McCardle Cultural Heritage Pty Ltd

Machiko Pty Ltd.

Diamond Beach

Indigenous Archaeological Assessment

July 2010

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Photograph on front cover: study area facing east

Report NoJ1005

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1 INTRODUCTION

1.1 OVERVIEW

McCardle Cultural Heritage Pty Ltd (MCH) has been commissioned by Machiko Pty Ltd to prepare an Indigenous Archaeological Assessment forming part of a Local Environmental Study (LES) of land at Diamond Beach, NSW.

The assessment employs a regional approach, taking into consideration both the landscape of the study area (landforms, water resources, soils, geology etc) and the regional archaeological patterning identified by past studies.

The objective of the assessment is to identify areas of indigenous cultural heritage value, to determine possible impacts on any indigenous cultural heritage identified (including potential subsurface evidence) and to develop management recommendations where appropriate.

1.2 SCOPE OF WORKS

The following tasks were carried out:

- a review of relevant statutory registers and inventories for indigenous cultural heritage including the NSW Department of Environment Climate Change and Water (DECCW) Aboriginal Heritage Information Management System (AHIMS) for known archaeological sites, the State Heritage Register, the Australian Heritage Database (includes data from the World Heritage List UNESCO, National Heritage List, Commonwealth Heritage List, Register of the National Estate) and the Greater Taree City Council Local Environmental Plan;

- a review of local environmental information (topographic, geological, soil, geomorphological and vegetation descriptions) to determine the likelihood of archaeological sites and specific site types, prior and existing land uses and site disturbance that may effect site integrity;

- a review of previous cultural heritage investigations to determine the extent of archaeological investigations in the area and any archaeological patterns;

- the development of a predictive archaeological statement based on the data searches and literature review;

- identification of human and natural impacts in relation to known and recorded archaeological sites and predicted archaeological potential of the study area;

- consultation with the Aboriginal community as per DECCW Interim Community Consultation Requirements for Applicants (2005);

- undertake a site inspection with the participation of the registered Aboriginal groups, and
- the development of mitigation and conservation measures.

1.3 STUDY AREA

The study area, consisting of Lot 6 DP 244030 and Lot 9 DP 250425, is located between Diamond Beach Road to the west and Diamond Beach to the east (Refer to *Figures 1.1* to *1.3*).

1.4 PROPOSED USE OF THE STUDY AREA

The purpose of the assessment is to provide an analysis of the capability and suitability of the land for future development and to make recommendations for the implementation of a Local Environmental Plan (LEP) that will ensure the proposed rezoning is environmentally sustainable and consistent with regional and local planning strategies.

1.5 ABORIGINAL COMMUNITY CONSULTATION

1.5.1 Traditional knowledge

In relation to cultural significance and cultural assessments, MCH recognizes and supports the Indigenous system of knowledge. The indigenous system of knowledge means that knowledge is not 'open' in the sense that everyone has access and an equal right to it, it is not always definitive and it often restricted. As access to this knowledge must be controlled by the appropriate people (usually elders, but may be based on other factors). Therefore, it is important to obtain information from the correct people: those that hold the appropriate knowledge of those sites and/or areas relevant to the project, and who are willing to share that knowledge.

If knowledge is shared, that information must be used correctly as per the wishes of the knowledge holder as a custodian may view this information as highly sensitive, secret/sacred information and may place restrictions on its use. It is therefore important for MCH to engage in affective and long term consultation to ensure knowledge is shared and managed in a suitable manner that will allow for the appropriate management of that site/area.

1.5.2 Definition of Aboriginal cultural heritage

As with all assessments, a broad definition of Aboriginal cultural heritage is adopted. All places and values of archaeological, traditional, spiritual, historical or contemporary significance are deemed to constitute cultural heritage. This definition is wide and covers the notion of cultural heritage as set in both state and federal legislation. In practical terms, this definition

MCH:

Figure 1.1 Regional location of the study area

Source: 1:100 000 Topo Series Bulahdelah

MCH:

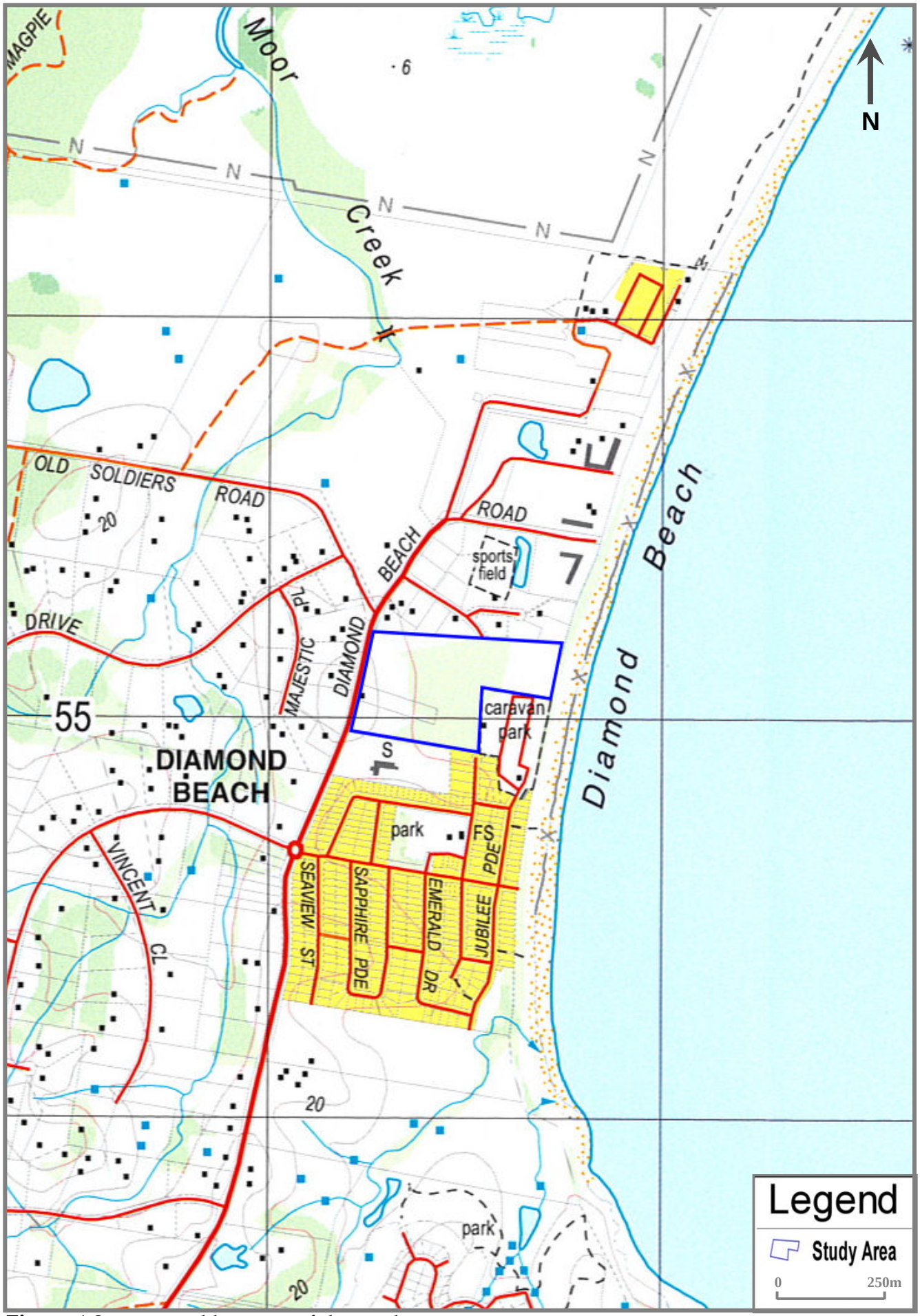


Figure 1.2 Regional location of the study area

Source: 1:25,000 Topo Series Hallidays Point

MCH:

Source: Google earth

Figure 1.3 Aerial location of the study area

MCH:

Figure 1.4 Proposed Plans

will allow, for instance, recording of places which are archaeological sites (such as shell middens, stone arrangements, scarred trees and the like), any places which have traditional stories associated with them, places which are historically important (such as old camps) and places which are important today (such as good food-getting places or places used for recreational purposes). All cultural places and values identified will be accorded equal importance in deliberations.

1.5.3 Consultation

The assessment was required to determine if the proposal has the potential to impact on any known sites or places of Aboriginal cultural heritage significance. Consultation with the relevant Local Aboriginal Land Council (LALC) was undertaken in accordance with the Greater Taree Aboriginal Cultural Heritage Planning Consultation Protocol. In addition to this, consultation with other Aboriginal Interest Groups within the local area including the Ghinni Ghinni Youth and Cultural Aboriginal Corporation, the Saltwater Tribal Council and the Interim Worimi Knowledge Holder Council was undertaken, however these additional groups did not respond to any attempts to consult with them.

In addition to the above, as per the DECCW Interim Community Consultation Requirements for Applicants (January 2005), MCH contacted the required organisations (Refer to *Table 1.1*) to identify who to contact and consult for this project.

Table 1.1 Initial consultation letters

Organisations contacted	**Date**
DECCW	3 March 2010
Forster LALC	
Greater Taree City Council	
Native Title Services	
Registrar of Aboriginal Owners	

Following this, MCH wrote to all parties identified by the organisations set out in *Table 1.1* to inform them of the project and request that they notify MCH, in writing, should they wish to be consulted regarding this project. An advertisement was placed in the Manning River Times on 23 March 2010 that outlined the project, its location and called for interested parties to register their interest no later than 7 April 2010.

Following the above endeavours, two groups registered their interest in the project including FLALC and Doo-wa-kee. The registered groups were forwarded an information pack on the 9 April 2010 that included a description of the proposed project, location maps and a description of the methods of survey. This pack also requested that in order to assist the proponent in the selection of field workers, that the groups provide information in relation to three criteria as set out in the DECCW Interim

Community Consultation Requirements for Applicants (January 2005). This included

- Ability to assist in communicating the results of the survey back to the stakeholders for the assessment of cultural significance and returning advice on their response to MCH (asked to provide details on their ability to discuss results of field work, ability to effectively represent the Aboriginal community and provide a cultural heritage report in an appropriate time frame);

- Cultural knowledge (asked to provide details on anyone who has cultural knowledge relevant to the project, their relationship and association to the local country, if they would feel comfortable in sharing that knowledge and in what manner), and

- Experience in field work and in providing cultural heritage advise (asked to nominate at least two individuals who will be available and fit for work (physically able to undertake field work) and their relevant experience.

This pack also asked the registered groups to provide a CV and insurance details for MCH to pass onto the client. A response was requested no later than 29th April 2010.

MCH were advised by the client that Council had changed to due date and for MCH to try to contact the groups and request a quicker response to the information packs if possible. MCH contacted both groups and received a quick response.

FLALC nominated Mr Stephen Brereton as a knowledge holder and MCH contacted him to determine the most appropriate way forward in relation to knowledge. It was agreed that Mr Brereton would attend the site when he could and then provide MCH with his knowledge in writing (Refer to *Annex A*).

Mr Brereton states that the general Aboriginal Cultural Values associated to the Diamond Beach area include the following:

- The area included in the study area lays within the traditional boundaries of the Worimi

- Although the area is Worimi and the traditional boundary between Worimi and Biripi to the north is the Manning River, this was a traditionally shared place, and still is today

- The study area is close to a Saltwater Aboriginal Place (approximately 4 kilometers away) which is acknowledged a very important Cultural area

- A number of known traditional stories are associated to the landscape

- Although there are no sites recorded within the study area, there are quite a number of Aboriginal sites recorded in the Diamond Beach, Red Head and Halidays Point areas
- Due to the landscape and available traditional food resources, Mr Brereton considers the study area to be of high potential of containing Aboriginal sites

All groups were invited to participate in the survey on 27 April 2010 and Mr Mick Leon and Mr Barry Bungie from Doo-wa-kee undertook the survey with MCH.

A copy of the DRAFT report was forwarded to all groups with a registered interest for their review. MCH asked the community if they would like to provide a cultural significance assessment for its inclusion in the final report or if they would like MCH to include the discussion on cultural sensitivity and significance in this report.

The final report incorporated the comments form FLALC and Doo-wa-kee in a format that is consistent with the "Aboriginal Cultural Heritage Standards and Guidelines Kit" published by NPWS. MCH consulted with all groups identified who registered an interest in the project and a consultation log that details the process is provided in *Annex A*.

1.6 STATUTORY CONTROLS

Land managers are required to consider the affects of their activities or proposed development on the environment under several pieces of legislation. Indigenous cultural heritage in NSW is protected and managed under both Commonwealth and State legislation. In general State legislation provides protection for the physical evidence of past human occupation and the Commonwealth legislation deals with heritage in a wider sense. The appropriate legislation is summarised below.

1.6.1 State

- *New South Wales National Parks and Wildlife Act* 1974, Amendment 2001

All indigenous objects within the state of New South Wales are protected under Section 90 of the National Parks and Wildlife Act 1974 (NPW Act). Under s.5 of the Act, "object" means any deposit, object or material evidence (not being a handicraft made for sale) relating to indigenous habitation of the area that comprises New South Wales, being habitation both prior to and concurrent with the occupation of that area by persons of European extraction, and includes Aboriginal remains.

Sites of traditional significance that do not necessarily contain archaeological materials may be gazetted as "Aboriginal places" and are protected under Section 84 of the Act. This protection applies to all sites, regardless of their significance or land tenure. Under Section 90, it is an offence to knowingly disturb, damage or destroy objects or Aboriginal

Places without the prior written consent of the Director-General of National Parks and Wildlife.

Amendments introduced by the National Parks & Wildlife Amendment Act 2001, include renaming Section 90 "consent" to "Heritage Impact Permit", removal of the term "knowingly" from Section 90, and adding reasonable precaution and due diligence as defences against prosecution under the amended Section 90. At the time of writing, these amendments have yet to commence.

- *Environmental Planning and Assessment Act* 1979, (EP&A Act)

The EP&A Act requires that environmental impacts be considered in land-use planning, including impacts on indigenous and non-indigenous heritage. Local Environmental Plans prepared in accordance with the EP&A Act identify permissible land use and development constraints, and provide guidance on the level of environmental assessment required.

The NSW DECCW provides guidelines for Aboriginal heritage assessment, including those conducted under the EP&A Act 1979. Where indigenous heritage assessment is conducted under the Integrated Development Approval process, a more detailed set of DECCW guidelines applies.

- *The Heritage Act* 1977

The Heritage Act 1977 protects the natural and cultural history of NSW with emphasis on non-indigenous cultural heritage through protection provisions and the establishment of a Heritage Council. While Aboriginal heritage sites and objects are protected primarily by the NPW Act 1974, if an Aboriginal site, object or place is of great significance it can be protected by a heritage order issued by the Minister on the advice of the Heritage Council.

1.6.2 Commonwealth

- *The Aboriginal and Torres Strait Islander Heritage Protection Act* 1984, Amendment 1987

The Aboriginal and Torres Strait Islander Heritage Protection Act 1984 protects areas and/or objects which are of significance to Aboriginal people and which are under threat of destruction. A significant area or object is defined as one that is of particular importance to Aboriginal people according to Aboriginal tradition. The Act can, in certain circumstances override state and territory provisions, or it can be implemented in circumstances where state or territory provisions are lacking or are not enforced. The Act must be invoked by or on behalf of an Aboriginal or Torres Strait Islander or organisation.

- *The Australian Heritage Commission Act* 1975

The Australian Heritage Commission Act 1975 established the Australian Heritage Commission, which assesses places to be included in the National

Estate and maintains a register of these places, which are significant in terms of their association with particular community or social groups for social, cultural or spiritual reasons. The Act does not include specific protective clauses.

1.7 REPORT STRUCTURE

The report includes *Chapter 1* which outlines the project, *Chapter 2* provides the environmental context, *Chapter 3* the archaeological background, *Chapter 4* provides the results of the fieldwork and discussion; *Chapter 5* presents the significance Assessment, *Chapter 6* presents the development impact assessment, *Chapter 7* presents the mitigation strategies and *Chapter 8* presents the management recommendations.

2 ENVIRONMENTAL CONTEXT

2.1 INTRODUCTION

The nature and distribution of Aboriginal cultural materials in a landscape are strongly influenced by environmental factors such as topography, geology, landforms, climate, geomorphology, hydrology and the associated soils and vegetation (Hughes and Sullivan 1984). These factors influence the availability of plants, animals, water, raw materials, the location of suitable camping places, ceremonial grounds, burials, and suitable surfaces for the application of rock art. As site locations may differ between landforms due to differing environmental constraints that result in the physical manifestation of different spatial distributions and forms of archaeological evidence, these environmental factors are used in constructing predictive models of Aboriginal site locations.

Environmental factors also effect the degree to which cultural materials have survived in the face of both natural and human influences and affect the likelihood of sites being detected during ground surface survey. Site detection is dependent on a number of environmental factors including surface visibility (which is determined by the nature and extent of ground cover including grass and leaf litter etc), the survival of the original land surface and associated cultural materials (by flood alluvium and slope wash materials), and the exposure of the original landscape and associated cultural materials (by water, sheet and gully erosion, ploughing, vehicle tracks etc), (Hughes and Sullivan 1984). Combined, these processes and activities are used in determining the likelihood of both surface and subsurface cultural materials surviving and being detected.

It is therefore necessary to have an understanding of the environmental factors, processes and activities, all of which affect site location, preservation, detection during surface survey and the likelihood of subsurface cultural materials being present. The environmental factors, processes and disturbances of the surrounding environment and specific study area are discussed below.

2.2 TOPOGRAPHY

The topographical context is important to identify potential factors relating to past Aboriginal land use patterns. The specific study area is characterised by a gentle eastern facing slope at the west and flats in the eastern portion.

2.3 GEOLOGY

The geology of a region is not only reflected in the environment (landforms, topography, geomorphology, vegetation, climate etc), it also influences past occupation and its manifestation in the archaeological record.

The nature of the surrounding and local geology along with the availability and distribution of stone materials has a number of implications for Aboriginal land use and archaeological implications. The implications for past Aboriginal land use mainly relate to location of stone resources or raw materials and their procurement for manufacturing and modification for stone tools. Evidence of stone extraction, and manufacture, can be predicted to be concentrated in the areas of stone availability. However, stone can be transported for manufacture and/or trading across the region.

The specific study area is situated on the Permian Manning group consisting of mudstone and sandstone. To the north is Quaternary alluvium consisting of gravel, sand, silt clay and marine and fresh water deposits and the south includes Devonian mudstone, sandstone, conglomerate, greywacke, tuff and chert (Newcastle 1:250,000 Geological Map Series 1966).

2.4 SOILS

The nature of the surrounding soil landscape also has implications for Aboriginal land use and site preservation, mainly relating to supporting vegetation and the preservation of organic materials and burials.

A geotechnical investigation was undertaken in 2008 across the study area (Coffey Geotechnics Pty Ltd 2008). The study area was divided into three terrain units: Terrain A, terrain B and Terrain C.

Terrain A includes the moderately undulating ridge and upper slopes along the western boundary down to the mid and lower slopes and includes the western to mid section of the study area. Hard silty topsoils are up to 30 centimetres in depth and overlay hard residual clays up to a depth of 2.5 metres on the lower slope and decrease in depth to 80 centimetres in depth on the upper slope towards the west. This overlays weathered silty sandstone and erosion occurs in areas with reduced vegetation cover (Coffey Geotechnics Pty Ltd 2008: 6).

Terrain B includes the area to the east of terrain A and includes alluvial plain. In this terrain colluvial clay soils overly alluvial clay with Aeolian sand lenses (Coffey Geotechnics Pty Ltd 2008: 6). Terrain C includes the eastern portion and information for this unit was interpreted from aerial photographs. This unit includes Aeolian sand dunes and is heavily vegetated (Coffey Geotechnics Pty Ltd 2008: 7).

2.5 *CLIMATE*

Climatic conditions would have affected the likelihood of the occupation of an area and also impacted upon the soils, vegetation and associated cultural materials (Kovac and Lawrie 1991).

Climatic conditions would have affected the likelihood of the occupation of an area and also impacted upon the soils, vegetation and associated cultural materials (Kovac and Lawrie 1991).

The highest temperature is 28^{o} C and lowest is 6^{o} C. The highest rainfall is from January to March and being up to 180mm and the lowest is August to October being up to 62mm (Department of Meteorology).

2.6 *WATERWAYS*

The availability of water (and the associated faunal and floral resources) is one of the most important factors influencing patterns of past Aboriginal land use. This assertion is undisputedly supported by the regional archaeological investigations carried out in the Hunter Valley.

Stream order assessment is one way of determining the reliability of streams as a water source. Stream order is determined by applying the Strahler method to 1:25 000 topographic maps. Based on the climatic analysis (see *Section 2.5*), the study area will typically experience comparatively reliable rainfalls under normal conditions and thus it is assumed that any streams above a third order classification will constitute a relatively permanent water source.

The Strahler method dictates that upper tributaries do not exhibit flow permanence and are defined as first order streams. When two first order streams meet they form a second order stream. Where two-second order streams converge, a third order stream is formed and so on. When a stream of lower order joins a stream of higher order, the downstream section of the stream will retain the order of the higher order upstream section (Anon 2003; Wheeling Jesuit University 2002).

Moor Creek (3rd Order) is located approximately 500 metres to the north west of the study area and the 1st and 2nd order streams that feed into this are situated to the west and south west and the closest is a 1st order located approximately 250 metres to the west. Diamond Beach is also located approximately 100 metres to the east. Therefore the study area may be considered moderate to low in relation to resources in terms of water availability and associated resources.

2.7 *FLORA AND FAUNA*

The availability of flora and associated water sources affect fauna resources, all of which are primary factors influencing patterns of past Aboriginal land

use and occupation. The preservation and detection of surface cultural materials from of past Aboriginal land uses are also influenced by flora and fauna.

European settlers extensively cleared the original native vegetation in the 1800's. Presently, the specific study area is densely vegetated with paperbark trees that cover approximately three quarters of the study area and the western portion is cleared and currently used for horse grazing.

Typically, due to vegetation cover, most artefacts identified through surface inspection are identified when they are visible on exposures created by erosion or ground surface disturbances (Dean-Jones and Mitchell 1993; Kuskie and Kamminga 2000). The extensive vegetation cover throughout the study area expected to result in limited visibility, hence reducing the detection of surface cultural materials.

2.8 PAST LAND USES AND DISTURBANCES

Based upon archaeological evidence, the occupation of Australia extends back some 40,000 years (Mulvaney and Kamminga 1999) whilst Aboriginal people have been present within the Hunter Valley for at least 20,000 years (Koettig 1987). Although the impact of past Aboriginal occupation on the natural landscape is thought to have been relatively minimal, it cannot simply be assumed that 20,000 years of land use have passed without affecting various environmental variables.

The practice of 'firestick farming' whereby the judicious setting of fires served to drive game from cover, provide protection and alter vegetation communities significantly influenced seed germination, thus increasing diversity within the floral community.

Following European settlement of the area in the 1820s, the landscape has been subjected to a range of different modifactory activities including clearing, agricultural cultivation (ploughing), pastoral grazing and residential developments (Turner 1985). The associated high degree of landscape disturbance has resulted in the alteration of large tracts of land and the cultural materials contained within these areas.

The specific study area has been subject to clearing and grazing to the west along with an abandoned house and shed and sand mining to the east.

Although pastoralism is a comparatively low impact activity, it does result in disturbances due to vegetation clearance and the trampling and compaction of grazed areas. These factors accelerate the natural processes of sheet and gully erosion, which in turn can cause the horizontal and lateral displacement of artefacts. Furthermore, grazing by hoofed animals can affect the archaeological record due to the displacement and breakage of artefacts resulting from trampling (Yorston *et al* 1990). Pastoral land uses are also closely linked to alterations in the landscape due to the construction of dams, fence lines and associated structures.

Sand mining of the study area involved large scale movement and removal of sand to depth resulting in the displacement and possible destruction of cultural materials. No sites are expected to be present in situ or at all where sand mining has occurred.

2.9 NATURAL DISTURBANCES

It must be recognised that the disturbance of cultural materials can also be a result of natural processes.

The patterns of deposition and erosion within a locality can influence the formation and/or destruction of archaeological sites. Within an environment where the rate of sediment accumulation is generally very high, artefacts deposited in such an environment will be buried shortly after being abandoned. Frequent and lengthy depositional events will also increase the likelihood of the presence of well-stratified cultural deposits (Waters 2000:538,540).

In a stable landscape, such as the study area, with few episodes of deposition and minimal to moderate erosion, soils will form and cultural materials will remain on the surface until they are buried. Repeated and extended periods of stability will result in the compression of the archaeological record with multiple occupational episodes being located on one surface prior to burial (Waters 2000:538-539). Within the Hunter Valley duplex soils artefacts typically stay within the A horizon on the interface between the A and B horizons (Refer to *Section 2.4*).

If erosion occurs after cultural material is deposited, it will disturb or destroy sections of archaeological sites even if they were initially in a good state of preservation. The more frequent and severe the episodes of erosional events, the more likely it is that the archaeological record in that area will be disturbed or destroyed (Waters 2000:539; Waters and Kuehn 1996:484). Regional erosional events may entirely remove older sediments, soils and cultural deposits so that archaeological material or deposits of a certain time interval no longer exist within a region (Waters and Kuehn 1996:484-485).

The role of bioturbation is another significant factor in the formation of the archaeological record. Post-depositional processes can disturb and destroy artefacts and sites as well as preserve cultural materials. Redistribution and mixing of cultural deposits occurs as a result of burrowing and mounding by earthworms, ants and other species of burrowing animals. Artefacts can move downwards through root holes as well as through sorting and settling due to gravity. Translocation can also occur as a result of tree falls (Balek 2002:41-42; Peacock and Fant 2002:92). Depth of artefact burial and movement as a result of bioturbation corresponds to the limit of major biologic activity (Balek 2002:43). Artefacts may also be moved as a result of an oscillating water table causing alternate drying and wetting of sediments, and by percolating rainwater (Villa 1982:279).

Experiments to assess the degree that bioturbation can affect material have been undertaken. In abandoned cultivated fields in South Carolina, Michie (summarised in Balek 2002:42-43) found that over a 100 year period 35% of shell fragments that had been previously used to fertilise the fields were found between 15 and 60 centimetres below the surface, inferred to be as a result of bioturbation and gravity. Earthworms have been known to completely destroy stratification within 450 years (Balek 2002:48). At sites in Africa, conjoined artefacts have been found over a metre apart within the soil profile. The vertical distribution of artefacts from reconstructed cores did not follow the order in which they were struck off (Cahen and Moeyersons 1977:813). These kinds of variations in the depths of conjoined artefacts can occur without any other visible trace of disturbance (Villa 1982:287).

However, bioturbation does not always destroy the stratigraphy of cultural deposits. In upland sites in America, temporally-distinct cultural horizons were found to move downwards through the soil as a layer within minimal mixing of artefacts (Balek 2002:48).

2.10 DISCUSSION

The regional environment provided resources, including raw materials, fauna, flora and water, that would have allowed for sustainable occupation of the area. Within the study area, these resources would have been limited due to a lack of reliable water which is needed for sustainable occupation.

In relation to modern alterations to the landscape, the use of the western portion of the study area for agricultural purposes can be expected to have had low impacts upon the archaeological record. European land uses such as clearing, grazing, ploughing, dam building and the construction of fences and dwellings may have displaced cultural materials, however in less disturbed areas, it is likely that archaeological deposits may remain relatively intact. Those areas impacted on by past sand mining will have significant impacts to the archaeological record.

Vegetation cover across both study areas consists of extensive grass and closed woodland throughout the mid and eastern sections. This will affect visibility and thereby reduce the potential for identifying archaeological evidence. Typically, due to vegetation cover, most artefacts identified through surface inspection are identified when they are visible on exposures created by erosion or ground surface disturbances (Kuskie and Kamminga 2000).

Because of the natural and cultural processes discussed above, site integrity cannot be assumed for the study area. However, the existence of *in situ* cultural materials cannot be ruled out.

3 ARCHAEOLOGICAL CONTEXT

A review of the archaeological literature of the region, and more specifically the local area and the results of a DECCW AHIMS search provide essential contextual information for the current assessment. Thus, it is possible to obtain a broader picture of the wider cultural landscape highlighting the range of site types throughout the region, frequency and distribution patterns and the presence of any sites within the study area. It is then possible to use the archaeological context in combination with the review of environmental conditions to establish an archaeological predictive model for the study area.

3.1 DECCW ABORIGINAL HERITAGE INFORMATION MANAGEMENT SYSTEM

A search of the DECCW AHIMS register has shown that 45 known Aboriginal sites are currently recorded within five kilometres of the study area. The recorded sites include 15 open camps, nine middens, five isolated finds, three natural mythological (ritual), three shelter with middens, two midden/open camps, one bora/ceremonial/carved tree, one bora/ceremonial, one burial, one scarred tree, two carved trees, one Aboriginal Place and one listed as none. Site co-ordinates are not provided due to site protection and conservation, however the general location of sites is shown in *Figure 3.1*.

3.2 ARCHAEOLOGICAL CONTEXT

A number of the sites above were recorded in the course of archaeological assessments conducted within the local area and therefore can provide more specific insight into local archaeological patterning. Also it must be recognised that cultural heritage assessments, conducted in association with development activity, by their very nature adhere to a restricted project area and thus may not give an entirely holistic representation. Three archaeological assessments are registered with DECCW. These studies are reviewed below and their location shown in *Figure 3.2*.

Creamer (1983) undertook an assessment in relation to a significant Aboriginal Place. The area referred to as Saltwater was first reported as being significant to contemporary Aboriginal people at Purfleet and Taree in 1976 by Terry Donovan who was an Aboriginal sites officer. Donovan (1969) concluded in his original report that a large fig tree allocated at the western end of Saltwater Recreation Reserve was believed to have spiritual powers and this site should be declared an Aboriginal Place to protect it. In 1982 the Purfleet Aboriginal community registered a land claim for Saltwater by sending information to the Aboriginal Land Trust and were asked to attend a site meeting to determine if archaeological sites existed which may support the claim. Fieldwork was undertaken in March 1983 but no details of the work are provided.

Figure 3.1 Known sites

Source: 1:100 000 Topo Series Bulahdelah

MCH:

Figure 3.2 Previous studies

Source: 1:100 000 Topo Series Bulahdelah

There are three main sites of significance at this location. A cave on the point of the headland believed to contain burials, the seasonal camping place on the Reserve used often and mainly at Christmas and Easter and the fig tree on the western bank of Saltwater.

During Creamers investigation, the cave was visited in March 1993 with several Aboriginal men as guides. The cave had collapsed and is very close to the waterline which would have resulted in frequent flooding at high tide. The cave effectively acts like a 'blow hole' and no bones were identified and it was concluded that due to the flooding and collapse that it is unlikely that any bones would remain. It was also believed that a person or persons of high social status were buried in the cave.

The seasonal camping place included approximately 300 metres in length of the headland immediately to the west of a flat area bordered on the south by dunes and the north by forest. This area was regularly used by Aboriginal people as a camping place, as an 'out station; from the Purfleet Mission that was located approximately 13 kilometres to the north west. This information was obtained from Margery Maher and Pat Davis who described the camps.

The sacred fig tree was believed to have powers as expressed during an interview with Margery Maher and Bert Marr. They were told to never sit under the tree or you'll be sick. Some children were fishing under the tree and one got sick with his glands swelling who was taken to the local doctor by Margery Maher who did not know what was wrong with him. Margery Maher then went to the fig tree, gathered some leaves and boiled them, washed the sick child's hands with them and the swelling had gone by morning. Bert Marr also stated that the last flood took the tree away.

Creamer concluded that the area is of high significance to the Aboriginal people and recommended it be declared as an Aboriginal Place under the National Parks and Wildlife Act 1974.

Brayshaw (1990) undertook an assessment as part of an Environmental Impact Study (EIS) for Mineral Deposits Limited who was proposing to mine Saltwater Beach for rutile and zircon. It was predicted that the most likely location for sites would be on the frontal dune as the remainder of the study area was low lying swamp. Further discussion with a mining employee revealed that the fore dune had been previously mined along with the full length of Saltwater beach and that the mined strip had been several hundred metres in width in some places. One site was identified outside the boundary of the mining lease at that time. The site included two yellow chert flakes situated on a south western slope on an elevated sand ridge. It was found that the archaeological context was destroyed by previous sand mining and as such no potential for in situ subsurface materials.

Collins (1993) undertook an additional assessment for Mineral Deposits Limited that focused on areas outside the previous assessment undertaken by Brayshaw (1990) and in areas outside of those known to have been

previously mined. It was found that the study area supported regenerating heath vegetation. One site, an artefact scatter, was identified along a track 55 metres south of the site identified by Brayshaw. Twelve artefacts were identified and it was argued that as the vegetation in the vicinity of the site was regenerating, it was likely that the artefacts had been subject to some spatial disturbances. However, it was also stated that further artefacts may be present in the site locality.

Although the site was assessed as having low archaeological and educational significance, its location in relation to knapping site at Saltwater reserve placed it within an area of significant traditional and contemporary importance to the local Aboriginal people and is therefore considered an integral component to the cultural landscape of this area. It was recommended that sand mining remain within areas already previously disturbed through past mining activities and that part of the site within previously mined area should be subject to a s90 to allow the surface collection of those artefacts.

In addition to this site, it was found that the presence of a discontinuous pipi midden band that was exposed below the surface in a cutting of the fore dune seaward cliff, may contain archaeological materials. It was found that the exposed shell was visible only in the part of the dune that overlaid an outcrop of 'coffee' rock and as such it was considered to be in situ. It was recommended that further investigation be undertaken or, alternatively, that this area be excluded from mining activities and retained as an in situ Potential Archaeological Deposit (PAD).

3.3 PREDICTIVE MODEL

Within the region, a broad range of site types are represented including predominantly shell middens, open camps and isolated finds with fewer natural mythological (ritual), bora/ceremonial sites, scarred and carved trees and a burial. Within the areas covered by the studies, a range of available landforms has been sampled. In regional terms, site distribution is closely linked to topography, with access to reliable water exhibiting the highest concentrations of sites.

There are a number of factors which affect site location and that are beyond human control. Shelter sites and grinding grooves are site types typical of the "sandstone country" however, their presence is limited to areas containing suitable sandstone outcrops and therefore such sites are not expected within an alluvial context.

Based on the available information, it is possible to identify a number of trends in site location and patterning within the local area. Open camps and shell middens are by far the most common site type located within close proximity to water and the associated resources, specifically along the sand dunes. A variety of other site types have been identified in the regional area in far lower concentrations and include isolated finds, scarred and carved trees and less commonly bora/ceremonial grounds and a burial.

The high representation of sites containing stone artefacts is to be expected due to the durability of stone in comparison to other raw materials.

The specific study area is not located in close proximity to reliable drinking water and their associated resources. Shell middens and stone artefacts (isolated finds) are expected to be found within the study area and they are expected to contain assemblages dating from the Holocene. As no local raw materials for tool manufacture are present in the area, all stone artefacts would have been sourced elsewhere thus indicating trading/travel routes. Artefact types would comprise predominantly of debitage from flaking, flakes, broken flakes and few cores. Small numbers of modified artefacts including retouched flakes, and asymmetrical and symmetrical backed artefacts may be present.

However, sites are expected to have been disturbed by human disturbances (clearing, grazing and sand mining) and past natural factors such as erosion. The accuracy of these predictions would be largely determined by the degree of such disturbances.

3.4 ARCHAEOLOGICAL POTENTIAL IN THES STUDY AREA

Based on archaeological sites registered in the region and the results of past archaeological studies, two site types were likely to occur throughout the study area prior to sand mining:

- Isolated finds

Isolated finds are single artefacts that are usually identified in areas where ground surface visibility is increased due to lack of vegetation. Erosion, agricultural activities (such as ploughing) and access ways can also expose surface artefacts.

- Middens

Middens result from seasonal camping and exploitation of oysters and freshwater mussels. Extended camping results in the deposition of a feature distinguishable from a natural shell layer through the inclusion of burnt or blackened shell, non-molluscan fauna, dis-articulated bivalves, charcoal, burnt wood, hearth stones, stone artefacts and stratification. Middens are usually found on the coast and on the shorelines of estuaries, lakes and inland rivers. Although sometimes identified on ridges, these middens tend to be less extensive than those close to the resource base. Smaller lenses of shell deposition also occur close to water.

Numerous shell middens have been recorded throughout the area. Whether such lenses are natural or cultural can best be determined by corroborating evidence such as stone artefacts. The durability of shell, like stone, gives it a better probability of survival than most other remains.

3.5 HERITAGE REGISTER LISTINGS

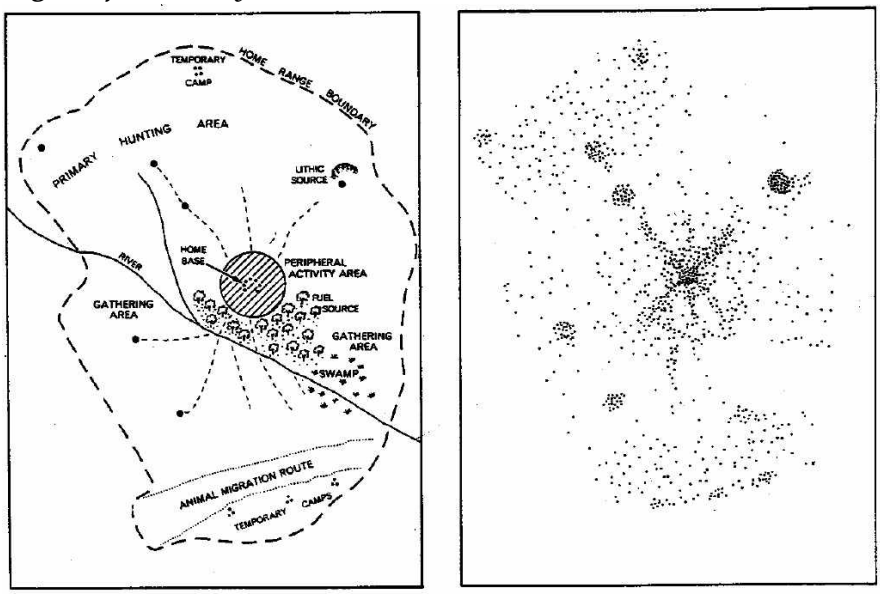
The State Heritage Register, the Australian Heritage Database (includes data from the World Heritage List UNESCO, National Heritage List, Commonwealth Heritage List, and Register of the National Estate) and the Greater Taree City Council Local Environmental Plan was checked for sites. However, not all indigenous places are listed, and the Heritage Commission is consulting with Traditional Owners to gradually include indigenous information. There are no indigenous heritage items listed on the Greater Taree City Council Local Environment Plan within the study area.

3.6 MODELS OF PAST ABORIGINAL LAND USE

The main aim of this project is to attempt to define both the nature and extent of occupation across the area. As a result, the nature of the analysis will focus on both the landform units and sites. The purpose of this strategy is to highlight any variations between sites and associated assemblages, landforms and resources across the area treating assemblages as a continuous scatter of cultural material across the landscape. In doing this, it is possible to identify variation across the landscape, landforms and assemblages that correspond with variation in the general patterns of landscape use and occupation. Thus the nature of activities and occupation can be identified through the analysis of stone artefact distributions across a landscape.

A general model of forager settlement patterning in the archaeological record has been established by Foley (1981). This model distinguishes the residential 'home base' site with peripheral 'activity locations'. Basically, the home base is the focus of attention and many activities and the activity locations are situated away from the home base and are the focus of specific activities (such as tool manufacturing). This pattern is illustrated in *Figure 3.3.*

Figure 3.3 Foley's model (left) and its manifestation in the archaeological record (right), (from Foley 1981).



Home

base sites generally occur in areas with good access to a wide range of resources (reliable water, raw materials etc). The degree of environmental reliability, such as reliable water and subsistence resources, may influence the rate of return to sites and hence the complexity of evidence. Home base sites generally show a greater diversity of artefacts and raw material types (which represent a greater array of activities performed at the site and immediate area).

Activity locations occur within the foraging radius of a home base camp (approximately 10 km); (Renfrew and Bahn 1991). Based on the premise that these sites served as a focus of a specific activity, they will show a low diversity in artefacts and are not likely to contain features reflecting a base camp (such as hearths). However, it is also possible that the location of certain activities cannot be predicted or identified, adding to the increased dispersal of cultural material across the landscape. If people were opting to carry stone tools during hunting and gathering journeys throughout the area rather than manufacturing tools at task locations, an increased number of used tools should be recovered from low density and dispersed assemblages.

4 RESULTS

4.1 METHODOLOGY

The survey areas were surveyed on foot in transects by 3 people at approximately ten metres apart. The study area was surveyed with a focus on areas of high ground surface visibility and exposures (erosional features, creek banks, tracks, cleared areas).

4.2 LANDFORMS

McDonald *et al* (1998) describes the categories of landform divisions. This is a two layered division involving treating the landscape as a series of 'mosaics'. The mosaics are described as two distinct sizes: the larger categories are referred to as *landform patterns* and the smaller being *landform elements* within these patterns. Landform patterns are large-scale landscape units, and landform elements are the individual features contained within these broader landscape patterns. There are forty landform pattern units and over seventy landform elements. However, of all the landform element units, ten are morphological types. For archaeological investigations they divide the landscape into standardised elements that can be used for comparative purposes and predictive modelling.

As outlined in *Chapter 2*, the study area includes a east facing slope and flats (Refer to *Figure 4.1*).

4.3 SURVEY UNITS

For ease of management, the study area was divided into two survey units (SU'S) based on landforms. These are shown in *Figure 4.2* and described below.

SURVEY UNIT 1

This SU includes the east facing slope. It has been cleared in the past and has an abandoned property on it. The western third of this SU is thick grass and the remainder is closed forest with lantana which hindered access in some parts and erosion was moderate.

SURVEY UNIT 2

This SU includes the flats in the eastern portion of the study area. It has been cleared in the past and has been subject to sand mining. Vegetation was dense and included closed forest with moderate erosion throughout.

MCH:

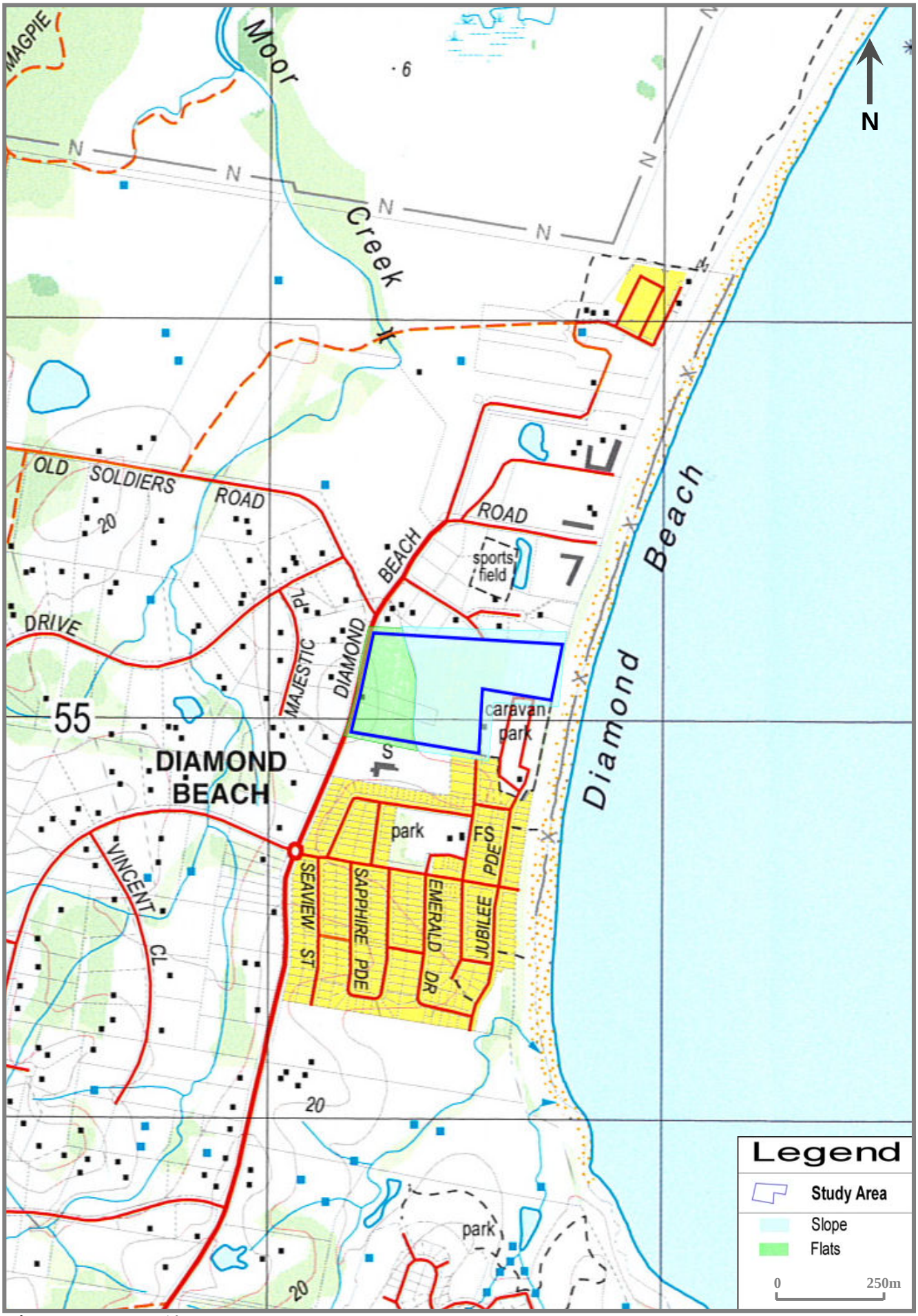


Figure 4.1 Landforms

Source: 1:25,000 Topo Series Hallidays Point

MCH:

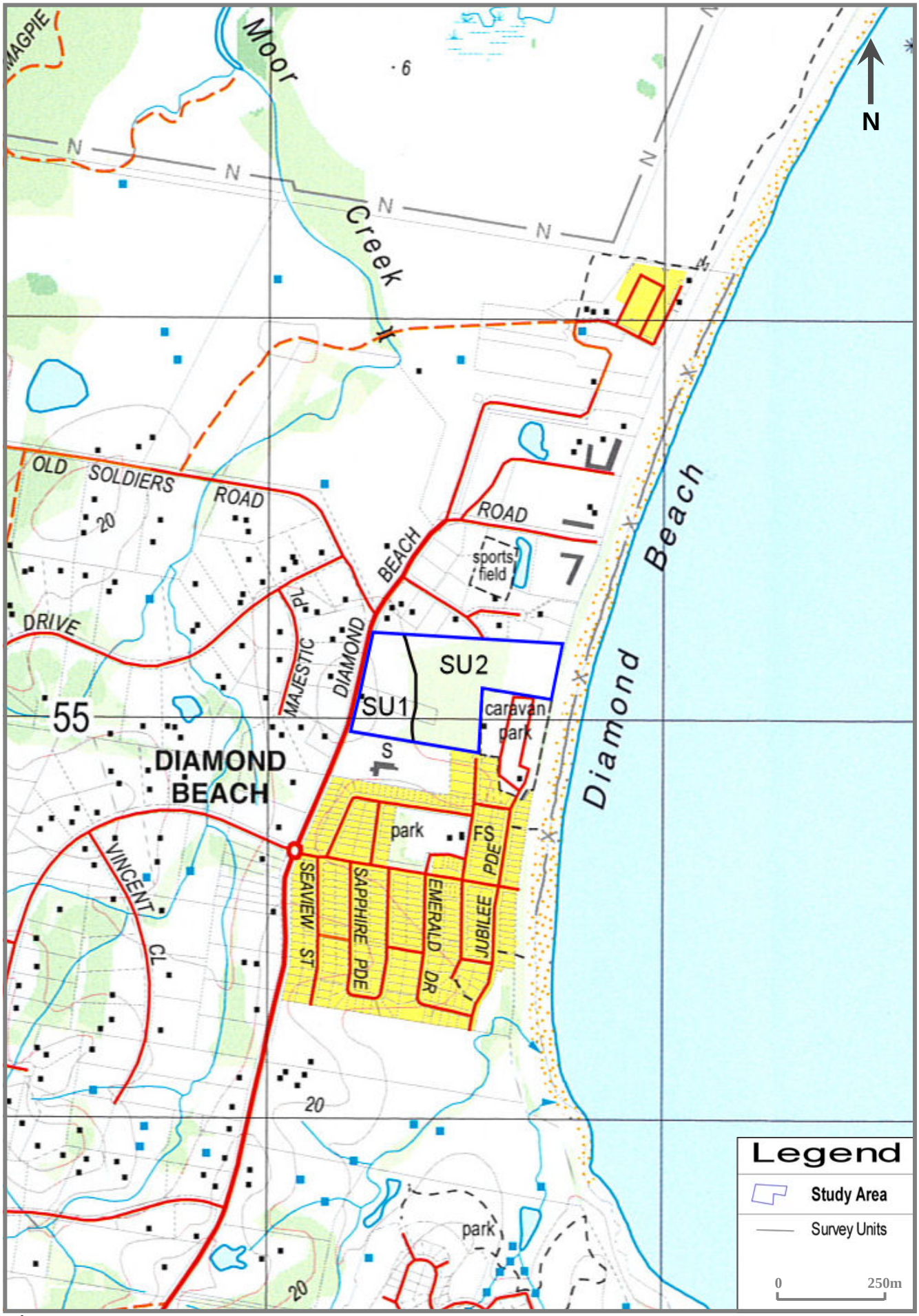


Figure 4.2 Survey units

Source: 1:25,000 Topo Series Hallidays Point

4.4 *EFFECTIVE COVERAGE*

Effective coverage is an estimate of the amount of ground observed taking into account local constraints on site discovery such as vegetation and soil cover.

Vegetation included dense grass and closed forest. The effective coverage for the study area was determined and *Table 4.1* details the visibility rating system used.

Table 4.1 Ground surface visibility rating

Description	GSV Rating %
Very Poor – heavy vegetation, scrub foliage or debris cover, dense tree of scrub cover. Soil surface of the ground very difficult to see.	0-9%
Poor – moderate level of vegetation, scrub, and / or tree cover. Some small patches of soil surface visible in the form of animal tracks, erosion, scalds, blowouts etc, in isolated patches. Soil surface visible in random patches.	10-29%
Fair – moderate levels of vegetation, scrub and / or tree cover. Moderate sized patches of soil surface visible, possibly associated with animal, stock tracks, unsealed walking tracks, erosion, blow outs etc, soil surface visible as moderate to small patches, across a larger section of the study area.	30-49%
Good – moderate to low level of vegetation, tree or scrub cover. Greater amount of areas of soil surface visible in the form of erosion, scalds, blowouts, recent ploughing, grading or clearing.	50-59%
Very Good – low levels of vegetation / scrub cover. Higher incidence of soil surface visible due to recent or past land-use practices such as ploughing, grading, mining etc.	60-79%
Excellent – very low to non-existent levels of vegetation/scrub cover. High incidence of soil surface visible due to past or recent land use practices, such as ploughing, grading, mining etc.	80-100%
Note: this process is purely subjective and can vary between field specialists, however, consistency is achieved by the same field specialist providing the assessment for the one study area/subject site.	

As indicated in *Table 4.2*, the effective coverage for the study area illustrates that visibility is very low at .03%with grass being the limiting factor. Examples of vegetation are shown in *Figure 4.3.*

Table 4.2 Effective coverage

SU	Landform	Area (m2)	Vis %	Exp %	Exposure type	Previous disturbances	Present disturbances	Limiting visibility factors	Effective coverage (m2)
1	slope	31,250	1%	1%	erosion, tracks	clearing, grazing, dwelling	NA	grass cover	3
2	flats	31,250	5%	1%	erosion, tracks	clearing, sand mining	NA	grass cover	16
Totals		**62,500**							**19**
Effective coverage %									**0.03%**

MCH:

Note: arrows on the photographs indicate the direction they were taken.

Source: Google earth

Figure 4.3 vegetation

4.5 ARCHAEOLOGICAL SITES

No archaeological sites were identified.

4.6 POTENTIAL ARCHAEOLOGICAL DEPOSIT (PAD)

The terms 'Potential Archaeological Deposit (PAD)' and 'area(s) of archaeological sensitivity' are used to describe areas that are likely to contain sub-surface cultural deposits. These sensitive landforms or areas are identified based upon the results of fieldwork, the knowledge gained from previous studies in or around the subject area and the resultant predictive models. Any or all of these attributes may be used in combination to define a PAD.

The likelihood of a landscape having been used by past Aboriginal societies and hence containing archaeologically sensitive areas is primarily based on the availability of local natural resources for subsistence, artefact manufacture and ceremonial purposes. The likelihood of surface and subsurface cultural materials surviving in the landscape is primarily based on past land uses and preservation factors.

Due to the disturbances and distance from reliable drinking water no PADs were identified.

4.7 CULTURAL SITES

Two sites were identified by Mr. Mick Leon during the survey. Site DBA-1 includes a yellow-brown chert piece with dorsal margins being flaked. This was located adjacent to the caravan park within a sewerage line that has now re-grown. The second site (DBA-2), located approximately four metres north of DBA-1, and includes an unknown type of broken stone that is suggested as either part of a blade or a larger scraping implement. The two isolated finds were found to be in a highly disturbed context and of low to medium cultural significance. A piece of bone was also identified. This bone is animal not human.

It was recommended that should the two cultural sites be disturbed in the future that the relevant Aboriginal groups be consulted with to determine the most appropriate cause of action (i.e. s90 Collection and storage of the artefacts). Monitoring was also suggested and site cards were provided to DECCW by Mr Leon. Mr Leons' report is provided in *Annex A*.

4.8 REGIONAL & LOCAL CONTEXT

The two sites identified were found in a highly disturbed context and as such do not allow for a comparison to the local and regional archaeological context.

4.9 DISCUSSION

Sites provide valuable information about past occupation, use of the environment and its specific resources including diet, raw material transportation, stone tool manufacture, and movement of groups throughout the landscape.

Proximity to water was an important factor in past occupation of the area, with sites being located along Diamond Beach and then reducing in number significantly away from water with most inland sites located within 50 metres of the tributaries. The surrounding area contains no raw materials that are typically used in the manufacture of stone tools, and as such it can be assumed that any artefacts identified would be of materials traded and/or transported from other locations.

Although two cultural sites were identified, they were found in a disturbed context and as such no further information can be added to the local or regional predictive modelling.

5 ASSESSMENT OF ARCHAEOLOGICAL SIGNIFICANCE

5.1 THE SIGNIFICANCE ASSESSMENT PROCESS

One of the key steps in the process of cultural heritage management is the assessment of significance. Not all sites are equally significant and not all are worthy of equal consideration and management (Sullivan and Bowdler 1984; Pearson and Sullivan 1995: 7).

The determination of significance can be a difficult process as the social and scientific context within which these decisions are made is subject to change (Sullivan and Bowdler 1984). This does not lessen the value of the heritage approach, but enriches both the process and the long-term outcomes for future generations as the reasons for, and objectives of, site conservation also change over time.

The assessment of significance of archaeological sites and resources is defined in most cases by what these entities can contribute to our understanding or knowledge of a place or site. In most cases, it is not possible to fully articulate or comprehend the extent of the archaeological resource at the outset, let alone its value. Therefore, the evaluation of the significance of archaeological material is based on the potential this resource has to contribute to our understanding of the past. Of importance is the type of information that can be revealed. In particular, site significance can be due to knowledge not available through other sources, and the contribution that it can make to our understanding of a place or a cultural landscape.

5.2 BASIS FOR EVALUATION

The significance of indigenous archaeological sites or cultural places can be assessed on the criteria of the Burra Charter, the Australian Heritage Commission Criteria of the National Estate, and the DECCW guidelines that are derived from the former two.

The NSW NPWS Aboriginal Cultural Heritage Standards and Guidelines Kit (1997) emphasises two realms of significance assessment:

Aboriginal cultural significance

Archaeological (scientific) significance

The cultural significance of the sites or landscape will be assessed by the Aboriginal groups mentioned previously.

5.3 ARCHAEOLOGICAL (SCIENTIFIC) SIGNIFICANCE

Scientific significance is assessed according to the contents of a site, state of preservation, integrity of deposits, representativeness/rarity of the site type, and potential to answer research questions on past human behaviour (NPWS 1997).

For open campsites, evidence required to adequately assess significance includes information about the presence of sub-surface deposits, the integrity of these deposits, the nature of site's contents and extent of the site. A review of information pertaining to previously recorded sites within the local area and region enables the rarity and representativeness of a site to be assessed.

High significance is usually attributed to sites that are so rare or unique that the loss of the site would affect our ability to understand an aspect of past Aboriginal use/occupation of an area. In some cases a site may be considered highly significant because its type is now rare due to destruction of the archaeological record through development. Medium significance can be attributed to sites that provide information on an established research question. Low significance is attributed to sites that cannot contribute new information about past Aboriginal use/occupation of an area. This may be due to site disturbance or the nature of the site's contents.

In order to clarify the significance assessment, the criteria used are explained below.

5.3.1 *Research potential*

Research potential refers to the potential for information gained from further investigations of the evidence to be used in answering current or future research questions. Research questions can relate to any number of issues concerning past human material culture and associated behaviour (including cultural, social, spiritual etc) and/or use of the environment. Several inter-related factors to take into consideration include the intactness or integrity of the site, the connectedness of the site to other sites, and the potential for a site to provide a chronology extending back in the past. Several questions are posed for each site or area containing evidence of past occupation:

- Can the evidence contribute information not available from any other resource?
- Can the evidence contribute information not available from any other location or environmental setting?
- Is this information relevant to questions of past human occupation (including cultural, social and/or spiritual behaviour) and/or environments or other subjects?

Assessing research potential therefore relies on comparisons with other evidence both within the local and regional context. The criteria used for assessing research potential include:

- potential to address specific local research questions;
- potential to address specific regional questions;
- potential to address general methodological and theoretical questions;
- potential sub-surface deposits; and
- potential to address future research questions.

The particular questions asked of the available evidence should be able to contribute information that is not available from other resources or evidence and are relevant to questions about past human societies and their material culture. Levels for defining research potential are as follows:

High	Has the potential to provide new information not obtained from any other resource to answer current and/or future research questions.
Medium	Has the potential to contribute significant additional information to answer current and/or future research questions.
Low	Has no potential to contribute significant information to answer current or future research questions.

5.3.2 Representativeness and rarity

Representativeness and rarity are assessed at a local, regional and national level (although assessing at a national level is difficult and commonly not possible due to a lack of national reports and available database). As the primary goal of cultural resource management is to afford the greatest protection to a representative sample of Aboriginal heritage throughout a region, this is an important criterion. The more unique or rare the evidence is, the greater its value as being representative within a regional context.

The main criteria used for assessing representativeness and rarity include:

- the extent to which the evidence occurs throughout the region;
- the extent to which this type of evidence is subject to existing and potential future impacts in the region;
- the integrity of the evidence compared to that at other locations within the region;

- whether the evidence represents a primary example of its type within the region; and
- whether the evidence has greater potential for educational purposes than at other similar locations within the region.

5.3.3 Nature of the Evidence

The nature of the evidence is related to representativeness and research potential. For example, the less common the type of evidence, the more likely it is to have representative value. The nature of the evidence is directly related to its potential to be used in addressing current and/or future research questions. Criteria used in assessing the nature of the evidence include:

- presence, range and frequency of artefacts;
- presence, range and frequency of artefact types; and
- presence and types of other features.

5.3.4 Integrity

The state of preservation and disturbances of the evidence (integrity) is also related to representativeness and research potential. The higher the integrity (well preserved and not disturbed) of the evidence, the greater the level of information that is likely to be obtained from further study. This translates to greater importance for the evidence within a local and regional context, as it may be a suitable example for preservation/conservation. The criteria used in assessing integrity include:

- horizontal spatial distribution of artefacts;
- vertical spatial distribution of artefacts;
- preservation of intact features such as hearths or knapping floors;
- preservation of site contents such as charcoal which may enable direct dating providing a reliable date of occupation of a given area;
- preservation of artefacts which may enable use-wear/residue analysis to determine tool use and possibly diet; and
- preservation of other cultural materials that may enable interpretation of the evidence in relation to cultural/social behaviour (e.g. burial types and associated mortuary practices may have been based on cultural, social, age, and/or gender distinctions).

Many of these criteria can only be obtained through controlled excavation. Generally high levels of ground disturbance (such as erosion, tracks, dams etc) limit the possibility that an area would unlikely contain intact spatial distributions, intact features, in situ charcoal et cetera.

Definitions for defining levels of site integrity and condition have been derived from Witter (1992) and HLA (2002) and are as follows:

Excellent Disturbance, erosion or development is minimal.

Good Relatively undisturbed deposits or partially disturbed with an obvious in situ deposit.

Fair Some disturbance but the degree of disturbance is difficult to assess.

Poor Clearly mostly destroyed or disturbed by erosion or development.

Very Poor Sites totally disturbed or clearly not in situ.

Destroyed A known site that is clearly no longer there.

5.4 EVALUATION

Table 5.1 presents the scientific significance assessment for the sites identified.

Table 5.1 Scientific Significance Assessment

Site	Site Type	Representativeness	Integrity	Res. Pot	Sci. Sig
DBA-1	isolated	well represented	very poor	low	low
DBA-2	isolated	well represented	very poor	low	low

5.5 CULTURAL SIGNIFICANCE

While Aboriginal sites and places may have scientific significance, they also have cultural/social significance to the Aboriginal people from that area. Determining cultural/social significance can only be determined by the Aboriginal people from the area in which the sites and/or places were identified. *Table 5.2* presents the cultural significance assessment for the sites identified.

Table 5.2 Cultural Significance Assessment

Site	Site Type	Representativeness	Integrity	Cult. Sig
DBA-1	isolated	well represented	very poor	Low to medium
DBA-2	isolated	well represented	very poor	Low to medium

6 ASSESSMENT OF IMPACTS

The archaeological record is a non-renewable resource that is affected by many processes and activities. As outlined in *Chapter 2*, the various natural processes and human activities may impact on archaeological deposits. *Chapter 4* describes the impacts within the study area, showing how these processes and activities have disturbed the landscape and associated cultural materials in varying degrees.

6.1 IMPACTS

As this assessment forms part of an analysis of the capability and suitability of the land for future development and to make recommendations for the implementation of a Local Environmental Plan (LEP) that will ensure the proposed rezoning is environmentally sustainable and consistent with regional and local planning strategies, no impacts at this stage are proposed.

Mitigation measures to minimise any future impacts are outlined in the following chapter.

7 *MITIGATION AND MANAGEMENT STRATEGIES*

Specific strategies, as outlined in the Aboriginal Cultural Heritage Standards and Guidelines Kit (NPWS 1987), are considered below for the management of identified sites and potential archaeological deposits within the study areas. One of the most important considerations in selecting the most suitable and appropriate strategy is the recognition that Aboriginal cultural heritage is very important to the local Aboriginal community. Decisions about the management of sites and potential archaeological deposits should be made in consultation with the appropriate local Aboriginal community.

7.1 CONSERVATION/PROTECTION

The DECCW is responsible for the conservation/protection of Indigenous sites and they therefore require good reason for any impact on an indigenous site. Conservation is the first avenue and is suitable for all sites, especially those considered high archaeological significance and/or cultural significance.

Conservation includes the processes of looking after an indigenous site or place so as to retain its cultural significance and are managed in a way that is consistent with the nature of peoples' attachment to them.

The two sites identified (DBA-1 and DBA-2) are found in a highly disturbed context and as such any cultural material that may have been present has been removed or disturbed due to sand mining and/or sewerage works. Additionally, no PADs were identified. Conservation is not justified.

7.2 FURTHER INVESTIGATION

When a site is identified but its extent, the nature of its contents, level of integrity and/or its significance cannot be adequately assessed through a surface survey, subsurface testing can be an appropriate strategy to further assess the site to determine its extent, nature, content, integrity and significance.

Subsurface testing is also appropriate where artefact deposits are predicted to occur in a Potential Archaeological Deposit (PAD) based on a predictive model. Subsurface testing can identify whether such deposits exist, their nature, extent, content, integrity and significance. Test excavations can include either or a combination of auger holes, shovel test pits, mechanically excavated trenches or surface scrapes. The method of subsurface testing is determined by the terrain, vegetation cover, disturbances, available time, expected deposit and discussions/consultation with the local Aboriginal community. A Section 87 Aboriginal Heritage Impact Permit (AHIP) is required from DECCW to undertake the testing.

The two sites identified (DBA-1 and DBA-2) are found in a highly disturbed context and as such any cultural material that may have been present has been removed or disturbed due to sand mining and/or sewerage works. Further investigation is not justified.

7.3 MITIGATED DESTRUCTION

Mitigated destruction is considered when a site is of moderate or high significance within a local context and the options for conservation are limited. Additionally, if the surface collection of artefacts or excavation of deposits could provide benefits and information for the Aboriginal community and/or archaeological study of past Aboriginal occupation, a salvage strategy may be considered.

Salvage may include the collection of surface artefacts or systematic excavation of known artefact deposits. Where the option of conservation is not possible, this strategy is the primary means of minimising impacts to Aboriginal heritage from development. A Section 90 Aboriginal Heritage Impact Permit from the DECCW, is required to undertake such excavations.

Should the site be impacted upon in the future, a s90 will be required for the two cultural (sites DBA-1 and DBA-2).

7.4 MONITORING

An alternative strategy for areas where archaeological deposits are predicted to occur is to monitor development works for cultural materials, predominantly during the initial earth moving and soil removal works. This is the main strategy for managing the possible occurrence of Aboriginal skeletal remains. Monitoring is also used to identify the presence of artefacts and cultural materials that are important to the Aboriginal community, who may be looking to identify and salvage any materials that were not identified on the surface during the preliminary surface investigation. Monitoring may also include the sieving of a sample of graded/scraped soils.

Monitoring (in preference to sub-surface testing) is not a widely accepted method within the context of scientific investigation as it could result in costly delays to development and late/continued revisions to development plans. However, monitoring when Development Consent is granted can be of great scientific benefit and a benefit to the Aboriginal community. Monitoring undertaken in some circumstances (specifically where there is a possibility of skeletal remains) will enable the correct identification of such evidence (by qualified personnel) and thus ensure the appropriate methods of salvage or protection/conservation are undertaken.

Monitoring may be considered in the future during the topsoil stripping of the upper slope area.

8 RECOMMENDATIONS

8.1 GENERAL

1) The persons responsible for the management of the site will ensure that all staff, contractors and others involved in construction and maintenance related activities are made aware of the statutory legislation protecting sites and places of significance. Section 90(1) of the National Parks and Wildlife Act, 1974 states that it is an offence to knowingly destroy, deface or damage, or cause or permit the destruction or defacement of or damage to, an object or Aboriginal place without first obtaining the consent of the DECCW.

2) s90 with collection will be required for DBA-1 and DBA-2 prior to any works and the s90 will include scope for monitoring by *qualified representatives of the registered Aboriginal community* during top soil stripping.

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ANNEX A

Community Cultural Heritage Assessment

Aboriginal Culture & Heritage Assessment
Lot 6 DP 244030 & Lot 9 DP 250425
Diamond Beach NSW
04/05/10

Steve Brereton
Aboriginal Culture and Heritage Consultant

Introduction:
All Aboriginal sites in NSW and Australia are very significant to the local Aboriginal Communities. It does not matter if the site is a very sacred ceremonial place or just an everyday occupational area, sites always have spiritual, historical and scientific values. The State Government acknowledged these values and declare that all Aboriginal sites/relics in NSW are protected under the *National Parks and Wildlife Act 1974*.

As stated in the "Community Consultation Requirements" of the *National Parks and Wildlife Act 1974: Part 6 Approvals*, "Input from the Aboriginal community is an essential part of assessing the significance of those Aboriginal objects likely to be impacted by an activity. Hence, the Department of Environment, Climate Change and Water (DECCW) require proponents to undertake consultation with the Aboriginal community as an integral part of the impact assessment".

Diamond Beach lies within the boundaries of the Forster Local Aboriginal Land Council (FLALC) and within the traditional boundaries of the Worimi Goori people. The Traditional boundaries are the Hunter River to the south, the Manning River to the north and the Barrington Tops to the west. The eastern boundary has always been the coastline, including a number of small offshore islands. But this has varied over 10s of thousands of years due to sea levels rising and falling from ice ages and global warming periods.

The majority of members of FLALC are Worimi Traditional Owners and still have a strong connection to the land, locally. FLALC is the most appropriate local Aboriginal organization to consult with on Aboriginal Culture and Heritage issues.

As a representative of the FLALC, I have conducted an Aboriginal Culture and Heritage Assessment and this report is of my conclusions and recommendations.

Assessment area:
The assessment area, Lot 6 DP 244030 and Lot 9 DP 250425, Diamond Beach, is within the Greater Taree City Council local government area.

The property runs from the main road at the west end (Diamond Beach Rd), down off the hill east to the beach.

This property appears to have once been a farm with old, rundown buildings/sheds and old stock yards.

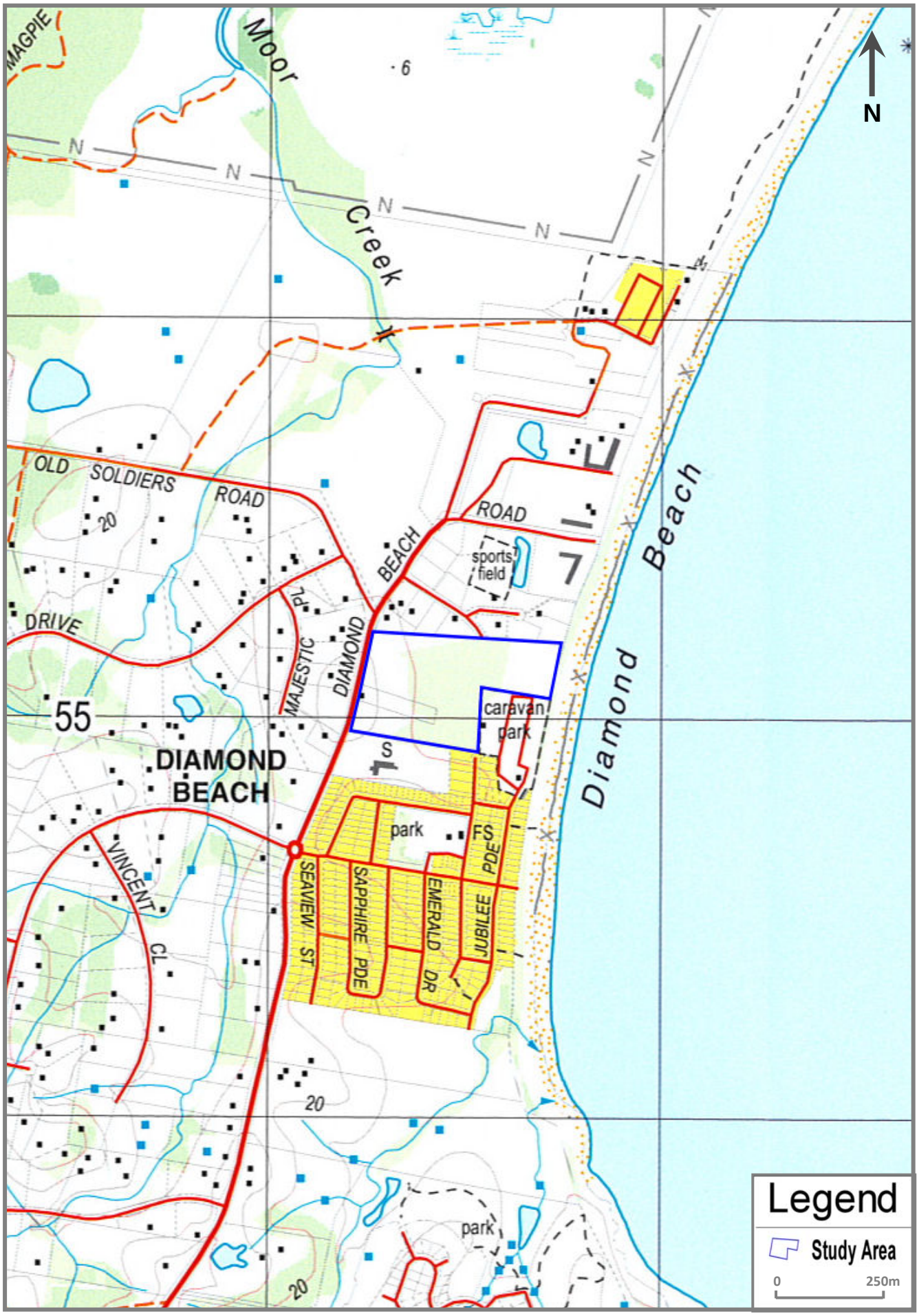
Thick vegetation covers most of the property ranging from sand dune heath near the beach, to thick tea tree scrub midway through the property and near the top of the property is a thick grass covering. All the vegetation is re-growth. The property was most likely cleared years ago for farming.

There is a sewage pipeline running from north to south through the centre of the property. This is possible the most disturbed area on the property. The sewage pipe area and the areas around the old buildings and yards, plus some areas in the dunes near the beach, are the only visible exposed ground.

Sewage Pipeline looking north

Sand dune area near the beach at eastern end of property

Old farm building & yards at western end of property



Source: 1:25,000 Topo Series Hallidays Point

Culture & Heritage values:

- The area being studied lies within the traditional boundaries of the Worimi people.
- Although the area is Worimi and the traditional boundary between Worimi and Biripi to the north is the Manning River, this was a traditionally shared place and still is today.
- Close to Saltwater Aboriginal Place which is acknowledged as being a very important Cultural area (approx 4 km away).
- A number of known traditional stories associated to the landscape.
- Although there are no sites recorded within the study area, there are quite a number of Aboriginal sites recorded in the Diamond Beach, Red Head and Halidays Point areas.
- Due to the landscape and available traditional food resources and fresh water in traditional times, I consider the study area to be of high potential of containing Aboriginal sites and/or Cultural material such as midden shell, worked stone tools and/or discarded pieces of worked stone and ancestral skeletal remains (traditional burials).

Recommendations:

- Due to the thick vegetation and little exposed ground for locating artifacts, further inspections and/or monitoring by a qualified representative of the FLALC will be needed as the vegetation is being cleared when the development work starts.
- Further inspections and/or monitoring by a qualified representative of the FLALC will be needed when excavation work starts.
- If any Aboriginal Culture material is unearthed at any stage of the development, FLALC and DECCW should be contacted immediately.
- This assessment report is to be tabled at the next FLALC Board meeting for endorsement or for further recommendations that Board members may feel need to be added.

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Doo-wa-kee

Culture & Heritage
Surveys & Training

Report for

Diamond Beach Road
Diamond Beach

REQUESTED BY:
MCCARDLE CULTURAL HERITAGE Pty Ltd

April 2010
18280410
Prepared by M.Leon & B.Bungie

Report No. 18280410

This report was prepared in accordance with the scope of services set out in the contract between Doo-wa-kee Culture & Heritage Surveys & Training ABN- 592 119 887 64 and MCCARDLE CULTURE AND HERITAGE PTY LTD. To the best of our knowledge, the proposal presented herein accurately reflects the Client's intentions (as per supplied background/ package information) when the report was printed. However, the application of conditions of approval or impacts of unanticipated future events could modify the outcomes described in this document. In preparing the report, Doo-wa-kee Culture & Heritage Surveys & Training used data, surveys, analyses, designs, plans and other information provided by the individuals and organisations referenced herein. While checks were undertaken to ensure that such materials were the correct and current versions of the materials provided, except as otherwise stated, Doo-wa-kee Culture & Heritage Surveys & Training did not independently verify the accuracy or completeness of these information sources.

Approval to Issue Draft

Description of Draft: *Lots 6 DP 244030 & 9 DP 250425, Diamond Beach Road Diamond Beach Aboriginal Archaeological assessment*

Ref. No.: *18280410* Footer Date: *28/04/10*

Recipient: *Penny McCardle*

I certify that the above document has been reviewed by the project supervisor and approved for issue as a draft to the above recipient.

Signed: _____ Date: _____

Name: *Mick Leon*

(Aboriginal Culture & Heritage Supervisor/ Archaeologist or Nominated Director)

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Chapter 1

INTRODUCTION

1.1 SUMMARY

Lots 6 DP 244030 & 9 DP 250425, Diamond Beach Road Diamond Beach is owned by ???????????. The property did produce various dairy products over it's established history.

This report outlines the Aboriginal Archaeological assessment of the proposed future activity. The study area lies close to the boundary of two Aboriginal Land Councils. It also encompasses the traditional boundaries of the ***Biripi*** peoples. The field survey was conducted by Doo-wa-kee Culture & Heritage Surveys and Training. Two traditional Aboriginal sites were located including an unconfirmed bone fragment (similar to human tibia). The recorded Aboriginal sites appear to be contained within the impact area that has been very disturbed via placement of a sewerage transfer line (North-South). Selected areas on a number of ridge lines (close to Diamond Beach Road) have been recommended for monitoring by appropriate Aboriginal community representatives. The monitoring is required because of the lack of visibility due to extensive grass cover and prior land clearing practices. The placement of the sewerage line prior, has also not included appropriate monitoring by appropriate Aboriginal representatives.

1.2 INTRODUCTION

At the time of preparing this draft report, no precise details of the intended land development is known. The subject lands are located 15.4 kilometres south of Taree and 17.9 kilometres north of Forster. This report documents a survey undertaken by Mick Leon and Barry Bungie (Doo-wa-kee Culture & Heritage Surveys & Training).

1.3 ABORIGINAL COMMUNITIES COLLABORATION

The study area is located close to the boundaries of Purfleet-Taree Local Aboriginal Land Council and Forster Local Aboriginal Land Council. This survey report will specifically be forwarded to Forster Local Aboriginal Land Council.

1.4 DESCRIPTION OF IMPACT

The proposed activity is unknown at this stage and particulars will need to be included in a final report. No notification as to the excavation operations for infrastructure is known at this stage.

1.5 OBJECTIVES OF THE STUDY

The objectives of this study are;

- work in conjunction with the appropriate Aboriginal community representatives;
- formulate a study plan based on Aboriginal community views, environmental factors and existing records of archaeological patterns within the broader regional area;
- survey the study area to identify Aboriginal and archaeological sites; and
- produce a report detailing the process above.

1.6 ARCHAEOLOGICAL CONTEXT

A site register search (DECCW AHIMS) revealed thirty eight sites within a five kilometre radius. The closest is a midden with stone artefacts (NPWS unrecorded?) located within the coastal fore dunes south of the township of Diamond Beach. The second is a midden with stone artefacts located within the coastal fore dunes north of the before mentioned site (NPWS 38-3-0233). Both sites occur to the east on Pleistocene sand dunes and have comparative values to the study area.

Archaeological surveys conducted in the wider regional area have, over time, indicated that sites can be located within a variety of environmental settings. Klaver and Heffernan (1991), found that the estimated site density of one per 100 kilometres square based on the forty two recorded sites within the City of Greater Taree, was not an accurate reflection of Aboriginal cultural material. They conducted a survey of less than a square kilometre and added fifty-nine sites to the forty two known sites in the NPWS register. The survey results indicated that sites occur in rugged to steep slopes as well as on creek alluvial flats and indicated Aboriginal land-use throughout the landscape (Klaver & Heffernan 1991).

Diamond Beach township has been non-systematically surveyed prior to the current investigation of this property (Appleton 1999/ 2002). The 1999 survey concentrated on cleared strips of land south of the township.

A more systematic study was undertaken by Haglund (1992) and occurred south of the study area on the Wotton 1:25,000 map sheet. Sub-surface testing of sites BC5 and BC9 and analysis of surface material indicated at the very least intermittent use of the forests by small groups of highly mobile people. The site types were overnight camp sites and activity areas (i.e. a stop to sharpen implements). Artefacts appeared to have been swept into hearths when the occupants moved on after short term use. A clear preference for ridge tops, saddles or spurs was indicated however the results may be skewed by poor visibility on the slopes (Haglund 1992).

These investigations indicated a forest landuse like that proposed by Byrne (1987) where base camps are located in open river valleys or around lakes, and travel between these areas utilised ridgelines. Alternatively Rich (in Haglund 1992) suggested that Aboriginal use of the nearby forests may increase in frequency (therefore density of material remnants) closer to the coast.

Ridges appear to have been used as travelling routes and the saddles on the ridges are the most likely sites of stop over activities. Coastal artefact deposits (e.g. campsites/ artefact scatters) would indicate deposition areas or distribution points for raw materials collected whilst travelling/ collecting natural resources.

With shell midden deposits it was determined that methodologies used by Attenbrow[1] criteria used to assess shell deposits.

- the range and number of shellfish species present,
- the percentage frequency (proportion) of each shell-fish species,
- the source/ habitat of shellfish species,
- the size of shells within individual shellfish species,

The presence/ absence of:

- non-edible (non-economic) species,
- articulated shells,

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1 1992. V.Attenbrow. Shell Bed or Shell Midden, Australian Archaeology 34:3-2

- water-worn/rolled and unbroken shells,
- fracture patterns in shells,
- burnt or blackened shells,
- non-molluscan fauna - marine and terrestrial,
- animals,
- charcoal/ burnt wood/ hearth stones,
- pumice and marine shell grit,
- forms of life not used by Aboriginal people, e.g. coral,
- stones with pitted or corroded surfaces,
- stratification,
- location of the shell deposit in the soil profile and in the landscape.

1.7 LANDSCAPE CONTEXT

The study area comprises low undulating slopes and flat alluvial wetlands with elevation between 5 metres and 10 metres above sea level. The survey area is approximately 286 meters long and 479 meters wide and is contained within the beach ridge landform west of the beach fore dunes. The study area is 89.7m kilometres from the coast at its closest point.

The vegetation of the area has been modified by timber-felling and clearing, with the study area comprising regrowth littorial forest approximately 30 years in age. Flora species that have provided food resources in the past include *Lomandra longifolia, Ficus, Acacia, Persoonia, Exocarpus* and ferns. The adjacent permanent residents[2] have frequently seen wallabies and snakes within the study area.

The geology of the site comprises some *shale* and *greywacke hornfels* (observed in higher western most localities). Windblown sand which has been held in the inner barrier dune system by vegetation for a long period of time can develop a recognisable soil profile. The major soil types present in the dune system are:

- Siliceous Beach Sands

- Siliceous Dune sands - Sand Podzols and

- Acid Peats

The dunes found in the eastern sections of the study area have two forms and soil types which relate to their age and formation.

The inner barrier deposits date to the Pleistocene and are estimated to be no older than 120,000 BP (Chapman et al 1982:40). These dunes are recognised by their leached greyish colour and high organic content.[3]

The outer dunes date to the Holocene and began to form when the sea level reached its present level 6000 years ago. These dunes are recognised by their distinct yellow colour and lack of well-developed soils.

It is clear that any archaeological sites located on the outer dunes can only be Holocene in age and date from no more than 6000 years ago.

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2 Pers. Comm. While undertaking field survey a resident informed staff that there had been an abundance of brown snakes habiting the immediate area that he had physically removed. He also wanted Field Staff to inform GTCC through this report. His concerns are raised as the study area is over-grown and close to the Halidays Point Public School. Unknown/ Recorded name of informant.

3

Sites recorded on dunes of the inner barrier system may also be Holocene in age but there is the possibility that Pleistocene sites may occur.

More recent land-uses in the study area are citrus growing commencing around the 1950's, lemons, oranges, grapefruit plantation (pers. comm, D.Jeffers 2006).

Chapter 2

ABORIGINAL ARCHAEOLOGICAL ASSESSMENT

2.1 STUDY PLAN

The study area comprises **Carboniferous formations containing *siltstone, greywacke, quartz, chert* and *tuff* form coastal hills to the north and west (cf Perram and Partners 2000:2.2), that** would have provided an abundance of seasonal natural resources and as suggested during the initial investigation, a travelling route from the mountains and plateau's to the west, along the flats of Khappinghat Creek, swampy lowlands and on to the coast in the Diamond Beach area. Oral and recorded tradition places a large base camp area on Diamond Beach lagoon (Aboriginal community, Taree pers. comm ND).

The review of previous archaeological investigations in the region would indicate that ridge line bases and undisturbed dunes are areas likely to contain material culture relating to Aboriginal travel routes and stop over points.

The site is comprises of low flat inner dunes, with **Carboniferous formations at higher points** and therefore the survey concentrated on the border crests, spurs and locations where earthen material may have been relocated or disturbed. The survey was primarily conducted on foot because of the further disturbance (via use of vehicle) would have contributed towards low swampy regions. Investigations required close inspections of surface areas to be able to see any artefactual material.

2.2 SURVEY STRATEGY

The survey strategy was to utilise all/ any exposures. The exposures tended to occur where the ground was sheltered through semi mature tree cover (towards Diamond Beach Road) and continuing ground maintenance has occurred. The site types which would be expected to be recorded are small artefact scatters, shell middens and isolated finds. Other heritage items relating to agricultural practices of land-use may be located.

2.3 FIELD METHODS

The field team surveyed the area on foot at predefined selected positions[4]. Vehicle tracks up and down the eastern & central sectors were inspected by foot and re-inspected for any reasonable exposure, and more than 10 per cent, was present on the eastern most property boundaries. As the property still has various functioning activities very few road formations had been encountered. There are fine scatters of crushed blue metal gravel to some degree, in areas where some form of infrastructure is evident.

2.4 SURVEY COVERAGE DATA

The coverage achieved was confined to exposed predefined and presumed areas. The eastern most vehicular roadway (Diamond Beach Road) bordering the property fence had limited visibility. In some locations at the north western most points of the property, variable amounts of road base and gravel mixed into the soil had limited visibility to between 2 and 5 per cent. This was due to the still present dairy building. Flora re-growth had also contributed towards surface investigations.

Houses/ work sheds have been constructed in the central western while central southern regions of the study area contain a dam. Some areas retain areas of imported gravels which probably formed an entrance area adjoining Diamond Beach Road and Anniversary Drive (the later probably used in laying the sewerage line behind the present caravan park).

The western slopes were generally cleared and with the exception of tall flora stands, had no ground visibility.

i. Survey Limitations

There are several limitations which require recognition in order for the survey to be assessed accurately. The most significant of these are geomorphic processes and clearing of the landscape for agriculture and timber getting that would have resulted in down-slope soil movement which could displace artefacts from higher points and bury material at lower areas.

The limited visibility of the study area and the disturbed nature of the current land-use renders the area difficult to assess on the basis of the visibility available at the

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4 *see DGPS recording map in Appendices.

time of survey. The only informative advice would be that supplied by the recent field survey conducted and recorded materials. It should be noted however that Aboriginal group(s) who have knowledge of prior cultural land use and the former land owner and current manager for the property should also be included in any consultation for the purposes of this investigation.

To supplement the limited visibility, this assessment has used the current understanding of the nature of land-use in relation to topography in the Manning-Great Lakes Regions. An overall summary of the survey coverage data can be found in *Table 2.1.*

Table 2.1 SURVEY COVERAGE DATA

Survey unit no.	Environment	Length x width	Exposure%	Visibility%	Effective cover
1	Diamond Beach Rd	266m x 110m	1	1	722 sq metres
2	Eastern slope	270m x 150m	1	1	792 sq metres
3	West of caravan park	281m x 70m	2	40	712 sq metres
4	Inter dune	Est. 123m x 179m	NA	NA	643 sq metres
				total cover	28.69 hectares

Notes:

1. *Exposure and visibility are averaged over the transect or survey area.*
2. *Yellow highlight to indicate applicable/ relational context for the study area.*
3. *Highlighted purple – locality.*
4. *Highlighted orange – not investigated due to prior knowledge of sand-mining operations in the immediate area.*

2.5 DEFINITION OF A SITE[5]

A site is defined by different means dependant upon the environment in which it may occur. Within the study area the following sites are considered more likely to occur based on the topography of the area and previous archaeological work within the region. .

i. Open sites

Open sites can range from a single stone artefact (often referred to as a solitary or an isolated find) to an extensive scatter of a wide range of artefact types (usually designated an open site, open camp site or artefact scatter). There may be evidence of a working floor where stone has been knapped and artefacts may include stone tools, cores, flakes, flaked material, hammer-stones or ground stone implements. Associated cultural remains may include hearths and charcoal, ochre, shell or bone.

Such sites may be found on the surface or stratified in subsurface levels which may be capable of dating. An area of potential subsurface material, which can be determined by investigation geomorphic processes, is known as potential archaeological deposit (PAD). PAD is considered a site until it has been defined by further investigation such as sub-surface testing.

Raw materials found in open sites may be local or introduced and can provide evidence of population movement and exchange systems. Open camp sites or artefact scatters are the most common in the Manning-Great Lakes Region.

ii. Scarred trees

Trees were scarred by the removal of bark for a number of purposes. Bark was used to make containers, shields and canoes but scarring can also be due to cutting toe-holds for climbing or holes for access to hollows to secure honey, grubs or possums. Scars vary in size according to purpose. Cultural scarring is distinguishable from natural scarring, using criteria such as:

- the maturity of the tree, generally trees need to be at least 100 years old;
- generally regular shape of scarring, usually elongated or oval;

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5 *1999. A. Besant.* Jandra Quarry Archaeological Assessment *draft.*

- termination of scar above ground level;
- exposed heartwood exhibits no signs of major irregularities;
- absence of branching at the top of the scarring;
- in some circumstances, scarring may be modified by carving in traditional cultural patterns; and
- the presence of stone tools or other sites in the vicinity of the tree can also be an indicator.
- Scarred trees may also indicate later human activity in the landscape in the form of surveyors marks or timber felling with the use of plants and hand axes. These sites can have historic importance.

iii. Stone Arrangements

A stone arrangement is located at Breakneck Hill, eleven kilometres north-west along a ridge-line from the study area (NPWS 38-2-19). The site comprised clusters of small granite stones placed in a circular arrangement. The majority of the site has been destroyed.

2.6 ARCHAEOLOGICAL RECORDING OF SITES

Two sites were recorded during the field survey.

The area cleared for placement of the sewerage line has now re-grown and visibility is limited. The isolated artefact (**DBA-1**) was a flaked yellow-brown chert; dorsal margins flaked. The adjacent caravan park basket ball court is approximately 10m SE and bears 120°.

Another isolated artefact (**DBA-2**) was recorded approximately 4m north from **DBA-1**. The artefact is either a fracture of a blade or part of a larger scraping implement. The adjacent caravan park basket ball court is approximately 14m SE and bears 160°.

Each recorded artefact is contained within the sewerage line easement.

The survey did not locate any further Aboriginal cultural material. There is however a unconfirmed bone in the central north east section of the study area. Authentication of this bone is yet to be confirmed as to its origins.

The environmental setting of the site location and site contents are in *Table* 2.2.

Table 2.2 SITE CONTENTS AND ENVIRONMENT

Survey unit & AMG	Environment	Site contents	Site area	Comments
DBA-1 94334n.sid 1:25K 456419.61E 6454781.12N	Disturbed lower slope adjoining rear of caravan park	Single flake yellow-brown FGS 2 neg scars on dorsal face	<2m²	located on disturbed trench, regrowth of grass cover established
DBA-2 94334n.sid 1:25K 456419.61E 6454788.09N	Disturbed lower slope adjoining rear of caravan park	Single Blade or scraper FGS	<1m²	located on disturbed trench, regrowth of grass cover established

1. FGS fine grain siliceous unless stated otherwise grey in colour.

2.7 ANALYSIS

Sites would have occurred in all landforms other than the disturbed locations where heavy sand extraction took place. The subject land is considered to be of adequate size to have been utilised as a camping place, and in a good position with access to the western ridge-lines extending west and swamps and riverine systems of the Khappinghat River to the north.

The similarity of stone artefact material composition, to the sites at the entrance to Saltwater Lagoon was noted by the survey team. The team noted the distribution of imported topsoil related to agricultural activities in the central regions of the study area. This was also known with prior Local Environmental Studies (LES), Research of Environmental Factors (REF) and individual archaeological studies, extending from Blackhead to the southern point at Saltwater[6].

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6 1997. R.Silcox Halidays Point/ GTCC REE,

1998. unknown. LES Blackhead-Redhead GTCC.

1999. J.Appleton, Survey of a property at Diamond Beach

Areas of exposure on the northern perimeters were inspected; however appeared to have lost some of the topsoil due to geomorphologic processes. No artefacts were located in this area, however soil movement from the west and east may provide old ground surfaces representative of the land-form. This could indicate the presence of the unconfirmed bone exposure.

Visibility was also a limitation to all areas of the survey. The reduced visibility resulted from very high levels of vegetation re-growth. The materials most commonly found at nearby culturally significant areas was silcrete and/ or river pebble. No modified or unmodified pebble material was located, there is although instances of silcrete or chert occurring in the study area.

Both sites located were disturbed, generally to a degree which reduces the potential scientific significance of the material. The material does comply with the hypothesis put forward by Klaver and Heffernan (1991), that Aboriginal peoples utilised all forms of landscape in this region and sites can be expected to be found in a wide variety of topographic units.

The question has been raised by Rich (in Haglund 1992), that the time between visits would decrease with increased distance of the land-form to the coast. The gentle sloping area on the south of Diamond Beach has the potential to support this hypothesis due to the density of previously recorded cultural material. This is considerable, even with the intensity of agricultural practices over the last 60 years.

2.8 SIGNIFICANCE ASSESSMENT

The significance assessment is an integral component of the management of cultural heritage. Significance is assessed within the frameworks of scientific significance, cultural significance and public significance. Due to the current land-use patterning for the study area, there is not much demand for public significance.

2.8.1 Scientific Significance

In order to determine scientific significance it is necessary to first place sites within a local and regional context. This process enables the assessment of any individual site in terms of merit against other sites of similar nature within similar contexts. As in the scenario with densities of cultural sites at Saltwater Lagoon - Old Bar.

Within a regional context the sites reinforce a pattern of site distribution noted by Klaver and Heffernan (1991), Haglund (1992), Appleton (1990-2006), and Kuskie (1994). The distribution of sites demonstrates the wide use of all landforms by Aboriginal people. The scientific significance of site distribution implies that all sites

are significant because they impart information about that particular landscape unit, and collectively about variations in site patterning in different regions. However, the conservation of sites requires the selection of sites which have the ability to disclose further information by means of excavation if required, or those which are rare or representative of their type. The recorded sites collectively may provide additional data to support movement by groups of people from north to south or east to west. The sites located by the survey do not retain the ability to add further information to the scientific record nor are they rare or undisturbed examples.

2.8.2 *Public Significance*

The sites are not considered to have educational value due to their context within the property. They could be utilised by educational institutions as static displays or interpretive archaeological techniques used to record Aboriginal heritage in the Diamond Beach - Blackhead area. Permission should be sought from the Forster Local Aboriginal Land Council/ Minimbah & Districts Elders Group/ Lakkari Native Title Group and preferably the closest school.

2.8.3 *Cultural Significance*

Generally, all sites are of significance to the Aboriginal people. It has been recognised however that with the widespread nature of site distribution, sites will eventually be impacted upon by development. It is however necessary to conserve where possible sites which are of high significance to the community. Discussions with Aboriginal persons in the field and community have indicated that the the more higher areas adjoining Diamond Beach Road and where the two sites were recorded should not be impacted in any way until the extent and nature of any possible sub-surface deposits has been tested. The testing process would allow for an understanding of material remains on this particular land-form prior to destruction.

2.8.4 *Site significance*

Site significance is rated low, medium and high. The significance of individual sites is determined by comparison with known sites in the region which have not been destroyed. These ratings apply to the sites located by the survey as shown in *Table* 2.3.

Table 2.3 SITE SIGNIFICANCE AND IMPACT OF DEVELOPMENT

Site	Significance	Degree of impact
DBA-1	Low to Medium due to disturbance and location is of interest, infill material at this location is of interest	Increased current pedestrian/ vehicular traffic will eventually destroy the site, impact could also occur as land is developed, Area may be destroyed as the land is rezoned - Avoidance to be recommended
DBA-2 (area north of DBA-1)	Low to Medium due to disturbance and location is of interest, infill material at this location is of interest	Increased current pedestrian/ vehicular traffic will eventually destroy the site, impact could also occur as land is developed, Area may be destroyed as the land is rezoned - Avoidance to be recommended

2.9 MANAGEMENT RECOMMENDATIONS

Management recommendations are made taking the following in to account;

- the National Parks and Wildlife Act 1974 which states that it is an offence to damage or destroy any Aboriginal relic without the written consent of the Director;
- the Environmental Planning and Assessment Act, 1979 Section 79C (b) which states that the impacts of any development on the environment must be addressed within land-use planning and decision making;
- the assessment of the cultural significance of the area by Doo-wa-kee Culture & Heritage Training;
- the results of fieldwork; and
- The plan of the proposed development.

The management recommendations are as follows;

- with the agreement of Forster Local Aboriginal Land Council/ Minimbah & Districts Elders Group/ Lakkari Native Title Group, agreements as to the future management of sites **DBA-1 & 2** be applied;

- Where practicable monitoring be undertaken to determine the degree of Aboriginal use of the **DBA-1 & 2 (area adjacent west of caravan park basket ball court)** in survey unit 3[7];
- subject to the results of the monitoring any further traditional Aboriginal sites located may become subject to mutual management agreements by the above mentioned stakeholders; and
- Confirmation of the reported bone protruding from the ground in the north central regions of survey unit 2.
- Areas in survey unit 1 are investigated by foot after initial land surface clearing (<300mm),
- If recorded cultural materials are to be destroyed for land development activities, upon authorisation being granted by Forster Local Aboriginal Land Council/ Minimbah & Districts Elders Group/ Lakkari Native Title Group, the materials/ objects are suitably archived in a display case and placed (upon permission by the Halidays Point Public School Principal is gained) in the school to educate and provide interpretive portrayals of collected cultural materials.

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7 *See Aerial map.

Chapter 3

RESEARCH DESIGN

3.1 INTRODUCTION

Further monitoring is designed to test a hypothesis or answer a research question. The survey of *Lots 6 DP 244030 & 9 DP 250425, Diamond Beach Road Diamond Beach* has identified an area of land which may or may not reveal further information about the extent and intensity of Aboriginal land-use of coastal zones between Blackhead and Diamond Beach.

3.2 ENVIRONMENT

The study area is approximately 80-100m from the coastline and the closest knoll (132m from ocean MHWM) at 10 metres elevation when heading south east from Breakneck Hill in the Kirrawak State Forest, eleven kilometres northwest. The study area forms a minor spur to the west-south-west of the main ridgeline between Breakneck Hill and the ocean. Directly south-east of the study area are Bungwahl and Frogella Swamps. The study area is well placed between resource zones, the forests of the mountains to the west, the swamps and the coast to the east.

The geomorphology of the site comprises in-situ weathered parent material of *shale* and *greywacke hornfels* (to the west) and low land acid peats continuing to beach and dune sands.

3.3 ARCHAEOLOGICAL CONTEXT

To the north of the study area is an Aboriginal midden (Bohnock NPWS 30-6-0042) that is located approximately 10.76 kilometres north of the study area. The midden was ^{14}C dated to 6,470+/- 85 BP in 1983. The density of artefacts and site patterning found at this site was interpreted as regular/ frequent intermittent visits and stopovers, where food was prepared, wood was worked and some tool retouching took place.

A hypothesis was presented that suggests that sites are likely to become more frequently visited closer to the coast.

The proximity of the Diamond Beach Road sites to the coast would provide a test case for the prediction that site use is likely to increase in such a location. The site would also have been attractive to Aboriginal people because of the variety of resource zones accessible within a five to eight kilometre radius of the study area and the relatively gentle gradient in comparison to similar landforms inland.

Alternatively it is possible that limited use was made of the ridge-lines for stopovers and short term camps because of the close proximity of the Saltwater and Diamond Beach Lagoons.

The identified area of **DBA-1 & 2** therefore presents an opportunity to test the hypothesis that use of spurs as stopover points would increase in intensity closer to the coast (Rich in Haglund 1992). Alternatively the site may show that saddles and spurs are more sensitive areas in deeply dissected country where alternative creek flats are smaller and more inaccessible. This is supportive of the observed incidences where topsoil has exhibited movement from higher points to lower areas.

3.4 PROJECT JUSTIFICATION

Proposed development may evidentially destroy the higher level areas along the spurs. Due to limited visibility and the potential for significant disturbance of each site by the construction of associated impacts, there are no grounds to constrain the development on the grounds of archaeological scientific significance. What needs to be tested is the potential for the land-form to retain some information regarding Aboriginal land-use. Should significant information be revealed a reassessment of the SU-1 & 3 may become necessary and the development plan adjusted accordingly. This is considered unlikely because of ground modification which has occurred. The site does however deserve some degree of further investigation because the grounds around the western dairy have been built up with imported(?) topsoil and the land-form does not appear to have had soil removed from the site, north or south, therefore there is potential for undisturbed surfaces to lie beneath the current surfaces.

3.5 ABORIGINAL COMMUNITY INVOLVEMENT

The study area lies within the boundary of Forster LALC. At the time of the survey, field officers from Doo-wa-kee CHST identified the level area south of the dairy as an area of medium - high potential. The environmental similarity of the ridges to places along Khappinghat River was commented upon. Due to the lack of visibility, monitoring of this location at a later date was considered to be the appropriate test method prior to the modification of the land-form. The research design has been

reviewed by some members of the before mentioned groups in order to incorporate the views of the community.

3.6 SCOPE OF WORK

The proposed scope of monitoring work to be undertaken is detailed below. The proposed methodology of various tasks is detailed in Section 3.7 following the outline of the scope of work.

Task 1: *Pre-monitoring preparation*

Equipment and safety procedures will be organised and recording forms prepared prior to commencement of the monitoring program. This task also includes preparing for the second phase of investigative monitoring and final briefings of the study team.

Task 2: *Monitoring program*

Once the preliminary surface clearing operations are carried out, engagement of community in accordance with the Development Application approval approved by the Greater Taree City Council.

Task 3 *Post-monitoring administration*

All specified procedures for securing the area will be conducted and the site vacated by the team.

Task 4: *Analysis and evaluation*

The analysis will include the identification of artefacts, the application of analysis variables, and evaluation of the results.

Task 5: *Report preparation*

An Aboriginal Archaeological report of the monitoring operations and results will be prepared detailing all stages of the project. The Doo-wa-kee CHST assessment of the site shall be provided in a written report.

3.7 METHODOLOGY

3.7.1 Sampling strategy

The site shall be sampled in the areas most likely to contain ground surfaces which remain undisturbed at the outer perimeters of the land-form. Sample sites shall be selected on the eastern and western sides of the property. In addition a probe (if practicable) shall be positioned in the area of imported fill, a reasonable distance from the dairy to avoid construction and services disturbance. The probe shall determine if the original ground surface remains underneath the fill undisturbed, or if the entire domestic area has been disturbed and / or eroded to the B horizon. This procedure will be dependant on availability and practicality to ascertain extents of disturbance to proposed monitoring areas.

3.7.2 Recording procedure

Each probe shall be allocated an identification number. Archaeological recording shall identify site name, location, survey units, grid numbers, artefact numbers, raw materials, artefact types, date and recorder. A mandatory field diary shall record observations.

3.7.3 Analysis

The analysis shall describe any artefact assemblage. Variables will include type of artefact (core, flake, tool, backing flake etc.) evidence of use (retouch use-wear) to indicate site activities, size as a monitor of variability within the assemblage, cortex as an indicator of reduction technology and analysis of any visible residue.

The analysis will include artefact identification, data entry, artefact analysis, and evaluation of the results. Artefact distribution shall be determined by artefact numbers per surface recordings. Densities and artefact characteristics shall form the basis of the identification of distribution of inter and intra site variations.

The outcome of the analysis is expected to be complementary to the characterisation of sites on this land-form, in closer proximity to the coast than similar landforms previously studied.

The analysis of retrieved material will aim to identify areas of activity within sites. This allows the interpretation of superimposition of one episode over the next particularly if the assemblage displays 'mismatched' artefact types (for example a core and primary flakes of one medium overlying a selection of distinct tool types) with use-wear and residue.

The activity areas which may be identified are:

- Knapping floors identified by cores, waste flakes, and cortex;
- Workshops identified by microblade backing flakes, multipurpose flakes, imperfect tool and retouched tools.
- Hammerstones and anvils can be expected to occur on the periphery of the knapping site or workshop site.
- Heat treatment can also occur in these sites;
- Camping area identified by hearths.

The above categories are a guide because it is possible that activities may overlap.

Technological variables to be used for analysis

The stone artefacts shall be classed as cores or flakes. The cores shall have material, core type (uni-platform, bipolar or alternating platform) and size class noted.

Flakes shall have material, backing, retouch, cortex, breakage and size class noted. Flakes less than 10 millimetres in greatest dimension shall be noted as trimming flakes on the assumption that they relate to microblade backing, retouch or platform redirecting (Koettig 1994).

The following variables have been selected to indicate particular features of site purpose.

Material - single material indicates single site use or use by people with access or preference to one stone type. Where several stone types are found together it may be inferred that people from different areas have met on the site, used the site alternatively, or bartered/ traded with the *Biripi*.

Core type - helps to indicate the technological technique being employed which in turn may indicate the extractive strategy used by the people at the site.

Size class - can indicate the ease of access to the stone resource. Exhausted cores indicate a maximum utilisation strategy and therefore availability of the resource. Large cores with primary flakes removed and minimal further work would suggest a plentiful resource in relatively close proximity. Amongst most recorded Aboriginal heritage from Saltwater to Blackhead, there is an abundance of all size ranges and stone material types, this would indicate proliferation and exploitation of many different types of raw stone material.

Flake material and size class - allows the interpretation of whether artefacts were made and used within the base camp or if they have been brought into the area. Backing is an indication of the time frame of site occupation as measured by technical attributes and dates the site to <5,000 years BP.

Retouch and use-wear indicates the use of the flake/tool on the site. Residues such as the lustre of starch shall be noted where possible.

Trimmings are an indicator of workshop activities where artefacts have undergone further modification to change tool use or where worn edges are rejuvenated. Trimmings can also indicate the backing of micro-blades, or platform preparation at a knapping site.

3.7.4 *Framework for significance assessment*

The basic processes of assessing significance for items of heritage are outlined by *The Australia ICOMOS Charter for the Conservation of Places of Cultural Significance: The Burra Charter* and its associated *Guidelines*. Sites may be significant according to several criteria, including scientific or archaeological significance, significance to Aboriginal people, aesthetic value, representativeness and value as an educational resource. Significance is generally assessed on nature and degree. The nature of significance relates to historic, aesthetic, social, scientific or other intrinsic values. Degree of significance specifies whether the item or place is rare, representative or associative. Aboriginal archaeological sites are generally assessed on their research or archaeological potential, however, they may also be assessed on the degree, as to whether it is rare and should be preserved, representative or characteristic or associated with historical or cultural connections.

The archaeological potential and significance of the study area will be further assessed based on the findings of the monitoring program using criteria for assessing scientific significance such as overall research potential, state of preservation, uniqueness or representativeness, artefact density and distribution.

Aboriginal significance will be assessed by Doo-wa-kee CHST. Aboriginal sites may be assessed by their cultural heritage value as well as traditional, historic or social significance.

3.7.5 *Reporting*

A report will be prepared detailing monitoring methodology and results. The report will include a description of artefacts recorded, an assessment of their significance within the local and regional context and an assessment of the archaeological

potential of the study area. Recommendations will be formulated regarding site preservation, or further investigation.

A draft report will be prepared and reviewed by Doo-wa-kee CHST, and the relevant stakeholders. Comments from all reviews will be considered prior to the completion of the final report.

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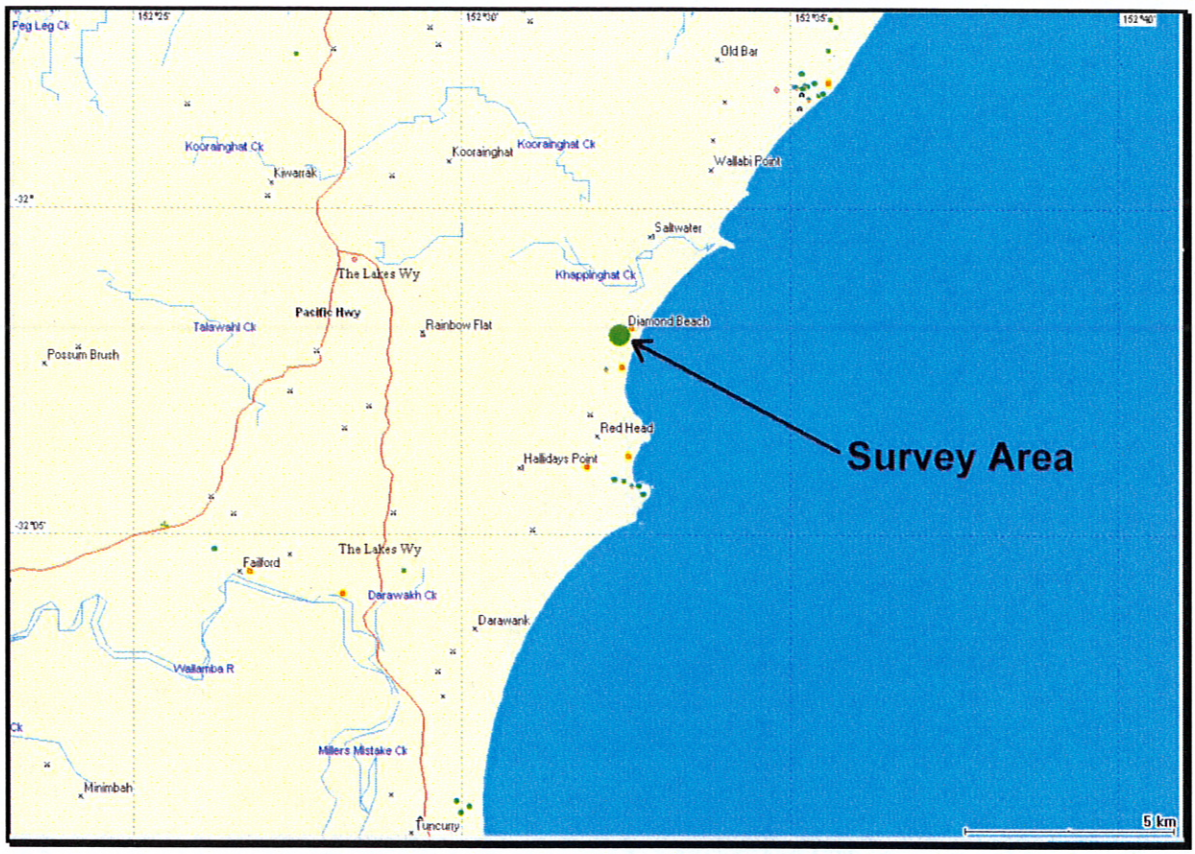
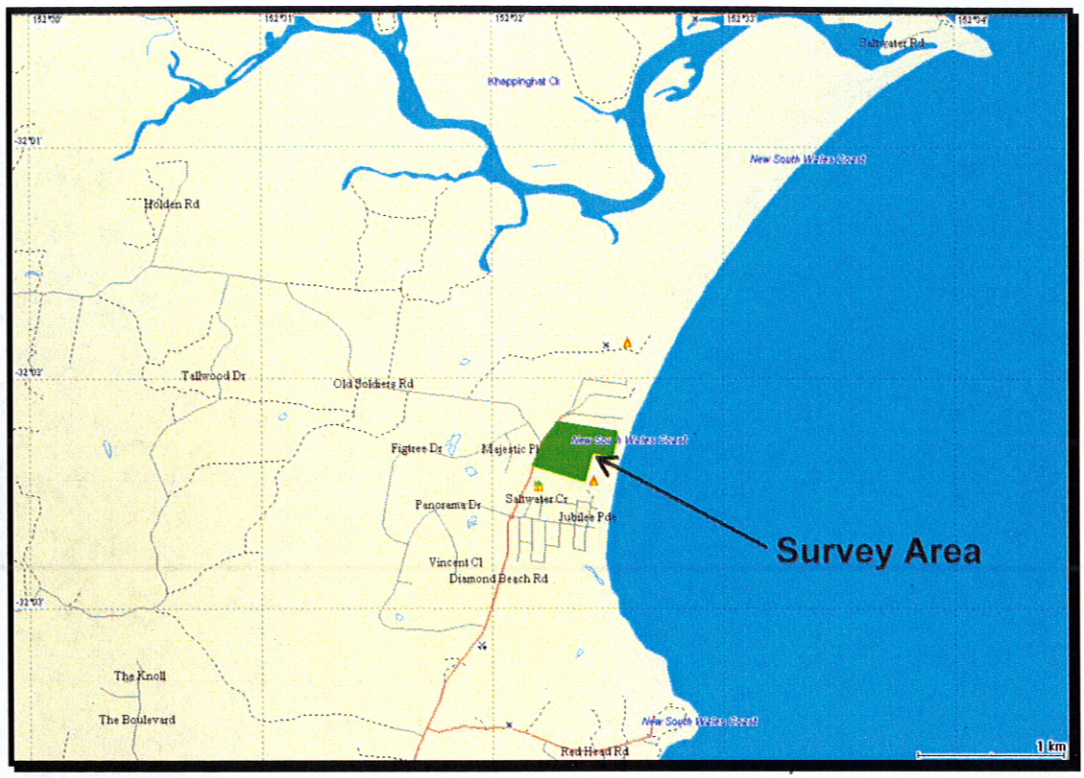
Site Photographs and maps



Regional View of Study Area.



Localised View

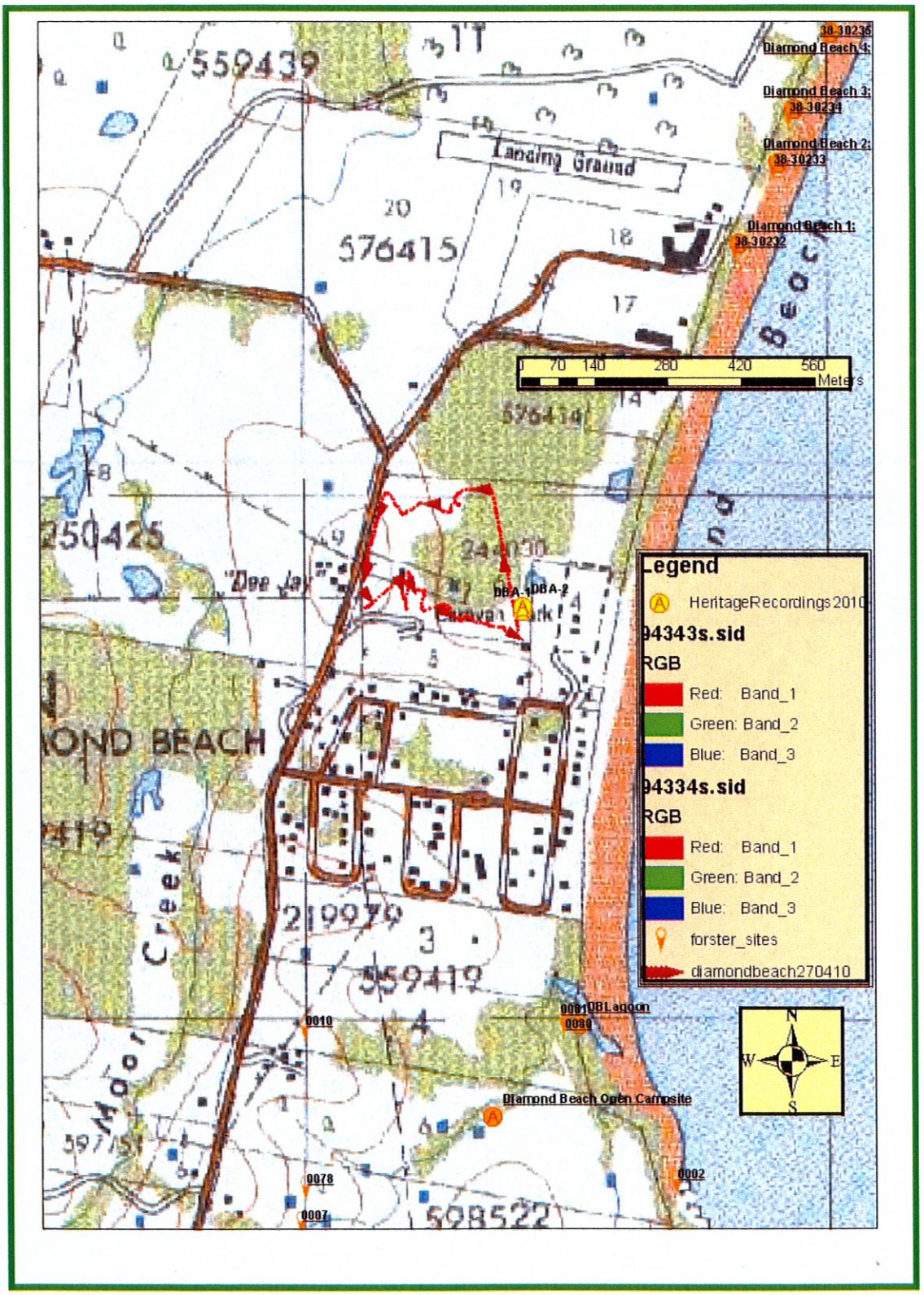


Figure 1. DGPS readings (in red).

Figure 2 Aerial Photo of Study Area circa 1984

Figure 3 Central cleared sector, view north west.

Figure 4 North-central regions, view north west.

Figure 5 Exposed central area.

Figure 6 View south west, central region.

Figure 7. Area adjacent to caravan park.

Figure 8. View south from DBA-1 along unformed track.

Figure 9. DBA-1

Figure 12. Unconfirmed bone, central region.