

Proposed Rezoning Jerberra Estate, NSW Aboriginal Archaeological Assessment

A Report to Shoalhaven City Council

October 2005



Julie Dibden

New South Wales Archaeology Pty Limited

97 Sugarloaf Cct Palmerston ACT 2913 Ph/fax 02 62622241 mob. 0427074901

julie@nswarchaeology.com.au

TABLE OF CONTENTS

EXECUTIVE SUMMARY	1
1. INTRODUCTION	5
2. PARTNERSHIP WITH THE ABORIGINAL COMMUNITY	7
3. PROPOSED IMPACTS	8
4. STUDY METHODOLOGY	11
4.1 LITERATURE REVIEW	11
4.2 FIELD SURVEY AND METHODOLOGY	11
5. LANDSCAPE CONTEXT	13
5.1 TOPOGRAPHY, GEOLOGY AND VEGETATION	13
5.2 LANDUSE HISTORY AND DISTURBANCE	14
6. ARCHAEOLOGICAL CONTEXT	15
6.1 SOCIAL GEOGRAPHY	15
6.2 PREVIOUSLY RECORDED SITES.....	17
6.3 ARCHAEOLOGY – THE LOCAL AREA	17
6.4 PREDICTION OF ARCHAEOLOGICAL POTENTIAL	20
7. SURVEY RESULTS	23
7.1 SURVEY COVERAGE VARIABLES	23
7.2 RESULTS	24
8. STATUTORY CONTEXT	25
9. CONCLUSIONS AND RECOMMENDATIONS	26
10. REFERENCES	27

EXECUTIVE SUMMARY

Introduction

New South Wales Archaeology Pty Ltd was commissioned by the Shoalhaven City Council in June 2005 to undertake an archaeological assessment of Jerberra Estate in response to a rezoning proposal.

Jerberra Estate is located 1.5 km east of Tomerong on the eastern side of Pine Forest Road. The land is bound by National Park to the north and north-east, and by rural-residential land to the south and south-east.

The Jerberra Estate subdivision was registered by the Land Titles Office in 1922. As originally registered, the Estate consisted of 166 lots, ranging in size from 1200 m² to 1.75 hectares. Due to the widening of Pine Forest Road, several lots are now <900 m².

Under Interim Development Order No. 1 the land comprising the Estate was zoned part Rural 1(a) and part Rural 1(b). At the gazettal of Interim Development Order No. 1 in 1964, 13 lots were held under one ownership and the remaining lots were held in another single ownership.

Under the Shoalhaven Local Environment Plan (SLEP) 1985, the land in Jerberra Estate is zoned part Rural 1(b) and part Rural (d). Council does not have the legal ability to approve dwellings. (There are two approved dwellings in the Estate associated with the two '1964 holdings').

Since 1986 many of the lots have been bought on speculation that the land would be rezoned to allow dwellings to be constructed on each individual lot. Land ownership in the Estate is now highly fragmented.

On 15th December 1992, Council resolved to prepare a Draft Local Environmental Plan to rezone part of the Estate. At the request of the owner, 13 lots in the south-western corner of the Estate (comprising one of the two 1964 holdings) are excluded from the rezoning investigation area. As such, the rezoning investigation area consists of 153 lots.

An audit by Council staff in 2004 revealed that there were 65 properties within the Estate that contain unauthorised structures/buildings, some of which are used for permanent occupation. The remainder are utilised for infrequent/weekend habitation

Rezoning investigations commenced but were halted when the NSW State Government placed a moratorium on land release in the Jervis Bay Region pending gazettal of the Jervis Bay Regional Environmental Plan, 1996 and, subsequently, completion of the Jervis Bay Settlement Strategy (JBSS). The JBSS, prepared by Council and endorsed by the then Department of Infrastructure Planning and Natural Resources, was finalised in 2003 and states that:

"Jerberra Estate will be investigated to provide for rural residential living opportunities. In order to achieve this, it will be necessary to finalise detailed environmental investigations that have commenced into appropriate size and configuration of allotments and their ability to accommodate on-site effluent disposal."

A number of studies including this Aboriginal archaeological assessment have been commissioned by Shoalhaven City Council to inform a proposed rezoning of the Jerberra Estate.

The Archaeological Study

An archaeological investigation for Aboriginal archaeological sites within the investigation area has been conducted by Julie Dibden and Andrew Pearce, New South Wales Archaeology Pty Ltd, Alfred Wellington, Jerringa Local Aboriginal Land Council and Graeme Connolly, Jerringa Traditional Owners. This report has been written by Julie Dibden.

The study has sought to identify and record any Aboriginal archaeological sites which may be present in the proposal area, to assess the archaeological potential of the landform elements present and to formulate management recommendations based on the results of background research, a field survey and site significance assessment.

The New South Wales National Parks and Wildlife Service has prepared a draft document which provides a series of guidelines regarding the assessment and management of Aboriginal cultural heritage in New South Wales. This report has been prepared in accordance with these draft guidelines (NSW NPWS 1997). Additionally the study has been undertaken in accordance with the NSW Department of Environment and Conservation (NSW DEC) Interim Guidelines for Aboriginal Community Consultation - Requirements for Applicants (NSW DEC 2004).

Previously Recorded Sites

A search of the New South Wales Department of Environment and Conservation (NSW DEC) Aboriginal Heritage Information Management System (AHIMS) has indicated that there are no previously recorded Aboriginal sites located within the investigation area (AHIMS #: 13390).

A previous archaeological survey has been conducted on the Jerberra Estate at which time no Aboriginal sites or areas of archaeological sensitivity were located (ERM Mitchell McCotter 1994).

Results

Field work was undertaken in October 2005. A total of eight archaeological terrain units have been defined (these are shown on Figure 3). Approximately 25 hectares of the study area was traversed on foot and inspected during the survey. The survey transects conducted across each survey unit included the inspection of exposures such as erosional features, vehicle tracks, dam exposures, animal tracks and bare earth patches. Within exposures of bare ground actual archaeological visibility (the potential artefact bearing soil profile) was for the most part reasonably high. Effective survey coverage achieved during the study is calculated to have been 4 % of the entire proposal area.

Effective survey coverage achieved during the survey is moderate and is assessed to have been adequate for providing a reliable characterization of the archeological status of the land. No Aboriginal objects or areas of archaeological potential were recorded. Based on the survey results and recourse to a predictive model of site location relevant to the study area the archeological potential of the investigation area is determined to be low.

Statutory Context

Sections 84 and 90 of the *National Parks and Wildlife Act 1974* (as amended) provide statutory protection for any physical/material evidence of Aboriginal occupation of NSW and places of cultural significance to the Aboriginal community.

The implementation of the Aboriginal heritage provisions of the Act is the responsibility of the NSW Department of Environment and Conservation. It is an offence to knowingly disturb an Aboriginal object, *irrespective of its nature or significance*, without the prior written consent of the Director-General of the NSW Department of Environment and Conservation.

The Act defines an Aboriginal 'object' as

'any deposit, object or material evidence (not being a handicraft for sale) relating to indigenous and non-European habitation of the area that comprises New South Wales, being habitation before or concurrent with the occupation of that area by persons of non-Aboriginal extraction, and includes Aboriginal remains'.

Conclusions

The investigation area is assessed to be of low archaeological potential. The study area is comprised predominantly of gently sloping spur crests and simple slopes. The area is located at some distance from reliable fresh water (c. 1.2 km from Tomerong Creek) and accordingly is unlikely to have been utilised by Aboriginal people for encampments or to have been a focus of activity within the landscape. Rather, the area would more probably have been exploited intermittently for hunting and gathering forays, and accessed in the course of movement through country.

This predicted occupation of the local area is likely to have resulted in very low levels of stone artefact discard.

Given the above, the investigation area is assessed to be of low archaeological sensitivity in accordance with the relevant predictive model of site location and the results of the study. It is concluded that there are no archaeological constraints to the proposed rezoning of the Jerberra Estate.

Recommendations

It is recommended that (see Section 10 for a full listing of recommendations):

- No Aboriginal objects or areas of archaeological sensitivity have been recorded on Jerberra Estate.
- There are no archaeological constraints to the proposed rezoning of the Jerberra Estate.

Acknowledgements

Gratitude is extended to the following people for their assistance in this project:

Eric Hollinger and Steve Robertson, Shoalhaven City Council
Alfred Wellington, Jerringa Local Aboriginal Land Council
Graeme Connolly, Jerringa Traditional Owners
John Colbran, RSM Bird Cameron Partners
Rod Wellington, NSW DEC

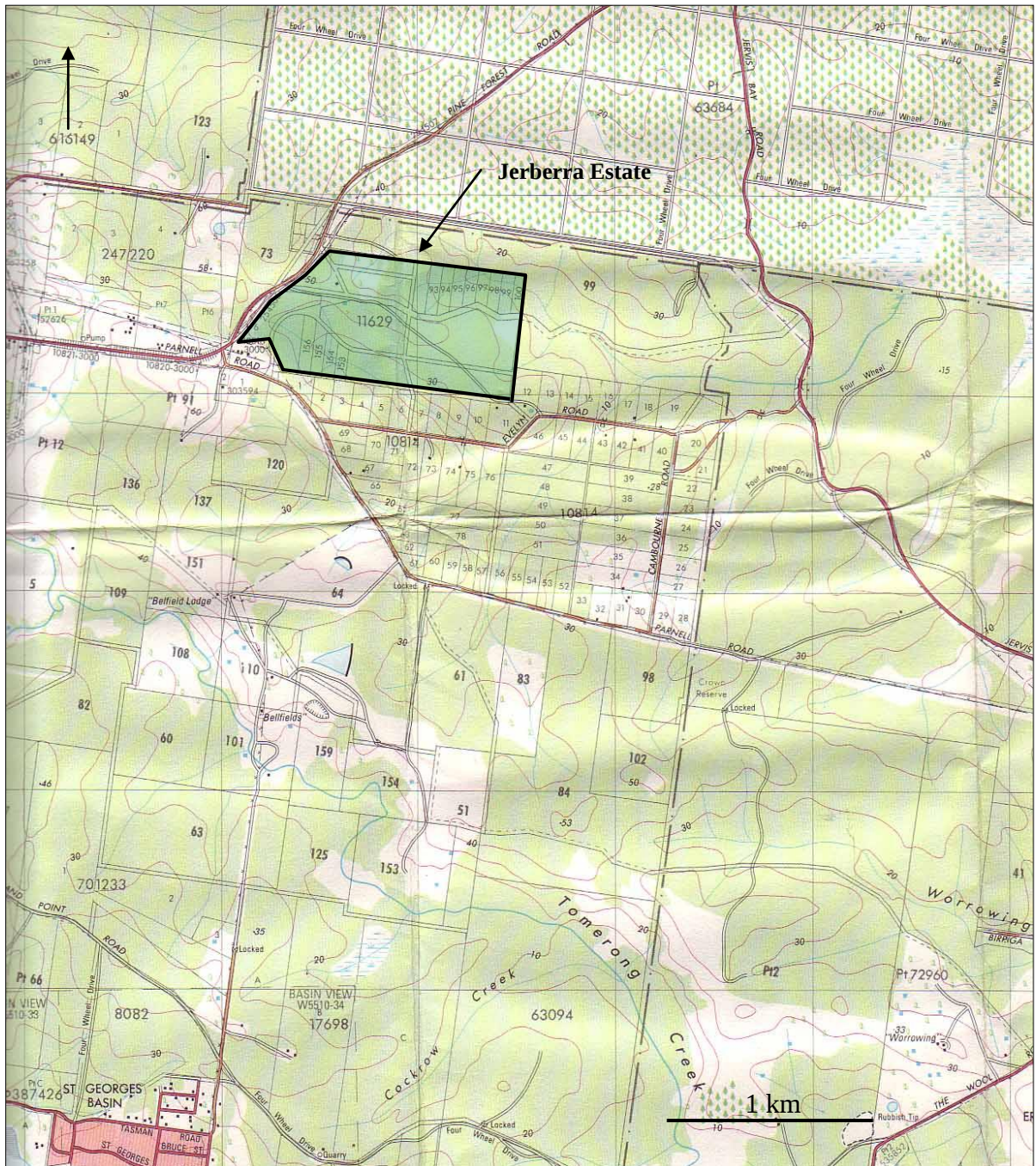


Figure 1 Proposed development area within a local context (Huskisson 9027-4-N 2nd ed. 1:25,000 topographic map)

1. INTRODUCTION

New South Wales Archaeology Pty Ltd was commissioned by the Shoalhaven City Council in June 2005 to undertake an archaeological assessment of Jerberra Estate in response to a rezoning proposal.

Jerberra Estate is located 1.5 km east of Tomerong on the eastern side of Pine Forest Road (Figure 1). The land is bound by National Park to the north and north-east, and by rural-residential land to the south and south-east.

The Jerberra Estate subdivision was registered by the Land Titles Office in 1922. As originally registered, the Estate consisted of 166 lots, ranging in size from 1200 m² to 1.75 hectares. Due to the widening of Pine Forest Road, several lots are now <900 m².

Under Interim Development Order No. 1 the land comprising the Estate was zoned part Rural 1(a) and part Rural 1(b). At the gazettal of Interim Development Order No. 1 in 1964, 13 lots were held under one ownership and the remaining lots were held in another single ownership.

Under the Shoalhaven Local Environment Plan (SLEP) 1985, the land in Jerberra Estate is zoned part Rural 1(b) and part Rural (d). Council does not have the legal ability to approve dwellings. (There are two approved dwellings in the Estate associated with the two '1964 holdings').

Since 1986 many of the lots have been bought on speculation that the land would be rezoned to allow dwellings to be constructed on each individual lot. Land ownership in the Estate is now highly fragmented.

On 15th December 1992, Council resolved to prepare a Draft Local Environmental Plan to rezone part of the Estate. At the request of the owner, 13 lots in the south-western corner of the Estate (comprising one of the two 1964 holdings) are excluded from the rezoning investigation area. As such, the rezoning investigation area consists of 153 lots.

An audit by Council staff in 2004 revealed that there were 65 properties within the Estate that contain unauthorised structures/buildings, some of which are used for permanent occupation. The remainder are utilised for infrequent/weekend habitation

Rezoning investigations commenced but were halted when the NSW State Government placed a moratorium on land release in the Jervis Bay Region pending gazettal of the Jervis Bay Regional Environmental Plan, 1996 and, subsequently, completion of the Jervis Bay Settlement Strategy (JBSS). The JBSS, prepared by Council and endorsed by the then Department of Infrastructure Planning and Natural Resources, was finalised in 2003 and states that:

“Jerberra Estate will be investigated to provide for rural residential living opportunities. In order to achieve this, it will be necessary to finalise detailed environmental investigations that have commenced into appropriate size and configuration of allotments and their ability to accommodate on-site effluent disposal.”

A number of studies including this Aboriginal archaeological assessment have been commissioned by Shoalhaven City Council to inform a proposed rezoning of the Jerberra Estate.

In accordance with the NSW NPWS guidelines for archaeological survey reporting this report aims to document (NPWS 1997):

- the rezoning proposal;
- the participation of the Aboriginal community in the archaeological assessment;
- the methodology implemented during the study;
- the environmental setting of the study area in order to establish background parameters;
- a review of archaeological and relevant literature and heritage listings on the NSW NPWS Aboriginal Heritage Information Management System;
- any Aboriginal archaeological and heritage sites known to exist within the study area;
- a synthesis of local and regional archaeology;
- a predictive model of site location for the study area;
- the field survey results;
- the archaeological sensitivity of the study area; and

- a series of recommendations based on the results of the investigation.

This project has been managed by Julie Dibden.

2. PARTNERSHIP WITH THE ABORIGINAL COMMUNITY

This project has been undertaken in accordance with the NSW DEC Interim Guidelines for Aboriginal Community Consultation - Requirements for Applicants (IGACC) (NSW DEC 2004). The NSW DEC requires proponents to undertake consultation with the Aboriginal community "...as an integral part of the impact assessment" process (NSW DEC 2004: this document can be viewed at <http://search.nationalparks.nsw.gov.au>).

The NSW DEC manages Aboriginal cultural heritage in NSW in accordance with the National Parks and Wildlife Act 1974. Part 6 of the Act provides protection for Aboriginal objects and Aboriginal Places. When an activity is likely to impact Aboriginal objects or declared Aboriginal Places approval of the Director-General of the NSW DEC under s90 or s87 of the NPW Act is required. The decision as to whether or not to issue s90 Consents or s87 Permits is based on the supply to the NSW DEC by a proponent of adequate information to enable the Director-General to make an informed decision (NSW DEC 2004).

When administering its approval functions under the NPW Act the NSW DEC requires applicants to have consulted with the Aboriginal community about the Aboriginal cultural heritage values (cultural significance) of Aboriginal objects and places present in the area subject to development (NSW DEC 2004).

The NSW DEC requires consultation with the Aboriginal community because it recognises the following:

- That Aboriginal heritage has a cultural and archaeological significance and that both should be the subject of assessment to inform its decision process;
- That Aboriginal people are the primary determinants of the significance of their heritage;
- That Aboriginal community involvement should occur early in the assessment process to ensure that their values and concerns can be taken into account and so that their own decision making structures can function;
- That the information arising from consultation allows consideration of Aboriginal community views about significance and impact and allows for management and mitigation measures to be considered in an informed way (NSW DEC 2004).

The community consultation process as outlined in the IGACC document aims to improve the assessment by providing the Aboriginal community with an opportunity to:

- Influence the design of the assessment of cultural and scientific significance;
- Provide relevant information about cultural significance values of objects/places;
- Contribute to the development of cultural heritage management recommendations; and
- Provide comment on draft assessment reports (NSW DEC 2004).

The role of the Aboriginal Community is outlined by the NSW DEC (2004) as follows:

- The Aboriginal community is the primary determinant of the significance of their heritage;
- The Aboriginal community may participate in the process via comment on the assessment methodology, contribution of cultural knowledge; and
- The Aboriginal Community may comment on cultural significance of potential impacts and/or mitigation measures.

In order to fulfil the consultation requirements as outlined in the IGACC document NSW Archaeology Pty Ltd, on behalf of the proponent, has followed the following procedure:

1. Notification and Registration of Interests

The proponent has actively sought to identify stakeholder groups or people wishing to be consulted about the project and has invited them to register their interest as follows:

Written notification about the project dated 5th July 2005 has been supplied to the following bodies:

- The Jerringa Local Aboriginal Land Council
- Native Title Services
- Shoalhaven City Council
- Department of Environment and Conservation

The investigation area is not situated within a National Park listed on schedule 14 of the National Parks and Wildlife Act, 1974 which possesses a Register of Aboriginal Owners. Accordingly, the Registrar of Aboriginal Owners was not notified of the project.

In addition an advertisement was placed in the South Coast Register (13th July 2005) providing notification of the cultural heritage study (see Appendix 1).

The closing date of registration of interest was 27th July 2005.

No individuals or groups formally registered an interest in this project.

2. Preparation for the Assessment (design)

Given the absence of registration of interest the proposed methodology for the study was not supplied to any groups or individuals.

3. Drafting, Review and Finalisation of the Cultural Heritage Assessment Report

The draft report has been provided to the Jerringa Local Aboriginal Land Council and Jerringa Traditional Owners for review and comment. No response has been received.

The study area falls within the boundaries of the Jerringa Local Aboriginal Land Council (JLALC) as defined under the *Aboriginal Land Rights Act 1983* (NSW).

The proposal does not require a s90 Consent or s87 Permit.

3. PROPOSED IMPACTS

This archaeological assessment is conducted in respect of a rezoning proposal. The Jervis Bay Settlement Strategy (JBSS) provides a strategic framework for managing residential and rural residential growth in the Jervis Bay area. In relation to Jerberra Estate, the JBSS states: “*The development potential for rural residential development will be investigated through a review of lot sizes and configuration in order to accommodate on site effluent management and meet the guiding principles and policy actions of this strategy.*”

This archaeological investigation is one of a number of studies which will form part of a Local Environment Study (LES) and will be used to determine the development potential in accordance with the JBSS.

The LES will provide the basis for determining the maximum number and/or density of dwellings in the Estate. The potential impacts of the development relate to the clearing of vegetation, construction of dwellings and associated infrastructure, and bushfire asset protection.

The level of prior European impacts is relatively high. The status of structures and dwellings in the investigation area is listed as follows (see Figure 2):

- One lot contains an approved dwelling;
- 8 lots contain permanent dwellings;
- 20 lots contain substantial structures; and
- c. 43 lots contain minor structures.

Many of the lots contain gardens and driveways (Plates 1 and 2). In addition there are numerous dams present.

Several roads traverse the Estate (not all of which are cleared or used) most of which are deeply rutted and in poor condition (Plate 3).

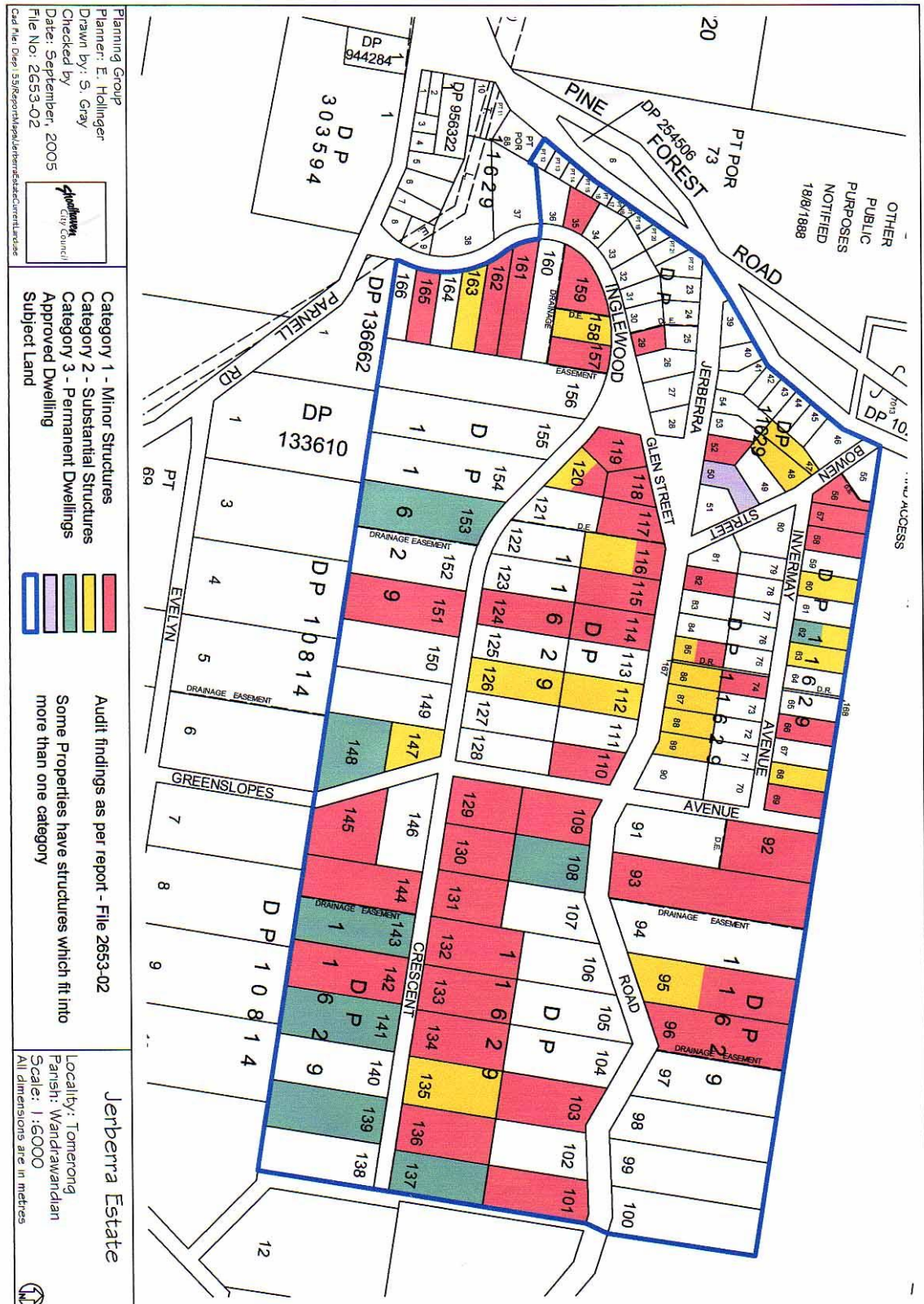


Figure 2 Jerberra Estate Lot layout showing status of built structures (supplied by Shoalhaven City Council)



Plate 1 View of gardens and structures on Inglewood Crescent



Plate 2 Minor structure on Lot 145 Greenslopes Avenue



Plate 3. Road within the Estate.

4. STUDY METHODOLOGY

This Aboriginal archaeological study has included the following components:

- A NSW DEC Aboriginal Heritage Information Management System site search to determine whether or not previously recorded sites are present within the investigation area and to list the type of sites known to be present within the local area (see Section 6.2).
- A review of local and regional archaeological reports and other relevant documents in order to provide a contextual framework to the study and heritage management process.
- A field survey of the area aimed at recording Aboriginal sites, survey coverage data and assessing the archaeological potential of the various landform elements present.
- Documentation of survey results.
- An analysis of survey results.
- The formulation of management recommendations ensuing from the above.

4.1 Literature Review

Background research has been conducted to determine if known Aboriginal heritage sites are located in the vicinity of the proposal area and to facilitate site prediction on the basis of known regional and local site patterns in order to place the study area within an archaeological research and heritage management context (see Section 6).

The following information sources have been accessed for this study:

- ❑ NSW DEC Aboriginal Heritage Information Management System
- ❑ Relevant archaeological reports held in the NSW DEC Cultural Heritage Unit
- ❑ Background information supplied by the proponent
- ❑ Huskisson 1:25,000 topographic map

4.2 Field Survey and Methodology

The field survey was carried out on the 7th October, 2005. Field survey was undertaken by Julie Dibden and Andrew Pearce, NSW Archaeology Pty Ltd, Alfred Wellington, Jerringa Local Aboriginal Land Council and Graeme Connolly, Jerringa Traditional Owners.

The survey methodology involved walking along existing roads, driveways and areas within individual lots. Field survey was focused particularly on those areas which afforded ground visibility. Those areas which were not comprehensively traversed or directly inspected were generally obscured with a thick bush, thus affording negligible ground surface exposure. Exposures present included unformed vehicle tracks, erosional features, animal tracks, areas under trees and bare earth exposures. Survey units (as defined below) and survey coverage are described in Section 8 of this report and identified in Figure 3.

The field survey was aimed at locating archaeological material (Aboriginal objects as defined under the Act) situated on or in ground surfaces. An assessment was also made of prior land disturbance, survey coverage variables (ground exposure and archaeological visibility) and the potential archaeological sensitivity of the land. All trees assessed to be old enough to possess Aboriginal scarring were examined.

The investigation area has been divided into a number of survey units each of which have been defined on the basis of a combination of environmental variables including landform element, gradient and aspect. These areas are termed *archaeological terrain units* (cf Kuskie 2000: 67). The survey area is defined as an individual unit that is bounded on all sides by different archaeological terrain units.

The rationale for employing this definition relates to its utility in regard to predicting the archaeological potential of landforms; archaeological terrain units are "...discrete, recurring areas of land for which it is assumed that the Aboriginal land use and resultant heritage evidence in one location may be extrapolated to

other similar locations” (Kuskie 2000: 67). Additionally, the archaeological evidence which has been located within individual survey units is assumed to be generally representative of the archaeological resource located within the entire survey unit.

5. LANDSCAPE CONTEXT

A consideration of the landscape is necessary in archaeological work in order to characterise and predict the nature of Aboriginal occupation across the land (NPWS 1997). In Aboriginal society landscape could be both the embodiment of Ancestral Beings and the basis of a social geography and economic and technological endeavour. The various features and elements of the landscape are/were physical places that are known and understood within the context of social and cultural practice.

Given that the natural resources that Aboriginal people harvested and utilised were not evenly distributed across landscapes, Aboriginal occupation and the archaeological manifestations of that occupation, will not be uniform across space. Therefore, the examination of the environmental context of a study area is valuable for predicting the type and nature of archaeological sites which might be expected to occur. Factors which typically inform the archaeological potential of a place include the presence or absence of water, animal and plant foods, stone and other resources and as well, the nature of the terrain.

Additionally, geomorphological and humanly activated processes need to be defined as these will influence the degree to which archaeological sites may be visible and/or conserved. Land which is heavily grassed will prevent the detection of archaeological material while land which has suffered disturbance may no longer retain artefacts or stratified deposits. A consideration of such factors is necessary in formulating site significance and mitigation and management recommendations.

The following section provides information in regard to the landscape context of the study area.

5.1 Topography, geology and vegetation

The study area is located east of Tomerong on the South Coast of New South Wales. The study area is located within the coastal lowlands system consisting of rolling to undulating terrain (Gunn *et al.* 1978). The topographic context of the study area is shown on Figure 1.

The geology of the study area is comprised of siltstone, silty sandstone, sandstone and conglomerate of the Permian Wandrawandian Siltstone (Monaro 1:500,000 Geological Series map sheet). The Wandrawandian Siltstone consists of micaceous siltstones and fine-grained silty sandstones with minor lithic sandstones. Where it crops out around the northern and western shores of Jervis Bay it forms a relatively 'subdued topography' (Taylor *et al* 1995). Pebbles are present across the study area and are a component of the local conglomerate.

The area consists of a low elevation ridge crest and simple slopes and is drained by ephemeral 1st and 2nd order drainage depressions. The area does not contain a source of reliable water. Tomerong Creek situated c. 1.2 km south of the study area is the nearest fresh water source.

The study area is comprised of a number of vegetation communities including woodland, open forest, wetland creek community and creek headwater open forest, and cleared areas (ERM Mitchell McCotter 1994).

An ethno botanical study by Lampert and Sanders (1973) on Beecroft Peninsula indicates that at least forty species of plant were locally available and consumed within the Jervis Bay area while another eleven species were recognised as being useful for purposes such as the manufacture of fishing lines and string, fish poison, spears, canoes and crayfish traps.

The investigation area is situated approximately 5.4 km from Jervis Bay. Accordingly, the investigation area formed a hinterland resource zone to Aboriginal occupants. The investigation area is amorphous in terms of topography and possesses no natural features which may have acted as a focus of Aboriginal conceptual or economic geography.

The area is located at some considerable distance from reliable fresh water. Furthermore the area contains limited biodiversity values; it does not possess a confluence of resource zones.

Given the above, the investigation area is unlikely to have been utilised by Aboriginal people for encampments or to have been a focus of activity within the local landscape. Rather, the area would more probably have been exploited intermittently for hunting and gathering forays, and accessed in the course of movement through country.

This predicted occupation of the local area is likely to have resulted in an extremely sparse distribution of stone artefact discard across the landscape.

5.2 Landuse history and disturbance

The level of prior European impacts in the investigation area is relatively high due to current occupation and the previous construction of structures and dwellings as listed below:

- One lot contains an approved dwelling;
- 8 lots contain permanent dwellings;
- 20 lots contain substantial structures; and
- c. 43 lots contain minor structures.

Many of the lots contain gardens and formed driveways. In addition numerous dams are present. Several roads traverse the Estate (not all of which are cleared or used) most of which are deeply rutted and in poor condition.

Previous European impacts in the investigation area are sufficiently high and extensive as to have caused disturbance to any Aboriginal objects (including archaeological deposit and/or soils containing Aboriginal objects) which may potentially be present. Such impacts will have disturbed the stratigraphic integrity of archaeological deposit, with a concomitant lessening of the archaeological significance of any which may be present.

6. ARCHAEOLOGICAL CONTEXT

6.1 Social geography

The investigation area is situated within a broader area which extended south from the lower Shoalhaven River to the Ulladulla area, and inland to the Shoalhaven River north of Braidwood and defined by Tindale (1974) as Wandandian tribal territory. The Wandandian people spoke the Dhurga language, which was spoken over an area ranging from the Shoalhaven District south to Narooma (Eades 1976). However, Navin (1991:8) cites ethnographic observations which describe the people of the lower Shoalhaven in terms of occupying one district and speaking one dialect as evidence that the tribal boundary with the more northerly Wodi Wodi people was located further south and closer to Jervis Bay. This would place the tribal boundary close to the current study area. Dharawal is the adjacent northern language which was spoken over an area ranging from the Shoalhaven north to Port Hacking (Eades 1976).

Traditional Aboriginal culture in south-eastern Australia was complex and varied. The present state of knowledge is based partially on studies of contemporary Aboriginal communities in northern and central Australia and on observations of the south-eastern communities after the disruption caused by European settlement (Thompson 1985). Due to these factors and considering the flexible territorial boundaries of Aboriginal social groups (*cf.* Peterson 1976) it remains uncertain where tribal and linguistic boundaries were located.

Both the Dhurga and Dharawal languages may have been understood in the Jervis Bay region and both form part of the Yuin linguistic group, which extends from Sydney to the Victorian border (Navin 1990a:6).

Boot (1994) has undertaken a study based on original archival sources of ethno historical observations relating to the south coast region. Boot (1994) lists the following faunal and floral species which have been recorded in the ethno historical literature as having been utilised: fish species including bream, trumpeter, whiting, salmon and shark, eel, whales, seals, marine worms, shellfish including oysters and mussels; terrestrial fauna including possum, kangaroo, wombat, birds, goanna, grubs; and plant products including honey, kangaroo apple, native cranberry, honeysuckle, pigface, macrozamia, cabbage tree, fruit and yams. Observations of use of these food sources were made within ten kilometres of the coast (Boot 1994).

The material culture of the local Aboriginal population would have included a range of items related to subsistence, cultural and social activities and shelter. Ethno historical observations along the coast have been made of the following items: gunyahs, canoes, spears, shell-barbed spears, fishing spears, bark/wood shields, waddy/clubs, spear throwers, boomerangs, hatchets, fish-traps, stone heat retainers, kangaroo teeth adornments, pierced nose adornments, bark drawings, possum skin cloaks, shell fish hooks and grass tree resin (Boot 1994). In the archaeological record few of these items survive. Stone, bone and shell are the materials most frequently represented in archaeological sites.

Information about traditional Aboriginal culture and their recent history in the Jervis Bay region is derived from various records and oral sources. However, it must be noted that many early observations were made by untrained people, often incorporating biases from their own cultural perspectives.

Jervis Bay was identified by Captain Cook in 1770 and named Cape St. George (Jervis 1937). Joseph Banks, recorded the same voyage and noted in his dairy on 25 April that large fires were visible so that "...we suposed (sic) that the gentlemen ashore has a plentiful (sic) breakfast to prepare" (Brunton 1998:20).

In 1791 Lieutenant Richard Bowen of the HMS Atlantic carried out a detailed survey and named the bay Port Jervis. Lieutenant Bowen noted 'many traces of inhabitants' including numerous canoes and natives armed with spears (Jervis 1937:120).

George Bass landed at Jervis Bay in December 1797 and spent four months exploring the region. Following his descriptions the bay became a regular port of call for a large whaling fleet operating along the coast. Aboriginal people had some involvement in the whaling industry, however the extent of this involvement is not clear (Navin 1990a:9). Navin (1990a:9) suggests that consistent contact between Europeans and the local Aboriginal population would have begun from this period.

The records indicate that early contact was on reasonably friendly terms (Egloff 1995:31). Lieutenant Grant of the Lady Nelson visited the Bay in 1801 and observed large numbers of unarmed Aborigines (Egloff *et al* 1995:31). However, by this time it is apparent that the Aboriginal people were well acquainted with European practices (Navin 1990a:10). Grant describes many adult Aborigines having what appeared to be small-pox scarring which was said by the locals to have resulted from sickness. Lieutenant Grant described the extensive and skilled use of bark canoes by the local people, and also their enthusiastic use of red paint, obtained from the boats' stores, for body painting. A ceremonial ground was noted by Grant (1803:112-113) and described as a:

...small eminence free from brush, having no habitation near it. We counted the marks of fifteen different fires, that had been employed in cooking fish and other eatables ... the grass was much trodden down, and many of the bones of animals appeared fresh.

Cane (1987) considered that this site may have been located near Currumbene Creek, although Navin (1990a) considers the eastern portion of Bherwerre Peninsula to be a more probable location.

Shipwrecked sailors made the first overland crossing at the Jervis Bay area during 1797 and 1805. The sailors of the *Cumberland* found the crossing difficult. It is recorded that "hunger, disease, fatigue and the Aborigines all took their toll" (Bayley 1975:15). However, as Navin (1990:9) notes, not all such encounters with the local Aborigines were hostile. Sailors from the *Nancy* were guided to the bay by a local and upon arriving were crowded by more people "... who made no attempt to molest them" (Jervis 1937:121).

Reports made by overland explorers and settlers during the 1820s and 1830s indicate that the local Aboriginal groups appear to have remained relatively intact, conducting traditional activities using European clothing and tools (Egloff 1995:13).

Despite colonial government attempts to control settler expansion, large scale European settlement of the Shoalhaven River commenced in 1822 (Egloff 1995:13). Aboriginal people worked for Alexander Berry at his Mount Coolangatta property near Nowra and according to the contemporary account of James Backhouse were badly treated (Egloff 1995:13). By 1840 over 11,000 acres had been granted to settlers in Vincentia, Callala, Currumbene and Woollamia (Bayley 1975:28). The Aboriginal communities survived in reduced, yet still large numbers in the area (Egloff 1995).

From the late 1800s local Aboriginal people have continued to live in community groups at locations either determined by government policy or chosen by them (*cf* Egloff 1995:13). Roseby Park at Orient Point was established as an Aboriginal Reserve in the 1880s. People from the Berry Estate and a small camp at Greenwell Point came to live there. At or around this time, Aboriginal people were also living at Wreck Bay, Currumbene Creek and around the fringes of Nowra (Egloff 1995:13-14). A reserve was established at Long Beach, adjacent to Green Point, although it was not a permanent settlement.

Fishing has been an important activity for the people of the Jervis Bay environs, both in economical and cultural terms. As Egloff (1995:14) noted 'the good times and fish go together in the memories of coastal Aboriginal people'. However, considerable use has also been made of adjacent scrub lands, both in the prehistoric past, historic past and the present, so that today Aboriginal people are concerned with such land issues as the impacts of tourism, the alienation of coastal recreation lands and perceived inappropriate restrictions on land use (Egloff 1995:15). Heritage is perceived to be of considerable importance, demonstrating that local Aboriginal people have a long and unbroken history in the area, "...to the extent that the archaeology of the past and the attachment to land by contemporary Kooris must be understood as being a part of the same process' (Feary 1997).

When in 1985 it was planned to move the naval fleet base from Sydney to Jervis Bay the Jerringa and Wreck Bay communities strongly objected to the proposal (Egloff 1995:15, Lesser 1985). Egloff *et al* (1995:19) concluded that the continuity of traditions within the culture of the Jervis Bay Aboriginal community is an indication of the significance of the Bay to them.

Several locations around Jervis Bay have significance to the local Aboriginal community for their historical connections and others are important for their connection to story lines. During the early 1970s Lampert (1971; Lampert & Sanders 1973) conducted archaeological and ethnobotanical studies on Beecroft peninsula. Lampert was informed by a local Aboriginal, Dave Carpenter, that a Bunan (ceremonial) ground existed at Hammer Head Point, adjacent to Carama Inlet (Cane 1988). Dave Carpenter also informed Lampert that a story about a mythological being, Yaroma, is associated with the area. In this story, two boys caught fish and quarrelled over the distribution of the largest fish. Because of their greed, Yaroma, a 'huge, hairy man' arrived during the night with the intention of taking them and dropping them into Devils Hole (located on Beecroft

Peninsula). However, due to the heavy load, Yaroma slept in a cave at the upper reaches of Currarong Creek, at which time the boys escaped.

A story line relating to the figure Bundoola/Spandula links Hare Bay (in the Red Point locality) with Green Point and other locations both on Beecroft Peninsula and the coastal hinterland (*cf.* Cane 1988:38, Egloff *et al* 1995:19). Cane (1988:39) reports that the characteristics relating to this figure appear to have changed in recent times. There are at least eight separate recordings relating to this figure, spanning a period of 118 years. Three versions of the story had initially been reported by Andrew Mackenzie in 1872.

The study area is located within the Jerringa Local Aboriginal Land Council area.

6.2 Previously Recorded Sites

A search of the NSW DEC Aboriginal Heritage Management Information System was conducted on 11th July 2005 (AHIMS #13390). The search was undertaken for an area which measures 30 km² (Eastings: 279000-285000; Northings: 6115000-6120000).

Six Aboriginal sites are recorded on AHIMS as being present within the site search area. The AHIMS register only includes sites which have been reported to NSW DEC (formally NPWS). Accordingly, this search cannot be considered to be an actual or exhaustive inventory of Aboriginal sites situated within the local area. Generally, sites are only recorded during targeted surveys undertaken in either development or research contexts. It can be expected that other sites are present within the local area but that to date they have not been recorded and/or reported to NSW DEC.

No sites are listed on AHIMS as being present within the proposal area itself. Following from the above discussion this does not mean that there are no Aboriginal sites present within the property. The following discussion in Section 7.3 will present a review of previous archaeological work in the region for the purposes of producing a predictive model of site type and location for the study area.

6.3 Archaeology – The local area

On the basis of archaeological research it is known that Aboriginal people have occupied Australia for at least 40,000 years and possibly as long as 60,000 years (Mulvaney and Kamminga 1999: 2). By 35,000 years before present (BP) all major environmental zones in Australia, including periglacial environments of Tasmania, were occupied (Mulvaney and Kamminga 1999:114).

At the time of early occupation Australia experienced moderate temperatures. However, between 25,000 and 12,000 years BP (a period called the Last Glacial Maximum) dry and either intensely hot or cold temperatures prevailed over the continent (Mulvaney and Kamminga 1999: 114). At this time the mean monthly temperatures on land were 6-10°C lower; in southern Australia coldness, drought and winds acted to change the vegetation structure from forests to grass and shrublands (Mulvaney and Kamminga 1999: 115-116).

During the Last Glacial Maximum at about 24-22,000 years ago, sea levels fell to about 130m below present levels and accordingly, the continent was correspondingly larger. With the cessation of glacial conditions, temperatures rose with a concomitant rise in sea levels. By ca. 6000 BP sea levels had more or less stabilised to their current position. With the changes in climate during the Holocene Aboriginal occupants had to deal not only with reduced landmass, but changing hydrological systems and vegetation; forests again inhabited the grass and shrublands of the Late Glacial Maximum. As Mulvaney and Kamminga (1999: 120) have remarked:

When humans arrived on Sahul's shores and dispersed across the continent, they faced a continual series of environmental challenges that persisted throughout the Pleistocene. The adaptability and endurance in colonising Sahul is one of humankind's inspiring epics.

Occupation of the NSW south coast dates from at least 20,000 years ago as evidenced by dated sites at Burrill Lake (Lampert 1971), Bass Point (Bowdler 1970) and two sites near Buchan in Victoria; Cloggs Cave (Flood 1980) and New Guinea 2 (Ossa *et al* 1995). The Bulee Brook 2 site in the south coast hinterland ranges, excavated by Boot (1994), provides evidence that occupation of this zone had occurred by at least 18,000 years ago. These known Pleistocene occupation sites are few on the south coast; the majority of recorded sites date from the mid to late Holocene at the time when the sea more or less stabilized at its current level. It is

nevertheless reasonable to assume that the Tomerong area was occupied and utilised by Aboriginal people from the late Pleistocene onwards.

The pre-European occupation on the south coast has been explored archaeologically. Until recently researchers have identified higher site densities in the coastal zone than in the coastal hinterland. Several models have been forwarded to account for this pattern of recorded site distribution. Bowdler (1970) argued that occupation of the coast during summer was intensive, with some exploitation of the hinterland when coastal resources were less abundant. Lampert (1971) proposed a mixed economic regime on the coast, involving exploitation of littoral, estuarine and land resources, but with a greater emphasis on the littoral component. Flood (1980) argued that the hinterland was only used when coastal resources were in short supply during the winter season.

Poiner (1976) proposed a model of semi-nomadic occupation of the coast during summer and nomadic occupation of both coastal and hinterland during winter. However, this model was based on scanty evidence (Hiscock 1982) and an assumption that hinterland sites were few in number, small and widespread (Boot 2002). The strong seasonal focus of Poiner's (1976) model is however, inappropriate given the mesothermal climate which prevails on the south coast which possesses little seasonal variation (Boot 2002).

The importance of the Jervis Bay area to the regional prehistory was recognized during the 1960s with the discovery of rock shelters with art, along with excavations conducted by Ron Lampert at Currarong, on the Beecroft Peninsula (Sullivan 1977:1). A number of archaeological surveys and excavations have been undertaken for commercial contracting and academic research purposes within the Jervis Bay region. These studies are discussed below to identify the range of site types and variety of site contents which might be expected to be present in the study area and broader region, to identify typical site locations, and assist with the construction of a predictive model of site location for the proposal area.

The Shoalhaven Antiquities Committee, established in 1963, has recorded many sites within the Shoalhaven area including rock shelters with art, ceremonial grounds, stone arrangements and artefact scatters. Artefact types recorded by the Committee include microlithic implements (bondi points, geometric microliths, micro-scrapers), unifacial implements, large flake implements ('end scrapers', blades, worimis), ground implements (axes, chisels, blades) and whetstones, fish hook files, fish hooks, bone needles and hammerstones (Antill 1982).

Sullivan (1977) conducted an extensive survey for Aboriginal sites on Bherwerre Peninsula. Sullivan (1977:6) reported that stone flaking sites typically occur adjacent to shell midden sites, but slightly more distant with headland midden sites. In other localities, extensive flaking floors appear to be situated closer to areas associated with food consumption (Sullivan 1977:6). Sullivan (1977:9) indicated that on Bherwerre Peninsula, silcrete and quartz are common in stone artefact assemblages, with rhyolite (probably derived as pebbles from local beaches) also present. Quartzite, although locally available, was relatively unused (Sullivan 1977: 9).

Cane (1988) has recorded numerous sites on the peninsulas surrounding Jervis Bay, including twenty seven sites on Beecroft Peninsula and twenty three sites on Bherwerre Peninsula. The Beecroft Peninsula contains over one hundred and thirty recorded Aboriginal sites (Cane 1988). These mostly consist of middens and rock shelters with deposit. Over sixty sites, also predominantly middens, have been recorded on Bherwerre Peninsula (Sullivan 1977). Cane (1988) interprets the archaeological evidence as suggesting that early, sporadic occupation of Beecroft Peninsula was followed by permanent, intense occupation within the last two thousand years.

Middens have been identified on Beecroft Peninsula at a relatively high density (8.5 sites/kilometre of coast line between Long Beach and Honeymoon Bay), compared to the rest of the New South Wales south coast (3.3 sites/kilometre of coastline: cf. Attenbrow 1981). However, it is uncertain whether this reflects differences in sampling or site detectability, or is an accurate indication of the pattern of Aboriginal occupation.

Several middens have been excavated in the Jervis Bay region. Barz (1987) excavated a shell midden on the eastern shore of St. Georges Basin. Pipi (*Donax deltooides*) and Sydney Cockle (*Anadara trapezia*) were found to be the dominant shellfish species present (Barz 1987). A midden excavated by Collier (1975) at Cemetery Point, dating to 1,800 years BP, contained mostly edible mussel (*Mytilus planulatus*) that could be gathered from nearby rock platforms. The excavation of Abrahams Bosom Rock shelter also revealed a late Holocene deposit of predominantly edible mussel shell (Paton & Macfarlane 1989). Occupation deposits dating to 4,000 years BP have been identified at several rock shelters near Currarong, on Beecroft Peninsula (Lampert 1971).

Blackwell (1982) excavated a stratified open midden on Bowen Island (situated at the mouth of Jervis Bay, on the northern side of Bherwerre Peninsula. Blackwell (1982:49) identified that the lower section of the midden

was dominated by gastropods, particularly *Subnirrella undulata*, while mussel (*Mytilus planulatus*) dominated the middle and upper portions. Associated with this change in dominant shellfish species, Blackwell (1982:48) indicated that a more diverse range of fish is present in the levels associated with the predominance of mussel.

Blackwell (1982) argued that this change also occurred at Bass Point to the north and Cemetery Point to the south and dates to between 1,200 and 600 years BP. Blackwell (1982) considered that the change-over relates to woman beginning to use fish hooks to catch fish, thereby reducing the time available for gathering shell fish. Hence, in what time was available for gathering, the women collected mussels, which are easier to procure. Blackwell (1982:50) also argued that the change in dominant species coincided with changes in intensity of occupation at the site. These hypotheses were important foci of research in coastal archaeology through the 1980s and early 1990s.

McConnell (1978) surveyed areas to be affected by sewerage works sites at Shoalhaven Heads, Culburra and Sussex Inlet, but no sites were located.

As a result of a study for a proposed armaments depot two kilometres north of Currumbene Creek, Officer (1986:9) concluded that:

- the potential for sites to occur in the coastal foreshore zone is high;
- the potential for sites to occur in the creek, estuary and wetland zone is moderate to high; and
- the potential for sites to occur in hinterland zones of ridge crests, moderate to steep slopes and narrow ephemeral creek lines is low.

Lance (1987) conducted a survey of a proposed dolerite quarry situated c. 10 km northwest of Huskisson. No sites were found. This result appeared to be consistent with the model of Aboriginal occupation being focused on the coast.

Lance and Fuller (1988) surveyed pipeline routes associated with sewerage outfalls in the Jervis Bay hinterland. Only one artefact scatter was located. Lance and Fuller (1988:8) concluded that the small number of sites found in the hinterland resulted from low intensity usage of inland resources.

Navin (1990, 1991) investigated options for a proposed road linking Woollamia with Callala Beach, including a bridge crossing Currumbene Creek. Navin (1991) noted the difficulty in identifying middens in the swampy deposits of the area. She has noted that European earthworks had exposed and widely distributed shell which was derived from thick natural beds of poorly sorted estuarine and marine shell, sand and gravel.

Navin (1991) refers in detail to the historic Aboriginal camp at 'Bilong' along the northern banks of Currumbene Creek. Navin (1991) recorded four scarred trees, two artefact scatters, two isolated artefacts, one midden and a major site complex on the northern bank of Currumbene Creek, comprising middens, artefact scatters and sub-surface deposits, possible burials and the historic Aboriginal camp-site. Test-excavations revealed that the deposits generally occurred at a depth of between 8-31 centimetres below the present surface and in a relatively undisturbed context. The results of excavations at these sites indicated that both the use and manufacturing of stone tools occurred and that the sites may have been occupied between 1,000 and 3,500 years ago.

Paton (1993) conducted a survey at Currumbene Creek at Myola Village, in which a small artefact scatter was located on sandy sediments adjacent to the creek.

Feary (1997) surveyed an area associated with a wetland, two kilometres inland at Moona Moona Creek, and recorded two small artefact scatters, two isolated finds and a midden containing mainly estuarine species.

Dallas (1998) conducted a survey at the site of the proposed Callalla Bay school (Lot 1 in DP 848057). The study area measured 200 m x 100 m. The landform consisted of gently south sloping forested land. No sites were recorded and this result was attributed to the location of the study area away from the swamps and wetlands

Dibden and Kuskie (1999) conducted an assessment at Red Point, situated on the northern shore of Jervis Bay, two kilometres east of the village of Callala Bay. The study area consisted of 16.3 kilometres of linear vehicle and walking tracks and several broader areas where midden sites were known to exist. A total of six sites (three artefact scatters, two shell middens and one isolated artefact) were recorded within the study area. Artefact

scatters were found to be small in area and to contain low numbers of artefacts distributed at relatively low densities. Silcrete was the dominant stone material at all sites, with quartzite, chert, quartz and volcanic materials also occurring. The results indicated that Aboriginal sites in the Red Point locality occur within several environmental contexts. The artefact scatters occur on a broad ridge crest, simple slopes and basal slopes within reasonable proximity of four resource zones (Jervis Bay, rock platform, forest/scrub, and wetlands). All sites are located some distance from potable water. In relation to landform units, artefact density was found to be higher on the broad ridge crest and basal slopes.

Jo McDonald CHM (2000) surveyed thirty hectare area at Griffin Street in Callalla Bay on the south side of Callalla Creek. A previously recorded midden site was relocated. Subsurface test excavation was recommended. It is unknown whether or not this has taken place. The midden Site NPWS Site #58-2-144 located close to the current study area was inspected during the survey.

Jo McDonald CHM (2002) surveyed a ca. 0.4 ha area behind the Huskisson Hotel. The land was formerly sand dunes and currently artificial embankment. No sites were located and the area was assessed to be of low potential.

Mary Dallas Consulting Archaeologists (2003) conducted an archaeological assessment at Vincentia situated c. 2.5 km to the east of the current study area. The land was comprised of a series of low bedrock ridgelines. No Aboriginal sites were recorded, however two areas were identified to be archaeologically sensitive.

Navin Officer Heritage Consultants (2004) conducted an assessment of a proposed 11kV underground cable route situated on either side of Currumbene Creek extending from Myola to Woollamia at c. 4 km north east of the current study area. The area is comprised of Holocene sands and silts. No Aboriginal sites were recorded however one area of archaeological potential was recorded on a sandy rise adjacent to a low-lying mangrove flat.

Three studies have been undertaken either within or close to the investigation area (Koettig 1989; Silcox 1990; ERM Mitchell McCotter 1994). The results of these studies indicate that the area is generally on low archaeological potential.

Koettig (1989) carried out a survey at Tomerong in respect of the proposed Tomerong bypass. One site consisting of a small surface scatter of stone artefacts (GR1) and several areas of archaeological (TBP1, TBP2 and TBP3) were recorded. Site GR1 consisted of four stone artefacts distributed over a 100 m area located on a low, broad ridge top.

Silcox (1990) conducted subsurface test excavation in respect of the proposed Tomerong bypass. Two of the areas of potential were located on alluvial flats bordering major creeks (TBP 1 and TBP2). The other was located on a broad sloping ridgetop. The results revealed very low artefact density at three of the test sites and were interpreted as representing infrequent occupation.

Jerberra Estate was subject to an archaeological investigation in 1994 at which time no Aboriginal sites or areas of archaeological potential were recorded (ERM Mitchell McCotter 1994).

6.4 Prediction of Archaeological Potential

Based on the above review and a consideration of the landscape context of the investigation area the type of sites known to occur in the region and the potential for their presence within the study area are listed as follows.

Stone Artefacts

Stone artefacts are found either on the surface and/or in subsurface contexts. The raw materials used for artefact manufacture will commonly be silcrete, chert, quartzite, quartz and volcanics.

Within the local area stone artefacts will be widely distributed across the landscape in a virtual continuum, but with significant variations in density in relation to different environmental factors. Artefact density and site complexity is likely to be greater near reliable water (c. 100 metres of the highest order streams and fresh water swamps) and the confluence of a number of resource zones.

The detection of stone artefacts depends on ground surface factors and whether or not the potential archaeological bearing soil profile is visible. Prior ground disturbance, vegetation cover and sediment/gravel deposition can act to obscure the presence of stone artefacts.

Given the environmental context of the study area, and a prediction of the likely nature of Aboriginal land use, stone artefacts can be expected to be present at very low density only.

Grinding Grooves

Grinding grooves are found in rock surfaces and result from the manufacture and maintenance of ground edge tools. Given the absence of large sandstone exposures in the study area grinding groove sites are unlikely to be present.

Burials sites

Burial sites have been recorded within the wider region. This site type is rarely located during field survey and given the topography and nature of the soils burials are not predicted to be present in the study area.

Rock Shelter Sites

Rock shelter sites are unlikely to be present in the study area.

Rock Art

Painted, drawn or engraved imagery on rock surfaces either situated in sheltered or open contexts, usually called rock art, is occasionally found in the local area. Given the absence of vertical or large horizontal stone outcrops, this site type is unlikely to be recorded in the investigation area.

Scarred and Carved Trees

Scarred and Carved trees result from either domestic or ceremonial bark removal. Carved trees associated with burial grounds and other ceremonial places have been recorded in the wider region. In an Aboriginal land use context this site type would most likely have been situated on flat or low gradient landform units in areas suitable for either habitation and/or ceremonial purposes.

Bark removal by European people through the entire historic period and by natural processes such as fire blistering and branch fall make the identification of scarring from a causal point of view very difficult. Accordingly, given the propensity for trees to bear scarring from natural causes their positive identification is impossible unless culturally specific variables such as stone hatchet cut marks or incised designs are evident and rigorous criteria in regard to tree species/age/size and specific characteristics in regard to regrowth is adopted.

Nevertheless, the likelihood of trees bearing cultural scarring remaining extant and in situ is low given events such as land clearance and bushfires. Generally scarred trees will only survive if they have been carefully protected (such as the trees associated with Yuranigh's grave at Molong where successive generations of European landholders have actively cared for them).

Given the removal of trees from the area in the historic period this site type has a low potential to be present in the study area.

Middens

Middens consist of deposits of shell and sometimes contain stone artefacts, bone and human burials. Middens are a commonly recorded site type in the local area.

Middens situated in the area will vary in their species composition which is generally a factor of environmental location. Rock platform species typically dominate sites situated on headland contexts, while estuarine species are dominant in sites found around estuaries. Middens present in areas near to marine rock platforms are indicated to be situated in reasonable proximity and have reasonable access to the resource zone.

Given the environmental context of the study area the potential for middens to be present is assessed to be low.

Ceremonial and Mythological Sites

No previously recorded ceremonial or mythological sites are recorded for the immediate area. Given that the identification of such site types is generally dependent on 19th century recordings, it is unlikely that such sites will be recorded during the current study.

Stone Quarry and Procurement Sites

A lithic quarry is the location of an exploited stone source (Hiscock & Mitchell 1993:32). Sites will only be located where exposures of a stone type suitable for use in artefact manufacture occur. Given the absence of suitable stone outcrops in the proposal area this site type is unlikely to be recorded during the study.

7. SURVEY RESULTS

7.1 Survey Coverage Variables

Survey Coverage Variables are a measure of ground surveyed during the study and the archaeological visibility present within that surveyed area. Survey coverage variables provide a measure with which to assess the effectiveness of the survey so as to provide an informed basis for the formulation of management strategies.

Specifically, an analysis of survey coverage is necessary in order to determine whether or not the opportunity to observe stone artefacts in or on the ground was achieved during the survey. In the event that it is determined that ground exposures provided a minimal opportunity to record stone artefacts it may be necessary to undertake archaeological excavation for determining whether or not stone artefacts are present. Conversely, if ground exposures encountered provide an ideal opportunity to record the presence of stone artefacts, the survey results may be considered to be adequate and accordingly no further archaeological work may be required for determining the status of an area.

Two variables have been recorded during this study to measure ground surface visibility: The area of ground exposure encountered and the quality and type of ground visibility (archaeological visibility) within those exposures. These two variables of ground surface visibility are defined as follows:

Average Ground Exposure – an estimate of the total area of ground inspected which contained exposures of bare ground; and

Average Archaeology Visibility – an estimate of the average levels of potential archaeological surface visibility within those exposures of bare ground.

Based on the two visibility variables as defined above, a net estimate (Net Effective Exposure) of the archaeological potential of exposure area within a survey unit has been calculated. The *Effective Survey Coverage* (ESC) calculation is a percentage estimate of the archaeological potential of the ground surveyed; this calculation is defined and required by the NPWS. The ESC provides an estimate of the proportion of the total study area which provided a net 100% level of ground surface visibility (with archaeological potential).

Survey coverage is described in Tables 1 below. A total of eight archaeological terrain units have been defined. Their location is shown on Figure 3. The survey area measured ca. 70.3 hectares. Approximately 25.26 hectares was subject to comprehensive visual inspection. Ground exposure of the area surveyed is estimated to have been ca. 3.1 hectares with 2.8 hectares of that area assessed to have afforded archaeological visibility. Accordingly, effective survey coverage is calculated to have been ca. 4% of the total survey area.

Survey Unit	Exposures	Land-form	Survey Unit Area	Area surveyed	Ground exposure	Ave. arch visibility %	Net Effective Exposure	ESC	Predicted potential density of subsurface artefacts
SU1	Bare earth patches, tracks, animal tracks, dams	Drainage depression	120,000 m ²	60,000 m ²	c.550 m ²	80 %	440 m ²	0.36 %	Very low
SU2	Bare earth patches, tracks, cleared areas adjacent to roads, dam	Ridge crest	150,000 m ²	60,000 m ²	c.10000 m ²	90 %	9000 m ²	6 %	Very low
SU3	Bare earth patches, tracks, cleared areas adjacent to roads	Ridge crest	90,000 m ²	50,000 m ²	c.12,500 m ²	90 %	11,250 m ²	12.5 %	Very low
SU4	Bare earth patches, track	Simple slope	10,000 m ²	5,000 m ²	c.240 m ²	90 %	216 m ²	2.16 %	Very low
SU5	Bare earth patches, tracks, cleared areas adjacent to roads	Simple slope	220,000 m ²	66,000 m ²	c.7000 m ²	90 %	6300 m ²	2.86 %	Very low
SU6	Bare earth patches, tracks, animal tracks	Drainage depression	48,000 m ²	9,600 m ²	c.300 m ²	80 %	240 m ²	0.5 %	Very low
SU7	Bare earth patches	Simple slope	25,000 m ²	1,000 m ²	c.50 m ²	90 %	45 m ²	0.18 %	Very low
SU8	Bare earth patches, tracks	Ridge crest	40,000 m ²	1,000 m ²	c.500 m ²	90 %	450 m ²	1.1 %	Very low
Total			70.3 ha	25.26 ha	3.1 ha		2.8 ha	4 %	

Table 2: Survey Coverage Data

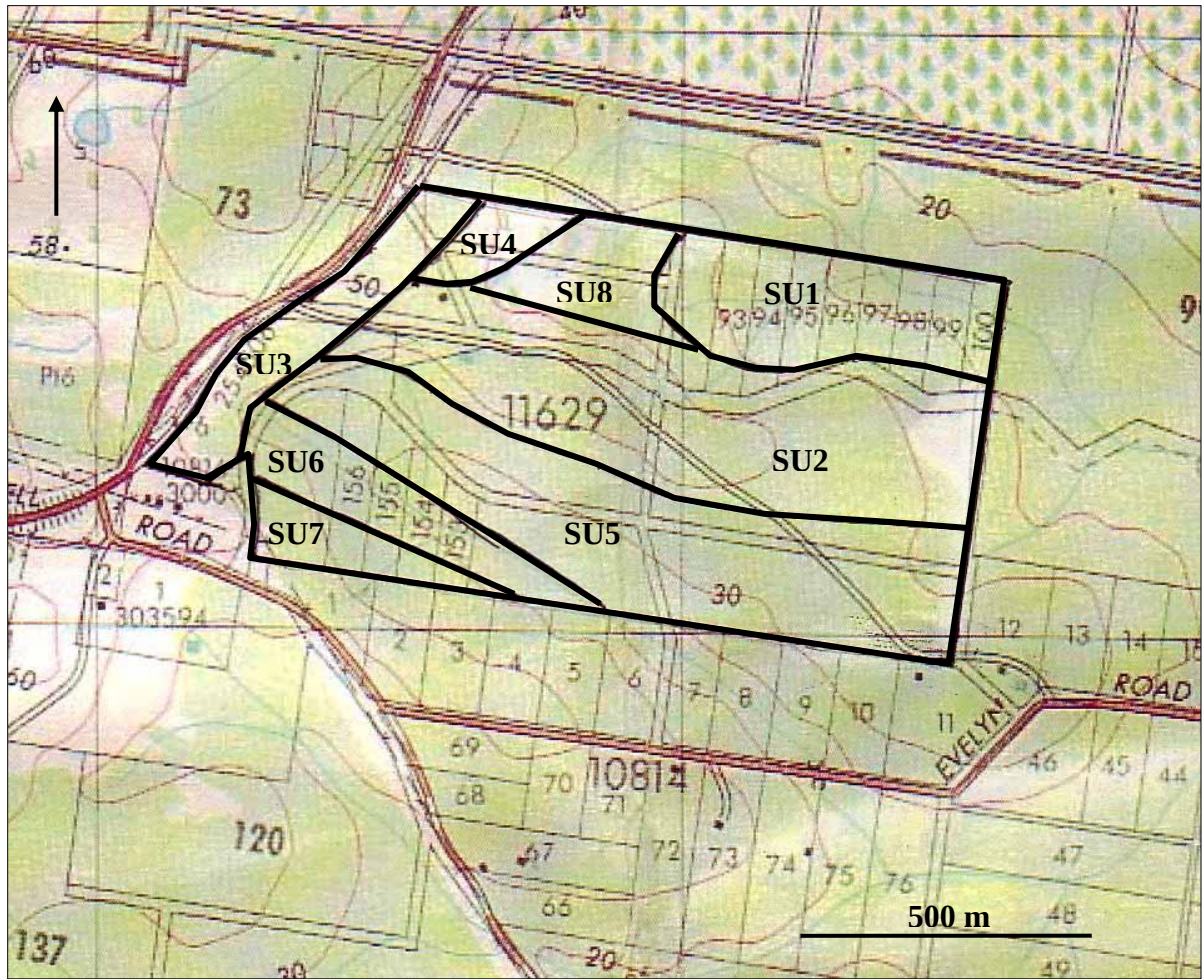


Figure 3 Location of Survey Units (Huskisson 9027-4-N 2nd ed. 1:25,000 topographic map)

7.2 Results

No Aboriginal objects or areas of archaeological potential were recorded during the survey.

The proposal area has been found to be highly disturbed as a result of prior European land usages, including impacts resulting from clearance and landscape modification associated with the construction of buildings, associated structures, roads, dams and gardens.

Given the reasonable effective survey coverage encountered during the survey the results are assessed to be an accurate reflection of the archaeological sensitivity of the area.

8. STATUTORY CONTEXT

Two pieces of legislation provide the primary basis for Aboriginal heritage management in NSW, the National Parks and Wildlife Act 1974 (NPW Act) and the Environmental Planning and Assessment Act 1979 (EP&A Act) (NPWS 1997).

The Environmental Planning and Assessment Act 1979 (EP&A Act), its regulations, schedules and guidelines provides the context for the requirement for environmental assessments to be undertaken during land use planning (NPWS 1997).

In the event that rezoning will permit rural residential development applications (DA's) are likely to be submitted for individual lots. Any such DA's would be assessed in accordance with section 79C of the EP&A Act, which would among other things require consideration of "...the likely impacts of that development, including environmental impacts on both the natural and built environments, and social and economic impacts in the locality."

The NPW Act provides statutory protection for Aboriginal objects and Aboriginal Places.

An 'Aboriginal object' is defined as

'any deposit, object or material evidence (not being a handicraft for sale) relating to Aboriginal habitation of the area that comprises New South Wales, being habitation before or concurrent with the occupation of that area by persons of non-Aboriginal extraction, and includes Aboriginal remains'.

Under s90 of the NPW Act a person must not knowingly destroy, damage or deface or knowingly cause or permit the destruction, damage or defacement of an Aboriginal object or Aboriginal Place without first obtaining the consent of the Director-General of the NSW DEC. Consents which enable a person to impact an Aboriginal object are issued by the NSW DEC upon review of a s90 Consent application.

Under s87 of the NPW Act a person must not excavate or disturb land for the purposes of discovering an Aboriginal object without first obtaining the consent of the Director-General of the NSW DEC. Permits which enable a person to excavate land for the purposes of determining whether or not an Aboriginal object is present are issued by the NSW DEC upon review of a s87 Permit application.

9. CONCLUSIONS AND RECOMMENDATIONS

The following conclusions and recommendations are made on the basis of:

- Legal requirements as set out under the National Parks and Wildlife Act 1974 (as amended) which states that it is illegal to knowingly destroy, damage or deface or knowingly cause or permit the destruction, damage or defacement of an Aboriginal object or Aboriginal Place in NSW without first obtaining consent of the Director-General of the NSW Department of Environment and Conservation (see Section 9 Statutory Information).
- The results of the investigation as documented in this report.
- An analysis of the survey results.

It is concluded and recommended that:

1. There are no archaeological constraints to the rezoning proposal.
2. No Aboriginal objects were recorded during the survey of the investigation area.

Given the absence of a source of reliable water and the distance of the site from other resource zones it is predicted that the study area would have been utilised for low levels of Aboriginal occupation and that this would result in correspondingly low levels of artefact discard.

The survey results are assessed to be a reliable indicator of the archaeological status of the study area. Accordingly it is recommended that further investigation is not warranted in respect of the rezoning proposal.

3. A copy of this draft report has been forwarded to:

Jerringa Local Aboriginal Land Council
c/o RSM Bird Cameron Partners
GPO Box 200
Canberra ACT 2601

Jerringa Consultants Pty Ltd
PO Box 5009
Nowra DC NSW 2541

4. A copy of this report should be submitted to:
Dr Philip Boot
South Branch, Archaeologist
Environment Protection and Regulation Division
NSW Department of Environment and Conservation
PO Box 2115
QUEANBEYAN NSW 2620

10. REFERENCES

- Antill, R. 1982. *Settlement in the South: A Record of the Discovery, Exploration and Settlement of the Shoalhaven River Basin 1803-1982*. Weston & Co, Publishers Pty Ltd: Kiama.
- Attenbrow, V 1976 *Aboriginal subsistence economy on the far south coast of New South Wales, Australia*. Unpublished BA honours thesis. University of Sydney.
- Barz, R.K. 1987 *Some Theoretical and Practical Aspects of Midden Sampling as Applied to a Site at St. George's Basin, Jervis Bay, A.C.T.* Unpublished BA (Honours) Thesis, Australian National University.
- Bayley, W. 1975 *Shoalhaven. History of the Shire of Shoalhaven NSW*. Shoalhaven Shire Council: Nowra.
- Blackwell, A. 1982. *Bowen Island: Further evidence for economic change and intensification on the South Coast of new South Wales*. In Bowdler, S. (ed), *Coastal Archaeology in Eastern Australia: Proceedings of the 1980 Valla Conference of Australian Prehistory*. Department of Prehistory, Research School of Pacific Studies, ANU: Canberra.
- Boot, P. 1994 *Recent Research into the Prehistory of the Hinterland of the South Coast of New South Wales*. In, Sullivan, M, Brockwell, S. and Webb, A. (eds) *Archaeology in the North: Proceedings of the 1993 Australian Archaeological Association Conference*. NARU: Darwin.
- Boot, P. 1996 Pleistocene Sites in the South Coast Hinterland of New South Wales. *Tempus* 6: 275-288
- Boot, P. 2002 *Didthul, Gulaga and Wadbilliga: An archaeological study of the Aboriginals of the New South Wales South Coast hinterland*. Unpublished PhD thesis: The Australian National University.
- Bowdler, S. 1970 *Bass Point: The Excavation of a South-East Australian Shell Midden Showing Cultural and Economic Change*. Unpublished BA (Hons) thesis. University of Sydney: Sydney.
- Brunton, P. (ed) 1998 *The Endeavour Journal of Joseph Banks: The Australian Journey*. Angus and Robertson: Sydney.
- Cane, S. 1987 *An Archaeological and Anthropological Investigation of the Armament Depot Complex in Jervis Bay, NSW*. Unpublished report to the Department of Housing and Construction.
- Cane, S. 1988 *An Assessment of the Impact of Defence Proposals on Aboriginal Sites in Jervis Bay, NSW*. Unpublished report to Sinclair Knight & Partners.
- Collier, M. 1975 *Cemetery Point: the Analysis and Economic Interpretation of a Midden*. Unpublished BA (Hons) thesis, Australian National University, Canberra.
- Dallas, M. 1998 *Proposed school sites at Callalla Bay – Aboriginal Archaeological survey*. Letter to NSW Department of Public Works and Services.
- Dibden, J. and P. Kuskie. 1999 *An Archaeological Assessment of Proposed works by NPWS (Nowra District) at Red Point and Hammerhead Point, Jervis Bay National Park, South Coast of New South Wales*. Report to NSW National Parks and Wildlife Service (Nowra District).
- Eades, D. 1976 *The Dharawal and Dhurga Languages of the New South Wales South Coast*. Canberra: Australian Institute of Aboriginal Studies.
- Egloff, B. (with the Wreck Bay and Jerrinja Aboriginal Communities) 1995 *Aboriginal landscapes and seascapes*. In Cho, G., Georges, A., Stoutjesdijk, R. and Longmore, R. (eds), *Jervis Bay: A Place of Cultural, Scientific and Educational Value*. Kowari 5. Australian Nature Conservation Agency: Canberra.

- Egloff, B., Navin, K. and Officer, K. 1995. *Jervis Bay National Park and Botanic Gardens as Aboriginal Land*. Unpublished report.
- ERM Mitchell McCotter 1994. *Jerberra Estate*. Report to Shoalhaven City Council.
- Feary, S. 1997 *An Assessment of Archaeological Sites in the Huskisson Area, Jervis Bay National Park*. Unpublished report to NPWS.
- Flood, J. 1980 *The Moth Hunters. Aboriginal Prehistory of the Alps*. Canberra: Australian Institute of Aboriginal Studies.
- Flood, J. 1982 Katungal, Paiendra and Bemeringal. In S. Bowdler (ed) *Coastal Archaeology in Eastern Australia. Proceedings of the 1980 Valla Conference on Australian Prehistory*. pp29-31: Canberra: Department of Prehistory, Research School of Pacific Studies ANU.
- Gunn, R. Austin, M. Galloway, R and D. Richardson. 1978 *Land Use on the South Coast of New South Wales. Volumes 1-4*. CSIRO: Melbourne.
- Hiscock, P. 1982. A Technological Analysis of Quartz Assemblages from the South Coast. In S. Bowdler (ed) *Coastal Archaeology in Eastern Australia. Proceedings of the 1980 Valla Conference on Australian Prehistory*. Department of Prehistory, RSPS. The Australian National University, Canberra.
- Hiscock, P. & Mitchell, S. 1993 *Stone Artefact Quarries and Reduction Sites in Australia: Towards a Type Profile*. AGPS: Canberra.
- Howitt, A. 1904 *The Native Tribes of South East Australia*. London: Macmillan & Co Limited.
- Kalma, J. and J. McAlpine 1978 Climate. In Gunn, R. (ed), *Landuse on the South Coast of New South Wales. Vol 2: Bio-physical Background Studies*. CSIRO: Melbourne.
- Kuskie, P. 2000 *An Aboriginal Archaeological Assessment of the Proposed Mount Arthur North Coal Mine, Near Muswellbrook, Hunter Valley, New South Wales*. Unpublished report to Dames and Moore.
- Jervis, J. 1937 Jervis Bay: its discovery and settlement. *Royal Australian Historical Society Journals and Proceedings*. 22:118-134.
- Jo McDonald Cultural heritage Management PL 2000 *Survey for Aboriginal Sites and Relics at Proposed Residential Subdivision at Griffin Street, Callalla Bay, NSW*. Report prepared for Gunninah Environment Consultants on behalf of Reality Realisations Pty Ltd.
- Jo McDonald Cultural heritage Management PL 2002 *Archaeological survey for Aboriginal Sites: Jervis Bay Hotel. Huskisson, NSW*. Report prepared for Allen Price & Associates on behalf of Santom Pty Ltd.
- Koettig, M. 1989 *Report on the Survey for Aboriginal Sites Along the Proposed Tomerong By-Pass*. Unpublished report to RTA.
- Lampert, R. 1971 *Burrill Lake and Currarong*. Department of Prehistory. Research School of Pacific Studies: Australian National University.
- Lampert, R. & Sanders, F. 1973 Plants and men on Beecroft Peninsula, New South Wales. *Mankind* 9: 96-108.
- Lance, A. 1987 *An Archaeological Survey of the Jervis Bay Quarry, South Coast New South Wales*. Unpublished report to Longworth and McKenzie.
- Lance, A. and Fuller, N. 1988 *An Archaeological Survey of Ocean Outfall Pipeline Routes, Jervis Bay, New South Wales*. Unpublished report to Shoalhaven City Council.

- Lesser, D. 1985. Dreamtime snake rears at Navy's Jervis Bay plans. *The Australian* 26/11/85: page 24.
- McConnell, A. 1978 *Report of the Archaeological Survey of the Sewerage Treatment Works Sites at Shoalhaven Heads, Culburra and Sussex Inlet, N.S.W.* Unpublished report to Shoalhaven City Council.
- Mary Dallas Consulting Archaeologists 2003 *Vincentia Master Plan Archaeological Assessment Lot 801 & 802 in DP 102286 and Lots 72-75 in DP 87404 Corner Naval Road and the Wool Road, Vincentia, NSW.* Report to Forbes Rigby Pty Limited on behalf of Stockland Development Pty Limited.
- Mulvaney, J. and J. Kamminga 1999 *Prehistory of Australia*. Allen and Unwin: St Leonards
- Navin, K. 1990 *Proposed Currumbene Creek Crossing Feasibility Study: Archaeological Component*. Unpublished report to Shoalhaven City Council.
- Navin, K. 1991 *An Archaeological Investigation of Proposed Currumbene Creek Crossing and Associated Road Routes from Woollamia to Callala Beach, Jervis Bay, NSW.* Unpublished report to Mitchell McCotter & Associates Pty Ltd.
- Navin Officer Heritage Consultants 2004 *Proposed 11kV Underground Cable from Myola to Woollamia, South Coast NSW.* Report to Integral Energy.
- New South Wales National Parks and Wildlife Service. 1997 *Aboriginal cultural heritage standards and guidelines kit*.
- New South Wales Department of Environment and Conservation 2004 *Interim Guidelines for Aboriginal Community Consultation - Requirements for Applicants*.
- Officer, K. 1986 *An Archaeological Baseline Study of a Proposed Armaments Depot and Wharf, Jervis Bay, New South Wales.* Unpublished report to Department of Housing and Construction.
- Ossa, P. Marshall, B. & C. Webb 1995 New Guinea 2 Cave: A Pleistocene site on the Snowy River, Victoria. *Archaeology in Oceania* 30 (1): 22: pp. 22-35.
- Paton, R. 1993 *An Archaeological Survey of the Banks of Currumbene Creek at Myola Village Near Jervis Bay, NSW.* Report to Patterson, Britton and Partners Pty Ltd.
- Paton, R. and MacFarlane, I. 1989 *An Excavation of Abrahams Bosom Rockshelter 1, Near Currarong, Jervis Bay, NSW.* Unpublished report to NPWS and Dept. of Lands.
- Peterson, N. 1976 *Tribes and Boundaries in Australia*. AIAS: Canberra.
- Poiner, G. 1976 The process of the year among Aborigines of the central and south coast of New South Wales. *Archaeology and Physical Anthropology in Oceania* 11: 186-206.
- Silcox, R. 1990 *Test Excavations on the Tomerong By-Pass, Near Nowra, New South Wales.* Unpublished report to NSW Roads and Traffic Authority.
- Sullivan, M. 1977 *Aboriginal Sites of Bherwerre Peninsula (Jervis Bay)*. Unpublished report to Department of Capital Territory.
- Taylor, G., R. Abell and I. Paterson. 1995. Geology, geomorphology, soils and earth resources. In Cho, G., Georges, A., Stoutjesdijk, R. and Longmore, R. (eds), *Jervis Bay: A Place of Cultural, Scientific and Educational Value*. Kowari 5. Australian Nature Conservation Agency: Canberra.
- Thompson, K. 1985 *A History of the Aboriginal People of East Gippsland*. Unpublished report to Land Conservation Council, Victoria.
- Tindale, N. 1974 *Aboriginal Tribes of Australia*. ANU Press, Canberra.

Vallance, D. 1983 *Fishing, Weather and Site Location: An Esoteric Essay*. Unpublished Litt. B. Thesis. ANU: Canberra.

APPENDIX 1
Copy of advertisement placed in the South Coast Register

South Coast Register

Inside
Yourguide

Classifieds -
Wednesday, 13th July 2005 nowra.yourguide.com.au

Cultural Heritage Assessment Shoalhaven City Council has commissioned NSW Archaeology to conduct a Cultural Heritage Assessment in relation to a proposed rezoning of DP 11629 Tomerong, this to contribute towards the drafting of an LEP. We seek views of the assessment process and cultural significance values of any objects/places in the proposal area from the Aboriginal community. Written enquiries to: NSW Archaeology 97 Sugarloaf Cct Palmerston ACT 2913 Phone/Fax 6262 2241 Registration closes 4.00pm 27th July 2005

PUBLIC NOTICES AND BUSINESS OPPORTUNITIES : PUBLIC NOTICES
13/07/2005