



NELLIGEN BRIDGE REPLACEMENT

Aboriginal Cultural Heritage Assessment

FINAL

July 2016



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on behalf of
Roads and Maritime

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Acknowledgement

The Roads and Maritime Services and Umwelt would like to acknowledge the Traditional Custodians of the Nelligen area – the Yuin peoples – and pay respect to their cultural heritage, beliefs and continuing relationship with the land.

We would also like to acknowledge and pay respect to the post-contact experiences of Aboriginal people who have attachment to the Nelligen area.

We pay respect to the elders, both past and present, for they hold the memories, traditions, culture and hopes of Aboriginal people in the area.

Executive Summary



Introduction

The Kings Highway crossing of the Clyde River, Nelligen Bridge, is located on the South Coast of New South Wales, about eight kilometres north-west of Batemans Bay. During routine inspections, Roads and Maritime Services identified deterioration of the supporting concrete pillars under Nelligen Bridge. The strength of the bridge has been assessed and is still able to safely carry normal traffic loads. However, the pillars will weaken over time and the bridge will require significant repairs or replacement.

A range of early investigations and consultation about options to repair or replace the bridge have been completed. The outcome of this work is a new bridge should be built to the north of the existing bridge (the Nelligen Bridge Replacement Project) (refer to **Figure 1.1** for the Locality Plan). The approaches to the bridge would also be realigned. After the new bridge is built the existing bridge would be demolished.

Umwelt Australia Pty Limited (Umwelt) has been engaged by Roads and Maritime as part of the *Roads and Maritime Services procedure for Aboriginal Cultural Heritage Consultation and Investigation* (Roads and Maritime 2011 - PACHCI) Stage 3 process, which includes this Aboriginal Cultural Heritage Assessment report. This report is required to inform the environmental assessment (EA) for the Nelligen Bridge Replacement Project.

Description of Proposed Development

Roads and Maritime proposes to construct:

- a new Kings Highway crossing of the Clyde River at Nelligen to the north of the existing bridge

- realign the approaches to the bridge and
- demolish the existing bridge.

The extent of the required investigation area is from 900 metres east of the existing bridge to 950 metres west of the existing bridge as measured along the Kings Highway.

The work would involve:

- construction within the Clyde River
- excavation of cut embankments
- construction of fill embankments on both sides of the Clyde River
- temporary stockpile sites
- temporary compound sites
- temporary sediment basins
- operational water quality treatments
- relocation of utilities
- clearing of vegetation
- landscaping/revegetation on completion of the road work.

The exact location of temporary stockpile, compound sites and sediment basins is not known at this stage however potential locations have been identified within the study area and have been inspected accordingly.

Aboriginal Consultation

Consultation with Aboriginal stakeholders is an integral part of identifying and assessing the significance of Aboriginal objects and/or places, and determining and carrying out appropriate strategies to mitigate the impact upon Aboriginal heritage.

PACHCI Stage 2 Aboriginal Consultation

Jeffery Nelson (Roads and Maritime), Tim Webster (Roads and Maritime) and Kym McNamara (Umwelt) undertook the following Aboriginal consultation as part of PACHCI Stage 2 of the project.

National Native Title Register Search

A search of the NNTTs National Native Title Register to identify any registered native title claimants or native title holders for the study area was conducted on 26 August 2015. The geographic parameters for the search was set to the Eurobodalla LGA (refer to **Appendix 2**). The search returned no relevant entries in the following databases:

- Schedule of Applications (unregistered claimant applications)
- Register of Native Title Claims
- National Native Title Register
- Register of Indigenous Land Use Agreements

Register of Aboriginal Owners Search

A search of the Register of Aboriginal Owners was conducted on 17 November 2015 by Tim Webster (Roads and Maritime). The results returned on 3 December 2015 outlined the study area did not appear to have Registered Aboriginal Owners pursuant to Division 3 of the *Aboriginal Land Rights ACT 1983* (NSW).

Batemans Bay Local Aboriginal Land Council (BBLALC)

The study area lies within the boundaries of the BBLALC area. BBLALC was identified as the sole key Aboriginal stakeholder for the project as part of the PACHI Stage 2 process. Initial contact was made by Tim Webster on 24 September 2015 to organise availability for the field survey. Les Simon from BBLALC participated in the field survey for the project. He provided further information on significance of the study area on the 8 January 2016.

PACHCI Stage 3 Aboriginal Consultation

The Aboriginal consultation regarding this project has been undertaken in compliance with the Department of Environment, Climate Change and Water (DECCW, now Office of Environment and Heritage (OEH)) Aboriginal Cultural Heritage Consultation Requirements (ACHCRs) for proponents (2010a) and the Roads and Maritime Procedure for Aboriginal Cultural Heritage Consultation and Investigation (PACHCI) (2011). Consultation regarding cultural heritage matters within the study area has been undertaken in accordance with Clause 80C of the Regulation.

Registered Aboriginal parties were encouraged to provide comments on the Aboriginal cultural values and significance of the study area and on a draft of this report for inclusion in this Aboriginal Cultural Heritage Assessment Report.

Consultation regarding cultural heritage matters within the study area has been detailed in **Table 2.1** below. Forty-three Aboriginal parties were identified as having an interest in the study area.

A draft copy of this report was provided to each of the registered Aboriginal parties. It was requested that the registered Aboriginal parties provide written comment on the draft report. The comments received from the registered Aboriginal parties are summarised below.

- A letter was received from Murra Bidgee Mullangari Aboriginal Corporation (MBMAC) on 7 July 2016 stating that the recommendations had been read and that they agreed with the recommendation for Option 3 – Impact Site without Further Investigation under AHIP and Conservation of Possible Burial Marker Trees.

No further comments were received.

Archaeological Context of Study Area

A summary is provided below of the archaeological context for the study area.

- The majority of the sites recorded locally are low density artefact scatters
- Isolated finds and PADs are the next most common site type recorded within five kilometres of the study area

- Middens with low density artefact scatters and a midden have also been recorded within five kilometres of the study area
- Sites are more commonly recorded in association with ridges, ridge crests and ridge slopes
- Sites are also recorded on creek flats, creek terraces, spurs, saddles and slopes
- The most common artefact type is flake; but broken flakes, flaked pieces, chips^[1], hammerstones, cores (including blade, bipolar and fragments), flaked pieces, manuports and a broken blade have been recorded
- Raw materials recorded include quartz, silcrete, chert, volcanic, quartzite, fine grained volcanic, acid volcanic, porphyry, rhyolite and sandstone
- There is not a single dominant raw material however quartz, volcanic and silcrete are most commonly used.
- There is a minor creek to the east of the Clyde River and north of the Kings Highway which would have supplied freshwater for Aboriginal people
- these resources would have enabled Aboriginal people to camp in the area in small groups for a relatively long period of time
- the alluvial landforms near the Clyde River would also have supported larger groups for shorter occupation periods
- it is likely the ridges and associated slopes with the study area would show evidence (low density artefact scatters) of travel by Aboriginal people.

Predictive Model

The following is predicted:

Environmental Context Implications for the Study Area

- portions of the top soil layer within the study area would have been previously disturbed/removed during the developmental history and through associated erosion
- it is likely the ridge slopes and crests could still retain spatial integrity but it is unlikely there is still stratigraphic integrity due to the previous disturbance
- it is likely the alluvial landforms within the study area would still retain spatial integrity but not stratigraphic integrity due to the sandy nature of the deposit
- the portion of the study area located on Clyde River could have been subject to one in 100 year flood events however it is possible the landform could retain evidence of Aboriginal occupation that has been buried by flood events and not been destroyed by flood events or river channel migration
- the study area is located close to the estuarine Clyde River which would have provided a diverse array of floral and faunal resources for Aboriginal people before disturbance
- low density and complexity artefact assemblages may occur within the subsurface context on the ridge and ridge slopes
- PADs are most likely to be recorded on spur slopes
- isolated finds would most likely be found on the slopes throughout the study area
- stone artefacts are most likely to be flakes manufactured from silcrete and volcanic material but may include; cores (including bipolar), broken flakes, flaked pieces, hammerstones, blades and broken blades; produced from quartz, chert, quartzite, sandstone or porphyry
- middens could be found in close proximity of the Clyde River on slopes and flats
- burial sites could occur in the foreshore of the Clyde River
- previous disturbance and development of the study area is most likely to have disturbed the top layers of the natural ground surface and resulted in erosion but deposits below this disturbance/erosion could potentially contain sites retaining some archaeological integrity.

Archaeological Survey

The inspection was undertaken with a representative from the BBLALC on 7 October 2015. The inspection was conducted in warm overcast conditions.

^[1] Although this term is not commonly or widely used today it has been used commonly during site recordings in this area.

Methodology

The inspection of the study area was conducted on foot. Photographs were taken of the study area with location data recorded using a hand-held GPS and compass. Information recorded during the survey included:

- landform
- vegetation
- Aboriginal resources
- aspect
- gradient
- outlook
- soil description
- soils aggrading/degrading/stable
- geology
- extent of exposures
- visibility
- distance to nearest watercourse/permanence of watercourse
- the effects of previous land use and disturbance
- any sites or PAD within the study area and
- any information provided by the key Aboriginal stakeholder about the cultural significance or values of the area.

Summary of Archaeological Survey Results

- Ground surface visibility was relatively low throughout the project except for within the riverbank landform
- The level of exposure throughout the study area was low except within the riverbank landform
- Roads and Maritime Nelligen PAD1 was identified within the ridge slope landform on the eastern side of the Clyde River to the east of the Kings Highway. The PAD is about 10 by 20 metres in area
- Two trees identified by the Aboriginal stakeholder as having the potential to be burial markers were

identified north of the Kings Highway and west of Clyde River not within the Roads and Maritime Nelligen PAD1 area

- No sites were identified through the survey
- Aboriginal resources were found throughout the study area
- No fauna was observed throughout the survey
- No suitable raw material sources were identified during the survey.

Summary of Significance

The Aboriginal significance of Roads and Maritime Nelligen PAD1 was assessed by the key Aboriginal stakeholder as moderate.

The archaeological significance of Roads and Maritime Nelligen PAD1 was assessed as moderate on a local level and low on a regional level.

Overall, Roads and Maritime Nelligen PAD1 was assessed as having low to moderate archaeological significance.

The full Aboriginal archaeological survey report is included in **Appendix 4**.

Subsurface Testing

The subsurface testing was conducted with two site officers from the Murra Bidgee Mullangari Aboriginal Corporation on 11 April 2016. The subsurface testing was conducted in hot sunny conditions.

Summary of Subsurface Testing Archaeological Excavation Results

A total of 14 artefacts were recovered from the test excavations at Roads and Maritime Nelligen PAD1. This number was comprised of eight broken flakes, three complete flakes, two cores and one flaked piece of which all were manufactured from quartz. Artefacts were excavated from each of the four test pits.

As a result of the test excavations at Roads and Maritime Nelligen PAD1 and the discovery of the 14 artefacts the site has been renamed Roads and Maritime Nelligen Artefact Scatter 1.

The assemblage has confirmed a low density and low complexity selection of artefacts exist within the site area.

Summary of Significance

The Aboriginal significance of Roads and Maritime Nelligen AS1 was assessed by the Aboriginal parties as moderate.

The archaeological significance of Roads and Maritime Nelligen AS1 was assessed as low on both a local and a regional level. The level of significance has been reduced after sub-surface testing because the site was found to be disturbed, there was no assemblage complexity and quartz is locally available thus there would be little learned by further investigation.

Overall, Roads and Maritime Nelligen AS1 was assessed as having low archaeological significance.

The full subsurface testing archaeological excavation report is included in **Appendix 6**.

Cultural Heritage Values and Statement of Significance

General Study Area

The survey of the area by the BBLALC Aboriginal stakeholder highlighted the cultural heritage sensitivity of Clyde River itself. The river was identified as a valuable resource which would have provided a focus for Aboriginal occupation of the area. Thus, the Aboriginal stakeholder indicated he wanted Roads and Maritime to minimise the impact of the bridge replacement project on the actual river.

Roads and Maritime Nelligen PAD1

The assessment provided by the representative of the BBLALC present during the survey, identified Roads and Maritime Nelligen PAD1 as being of moderate Aboriginal cultural heritage significance. This level of significance was identified based on the following:

- It is located along an identified travel route with an outlook over the Clyde River
- There are known but unrecorded artefact scatters to the east
- Aboriginal resource plants were recorded in the area.

Roads and Maritime Nelligen AS1

Input was sought from the Aboriginal parties on the significance of the Roads and Maritime Nelligen AS1 site in light of the subsurface excavation results included in **Appendix 6**.

The registered Aboriginal parties did not subsequently provide a revised level of significance for Roads and Maritime Nelligen AS1 following the subsurface testing and subsequent Aboriginal Focus Group meeting. As such the Aboriginal significance of Roads and Maritime Nelligen AS1 remains moderate.

Management and Mitigation measures

Requirement 11 of the Code of Practice (2010a) requires that various options for management of archaeological impacts are formulated and evaluated. Justification must be provided for those that are recommended.

A range of management options have been outlined and evaluated below in relation to the study area that include varying levels of mitigation of identified or potential harm. The recommendation of management options is guided by the Aboriginal significance/sensitivity and archaeological significance of the study area. These management options have been developed from an archaeological perspective.

The Aboriginal parties were given an opportunity to comment on and inform the management options outlined in this report.

Option 1 Conservation of Site and Possible Burial Marker Trees

Option 1 would involve the conservation of Roads and Maritime Nelligen AS1.

Option 1 would also involve the conservation of two trees identified by the Aboriginal stakeholder as having the potential to be burial markers and a buffer of five metres¹.

The project would be able to proceed with the conservation of two trees identified by the Aboriginal stakeholder as having the potential to be burial markers and a buffer of five metres.

Option 1 has been evaluated and is not considered a recommended option due to the following:

- The project would not be able to proceed with Site conservation
- The Site has been identified as being of low archaeological significance and consequently, it is not archaeologically valid to propose a full conservation outcome for the Site within the study area.

¹ Located north of the Kings Highway and west of Clyde River not within the Roads and Maritime Nelligen AS1 area.

Option 2 Salvage of Site under AHIP and Conservation of Possible Burial Marker Trees

Option 2 would involve further salvage of Roads and Maritime Nelligen AS1. Option 2 would require that the further salvage be completed under an AHIP.

Option 2 would also involve the conservation of two trees identified by the Aboriginal stakeholder as having the potential to be burial markers and a buffer of five metres².

The project would be able to proceed with the conservation of two trees identified by the Aboriginal stakeholder as having the potential to be burial markers and a buffer of five metres.

Option 2 has been evaluated and is not considered a recommended option due to the following:

- Based on the results of the subsurface testing further investigation is not warranted from an archaeological perspective.

Option 3 Impact Site Without Further Investigation under AHIP and Conservation of Possible Burial Marker Trees

Option 3 would involve Roads and Maritime proceeding with the project without conducting further investigation within Roads and Maritime Nelligen AS1. Option 3 would require that Roads and Maritime works within the Site area be completed under an AHIP.

Option 3 would also involve the conservation of two trees identified by the Aboriginal stakeholder as having the potential to be burial markers and a buffer of five metres³.

The project would be able to proceed with the conservation of two trees identified by the Aboriginal stakeholder as having the potential to be burial markers and a buffer of five metres.

Option 3 has been evaluated and is considered a preferred option due to the following:

- Option 3 recognises the low significance of the site from an archaeological perspective and allows for the Roads and Maritime to proceed with the project.

Recommendations

The management recommendations outlined below have been prepared with regard to:

- Respect and consideration of the views of the Aboriginal parties
- The archaeological context of the Nelligen region
- The findings of the survey and subsurface testing
- The moderate cultural significance assessment of the area by the key Aboriginal stakeholder from BBLALC. The overall low archaeological assessment of Roads and Maritime Nelligen AS1
- The overall low research potential of the Roads and Maritime Nelligen AS1
- Two trees identified by the key Aboriginal stakeholder from BBLALC Aboriginal as having the potential to be burial markers
- Current cultural heritage legislation
- Providing clear guidance about appropriate management and protection of cultural heritage values

The following is recommended:

- That Option 3 be adopted for the project
- That no further archaeological salvage be conducted at Roads and Maritime Nelligen AS1
- Roads and Maritime should apply to the Director-General of OEH for an AHIP in accordance with Section 90 of the NPW Act, with this AHIP to cover the entirety of Roads and Maritime Nelligen AS1 and the entirety of the study area. The AHIP should extend for five years to allow Roads and Maritime sufficient time to complete the works within the AHIP area.
- Roads and Maritime ensure the two trees identified by the key Aboriginal stakeholder as having the potential to be burial markers have a buffer of five metres protected during construction work to ensure they are not adversely impacted.

² Located north of the Kings Highway and west of Clyde River not within the Roads and Maritime Nelligen AS1 area.

³ Located north of the Kings Highway and west of Clyde River not within the Roads and Maritime Nelligen AS1 area.

- Roads and Maritime should ensure that its employees and contractors are aware that it is an offence under Section 86 of the NPW Act to harm or desecrate an Aboriginal object unless that harm or desecration is the subject of an AHIP
- The proposed works can proceed in the remainder of the study area without any further archaeological requirements. In the event that suspected human skeletal material be identified within the study area, all works should cease immediately and the NSW Police Department, OEH and the registered Aboriginal parties should be contacted so that appropriate management strategies can be identified.

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1.0 Introduction

The Kings Highway crossing of the Clyde River, Nelligen Bridge, is located on the South Coast of New South Wales, about eight kilometres north-west of Batemans Bay. During routine inspections, Roads and Maritime Services identified deterioration of the supporting concrete pillars under Nelligen Bridge. The strength of the bridge has been assessed and is still able to safely carry normal traffic loads. However, the pillars will weaken over time and the bridge will require significant repairs or replacement.

A range of early investigations and consultation about options to repair or replace the bridge have been completed. The outcome of this work is a new bridge should be built to the north of the existing bridge (the Nelligen Bridge Replacement Project) (refer to **Figure 1.1** for the Locality Plan). The approaches to the bridge would also be realigned. After the new bridge is built the existing bridge would be demolished.

Umwelt Australia Pty Limited (Umwelt) has been engaged by Roads and Maritime as part of the *Roads and Maritime Services procedure for Aboriginal Cultural Heritage Consultation and Investigation* (Roads and Maritime 2011 PACHCI) Stage 3 process, which includes this Aboriginal Cultural Heritage Assessment report. This report is required to inform the environmental assessment (EA) for the Nelligen Bridge Replacement Project.

1.1 Background

The Nelligen Bridge Preliminary Environmental Investigation (PEI) (URS Australia Pty Ltd) was completed for the project in September 2014. In relation to Aboriginal heritage the PEI identified seven Aboriginal sites had been previously recorded and registered with the Office of Environment and Heritage (OEH) Aboriginal Heritage Information Management System (AHIMS) within one kilometre of the study area. None of these sites are located within the current study area.

However, even though there are no recorded sites within the study area, its location on the banks of an important and significant river which is of known Aboriginal heritage value is recognised. It was acknowledged the proposed impact may involve construction on previously undisturbed land and/or the removal of remnant vegetation, including mature stands of trees. Therefore it was accepted there was potential to impact on undiscovered Aboriginal values within the study area.

Aboriginal heritage was assessed in terms of the following options:

- Do nothing
- Maintenance of the existing bridge
- Development to the north of the existing bridge
- Development to the south of the existing bridge

It was recommended an Aboriginal Heritage Assessment be undertaken in accordance the Roads and Maritime' Procedure for Aboriginal Cultural Heritage Consultation and Investigation 2010 (PACHCI) for any of the proposed options except for the do nothing option.

The PACHCI Stage 2 process was undertaken including the completion of the Nelligen Bridge Replacement, Aboriginal archaeological Survey Report, PACHCI Stage 2 (Umwelt February 2016, refer to **Appendix 4** of this document).



Image Source: Google Earth, DigitalGlobe (2015)
 Data Source: NSW Roads and Maritime (2015)

- Legend**
- Nelligen Bridge - Aboriginal Cultural Heritage Study Area
 - Proposed Design
 - Artefact Scatter

FIGURE 1.1
 Locality Plan

1.2 Project Description

Roads and Maritime proposes to construct:

- A new Kings Highway crossing of the Clyde River at Nelligen to the north of the existing bridge
- Realign the approaches to the bridge and
- Demolish the existing bridge.

The extent of the required investigation area is from 900 metres east of the existing bridge to 950 metres west of the existing bridge as measured along the Kings Highway.

The work would involve:

- Construction within the Clyde River
- Excavation of cut embankments
- Construction of fill embankments on both sides of the Clyde River
- Temporary stockpile sites
- Temporary compound sites
- Temporary sediment basins
- Operational water quality treatments
- Relocation of utilities
- Clearing of vegetation
- Landscaping/revegetation on completion of the road work.

The exact location of temporary stockpile, compound sites and sediment basins is not known at this stage however potential locations have been identified within the study area and have been inspected accordingly.

1.3 Legislative Context

The Office of Environment and Heritage (OEH) is primarily responsible for regulating the management of Aboriginal cultural heritage in New South Wales under the *National Parks and Wildlife Act 1974* (the NPW Act). The NPW Act is accompanied by the *National Parks and Wildlife Regulation 2009* (the Regulation), the *Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales* (DECCW 2010a) and other industry-specific codes and guides.

The NPW Act defines an Aboriginal object as:

..any deposit, object or material evidence (not being a handicraft made for sale) relating to the Aboriginal habitation of the area that comprises New South Wales.

Under Section 84 of the NPW Act, an Aboriginal Place must be declared by the Minister as a place that, in the opinion of the Minister, is or was of special significance with respect to Aboriginal culture.

In accordance with Section 86(1) of the NPW Act, it is an offence to harm or desecrate a known Aboriginal object, whilst it is also an offence to harm an Aboriginal object under Section 86(2). Similarly, Section 86(4) states that a person must not harm or desecrate an Aboriginal place. Harm to an object or place is defined as any act or omission that:

- a) destroys, defaces or damages an object or place, or
- b) in relation to an object – moves the object from the land on which it had been situated, or
- c) is specified by the regulations, or
- d) causes or permits the object or place to be harmed in a manner referred to in paragraph (a), (b) or (c),

but does not include any act or omission that:

- e) desecrates the object or place, or
- f) is trivial or negligible, or
- g) is excluded from this definition by the regulations

Section 87(1) of the NPW Act specifies that it is a defence to prosecution under Section 86(1) and Section 86(2) if the harm or desecration of an Aboriginal object was authorised by an Aboriginal Heritage Impact Permit (AHIP) and the activities were carried out in accordance with that AHIP. Furthermore, Section 87(2, 4) establishes that it is a defence to prosecution under Section 86(2) if due diligence was exercised to reasonably determine that the activity or omission would not result in harm to an Aboriginal object or if the activity or omission constituting the offence is a low impact act or omission (as defined in Section 80B of the Regulation). The Regulation identifies that compliance with the *Code of Practice for the Archaeological Investigation of Aboriginal Objects in New South Wales* (DECCW 2010a – hereafter referred to as the code of practice) is excluded from the definition of harm.

2.0 Aboriginal Consultation

Consultation with Aboriginal stakeholders is an integral part of identifying and assessing the significance of Aboriginal objects and/or places, and determining and carrying out appropriate strategies to mitigate the impact upon Aboriginal heritage.

2.1 PACHCI Stage 2 Aboriginal Consultation

Jeffery Nelson (Roads and Maritime), Tim Webster (Roads and Maritime) and Kym McNamara (Umwelt) undertook the following Aboriginal consultation as part of PACHCI Stage 2 of the project.

2.1.1 National Native Title Register Search

A search of the NNTTs National Native Title Register to identify any registered native title claimants or native title holders for the study area was conducted on 26 August 2015. The geographic parameters for the search was set to the Eurobodalla LGA (refer to **Appendix 2**). The search returned no relevant entries in the following databases:

- Schedule of Applications (unregistered claimant applications)
- Register of Native Title Claims
- National Native Title Register
- Register of Indigenous Land Use Agreements

2.1.2 Register of Aboriginal Owners Search

A search of the Register of Aboriginal Owners was conducted on 17 November 2015 by Tim Webster (Roads and Maritime). The results returned on 3 December 2015 outlined the study area did not appear to have Registered Aboriginal Owners pursuant to Division 3 of the *Aboriginal Land Rights ACT 1983* (NSW).

2.1.3 Batemans Bay Local Aboriginal Land Council

The study area lies within the boundaries of the BBLALC area. BBLALC was identified as the sole key Aboriginal stakeholder for the project as part of the PACHCI Stage 2 process. Initial contact was made by Tim Webster on 24 September 2015 to organise availability for the field survey. Les Simon from BBLALC participated in the field survey for the project which was conducted with an archaeologist and representatives from Roads and Maritime. He provided further information on significance of the study area on the 8 January 2016.

2.2 PACHCI Stage 3 Aboriginal Consultation

The Aboriginal consultation regarding this project has been undertaken in compliance with the Department of Environment, Climate Change and Water (DECCW, now Office of Environment and Heritage (OEH)) Aboriginal Cultural Heritage Consultation Requirements (ACHCRs) for proponents (2010a) and the Roads and Maritime Procedure for Aboriginal Cultural Heritage Consultation and Investigation (PACHCI) (2011). Consultation regarding cultural heritage matters within the study area has been undertaken in accordance with Clause 80C of the Regulation.

Registered Aboriginal parties were encouraged to provide comments on the Aboriginal cultural values and significance of the study area and on a draft of this report for inclusion in this Aboriginal Cultural Heritage Assessment Report.

Consultation regarding cultural heritage matters within the study area has been detailed in **Table 2.1** below. Forty three (43) Aboriginal parties were identified as having an interest in the study area (refer to **Appendix 2** for details).

A draft copy of this report was provided to each of the registered Aboriginal parties. It was requested that the registered Aboriginal parties provide written comment on the draft report. The comments received from the registered Aboriginal parties are summarised below.

Table 2.1 Record of Consultation with Aboriginal Parties

Date	Type of Consultation	Authorities/Aboriginal Parties Contacted	Outcome
15/01/16	Letter providing notification of assessment and request to identify Aboriginal parties	Office of Environment and Heritage	OEH provided a list of 43 names that have registered an interest in this location.
		Batemans Bay Local Aboriginal Land Council	BBLALC were engaged to do stage 2 PACHCI works.
		Office of the Registrar of Aboriginal Owners	Advised there were NO registered Aboriginal owners in the project area. Referred Roads and Maritime to Batemans Bay LALC for further stakeholders.
		National Native Title Tribunal	Did not receive a response.
		New South Wales Aboriginal Land Council	Recommended we contact the Local Aboriginal Land Council the project lies within. (Batemans Bay LALC)
		Local Land Services South East	Recommended contacting OEH.
		NSW Native Title Services Corporation	Did not receive a response.
		Eurobodalla Shire Council	Referred Roads and Maritime to Batemans Bay LALC

Date	Type of Consultation	Authorities/Aboriginal Parties Contacted	Outcome
27/01/16	Advertisement providing notification of assessment and opportunity to registration interest in on-going consultation	Advertisement placed in: The Koori Mail Bay Post The National Indigenous wasn't operable at time of print	
10/02/16	Letter providing an invitation to attend an Aboriginal focus group meeting and to review draft methodology for subsurface testing provided to registered Aboriginal parties	All 43 Aboriginal parties whose name was put forward by the OEH on 05/02/2016.	Two stakeholders attended the AFG on Tuesday 23 February 2016. The Roads and Maritime Project Manager and Aboriginal Cultural Heritage Advisor visited the Batemans Bay LALC after the meeting to discuss the proposal for Nelligen as they did not attend the AFG. No comments received on methodology.
11/02/16	Letter providing notification of assessment and invitation to register interest in consultation (for known Aboriginal parties previously identified as potentially having an interest in this area)	All registered Aboriginal parties were sent a letter on 11/02/2016	Some undeliverable emails. No alternative contacts were provided apart from an email. Letters posted to parties without an email address on 11/02/2016
24/02/16	The subsurface testing methodology provided to OEH for review	OEH Queanbeyan	After discussions no changes required to methodology
25/02/16	Provide meeting minutes to Aboriginal parties	All 43 registered parties	No further comments
30/03/16	Engagement of Aboriginal Sites Officers	Engagement letter sent	Site Officers engaged to do works on Monday 11 April 2016

Date	Type of Consultation	Authorities/Aboriginal Parties Contacted	Outcome
11/04/16	Subsurface testing conducted with Aboriginal party representatives	Two sites officers from the MBMAC participated in the subsurface testing.	A total of 14 artefacts were recovered and the Roads and Maritime PAD 1 was rerecorded as Roads and Maritime AS1.
9/06/2016	Letter providing an invitation to attend an Aboriginal Focus Group meeting and to review draft report ACHA and Subsurface Testing Report provided to registered Aboriginal parties.	All 43 registered Aboriginal parties	<p>No stakeholders were available to attend the AFG on Tuesday 23 June 2016. However the Roads and Maritime Project Manager, Aboriginal Cultural Heritage Advisor and Umwelt Senior Archaeologists visited the Batemans Bay LALC to conduct the meeting to discuss the project, to outline the subsurface testing results, review the ACHA and to discuss management recommendations for the project. It was discussed that a study area wide AHIP would be applied for not just a site AHIP.</p> <p>Only one response was received. This was a letter from MBMAC dated 7 July 2016 which stated that the community agreed with the recommendation for Option 3 – Impact Site without Further Investigation under AHIP and Conservation of Possible Burial Marker Trees</p>

3.0 Desktop Research

This section of the report provides an Aboriginal cultural, ethnographic and archaeological context for the study area. This was used to formulate the survey methodology and predictive model for site location, site type and site preservation within the study area as part of the PACHCI Stage 2 process.

3.1 Ethnography

Early historic documents relating to Aboriginal people are referred to as ethnohistoric records. Ethnohistoric records from the South Coast area surrounding Nelligen document various elements of Aboriginal society including population, ceremonial and cultural practices, gatherings, material uses and food sources. The study area lies within the tribal country of the Yuin (Djuin) people which was further divided into thirteen sub-tribal groupings. This country extended from the Shoalhaven River in the north, to the Victorian Border in the south and in the west to the eastern edge of the tablelands. The thirteen Yuin sub-tribal groupings are based on the existence of a mythological ancestor “Bundoola” who is said to have had thirteen wives, each representing a different tribal group (Donaldson 2006:7). According to Tindale (1974) the study area lies with the subtribal boundary of the Walbanga people. The Walbanga is a coastal tribe located between the Wandandian and Thaua tribes.

According to oral tradition among South Coast Aboriginal people there were four Yuin tribes. The geographic divisions correspond with the four language groups within the Yuin language family (Eades 1976:1976 1:17). Howitt suggests at contact in the South Coast region the Yuin were divided into two major social divisions, the Kurial-Yuin (North Yuin) and Guyangal-Yuin (South Yuin). There is also a further suggestion there was an inland/coastal division to distinguish tableland and alpine groups from the coast and coastal hinterland (Howitt 1904:82:3).

Within the Yuin area there are two prominent sacred mountains Didthul (Pigeon House Mountain) and Gulaga (Mt. Dromedary) and two rivers Bhundoo (Clyde) and Wadbilliga (Howitt 1904:82:3).

3.1.1 Population

Boot (2002:119) suggests the Yuin people (before European contact) lived a gatherer-hunter lifestyle in semi-permanent camps throughout the now Eurobodalla Local Government Area (LGA). Boot describes the Yuin as a related group of intermarrying clans.

Yuin Culture, as recorded during the eighteenth and nineteenth centuries, was cohesive regardless of hinterland or coastal context. This is evidenced by not only a common subsistence economy throughout the area but also by region wide social, political and religious systems. This is a result of access to an environment characterised by high levels of biodiversity and abundant resources. The high levels of biodiversity and abundant resources allowed frequent large gatherings of people (Boot 2002: 108).

Although the South Coast region was much affected by the introduction of disease after colonisation, with a 95 per cent suggested mortality rate, a healthy population of as many as 25,000 (or a population density of 1.6 persons/sq kilometre) has been indicated from early 19th century census returns. This population is thought to have been evenly distributed across both coastal and hinterland areas (Boot 2002:1).

It has also been possible due to the 19th century census, to reconstruct the size of groups of people observed in both coastal and hinterland communities with the average size of groups being 27 people. There are, however considerable differences between the size of men’s groups with figures given as 18 on the coast and four in the hinterland. Boot asserts fishing with spears on the coast would have greater

return with numerous individuals whereas the act of hunting in the hinterland environment would have been more successful in smaller groups (Boot 2002: 112).

Large groups of people were observed congregating for ceremonial purposes in the hinterland during spring when starch foods provided by plants such as *Macrozamia* sp. were abundant (Boot 2002: 113).

3.1.2 Gathering and Hunting

Ethnographic records reference a wide range of material culture items utilised among the Yuin people. Those most frequently recorded were common in both coastal and hinterland contexts such as bark canoes, single barbed fishing spears, waddies, spear throwers, digging sticks and boomerangs. Among lithic materials the most commonly recorded items included hafted edge-ground hatchet heads. Other commonly recorded items included fish traps, bark shelters/huts, shields, clubs, clap sticks, possum skin rugs and cloaks, possum-fur belts, netted bags, plant fibre string and fibre baskets, body paint, grass tree resin cement and bone or teeth adornments (Boot 2002: 116).

Ethnohistoric literature suggests for the Yuin people fish and possums were particularly important food resources on the coast and these were available all year. Major hinterland resources were marsupials, plants and fish which were also available all year. While these may not have been staples, their availability guaranteed the possibility of occupation of both coastal and hinterland environments all year round. Ethnographic sources suggest seasonally exploited resources would have included marine mammals with observations of feasts occurring when the occasional whale was stranded (Boot 2002: 120).

Plant foods were rarely recorded by European observers, Yuin women (and sometimes men) would use digging sticks (sharpened) to dig for yams, roots and to catch smaller game. Europeans did observe the processing of the seed of *Macrozamia* sp. (particularly in the hinterland) from which large quantities of paste were carried wrapped in fronds of the cabbage tree palm (*Livistona* sp.) (Boot 2002: 123).

3.1.3 Corroboree, Ceremonial, Gatherings and Trade

The main Yuin ceremonial and religious events were a range of initiation ceremonies known collectively as Kuringal. Other gatherings included ritual combat and exchange. These have been recorded as being held in a number of different locations throughout the region. Depictions of events recorded near Nelligen and Ulladulla in 1875 portrayed a line of male and female dancers directed by two individuals. The ceremonial areas for Kuringal ceremonies sometimes contained raised earth rings while other ceremonies were conducted without them. The Kuringal ceremonies would promote strong tribal affiliations. Links between Yuin people would be further strengthened during the bartering exchanges of goods such as fish hooks, fishing spears, bark canoes and increase rites which occurred after ceremonies (Howitt 1904: 513, 518-519).

Evidence suggests the South Coast, hinterland, and nearby tablelands and alpine regions shared a social organisation where descent was patrilineal and marriage was exogamous, that is marriages within the moiety were not allowed. Other social practises include polygamous marriage by exchange of sisters, strict avoidance of mothers-in-law, local group leadership by senior men and use of ritual fights to resolve disputes and punish wrong-doers (Howitt 1904: 83, 133, 261-266, 314; Peterson 1976: 52-53; Berndt and Berndt 1974: 44).

3.1.4 Burials

There is limited information about burial customs and burial locations of the Yuin people. In addition to traditional burial places, a reserve cemetery and a burial/massacre site south-west of Kings Chair has been recorded (Boot 2002: 125). Burial practices are shared throughout the South Coast region and include burial in sheets of bark at the location of the birth place of the deceased. Most recorded burial sites occur in sand dunes or on foreshores. Burials have been marked with mounds, earth rings, fences or carved trees. The body was usually buried with the face pointing east and may have been accompanied by fishing tools, animal bones, shell ochre, spears and throwing sticks (Boot 2002:341).

3.1.5 Summary

The ethnographic information suggests the Yuin:

- Led a semi-nomadic, gatherer, hunter lifestyle
- Lived in semi-permanent camps
- Had similar cultural beliefs, shared political and social structure, and common economic strategies in both coastal and hinterland communities
- Utilised huts, canoes, fish traps, single barbed fishing spears, shields, clubs, spear throwers, clap sticks, boomerangs, hatchets, body paint, possum skin cloaks, possum fur belts, grass tree resin cement, netted bags, plant fibre string and fibre baskets in both coastal and hinterland communities
- Were able to inhabit coastal and hinterland areas all year round due to high level biodiversity and abundant resources
- Lived in average sized groups near the coast and in the hinterland however hunting parties were different sizes depending on environment
- Ceremony, corroboree and trade were an important part of traditional life
- Traded and bartered for objects such as fish hooks, fishing spears, bark canoes, utensils and weapons
- There is evidence of Aboriginal people being wrapped in bark and buried in dunes or on foreshores usually facing east and in the area where they were born
- Burials have been marked with mounds, earth rings, fences or carved trees

3.2 Site Register Search

A search was conducted of the OEH Aboriginal Heritage Information Management System (AHIMS) database on 21 August 2015 for any sites that had been previously recorded within the study area or within five kilometres of the study area. The AHIMS database listed a total of 48 sites within five kilometres of the study area but none within the study area itself. **Table 3.1** summarises the site types listed on the AHIMS Database. The full database search has been included as **Appendix 3**. The distribution of previously recorded sites is shown in **Figure 3.1**.

Table 3.1 Aboriginal Sites/Places Listed on the AHIMS Site Database within 5km of the Study Area

Site Type	No.
Artefact scatter	34
Isolated find	5
Potential archaeological deposit (PAD)	5
Midden/artefact scatter	3
Midden	1
Total	48

Distribution of the sites across the landscape has been biased by the lack of archaeological survey and assessment across large portions of the AHIMS search area. It could also be a reflection of the fact works were conducted before it was legally required that Aboriginal cultural and archaeological assessment be undertaken. Therefore, while the presence of sites indicates Aboriginal use of an area, it does not follow that the lack of sites means Aboriginal people did not use an area.

Those sites that are listed on the register within five kilometres of the study area have been identified as a result of surveys conducted for: housing subdivisions; proposed quarries; new transmission lines; academic research; and as a component of a Eurobodalla based heritage study (refer to **Section 3.3**).

The most common site type is artefact scatters. They are all low density artefact scatters with less than 56 artefacts and are most commonly found on ridge crests and ridge slopes.

The five PADs recorded on AHIMS Site Database were all recorded on spur slopes and have been subject to subsurface testing since the initial recording:

- One PAD was determined not to be a site (#58-4-1073)
- One PAD (#58-4-1069) was determined to be a part of a pre-recorded site (#58-4-0955)
- PAD (#58-4-1070) was determined to be an artefact scatter and was re-registered as (#58-4-1109)
- PAD (#58-4-1071) was determined to be an isolated find and was re-registered as (#58-4-1110)
- PAD (#58-4-1072) was determined to be an isolated find and was re-registered as (#58-4-1111)

The five isolated finds were all recorded on slopes and include the two sites that were previously recorded as PAD.

The three midden/artefact scatter sites include only three artefacts each and shell species such as *Anadara* (saltwater bivalves) and *Saccostrea cucullata* (natural rock oyster). These sites were recorded on slopes and a creek flat. There is also one midden site recorded about two kilometres south-east of the current study area.

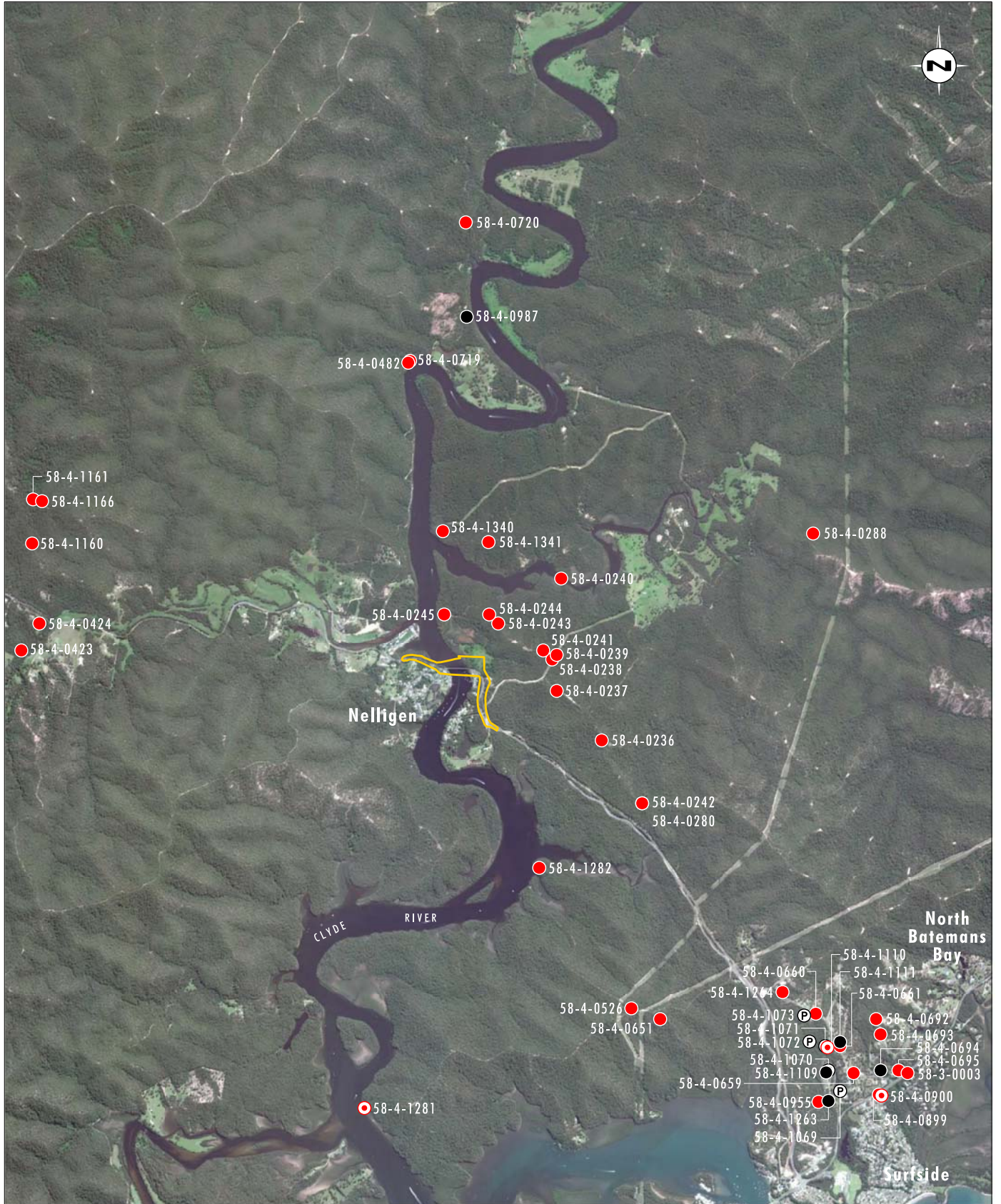


Image Source: Google Earth, DigitalGlobe (2015)
 Data Source: OEH (2015)

0 1.0 2.0 3.0 km
 1:60 000

Legend

- Nelligen Bridge - Aboriginal Cultural Heritage Study Area
- Artefact Scatter
- Isolated Find
- Midden
- Potential Archaeological Deposit

FIGURE 3.1

Aboriginal Sites/Places Listed on the AHIMS Site Database within 5km of the Study Area

3.3 Previous Archaeological Research

As stated in **Section 3.2** the majority of the archaeological survey and assessments conducted within the Nelligen Region have been for housing subdivisions, proposed quarries, new transmission lines, academic research and as a component of a Eurobodalla based heritage study.

Previous archaeological research conducted for the Nelligen region is summarised in **Table 3.2**. Please note not all reports are available through OEH so relevant information has been summarised from other reports and available site cards when necessary. It should also be noted relevant information is not always recorded.

Table 3.2 Previous archaeological research conducted for the Nelligen region

Year	Author	Study Area	Site/PAD	Landform	Artefact Type	Raw Material	Distance and Direction From Current Study Area	Distance to water (metres)
Unknown	Nicholson	Unknown	One artefact scatter	Ridge Crest	26 artefacts	Unknown	4.2 km south-east	500
Unknown	Arncliffe	Unknown	One artefact scatter	Silt bank on edge of Clyde River	8 artefacts- Flakes, broken flakes, flaked pieces	Quartz, silcrete, fine-grained volcanic	3.5 km north.	5
Unknown	McKeown	Unknown	Two Artefact scatters	Ridge top	21 artefacts- Flakes and cores	Silcrete, fine-grained volcanic	2.6 to 4.3 km east.	500 – 1000
Unknown	D. Wood	Unknown	One artefact scatter and midden	Creek flat	3 artefacts- 1 core and two silcrete flaked pieces	Silcrete, fine-grained volcanic and shell of Anadara and Saccostrea sp.	6.6 km south-east	50
Unknown	V. Wood	Unknown	One artefact scatter	Hill slope	56 artefacts, 45 chips, 6 flaked pieces, 4 cores and 1 flake	Quartz, fine-grained volcanic and silcrete	6.6 km south-east	50
Unknown	Hall	Unknown	One artefact scatter	Ridge Top	5 artefacts- 3 flaked pieces and 2 cores	Quartz, fine-grained volcanic and silcrete	6.7 km south-east	50 – 100

Year	Author	Study Area	Site/PAD	Landform	Artefact Type	Raw Material	Distance and Direction From Current Study Area	Distance to water (metres)
Unknown	State Forests of NSW	Unknown	Three artefact scatters	Ridge crest	Flakes	Unknown	4.9 km north-west	1000 – 1200
1988	Hackwell	Archaeological survey of a housing subdivision at Nelligen, South Coast, NSW	Two artefact scatters	Ridge	Unknown	Silcrete, fine-grained volcanic	About 4.6 km west	100 -200
1989	Kuskie	Archaeological investigations of the Nelligen Run, Potato Point & Dwyer's Creek Quarries on the South Coast of NSW	10 artefact scatters	Upper ridge slope, ridge crest, creek terrace, saddle, basal slope, simple slope,	33 artefacts- Flakes, broken flakes, flaked pieces, cores and blades	Quartz, silcrete, fine-grained volcanic, porphyry	About 600 metres north to 2.5 km south-east	0 – 220
1992	Paton	An Archaeological investigation of the proposed Ulladulla to Moruya 132Kv Transmission Line	One artefact scatter	Northern slope of ridge	4 artefacts- 3 flakes and 1 core	Quartz and silcrete	4.5 km south-east	300 – 350

Year	Author	Study Area	Site/PAD	Landform	Artefact Type	Raw Material	Distance and Direction From Current Study Area	Distance to water (metres)
1992	Williams	Report on the archaeological survey of a proposed subdivision of Lots 22, 23, 24, DP1068, Clyde Road, Batemans Bay.	Four artefact scatters	Ridge Top	22 artefacts and some shell	Unknown	5.9 km south-east	100 – 150
1995	Kuskie	An Archaeological Assessment of Lot 8 DP 837396 at North Batemans Bay, South Coast NSW	Three artefact scatters, one isolated find	Ridge crest, ridge, basal slope simple slope	19 artefacts- Flakes, broken flakes, flaked pieces, cores and a hammerstone	Quartz, silcrete, fine-grained volcanic, porphyry	6.7 km south-east	15 – 300
2002	Saunders	Lot 1 DP 1015889 and Lot 2 DP 865527, Kings Highway, North Batemans Bay, NSW. Archaeological Survey.	One artefact scatter, one artefact scatter and midden, three isolated finds	Basal slope, basal spur slope, mid spur slope	36 artefacts- Flakes, flaked pieces, cores and blades	Quartz, fine-grained volcanic, silcrete and chert	About 6.5 km south-east	50 – 120

Year	Author	Study Area	Site/PAD	Landform	Artefact Type	Raw Material	Distance and Direction From Current Study Area	Distance to water (metres)
2002	Boot	Didthul, Bhundoo, Gulaga and Wadbilliga: An Archaeological Study of the Aboriginals of the New South Wales South Coast Hinterland.	Two artefact scatters and one isolated find	Slope, low terrace and saddle on north-west/south-east ridge	10 artefacts- Flaked pieces, core, flakes, broken flakes, clay hearths	Porphyry, rhyolite, silcrete	About 3.4 to 5 km north	20 -250
2004	Saunders/McGregor	Lot 10 DP1015889 & Lot 2 DP865527, Kings Highway, North Batemans Bay: Archaeological Investigation of Six PAD's	Five PAD	lower spur slope, basal spur slope, mid spur slope	8 artefacts including flakes and a hammerstone	Quartz, fine-grained volcanic and silcrete	About 6.6 to 5.2 km south-east	50 – 120

Year	Author	Study Area	Site/PAD	Landform	Artefact Type	Raw Material	Distance and Direction From Current Study Area	Distance to water (metres)
2009	Carriage	Clyde River National PARK: Aboriginal Sites Inspection	One Midden and one midden and artefact scatter	Unknown	Unknown	Unknown	4.9 to 2.4 km to the south	Unknown (near the Clyde River –uncertain distance to fresh water)
2014	Dibden	Lot 6 DP 263081 Windywoppa Road, Benandarah, via Batemans Bay NSW. Aboriginal Cultural Heritage Assessment Report	Two artefact scatters	Spur crest	38 artefacts- Cores, flakes and broken flakes	Silcrete, quartzite, sandstone, chert, quartz and fine-grained volcanic	1.5 km to the north	Unknown (near the Clyde River –uncertain distance to fresh water)

3.4 Summary

A summary is provided below of the archaeological context for the study area.

- The majority of the sites recorded locally are low density artefact scatters
- Isolated finds and PADs are the next most common site type recorded within five kilometres of the study area
- Middens with low density artefact scatters and a midden have also been recorded within five kilometres of the study area
- Sites are more commonly recorded in association with ridges, ridge crests and ridge slopes
- Sites are also recorded on creek flats, creek terraces, spurs, saddles and slopes
- The most common artefact type is flake; but broken flakes, flaked pieces, chips⁴, hammerstones, cores (including blade, bipolar and fragments), flaked pieces, manuports and a broken blade have been recorded
- Raw materials recorded include quartz, silcrete, chert, volcanic, quartzite, fine grained volcanic, acid volcanic, porphyry, rhyolite and sandstone
- There is not a single dominant raw material however quartz, volcanic and silcrete are most commonly used.

3.5 Environmental Context

The decisions people make regarding where they live, the range of resources they use and other aspects of daily life may all be influenced by the environment in which they live. The likelihood of sites being preserved and visible is also affected by environmental factors such as vegetation, past land use and disturbance. A review of the environmental context of the study area is therefore integral to developing a model with which to predict the likelihood of Aboriginal archaeological sites being present and preserved within the study area.

3.5.1 Geology and Soils

The Eurobodalla Shire occurs primarily within two sub-regions (Bateman and South East Corner Coastal Ranges) as identified in the *“Interim Biogeographic Regionalisation for Australia (IBRA) (version 7)”*. Both of these sub-regions contain Palaeozoic (Ordovician and Silurian) metamorphic rocks with intrusions of granite and acid volcanics, particularly in the South East Corner Coastal Ranges. The western margin of Bateman and surrounding areas of South East Corner Coastal Ranges is folded Devonian sandstone, siltstone, and shales with limited areas of Tertiary basalt and quartz sands. The main valley floors and estuaries contain Quaternary alluvium in Bateman and Quaternary coastal sediments with small areas of alluvium in South East Corner Coastal Ranges (Morgan, 2001) (NPWS 2003).

Soils of the South East Corner Coastal Ranges include acid brown earths and acid red duplex soils, while the soils of Bateman are brown friable earths. The soils are mostly texture contrast soils, which are coarser in the South East Corner Coastal Ranges. Subsoils are red and yellow clays with thin topsoil on metamorphic rocks and coarser deeper grained profiles on granite. In Bateman, red brown structured loams occur on

⁴ Although this term is not commonly or widely used today it has been used commonly during site recordings in this area.

basalt. In South East Corner Coastal Ranges, deep coarse sands occur in granite derived alluvium in the flats with peaty sands in lagoons and swamps. In both subregions, deep siliceous sands occur in Tertiary sands and coastal dunes (Morgan, 2001) (NPWS 2003).

3.5.2 Hydrology and Topography

The South East Corner Bioregion (which contains both Bateman and South East Corner Coastal Ranges subregions) covers the eastern fall of the Great Dividing Ranges to the coast, with the north-south Great Escarpment forming the most prominent feature of it. The topography runs from the plateau above the escarpment across steep hills and gorges towards the coast, where undulating low hills dominate. Differing rates of erosion affect the local topography, forming basins in some areas and outcrops and rounded tors in others. The altitude reaches 750 metres above sea level in South East Corner Coastal Ranges, and is generally less than 250 metres above sea level in Bateman (Morgan, 2001) (NPWS 2003).

Most streams have their headwaters at the escarpment, with the resulting erosion heavily influencing the topography of the coastal side ranges. Some streams have their headwaters on the plateau, running parallel to the coast until they reach a gorge where they cross the escarpment. More detailed patterns of stream direction relate to smaller joints and faults in the bedrock. Both dendritic and rectangular drainage patterns are present. The streams are generally short and active. Streams in the deep gorges often contain rapids and waterfalls carrying large volumes of sand to the valley floors and estuaries (Morgan, 2001) (NPWS 2003).

The study area spans the Clyde River at Nelligen and includes part of the river channel, floodplain and the terraces of the Clyde River, as well as part of the adjoining hills, ridges and moderate slopes of the Clyde Valley and Budawang Range (NSW Government 2002). The portion of the study area located in the Clyde River floodplain could have been subject to one in 100 year flood events however it is possible the landform could retain evidence of Aboriginal occupation that has been buried by flood events and not been destroyed by flood events or river channel migration.

The Clyde River is estuarine at Nelligen and would have provided abundant resources for Aboriginal people camping in the area. There is a minor creek to the east of the Clyde River and north of the Kings Highway which would have supplied fresh water for Aboriginal people.

It is noted elevated alluvial deposits/ridges and floodplains along major waterways have been recorded as favoured by Aboriginal people for burials because it was easier to dig in sand than clay (Hope and Littleton 1995a, 1995b).

3.5.3 Previous Land Use

The Eurobodalla Shire's main population and commercial centres occur at Batemans Bay, Moruya, and Narooma. The remainder of the Shire is predominantly National Parks, state forests, and community lands, with a little less than a quarter being private rural land (RMCG 2014).

European contact in the area occurred in the early 1800s, with permanent settlement becoming widespread by the 1830s and 1840s marking the advent of the cattle and sheep pastoral industry in the region. After a slow start, the pastoral industry was surpassed by the dairy industry, which continues in many areas, particularly around the Bega plains, to this day. In addition to this, pig farming and maize and sorghum production also form important agricultural industries in the area (NPWS 2003). In recent times, there has been an increase in private forestry, rural lifestyle landholders and horticultural uses in the area (RMCG 2014).

Around the same time as the start of pastoral activity, fishing industries were set up along the coast, and the 1830s also saw the development of a significant whaling industry in Twofold Bay near Eden, which continued until the 1920s (NPWS 2003).

Mining for gold, silver, and arsenic occurred in the wooded areas between Batemans Bay and Eden from 1852. This mining, particularly for gold, occurred up until very recently, and formed the basis for many of the towns in the region. Forestry occurred since the 1800s to support the development of the surrounding industries (NPWS 2003). Today forestry predominantly occurs on public land and is considered to be a primary land use in the Eurobodalla Shire (RMCG, 2014).

Nelligen was first charted in 1821 by Lieutenant Robert Johnston, with mapping continuing throughout the mid 1820s. In 1829 Robert Hoddle laid out 640 acres of land at 'Nellican Creek' for an absentee landowner, and soon after other early settlers became attracted by the good timber and boat access to the area (Giovanelli 2011).

The need for access between the coast and Southern Tablelands for transporting goods was highlighted as early as 1835, however work did not begin on a road until 1853. At this time, a workman's camp was started at Nelligen, with the town formally being established in December of 1854. In 1856 The Clyde Mountain Road between Braidwood and Nelligen was opened (Giovanelli 2011).

Up until this point, timber felling was the primary production occurring at Nelligen, however with the opening of the Clyde Mountain Road, regular steamship services started and supplies to and from Braidwood and the surrounding areas were loaded at Nelligen for transport to Sydney and beyond. The population swelled. A ferry service across the Clyde was started in 1878 allowing a shorter route to Batemans Bay for travellers (Giovanelli 2011).

By the 1870s the goldfields began to wane, despite a small local rush in 1894, and Nelligen's trade and growth dropped and businesses started to close. After this, commerce changed and now centred on sawmilling, oystering, and wattlebark processing. Dairy farming in the region also began to increase, with the Clyde River Dairy Farmer Co-operative cheese factory built in 1905. By 1915 Nelligen's principal local production was timber, butter, cheese, maize, pigs, poultry, wattlebark, and gold. Steamship transport steadily began to wane as Bateman's Bay increasingly became the commercial hub of the region (Giovanelli 2011).

By 1954 the ferry was carrying some 7,500 vehicles per year across the Clyde at Nelligen. This number increased to over 30,000 by 1963, causing extensive queues at peak seasons and signalling the need for a bridge. The ensuing Nelligen Bridge was opened in December 1964 (Giovanelli 2011).

3.5.4 Flora and Fauna

The vegetation in the Eurobodalla Shire reflects the diversity in topography, rainfall, and temperature.

Coastal heathlands occur on shallow soils with high salt spray and frequent fire and are dominated by *Hakea* spp., *Melaleuca* spp., coastal rosemary (*Westringia fruticosa*), and dwarfed red bloodwood (*Corymbia gummifera*). Coastal dunes are similar to others along the NSW coast with an inland forest of various *Banksia* spp., bangalay (*E. botryoides*) and blackbutt (*E. pilularis*).

Mangrove estuarine forest occurs along the Clyde River in many locations. Mangrove estuarine forest is dominated by River Mangrove (*Aegiceras corniculatus*) and Grey Mangrove (*Avicennia marina*).

Further inland, vegetation is markedly altitudinal. Dwarfed red bloodwood and spotted gum (*Eucalyptus maculata*) forest occupy lower elevations, with yellow stringybark (*E. muellerana*), grey ironbark (*E. paniculata*), and woollybutt (*E. longifolia*) associations with brown barrel (*E. fastigata*), blue-leaved

stringybark (*E. agglomerata*), messmate (*E. obliqua*) and monkey gum (*E. cypellocarpa*) occurring between 200 and 900 metres above sea level. Above this, narrow-leaved peppermint (*E. radiata*) and snow gum (*E. pauciflora*) dominate.

Latitudinal differences also occur with Sydney peppermint (*E. piperita*), large-fruited red mahogany (*E. pellita*), Sydney blue gum (*E. saligna*) and spotted gum being found in the northern part of the region. Blue box (*E. bauerana*), bangalay (*E. botryoides*), coastal grey box (*E. bosistoana*) and woollybutt are found further to the south. Granite areas commonly support forest red gum (*E. tereticornis*) and blue gum (*E. globulus*), while black ash (*E. sieberi*) can be found in almost all forest environments.

Further south, in the South East Corner Coastal Ranges, the vegetation of the steep slopes differs greatly, with white box (*E. albens*), black cypress pine (*Callitris endlicheri*), and scattered kurrajong (*Brachychiton populneum*) occurring. The tops of these slopes also support rare Acacia dry scrub communities dominated by *Acacia silvestris* and *Eriostemon trachyphyllus*. Estuaries support small areas of stunted mangrove (*Avicennia marina*) and salt marsh, with a fringe of swamp oak (*Casuarina glauca*).

Small patches of temperate rainforest with sassafras (*Doryphora sassafras*) and lilly pilly (*Acmena smithii*) occur along major streams and in sheltered locations. River oak (*Casuarina cunninghamiana*) is also present along most streams.

The area supports 15 endangered ecological communities, 11 threatened fauna species, and 98 threatened flora species. Key threats to these and all remaining native vegetation include loss and degradation of remnant vegetation, invasive plants and animals, loss and degradation of habitat, climate variability, and urban development (RMCG, 2014).

Given the diversity in vegetation and landforms, fauna in the Eurobodalla is also quite diverse. Of note, there are least 16 frog species, 18 reptile species, 199 bird species, 24 mammal species, and 16 bat species (Crowley, 2005).

Within the study area, the vegetation consists of estuarine and wetland communities such as estuarine saltmarsh, floodplain swamp forest, estuarine fringe forest, estuarine mangrove forest, and seagrass meadows; forest communities such as southeast lowland grassy woodland, south coast river flat forest, and Batemans Bay cycad forest; and shrubland (Data provided by Roads and Maritime in Data Package 20140130).

This includes two *Environment Protection and Biodiversity Conservation Act 1999* (Commonwealth) (EPBC Act) listed threatened ecological communities: 'Subtropical and Temperate Coastal Saltmarsh' (vulnerable) and 'Lowland Grassy Woodland in the South East Corner Bioregion' (critically endangered). Both of these communities are also listed under the NSW *Threatened Species Conservation Act 1995* (TSC Act) as endangered (Data provided by Roads and Maritime in Data Package 20140130).

A number of migratory bird species have also been recorded within and near the study area. White-bellied sea-eagle (*Haliaeetus leucogaster*) was the only record within the study area, however eastern great egret (*Ardea modesta*), black-faced monarch (*Monarcha melanopsis*), and satin flycatcher (*Myiagra cyanoleuca*) have been recorded within five kilometres of the study area (Data provided by Roads and Maritime in Data Package 20140130).

There is one record of koala (*Phascolarctos cinereus*) within the study area (EPBC and TSC vulnerable species) and six nearby records of greater glider (*Petauroides volans*) (TSC endangered population). There is no threatened flora within the study area, however there are three records of chef's cap correa (*Correa baeuerlenii*) (EPBC and TSC vulnerable species) nearby (Data provided by Roads and Maritime in Data Package 20140130).

3.5.5 Aboriginal Resources

3.5.5.1 Flora

Table 3.3 provides a list of plants that are likely to have occurred within the broader Eurobodalla region and would have been used for food, medicinal or technological purposes by Aboriginal people before European Settlement.

Table 3.3 Aboriginal Resource Plants Most Likely to have occurred within the study area

Common Name and Scientific Name	Purpose	Reference
Apple berries <i>Billardiera</i> spp.	Food: The ripe fruits were eaten raw; the unripe fruits were roasted then eaten.	Low 1991: 124 Isaacs 1987: 218
Australian blackthorn <i>Bursaria spinosa</i>	Food: Nectar is sucked out of flowers.	Isaacs 1987: 219
Australian bugle <i>Ajuga australis</i>	Medicinal: Bruised and soaked leaves used in some areas to bathe sores and boils.	Hiddins 2003: 14 Isaacs 1987: 231
Banksias <i>Banksia</i> spp.	Food: Nectar from the blossoms provided sugary food, and was sucked from the flower.	Low 1991: 141 Isaacs 1987: 218
Blackwood <i>Acacia melanoxydon</i>	Technology: Bark.	Boot 2002:118
Blady grass <i>Imperata cylindrica</i>	Medicinal: Sharp, unfolded leaves used to cause sneezing by tickling the nose. Technology: The leaves were used to thatch huts and weave dillies.	Low 1991: 114 Isaacs 1987: 237
Blushing bindweed <i>Convolvulus angustissimus</i>	Food: Roots eaten cooked and kneaded to make dough. Medicinal: Decoction used to treat diarrhoea, indigestion, and stomach pain.	Isaacs 1987: 220, 234
Bottlebrush <i>Callistemon</i> spp.	Food: Flowers sucked for nectar.	Isaacs 1987: 219
Bracken <i>Pteridium esculentum</i>	Food: The rhizomes were roasted and eaten, sometimes as a paste. Black skin peeled off and eaten with meat. Medicinal: The sap from the stems of young ferns was used to treat insect bites.	Low 1991: 115 Isaacs 1987: 228

Common Name and Scientific Name	Purpose	Reference
Bulbine lily <i>Bulbine bulbosa</i>	Food: The bland starchy tubers were harvested.	Low 1991: 103 Isaacs 1987: 219
Bulrush <i>Typha</i> spp.	Food: Rhizomes roasted and steamed. After skin removed, the fibres were chewed until the starch was gone. Yong shoots were pulled and eaten raw. Technology: Leftover fibres from the rhizomes were spun into a tough string.	Low 1991: 54 Isaacs 1987: 229
Cabbage tree palm <i>Livistona australis</i>	Food: Vegetable food, young shoots and leaves eaten raw.	Isaacs 1987: 225
Caustic Weed <i>Chamaesyce drummondii</i>	Medicinal: Whole plant boiled and liquid applied for scabies or pains in the chest. Sometimes the latex used to treat sore eyes, and the juice for venereal infection and genital sores.	Isaacs 1987: 236
Chocolate lilies <i>Dichopogon strictus</i> ; <i>D. fimbriatus</i>	Food: The juicy, slightly bitter tubers were eaten.	Low 1991: 105 Isaacs 1987: 218
Common fringed lily <i>Thysanotus tuberosus</i>	Food: The crisp, juicy, almost flavourless tubers and the base of stems were eaten.	Low 1991: 106 Isaacs 1987: 229
Cranberry heath <i>Astroloma humifusum</i>	Food: Apple tasting fruits were eaten.	Low 1991: 132 Isaacs 1987: 218
Cycads CYCADACEAE and ZAMIACEAE (families)	Food: Seeds were leached of their toxins by being soaked in water for days or weeks. The starchy kernels were cracked or crushed, sometimes cooked first, the fragments ground to paste, and then cooked. Surplus seeds could be preserved by being ground and fermented in water.	Low 1991: 138-139 Isaacs 1987: 220
Devil's twines <i>Cassytha</i> spp.	Food: The small fruits are edible, and used as snack foods. Technology: The stems were sometimes used as twine.	Low 1991: 125 Isaacs 1987: 219

Common Name and Scientific Name	Purpose	Reference
Early Nancy <i>Wurmbea</i> spp.	Food: The tiny rounded tubers of some species were eaten; however most seem unpalatable, including the common <i>W. dioica</i> .	Low 1991: 101 Isaacs 1987: 218
Eucalyptus <i>Eucalyptus</i> spp.	Food: Some species roots tapped for water. Medicinal: Leaves burnt and smoke used to treat fevers.	Isaacs 1987: 223, 235
Fig <i>Ficus coronata</i> ; <i>F. obliqua</i> ; <i>F. rubiginosa</i>	Food: The fruit was eaten raw. Technology: The rough leaves were used as sandpaper.	Hiddins 2003: 105 Isaacs 1987: 224
Flax lilies <i>Dianella</i> spp.	Food: Berries eaten (except <i>D. tasmanica</i>). Edible species include <i>D. caerulea</i> , <i>D. longifolia</i> , <i>D. revoluta</i> , <i>D. pavopennacea</i> and <i>D. bambusifolia</i> . Roots are also edible. Technology: Tough leaves of flax lilies used to weave dillies and baskets.	Low 1991: 113 Isaacs 1987: 220
Geebungs <i>Persoonia</i> spp.	Food: Fruits were eaten raw. Fruits ripen on the ground and are best when soft. The skin is discarded and the soft pulp around the seed is consumed. Medicinal: An infusion of the bark and leaves was used to relieve sore throats and colds. A concoction of inner bark and water used to relieve sore eyes. Technology: Fishing lines made from the bark of <i>E. Agglomerate</i> . They were strengthened by soaking the bark in water.	Low 1991: 134 Hiddins 2003: 77 Isaacs 1987: 226
Golden stars <i>Hypoxis pratensis</i> ; <i>H. hygrometrica</i> ; <i>H. nervosa</i>	Food: The roasted tubers of these species were eaten. The other species are irritants and inedible.	Low 1991: 103 Isaacs 1987: 224
Grasstrees <i>Xanthorrhoea</i> spp.	Food: The starch, nectar, shoots, and leaf bases are all edible and all eaten raw. The flower heads were also sometimes soaked in coolamons to make sweet drinks. Technology: The gum served as glue; flower stalks were made into firesticks and spear handles; the resin was used as a fire starter; and the dead trunks served as fire wood, burning hot even when wet.	Low 1991: 140 Hiddins 2003: 80 Isaacs 1987: 229

Common Name and Scientific Name	Purpose	Reference
Grevillea <i>Grevillea spp.</i>	Food: Nectar sucked from flowers.	Isaacs 1987: 224
Ground orchids ORCHIDACEAE (family)	Food: Starchy tubers eaten either roasted or raw. Epiphytic tree orchids such as <i>Dendrobium speciosum</i> have thickened stems, which were chewed or sucked for their starch.	Low 1991: 108 Isaacs 1987: 224, 226
Grey Box <i>Eucalyptus bosistoana</i>	Technology: Bark.	Boot 2002:118
Headache vine <i>Clematis glycinoides</i>	Medicinal: The odour used to treat headaches.	Isaacs 1987: 234
Hovea <i>Hovea spp.</i>	Food: Young pods eaten.	Isaacs 1987: 224
Indigo <i>Indigofera spp.</i>	Medicinal: Roots hammered and placed in fresh or salt water as a fish poison.	Isaacs 1987: 237
Kangaroo apples <i>Solanum spp.</i>	Food: The soft sickly sweet berries were eaten either roasted or raw.	Low 1991: 133 Isaacs 1987: 228
Kangaroo grass <i>Themeda triandra</i>	Food: Seeds ground and baked.	Isaacs 1987: 229
Kurrajong <i>Brachychiton populneus</i>	Technology: Bark.	Boot 2002:118
Lance beard heath <i>Leucopogon lanceolatus</i>	Food: Fruits were eaten.	Low 1991: 130

Common Name and Scientific Name	Purpose	Reference
Lawyer vine <i>Smilax australis</i>	Medicinal: Extract used to treat sore eyes.	Isaacs 1987: 239
Lilly pilly <i>Syzygium smithii</i>	Food: The fruits were widely eaten.	Isaacs 1987: 217
Long-leaf mat-rush <i>Lomandra longifolia</i>	Food: The white inner leaf bases and seeds were eaten raw. Technology: The tough leaves were split into strips and woven into dillies and mats.	Low 1991: 118 Isaacs 1987: 225
Messmate <i>Eucalyptus obliqua</i>	Technology: Bark.	Boot 2002:118
Milkmaids <i>Burchardia umbellata</i>	Food: The crisp juicy tubers eaten	Low 1991: 101
Mistletoes Loranthaceae and Visaceae (families)	Food: The fruits of many species were eaten as a snack. Mainly Amyema and Lysiana species.	Low 1991: 126 Isaacs 1987: 218
Mountain she-oak <i>Allocasuarina verticillata</i>	Food: Leaves and young cones chewed raw when thirsty	Isaacs 1987: 217
Nardoo <i>Marsilea drummondii</i>	Food: In some areas, the seeds would be collected and ground into flour.	Hiddins 2003: 2
Native cherry <i>Exocarpos cupressiformis</i>	Food: The fruits were eaten. Technology: wood.	Low 1991: 137 Isaacs 1987: 223
Native grape <i>Cissus hypoglauca</i>	Food: The grapes eaten raw. Vines used as a water source.	Hiddins 2003: 138 Isaacs 1987: 220

Common Name and Scientific Name	Purpose	Reference
Native plantain <i>Plantago</i> spp.	Medicinal: After heavy rains the seeds swell into balls of jelly (mucilage) which was used as a cure for constipation	Low 1991: 97
Native sarsaparilla <i>Smilax glycyphylla</i>	Medicinal: Leaf infusion used as general tonic and remedy and to treat coughs and chest troubles. Also a good source of vitamin C.	Isaacs 1987: 239
Pale-fruit ballart <i>Exocarpos strictus</i>	Food: The fruits were eaten.	Low 1991: 137
Pale grass lily <i>Caesia calliantha</i> ; <i>C. parviflora</i>	Food: The roots of both species were eaten.	Low 1991: 102
Paperbark <i>Melaleuca</i> spp.	Medicinal: Leaf oils used in treatment of colds. The flexible bark used as bandages.	Isaacs 1987: 237
Pigface <i>Carpobrotus</i> spp.	Food: The fruits were eaten and the salty leaves were sometimes used in place of salt with meat. Medicinal: Juice used to treat sandfly bites, and a poultice of crushed leaves used on burns and scalds.	Low 1991: 30 Hiddins 2003: 16
Pink-flowered native raspberry <i>Rubus parvifolius</i>	Food: The fruits were eaten. Medicinal: Decoction of young leaves used to treat 'bad' belly.	Low 1991: 127 Isaacs 1987: 228, 238
Prickly broom heath <i>Monotoca scoparia</i>	Food: Fruits were eaten.	Low 1991: 129
Red ash <i>Alphitonia excelsa</i>	Medicinal: Young leaf tips chewed for upset stomach and decoction of bark and wood used for muscle pains and toothaches.	Isaacs 1987: 231

Common Name and Scientific Name	Purpose	Reference
Rounded noon-flower <i>Disphyma crassifolium</i> <i>subsp. Clavellatum</i>	Food: Fleshy leaves eaten raw or baked.	Isaacs 1987: 220
Sallee <i>Eucalyptus stellulata.</i>	Technology: wood.	Boot 2002:118
Saw-sedge <i>Gahnia aspera</i>	Food: The seeds were pounded and ground to form flour that was used to make damper.	Hiddins 2003: 11
Sedge Carex sp.	Food: The flower stems were eaten.	Boot 2002:118
Sour currant-bush <i>Leptomeria acida</i>	Food: The fruits were eaten.	Low 1991: 135
Stinging nettle <i>Urtica incisa</i>	Medicinal: Leaves used to cause a nettle rash in areas suffering from rheumatism. For sprains, an infusion was used to bathe affected part. Boiled leaves also used as a poultice.	Isaacs 1987: 240
Stringybark <i>Eucalyptus muellerana.</i>	Technology: Bark and wood.	Boot 2002:118
Tall spike rush <i>Eleocharis sphacelata</i>	Food: The starch in the young underground stems eaten.	Low 1991: 53 Isaacs 1987: 220
Tree fern Cyathea spp. And Dicksonia spp.	Food: The upper trunk contains a core of white starch which was eaten raw or roasted. The croziers (curled top of the young fern) were also eaten.	Low 1991: 86 Isaacs 1987: 220
Twining fringed lily <i>Thysanotus patersonii</i>	Food: The watery tubers eaten.	Low 1991: 107

Common Name and Scientific Name	Purpose	Reference
Vanilla lilies <i>Arthropodium minus</i> ; <i>A. milleflorum</i>	Food: The juicy, sweetish or bitter tubers eaten.	Low 1991: 102 Isaacs 1987: 218
Water ribbons <i>Triglochin</i> spp.	Food: Bland starchy tubers were roasted, pounded and fed to teething babies and the elderly. The raw or roasted tubers were also eaten by adults, and were probably an important staple food throughout much of Australia.	Low 1991: 49
Wattles <i>Acacia</i> spp.	Food: The gum of pale species was eaten and often blended with water or nectar to make drinks. Acacia seeds are exceptionally nutritious and were also eaten. Medicinal: Inner bark soaked or boiled and liquid drunk as a cough medicine.	Low 1991: 152 Isaacs 1987: 217, 231
Wild sorghum <i>Sorghum leiocladum</i>	Food: Seeds ground and baked.	Isaacs 1987: 228
Wombat berry <i>Eustrephus latifolius</i>	Food: The burst berries contain a small amount of crisp white pulp which was eaten. The tubers were also eaten, though less often and not after dry weather.	Low 1991: 122
Yellow wood sorrel <i>Oxalis</i> spp.	Food: Sour, lemony leaves of wood sorrel were sometimes eaten by Aboriginal people. Excellent salad herb. Some tap roots dug as food, resembling a carrot and tasting like coconut.	Low 1991: 99 Isaacs 1987: 226

3.5.5.2 Fauna

Table 3.4 provides a list of fauna that are likely to have occurred within the broader Eurobodalla region and would have been used for food or technological purposes by Aboriginal people before European Settlement.

Table 3.4 Aboriginal Faunal Resources Most Likely to Have Occurred within the Study Area

Common Name and Scientific Name	Purpose	Reference
Eel <i>Alabes dorsalis</i>	Given to wife's father, food source	Howitt 1904: 756-758
Echidna <i>Tachyglossidae</i>	Hunted for its meat	Howitt 1904: 756-758
Emu <i>Dromaius novaehollandiae</i>	Cooked where killed, unless near camp, intestines, liver, gizzard eaten by hunter, rest distributed	Howitt 1904: 756-758
Fish	Part of catch shared	Howitt 1904: 756-758
Freshwater mussel <i>Mytilis edulis</i>	Eaten raw or cooked over hot ashes	Hiddins 2003: 165
Gould's goanna <i>Varanus gouldii</i>	Cooked whole over ashes or hot coals and the intestines searched for eggs	Hiddins 2003: 158
Kangaroo <i>Macropus sp.</i>	Butchered, shared amongst men and cooked before returning to camp	Howitt 1904: 756-758
Koala <i>Phascolarctos cinereus</i>	Cooked where caught or carried home raw, depending on distance, before being distributed	Howitt 1904: 756-758
Lace monitor <i>Varanus varius</i>	Shared by all in camp	Howitt 1904: 756-758

Common Name and Scientific Name	Purpose	Reference
Lerp scale <i>Psylla</i> spp. Especially <i>Psylla eucalypti</i> , and <i>Glycaspis</i> spp.	Scraped off the leaves and eaten for a sugary hit. Also used to make drinks by mixing it with water.	Hiddins 2003: 154
Mangrove worm <i>Teredo</i> spp	Chopped from the wood and eaten raw	Issacs 1987:175
Native bee sugarbag <i>Tetragonula carbonaria</i>	Highly prized and never served with anything else the sugarbag was scooped out with the larvae and bees	Hiddins 2003: 155
Possum <i>Trichosurus</i> sp. <i>Pseudocheirus peregrinus</i> sp.	Not butchered but given away whole if more than one caught, if only one, is kept by the hunter. Skin rugs made from dried pelts.	Howitt 1904: 756-758
Shellfish	Shared food source	Howitt 1904: 756-758
Stingrays <i>Dasyatis</i> spp., <i>Himantura</i> spp	Speared and either roasted or skinned and grilled. The barb from the tail was also used as a knife or spear point	Hiddins 2003: 151
Swan <i>Cygnus olor</i>	One kept by the hunters, others distributed. Food source	Howitt 1904: 756-758
Wombat <i>Vombatidae</i>	Intestines removed, animal skewered and taken to camp for distribution	Howitt 1904: 756-758
Yabby <i>Cherax destructor</i>	Eaten cooked	Hiddins 2003: 175

3.6 Implications for the Study Area

- Portions of the top soil layer within the study area would have been previously disturbed/removed during the developmental history and through associated erosion
- It is likely the ridge slopes and crests could still retain spatial integrity but it is unlikely there is still stratigraphic integrity due to the previous disturbance
- It is likely the alluvial landforms within the study area would still retain spatial integrity but not stratigraphic integrity due to the sandy nature of the deposit
- The portion of the study area located on Clyde River could have been subject to one in 100 year flood events however it is possible the landform could retain evidence of Aboriginal occupation that has been buried by flood events and not been destroyed by flood events or river channel migration
- The study area is located close to the estuarine Clyde River which would have provided a diverse array of floral and faunal resources for Aboriginal people before disturbance
- There is a minor creek to the east of the Clyde River and north of the Kings Highway which would have supplied freshwater for Aboriginal people
- These resources would have enabled Aboriginal people to camp in the area in small groups for a relatively long period of time
- The alluvial landforms near the Clyde River would also have supported larger groups for shorter occupation periods
- It is likely the ridges and associated slopes with the study area would show evidence (low density artefact scatters) of travel by Aboriginal people.

3.7 Predictive Model

This section of the report provides a predictive model for site type, site location and site preservation within the study area. The predictive model is based on the Aboriginal cultural, ethnographic and archaeological context and the environmental context (refer to **Section 3.1 to 3.6**) of the study area. This information is used to inform the survey methodology and significance assessment process. Please note (for the purpose of this predictive model, survey and assessment) a potential archaeological deposit (PAD) is defined as deposits that have the potential to retain either stratigraphic or spatial integrity. They are not simply areas that can be predicted to have subsurface artefacts (though the term is often used in this manner).

The following is predicted:

- Low density and complexity artefact assemblages may occur within the subsurface context on the ridge and ridge slopes
- PADs are most likely to be recorded on spur slopes
- Isolated finds would most likely be found on the slopes throughout the study area

- Stone artefacts are most likely to be flakes manufactured from silcrete and volcanic material but may include; cores (including bipolar), broken flakes, flaked pieces, hammerstones, blades and broken blades; produced from quartz, chert, quartzite, sandstone or porphyry
- Middens could be found in close proximity of the Clyde River on slopes and flats
- Burial sites could occur in the foreshore of the Clyde River
- Previous disturbance and development of the study area is most likely to have disturbed the top layers of the natural ground surface and resulted in erosion but deposits below this disturbance/erosion could potentially contain sites retaining some archaeological integrity.

4.0 Summary of the Background Information

4.1 Archaeological Survey

The study area inspection was conducted by Les Simon (BBLALC), Kym McNamara (Senior Archaeologist, Umwelt), Timothy Webster (Roads and Maritime), Supriya Mehta (Engineering Undergraduate Cadet, Roads and Maritime) and Jeffery Nelson (Roads and Maritime) on 7 October 2015. The inspection was conducted in warm overcast conditions.

4.1.1 Methodology

The inspection of the study area was conducted on foot. Photographs were taken of the study area with location data recorded using a hand-held GPS and compass. Information recorded during the survey included:

- Landform
- Vegetation
- Aboriginal resources
- Aspect
- Gradient
- Outlook
- Soil description
- Soils aggrading/degrading/stable
- Geology
- Extent of exposures
- Visibility
- Distance to nearest watercourse/permanence of watercourse
- The effects of previous land use and disturbance
- Any sites or PAD within the study area and
- Any information provided by the key Aboriginal stakeholder about the cultural significance or values of the area.

4.1.2 Summary of Archaeological Survey Results

- Ground surface visibility was relatively low throughout the project except for within the riverbank landform
- The level of exposure throughout the study area was low except within the riverbank landform
- Roads and Maritime Nelligen PAD1 was identified within the ridge slope landform on the eastern side of the Clyde River to the east of the Kings Highway. The PAD is about 10 by 20 metres in area
- Two trees identified by the Aboriginal stakeholder as having the potential to be burial markers were identified north of the Kings Highway and west of Clyde River not within the Roads and Maritime Nelligen PAD1 area
- No sites were identified through the survey
- Aboriginal resources were found throughout the study area
- No fauna was observed throughout the survey
- No suitable raw material sources were identified during the survey.

4.1.3 Summary of Significance

The Aboriginal significance of Roads and Maritime Nelligen PAD1 was assessed by the key stakeholder as moderate.

The archaeological significance of Roads and Maritime Nelligen PAD1 was assessed as moderate on a local level and low on a regional level.

Overall, Roads and Maritime Nelligen PAD1 was assessed as having low to moderate archaeological significance.

The full Aboriginal archaeological survey report is included in **Appendix 4**.

4.2 Subsurface Testing

The subsurface testing was conducted with two sites officers from the Murra Bidgee Mullangari Aboriginal Corporation, Kym McNamara (Senior Archaeologist, Umwelt), and Kirwan Williams (Archaeologist, Umwelt) on 11 April 2016. The subsurface testing was conducted in hot sunny conditions.

4.2.1 General Excavation Methodology

Test excavations were undertaken manually and in accordance with the Code of Practice (DECCW 2010a) adhering to the methodology provided below.

- The test excavation area was marked out as a series of 50 centimetre by 50 centimetre (test pits)
- Each test pit was excavated using 5 centimetre spits.
- Each test pit was excavated to the top of the B-horizon

- A soil sample was collected from each spit of the four test pits for geomorphic analysis as required.
- Photographic records of the stratigraphy/soil profile were completed for each test pit
- Excavated materials were dry sieved through nested 2 and 5 millimetre gauge sieves in order to ensure that all artefactual material was retained
- The artefacts were collected, bagged and labelled
- All artefacts collected were subject to attribute analysis
- At the completion of the excavation the test excavations were backfilled

No archaeological features or potential human skeletal material (single bones or an intact burial) were located within any excavated area.

4.2.2 Summary of Subsurface Testing Archaeological Excavation Results

A total of 14 artefacts were recovered from the test excavations at Roads and Maritime Nelligen PAD1. This number was comprised of eight broken flakes, three complete flakes, two cores and one flaked piece of which all were manufactured from quartz. Artefacts were excavated from each of the four test pits.

As a result of the test excavations at Roads and Maritime Nelligen PAD1 and the discovery of the 14 artefacts the site has been renamed Roads and Maritime Nelligen Artefact Scatter 1.

The assemblage has confirmed a low density and low complexity selection of artefacts exist within the site area.

4.2.3 Summary of Significance

The Aboriginal significance of Roads and Maritime Nelligen AS1 was assessed by the key Aboriginal stakeholder as moderate.

The archaeological significance of Roads and Maritime Nelligen AS1 was assessed as low on both a local and a regional level. The level of significance has been reduced after subsurface testing because the site was found to be disturbed, there was no assemblage complexity and quartz is locally available thus there would be little learned by further investigation.

Overall, Roads and Maritime Nelligen AS1 was assessed as having low archaeological significance.

The full subsurface testing archaeological excavation report is included in **Appendix 6**.

5.0 Cultural Heritage Values and Statement of Significance

This section of the report assesses the Aboriginal cultural heritage values and significance of the study area. Whilst archaeological significance is a scientific value which can be determined by archaeologists based on the characteristics of the landscape and archaeological evidence from the area, Aboriginal cultural heritage significance can only be determined by members of the Aboriginal community. Even though an area may not have Aboriginal archaeological sites, it may still have cultural significance to Aboriginal communities.

No sites were found throughout the survey. However Roads and Maritime Nelligen PAD1 was identified and the possible significance of the PAD was assessed during the PACHCI Stage 2 process. Subsequent subsurface testing and the salvage of Aboriginal stone artefacts has meant that the PAD has now been renamed Roads and Maritime Nelligen Artefact Scatter 1 (Roads and Maritime Nelligen AS1).

As stated above, Aboriginal cultural heritage significance can only be assessed by the relevant Aboriginal community groups. For a particular site or area, it is often at a different level than the assessed archaeological significance. The Aboriginal significance of the PAD/Site is derived from their perceived cultural heritage sensitivity. Perceived cultural heritage sensitivity is the value and importance which the Aboriginal community places on a site, area or location. For example, a ceremonial site may be considered to be more culturally sensitive than an open campsite, or, a grinding groove site would probably have a higher cultural heritage value than an isolated find.

5.1 General Study Area

The survey of the area by the BBLALC Aboriginal stakeholder highlighted the cultural heritage sensitivity of Clyde River itself. The river was identified as a valuable resource which would have provided a focus for Aboriginal occupation of the area. Thus, the Aboriginal stakeholder indicated he wanted Roads and Maritime to minimise the impact of the bridge replacement project on the actual river.

5.2 Roads and Maritime Nelligen PAD1

The assessment provided by the representative of the BBLALC present during the survey, identified Roads and Maritime Nelligen PAD1 as being of moderate Aboriginal cultural heritage significance. This level of significance was identified based on the following:

- It is located along an identified travel route with an outlook over the Clyde River
- There are known but unrecorded artefact scatters to the east
- Aboriginal resource plants were recorded in the area.

5.3 Roads and Maritime Nelligen AS1

Input was sought from all registered Aboriginal parties on the significance of the Roads and Maritime Nelligen AS1 site in light of the subsurface excavation results included in **Appendix 6**.

The registered Aboriginal Stakeholders did not provide a revised the level of significance for Roads and Maritime Nelligen AS1 following the subsurface testing and subsequent Aboriginal Focus Group meeting. As such the Aboriginal significance of Roads and Maritime Nelligen AS1 remains moderate as identified by the key Aboriginal stakeholder from BBLALC.

6.0 Impact Assessment

The extent of the required investigation area is from 900 metres east of the existing bridge to 950 metres west of the existing bridge as measured along the Kings Highway. The general proposed work involved is detailed in **Section 1.2**.

The following information will outline the proposed impact (harm) on Roads and Maritime Nelligen AS1.

6.1 Roads and Maritime Nelligen AS1

Type of harm:

- Excavation of cut embankments
- Relocation of utilities
- Clearing of vegetation
- Landscaping/revegetation on completion of the road work.

Degree of harm:

- Total removal of site

Consequence of harm:

- Total loss of any archaeological material it may contain.

6.2 Unknown impact

Please note the locations of the following impacts are not known but will be located wholly within the current study area and will not impact on any known sites or areas of archaeological potential:

- Temporary stockpile sites
- Temporary compound sites
- Temporary sediment basins.

6.3 Ecologically Sustainable Development

Ecologically sustainable development (ESD) is development that improves the total quality of life, both now and in the future, in a way that maintains the ecological processes on which life depends. The principles of ESD have been an integral consideration throughout the development of the project.

ESD requires the effective integration of economic and environmental considerations in decision-making processes. The main principles supporting the achievement of ESD are discussed below.

6.3.1 The precautionary principle

The preferred option for the bridge design was recommended through a Value Management (VM) workshop including Roads and Maritime, Eurobodalla Shire Council, Aboriginal, and community stakeholders. The VM workshop considered functional, socio economical and environmental (including heritage) criteria. The preferred option was recommended as it provided the best value for money option and had fewer impacts on private property and heritage items in Nelligen when compared with the southern bridge replacement option. In terms of Aboriginal heritage, Roads and Maritime chose as much as possible to put the approaches to the bridge in previously disturbed areas including a power easement. This recommendation was subject to resolution of constructability issues and optimising the bridge configuration.

To resolve the above two issues two new northern bridge replacement options were developed, one with a straight between the two curves on the bridge (Northern Option 2) and the other with a straight bridge deck (Northern Option 3). While Northern Option 3 would improve constructability of the bridge it had an additional 0.7 hectares of direct impacts to SEPP14 wetlands and threatened ecological communities when compared with Northern Option 2. Northern Option 2 was selected to proceed as the preferred option for concept design.

6.3.2 Intergenerational equity

The assessment process has provided all registered Aboriginal party participants with the opportunity to provide information in relation to the contemporary and past cultural value of Roads and Maritime Nelligen AS1 and to identify those resources and landscape values that are/have been important to them through the archaeological assessment process and from their oral history. Past and contemporary cultural values have been incorporated into the significance assessment and have been used to justify/support the various preferred management options.

In addition, it is proposed that ongoing awareness and passing on of traditional knowledge will be enabled within the community through access for teaching purposes to the artefacts associated with Roads and Maritime Nelligen AS1.

6.3.3 Cumulative Impact

Roads and Maritime Nelligen AS1 is a low density, low complexity artefact scatter recorded on a ridge crest. Fourteen artefacts were located during subsurface testing of the site. The artefacts included eight broken flakes, three complete flakes, two cores and one flaked piece of which all were manufactured from quartz.

The majority of the sites recorded locally within five kilometres of the study area are low density artefact scatters. The sites are more commonly recorded in association with ridges, ridge crests and ridge slopes. The most common artefact type is flake; but broken flakes, flaked pieces, chips⁵, hammerstones, cores (including blade, bipolar and fragments), flaked pieces, manuports and a broken blade have been recorded. There is not a single dominant raw material however quartz, volcanic and silcrete are most commonly used.

Since the majority of the extant sites recorded in the vicinity of the project area are of a similar nature and recorded on a similar landform it is determined that the cumulative impact of the Nelligen Bridge replacement project is low.

⁵ Although this term is not commonly or widely used today it has been used commonly during site recordings in this area.

7.0 Management and mitigation measures

Requirement 11 of the Code of Practice (2010a) requires that various options for management of archaeological impacts are formulated and evaluated. Justification must be provided for those that are recommended.

A range of management options have been outlined and evaluated below in relation to the study area that include varying levels of mitigation of identified or potential harm. The recommendation of management options is guided by the Aboriginal significance/sensitivity and archaeological significance of the study area. These management options have been developed from an archaeological perspective.

The registered Aboriginal parties were given an opportunity to comment on and inform the management options outlined in this report.

7.1 Option 1 Conservation of Site and Possible Burial Marker Trees

Option 1 would involve the conservation of Roads and Maritime Nelligen AS1.

Option 1 would also involve the conservation of two trees identified by the key Aboriginal stakeholder from BBLALC as having the potential to be burial markers and a buffer of five metres⁶.

The project would be able to proceed with the conservation of two trees identified by the key Aboriginal stakeholder as having the potential to be burial markers and a buffer of five metres.

Option 1 has been evaluated and is not considered a recommended option due to the following:

- The project would not be able to proceed with Site (Roads and Maritime Nelligen AS1) conservation
- The Site has been identified as being of low archaeological significance and consequently, it is not archaeologically valid to propose a full conservation outcome for the Site within the study area.

7.2 Option 2 Salvage of Site under AHIP and Conservation of Possible Burial Marker Trees

Option 2 would involve further salvage of Roads and Maritime Nelligen AS1. Option 2 would require that the further salvage be completed under an AHIP.

Option 2 would also involve the conservation of two trees identified by the Aboriginal stakeholder as having the potential to be burial markers and a buffer of five metres⁷.

The project would be able to proceed with the conservation of two trees identified by the Aboriginal stakeholder as having the potential to be burial markers and a buffer of five metres.

Option 2 has been evaluated and is not considered a recommended option due to the following:

- Based on the results of the subsurface testing further investigation is not warranted from an archaeological perspective.

⁶ Located north of the Kings Highway and west of Clyde River not within the Roads and Maritime Nelligen AS1 area.

⁷ Located north of the Kings Highway and west of Clyde River not within the Roads and Maritime Nelligen AS1 area.

7.3 Option 3 Impact Site Without Further Investigation under AHIP and Conservation of Possible Burial Marker Trees

Option 3 would involve Roads and Maritime proceeding with the project without conducting further investigation within Roads and Maritime Nelligen AS1. Option 3 would require that Roads and Maritime works within the Site area be completed under an AHIP.

Option 3 would also involve the conservation of two trees identified by the Aboriginal stakeholder as having the potential to be burial markers and a buffer of five metres⁸.

The project would be able to proceed with the conservation of two trees identified by the Aboriginal stakeholder as having the potential to be burial markers and a buffer of five metres.

Option 3 has been evaluated and is considered a preferred option due to the following:

- Option 3 recognises the low significance of the site from an archaeological perspective and allows for the Roads and Maritime to proceed with the project.

⁸Located north of the Kings Highway and west of Clyde River not within the Roads and Maritime Nelligen AS1 area.

8.0 Recommendations

The management recommendations outlined below have been prepared with regard to:

- Respect and consideration of the views of the Aboriginal parties
- The archaeological context of the Nelligen region
- The findings of the survey and subsurface testing
- The moderate cultural significance assessment of the area by the key Aboriginal stakeholder from BBLALC
- The overall low archaeological assessment of Roads and Maritime Nelligen AS1
- The overall low research potential of the Roads and Maritime Nelligen AS1
- Two trees identified by the BBLALC key Aboriginal stakeholder as having the potential to be burial markers
- Current cultural heritage legislation
- Providing clear guidance about appropriate management and protection of cultural heritage values

The following is recommended:

- That Option 3 be adopted for the project
- That no further archaeological salvage be conducted at Roads and Maritime Nelligen AS1
- Roads and Maritime should apply to the Director-General of OEH for an AHIP in accordance with Section 90 of the NPW Act, with this AHIP to cover the entirety of Roads and Maritime Nelligen AS1 and the entire project area. The AHIP should extend for five years to allow Roads and Maritime sufficient time to complete the works within the AHIP area.
- Roads and Maritime ensure the two trees identified by the key Aboriginal stakeholder as having the potential to be burial markers have a buffer of five metres protected during construction work to ensure they are not adversely impacted.
- Roads and Maritime should ensure that its employees and contractors are aware that it is an offence under Section 86 of the NPW Act to harm or desecrate an Aboriginal object unless that harm or desecration is the subject of an AHIP
- The proposed works can proceed in the remainder of the study area without any further archaeological requirements.
- In the event that suspected human skeletal material be identified within the project area, all works should cease immediately and the NSW Police Department, OEH and the registered Aboriginal parties should be contacted so that appropriate management strategies can be identified.

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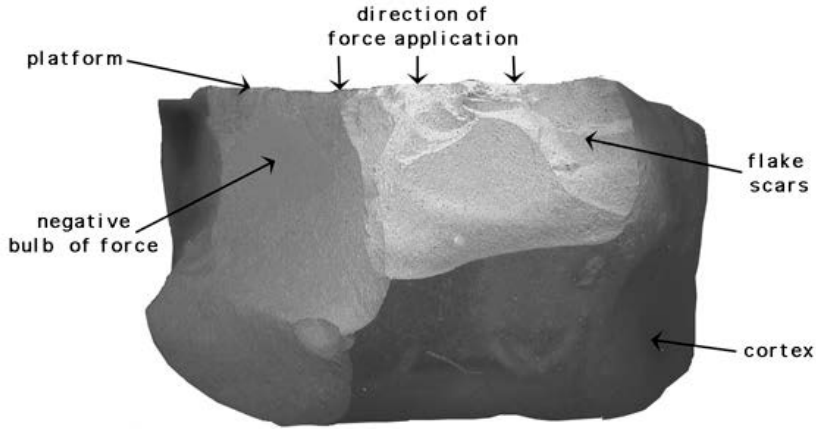



APPENDIX 1

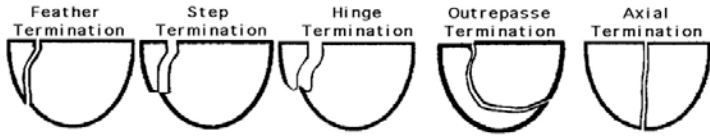
Glossary

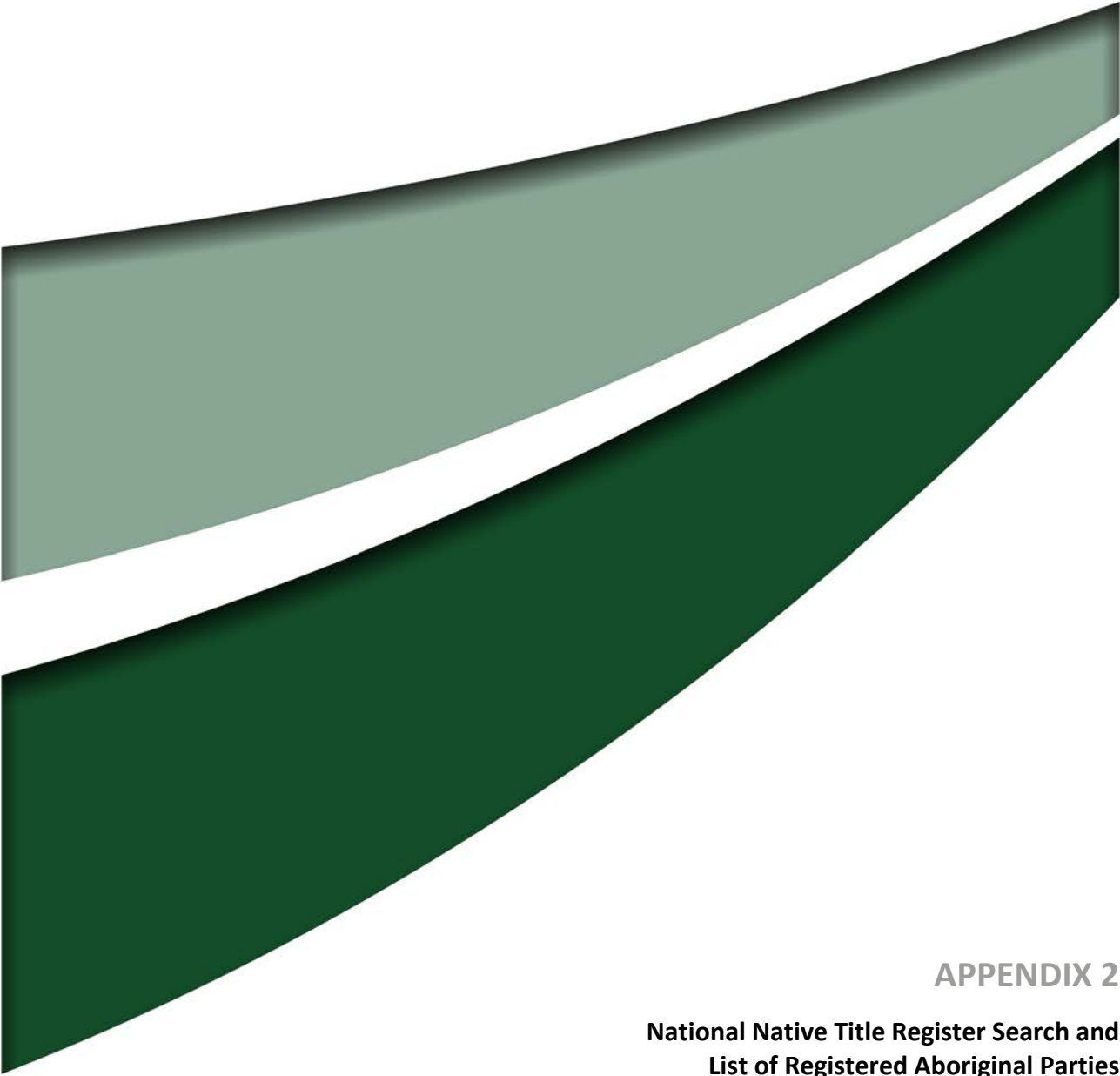
Appendix 1 – Glossary

archaeological integrity	The archaeological integrity of a site depends on the degree of disturbance which it has undergone. The more a site is disturbed the less integrity it and its contained artefact assemblage retain.
Aspect	In relation to an open site the aspect is the direction that affords the most open view eg. when on a northerly facing slope your aspect will generally be to the north, on a flat plain your aspect will be a full 360° around you; in relation to a rockshelter, the aspect is the direction viewed when looking out from the front of the rockshelter. The aspect of a rockshelter (along with the shape of the rockshelter opening) will affect factors such as the degree of shelter from the sun, rain and prevailing winds at different times of the day and at different times of the year.
Assemblage	In stone artefact analysis the term assemblage refers to all the artefacts being analysed. These may be from a single site, from a section of a site, from a number of sites etc.
attribute analysis	Aboriginal stone artefacts have a number of attributes (features) that result from human behaviours. These features are measured/recorded and analysed both within assemblages and between assemblages to assist with understanding the how Aboriginal people used the landscape and to determine differential patters of use.
Bedrock	The consolidated rock beneath the soil and/or beneath the deposits in a rockshelter.
Blade	A specialised flake which is either triangular or trapezoid in cross-section and which has parallel or sub-parallel lateral margins. There can be one or more dorsal ridges which are generally parallel to the long axis of the blade. Blades are generally struck from a specialised core which has been set up for the continued production of blades (refer to blade core). Blades by definition are more than twice as long as they are wide. The manufacture of thin blades allows a knapper to make more flakes from a single core, thus, producing more cutting edges from the same amount of raw material.
Blade core	In order to produce blades a knapper requires a specialised core which has a series of parallel ridgelines running down its side. In order to set up a core in this manner a knapper must first produce one blade from the core. The parallel ridgelines set up by this blade removal are then used for the production of the next blade (refer to knapping) and so on. This form of blade production generally results in a core which is conical or prismatic in shape. Large flakes can also be used to produce blades. In this case the knapper removes one of the margins of the flake, generally by striking the platform of the flake with the hammerstone. This results in the removal of a long narrow flake (blade). This form of retouch is often called tranchet retouch.
Chalcedony	A cryptocrystalline type of silica formed through the precipitation of silica in crack of other rocks as a result of igneous activity. The colour depends on impurities present in the chalcedony. Artefacts are translucent on their edges when held to the light. The most common sources of chalcedony are as inclusions in basalt pebbles in rivers or creeks.
Chert	A cryptocrystalline rock containing very fine-grained interlocking quartz. Chert is hard and splintery rock with a glassy lustre; generally grey but sometimes white, green, red or black.

<p>core</p>	<p>A piece of raw material from which flakes have been struck. Cores will always exhibit at least one negative flake scar (refer to Figure 1).</p>  <p>Figure 1 - A single platform core</p>
<p>deposits</p>	<p>In an excavation the term deposit or deposits refers to the material excavated. This includes the soil and all its contents.</p>
<p>Flake</p>	<p>A piece of stone detached from a larger mass (generally termed a core) by the application of force. Attributes of whole flakes are platforms, terminations, lateral margins, a ventral and dorsal surface and a bulb of force.</p>
<p>Flake scar</p>	<p>A concave surface which has resulted from the removal of a flake.</p>
<p>Geomorphic/ geomorphology</p>	<p>Geomorphology is the scientific study of landforms and how they were created. When assessing Aboriginal site formation processes the geomorphic history of the location must be understood in order to recognise the site formation processes that can be related to human behaviour/actions and those that have come about due to natural processes.</p>
<p>Hammerstone</p>	<p>A stone used to strike another piece of stone (a core) to remove flakes. Often a rounded pebble.</p> 
<p>hearth</p>	<p>Term used by archaeologists to refer to a fire place.</p>

Holocene	The geological epoch that encompasses the last 10,000 years of the earth's history.
Igneous	A solid crystalline or glassy rock formed by crystallisation from a magma.
Lateral	The lateral margins of a flake are the left and right margins which run from the platform of the flake to its termination.
Manuport	A natural object such as a river cobble, that has been moved through the landscape by humans but remains unmodified.
pH	The pH of soil/sediments refers to their acidity or alkalinity. A pH below 7 indicates acidity. A pH above 7 indicates alkalinity. A pH of 7 indicates that the soil/sediment is neutral. Organic materials such as bone and plant do not preserve well under acidic conditions, while they may be preserved for many thousands of years under neutral to slightly alkaline conditions. Other variables also affect the preservation of organic materials. For example, the moisture conditions need to be stable. That is, either constantly wet or constantly dry. If moisture levels fluctuate organic materials are unlikely to be preserved.
Quartz	A silicate mineral which is normally colourless or white but may be any colour depending on the amount and type of impurities it contains. Quartz is very hard and when crystalline will flake with a conchoidal fracture. However, crystalline quartz is rare and most quartz breaks with a ubiquitous fracture. That is, it breaks along faults and cracks in the rock. Quartz is often found as pebbles in rivers or in conglomerates and as reefs or veins in igneous areas.
Quartzite	A white, pink, brown or grey metamorphic rock formed through geological processes acting on sandstone. Contact metamorphism results in a hard crystalline rock made up of almost 100 per cent quartz. It can be found as cobbles in river and creeks or in areas of basalt flows or igneous intrusions. Quartzite pebbles are ideal for use as hammer stones due to their hardness.
Sandstone	A sedimentary rock generally composed of quartz grains cemented by a softer silica, clay, calcium carbonate or iron oxide. Sandstone is generally used for grindstone and is not suitable for flaking unless it has been metamorphosed to form a quartzite.
Silcrete	An indurated rock consisting primarily of quartz, where the original minerals in the rock have been replaced by silica from solution. Silcrete is generally grey to grey brown and also orange, pink, yellow or red.
Soil profile	The soil profile refers to layers within the soil. An intact soil profile that has not been subject to erosion will have a thin humic top layer referred to as the O horizon. Beneath the O horizon is the A1 soil horizon which is generally less humic than the O horizon but I within the root zone. Beneath the A1 is the A2 which is generally slightly bleached and lighter in colour than the A1. Beneath the A2 is the B horizon (the clay). In some instances the A2 may merge with decomposed bedrock (C Horizon). It is noted that often soil horizons have been truncated by erosion and all or part of the horizon may be missing.
Spatial integrity	The term spatial integrity refers to the potential for the artefactual material within the stratigraphic units to remain in its original pattern of discard and not to have moved horizontally. In this case artefacts can move vertically down through the stratigraphic units.
stratigraphic integrity	The term stratigraphic integrity refers to the potential for the artefactual material within the stratigraphic units to remain in its original position of discard and not have moved vertically or horizontally within the units.
stratigraphic units	The term stratigraphic unit refers to the sandy deposits exposed within the excavations that have been differentiated by either their colour and/or degree of compaction and/or contents.

<p>termination</p>	<p>The termination of the flake is that part of the flake that was the last to be detached from the core. Terminations vary depending on the amount of force and the direction of force loaded into the core. The figure below shows five different terminations.</p> <div style="text-align: center;">  </div>
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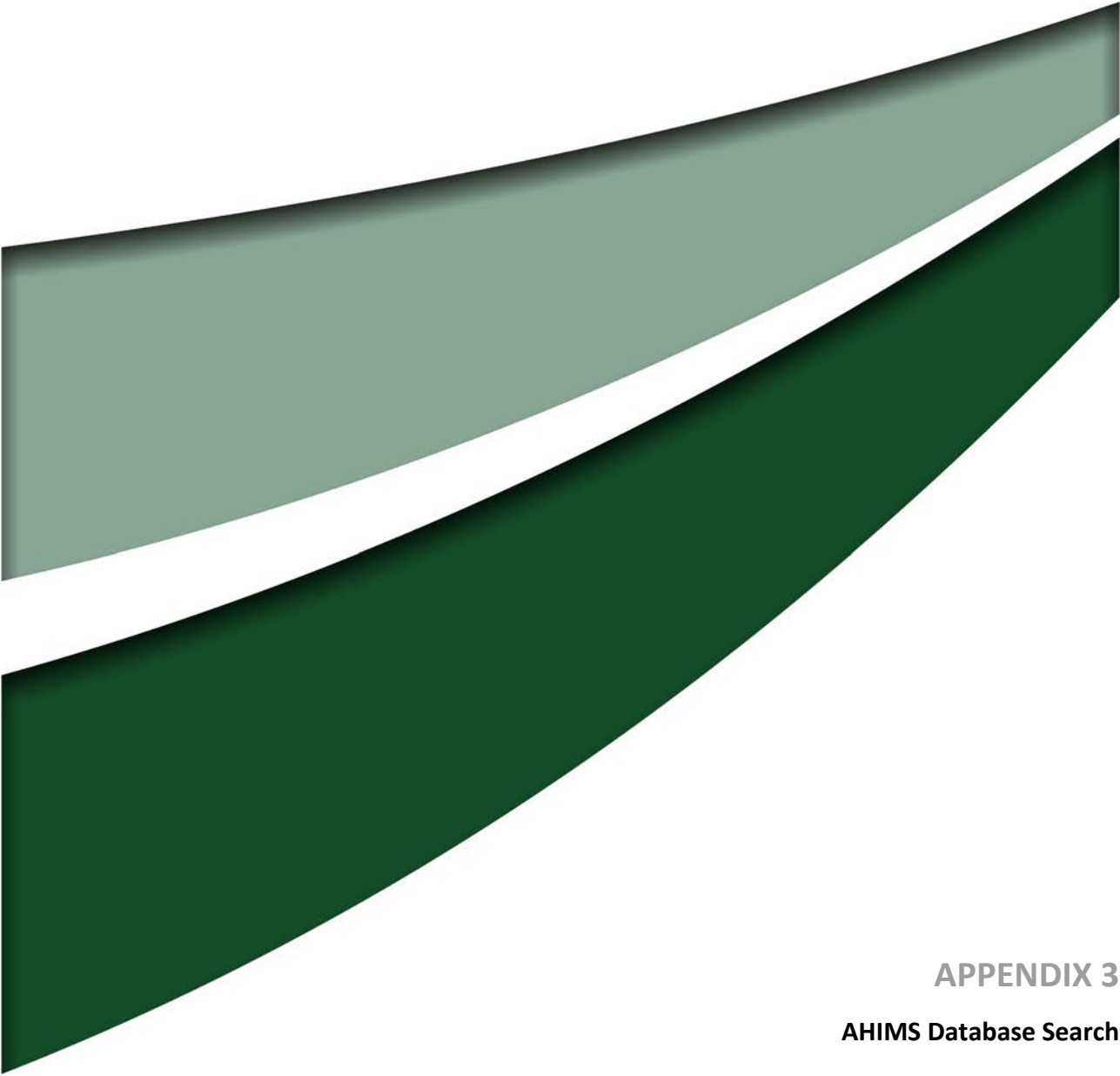


APPENDIX 2

**National Native Title Register Search and
List of Registered Aboriginal Parties**

Name	Organisation
Maria Maher	Kullila Site Consultants
Maria Maher	National Koori Site Management
Alisha Davis	Batemans Bay LALC
Hika Te Kowhai	Walbunja
Aunty Iris White	Ngarigo Elders
Mr Arnold Williams CEO	Ngunnawal Elders Corporation
	NSW Aboriginal Land Council
	Cobowra LALC
Mr Lionel P Mongta	Yuin Traditional Owner
	Mogo LALC
	Bodalla LALC
Colleen Dixon	
Mr Graham Connolly	Jerrinja Consultants Pty Ltd
	Merrimans LALC
Cherie Carroll Turrise	Gunjeewong Cultural Heritage Aboriginal Corporation
Tomas Brown	
Steve Johnson	Corroboree Aboriginal Corporation
Darleen Johnson	Murri Bidgee Mullangari Aboriginal Corporation
Richard Campbell	Guunamaa Dreaming
Newton Carriage	Nundagurri Aboriginal Corporation
Basil Smith	Goobah Development Pty Ltd
Kylie Ann Bell	Gunyuu
Darlene Hoskins-McKenzie	Gunyuu Cultural Heritage Technical Services
Leeroy Boota	Wullung
Karia Lea Bond	Badu
Robert Parsons	Yerramurra
Jodie Stewart	Jerringong

Name	Organisation
Shaun Carroll	Merrigarn Aboriginal Corporation
Mark Henry	Murrumbul
Levi McKenzie-Kirkbright	Murrumbul Cultural Heritage Technical Services
Hayley Bell	Wingikara
Wandai Kirkbright	Wingikara Cultural Heritage Technical Services
Simalene Carriage	Bilinga
Robert Brown	Bilinga Cultural Heritage Technical Services
Kaya Dawn Bell	Munyunga
Suzannah McKenzie	Munyunga Cultural Heritage Technical Services
Pemulwuy Johnson	Pemulwuy
Karrial Johnson	Karrial
Lillie Carroll	Didge Ngunawal Clan
Krystle Carroll	Ginninderra Aboriginal Corporation
Jesse Johnson	
Shane Carriage	Thauaira
Ronald Stewart	Walgalu
Uncle Les Simon	Chapman Clan



APPENDIX 3

AHIMS Database Search

Note: This Excel report shows the sites found in AHIMS on the 21/08/2015. If this date is not the same as the original date of the Search Results letter obtained during the Basic Search, then the search results might be different. The PDF version of this report will always coincide with the Basic Search Results letter.

Site ID	Site name	Datum	Zone	Easting	Northing	Context	Site status	Primary contact	Site features	Site types	Recorders	Reports	Permits	Longitude GDA94	Latitude GDA94
58-4-0719	PB 130;	AGD	56	240720	6054620	Open site	Valid		Artefact : -	Open Camp Site	Philip Boot	99058		150.14	-35.62
58-4-0720	PB 131;	AGD	56	241340	6056160	Open site	Valid		Artefact : -	Open Camp Site	Philip Boot,Biosis Pty Lt	99058		150.15	-35.60
58-4-0526	Holmes Lookout A1;	AGD	56	243180	6047420	Open site	Valid		Artefact : -	Open Camp Site	Annie Nicholson			150.16	-35.68
58-4-0238	89/PK/33;	AGD	56	242300	6051300	Open site	Valid		Artefact : -	Open Camp Site	Mr.Peter Kuskie			150.15	-35.65
58-4-0239	89/PK/32;	AGD	56	242350	6051350	Open site	Valid		Artefact : -	Open Camp Site	Mr.Peter Kuskie			150.16	-35.65
58-4-0240	89/PK/29;	AGD	56	242400	6052200	Open site	Valid		Artefact : -	Open Camp Site	Mr.Peter Kuskie			150.16	-35.64
58-4-0241	89/PK/28;	AGD	56	242200	6051400	Open site	Valid		Artefact : -	Open Camp Site	Mr.Peter Kuskie			150.15	-35.65
58-4-0243	89/PK/27;	AGD	56	241700	6051700	Open site	Valid		Artefact : -	Open Camp Site	Mr.Peter Kuskie			150.15	-35.64
58-4-0244	89/PK/26;	AGD	56	241600	6051800	Open site	Valid		Artefact : -	Open Camp Site	Mr.Peter Kuskie			150.15	-35.64
58-4-0245	89/PK/24;	AGD	56	241100	6051800	Open site	Valid		Artefact : -	Open Camp Site	Mr.Peter Kuskie			150.14	-35.64
58-4-0482	River Rod;	AGD	56	240700	6054600	Open site	Valid		Artefact : -	Open Camp Site	P.J Arncliffe			150.14	-35.62
58-4-0280	89/DM/38;Benandarah	AGD	56	243300	6049700	Open site	Valid		Artefact : -	Open Camp Site	D McKeown			150.17	-35.66
58-4-0288	89/DM/20;Boyne State	AGD	56	245200	6052700	Open site	Valid		Artefact : -	Open Camp Site	D McKeown			150.19	-35.63
58-4-0423	No_3;	AGD	56	236400	6051400	Open site	Valid		Artefact : -	Open Camp Site	W.J Hackwell	1997		150.09	-35.64
58-4-0424	No1+2;	AGD	56	236600	6051700	Open site	Valid		Artefact : -	Open Camp Site	W.J Hackwell	1997		150.09	-35.64
58-4-0237	89/PK/35;	AGD	56	242350	6050950	Open site	Valid		Artefact : -	Open Camp Site	Mr.Peter Kuskie			150.16	-35.65
58-4-0692	Liamena 4;	AGD	56	245900	6047300	Open site	Valid		Artefact : -	Open Camp Site	Mr.Peter Kuskie		767	150.19	-35.68
58-4-0693	Liamena 3;	AGD	56	245950	6047130	Open site	Valid		Artefact : -	Open Camp Site	Mr.Peter Kuskie		767	150.19	-35.69
58-4-0694	Liamena 2;	AGD	56	245950	6046730	Open site	Valid		Artefact : -	Isolated Find	Mr.Peter Kuskie		767	150.19	-35.69
58-4-0695	Liamena 1;	AGD	56	246150	6046730	Open site	Valid		Artefact : -	Open Camp Site	Mr.Peter Kuskie		767	150.20	-35.69
58-4-0651	UM 4	AGD	56	243500	6047300	Open site	Valid		Artefact : -	Open Camp Site	Robert Paton	2253		150.17	-35.68
58-4-0659	CR-4	AGD	56	245650	6046700	Open site	Valid		Artefact : 3, Shell : 1	Open Camp Site	Mr.Doug Williams	2319	438,679	150.19	-35.69
58-4-0660	CR-2	AGD	56	245230	6047360	Open site	Valid		Artefact : 15, Shell : 10	Open Camp Site	Mr.Doug Williams	2319	531,549,679	150.19	-35.68
58-4-0661	CR-3	AGD	56	245500	6047000	Open site	Valid		Artefact : 4	Open Camp Site	Mr.Doug Williams	2319	679	150.19	-35.69
58-4-0987	TR 23	AGD	56	241350	6055110	Open site	Valid		Artefact : 1		Philip Boot,Biosis Pty Lt	98358,98359,98360,99058		150.15	-35.61
58-4-0955	KPH2	AGD	56	245260	6046380	Open site	Valid		Artefact : 30		Ms.Trish Saunders	98990	2099,2100	150.19	-35.69
58-4-0242	89/PK/39;	AGD	56	243300	6049700	Open site	Valid		Artefact : -	Open Camp Site	Mr.Peter Kuskie			150.17	-35.66
58-4-0899	surfside 3;	AGD	56	245930	6046460	Open site	Valid		Artefact : -	Open Camp Site	Vivienne Wood			150.19	-35.69
58-4-0900	Surfside 2	AGD	56	245960	6046450	Open site	Valid		Shell : -, Artefact : -	Midden	D Wood			150.19	-35.69
58-3-0003	N12	AGD	56	246250	6046700	Open site	Valid		Artefact : -	Open Camp Site	N.K Hall			150.20	-35.69
58-4-1069	PAD 3 (cnr Princes/Kin	AGD	56	245500	6046500	Open site	Partially Destroyed		Potential Archaeological Deposit (PAD) : 1		Ms.Trish Saunders,Doc	98246,98990	1927,1928,2099,2100	150.19	-35.69
58-4-1070	PAD 4 (cnr Princes/Kin	AGD	56	245370	6046730	Open site	Partially Destroyed		Potential Archaeological Deposit (PAD) : 1		Ms.Trish Saunders,Doc	98246,98990	1927,1928,2099,2100	150.19	-35.69
58-4-1071	PAD 5 (cnr Princes/Kin	AGD	56	245335	6047000	Open site	Partially Destroyed		Potential Archaeological Deposit (PAD) : 1		Ms.Trish Saunders,Doc	98246,98990	1927,1928,2099,2100	150.19	-35.69
58-4-1072	PAD 6 (cnr Princes/Kin	AGD	56	245160	6047050	Open site	Partially Destroyed		Potential Archaeological Deposit (PAD) : 1		Ms.Trish Saunders,Doc	98246,98990	1927,1928,2099,2100	150.19	-35.69
58-4-1073	PAD 7 (cnr Princes/Kin	AGD	56	245100	6047340	Open site	Partially Destroyed		Potential Archaeological Deposit (PAD) : 1		Ms.Trish Saunders,Doc	98246,98990	1927,1928	150.18	-35.68
58-4-1109	KPH6 (PAD4)	AGD	56	245345	6046707	Open site	Valid	T Russell	Artefact : 1		Ms.Trish Saunders	98990	2099,2100	150.19	-35.69
58-4-1110	KPH7 (PAD5)	AGD	56	245360	6046985	Open site	Valid	T Russell	Artefact : 3, Shell : 1		Ms.Trish Saunders	98990	2099,2100	150.19	-35.69
58-4-1111	KPH8 (PAD6)	AGD	56	245500	6047045	Open site	Valid	T Russell	Artefact : 1		Ms.Trish Saunders	98990	2099,2100	150.19	-35.69
58-4-1263	KPH3A	AGD	56	245370	6046390	Open site	Valid		Artefact : 1		Ms.Trish Saunders			150.19	-35.69
58-4-1264	CR-1	AGD	56	244860	6047600	Open site	Valid		Artefact : 2		Mr.Doug Williams	2319		150.18	-35.68
58-4-1282	Redgum Camp 1 and 2	GDA	56	242156	6048982	Open site	Valid		Shell : 50		Miss.Kristine Carriage	101392	3131	150.15	-35.67
58-4-1281	Beach Camp Clyde Riv	GDA	56	240317	6046502	Open site	Valid		Shell : -, Artefact : -		Miss.Kristine Carriage	101392	3131	150.13	-35.69
58-4-0236	89/PK/38;	AGD	56	242850	6050400	Open site	Valid		Artefact : -	Open Camp Site	Mr.Peter Kuskie			150.16	-35.66
58-4-1160	232/3	AGD	56	236520	6052590	Open site	Valid	T Russell	Artefact : -		State Forests of NSW - Batemans Bay			150.09	-35.63
58-4-1161	232/2	AGD	56	236530	6053080	Open site	Valid	T Russell	Artefact : -		State Forests of NSW - Batemans Bay			150.09	-35.63
58-4-1166	232/1	AGD	56	236630	6053060	Open site	Valid	T Russell	Artefact : -		State Forests of NSW - Batemans Bay			150.09	-35.63
58-4-1340	Benandarah SU1/L1	GDA	56	241189	6052917	Open site	Valid		Artefact : -		Doctor.Julie Dibden	103024,103025	3700	150.14	-35.63
58-4-1341	Benandarah SU1/L2	GDA	56	241696	6052796	Open site	Valid		Artefact : 2		Doctor.Julie Dibden	103024,103025	3700	150.15	-35.63