Karuah
Local Aboriginal
Land Council

PO Box 30, Karuah, NSW 2324
16 Mustons Rd, Karuah NSW 2324
admin@karuahaboriginal.com.au
(02) 49 975733
ABN 17 304 066 465

Preliminary Cultural Heritage Assessment

Lot 1; DP1234229,

Sanderling Avenue, Hawks Nest NSW

Report to

Lands Advisory Services Pty Ltd,

265 King Street, Newcastle, NSW,

2nd July, 2018

Preliminary Aboriginal Heritage Assessment

Table of Contents

1. Introduction

1.1 Background

This report has been prepared by Karuah Local Aboriginal Land Council at the request of Lands Advisory Services Pty Ltd, 265 King Street, Newcastle, NSW, to assess the possible impact a proposed rezoning may have on Aboriginal Cultural Heritage at lot 1 DP 1234229, Sanderling Avenue, Hawks Nest, NSW, by:

1. Identifying whether or not Aboriginal objects are, or are likely to be, present in an area;
2. Determining whether or not their activities are likely to harm Aboriginal objects (if present); and
3. Determining whether an Aboriginal heritage Impact Permit (AHIP) application is required.

The development proposal is being assessed as a Planning Proposal under the Environmental Planning and Assessment Act (EP&A).

There is no specific proposal per se being considered under this assessment as it is a reoning of the land to allow development.

Figure 1 illustrates the regional location of the study area; Figure 2 shows the study area in a local context. Figure 3 is an aerial view of the study area.

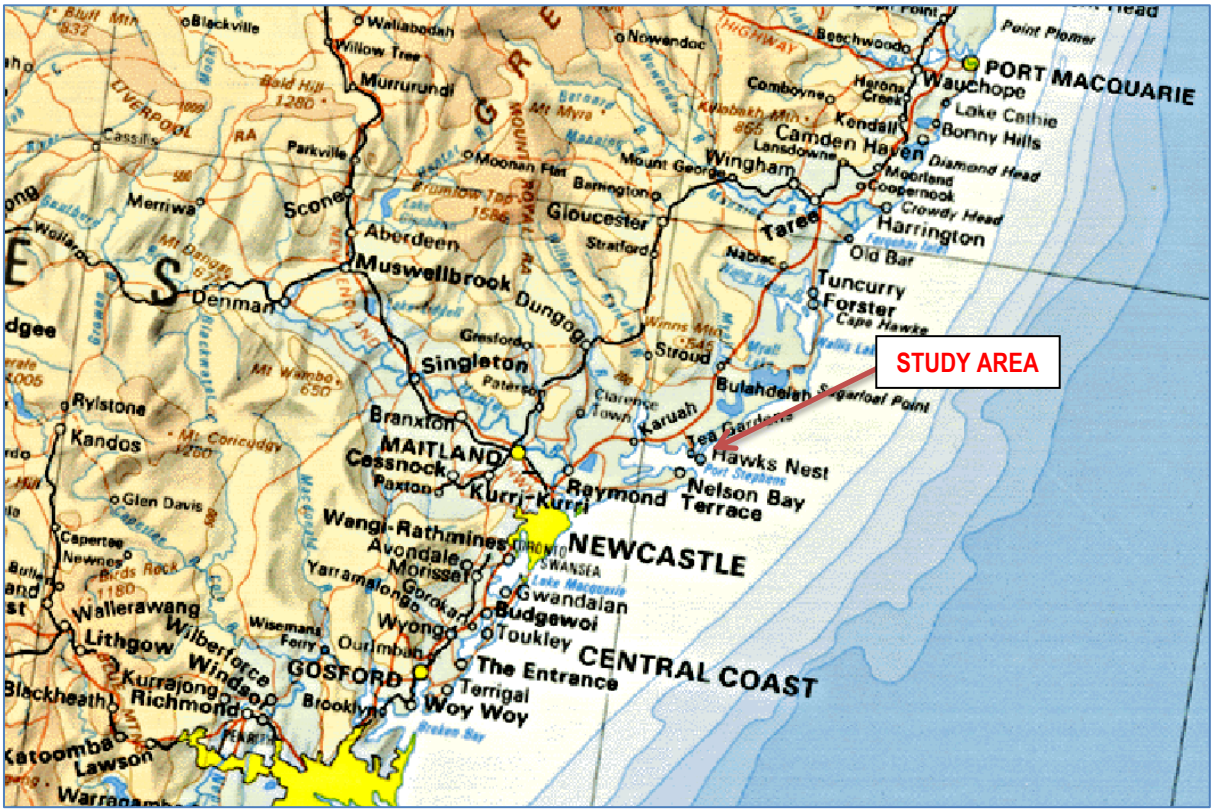

Figure 1 Regional Location

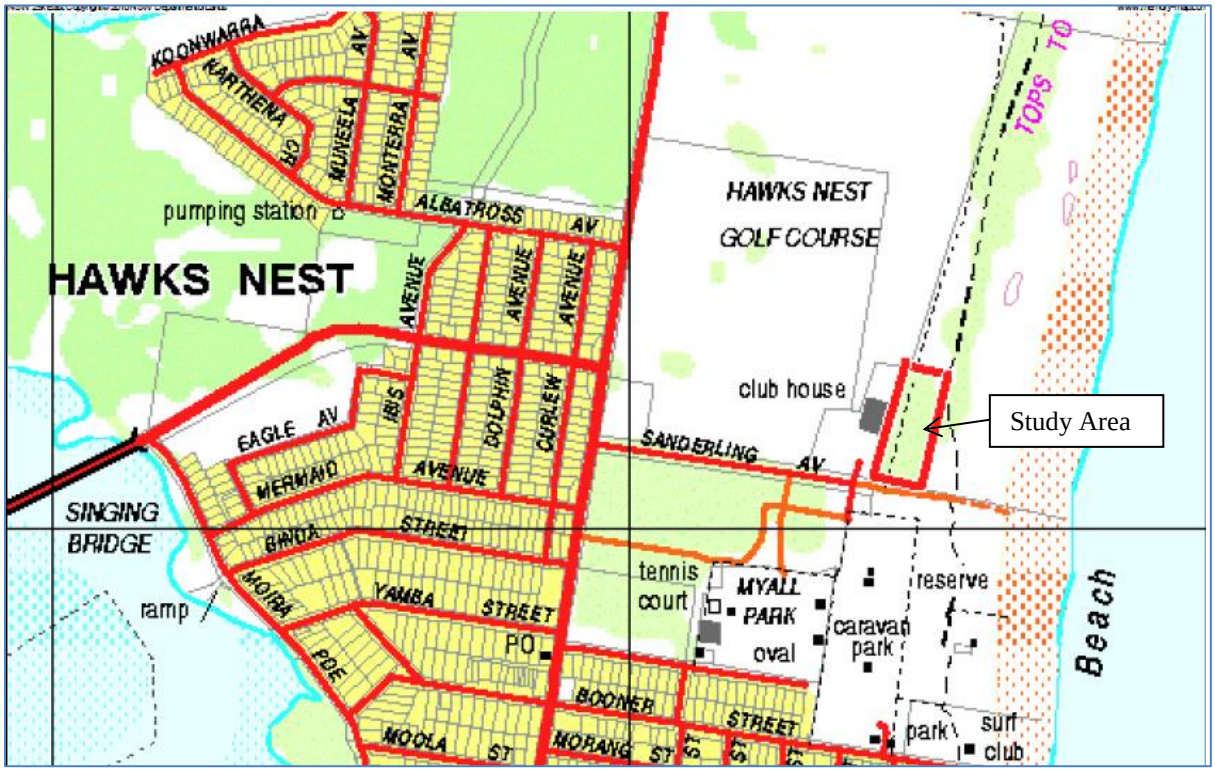

Figure 2 Study area

Figure 3 Aerial view of Study Area

1.2 Legislative Context

Under Section 52 Aboriginal Land Rights Act 1983, Local Aboriginal Land Council has the following functions in relation to Aboriginal culture and heritage:
(a) To take action to protect the culture and heritage of Aboriginal persons in the Council's area, subject to any other law,
(b) To promote awareness in the community of the culture and heritage of Aboriginal persons in the Council's area.

The primary law which affects the above functions of a land Council is The *National Parks and Wildlife Act 1974*, (NPW Act) administered by the Office of Environment and Heritage (OEH). It has as one of its Objects, the conservation of objects, places and features of significance to Aboriginal people. That is once an object, place or feature is determined to be significant to Aboriginal people it becomes protected by the NPW Act. Section 85 of that Act, vests authority in the Chief Executive to be responsible for: the proper care, preservation and protection of any Aboriginal objects, features and places. It is not the role of a land council to "care" for the object but the Chief Executive of OEH.

'Aboriginal object means 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, being habitation before or concurrent with (or both) the occupation of that area by persons of non-Aboriginal extraction, and includes Aboriginal remains.'

Under section 86 of the NPW Act, it is an offence to 'harm' an Aboriginal object. 'Harm' means any act or omission that:

- Destroys, defaces, damages or desecrates the object
- Moves the object from the land on which it had been situated, or
- Causes or permits the object to be harmed.

Harm does not include something that is trivial or negligible.

It is section 87 that overrides the function of a Land Council to protect Aboriginal Culture and heritage.

However, before the power to take "proper care" of an Aboriginal Object by the Chief Executive of OEH, the object must first be determined that it is significant to Aboriginal people.

Such determination can only be made by Aboriginal people and ipso facto by its legislated function; an Aboriginal Land Council.

The regulations under the NPW Act set out a generic *Due Diligence Code of Practice for the Protection of Aboriginal Objects in New South Wales*, as well as, a *Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales* to assess the significance and extent of archaeological evidence in order to apply for an AHIP.

The regulated code links to other planning processes under the EP&A Act and the applicable section in the code referring to the EP&A Act is as follows:

> ***4.1 Development under Part 4 EP&A Act and activities under Part 5 EP&A Act***
>
> *Consideration of the potential impacts of development on Aboriginal heritage is a key part of the environmental impact assessment process under the Environmental Planning and Assessment Act 1979 (EP&A Act). The standards in this code can be used or adapted by proponents to inform the initial assessment of the environmental impacts of an activity on Aboriginal heritage. An environmental impact assessment which meets all of the*

requirements of this code will satisfy the due diligence test. Alternatively, you could adapt the requirements of this code, provided it still meets the ordinary meaning of exercising due diligence (see section 7.7).

If it is found through this initial assessment process that Aboriginal objects will or are likely to be harmed, then further investigation and impact assessment will be required to prepare information about the types of objects and the nature of the harm. If you are going to harm a known Aboriginal object you will need to apply for an AHIP. In this situation, the need to obtain the AHIP is in addition to any approval under the EP&A Act (unless the project is subject to Part 3A EP&A Act).

As the proposal is a planning proposal, Section 117(2) Direction 2.3 of the Environmental Planning and Assessment Act 1979, must be considered, namely;

"A planning proposal must contain provisions that facilitate the conservation of: (a) items, places, buildings, works, relics, moveable objects or precincts of environmental heritage significance to an area, in relation to the historical, scientific, cultural, social, archaeological, architectural, natural or aesthetic value of the item, area, object or place, identified in a study of the environmental heritage of the area, (b) Aboriginal objects or Aboriginal places that are protected under the National Parks and Wildlife Act 1974, and (c) Aboriginal areas, Aboriginal objects, Aboriginal places or landscapes identified by an Aboriginal heritage survey prepared by or on behalf of an Aboriginal Land Council, Aboriginal body or public authority and provided to the relevant planning authority, which identifies the area, object, place or landscape as being of heritage significance to Aboriginal culture and people."

Planning proposals should identify whether Aboriginal cultural heritage values are known or are likely to occur. As a minimum, there should be a preliminary assessment (desktop study with or without a site inspection) as to whether Aboriginal cultural heritage values are known or likely to occur in the area covered by the proposal. If cultural heritage values are known or are likely to occur, the planning proposal should indicate what further studies and consultation will be undertaken post Gateway determination and how Aboriginal cultural heritage values could be addressed through appropriate planning provisions.

It is important to note that The Due Diligence Code of Practice for the Protection of Aboriginal Objects in New South Wales (2010) should not be used to support a planning proposal. Due diligence is an assessment of likely harm and not a detailed assessment of Aboriginal cultural heritage values.

The planning proposal must include provisions to facilitate the conservation of Aboriginal cultural heritage values in accordance with Local Planning Direction 2.3. Provisions may include:

- appropriate land use zoning (e.g. E2 conservation)
- redesign of future development to avoid harm
- incorporating areas into passive open space
- recommendations for a Development Control Plan.

If impacts to Aboriginal cultural heritage cannot be avoided, they must be minimised and managed; any impact to Aboriginal cultural heritage can only proceed in accordance with appropriate authorisation (such as an approved Aboriginal Heritage impact Permit (AHIP).

A Planning Proposal assessment may need to be in 2 stages; a preliminary assessment pre gateway and a fuller, more detailed assessment post gateway, if required

This assessment is a preliminary assessment for a pre-gateway determination.

2.0 Assessment Process

According to OEH regulated codes, (Archaeological Code of Practice and Due Diligence Code of Practice for protection of Aboriginal Objects in NSW) the objective of any archaeological investigation (where necessary) is to learn about past human societies through the study of material remains and historical, oral and environmental sources. Archaeological investigations locate, identify and study Aboriginal objects, archaeological deposits and potential archaeological deposits, and historical, oral and environmental sources to provide an assessment of the archaeological significance of the objects and the subject area.

In order to fulfil this objective the following steps need to be undertaken:

- Clearly describe the aims of the project. The rationale for the archaeological assessment must be clearly defined through these aims.
- Present a feasible and appropriate methodology for the archaeological survey and other investigations to ensure that work can be clearly linked to these aims.
- Present the findings and interpretation of the results within a wider context of archaeological knowledge and Aboriginal history.
- Ensure that the findings and interpretation of the results support the assessment of the archaeological significance of the subject area.

The purpose of the Code and Guidelines is to assist individuals and organisations to exercise due diligence when determining whether or not to obtain a permit to harm Aboriginal objects. The National Parks and Wildlife Act 1974 (NPW Act) provides that a person who exercises due diligence in determining that their actions would not harm Aboriginal objects has a defence against prosecution if they later harm an object without an Aboriginal heritage impact permit.

The Codes set out the reasonable and practicable steps which individuals and organisations can take to:

1. identify whether or not Aboriginal objects are present in an area
2. consider whether or not their activities are likely to harm Aboriginal objects (if present)
3. make a reasonable determination as to whether an Aboriginal heritage impact permit is required

The aim of this assessment is to identify the Aboriginal heritage and archaeological values of the proposed study area in particular and the landscape area in totality and the potential impacts on those values as a result of the proposal. Rather than only attempting to identify individual sites across the study area, the assessment also takes a landscaped approach to determine any potential Aboriginal archaeological evidence. This will require the identification of the range of landscape units, which are likely to contain Aboriginal archaeological evidence. This will ensure that the landscape context is assessed for significance. The landscape approach as well as previous archaeological work in the area will determine a predictive model of Aboriginal occupation of the study area.

This will be achieved through Aboriginal stakeholder consultation, surveys and literature.

This assessment also provides recommendations on the management and mitigation of impacts on known and unknown (may be uncovered through post approval work) heritage and values that may be potentially impacted by the proposal.

2.1 Assessment Personnel

The research and report were undertaken by Len Roberts, (BA [Arch.], Grad. Dip. Comp., Dip Sp. Ed.,) who also holds a certificate in Archaeological fieldwork, from Tel Aviv University, Israel. Len has worked on archaeological projects in Australia and overseas. Len is a member (since 1990) and was Deputy Chairperson (2007 -2011) of Karuah Local Aboriginal Land Council and currently CEO.

He was appointed, in 1977, (under S32AV of the Local Government Act 1919) as a part time, non-judicial expert (having, special knowledge of and experience in law, local government administration or town planning administration) member of the Local Government Appeals Tribunal from 1977 until it was replaced by the Land and Environment Court in 1980. He has been an expert witness before the Land and Environment court on Aboriginal heritage matters. Len has also taught English and Society (Australiana) at Beifang University, Yinchuan, China as an invited lecturer in second semester 2011.

Len has undertaken archaeological work for various planning and surveying companies, as well as large organizations such as AMP, Department of Public Works, RTA, Local Government Authorities, Energy Australia, Australian Rail and Track Corporation, Rio Tinto, Woolworths and numerous other clients. The projects have ranged from small aquaculture (at sea), industrial and residential projects to large rezoning proposals, as well as linear surveys for sewerage treatment upgrades, pipelines, transmission lines, wind farms, rail line upgrades and highways.

The assessments have included Due Diligence assessments, gateway determinations, as well as assessments under, Parts 3A, 4 and 5 of the EP & A Act

Len has completed various S90 applications, as well as identifying and recording in excess of 1,000 Aboriginal objects and has authored in excess of 120 reports in the last 15 years.

The visual assessment was conducted by Robert Beetson and Jordan Cobb, sites officers, of Karuah LALC. Both are very experienced sites officers in particular, Robert, who is a senior sites officer with experience in burial repatriation, bone identification and artefact recognition. The visual assessment was conducted on 30/4/2018 under good weather conditions.

2.2 Aboriginal Community Consultation

The study area is within the Karuah Local Aboriginal Land Council (CHLALC) area.

In accordance with the Office of Environment and Heritage (OEH) requirements Aboriginal community consultation needs to be undertaken as a component of the assessment. The proponent has met that requirement by engaging Karuah Local Aboriginal Land Council (KLALC) to undertake this assessment.

It is understood that should the application receive Gateway approval and further assessment is required, the Consultation guidelines will be triggered. However KLALC is also aware that further assessment may not be required post-gateway.

2.3 Assessment Methodology

Various models have been proposed by archaeologists to explain Aboriginal occupation and use of the landscape environments in NSW.

The predictive or contextual model for the archaeological assessment of the site forms the basis for developing a picture of Aboriginal occupation.

The assessment of the data enables a prediction of what form of Aboriginal occupation was likely to have existed on the study area and would show the potential for finding Aboriginal Sites. A field survey is then able to evaluate the prediction and to extrapolate reasons as to why the survey did or did not match the prediction.

The study methodology was based on data research, visual inspection and report compilation. The analysis and assessment of the study area's archaeological potential and the impact of the proposal required the completion of the following;

- Research

This involved a review of primary and secondary sources including written material, maps, plans, AHIMS database and other reports as outlined in the reference section (10) of this report.

- Predictive modelling;

This involved an analysis of the research to produce a model of possible archaeological deposits within the study area. In order to conduct the analysis of the research material in an effective and consistent manner the following aspects were examined:

1. Aboriginal heritage values
2. Archaeological record
3. Previous Studies
4. Landscape
5. Soils
6. Geological Features
7. Past land use

To ensure compliance under the S117 direction, it is proposed to undertake a 6 step process:

STEP 1 Preliminary assessment

The main purpose of a preliminary assessment is to identify whether there are Aboriginal cultural heritage values associated with the subject site.

This study will use the OEH Due Diligence process for the preliminary assessment. The due diligence process is a standardised process which enables transparency and can be used for all activities across all environments.

STEP 2 Information Requirements

Aboriginal heritage assessment requires a "multi-value" approach which includes a range of methods to satisfy data/information/reporting needs. The information required for understanding Cultural Landscape includes a range of data sets detailing the physical setting (landscape); the history of the peoples living on that land (documentation from archival and oral sources, as well archaeological information)

STEP 3 Integration of information and identification of heritage values

The synthesis and integration of the information collected will provide the description of the Cultural Landscape to provide the basis for identifying the range of heritage values present. It will also provide the basis for development of criteria to clearly support the identification of areas/places/landscapes/features and sites of high heritage value to be considered as candidates for

conservation/protection and/or the consideration of suitable off-set strategies eg community enhancement projects. This assessment will then also support the decisions regarding which areas/places/landscapes/features and sites will be impacted and any appropriate short and long-term mitigation requirements.

STEP 4 Information regarding the proposed development

This step will identify the nature and extent of the development and impacts on the Aboriginal heritage values across the development area. The extent of impact will include both direct and indirect impacts and their effect on Aboriginal heritage needs to be quantified to ensure that appropriate management in the context of the assessed values can be determined. Indirect impacts may affect sites or features located immediately beyond the development area or within the development area.

STEP 5 Integration of assessment with proposed development

This involves using the above information as the basis for assessing the cultural values against the impacts from any proposed development to identify specific outcomes.

This will include consideration of the following:

- justification for any likely impact(s), including any alternatives considered for the proposal;
- Any measures which will be implemented to avoid, mitigate or offset the likely impact(s).
- Demonstration that the input by affected Aboriginal communities has been considered when determining and assessing impacts, developing options, and making final recommendations to ensure that Aboriginal cultural heritage outcomes can be met by the proposed development.

STEP 6 Management strategy for Aboriginal heritage

This section will set out the specific management outcomes arising from the above assessment stages agreed to by the developer for management of the Aboriginal heritage values. This is to include identification of the final development impacts and the places, sites and landscape areas to be avoided and protected or conserved.

It is also to include, the nature of and location of any offsets, requirements for further work such as, archaeological salvage or community collection for objects of high archaeological or community value; specific on-going management protocols for both physical conservation outcomes and specific Aboriginal community requirements. This would include a contingency plan that details the measures to be taken in the event that Aboriginal objects of significance or a nature not anticipated, such as burials or ceremonial items are discovered during the course of works on the development site.

This assessment is step 1 and Step 2; the other steps will be undertaken post gateway if required.

3.0 Step 1 Preliminary Assessment

The preliminary assessment follows the numerical sequencing and headings of the OEH Due Diligence Code.

3.1 Description of Land and Activity

The study area can generally be described as low lying coastal floodplain landward of a foredune system. It is generally flat and lightly undulating. It does not contain treesofa good age . The land is covered in bracken, introduced grasses and banksia. It has a regular mowing regime mainly for fire hazard reduction purposes.

Figure 4 Cadastral layout of study area (Six maps)

3.2 Is the Land defined as "Disturbed Land" or an exempt or complying development?

Yes. The area has been previously mined for mineral deposits. In addition the Golf Club has overtime substantially encroached on the the western boundary for a substantial distance study area and has levelled and used some of the land as a car park and a putting green. The council has also used the eastern portion for a soil and overburden stockpile area and has often re arranged the profile of the land.

The NPW Act defines disturbed land as:
" Land that has been previously subjected to any activity that has resulted in clear and observable changes to the land's surface. Examples include: ***soil that has been ploughed;*** *urban development that has occurred; existing rural infrastructure such as dams and fences; existing roads, trails and walking tracks; and other existing infrastructure such as pipelines, transmission lines and stormwater drainage."*

Under a planning proposal, Aboriginal heritage values need to be assessed and not merely as a defence against harming an object through continuing activity. As such, disturbed land in a planning proposal context would constitute a land profile that has been clearly altered through construction, or substantial earthworks, rather than simply having been ploughed. Ploughing may destroy context whereas, construction tends to obliterate.

The land is so disturbed that any archaeological evidence that existed on site would have been obliterated. It must be noted that with mineral deposit sand mining all the sand is dug up and sieved, the minerals extracted and the sand returned to site. This process would capture any subsurface rocks or archaeological evidence and generally destroy them and more importantly contextual integrity. Any surface objects would have been removed e when the clearing of the vegetation occurred.

The following figure 5, whilst not of the study area itself, is of an adjacent area showing the transformation of the land. The Hawks Nest sand mining area was known as G Bridge Hill Ridge. It is from the book "Environmental Management in the Australian Minerals and Energy Industry Gold", edited by DP Nulughan, printed by UNSW Press (1999).

THE AREA OF BRIDGE HILL RIDGE AND WAS PREVIOUSLY USED FOR LOGGING AND MINING. HOWEVER, NOW THE AREA IS A NATIONAL PARK.

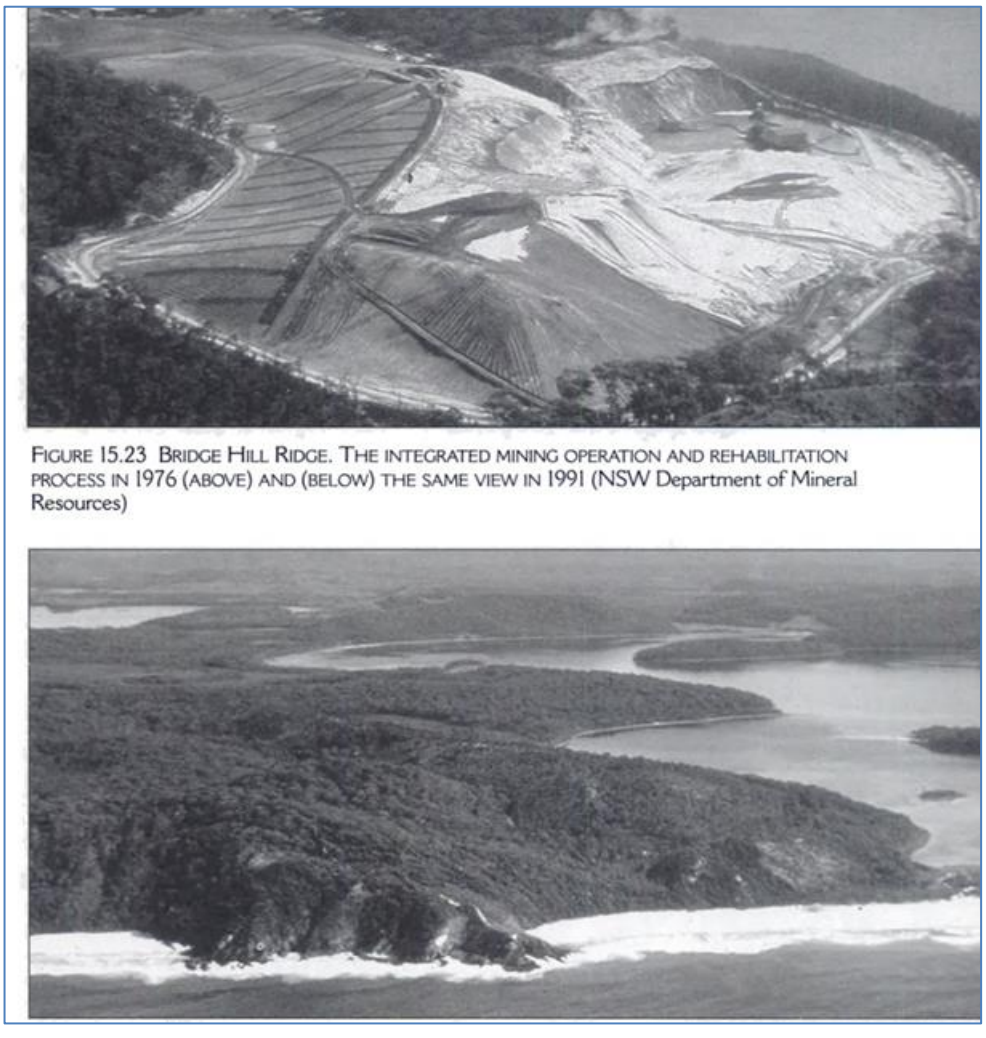

FIGURE 15.23 BRIDGE HILL RIDGE. THE INTEGRATED MINING OPERATION AND REHABILITATION PROCESS IN 1976 (ABOVE) AND (BELOW) THE SAME VIEW IN 1991 (NSW Department of Mineral Resources)

Figure 5 Illustration of the altered landscape

3.3 Is the activity exempt?

No

3.4 Will the activity involve harm that is trivial or negligible?

No

3.5 Is the activity in an Aboriginal Place or are you already aware of Aboriginal objects on the land?

No

3.6 Is the activity a low impact activity for which there is a defence in the regulation?

No

3.7 Will the activity disturb the ground surface?

Not the proposal per se, as the clearing, infrastructure works and erection of buildings for the proposal will occur at the subdivision and construction stages post rezoning.

3.8 Does the Aboriginal Heritage Information Management System suggest potential?

No, there are no Objects located within 200m of the study area but 12 are located within 1km. The nearest is a scarred tree some 500m to the east. See section 4 for further detail.

3.9 Is there archaeological potential because the proposal is:

- **within 200m of waters;**
  No
- **located within a sand dune;**
  No.
- **located on a ridge top, ridge line, or headland;**
  No. **located within 200m below or above a cliff face;**
  No
- **within 20m of or in a cave, rock shelter, or a cave mouth;**
  No

3.10 Can harm be avoided to the object or disturbance of the landscape feature?

N/A

3.11 Is Desktop assessment and visual inspection required?

Yes. Desktop assessment is required but a visual inspection is not required at this stage. The desktop assessment forms part 4 of this report (step 2)

3.12 Are further investigations and impact assessment required?

In order to satisfy the opinions of the Aboriginal community an assessment under the Archaeological Code would be warranted post gateway.

4.0 STEP 2 Information Requirements (desktop study)

An understanding of environmental factors within the local landscape provides a context for analysing past human occupation and history of an area. The analysis of environmental factors contributes to the development of the predictive modelling of archaeological sites, as well as providing a basis to contextualise the archaeological material and to interpret patterns of past human behaviour.

In particular, the nature of the local landscape including topography, geology, soils, hydrology and vegetation are factors which affect patterns of past human occupation.

Aboriginal occupation of the landscape and land use practices changed over time. Landuse has the potential to affect the visibility of archaeological material; they may obscure, or expose archaeological sites. In addition, previous disturbances may have exposed archaeological material, such as excavation for dams or other ground disturbing works. It is important that such factors are also considered when making assessments of archaeological resources in an area and understanding the distribution of observed sites.

Whilst this report is primarily focussed on the archaeological aspects of Aboriginal heritage, it is important to acknowledge and assess the importance of Aboriginal cultural context regarding places and landscapes.

4.1 Aboriginal Cultural Context

The estimated minimum viable population of about five hundred was the average size of a so-called tribe in Australia. Several anthropologists feel that 'tribe' does not accurately reflect the interaction and make-up of Aboriginal Australia, preferring the term 'band' to be the most appropriate term to describe the basic social and economic unit of Aboriginal society. It is described as a small-scale population, comprising between 2 to 6 extended family units, who together occupied and exploited a specific area.

The band was by no means a social or cultural isolate but, rather, interacted with other bands in a variety of ways. Typically these interactions involved visits, marriage, ceremonies and trade. As a result of these interactions, clusters of bands were formed; wherein there was a sense of collective identity, often expressed in terms of common and distinctive language.

In recent times the territories of Aboriginal bands generally encompassed the drainage basin of one river and stretched from the shoreline up to the top of an escarpment, another river or prominent landform feature.

The bands developed into regional groupings or cultural areas of interacting Aboriginal societies possessing broadly similar languages, social organisation and customs, material culture and art styles, ways of life and environment. According to the work by Peterson (1986), there is a general correlation between culture areas and major drainage basins, which has been explained on the grounds that a drainage basin is unified by its river system and bounded by its catchment. Water supply determines plant cover and therefore the availability of food and consequently, Aboriginal population density.

The earliest inhabitants were hunters and gatherers living off the abundant wildlife. The varied environment - terrestrial, rivers and estuaries, sand dunes and mountains provided a diet of oysters, fish, turtles, kangaroos, wallabies, possums, pigeons, bats, wild fruits and roots.

Trees were an important resource. In addition to providing the raw materials needed to produce products that were utilised in everyday life, trees also provided access to the birds and animals that

made use of them. Tree climbing using steps gouged by hatchets, allowed aborigines to access a variety of foodstuffs including wild honey, possums, flying foxes koalas and bird eggs.

There is an assumption that prior to European settlement the land was heavily forested. However, according to early settler's accounts and the Aboriginal oral history, this was not so as regular, light burning was the pattern all over Australia at the time of first European contact. The fires were of low intensity, which meant that they consumed the litter of leaves and branches on the forest floors but did not burn down the trees. Walsh, (p26), cites extracts from the accounts of early explorers,

> *"The extracts from letters, diaries and journals of early European settlers, explorers and government officials describe a parklike landscape of grasslands and grassed open forest lands with very few areas of thick forest. The cessation of regular burning following European settlement allowed a growth of thick forest of young trees that, together with an increasing understorey, choked out the grasses."*

Other uses of fire were for longer term hunting strategies. After firing, the Bush would regenerate; new grass would spring up and attract kangaroos and other animals, on which the hunters could prey. Likewise, fire encouraged the regrowth of eucalyptus trees and of edible plant roots. The ashes acted like manure, and sweet, new green shoots would spring up after the first hard rain following the burn.

The term 'fire-stick farming' has been applied to this aspect of hunting. Aborigines never put out their fires. Campfires were left burning, as were signal fires, including those lit in a sequence to indicate the direction of travel of humans or game.

The food resources available controlled the Aboriginal population, which in turn were related to water resources: the areas with the highest rainfall were generally richest in food. When food was difficult to obtain, the food quest simply required more time and effort rather than new strategies. Thus when times were hard, the people could simply move more often and further afield.

The typical Australian Bands economy is flexible with a wide variety of foods being sought and advantages being taken of seasonal abundance or chance events, such as the stranding of a whale. Aboriginal Australia was not vulnerable to famine through the failure of one crop.

The simplicity and self-sufficiency of Aboriginal society was observed by Captain Cook in 1770, and cited in Beaglehole, 1955 (p.399).

> *"From what I have said of the natives of New Holland they may appear to some to be the most wretched people on earth, but in reality they are far more happier than we Europeans. They live in a tranquillity which is not disturbed by the inequality of condition: the air and sea of their own accord furnishes them with all things necessary for life, they covet not magnificent houses, household stuff etc., they lie in a warm and fine climate and enjoy a very wholesome air, so that they have very little need of clothing and this may seem to be fully sensible of, for many to whom we gave cloth etc. to, left it carelessly upon the sea beach and in the Woods as a thing they had no matter of use for. In short they seemed to set no value upon any thing we gave them, nor would they ever part with anything of their own for any one article we could offer them; this in my opinion argues that they think themselves provided with all the necessary's of life and that they have no superfluities."*

The above comment is probably the first recorded by a European with respect to Aboriginal society and culture. It sets the background or the context in which to assess the cultural significance of an area. From a first contact European perspective it appears that items of value were carried and kept whereas, items of little value discarded. Permanent dwellings were of no interest, nor European

belongings. They were not wretched but happy and content. The environment and landscape provided for their needs.

According to Horton (1994) Fig 6, the Band that would be of interest to this survey, would be the family groupings of the Worimi.

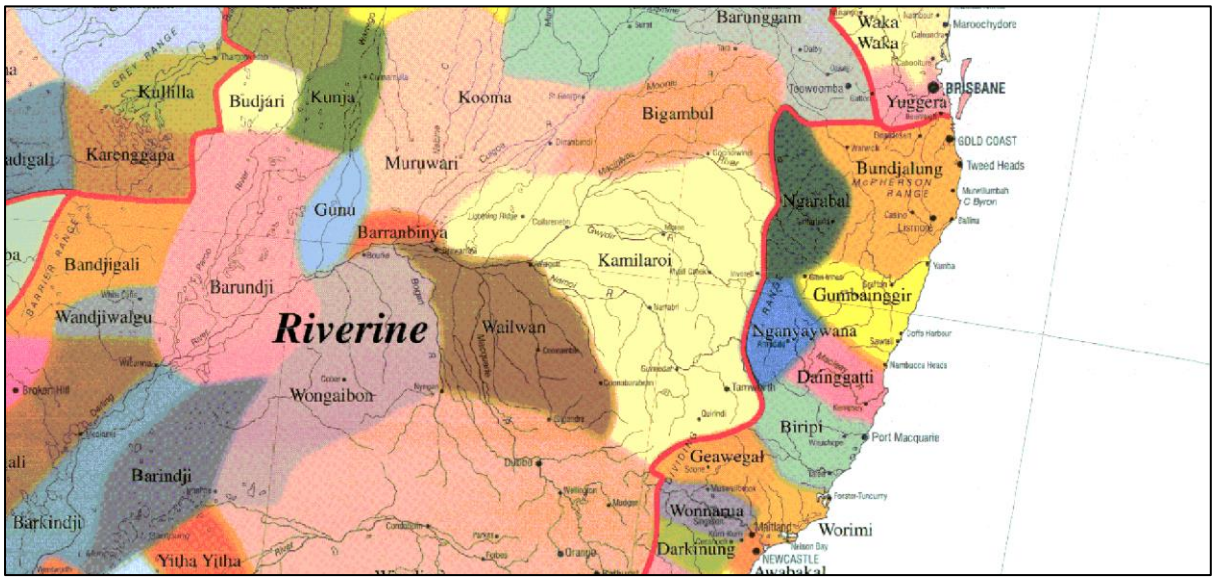

Figure 6 Horton's Map of Aboriginal Territorial Organisation

The earliest inhabitants were members of the Gringai clan, hunters and gatherers living off the abundant wildlife. The varied environment - terrestrial, rivers and estuaries, sand dunes and mountains provided a diet of oysters, fish, turtles, kangaroos, wallabies, possums, pigeons, bats, wild fruits and roots.

There are conflicting accounts as to the familial relationships of these clans, but there was a definite relationship between the clans from the Williams river and Gloucester area through to Port Stephens. They were known as the Gringai Clan and probably part of the Worimi or the Wonnarua Band (see map figure 6). According to Walsh, [Tocal's First European Settler James Phillip Webber. CB Alexander Foundation, 9p25)], "The Gringai clan of the Wonnarau had a well-developed kinship structure and lived in extended family groups."

According to the Aboriginal knowledge holders, many of the artefacts found across the landscape today were generally discards and of little importance, yet they are protected by law, whilst the real value which lies in the landscape and the sense of place ,which provided “all the necessary’s of life,” is not.

It is important in assessing the cultural significance of a place that one does not focus on the discards but on the connection to land. Whilst all land and all objects are significant to the Aboriginal community as they tell a story of place; past and present, not all objects are seen as “valuable”. According to the Aboriginal knowledge holders, stone flakes (for instance) in Aboriginal society are superfluous but grinding grooves, hearths, rock shelters, carved trees and ceremonial grounds indicate a sense of connection to the past and present and valued. Cultural assessment should be seen in the context of “home” not through the nebulous value of stone discards that are generally found at the lowest point in a landscape and from not whence they originated.

4.2 Archaeological Record

The AHIMS database search area places the study area in a very broad archaeological context in which to assess archaeological potential. These individual sites may contain 1 or many artefacts. The search results of the Aboriginal Heritage Management System are found at Appendix B.

There are no objects located within the study area or within 200 metres. However there is 1 Object within 1km. Figure 7 shows the approximate location. That object was identified by Dyall and was a midden. However, searches by various archaeologists, have not been able to relocate it. It is believed it is actually an identified midden at Yacaabaa headland.

The majority of objects were located during specific cultural assessments and tend to skew results to only that land which has been investigated. However patterns of Aboriginal land use can be postulated from that information.

It should be noted that in regards to the Database:

• Object records for many places are incomplete to varying degrees: grid references are not always accurate (due to errors on the part of field investigators or data processors) and unless the original site cards and associated reports are accompanied by detailed maps at 1:25,000 scale, it can be very difficult to check the accuracy of the grid references.

• Objects can be sometimes recorded more than once by different field investigators and registered as separate sites or not necessarily recorded.

• Not all reports and cards are available for inspection.

• Recent studies have not as yet been registered.

Within the wider region some studies revealed an abundance of Objects whilst others revealed none. Such a dichotomy of observation of artefacts may be affected by a number of possible factors singularly or in combination; and in order to adequately assess the observational record it is important to address those factors;

- Differences in observer styles
  Whilst observer styles will always play a part in observation of artefacts, it must be noted that within a wide variety of landscape and area the same study teams had areas of high concentration and no concentration of artefacts. Differing archaeological survey teams had the same Aboriginal Sites Officers and therefore minimised style difference. Several areas were surveyed by differing teams independent of each other at different times with no marked difference in the archaeological record. Despite observer styles the survey teams consistently reinforced the pattern of artefact distribution across the landscape. In addition the archaeologists undertaking the surveys are well qualified and experienced and therefore any differences in observer styles appear not to have affected the archaeological observation.

- Survey visibility
  That is, the extent to which an observer can detect the presence of archaeological material at or below a given place and is generally affected by seasonal factors such as grass cover, level of water in creeks etc. It is a given, that the archaeological record is affected by surface visibility, however it would appear that the visibility across the study areas has been consistent and therefore archaeological observation is equally consistently affected. Surface visibility is not a factor contributing to assessment. However historical landuse is..

- Integrity of soil profile and landscape

Whether a study area will contain archaeological evidence is dependent on the level of disturbance of a site. Filling, levelling ploughing road construction and other processes will affect observation. Construction, levelling and creation of a park like landscape has affected the soil profile and potential archaeological integrity. That is the soil profile will have been disturbed to such an extent that any archaeological evidence will have a mixed depository stratum.

- Depositional qualities of the study area
  This perhaps is probably the fundamental aspect for concealing/revealing objects. Stone artefacts on slopes will be affected by natural surface processes. Initially deposited on the surface an object will be subjected to differing rates of burial and exposure, dependent upon climactic conditions and bioturbation agents. Objects are known to migrate vertically downwards within a soil profile or be carried over the surface toward a lower landscape by means of wind, rain and other natural processes. Thus a range of natural processes will influence artefact distribution and any interpretation of such distribution must consider the effects and intensity of such natural processes. However, for the purpose of this analysis it is not so much where the objects are found but the densities of any finds, which will tend to indicate the degree or intensity of Aboriginal occupation. The study area does not lend itself to bring a repository for runoff artefacts.

- Aboriginal Occupation Patterns
  The observation or non - observation of artefacts or objects in a given place may be directly proportional to the level of Aboriginal occupation. Taking into account the various natural processes within a landscape and the factors as outlined previously may suggest quite emphatically a pattern of Aboriginal occupation. Areas of danger to children, poor amenity and adverse exposure to the elements, would not be used as frequently if at all, to more favourable locations. The area in a landscape occupation context does not lend itself to intensive occupation.

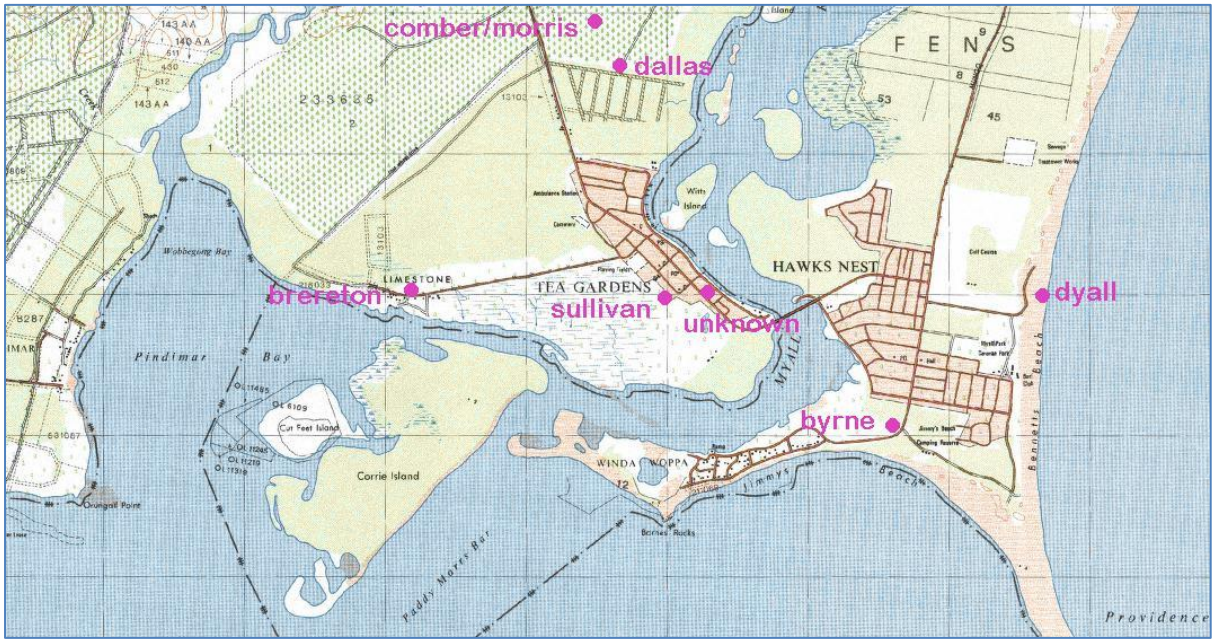

Figure 7 Approximate locations of known Aboriginal Objects

Comment:

The Database search is not reliable in determining archaeological potential for the study area but does indicate occupation of the general area. An examination of the location of the landscape context of the artefacts reveals that they are generally associated with a water or food source. The artefact scatters tend to be found on elevated ground above swamplands and marsh along the

creeks and estuaries. The study area does not have the same attributes as the areas where artefacts have been observed.

4.3 Previous Studies

Locally, in the Hawks Nest area, no recent studies have been conducted. Studies have been conducted in the general area of tea gardens, Pindimar, Pacific Highway Upgrade, Shearwater and Hunterview. However none of these are applicable to a beach front dune system. The studies were undertaken for development proposals.

The study by Dyall (Figure 7) was some 40 years ago and was a general overarching study of dune landscapes.

Comment

Local studies have no immediate relevance to the study area but reinforces the occupation and us eof the Port Stephens Myall Laj kes area, intha, other areas were more favoured for occupation.

On a state wide basis, several studies have been undertaken which have proven to be definitive works for understanding the correlation of landscape and archaeological potential.

- **Importance of wetlands**

Archaeological investigations by Kuskie (1994), Ruig (1995) and Effenberger and Baker (1996) on margins of various wetlands indicate that artefacts could be found on all types of landscapes abutting wetlands with density in direct correlation to distance from the margin.

Relevance:

The study area is over 1km from a coastal/riverine wetland but only 500mfromteh beach. The wetland, river and coast are all resource areas and therefore potential seasonal and transitory use of the study area. The likelihood of the study area for intensive occupation is remote.

- **Relationship of Objects and Distance from Water /Song trails**

A report for the Brigalow country undertaken by the Resource and Assessment Council titled Aboriginal cultural heritage assessment NSW western regional assessments final report September 2002 – Brigalow Belt South Stage 2. This large scale landmark study analysed the finding of separate independent studies and was able to establish an information base that highlighted Aboriginal association with forests, travelling stock routes (early roads), rural properties and towns.

The study showed that of the sites recorded, 50% were within 200 metres of water and Aboriginal occupation may have occurred for prolonged periods under the right conditions, made possible by a different array of water features (chains of ponds) that existed prior to European usage of the forests.

Relevance:

The study area is some distance from permanent water source, however may have formed part of a transitory north south coastal corridor although it is more likely that the shoreline was the walking trail. This means that the study area was not conducive to camping.

- **Relationship between Stream Order and occupation pattern**

A survey by Jo McDonald 1988 was an east west survey from Dubbo to Tamworth. The report found stream order influenced occupation pattern. Stream order is a measure of the relative size of streams. The smallest tributaries are referred to as first-order streams and so on. Her analysis concluded that;

"The size (density and complexity) of archaeological features will vary according to the permanence of water (i.e. stream order), landscape unit and proximity to lithic resources in that density and complexity are greater in 4th order (major creeklines and rivers)."

Relevance:
The study area is 1km to the Myall River but it is saltwater and tidal. This means it would have been a food resource but not a freshwater source which is critical for occupation.

- **Relationship of landform type and ceremonial areas**

Work by Klaver and Heffernan (1991) identified landscape attributes for ceremonial sites. Citing an earlier work by Fitzpatrick (1986), they stated, "Ceremonial grounds were said to comprise two rings, one on top of a low ridge and the other in a level place below. The latter was…"established in a roomy place, so that all the gins could camp there close to the ring." This aligns with this author's findings at North Arm Cove and Kings Hill, Raymond Terrace.

Relevance:
The study area does not have attributes for ceremonial areas.

- **Relationship between Object type and landscape**

Brayshaw, in 1986 conducted a Study of Colonial Records of the Aborigines of the Hunter Valley and was able to present an account of the environment and way of life of the Aboriginals at the time of colonial settlement. Her study also indicated areas and landforms of Aboriginal use and occupation. Dean-Jones and Mitchell (1993) conducted a similar assessment of archaeological sites in the Hunter Valley.

The above studies indicated:

- Open campsites would be near water holes
- Grinding grooves are more likely to be found in rocky outcrops exposed by erosion or in creek beds.
- Scarred trees may be present in any type of landscape, but this would depend on the age and type of tree.
- Artefacts are more likely to be found along creek and drainage lines
- Stone arrangements and ceremonial artefacts are more likely to be found in significant landscape aspects such as caves and hills.
- Artefacts can be found in any landscape in proximity to an abundant food/water source.
- Archaeological evidence is more likely to occur in undisturbed areas.

Relevance:
The study area has disturbance through extensive sandmining, change sto the land surface through landscape modification, does not contain waterholes; has no ceremonial attributes, no rock outcrops and no drainage lines.

- **Burials**

With respect to burials, work by Donlon (1990), where she analysed skeletons uncovered on beaches on the Central Coast of NSW, ethnographic reports by Bennett 1929, along with other research cited by Mulvaney and Kamminga (1999), has tended to indicate that whilst burials could be found almost anywhere and diverse in practice, intentional or formal burials, generally in Eastern NSW, consisted of isolated burials being placed in sandy type soil, near the high water mark, and sufficient soil depth to bury the person vertically in a sitting position and with various belongings. In the Central west of NSW according to Garnsey (1942: p.23ff), the body was placed in a squatting position; with the elbows placed on the knees and the head between the hands. In this position, the body was placed at the foot of a Coolabah tree facing east. A blaze on the tree was also carved in tribal

markings to show the man's status. These carved trees were apparently only associated with the graves of the spiritual leaders. For the period of mourning, the body remained out of the ground. The only recorded cemeteries are within the Murray River corridor or at Broadbeach in Queensland. Most burials are discovered by accident.

Locally, known burial sites are at the Yacaabaa Headland, Broughton Island and Dark point. In the book, "The Port Stephens Blacks recollections of William Scott", by g Bennett 1929, Scott describes the burial practice of the local inhabitants;

"… the excavation was made on the foreshore a few yards above high-water mark ..the internment took place at flood-tide for they believed if it took place at ebb-tide the spirit of the departed would be carried out to sea and lost in the great waters."

Relevance:
The study area does not have landscape conducive to burials. Anecdotally and scientifically extensive burial areas are known to be elsewhere within the general area.

- **Occupation Pattern**

A general pattern is emerging that more concentrated remains of Aboriginal occupation are associated with wetland or swamp resources along the principal rivers of the region and/or where resources suitable for the manufacture of tools are present.

The pattern of Aboriginal occupation was underpinned by 2 tenets:

- Aboriginal camping areas were always situated in areas of good shelter and good resources
- Base campsites would be near reliable water.

Comment:
The archaeological evidence suggests that base camps were located close to freshwater and food sources. The campsites were in favourable climactic conditions, safe, not only from intruders but also for young children. Campsites were therefore not near fast, flowing rivers, dangerous swampy areas or steep cliffs. (Many Dreamtime stories were developed to keep children away from dangerous areas). Trails from campsites and to other clans were generally along creek lines or ridgelines.

Although archaeological evidence is generally associated with creeks because they are the lowest elevation and natural depositional areas, it is more likely that camping occurred on higher ground.

The study area constitutes a highly disturbed portion of coastal, landward of a coastal dune system.. There is little doubt that the study area would have been visited by seasonal, transitory groups, cultural discard is likely to have been rare if at all.

With respect to the study area it appears that it does not have attributes for occupation other than the occasional overnight opportunistic stay and even that is very unlikely.

4.4 Landscape

The differing landscape creates different land use. For instance swampy or poorly drained land would not be conducive to campsites or burial grounds. Whereas, caves and rock shelters would give rise to artwork, and practical purposes such as shelter or women's birthing areas. Early roads, stock routes and river crossings during European settlement often followed Aboriginal Song Trails (walking trails) and natural features adjacent to such trails were of significance for various reasons. Over the years, the main highways and roads have been realigned and adjusted, but initially the roads between settlements which were generally established around Aboriginal camping grounds, followed the Aboriginal trails.

The landscape survey and classification followed in this report is that formulated by Speight and others in the Australian Soil and Land Survey, Field Handbook, Second Edition.

Landform is basically divided into 2 classifications, the classification covering a larger area is known as Landform Pattern, which can then subdivided into smaller areas known as Landform Elements. About 40 types of landform pattern are defined and include, for example, floodplain, dunefield and hills. Whereas, about 70 of the smaller landform elements are defined, including cliff, footslopes and valley flat. Relative elevation classes have been standardised and used throughout Australia. The landscape is divided into the following classes:

Landform	Relative Elevation
Plains	0-9 m
Rises	9-30 m
Low hills	30-90 m
Hills	90-300 m
Mountains	>300 m

Landforms as well as having morphological characteristics (surface dimensions) have been formed by processes. The formation processes can interact to produce an array of landforms. For example, plains can be separated into depositional plains of various kinds or erosional surfaces (peneplain). The formation process contributes to the concealing/revealing and the preserving/destroying of archaeological evidence. The identification of landform is paramount in predicting areas that have the potential to contain archaeological evidence.

Comment:
Topography, hydrology and drainage are important for understanding how accessible an area was for Aboriginal occupation, as well as providing information on available water resources vital to the sustainability of any population.

The study area landform pattern is generally part of the coastal floodplain, with an AHD of approximately 10m across the site. It does not contain any special landform attributes that would encourage Aboriginal occupation.

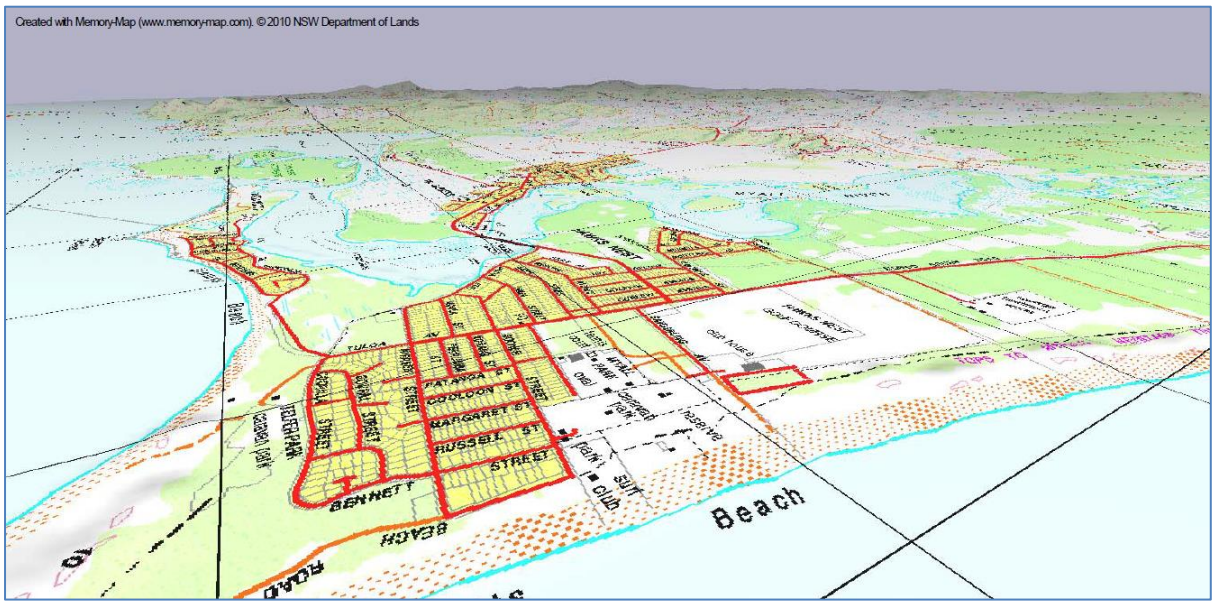

Figure 8 Landscape Context

4.5 Soils

Where an archaeological survey is only a surface investigation, any information relating to subsurface information is important, in that it indicates:

- The possibility of archaeological evidence beneath the surface.
- The possibility of archaeological evidence destroyed through erosion or other natural phenomena.
- The possibility of archaeological evidence preserved through soil/sand deposition.

The main soil features of interest are the depth of deposits, stability of the soil composition and the depositional age of the soil groups. Detailed analysis of the effects of different soils on the burial process of archaeological remains can only be carried out during an excavation.

The topsoil or A horizon is where most nutrients, organic matter, seed and macroporosity so desirable for a seedbed exists. If this is stripped away through soil loss the fertility of the soil is lost and productivity reduced. The first few centimetres of soil also generally contain artefacts.

Soils over the land are generally comprised of sandy alluvial and aeolian materials. The slopes over the land are not considered steep and there is no evidence of slope instability.

Comment:

The soil characteristics do not indicate any particular artefact holding capacity.

4.6 Geological Features

The geological data allows for analysis of the landscape to determine any special features that may contribute to historical Aboriginal occupation. There may be particular outcrops or features that would suggest significant Aboriginal use.

Comment:

There is no indication of a geological abnormality or feature that would suggest special significance to the landscape.

4.7 Past Land Use

Past Aboriginal activities are not well manifested by archaeological record because many activities did not leave material evidence or because the material evidence was not durable. Many of the implements were organic material, such as wood and bone and readily decayed when exposed to the elements. Even burials, are subject to the acidic condition of the soil.

Durable evidence, such as stone and rock implements, is affected by European land use. Easily recognisable implements such as stone axes, have found their way into many private collections, well before it became illegal to do so, with no record of the location of the find.

In general, the archaeological record is dependent on the exposure of sites through erosion, weathering, fire, drought and anthropogenic activities.

The vegetation within the study area is predominantly Open Forest dominated by various species. The majority of the trees appear to be of a similar age and would probably be less than 20 years of age.

The current vegetation does not give a good indication of the archaeological potential as it is basically regrowth or introduced grasses and pasture and is not necessarily indicative of what was there over 200 years ago.

The variety of vegetation that was probably on the subject site at European contact would also have lent itself to the fostering of animal food resource. Many of the current animal and bird species found on the subject site most probably existed on the site at European occupation although as to the abundance is speculative but probably more intense and greater variety.

- *European*

The subject land has been cleared, undergone substantial modification through sandmining and the landscape reworked on several occasions through stockpiling and levelling and mowing/slashing.

Implications
The land in the study area has been disturbed by European Activities since 1820. The land has been used for various rural and economic pursuits. Although Aboriginal occupation occurred within the study area, evidence of such occupation appears remote, as the past land use has probably destroyed any likely evidence.

- *Aboriginal*
  The known archaeological evidence tends to suggest that base camps were located close to freshwater and food sources. The campsites were in favourable climactic conditions, safe, not only from intruders but also for young children. Campsites were therefore not near fast, flowing rivers, dangerous swampy areas or steep cliffs. Many Dreamtime stories were told of mythical creatures to keep children away from dangerous areas. Trails from campsites and to other clans were generally along creek lines or ridgelines.

  Prior to European settlement the area was inhabited by Aboriginal people who roamed freely across the river flats and coastal landscape. They lived in harmony with the land, only taking what they required from the bounty of game available. They also adopted burning off practices as the new shoots which emerged after fire attracted kangaroos which they surrounded and killed with clubs and spears) barbed with sharp stones.

  There are conflicting accounts as to the tribal relationships of these clans, but there was a definite relationship between the clans from the Williams River and Gloucester area through to Port Stephens. They were known as the Gringai Clan and probably part of the Worimi or the Wonnarua Band (Figure 7). According to Walsh, (p25) "The Gringai clan of the Wonnarua had a well-developed kinship structure and lived in extended family groups."

  “The Aboriginal population was controlled by the food resources available, which in turn was related to water resources." (Flood, p265)

  This would mean that Port Stephens could sustain a large and healthy population. The area was well known for marine life and abundance of other wildlife. The early historical records even dating back to Captain James Cook, notes the vitality and healthy appearance of the natives.

  In the 1820's records indicate that a large number of Aboriginals died from introduced diseases from which they had no immunity.

  From the recollections of William Scott who was born at Carrington, his father being employed by The A.A. Company, it is obvious that the Aboriginal population was quite large, but declined rapidly in the years since white settlement.

  According to Scott, the main campsites were close to the shore of Port Stephens. The area inland was used for ceremonial purposes, " carved trees still remain that were about the old Bora rings near Bulga Creek on the crown of the ridge some half mile from Bundabah Station" (p35), bark

gathering " the hull of the little vessel was made of a single sheet of bark of the stringy bark tree"(p31) and food harvesting. Kangaroos would be carried for a couple of miles back to camp. "the man had to bear the burden for perhaps many a weary mile"(p21).

Local ethnographic and anecdotal information understands that Aboriginal occupation of the area was centred on Carrington. There was a connection from there across Koree Koree Creek up to Monkey Jacket and across to the Big Gibber. The wetland or swampy areas were avoided and not a source of food as it was extremely difficult to access and a mosquito haven. It was a "sick" area to be avoided. The tea gardens area was only settled once fishing and sawmilling was established. It was not known as a place of Aboriginal occupation. The difficulty of intensive Aboriginal occupation of the Tea Gardens area was the availability of fresh water. Whilst ponds after rainfall may have existed from time to time, such water did not last long. The Tea Gardens area is an estuarine depositional plain and the water table (brackish/sour and undrinkable) is just below the surface.

In *the Sediment and Hydrodynamic Assessment of the Lower Myall River Estuary Prepared By: BMT WBM Pty Ltd* for Great lakes Council (2011) the following comments relate to the vegetation of the study area and groundwater.

Estuarine Vegetation
The wetlands and vegetation surrounding the fringes of Port Stephens, Myall Lakes and the Lower Myall River comprise mangroves, open scrub, salt marsh, rushland and swamp forest. The mangrove stands are the largest in NSW whilst the salt marsh constitutes 18% of that remaining in the state (MHL 1999).

Groundwater flowing through the wetlands surrounding Myall Lakes can pick up tannins and humic acids, which result in tea brown coloured waters and an additional organic nutrient load to the estuary. The groundwater therefore influences water quality in the Lakes.

In order for houses to be constructed it was necessary from earliest settlement to fill the land. The closest reliable fresh water is at Carrington north Arm Cove where the AA Company established its headquarters. Fresh water was available but not permanently at Shearwater and also at Kore Kore Creek above the tidal influence. Rob Quirk (pers. comment) regional manager of NPWS remarked about the paucity of Aboriginal sites in the National Park of the local area compared to other areas. There may be many reasons for this but one is proximity to reliable water especially in summer when the weather can be quite hot.

The archaeological significance of Carrington and the surrounding area, North Arm Cove and Fame Cove has been established in a number of scientific studies and was generally the centre of Aboriginal occupation. Yacaabaa headland, Fame Cove, Pindimar Bay and Barnes Rock at Winda Woppa were significant Aboriginal places and were occupied or visited on regular seasonal basis. In addition the islands in Ports Stephens and off the coast especially Broughton were favoured Aboriginal places.

Implications:
The study area was not known nor seen as having attributes for intensive Aboriginal occupation or use.

4.8 Predictive Model

According to Orton (2000),"In archaeology, predictive modelling refers to a process that considers variables that may influence the location, distribution and density of sites, features or artefacts across the landscape. As well as a review of the results of previous archaeological work and available ethnographic information (to make judgements about past Aboriginal settlement of the landscape),

the variables often included in a predictive model are environmental and topographic variables such as soils, distance from landscape features, slope, landform elements, and cultural resources."

A predictive model of Aboriginal object location is constructed to identify areas of high archaeological sensitivity (i.e. locations where there is a high probability of an archaeological site occurring), so it can be used as a basis for the planning and management of Aboriginal sites. Predictive modelling involves reviewing existing literature to determine basic patterns of site distribution. These patterns are then modified according to the specific environment of the study area to form a predictive model of site location. A sampling strategy is employed to test the predictive model and the results of the survey used to confirm refute or modify aspects of the model.

The use of land systems and environmental factors in predictive modelling is based upon the assumption that they provide distinctive sets of constraints, which influenced Aboriginal land use patterns. Following from this is the expectation that land use patterns may differ between each zone, because of differing environmental constraints and that this may result in the physical manifestation of different spatial distributions and forms of archaeological remains.

The predictive model is based on information from the following sources:

- Identification of land systems and landform units
- Previous archaeological surveys conducted within the region
- Distribution of recorded sites and known site density
- Traditional Aboriginal landuse patterns
- Known importance of any part of the study area to the local Aboriginal community

The types, contents and distribution of sites within the study area can be predicted using such modelling.

The following raw materials have been identified in the region (in order of frequency) silcrete, shell indurated mudstone, silicified tuff, chert, quartz and other materials. Artefacts types identified in order of frequency are flakes, cores and tools.

An analysis of the density of distribution, site type and landscape context shows that any archaeological evidence will tend to be middens, scarred trees, stone artefacts associated with a watercourse or midden and occasional ceremonial Objects such as grinding grooves will be dependent on a sandstone outcrop associated with a water course. It is not likely that burials or ceremonial areas will be found given the ethnographic and historical record shows them to be elsewhere. Ceremonial areas, like churches and war memorials today. Tended to serve a wider area.

Where there is a potential for sub-surface deposit with artefacts (such as flaked stone) it is identified as a PAD. Sub-surface deposits are important as they have the potential to contain intact in-situ archaeological material. In some cases, they may contain material that can be placed in chronological sequence. PADs are significant because they may contain new scientific and cultural information and have the potential to further our understanding of past Aboriginal occupation of the region. Generally PADs in the area are associated with middens.

The recorded archaeological data suggests that there is a correlation between watercourses and the presence of Aboriginal sites. There is higher potential for sites to be identified within 200m of a water course, than further away. Sites are likely to occur within flat, open depression, simple slope and crest formations.

The results of past archaeological assessments/investigations and the distribution of recorded sites/materials suggest a landuse system which has resulted in a widespread distribution of usually small scatters of stone artefacts reflective of specialised-activity encampments/stopping places on ridges/spurs and floodplains in close proximity to estuaries, creeks/gullies and swamps within the coastal hinterland.

Prediction of Site Type, Location and Density
Based on the foregoing information (Section 4) the likely site types to be found within the study area depending on the level of disturbance are:

Isolated stone artefacts
These can be located anywhere in the landscape and represent the remnant of a dispersed artefact scatter (open campsite), the simple loss or random discard of artefacts or anthropogenic and natural processes. However, given the disturbed nature of the land and more importantly the infrequent use archaeological evidence is unlikely.

Stone artefact scatters (open campsites)
This type of site can range from as few as two stone artefacts to an extensive scatter containing a variety of tools and flaking debris, sometimes with associated materials such as bone, shell, ochre, charcoal and hearth stones. An artefact scatter does not necessarily mark a place where actual camping was carried out, but may instead be the product of specialised and/or short-term activities involving some level of stoneworking or whilst in transit from one occupation area to another. Artefact scatters may occur as surface concentrations or indicate subsurface stratified deposits. However, given the disturbed nature of the land and more importantly the infrequent use archaeological evidence is unlikely.

Scarred Trees
Given the cleared nature of the land scarred or modified trees do not exist.

Location
Artefacts in the wider area have been found on well-drained low-gradient footslope immediately adjacent to a swamp. Low crests or rises for instance, would have a high level of potential sensitivity. The potential location of artefacts within the study area is unlikely.

Density
Based on adjacent recorded average data density of artefacts will be low and generally in the order of less than 3 artefacts per hectare. However, where a concentrated occupation site occurred numerous artefacts possibly into the thousands can be revealed (Davies 2006). It is unlikely that artefacts will be found in any level of concentration.

4.9 Landscape Significance Assessment
It is important to stress that the significance of a cultural landscape is not dependent on archaeological evidence being significant in itself but the interrelatedness of the individual objects to the cultural landscape as a whole. Through understanding the cultural landscape in an holistic manner one may be able to appreciate the associations that may exist between Aboriginal objects and other features within the landscape.

Using the criteria outlined earlier the significance of the study area in an Aboriginal cultural heritage context can be assessed as follows:

- *Social value*

Much of the oral tradition and knowledge has been lost to the Aboriginal communities today. However as research and surveys discover and reveal greater understanding of the past,

communities are rediscovering and appreciating what has gone before. At the present time, there does not appear to be spiritual, traditional, historical or contemporary associations and attachments which the place or area has for the present-day Aboriginal community. Similarly there does not appear to be associations with tragic or warmly remembered experiences, periods or events. However that is not to say that discovery of evidence or knowledge of past spiritual connection to the place will not rekindle such association.

- *Historic value*

At this time, there does not appear to be an association of the study area with a person, event, phase or activity of importance to the history of the Aboriginal community.

- *Scientific value*

Technically, there is **NO** scientific value to the study area as there has not yet been any field survey to determine archaeological evidence.

- *Aesthetic value*

The sensory, scenic, and creative milieu of various parts of the landscape does not evoke feelings of a sense of place and its past use.

Comment

Aboriginal Heritage is centred on Yaccabaa headland, the ocean front, Winda Woppa, Myall River and Dark Point and the intransient use of the wider landscape. Whilst all landscapes are of significance to Aboriginal people there are no known areas of archaeological significance within the study area.

4.10 Aboriginal Occupation Assessment

Roberts, 2009 formulated 7 key principles to determine probable Aboriginal land use of a particular area.

Using those principles it is possible to place the study area into Aboriginal occupation context and use.

1. Proximity to water

   There is no permanent water on site.

2. Food resource

   The study area does not appear to contain any unusual favourable, seasonal or special food resources.

3. Geological features

   There are no unusual, unique or prominent geological attributes within or adjacent to the study area.

4. Ease of access

   The study area is easily accessible on foot for all age groups

5. Connectivity

   The study area does not appear to link significant landscape features

6. Safety

   The study area is not extremely dangerous or close to dangerous or unhealthy landscapes. However, coastal floodplains were not favoured camping areas because

of insects, and lack of freshwater. There does not appear to be natural protection from harsh and extreme weather. There is no particular view.

7. Archaeological evidence

   Only 12 recorded objects are within 1km of the study area and are concentrated closer to the coast. This tends to suggest unlikely archaeological evidence within the study area..

Comment

The information from the above 7 principles indicate:

The study area was only likely to have been utilised by the Aboriginal community as a transitory corridor. Food and other practical resources were available nearby and there were no access constraints. However there are no indications that any of the study area was intensively or extensively used on a permanent basis. The lack of areas such as grinding grooves and low density of archaeological evidence suggest occasional or less intensive use. The landscape and archaeological evidence not too distant from the study area indicate more favourable areas for permanent, occasional and more intensive camping.

There does not appear to be any landscape attributes that would suggest more than occasional opportunistic use.

This desktop assessment has found no evidence to suggest that the proposed rezoning (and any arising development) would affect significant archaeological sites/materials. Given the landscape setting and extensive disturbance already sustained, it is considered that impacts on the archaeological resource (if any) would be restricted to the destruction of a dispersed low density distribution of isolated stone artefacts lost or randomly discarded during the course of transit occupation.

The locations of artefacts cannot be and is not predicted.

Taking all available information into account, it is concluded that the archaeological potential of the study area is not sufficient to warrant further intensive investigation.

5.0 Recommendations

Given the archaeological finds across the wider landscape and the cultural knowledge of the area, further intensive archaeological work is not required post gateway to determine the actual likelihood of significant evidence of Aboriginal occupation.

In all probability it is unlikely that any archaeological evidence exists within the study area and development is unlikely to impact potential archaeological evidence.

1. It is therefore recommended that following a positive gateway determination that no further archaeological assessment is required.

6.0 Certification

This preliminary Aboriginal heritage assessment was prepared in accordance with the brief given by Land to assess of the impact of the proposed rezoning on Aboriginal heritage and was undertaken to consider and assess Aboriginal cultural heritage values and to demonstrate a Due Diligence process.

To the best of our knowledge the report accurately reflects the archaeological survey, findings and results, as well as the input and recommendations of the Garby Elders.

Whilst every care has been taken in compiling this report to determine the impact the proposal may have on Aboriginal Heritage and to demonstrate a due diligence process, KLALC cannot warrant or guarantee that due diligence has been met. It is the responsibility of the individual or proponent to ensure that they have undertaken due diligence.

Signed

CEO Karuah local Aboriginal land Council
(Archaeologist)
2/07/2018

7.0 References

(Books and Journals)

Beaglehole, J.C. (1955) (ed.)
The Journals of captain James Cook on his Voyage of Discovery. London, Hakluyt Society.

Bennett, F. C. *Ed*. (1981)
The Story of the Aboriginal People of the Central Coast. Brisbane Water Historical Society.

Brayshaw, H (1986)
Aborigines of the Hunter Valley, A Study of Colonial Records, Bicentennial Publication No.4, 1986, Scone & Upper Hunter Historical Society Scone, N.S.W.

Cunningham, P. (1827)
Two Years in New South Wales. London.

Davidson, I, et. Alia (editor) (1995)
Archaeologists and Aborigines Working Together. University of New England Press.

Flood, J (1995)
Archaeology of the Dreamtime. Angus and Robertson

Gould, R. (1980)
Living Archaeology. New York. Cambridge University Press.

Hester, T. R., et al (1997)
Field Methods in Archaeology. Mayfield Publishing Company

Horton, D (1994)
Encyclopaedia of Aboriginal Australia. Aboriginal Studies Press

Meehan, B. 1982,
Shell Bed to Shell Midden. Canberra: Australian Institute of Aboriginal Studies.

Mulvaney & Kamminga (1999)
Prehistory of Australia. Allen & Unwin

Orton, C (2000)
Sampling in Archaeology. Cambridge Manuals in Archaeology (Cambridge 2000).

Oxley, J. 1820
Journals of Two Expeditions into the Interior of NSW. John Murray, London

Petersen, N (1986)
Australian Territorial Organisation. Oceania Monograph, Sydney. University of Sydney Press.

Ramsland, J. 1987
The Struggle Against Isolation: A History of the Manning Valley. Library of Australian History, North Sydney.

Schiffer, M.B. et al(1978)

The Design of Archaeological Surveys. *World Archaeology* 10(1):1-28

Speight, J. (1990)
Landform. Contained in *Australian Soil and Land Survey* Field Handbook. 2nd Edition. By R.C. McDonald et al. Inkata Press.

(Archaeological and Scientific Reports)

Statewide:

Bonhomme, T. 1994.
A Study of the Shell Middens of the Central Coast of New South Wales. A Report to the Aboriginal Communities.

Dean-Jones, P & Mitchell, P. B. 1993
Hunter Valley Aboriginal Sites Assessment Project Unpublished Report to NP&WS (NSW).

Donlon, D. (1990)
Ettalong Beach Skeletons. Report for Darkinjung Local Aboriginal Land Council. Analysis of an Australian Aboriginal Skeleton from Wamberal Beach. Report for Darkinjung Local Aboriginal Land Council.

Haglund, L. 1986
Assessment of the Prehistoric Heritage in the Lake Macquarie Area. Report to Lake Macquarie City Council.

Klaver, J. & Heffernan, K. (1991)
Greater Taree Aboriginal Heritage Study. Report to Greater Taree City Council

Navin & Officer (1999)
North Wallarah Peninsula Project Site. Aboriginal Cultural Assessment. Report to AGC Woodward- Clyde Pty Ltd.

Roberts, L.B 2004
---2009
Aboriginal Heritage Assessment Newdell Junction, Ravensworth, NSW. Report to TRANSPORT EXPRESS JV ARTC Strategic Alliance- Northern Improvement NSW, Newcastle. NSW

Collins, J 2001
Tuncurry sewage transfer to Hallidays Point and upgrade of Hallidays Point

Maps

Central Mapping Authority

Topographical Map NSW 25k East. Copyright © 2010 NSW Department of Lands

Aboriginal Australia

Source*: Aboriginal Australia by David R. Horton. Names and regions as used by D. Horton in his book "The Encyclopaedia of Aboriginal Australia" published in 1994 by Aboriginal Studies Press for the Australian Institute of Aboriginal and Torres Strait Islander Studies.*

8.0 Glossary

Aboriginal Site

I. Occupation Sites

Evidence of human occupation, which includes food remains, stone tools, baked clay, fire-blackened and fire-cracked stones and charcoal, is found in a range of sites known collectively as occupation sites

- *Shell middens.* These sites are found on the coastline and along the edges of rivers and lakes. It is a deposit composed of the remains of edible shellfish and also usually contains fish and animal bones, stone tools and campfire charcoal.

- *Rock shelters with archaeological deposit.* In rock outcrops such as sandstone and granite, overhangs sometimes form creating useable shelters. Sediment from fires, roof fall, discarded stone tools and food remains form a deposit protected within the shelter and this deposit can be excavated by archaeologists to study patterns of Aboriginal life.

- *Open campsites.* These sites are mostly surface and associated subsurface scatters of stone artefacts, sometimes with fireplaces. They exist throughout the landscape and are the most common site type in rural areas, While found in all environmental locations larger and denser sites tend to be found on riverbanks and lower slopes racing watercourses, as well as ridgelines and other areas that offers movement routes. The study or open sites can assist in understanding patterns of Aboriginal land use.

- *Base camp.* This is the name applied to the major or main area of habitation. They tended to be close to a permanent water source and food source. Generally well sheltered. These camps would be rotated for hygiene reasons. They are different to smaller open campsites, which were mainly camps on transport routes or overnight areas on hunting forays.

2. Aboriginal Reserves and Missions

These places are very important to Aboriginal people today. Although Aboriginal people were often moved to reserves by force and were restricted by harsh regulations, the reserves became home to many people, where they and their families were born, lived and died. Historic cemeteries at many reserves are still cared for by the local Aboriginal community.

3. Rock Paintings

Aboriginal paintings are found on the ceilings and walls of rockshelters, which occur wherever suitable rock surfaces and outcrops, exist. Figures include humans, kangaroos, emus, echidnas, grid patterns, animal tracks, boomerangs, axes, hand stencils and other motifs. Paintings are made with white, red, yellow and black pigments. The motifs may be drawn, painted or stencilled, and charcoal drawings are common as well.

4. Rock Engravings

These occur usually where there is a suitable exposure of fairly flat, soft rock or in rock overhangs. The outlines of motifs were made by hitting the rock surface with a sharp stone to make small holes or pits. Sometimes the pits were jointed to form a groove, by rubbing with a stone. People, animal shapes and tracks are common as well as non-figurative designs such as circles.

5. Grinding Grooves

Grooves are located on flat rock exposures close to a stream or rock hole. They vary in size but are generally long (about 30-40cm in length) and elliptical in shape. Stone axes were ground into the softer stone allowing a working edge to be created or sharpened- Deeper grooves may have been used to work spears or other thin implements.

6. Quarries

Quarry sites occur wherever there are outcrops of siliceous or igneous rock. Stone material was used in creating stone tools, which in turn were used to work wood and provide people with tools to assist in hunting

and gathering activities. Siliceous rock is easily flaked and made useful cutting and scraping tools whereas igneous rock was preferred for edge-ground tools, particularly axes.

7. Ceremonial grounds

These sites were used for initiation ceremonies, marriages, tribal meetings and other important functions and are of great significance to Aboriginal people. Bora rings, which are one or more raised earth rings, were used for male initiations.

8. Stone arrangements

These range from simple stone mounds to complex circles and pathways. Arrangements are found throughout inland New South Wales as well as the coast, where fish traps were sometimes constructed.

9. Carved and scarred trees

Tree bark was used for constructing canoes, shelters, coolamons and shields. Distinctive scars are left from bark removal and can usually be differentiated from natural scars. Carved trees are more distinctive, exhibiting patterns etched into the wood of the tree. They can occur throughout the state although clearing and forestry practices have greatly reduced numbers.

A range of diagnostic criteria has been developed to assist in the identification of Aboriginal scarred trees. The following criteria are based on archaeological work conducted by Simmons (1977) and Beesley (I989) It should be noted that these criteria have never been quantitatively tested or quantified using non-relative criteria such as absolute dating or an analysis of pre-occluded scar morphologies. This is because radiocarbon dating or dendrochronology is mostly inconclusive. and the removal of regrowth exposes trees to further damage.

1. **The scar does not normally run to ground level**: (scars resulting from fire, fungal attack or lightning nearly always reach ground level). However, ground termination does not necessarily discount an Aboriginal Origin (some ethno-historic examples of canoe scars reach the ground);

1. (A). **If a scar extends to the ground, the sides of the original scar must be relatively parallel**: (natural scars tend to be triangular in shape):

2. **The scar is either approximately parallel sided or concave, and symmetrical**: (few natural scars are likely to have these properties except fire scars which may be symmetrical but are wider at the base than their apex. Surveyors marks are typically triangular and often adzed);

3. **The scar should be reasonably regular in outline and regrowth**: scars of natural origin tend to have irregular outlines and may have uneven regrowth:

4. **The ends or the scar should be shaped, either squared off, or pointed** (often as a result of regrowth): (a 'keyhole' profile with a 'tail' is suggestive of branch loss);

5. **A scar which contains adze or axe marks** on the original scar surface is likely to be the result of human scarring. Their morphology arid distribution may lend support to an interpretation of an Aboriginal origin: (marks produced after the scarring event may need to be discounted):

6. **The tree must date to the time of Aboriginal bark exploitation within its region**: (an age *of at least* I00 years is prerequisite)

7. **The tree must be endemic to the region**: (and thus exclude historic plantings).

Field based identification of Aboriginal scars, is based on surface evidence only and will not necessarily provide a definitive classification. In many cases the possibility of a natural origin cannot be ruled out, despite the presence or several diagnostic criteria or the balance or interpretation leaning toward an Aboriginal origin. For this reason interpretations of an Aboriginal origin are qualified by the recorder's degree of certainty. The following categories are used

Definite Aboriginal scar - This is a scar that conforms to all of the criteria and/or has in addition a feature or characteristic that provides definitive identification, such as diagnostic axe or adze marks or an historical identification. All conceivable natural causes of the scar can be reliably discounted.

Aboriginal origin is most likely - This is a scar that conforms to all of the criteria and where a natural origin is considered unlikely and improbable.

Probable Aboriginal sear - this is a scar that conforms to all of the criteria and where an Aboriginal origin is considered to be the most likely. Despite this, a natural origin cannot be ruled out.

Possible Aboriginal scar - This is a scar which conforms to all or most of the criteria and where an Aboriginal origin cannot be reliably considered as more likely than alternative natural causes. The characteristics of this scar will also be consistent with a natural cause.

10. Burials

Aborigines feel equally as respectful about prehistoric burials as modern cemeteries. As Aborigines have lived in Australia for over 30 000 years burials are seen as part of a continuing culture and tradition as well as offering valuable archaeological information. The dead wore sometimes cremated, sometimes placed in trees or rock ledges and sometimes buried. Burials exist throughout New South Wales and can be accidentally uncovered in construction work or become exposed through erosion. It is important that if a skeleton is found it be reported to the police, to a representative of the National Parks and Wildlife Service and to the relevant Aboriginal community group.

II. Natural sacred sites

Many features of the landscape, such as mountains, rocks, waterholes etc., are regarded as sacred sites by Aborigines. They are places associated with Dreamtime ancestors and usually can only be identified by Aboriginal people. They retain a high significance to Aborigines.

Fire- stick Farming

The process of burning to aid in hunting. Animals could be speared or clubbed as they fled to escape the flames. Other uses of fire were for long term hunting strategies. After firing, the bush would regenerate attracting animals on which the hunters would prey. (Flood, p250)

Flake fragment of stone that was used as a tool for weapons, scrapers etc.

Geographical

AHD (Australian Height Datum) Australian standard measurement from the mean high sea level.

Swamp. An almost level, closed, or almost closed depression with a seasonal or permanent water table at or above the surface, commonly aggraded by overbank stream flow (Speight1990: 33).

Legal

Activity means a project, development, activity or work (ie this term is used in its ordinary way, and does not just refer to an activity as defined by Part 5 EP&A Act)

Disturbed land or land already disturbed by previous activity Land that has been previously subjected to any activity that has resulted in clear and observable changes to the land's surface. Examples include: soil that has been ploughed; urban development that has occurred; existing rural infrastructure such as dams and fences; existing roads, trails and walking tracks; and other existing infrastructure such as pipelines, transmission lines and stormwater drainage.

Due diligence Taking reasonable and practicable steps to avoid harm and protect Aboriginal objects.

harm an object or place includes any act or omission that:
(a) destroys, defaces or damages the 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.

Sand Dune Refers to sand ridges and sand hills formed by the wind, usually found in desert regions, near a lake or in coastal areas. In areas of Western NSW, windblown dunes can occur along the eastern edges of ephemeral lakes (called lunettes dunes). They can also occur along the banks of rivers.

Waters means the whole or any part of: any river, stream, lake, lagoon, swamp, wetlands, natural watercourse, tidal waters (including the sea). Note: the boundary or tidal waters is defined as the high water mark. [2]

9.0 Appendix

(A) AHIMS Results

APPENDIX A

AHIMS Web Services (AWS)
Search Result

Purchase Order/Reference : HN1

Client Service ID : 363821

Susan Roberts

Date: 14 August 2018

6783 Pacific Highway 6783 Pacific Highway
Tea Gardens New South Wales 2324

Attention: Susan Roberts

Email: sue@tallpines.net.au

Dear Sir or Madam:

AHIMS Web Service search for the following area at Lot : 1, DP:DP868540 with a Buffer of 200 meters, conducted by Susan Roberts on 14 August 2018.

The context area of your search is shown in the map below. Please note that the map does not accurately display the exact boundaries of the search as defined in the paragraph above. The map is to be used for general reference purposes only.

A search of the Office of the Environment and Heritage AHIMS Web Services (Aboriginal Heritage Information Management System) has shown that:

0	Aboriginal sites are recorded in or near the above location.
0	Aboriginal places have been declared in or near the above location. *

If your search shows Aboriginal sites or places what should you do?

- You must do an extensive search if AHIMS has shown that there are Aboriginal sites or places recorded in the search area.
- If you are checking AHIMS as a part of your due diligence, refer to the next steps of the Due Diligence Code of practice.
- You can get further information about Aboriginal places by looking at the gazettal notice that declared it. Aboriginal places gazetted after 2001 are available on the NSW Government Gazette (http://www.nsw.gov.au/gazette) website. Gazettal notices published prior to 2001 can be obtained from Office of Environment and Heritage's Aboriginal Heritage Information Unit upon request

Important information about your AHIMS search

- The information derived from the AHIMS search is only to be used for the purpose for which it was requested. It is not be made available to the public.
- AHIMS records information about Aboriginal sites that have been provided to Office of Environment and Heritage and Aboriginal places that have been declared by the Minister;
- Information recorded on AHIMS may vary in its accuracy and may not be up to date .Location details are recorded as grid references and it is important to note that there may be errors or omissions in these recordings,
- Some parts of New South Wales have not been investigated in detail and there may be fewer records of Aboriginal sites in those areas. These areas may contain Aboriginal sites which are not recorded on AHIMS.
- Aboriginal objects are protected under the National Parks and Wildlife Act 1974 even if they are not recorded as a site on AHIMS.
- This search can form part of your due diligence and remains valid for 12 months.

3 Marist Place, Parramatta NSW 2150
Locked Bag 5020 Parramatta NSW 2220
Tel: (02) 9585 6380 Fax: (02) 9873 8599

ABN 30 841 387 271
Email: ahims@environment.nsw.gov.au
Web: www.environment.nsw.gov.au