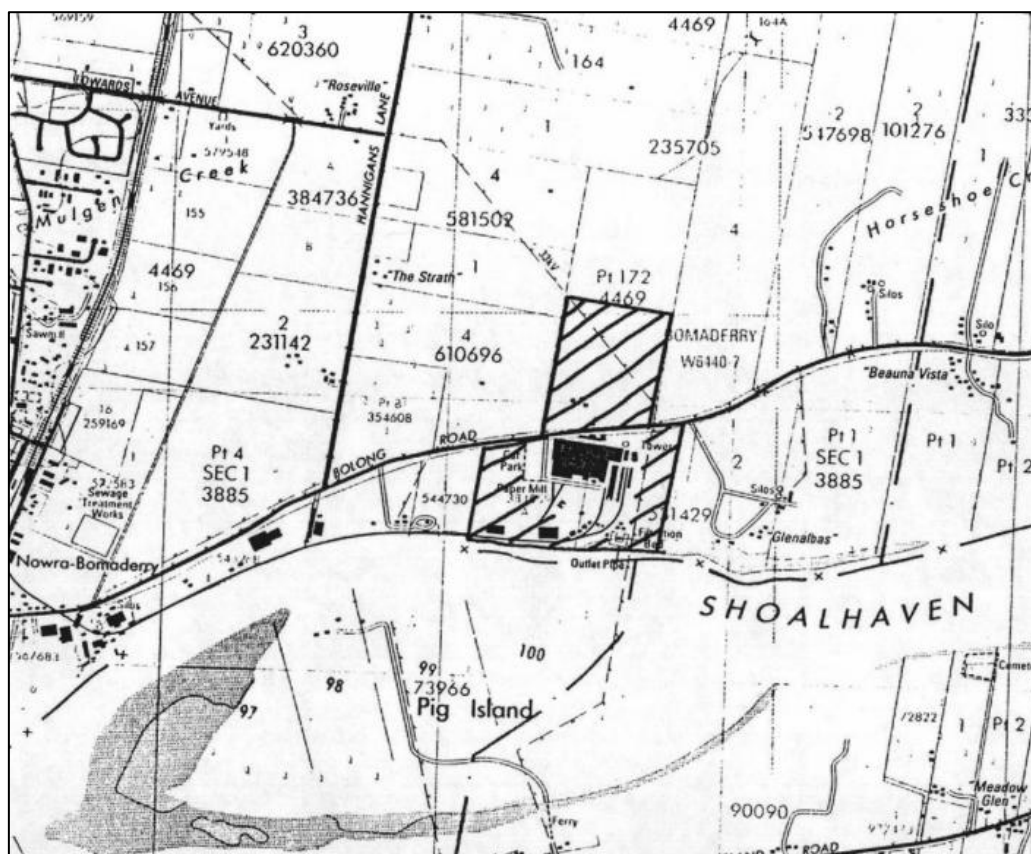


Figure 12: Navin 1992 study area (hatched area)

KUSKIE 2002

In 2002, South East Archaeology was commissioned by Cowman Stoddart, acting on behalf of the Manildra Group, to undertake an Aboriginal heritage assessment of areas proposed for development associated with the Shoalhaven Starches Environmental Farm. The assessment area included land adjacent to the existing starches factory, where new infrastructure such as an employee car park and evaporation plant was planned, as well as a separate irrigation extension located approximately 3.5 kilometres to the northeast. Portions of this study area correspond to areas that have been reassessed in later investigations.

A field survey was conducted on 18 November 2002 with participation from the Nowra Local Aboriginal Land Council and Shoalhaven Aboriginal Elders. No Aboriginal sites or objects were recorded, and none had previously been identified within the assessed area. The absence of cultural material was interpreted as a result of both low Aboriginal use of the area and extensive disturbance from modern land use. The study concluded that the archaeological potential of the area was very low, particularly for intact or scientifically significant deposits.

KUSKIE 2008

This Aboriginal Heritage Impact Assessment was undertaken for proposed upgrades to the Manildra Group's Ethanol Plant at the Shoalhaven Starches facility on Bolong



Road, Bomaderry. The project included additional infrastructure at the factory site, and the installation of gas and water pipelines along Bolong Road, connecting the facility to storage ponds and the nearby paper mill. The study area lies within the floodplain of the Shoalhaven River and shares immediate environmental characteristics with the CO2 Bomaderry study area.

The investigation involved a background review, consultation with Aboriginal stakeholders, and a site inspection in January 2008. It built on two earlier studies: Navin (1992), which recorded two isolated artefacts near the eastern end of the pipeline corridor (a ground-edge hatchet and a flaked pebble); and Kuskie (2002), which found no archaeological evidence during survey of nearby factory extensions.

The 2008 survey confirmed that most of the study area had been subject to extensive prior disturbance from industrial and agricultural activity. Surface visibility was poor due to dense grass cover, and areas not already disturbed were considered unlikely to contain intact archaeological deposits. No new Aboriginal sites or objects were identified during the inspection. The potential for in situ heritage values across the study area was assessed as negligible, with a very low likelihood of isolated artefacts being present in undisturbed pockets.

Although the Shoalhaven River corridor may have been used for movement or resource gathering, the low-lying and flood-prone terrain, combined with the level of modern disturbance, limits the likelihood of preserved archaeological evidence. The findings support a predictive model of low site potential for this portion of the floodplain. Management measures recommended the inclusion of heritage procedures in the project's Environmental Management Plan, including protocols for unexpected finds and surface collection of the previously recorded APPM Isolated Find 1 if impacted.

This assessment reinforces the pattern observed in adjacent investigations, that while occasional artefacts may be present along the river levee, the overall archaeological sensitivity of the area is low.

KAS 2011

In 2011, Kayandel Archaeological Services (KAS) was engaged by the Manildra Group to undertake an Aboriginal and historic heritage assessment for the proposed Shoalhaven Starches Gas Pipeline Scheme in Bomaderry, NSW. The project involved installation of a gas pipeline between an existing gas main on Pestells Lane and the Shoalhaven Starches facility on Bolong Road, traversing a mix of cleared paddocks, road reserves, and industrial land within the Shoalhaven floodplain.

A pedestrian field survey was conducted in March 2011, with participation from representatives of the local Aboriginal community. The survey inspected the full length of the proposed pipeline corridor for Aboriginal objects and historical features.



No Aboriginal cultural heritage sites or objects were identified during the survey, and no historic heritage values were recorded. The study area was assessed as having low to moderate archaeological sensitivity, with prior disturbance from road construction, fencing, vegetation clearing, and industrial activity considered likely to have impacted any potential archaeological deposits.

The report concluded that there were no archaeological constraints to the proposed works and no requirement for further archaeological investigation. However, it recommended that any Aboriginal cultural material uncovered during construction be managed in accordance with the *National Parks and Wildlife Act 1974* and associated guidelines, including cessation of works and appropriate notification and management. One RAP expressed a preference for cultural monitoring during initial ground disturbance, but this was not supported as necessary by another RAP involved in the consultation.

APEX ARCHAEOLOGY 2022B

Apex Archaeology were engaged to assist Cowman Stoddart Pty Ltd on behalf of the Manildra Group of Companies in the Aboriginal due diligence assessment of the proposed Rail Line Extension and Additions to Product Dryer 3 & 4. This was prepared in support of a modification application (Mod 25) to the Department of Planning Industry and Environment (DPIE) to modify their Project Approval for the Shoalhaven Starches Expansion Project (SSEP).

An area of moderate subsurface archaeological potential was identified by both Niche (2000) and Biosis (2021) within the north west portion of Lot 1 DP531429 for the development of a cement batch plant. A subsequent test excavation program undertaken by Biosis identified one artefact and re-evaluated the archaeological potential of the site to low.

A review of historical records was undertaken for this assessment and visual records show the area completely inundated from flood water of the Shoalhaven River on numerous occasions. It is highly likely that any artefacts may have washed into the site from any number of flood events and subsequently been buried on site in secondary depositional contexts.

As such, no areas of archaeological potential or surface sites were identified within the study area for this assessment. Based on the assessment undertaken, it was considered that the proposal would not impact on any Aboriginal heritage values within the proposed impact area. No further Aboriginal archaeological assessment was required prior to the commencement of development works.

4.5.3 SUMMARY

Archaeological investigations across the Shoalhaven region have consistently identified open artefact scatters and isolated finds as the most common site types, generally occurring on river levees, terraces and floodplain margins. Artefact densities are usually low, reflecting background discard, though localised areas of

higher density have been recorded along wetland margins such as Brundee Swamp and in terrace settings overlooking creeks. Rock shelters in the region, including those at Burrill Lake, Currarong, and Bomaderry Creek, have produced shallow but significant cultural deposits, often with faunal remains and stone artefacts, and occasionally burials. Large salvage programs at the Shoalhaven River crossings have demonstrated that larger artefact assemblages can occur on clifftops and terraces, dominated by flakes and angular fragments with occasional backed artefacts.

In the immediate study area, previous assessments at the Shoalhaven Pulp and Paper Mill site (Navin 1992) and subsequent heritage investigations for Shoalhaven Starches developments (Kuskie 2002, 2008; KAS 2011; Apex 2022) have consistently found either no sites or only isolated artefacts of low density. These results reflect both the low-lying floodplain context and the high degree of disturbance caused by historical agriculture, channel works, and industrial development. The recovery of a ground-edge hatchet head and flaked pebble north of Bolong Road highlights that Aboriginal use of the floodplain did occur, but surviving evidence is sparse, often disturbed, and typically limited to isolated items.

Taken together, the literature indicates that while the Shoalhaven floodplain was used repeatedly, the archaeological signature within the current study area is low-density and highly disturbed, with intact deposits unlikely to survive except in small, localised pockets.

4.6 PREDICTIVE MODEL

4.6.1 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 open artefact scatters, isolated finds, and rock shelters with archaeological deposit. Rock shelters with art and archaeological deposit are found where sandstone escarpments are present, such as within the Bomaderry Creek gorge and further south at Currarong and Burrill Lake. Artefact scatters and isolated finds are most commonly identified along riverine levees, terraces, and floodplain margins, and in some cases on swamp edges such as Brundee Swamp. Larger-scale excavations at the Nowra Bridge project have shown that significant artefact assemblages can occur in elevated terrace and clifftop contexts overlooking the Shoalhaven River, while background scatter dominates in low-lying floodplain environments.

In 2006, Clarke and Kuskie developed a predictive model for the Lower Shoalhaven River Valley, distinguishing between primary resource zones (close to major rivers and estuaries) where larger, more complex sites such as base camps and repeated activity areas are likely, and secondary resource zones (along higher-order creeks and wetlands) where smaller, short-term campsites and task-specific activity areas



are expected. Areas outside these zones generally show little more than sporadic background discard. While this model was developed for the Lower Shoalhaven, the framework is applicable across similar landscapes on the South Coast. It is directly relevant to the present study area, which is situated within the primary resource zone of the Shoalhaven River.

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. Rock art, engravings, grinding grooves, and rockshelters are not considered likely to occur within the study area as the industrial precinct is located on an alluvial floodplain lacking sandstone outcrops. Shell middens are unlikely this far upriver from the estuarine mouth, though fragmentary shell may occur in isolated pockets. Burials within sand dunes are not relevant to this inland context, and scarred trees are unlikely due to the historical clearing of the floodplain for agriculture and industry.

Disturbance is the predominant factor determining whether artefacts made from stone or other materials are likely to be identified within the study area. Extensive industrial modification, including construction, filling, truncation, and compaction, has impacted much of the natural ground surface. These actions are likely to have disturbed or destroyed stratigraphic integrity, although isolated artefacts may remain within undisturbed levee or terrace pockets. Previous archaeological investigations at and around the Shoalhaven Starches and APPM Paper Mill sites support this, having identified either no material or occasional isolated finds, such as a ground-edge hatchet and flaked pebble.

Taken together, the regional and local evidence suggests that while the Shoalhaven River corridor was an important focus of Aboriginal use, the archaeological evidence within the present study area is most likely to be limited to isolated artefacts or low-density scatters within any surviving intact soils on levees and terraces, with little expectation for complex or stratified deposits.

4.6.2 APPLICATION TO STUDY AREA

In terms of the study area, the most likely archaeological material that may remain are isolated stone artefacts, and/or stone artefact scatters, which may occur anywhere across a landscape.

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. Within the study area, stone artefacts are considered a low likelihood, generally limited to isolated finds or very low-density scatters along levee and terrace margins. Previous assessments in the Bomaderry industrial precinct have identified only occasional isolated artefacts, and extensive disturbance across the footprint further reduces the chance of intact deposits.

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.

Within the study area, there are no known raw material outcrops, and the alluvial floodplain context offers little opportunity for quarrying. Procurement may have occurred opportunistically from cobbles deposited along the Shoalhaven River, but the likelihood of identifying quarry or procurement sites within the project footprint is negligible.

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, particularly along the estuarine and coastal margins of the Shoalhaven River. However, given the inland floodplain setting and extensive industrial modification of the project footprint, the likelihood of middens occurring within the study area is negligible.

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, no burials have been recorded within the study area, and the alluvial floodplain setting lacks the sandy dune contexts where they are most commonly found in the region. Given the high levels of disturbance from industrial development, the likelihood of burials occurring within the study area is negligible, though this site type may occur outside the footprint in coastal or dune environments.

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.

The study area is located on the alluvial floodplain of the Shoalhaven River and does not contain sandstone escarpments or overhangs suitable for rock shelter formation. As such, the likelihood of rock shelters occurring within the study area is negligible, though this site type is known from the nearby Bomaderry Creek gorge and other sandstone contexts outside the project footprint.

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.

The study area is located on an alluvial floodplain and lacks sandstone exposures suitable for the formation of grinding grooves. While this site type is well documented in sandstone contexts such as Bomaderry Creek, the likelihood of grinding grooves occurring within the study area is negligible.

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.

The study area has been extensively cleared and modified for industrial use, and few mature native trees remain that would be suitable to retain cultural scarring. Given this disturbance, the likelihood of scarred or carved trees occurring within the study area is negligible, though such sites may be present in less disturbed bushland outside the project footprint.

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 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 Project. Areas considered likely to have archaeological potential were closely scrutinised, although the entire study area was considered.

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. During the survey completed by Apex Archaeology the study area was inspected for Aboriginal archaeological evidence.

5.2 SITE INSPECTION

A site survey was undertaken on 8th August 2025 by Leigh Bate and Jenni Bate of Apex Archaeology. James Davis (Wodi Wodi Elders) was invited to attend but was unable to be there on the day.

5.3 SURVEY COVERAGE

The survey was undertaken with two survey participants for the study area. The survey participants were responsible for inspecting a 2 m wide portion of the study area inspected. This meant that on each pass an area covering 4 m would be observed for archaeological material. Some areas of the site were inaccessible with high vegetation 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, Floodplain	2	1,350m

An assessment of landform element and slope was made for the study area, with the results presented in Table 7.

Table 7: Survey unit results

Survey Area #	Landform Element	Slope	Vegetation	Detection Limiting Factors	Ground Disturbance
ATU 1	Flat, Floodplain, Road Verge	Level-very gentle (<1.45°)	Cleared (Grassed)	Exotic grasses, weeds	Moderate to High

The total survey coverage (meaning the areas physically inspected for archaeological evidence) was approximately 5,400m². The total area of the development impact is approximately 29,090 m². 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	5,400	10	5	A	27	0.5

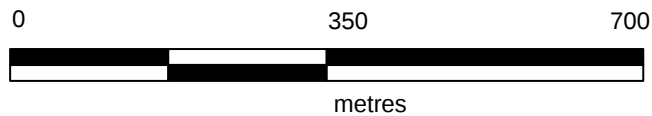
Surface visibility across the study areas was limited due to surface vegetation such as exotic pasture grasses, leaf litter and weeds. Total effective survey coverage of the survey transect was 0.5%. Total effective survey coverage for the entire study area was 0.09% (Table 9).

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	29,090	27	10	5	A	0.09



PO Box 236
NOWRA
NEW SOUTH WALES 2541



Projection:
MGA Zone 56 (GDA 94)
Base Map:
Near Maps 2025
Image Date: 05/07/2025
Final - Version 1

Figure 13: Survey transect within the study area.



5.4 SURVEY RESULTS

The survey was completed in August 2025, shortly after significant rainfall which had resulted in localised flooding. Much of the ground was still waterlogged but accessible. Visibility was very poor due to existing disturbance associated with the construction of the Manildra site and pasture grasses.



Plate 1: Looking west along the northern portion of Lot A DP 384559 showing regularly planted trees along lot boundary adjacent to Bolong Road.



Plate 2: Looking south within proposed location for the CO₂ processing plant



Plate 3: Looking north within the proposed location for the CO₂ processing plant.



Plate 4: Looking north along proposed pipeline route west of the proposed CO₂ processing plant.



Plate 5: Looking west along proposed pipeline route adjacent Bolong Road.



Plate 6: Looking west along proposed pipeline route adjacent Bolong Road.

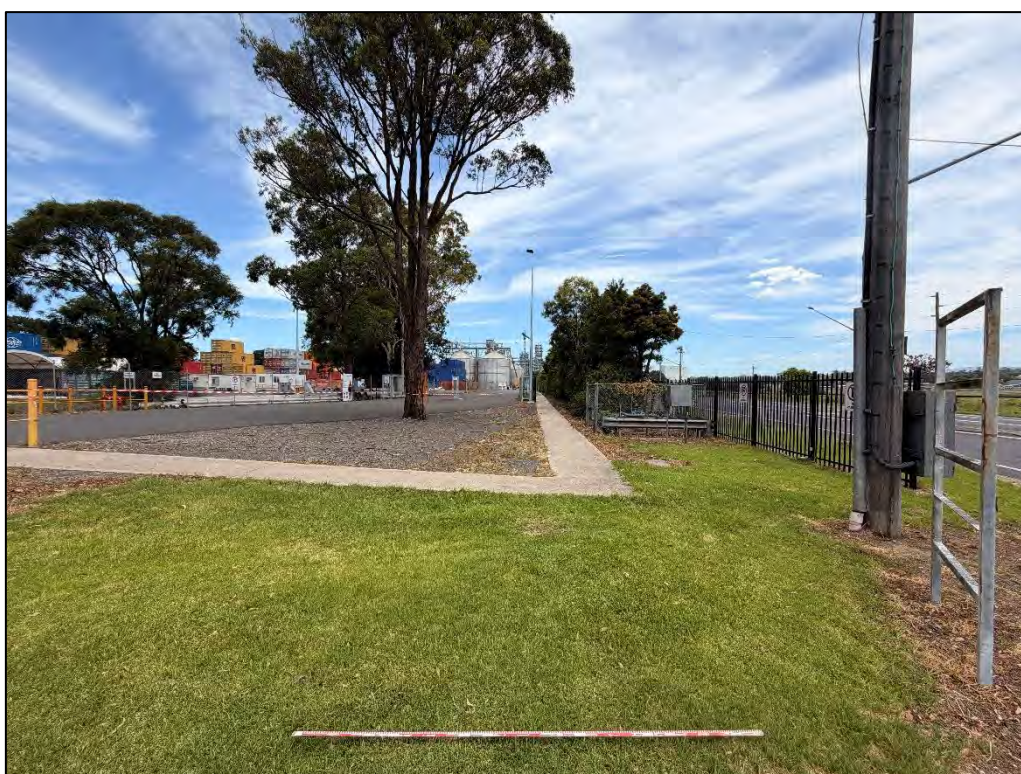


Plate 7: Looking west along proposed pipeline route adjacent Bolong Road.



Plate 8: Start location of pipeline route within existing Manildra facility (pipeline will connect to existing raised infrastructure).



Plate 9: Looking east through existing Manildra infrastructure and proposed pipeline route.



Plate 10: Existing CO2 facility within Manildra similar to the proposed new CO2 facility.

5.5 DISCUSSION

No newly identified Aboriginal archaeological sites were noted during the survey. No previously recorded sites were located within the study area, and no areas of archaeological potential were identified. The area proposed for works is considered to be highly disturbed for the most part, particularly within the existing Manildra site, and the less disturbed areas between the former Paper Mill site and the existing Manildra site were noted to have been impacted by works in the vicinity of the study area, along with use of the areas for agricultural purposes.

Overall, it was considered that the proposed works are unlikely to impact on any Aboriginal objects or places within 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; specifically considering the “associations of a place with a historically important person, event, phase or activity in an Aboriginal community” (DECCW 2010)
- **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

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 or educational 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

There were no sites identified within the study area and as such we discuss below the significance assessment for the study area as a whole.

SOCIAL VALUE

The Aboriginal community are best placed to make a determination of the social or cultural value of the study areas. One RAP has expressed that the study area holds cultural significance, noting ongoing connection to the Shoalhaven River and surrounds, and that seafood continues to be gathered within the study area by his family. No further comments on social value have been received. It is nevertheless acknowledged that all areas with evidence of Aboriginal occupation, as well as the broader cultural landscape of the Shoalhaven River, hold inherent significance to Aboriginal people.



HISTORIC VALUE

The study area is not known to be associated with any specific Aboriginal individuals or historical events, nor were any artefacts or sites identified that might demonstrate rare or distinctive technological traits. The study area is therefore considered to have limited significance under this criterion.

SCIENTIFIC VALUE

The study area itself is considered to have negligible scientific value. No Aboriginal objects or deposits were identified during the assessment, and the extensive disturbance across the industrial footprint has removed or obscured natural soil profiles. As such, the study area is not considered to have potential for intact subsurface archaeological deposits and does not have significance under this criterion.

AESTHETIC VALUE

Generally, aesthetic value is determined by the response evoked by a setting. The study area is located directly on the Shoalhaven River, which retains visual and cultural significance for Aboriginal people and offers attractive views across the river corridor. Noting that there are likely aesthetic values outside the study area, the study area itself is not considered to have significance under this criterion.

RESEARCH POTENTIAL

The study area is considered to have low research potential. No Aboriginal sites or artefacts were identified during the current assessment, and the disturbed nature of the industrial footprint has largely removed opportunities to investigate intact archaeological deposits. Greater research potential is likely to exist in less disturbed areas along the Shoalhaven River corridor outside the project footprint.

REPRESENTATIVENESS

The study area is generally representative of a disturbed industrial floodplain context. While the broader Shoalhaven River landscape demonstrates continuity of Aboriginal occupation and cultural values, no sites were identified within the project footprint itself. As such, the study area has limited representative value compared to other, less disturbed parts of the regional archaeological landscape.

RARITY

Archaeological sites with intact deposit are relatively rare within the South Coast region. No sites or artefacts were identified within the study area, and the landscape has been heavily disturbed by industrial activity. The study area is therefore considered to have low value under this criterion.

INTEGRITY/INTACTNESS

The study area has been extensively modified through industrial development, including filling, compaction, and construction, which has removed or obscured natural soil profiles. As such, it is not considered to be intact and has low significance 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 negligible archaeological significance based on its low research potential, representativeness, rarity and integrity. No Aboriginal sites or objects were identified during the survey, and the industrial disturbance across the footprint has largely removed the potential for intact subsurface deposits. While the Shoalhaven River corridor more broadly is an area of high cultural significance to Aboriginal people, the potential for the study area itself to contribute to a greater understanding of the archaeological record is considered low.



7.0 IMPACT ASSESSMENT

7.1 PROPOSED DEVELOPMENT

It is proposed to construct a new CO₂ processing plant within the Shoalhaven Starches facility at Bomaderry. The project will involve construction of the main processing unit, associated tanks and utilities, and a new pipeline corridor connecting the facility to existing infrastructure. Works will be located primarily within the existing industrial precinct, with the pipeline alignment extending through previously disturbed floodplain land.

7.2 POTENTIAL IMPACT

No Aboriginal sites were identified within the study area during the current assessment. Accordingly, no known or potential Aboriginal sites are considered likely to be impacted by the proposed development.

7.3 JUSTIFICATION

The proposed works are necessary to support the ongoing operation and expansion of the Shoalhaven Starches facility by enabling the capture and processing of carbon dioxide. The project contributes to industrial efficiency and environmental performance, while utilising an area that has already been heavily modified by previous agricultural and industrial activity.

7.4 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 low archaeological significance.

7.4.1 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.

7.4.2 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.

7.5 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 OR MITIGATION

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, although a stop works protocol has been developed and is made a recommendation of this report.

8.3 RESTRICTED INFORMATION AND CONFIDENTIALITY

Aboriginal stakeholders for the project have not identified any restricted, confidential or culturally sensitive information related to the project.

It is noted that all AHIMS data and Aboriginal site-specific information, along with associated mapped information, must be treated as confidential and not shared with the general public.

8.4 COPYRIGHT

Apex Archaeology asserts its Moral Rights in this work, unless otherwise indicated, in accordance with the Commonwealth *Copyright (Moral Rights) Amendment Act 2000*. Apex Archaeology vests copyright in all material produced in this report by Apex Archaeology (excluding pre-existing material) in Babbage Consultants on behalf of Air Liquide Australia Solutions Pty Ltd and retains the right to use all the material produced by Apex Archaeology for our ongoing business and professional activities (including but not limited to professional presentations, academic papers and/or publications).

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.

Therefore, the following recommendations have been made.

RECOMMENDATION 1: NO FURTHER ARCHAEOLOGICAL ASSESSMENT REQUIRED

This report details the archaeological potential of the site, 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.



10.0 BIBLIOGRAPHY

Allan Jamieson, *The Pulp: the birth, life and death of an industry*. 2011. Independent Australia. Retrieved from: [The Pulp: the birth, life and death of an industry](#)

Apex Archaeology. 2018, *Vermont Estate Central Precinct Stage 3: Archaeological Technical Report*. Report to Johnson Property Group.

Apex Archaeology. 2022, *Proposed Additional Grain Storage and Handling Facilities Shoalhaven Starches Expansion Project (Mod 26), Bomaderry NSW: Aboriginal Due Diligence Assessment*. Report to Cowman Stoddart on behalf of the Manildra Group of Companies.

Apex Archaeology. 2022, *Stage 1, 191 Bells Lane, Meroo Meadow, NSW: Aboriginal Cultural Heritage Assessment*. Report to Maker Eng on behalf of 191 Bells Pty Ltd.

Apex Archaeology. 2023a, *133-143 Albatross Road, Nowra Hill, NSW: Aboriginal Due Diligence Assessment*. Report to Allam Property Group.

Apex Archaeology. 2023b, *23A Aldous Place and 369 Worrigeer Road, Worrigeer, NSW*. Report to Umbene Pty Ltd.

Apex Archaeology. 2023c, *133-143 Albatross Road, Nowra Hill, NSW: Aboriginal Cultural Heritage Assessment*. Report to Allam Property Group.

Apex Archaeology. 2025 *Bomaderry Creek Regional Park, Bomaderry NSW*. Report to NPSW.

Artefact Heritage. 2012, *Nowra to Bombaderry 33kV Feeder Line Upgrade. Aboriginal and non-Indigenous Heritage Assessment*. Report to Parsons Brinckerhoff.

Artefact. 2018, *Nowra Bridge Project, Aboriginal Cultural Heritage Assessment Report (PACHCI Stage 3)*. Report to SMEC.

Attenbrow, V. 2010, *Sydney's Aboriginal Past: Investigating the archaeological and historical records*. UNSW Press, Sydney (Second Edition).

Attenbrow, V, Corkill, T., Pogson, R., Sutherland, L, Grave, P. 2017. 'Non-destructive Provenancing of Ground-Edged Mafic Artifacts: A Holocene Case Study from the Sydney Basin, Australia'. *Journal of Field Archaeology* 42(3): 173-186.

Austral Archaeology. 2021, *126 Taylors Lane Cambewarra New South Wales: Aboriginal Cultural Heritage Assessment Volume 1*. Report to Maker ENG.

Austral Archaeology. 2022, *49 Hockeys Lane & 41 Main Road, Cambewarra New South Wales: Aboriginal Cultural Heritage Assessment Volume 1*. Report to Maker ENG.000



Biosis. 2021, *Bolong Batch Plant: Archaeological Report*. Report to City Plan on behalf of Cleary Bros (Bombo) Pty Ltd.

Bomaderry Railway Station and yard group. *New South Wales State Heritage Register*. Department of Planning & Environment.

Boot, P. 2001, 'Bomaderry Creek Bushland – Aboriginal Cultural Heritage', internal report for NSW National Parks and Wildlife Service.

Boot, P. 2002, *Didthul, Bhundoo, Gulaga and Wadbilliga: An Archaeological Study of the Aboriginals of the New South Wales South Coast Hinterland*. Thesis submitted for the degree of Doctor of Philosophy of the Australian National University.

Bowdler, S. 1970, *Bass Point: The Excavation of a South East Australian Shell Midden Showing Cultural and Economic Change*. Unpublished BA (Hons) Thesis, University of Sydney, Sydney.

Bowdler, JM., Johnston, H., Olley JM., Prescott, JR., Roberts, RG., Shawcross, W and Spooner, N. 2003, 'New ages for human occupation and climactic change at Lake Mungo, Australia.' *Nature* Vol 421:30, pp.837-840.

BRITISH AUSTRALIAN MILK PROPY. LTD. (1926, October 20). *The Shoalhaven Telegraph* (NSW: 1881 - 1937), p. 8. Retrieved September 22, 2025, from <http://nla.gov.au/nla.news-article135359718>

Clarke, E. and Kuskie, P. 2006, *Aboriginal Heritage and Cultural Mapping Project: lower Shoalhaven River Valley – Stage 4A: Archaeological Predictive Modelling and Aboriginal Community Consultation*. Report to the Department of Environment and Conservation (NSW) National Parks and Wildlife Service South Coast Region.

Corkill, T. 2005. "Sourcing Stone from the Sydney Region: A Hatchet Job." *Australian Archaeology* 60: 41–50.

Clark, A and R. Florance 2017. *Going South: Constructing the Railway – Kiama to Bomaderry*. Shoalhaven Historical Society.

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

DEATH OF MR. DAVID BERRY, OF SHOALHAVEN. (1889, September 26). *Illawarra Mercury* (Wollongong, NSW: 1856-1950), p. 2. Retrieved from <http://nla.gov.au/nla.news-article135708931>

DECCW 2010a. *Aboriginal cultural heritage consultation requirements for proponents 2010*. DECCW, Sydney South.



DECCW 2010b. *Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales*. DECCW, Sydney South.

DECCW 2010c. *Due Diligence Code of Practice for the Protection of Aboriginal Objects in New South Wales*. DECCW, Sydney South.

Eades, D.K. 1976, *The Dharawal and Dhurga Languages of the NSW South Coast*, Australian institute of Aboriginal Studies, ANU, Canberra.

Feary, S. and Moorcroft, H. 2011. *An Indigenous Cultural Heritage Management Plan for the Bundanon Trust Properties*. Report to Bundanon Trust Properties.

Fitzhardinge, L. F. 1979, *Sydney's First Four Years, A Narrative of the Expedition to Botany Bay and a Complete Account of the settlement of Port Jackson 1788 – 1791 by Captain Watkin Tench of the Marines*. Library of Australian History: Sydney.

Grant, J. 1801, Extract from Ships journal in letter from Governor King to Duke of Portland. In *Historical Records of New South Wales*, Vol IV, Hunter and King 1800, 1801, 1802. Charles Potter, Government Printer, Facsimile Edition 1976.

GML Heritage. 2017, *369 Worrigee Road, Worrigee Aboriginal Due Diligence Report*. Report to Umbene Pty Ltd c/o Catylis.

Heritage Branch Department of Planning. 2009, *Assessing Significance for Historical Archaeological Sites and 'Relics'*. Heritage Council of NSW, Sydney.

Howitt, AW. 1904, *The Native Tribes of South-East Australia*. Macentimetresillan & Co. London.

Hughes, P & R Lampert. 1982, Prehistorical population changes in southern coastal New South Wales. In S. Bowdler (ed) *Coastal Archaeology in Eastern Australia: Proceedings of the 1980 Valla Conference on Australian Prehistory*. Pp 16-28. Occasional Papers in Prehistory 11. Department of Prehistory Research School of Pacific Studies, Australian National University, Canberra.

JMcD CHM 2005 *Archaeological salvage excavation of site RTA-G1 109-113 George Street Parramatta*. Unpublished report to Landcom Pty Ltd.

Kayandel Archaeological Services. 2011. *Shoalhaven Starches Gas Pipeline Scheme, Bomaderry: Aboriginal and Historic Heritage Assessment*. Report to the Manildra Group.

Kelleher Nightingale Consulting. 2010, *North Nowra Link Road Aboriginal Archaeological Assessment – Stage 2*. Report to Shoalhaven City Council.

Kelleher Nightingale Consulting. 2020, *Nowra Bridge Project Boundary Adjustments: Aboriginal Heritage Due Diligence Assessment*. Report to Transport NSW.



Kelleher Nightingale Consulting. 2020, Nowra Bridge Project: Aboriginal Archaeological Salvage Excavation, Aboriginal Heritage Impact Permit #C000574. Report to Fulton Hogan.

Kohen, JL., Stockton, ED., and Williams, MAJ. 1984, 'Shaws Creek KII rockshelter: a prehistoric occupation site in the Blue Mountains piedmont, eastern New South Wales'. *Archaeology in Oceania* 19(2):57-73.

Kuskie, P. and Kamminga, J. 2000 *Salvage of Aboriginal archaeological sites in relation to the F3 Freeway near Lenaghans Drive, Black Hill, New South Wales*. Unpublished report by Southeast Archaeology to Northern Region, Roads and Traffic Authority.

Kuskie, P. 2002. *Aboriginal Heritage Assessment of Proposed Extensions to the Shoalhaven Starches Environmental Farm, Bomaderry, NSW*. Report to Cowman Stoddart on behalf of Manildra Group. South East Archaeology Pty Ltd. [Referenced in Kuskie 2008].

Kuskie, P. 2008. *An Aboriginal Heritage Impact Assessment of a Proposed Ethanol Plant Upgrade at Shoalhaven Starches, Bomaderry, South Coast of New South Wales*. Report to Manildra Group. South East Archaeology Pty Ltd.

Kuskie, P. 2012, *Proposed Mixed Use Subdivision at West Culburra, Shoalhaven, South Coast of New South Wales: Aboriginal Cultural Heritage Assessment*. Report to Realty Realizations Pty Ltd.

Lampert, RJ. 1971, Coastal Aborigines of Southeastern Australia. In DJ Mulvaney and J Golson (Eds), *Aboriginal Man and Environment in Australia*. Pp 114-132. Australian National University Press, Canberra.

Manildra Group. "About Manildra Group". Retrieved from [About Manildra Group - Manildra Group](#)

Mary Dallas Consulting Archaeologists. 2018, *Aboriginal Cultural Heritage Assessment Report 2541 Warrah Road (Lot 24 in DP 714096), and 12A-C Warrah Road (Lots 21-23 in DP 14096), North Nowra, NSW*. Report to Southbank Land Pty Ltd and Huntingdale Pty Ltd.

McDonald J. 2005, *Archaeological Salvage Excavation of Eight Archaeological Landscapes in the Second Ponds Creek Valley Rouse Hill Development Area, NSW*. Unpublished report to Rouse Hill Infrastructure Pty Ltd and Landcom.

McDonald, J. 2008, *Dreamtime superhighway: An analysis of Sydney Basin rock art and prehistoric information exchange*. *Terra Australis*. Australian National University E Press, Canberra.



MESSRS. DENHAM BROS. (1901, December 14). *The Sydney Mail and New South Wales Advertiser* (NSW : 1871 - 1912), p. 1492. Retrieved from <http://nla.gov.au/nla.news-article165235660>

MILK DEPOT AT BOMADERRY. (1912, April 16). *The Daily Telegraph* (Sydney, NSW : 1883 - 1930), p. 5. Retrieved from <http://nla.gov.au/nla.news-article239146151>

Mulvaney, J & Kamminga, J. 1999, *Prehistory of Australia*. Allen & Unwin, Crows Nest.

Navin Officer Archaeological Resource Management. October 1992. *Archaeological Investigation: APPM, Shoalhaven River, NSW*. Report to GHD Pty Ltd.

Navin Officer, 1992. *Archaeological Investigation: APPM Nowra, Shoalhaven River, NSW*.

Nicol, G & Sewell, J. 1793, *A Complete Account of the Settlement at Port Jackson in New South Wales, Including An Accurate Description of the Situation of the Colony; of the Natives; and Of Its Natural Productions*. London.

Niche Environment and Heritage. 2020, *Bolong Batch Plant – Aboriginal Objects Due Diligence Assessment*. Letter Report to Cleary Bros (Bombo) Pty Ltd.

Nicol, G & Sewell, J. 1793, *A Complete Account of the Settlement at Port Jackson in New South Wales, Including An Accurate Description of the Situation of the Colony; of the Natives; and Of Its Natural Productions*. London.

New paper mill to start soon (1956, August 1). *The Argus* (Melbourne, Vic. : 1848 - 1957), p. 10. Retrieved from <http://nla.gov.au/nla.news-article71649292>

Nowra Bridge over the Shoalhaven River. *New South Wales Heritage Database*. Office of Environment & Heritage. Retrieved from: [Nowra Bridge over the Shoalhaven River | Heritage NSW](#)

Peterson, N. 1976. *Tribes and Boundaries in Australia*. Humanities Press, Canberra: Australian Institute of Aboriginal Studies.

"Obituary." *The Shoalhaven Telegraph* (NSW : 1881 - 1937) 21 September 1887: 2. Retrieved from <http://nla.gov.au/nla.news-article135353160>.

O'Connell, J.F and Allen, J. 2004. Dating the colonization of Sahul (Pleistocene Australia-New Guinea): a review of recent research. *Journal of Archaeological Science* 31:835-853.

OEH 2011. *Guide to investigating, assessing and reporting on Aboriginal cultural heritage in NSW*. OEH, Sydney South.

OUTSTANDING SUCCESS (1934, April 5). *The Border Star* (Coolangatta, Qld. : 1929 - 1942), p. 1. Retrieved from <http://nla.gov.au/nla.news-article226615350>



Shoalhaven Paper Mill produces last reel after 58 years. 2015. ABC. Retrieved from [Shoalhaven Paper Mill produces last reel after 58 years - ABC News](#)

Slipstream: The Journal of the H.M.A.S. Albatross, 1959, ed. 27. "Local Industries: No.3 – Horlicks Malted Milk Factory."

Smith, MA. 2013, *The Archaeology of Australia's Deserts*. Cambridge University Press, New York.

South Coast Register. 2013. *Horlicks makes global impact from Bomaderry*. Retrieved from [Horlicks makes global impact from Bomaderry | South Coast Register | Nowra, NSW](#)

Stockton, ED. 1973. 'Shaws Creek Shelter: Human Displacement of Artefacts and its significance.' *Mankind* 9: 112-117

Stockton, ED. & Holland, WN. 1974. 'Cultural sites and their environment in the Blue Mountains.' *Archaeology and Physical Anthropology in Oceania*. 9:36-65

Tindale, N.B. 1974, *Aboriginal Tribes of Australia – Their Terrain, Environmental Controls, Distribution, Limits and Proper Names*. Online resource, accessed from <http://archives.samuseum.sa.gov.au/tribalmmap/index.html>

Weigh Bridge for Nowra. (1921, April 23). *The Shoalhaven News and South Coast Districts Advertiser* (NSW: 1891 - 1937), p. 2. Retrieved from <http://nla.gov.au/nla.news-article112536041>



APPENDIX A: CORRESPONDENCE LOG

Not included in public report



APPENDIX B: STEP 1 LETTERS AND RESPONSES

Not included in public report



APPENDIX C: STEP 2 LETTERS AND RESPONSES

Not included in public report



APPENDIX D: ADVERTISEMENT

Connect with Classifieds

Phone: 4421 9100
Email: classifieds@southcoastregister.com.au

Smith Coast Register

Smith Coast Register

Connect with Classifieds

Place a Classifieds ad

4421 9100
classifieds@southcoastregister.com.au
Save time, submit online 24/7
adirect.com.au



Print and online packages available throughout Australia

Advertising self service enquiries:
acmadonline@austcommunitymedia.com.au

Self Service

Death Notices

In loving memory

GRAHAME ERIC MARR

Late of Kingscliff.
Formerly of Nowra.
Passed away peacefully
Saturday 31st May, 2025.
Aged 85 Years.
Dearly loved Husband of Barbara.
Loved Father and Father-in-law of Sarah & Graham, Brad & Karen, and Craig & Kylie.
Cherished Grandad of Lachlan, Hannah, Jerem, Layla and Coen.
Family and Friends are warmly invited to attend Grahame's Funeral
Service to held at the
Tweed Valley Lawn Chapel & Crematorium
Eviron Road, Eviron on Friday 13th June at 11am.
To view service online go to
<https://view.oneroomstreaming.com/index.php?data=MTc0OTA4MDAzMzE2NDc1NzEmb25lcm-9vbS1hZG1pbjZjb3B5X2xpbnMs=>
 Ph: (02) 6672 2144 Murwillumbah



AVT745613



Anniversaries

Happy Anniversary!

Any Wedding Anniversary is a special occasion to celebrate... from your 1st to your 60th anniversary and beyond. These milestones in life deserve to be acknowledged.

"NOW AND THEN"
JULY 2024 - JUNE 2025

Send us two of your favourite photographs The "Then" and the "Now" together with a short message. We will then publish your notice in our special classified Program at the end of June 2025



Actual size is 4.5cm high x 12.9cm wide

Cost \$88 Deadline: Monday 2nd June, 2025

For more details please contact Rachel on (02) 4570 4411 or email tradesprograms@austcommunitymedia.com.au Attention Rachel

ACM trusted voice

AVT745607

For more details please contact Rachel on (02) 4570 4411 or email tradesprograms@austcommunitymedia.com.au Attention Rachel

For Rent

HOUSE for rent in Culburra - 4 B/R with garage and water views. NO Pets. \$900pw. ☎ 0439 398 769

Mobile Homes



VAN HOME, Never used. Ideal granny flat. No DA necessary, permanent tri-axle trailer. Easy to transport & install. 2 bdrms/beautiful kitchen/bthrm/laundry. \$120,000. Rose-dale 2536. ☎ 0402 230 977

STAND OUT!!

ADD COLOUR TO YOUR AD

Public Notices

Aboriginal Cultural Heritage Assessment:
Bolong Road, Bomaderry NSW
Notification and Registration of Aboriginal Interests

Air Liquide Australia Solutions Pty Ltd (the proponent) has engaged Apex Archaeology to assist in preparing an Aboriginal Cultural Heritage Assessment (ACHA) for the proposed CO2 Processing Plant at Bolong Road, Bomaderry NSW. The area of proposed works is located within the Shoalhaven Local Government Area (LGA).

The ACHA will inform a State Significant Development (SSD) application under Part 4 of the Environmental Planning and Assessment Act 1979.

A process of Aboriginal community consultation in accordance with the Aboriginal cultural heritage consultation requirements for proponents 2010 is being initiated by Apex Archaeology on behalf of the proponent.

The purpose of consultation with Aboriginal people is to assist the Department Secretary in their consideration and determination of the application.

The proponent invites Aboriginal people who hold cultural knowledge relevant to determining the cultural significance of Aboriginal objects and places within the study area to register an interest in the process of Aboriginal community consultation.

Please note that details of the Aboriginal people or organisations who register an interest in consultation will be forwarded to both Heritage NSW and the Nowra Local Aboriginal Land Council. Please advise at the time of registration if you do not wish for your details to be forwarded to either entity.

The proponent's project manager is Tim Barrett who can be contacted via timb@babbageconsultants.com.au

Aboriginal stakeholders can register their interest by post to PO Box 236, Nowra, NSW 2541; via ☎ on 0403 930 551; or via ✉ marian@apexarchaeology.com.au.

Please include the name and contact details of your preferred contact person in your registration.

Registrations will be accepted until the CoB 21 June 2025

Public Notices

NOTICE TO ALL MEMBERS OF MIA MIA PROPERTIES INCORPORATED
A General Meeting will be held at 2:00 pm on Sunday, 22 June 2025, at Nowra Youth Centre, 132 Kinghorn Street, Nowra, NSW, 2541.
Please come along and contribute to the redevelopment plans for Illaroo Farm.
Authorised by Uncle Gerry Moore, Chairperson.

ALL OUR CLASSIFIEDS APPEAR ONLINE

Adult Services

ANN Taiwanese Busty, Classic, Goodness Sexy, Fantastic Service
0424 863 122



NOT SURE HOW TO BEST ADVERTISE YOUR ITEMS FOR SALE?

Why not enjoy the same service as Barbara did recently

"I just want to say that your classified ladies were so helpful - you must be so happy having such wonderful & efficient staff. It was a pleasure dealing with them."
Barbara.

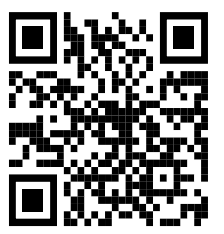
Phone or email your local classified staff and let them help you.

Connect with Classifieds

Australian COUPONS

SCORE MORE FOR LESS

Check out the Latest Deals at Australian COUPONS







APPENDIX E: METHODOLOGY, COVER LETTERS AND RESPONSES

Not included in public report



APPENDIX F: DRAFT REPORT EMAILS AND RESPONSES

Not included in public report



APPENDIX G: AHIMS SEARCH RESULTS

Not included in public report