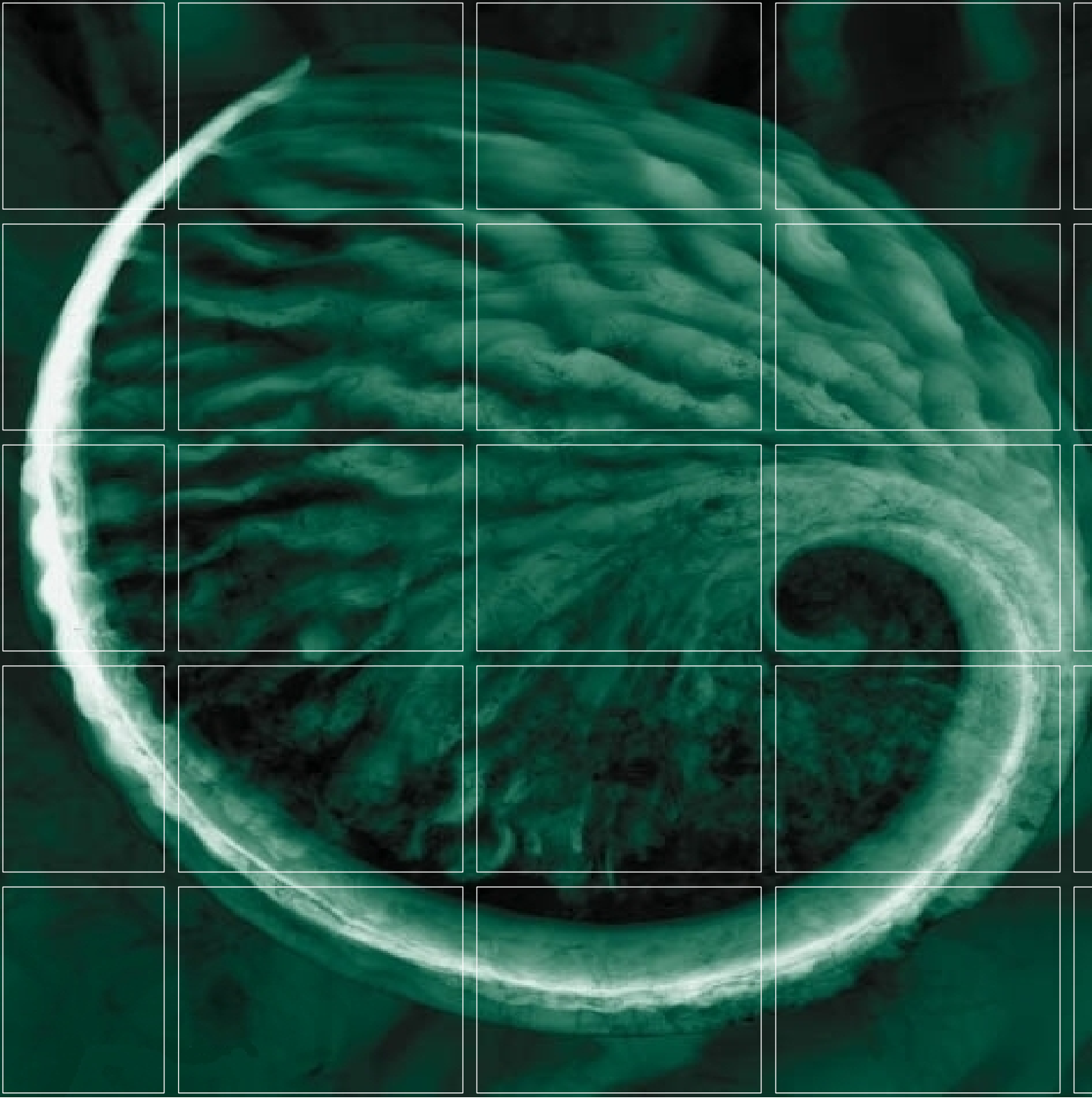

Parkside @ Terrigal

Aboriginal Heritage Assessment

Crighton Properties Pty Limited

December 2008

0050265 - Final

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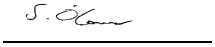
Approved by:	*Joanne Woodhouse*
Position:	Archaeologist
Signed:	
Date:	*12 December, 2008*
Partner:	
	Steve O'Connor

Environmental Resources Management Australia Pty Ltd Quality System

Parkside @ Terrigal
Aboriginal Heritage Assessment

Crighton Properties Pty Limited

December 2008

0050265 – Final

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1 INTRODUCTION

Environmental Resources Management Australia Pty Ltd (ERM) was commissioned by Crighton Properties Pty Ltd to prepare an Aboriginal Heritage Assessment for the proposed rezoning and subsequent development of approximately 50 hectares (ha) of land at Kings Avenue, Terrigal NSW (refer to Locality Plan at *Figure 1.1* and Aerial Photograph of Study Area at *Figure 1.2*). This report will form part of an Environmental Study currently being prepared for the 'Parkside' study area.

1.1 ASSESSMENT AIMS AND METHODOLOGY

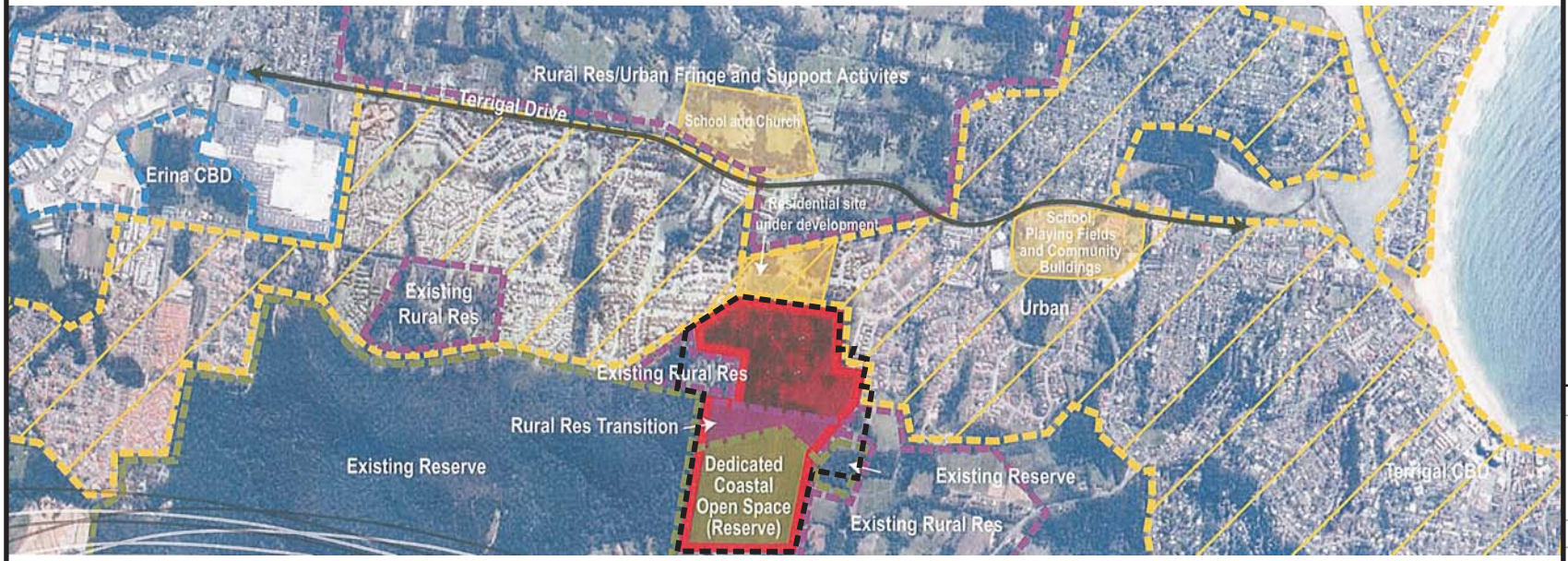
The overall aim of this assessment was to identify whether there are any Aboriginal heritage constraints to the proposed rezoning and subsequent development of the study area.

In order to achieve this aim, the following tasks were undertaken:

- collate data relating to previously recorded Aboriginal archaeological sites within or close to the study area;
- develop an Aboriginal heritage site prediction model for the study area based on existing archaeological data and landforms;
- undertake Aboriginal community consultation, in accordance with the Department of Environment and Climate Change (DECC) intrim guidelines for Aboriginal community consultation;
- completion of a field survey in consultation with the local Aboriginal community to identify any Aboriginal archaeological sites and features within the study area;
- identify and assess potential impacts of the proposal on Aboriginal heritage values; and
- prepare recommendations on the management of Aboriginal heritage sites in consultation with the local Aboriginal community.

1.2 DESCRIPTION OF THE PROPOSAL

It is proposed that Lot 2 DP1111392, Lots 8 & 9 DP876102, Lot 202 DP831864, Lot 4 DP37914 and Lot 1 DP381971 (referred to as the study area) are rezoned from *E2 "Environmental Conservation" and E3 'Environmental Management"* to an amended *E2 "Environmental Conservation"* and *R2 "Low Density Residential*". The E2 portion is to remain zoned E2 and it is proposed to dedicate this area of land to Council's Coastal Open Space System.



Legend

Study Area

Figure 1.1

Locality Plan

Client:	Crighton Properties Pty Ltd		
Project:	Parkside Terrigal Rezoning Report - Archaeology		
Drawing No:	0050265hv_arch_01		
Date:	17/09/08	Drawing size:	A4
Drawn by:	JD	Reviewed by:	JW
Source:	Andrews.Neil Pty Ltd - Rezoning Submission August 2005		
Scale:	Not to Scale		

N

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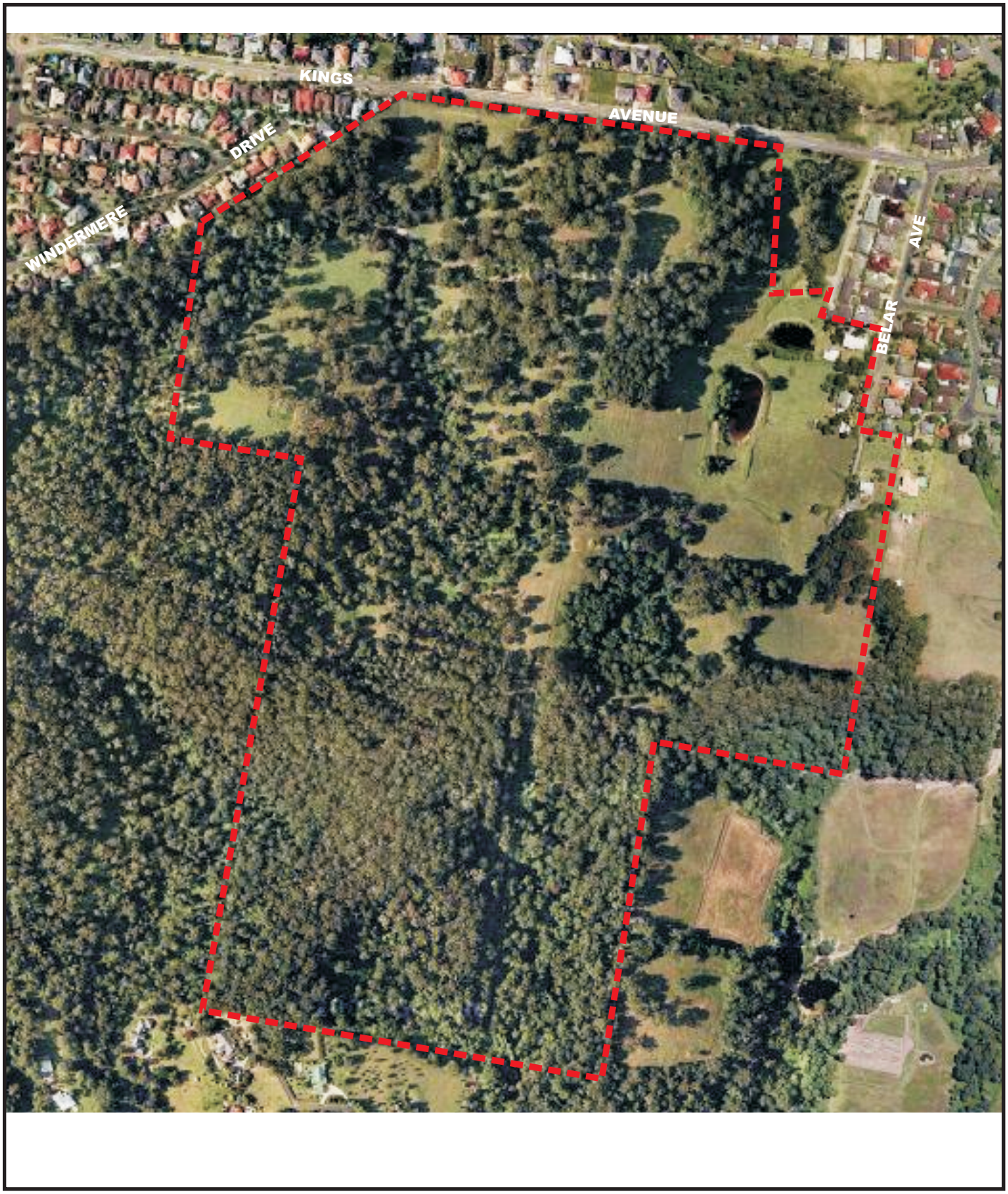

Figure 1.2

Aerial Photograph of Site

Legend

Study Area

Client:	Crighton Properties Pty Ltd		
Project:	Parkside Terrigal Rezoning Report - Archaeology		
Drawing No:	0050265hv_arch_02		
Date:	17/09/08	Drawing size:	A4
Drawn by:	JD	Reviewed by:	JW
Source:	-		
Scale:	Refer to Scale Bar		

N

0 100 200m

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Figure 1.3

Concept Plan

Client:	Crighton Properties Pty Ltd		
Project:	Parkside Terrigal Rezoning Report - Archaeology		
Drawing No:	0050265hv_arch_03		
Date:	17/09/08	Drawing size:	A4
Drawn by:	JD	Reviewed by:	JW
Source:	Andrews.Neil Pty Ltd - Rezoning Submission August 2005		
Scale:	Not to Scale		

N

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The rezoning will facilitate the development of approximately 20 ha within the northern portion of the site as a 145 lot home based business park (refer to *Figure 1.3*).

1.3 DESCRIPTION OF THE STUDY AREA

The study area is bounded by Kings Avenue to the north and existing residential development to the east and west. Kincumber Mountain Reserve forms the southern and south-eastern boundaries.

The study area is situated on the north-eastern flank of a moderately to steeply undulating ridge. Three roughly northeast/southwest trending spurs characterise the northern portion of the study area and form the eastern extent of the Kincumba Mountain Reserve. The eastern and western spurs extend only partway across the study area with the central spur intersecting its entire length. The crest of the central spur has been cleared for electricity transmission lines.

Two broad valleys (see *Photographs 1 and 2*) dominate the areas between the spurs and form three distinct drainage lines. The central and western drainage lines converge to form a large creek line, with steep sided banks and remnant areas of lowland rainforest.

1.4 PROJECT TEAM

Joanne Woodhouse (ERM Archaeologist) conducted the Aboriginal consultation and completed the field surveys. Dr. Tim Owen (ERM Principal Heritage Consultant) completed the technical review of the report.

Photograph 1

Valley and footslopes of eastern and central ridge.

Photograph 2

Valley and upper slopes of central ridge.

Photograph 3

Constructed dam in north eastern portion of the study area.

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Photographs

2 *RELEVANT LEGISLATION*

Aboriginal cultural heritage in NSW is protected by the *National Parks and Wildlife Act 1974*. Land managers are required to consider the effects of their activities or proposed development on the environment under several pieces of legislation, principally the *Environmental Planning & Assessment Act 1979*. Cultural heritage, which includes Aboriginal heritage, is subsumed within the definition of "environment". Commonwealth legislation protecting Aboriginal heritage may also apply to Aboriginal heritage places in NSW in certain circumstances. Key legislation is summarised below.

2.1 *NATIONAL PARKS AND WILDLIFE ACT 1974 (NSW)*

All Aboriginal objects within the state of New South Wales are protected under Section 90 of the *National Parks and Wildlife Act 1974* (NPW Act).

Under Section 5 of the Act, "Aboriginal Object" means any deposit, object or material evidence (not being a handicraft made for sale) relating to the Aboriginal habitation of the area that comprises New South Wales, being habitation before or concurrent with (or both) the occupation of that area by persons of non-Aboriginal extraction, and includes Aboriginal remains.

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, a person who, without first obtaining the consent of the Director-General, knowingly destroys, defaces or damages, or knowingly causes or permits the destruction or defacement of or damage to, an Aboriginal object or Aboriginal place is guilty of an offence.

Amendments introduced by the *National Parks & Wildlife Amendment Act 2001* which strengthen the provisions of Section 90 have yet to commence.

The DECC is the statutory authority for the protection of Aboriginal objects and places within NSW, with the Director-General of that department the consent authority.

2.2 *ENVIRONMENTAL PLANNING AND ASSESSMENT ACT 1979 (NSW)*

The *Environmental Planning and Assessment Act 1979* (EP&A Act) requires that environmental impacts are considered in land-use planning, including impacts on Aboriginal and historical heritage. Various planning instruments prepared under the Act identify permissible land use and development constraints.

The NSW NPWS (now DECC) provide guidelines for Aboriginal heritage assessment, including those conducted under the EP&A Act 1979. Where Aboriginal heritage assessment is conducted under the Integrated Development Approval process, a more detailed set of NPWS guidelines applies.

Where a development is approved under Part 3A of the Act, further approvals under the *National Parks & Wildlife Act 1974* and *Heritage Act 1977* are not required. In those instances management of heritage sites must follow the statement of commitments included in the Environmental Assessment.

2.3 *ABORIGINAL AND TORRES STRAIT ISLANDER HERITAGE PROTECTION ACT 1984 (COMMONWEALTH)*

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. 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. A significant area or object is defined as one that is of particular importance to Aboriginal people according to Aboriginal tradition. The Act must be invoked by or on behalf of an Aboriginal or Torres Strait Islander or organisation.

3 BACKGROUND

3.1 ENVIRONMENTAL CONTEXT

The purpose of this section is to provide environmental contextual information for use in developing a predictive model of site location for the study area.

Interactions between people and their surroundings are of integral importance in both the initial formation and the subsequent preservation of the archaeological record. Although social networks and cultural factors inevitably underpin all human behaviour, the nature and availability of resources including water, flora and fauna and suitable raw materials for the manufacture of stone tools and other items had (and continues to have) a significant influence over the way in which people utilise the landscape. Alterations to the natural environment also impact upon the preservation and integrity of any cultural materials that may have been deposited, whilst current vegetation and erosional regimes affect the visibility and detectability of sites and relics. For these reasons, it is essential to consider the environmental context as a component of any heritage assessment.

3.1.1 *Geomorphology and Landforms*

The study area lies at an elevation of between 30 and 60 m above sea level, approximately 2.5 km from the coastline at Terrigal. It lies at the northern end of a prominent ridge system, which extends between Erina and Kincumber. The proposed development area is situated on the north eastern flank of a moderately to steeply undulating ridge and features three roughly northeast/southwest trending spurs which form the north eastern extent of the Kincumba Mountain Reserve. The three spurs are located in the western, central and eastern portions of the study area and form three short, steep-sided gullies, which drain northwards in a tributary of an unnamed creek system which flows to the east to Terrigal Lagoon.

Speight (1990) describes categories of landform divisions, including ten morphological types of landform element units. For archaeological investigations they divide the landscape into standardised elements that can be used for comparative purposes and predictive modelling. A number of landform units were identified within the study area, being slopes, ridges, flats and gullies/creeks. Site types most likely to occur on these landforms are stone artefact sites (scatters and isolated finds), axe grinding grooves and scarred trees (see *Table 3.1*).

Table 3.1 Aboriginal Archaeological Site Types

Site types	Definition
Stone artefact scatters	Stone artefact scatter sites, also known as open campsites, are usually indicated by surface scatters of stone artefacts and sometimes fire blackened stones and charcoal. Where such sites are buried by sediment they may not be noticeable unless exposed by erosion or disturbed by modern activities. The term campsite is used as a convenient label which, in the case of open sites, does not necessarily imply that Aboriginal people actually camped on the sites; rather it indicates only that some type of activity was carried out there.
Isolated finds	Sites consisting of only one identified stone artefact, isolated from any other artefacts or archaeological evidence. They are generally indicative of sporadic past Aboriginal use of an area.
Shell middens	Middens consist of accumulations of shell that represent the exploitation and consumption of shellfish by Aboriginal people. Shell species may be marine, estuarine or freshwater depending on the environmental context and middens may also include other faunal remains, stone artefacts, hearths and charcoal.
Shelter sites	Sandstone shelters and overhangs were used by Aboriginal people to provide campsites sheltered from the rain and sun. The deposits in such sites are commonly very important because they often contain clearly stratified material in a good state of preservation.
Grinding grooves	Grooves resulting from the grinding of stone axes or other implements are found on flat areas of suitable sandstone. They are often located near waterholes or creek beds as water is necessary in the sharpening process. In areas where suitable outcrops of rock were not available, transportable pieces of sandstone were used.
Quarries	These are areas where stone was obtained for flaked artefacts or ground-edge artefacts, or where ochre was obtained for rock paintings, body decoration or decorating wooden artefacts.
Art sites	Aboriginal paintings, drawings and stencils are commonly to be found where suitable surfaces occur in sandstone shelters and overhangs. These sites are often referred to as rock shelters with painted art. Rock engravings, carvings or peckings are also to be found on sandstone surfaces both in the open and in shelters. These are referred to as rock engraving sites.
Scarred trees	Scarred trees bear the marks of bark and wood removal for utilisation as canoes, shields, boomerangs or containers. It is commonly very difficult to confidently distinguish between Aboriginal scars and natural scars or those made by Europeans.
Burial sites	Burials may be of isolated individuals, or they may form complex burial grounds.
Stone arrangements, carved trees and ceremonial grounds	These site types are often interrelated. Stone arrangements range from simple cairns or piles of rocks to more elaborate arrangements; patterns of stone laid out to form circles and other designs, or standing slabs of rock held upright by stones around the base. Carved trees are trees with intricate geometric or linear patterns or representations of animals carved into their trunks. Ceremonial grounds and graves were often marked by such trees. Bora grounds are a common type of ceremonial site and they are generally associated with initiation ceremonies. They comprise two circles, generally edged with low banks of earth but sometimes of stone, a short distance apart and connected by a path.

3.1.2 Geology and Soils

The Gosford 1:25 000 Geological Map (unpublished) indicates that the locality is underlain by rocks belonging to the Terrigal Formation of the Narrabeen Group, consisting of interbedded lithic sandstone and siltstone (Coffey, 2008).

The valley floors and footslopes within the study area are generally characterized by deep (1.5 m to 3.5 m thick) soils comprising silty sand alluvial/colluvial soils overlying low to medium plasticity sandy clays (Coffey, 2008).

The steep slopes are comprised of shallow (0.2 m to 1 m thick) silty clayey sand colluvial soils overlying medium to high plasticity sand clays (0.2 m to 1.3 m thick). Distinctly weathered sandstone is reported to occur 0.7 m to 2 m below the current surface level (Coffey, 2008).

The central ridge is characterized by shallow (0.2 m to 0.8 m thick) soils comprising silty clayey sand colluvial overlying medium to high plasticity sand clays (0.5 m to 1.1 m thick). Distinctly weathered sandstone is reported to occur 0.9 m to 1.6 m below the current surface level. Some scattered sandstone outcrops were observed at the crest of the ridge, and rock was generally encountered at shallower depths that the other landscape units (Coffey, 2008).

Axe grinding grooves are often located on sandstone platforms where they occur in association with water. These sites are likely to occur within the locality particularly given the proximity to the creeks and Terrigal Lagoon. Several low outcrops of Narrabeen Sandstone bedrock have been reported on the upper slopes of the current study area although these are generally less than 50 cm above the ground surface and are reported to display a rough surface (Silcox, 1996). There is therefore no potential for the presence of any rock shelters, engravings, axe grinding grooves or other site types associated with sandstone outcrops within the current study area.

3.1.3 Drainage

The availability of water has significant implications for the range of resources available and the suitability of an area for human occupation. The study area is located in the Terrigal Lagoon catchment area.

Valley formation along two deeply incised gullies has resulted in the presence of two prominent creek lines that originate in the upper slopes and join in the north-western portion of the study area. This combined creek line discharges to the north of the study area, into a constructed drain and ultimately flows to Terrigal Lagoon via a series of channels, culverts and pipes. A smaller drainage line is located within the eastern portion of the study area and flows to the north of the study area into a constructed dam (see *Photograph 3*). Prior to European settlement, these first and second order drainage lines would have naturally flowed north into Terrigal Lagoon.

The combined creek line in the north-west is relatively wide (>30m) with very steep sided banks indicating that it would have been a major creek line suitable for transport between the adjacent Kincumber Mountain and the nearby Terrigal Lagoon. Scarred trees, associated with canoe production may therefore be present along the edges of the creek, although Silcox did not locate any in this area during his survey in 1996.

3.1.4 Land Use and Disturbance

Since European settlement of the Gosford/Wyong region in 1823, the clearing and working of land for agricultural purposes, the quarrying of mineral resources and the spread of urban development has resulted in the destruction of much of the material remains of the earlier Aboriginal society. This process is continuing, with increasing threat from the demands of a rapidly expanding population (Silcox, 1996).

The study area has been affected by the proximity of intensive settlement, resulting in the influx of a variety of weeds and introduced grasses. Much of the understorey and regrowth originally occupying the northern creek flats and slopes has been extensively cleared leaving scattered mature trees and a grazed understorey.

A review of aerial photography from 1954 shows the study area dominated by dense vegetation and with only a small area in the north-eastern corner cleared. No plantations or evidence of other agriculture could be identified.

More recent aerial photography from 1980 shows that some additional areas in the northern half of the study area had been cleared and a small dam constructed in the north eastern portion. With the exception of one or two buildings with unknown use in the north-eastern part of the study area, no buildings or other structures were noted. Photos from 1985 shows additional areas of clearing in the north-western part of the study area and an additional dam in the north-eastern corner. Two additional buildings/structures were noted in the north-eastern portion.

No evidence of significant development can be identified on the various aerial photographs. There is no evidence of market gardening, cropping, or other high-intensity agriculture having taken place on the study area.

3.1.5 Flora and Fauna

Vegetation in the study area comprises a mosaic of open forest communities consistent with the topography and land use history. The two western valleys are dominated by dense vegetation and mature trees. The eastern valley has been previously cleared although dense mature vegetation was noted on the upper slopes, ridges and along the drainage line (see *Photograph 4*). Mature trees can exhibit carving and Aboriginal scarring from the pre-contact period,

Photograph 4

Vegetated ridge.

Photograph 5

Low rock outcrops noted along the central ridge.

Photograph 6

Red ochre noted on the eastern ridge and upper slopes.

however Silcox did not locate any scarred or carved trees in this area during his survey in 1996.

Coastal Warm Temperate Rainforest has been identified within the sheltered creek lines and is dominated by *Archontophoenix cunninghamiana* (Bangalow Palm), *Acmena smithii* (Lillypilly) and *Livistona australis* (Cabbage Tree Palm).

Coastal Narrabeen Moist Forest is located within the more open portion of the creeks and smaller drainage line with Narrabeen Coastal Blackbutt Forest on the slopes and ridges of the study area. Pasture and scattered trees dominate the lower slopes and flats in the northern portion of the study area.

3.2 ARCHAEOLOGICAL CONTEXT

The purpose of this section is to provide archaeological background information for use in developing a predictive model of site location for the study area.

3.2.1 AHIMS Results

A search of the Aboriginal Heritage Information Management System (AHIMS) Aboriginal Sites Database at DECC was undertaken on 19 June 2008, for a 10 km radius centred on the study area. A total of 51 recorded sites were identified within this search area (see *Table 3.2* and *Figure 3.1*).

Table 3.2 AHIMS Results

Site type	Number
ART	18
AFT; ETM; SHL	19
AFT; ETM; SHL; BUR	1
AFT	4
ETM	1
GDG	2
PAD	2
SHL	3
ART; GDG	1
Total	**51**

This search of the local area shows that art sites and middens are the main Aboriginal site types recorded in the area. Midden sites are predominantly located on the beach and bays. Art sites, predominantly rock engraving sites are located on the ridges within Kincumber Mountain Reserve to the south of the site. These ridges provide a commanding view of the surrounding lands including Terrigal Lagoon to the north-east and Brisbane Waters to the south-west.

No Aboriginal sites have been previously recorded in the study area.

Legend

Study Area

AHIMS Sites

- AFT
- AFT; ETM; SHL
- AFT; ETM; SHL; BUR
- ART
- ART; GDG
- ETM
- GDG
- PAD
- SHL

Figure 3.1

AHIMS Records within 5km of Study Area

Client:	Crighton Properties Pty Ltd		
Project:	Parkside Terrigal Rezoning Report - Archaeology		
Drawing No:	0050265hv_arch_04		
Date:	22/09/08	Drawing size:	A4
Drawn by:	JD	Reviewed by:	JW
Source:	DEC		
Scale:	Not to Scale		

N

0 100 200m

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3.2.2 Previous Local Studies

One archaeological investigation has been undertaken within the study area. This assessment has been outlined below, to establish a basis on which the predictive model for the study area may be formulated.

Previous Archaeological Work in the Study Area, Silcox 1996

The northern portion of the study area has been previously surveyed by Rex Silcox (1996), who traversed the entire survey area on foot, focussing on areas of ground surface exposure, mature trees, and environmental features which may have formed a focus for Aboriginal occupation. No Aboriginal sites were recorded during the survey although an area of creek flats with some potential as a campsite was noted to the north-east of the study area (Nb this area is not included in the current survey area).

On the basis of the findings of this archaeological assessment it was recommended that no further archaeological investigations were warranted (*Annex A*).

3.2.3 Regional Archaeological Context

By far the bulk of the archaeological investigations in the Central Coast region have been carried out in relation to development projects. Consequently, the locations of previous studies are generally linked to the primary areas of development, rather than reflecting a cohesive research design. Shell middens are the most common site type along the coast, and tend to occur most frequently in association with beach dunes or estuaries, and to a lesser extent with rock platforms/headlands, particularly in close proximity to fresh water (Sullivan 1982). While shell middens are the most common type of site on the coast, other sites recorded include stone artefact scatters, scarred trees and axe grinding grooves. Burials may be located in soft dune sand either alone or in association with middens.

Sites on the NSW North Coast have been dated predominantly to the last 6,000 years, which corresponds to the time when sea levels rose to their present level (Lampert and Hughes 1974). During the period of lower sea level, the NSW coast would have been located a great distance to the east. Archaeological sites on that ancient coastline would have been submerged below the rising sea levels following the last glacial maximum when sea levels were at their lowest (approximately 18,000 BP).

Attenbrow (1982) investigated the nearby Mangrove Creek catchment area, with results that indicate that occupation of the region was probably older and more prolonged than previously believed. The earliest settlement has been dated to approximately 11,000 BP, although very few rock shelters were occupied prior to 5,000 BP (Attenbrow, 1982).

Comprehensive investigations were carried out in the nearby Upper Mangrove Creek, Lower Mangrove Creek and Brisbane Water/Boudii Peninsula (Vinnicombe, 1982). Each separate area represents a different environmental context. The Brisbane Water/Boudii Peninsula area is the most relevant to the current study area, characterised by open coastline (rocky headlands and beaches) and coastal estuarine environments. A total of 111 sites were recorded in this area consisting of 60 rock shelters (18 with artwork), 43 middens, 5 engraving sites (2 associated with axe grinding grooves) and 3 grinding grooves.

The results of this study suggest that this area contained the greatest density of sites (compared to the other areas sampled), although art sites were under represented. Most shelter sites and engraving sites tend to be concentrated in the Hawkesbury Sandstone landscape, although Narrabeen Group sandstone is the predominant type of the peninsula (Silcox, 1996). Within the sandstone landscape, the distribution of shelter sites was related to the suitable exposure and erosion of the bedrock. Vinnicombe (1982) found that rock shelters used for habitation were more likely to occur near the base of slopes at valley floors, while rock shelters containing art were more likely to be found just below the plateau escarpment.

Grinding grooves tended to occur on exposures of Hawkesbury Sandstone in creek beds at the heads of valleys, in proximity to the tops of waterfalls, near springs or seepage points. Engravings were mostly found on platforms on ridge tops or near heads of valleys. Open campsites were rare, but this was believed to be a consequence of the difficulty in their detection in the Hawkesbury Sandstone landscape. It was considered that these sites could occur wherever suitably flat ground was available near a water supply, whether on ridge tops or creek flats (Vinnicombe, 1982).

Only the basis of the overall study, Vinnicombe proposed a land use model involving the seasonal exploitation of resources in association with limited population movements between the coastal zone and the hinterland. During winter, there would have been less emphasis on marine resources, associated with an increased population in exploitation of inland environments, but the variety of micro-systems comprising the coastal environment would probably have provided a reliable continuous resource base during this season. It was therefore unlikely that winter population density along the coastal margins was greatly reduced below its spring-summer levels. Movement between coastal and inland ecosystems and exploitation of the intermediate zones were not confined to any particular time of the year.

In a more recent overview of recorded Aboriginal heritage in the Gosford area, Dallas and Bell (1989) identified four major land systems and associated suites of site types:

1. Coastal lakes/lagoons – a rich food resource zone (fish, shellfish, waterfowl) where open middens, campsites and burials can be expected on Quaternary deposits adjacent to the water, while in areas where sandstone outcrops can occur, rock shelters containing occupation deposit and/or art may be found.

2. Coastal plains – of limited occurrence, with an easily weathered bedrock type offering little opportunity for the creation of shelter or engravings.

3. Coastal hills – a number of prominent ridgelines capped by Hawkesbury Sandstone providing outcrops suitable for engravings, axe grinding grooves, rock shelters containing occupation deposit and/or art. In the valley bottoms, where alluvial deposits occur, any open sites would have been liable to destruction from prolonged agricultural activities.

4. Upland plateaus - a high concentration of sites are widespread across the Hawkesbury Sandstone of this landscape unit, consisting of rock shelters with occupation deposit and/or art, engravings, and axe grinding grooves. Middens are prevalent along tidal water courses.

Dallas and Bell (1989) also identified a number of archaeologically sensitive areas where sites were concentrated, including the prominent Mt Avoca ridge immediately to the south west of the current study area and the margins of the coastal lagoons along the open coastline to the east.

3.3 PREDICTIVE MODEL OF SITE LOCATION

Based on the archaeological and environmental context outlined above, it is predicted that artefact scatters and scarred trees are the type of site most likely to be found in the study area.

Open Stone Artefact Scatters

Open stone artefact scatters consist of more than one stone artefact. Activities associated with this site type include stone tool production, hunting and gathering or domestic tasks associated with campsites. Sites are most likely to occur along the steep sided banks of the drainage lines within the north-western portion of the study area.

Limited potential also exists for Aboriginal sites to be located along the hill slopes and ridge crest of the study area. It is not expected, however, that artefacts will appear in large concentrations, rather the evidence is likely to be limited to singular knapping events or isolated finds.

There is also the possibility that these open stone artefact sites may contain evidence from the contact period (early 1800's). Cultural material present at contact sites may include flaked glass, ceramics or other introduced European materials that may have been used by the Aboriginal inhabitants during the contact period.

Scarred Trees

Aboriginal people have used the wood and bark of trees for a variety of purposes in the past, such as for carrying implements, shields or canoes. The removal of this raw material from a tree produces a "scar".

The identification of a scar associated with Aboriginal custom as opposed to natural scarring can be difficult. The scar should be of a certain size and shape to be identifiable with its product; the tree itself should also be mature in age, from a time when Aboriginal people were still actively living in the area.

Areas of mature vegetation will have potential for scarred trees although none were recorded by Silcox during his investigations in 1996.

Other Site Types

Several low outcrops of Narrabeen Sandstone bedrock have been reported on the upper slopes in the western valleys but these are generally less than 50 cm above the ground surface and are reported to display rough surfaces (Silcox, 1996). There is therefore no potential for the presence of any rock shelters, engravings, axe grinding grooves or other site types associated with sandstone outcrops.

Based on the literature review, open campsites are relatively rare in the rugged landscape of the Gosford-Wyong area. This is probably due to difficulty in detection, differential conditions for preservation and to a preference for rock shelters in areas where suitable outcrops are available. Previous surveys across the study area reported that suitable camping sites and areas where archaeological deposit might accumulate were virtually absent (Silcox, 1996).

Burials are more likely to occur in the soft sands of the nearby beaches and estuarine environments. There is no indication that burials are more likely to occur in the study area than in any of the surrounding localities.

4 ABORIGINAL CONSULTATION

Aboriginal consultation is required for any assessment of Aboriginal heritage. The DECC has released the Interim Community Consultation Requirements guideline (2004) for Aboriginal consultation in relation to any study that might eventually be used to support an application under Part 6 of the National Parks and Wildlife Act 1974 (i.e. Section 90 consents to destroy sites and Section 87 permits to collect/investigate). The interim guideline sets out a process of inviting Aboriginal groups to register interest as a party to consultation (including local press advertisement), seeking responses on proposed assessment methodology, and seeking comment on proposed assessments and recommendations. The interim guideline requires proponents to allow 10 working days for Aboriginal groups to respond to invitations to register, and then 21 days for registered Aboriginal parties to respond to a proposed assessment methodology. An additional ten days are allowed for groups to review a draft report and comment on the results and management recommendations made.

The consultation for the proposed development of the Parkside site has been carried in accordance with the DECC guideline.

4.1 NOTIFICATION

Letters requesting advice on Aboriginal organisations to consult and any known heritage issues to be taken into consideration in the area were sent on 2 June 2008 to:

- NSW Native Title Services;
- Darkinjung Local Aboriginal Land Council (DLALC);
- The former NSW Department of Environment & Conservation (now DECC);
- Registrar, Aboriginal Land Rights Act 1983 (NSW); and
- Gosford City Council.

A local press advertisement requesting Aboriginal individuals and groups interested in being consulted on this project to write to ERM by 19 June 2008, was placed in the local newspaper on 4 June 2008. No responses were received by ERM.

The DECC response was received on 10 June 2008 and identified six additional Aboriginal parties to be contacted:

- Guringai Tribal Link Aboriginal Corporation (GTLAC);
- Wonnaruah 1 Sites Officer;
- Mimaga Wajaar Pty Ltd;
- Mur-Roo-Ma Inc.;
- Darkinjung CDEP; and
- Nur-Run-Gee Pty Ltd.

Letters requesting advice on Aboriginal organisations to consult and any known heritage issues to be taken into consideration were sent to these additional groups on 12 June 2008, with a response required by 26 June 2008 (10 working days).

4.2 REGISTRATION

Two parties registered an interest (DLALC and GTLAC) and were provided with a proposed methodology on 27 June 2008, with a required response date of 18 July 2008 (21 days). Verbal responses to these methodologies were received each indicating their agreement. Field survey was scheduled for Friday 18 July 2008.

No further Aboriginal parties have been identified through this process.

A search of the National Native Title Tribunal website undertaken on 12 June 2008. It failed to reveal any active claimant applications in the study area.

4.3 FEEDBACK

A draft copy of the report has been sent to each of the registered groups for their review and comment. Responses to the draft report have been included in *Annex B*.

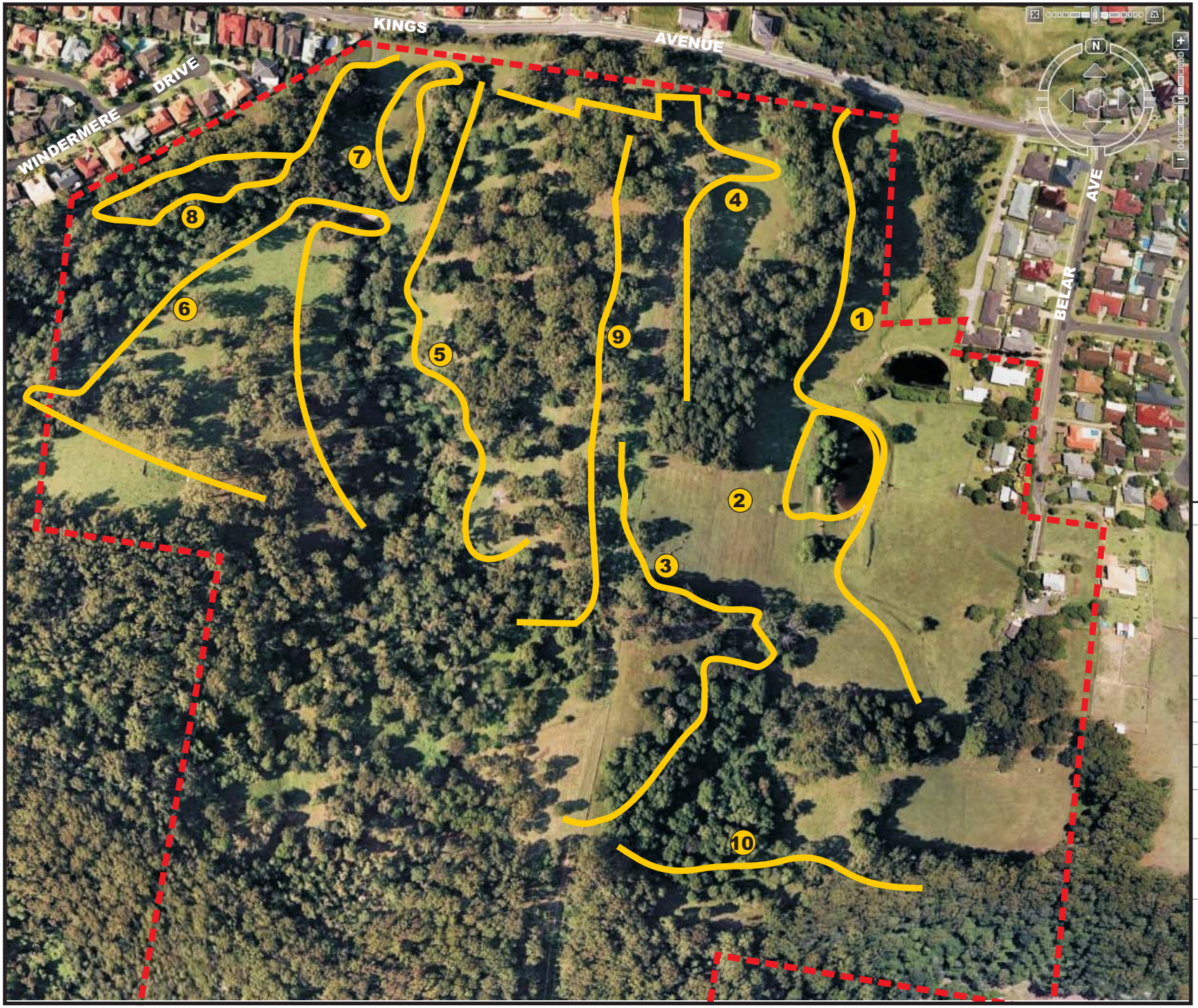
5 METHODOLOGY

In order to determine the validity of a field survey, it is necessary to describe the fieldwork methodology. This section describes the survey strategy, the criteria used to identify artefacts and the means by which survey coverage was calculated.

5.1 SURVEY STRATEGY

The survey involved 10 walking transects (refer to *Figure 5.1*).

- Transect 1 was located in the eastern portion of the study area and covered the footslopes and valley floor landscape units. Visibility was very low (8%) due to dense grass cover.
- Transect 2 was located around the edges of a constructed dam in the eastern portion of the study area. Visibility was relatively high (60%).
- Transect 3 was located in the central portion of the study and followed the south-eastern flank of the central spur. Visibility was low (10-15%) due to dense grass cover and leaf litter.
- Transect 4 was located in the central portion of the study and covered the northern and north-eastern flank of the central spur. Visibility was low (8%) due to dense grass cover and leaf litter.
- Transect 5 was located within the western portion of the study area and followed the western flank of the central spur. Visibility was low (10%) due to dense leaf litter and fallen timber.
- Transect 6 was located on the footslopes and valley of central spur and partially followed the western creek line. Visibility was low (8%), particularly along the edges of the creek where lantana became impenetrable.
- Transect 7 was located on the footslopes and valley of the central spur. Visibility was low (5%) due to the dense grass cover.
- Transect 8 was located within the western portion of the study area and followed the western creek line. Visibility was low (6%) due to dense leaf litter, fallen timber and introduction of gravel along the old vehicle track.
- Transect 9 followed the central ridge. Visibility was low (12%) based on the dense grass layer. A few small, low rock outcrops were noted along the ridge (see *Photograph 5*).
- Transect 10 followed the eastern ridge. Visibility was low (15%) due to dense leaf litter and fallen timber.



Legend

Study Area

Transects

Figure 5.1

Survey Transects

Client:	Crighton Properties Pty Ltd		
Project:	Parkside Terrigal Rezoning Report - Archaeology		
Drawing No:	0050265hv_arch_05		
Date:	17/09/08	Drawing size:	A4
Drawn by:	JD	Reviewed by:	JW
Source:	-		
Scale:	Refer to Scale Bar		

N

0 50 100m

approx only

Environmental Resources Management Australia Pty Ltd
53 Bonville Avenue, Thornton, NSW 2322
Telephone +61 2 4964 2150

ERM

5.2 SURVEY COVERAGE

In accordance with NSW NPWS (1997:18), the description of survey coverage includes the landform, survey unit area and a quantification of the level of exposure and visibility. The survey units were mapped using a combination of hand-held GPS and visible landmarks.

Visibility refers to the amount of ground upon which artefacts could be sighted and is expressed as a percentage of the survey unit (NSW NPWS 1997:18). The presence of vegetation, leaf litter and other variables can obscure visibility. Exposure is defined as areas in which erosional processes result in the removal of soils and permit the detection of archaeological material that was formerly subsurface. Exposure is also expressed as a percentage of the survey unit (NSW NPWS 1997:18).

5.3 ABORIGINAL SITE IDENTIFICATION

The criteria applied to the identification of Aboriginal sites are outlined below.

Stone Artefacts

There are a number of grounds for distinguishing between artefacts that have been flaked through human activity and those that result from natural processes, including features such as negative and positive bulbs of percussion, ring cracks, ripple marks, flake terminations and errailure scars (Holdaway and Stern 2004:6-9). For the purposes of this assessment, flaked stone artefacts were identified on the basis of the presence of one or more of these attributes. Other stone artefacts such as grindstones or hammerstones are identified by the presence of distinctive pitted, crushed or abraded surfaces.

The location of each artefact was recorded using a hand-held GPS unit and the attributes listed in *Table 5.1* were recorded for each artefact (where applicable).

Table 5.1 Recorded Artefact Attributes

Variable	Attribute
Raw material	Mudstone, silcrete, quartz and igneous.
Artefact type	Flake (recorded as complete, proximal fragment or other fragment), core (unidirectional, multidirectional, bipolar); retouched flake; broken flake (proximal or other); flaked piece[1].
Implement	Following McCarthy (1976).
Size	Maximum dimension (mm).
Platform type	Cortex – surface is outer weathered surface of a stone cobble or fragment. Single scar – platform is a single flaked surface or freshly broken surface. Several scars - platform comprises several flaked scars. Faceted – platform surface comprises a series of small scars typically overlying larger scars.
Cortex	Proportion of cortex remaining on the artefact (%).
Notes	Includes notes on macroscopic signs of use.

1. Artefact types defined by Hiscock 2001 (see McCarthy 1976 for implement types).

The following variables were recorded for stone artefact scatters:

- site coordinates (AMG84);
- landform element;
- site size (visible distribution of artefacts within a continuous exposure or landform);
- exposure type;
- visibility within and outside the exposure, and;
- the likelihood of subsurface deposits.

Scarred Trees

The removal of bark and wood from trees results in the presence of scarring on the tree trunk. However, it is often difficult to distinguish between scars of natural and cultural origin and it is important to identify where scarring relates to Aboriginal rather than European activities. Two broad criteria were used to define Aboriginal scarred trees during this survey (refer to Long 2005:20-22) and are detailed as follows:

- the scar must be of a size and shape and location on the tree that suggests it was caused by removal of bark by an Aboriginal person or Aboriginal people. Typically scars are symmetrical in form and of a size that suggests the removal of bark for containers, carrying implements, shields or canoes. There may also be small scars resulting from the cutting of footholds used to climb trees;

- tool/axe marks that may be present should be of a size and demonstrate a degree of weathering that indicates that they are not of recent origin; and

- the tree (and the scar) must be sufficiently old to indicate that the removal of bark took place at a time when Aboriginal people were employing traditional methods in the production of their material culture.

6 SURVEY RESULTS

An archaeological survey was undertaken on Friday 18 July 2008. Deborah Swan (Darkinjung Local Aboriginal Land Council), Tracey Howie (Guringai Tribal Link Aboriginal Corporation) and Joanne Woodhouse (ERM archaeologist) conducted the targeted survey.

No sites were recorded during the field surveys which confirms the findings of the previous investigations by Silcox in 1996.

One potential scar tree was noted during the field surveys, however further investigations have confirmed that the scar is not of Aboriginal origin (refer to *Section 6.2* and *Annex C*).

Red and yellow ochre was noted within the southern portion of the survey area, along the eastern ridge and upper slopes (see *Photograph 6*). None of the pieces appeared to have been worked and the area was not identified as being a quarry. Ochre is iron oxide and is found in a range of colours, from yellow through to red and brown. It is recognised as being a significant cultural resource and was ground to a powder and then mixed with water (sometimes saliva, blood, the fat of fish etc) for a fixative. The resulting pigment was used for body and artefact decoration, and cave painting. Dry ochre was used for staining skins and hair (NSW DPI, 2007).

6.1 SURVEY COVERAGE

The calculation of effective coverage provides a means to describe the proportion of the study area in which it was possible to assess the presence or absence of artefacts. Due to the limited archaeological visibility and exposure, effective coverage was low at three percent (refer to *Table 6.1*). Of the three landscape types surveyed the footslopes and valley floor had the greatest visibility (40%), although this was only along the edges of the constructed dam.

6.2 POTENTIAL SCAR TREE

A large number of mature trees within the northern portion of the study area exhibited large vertical scars that could be attributed to fallen limbs, machinery damage and lighting strikes.

One large Blackbutt within the north-western corner was identified as a potential Aboriginal scar tree. As indicated within *Photographs 7* and *8*, the 6 m long scar has symmetrical sides and no evidence machinery damage or fallen limbs.

Photograph 7

Potential scar tree - not of Aboriginal origin.

Photograph 8

Close up view of the deep scar.

Table 6.1 Effective Coverage

Transect	Landform	Length (m)	Width (m)	Area (m²)	Visibility	Exposure	Visible area (m²)	Area available for detection (m²)	% Effective coverage
1	valley floor and footslopes	520	10	5200	8%	10%	416	41.6	1%
2	valley floor and footslopes	240	5	1200	40%	60%	480	288.0	24%
3	upper slopes	270	10	2700	15%	12%	405	48.6	2%
3	ridge spur	110	10	1100	10%	15%	110	16.5	2%
4	upper slopes	480	10	4800	8%	12%	384	46.1	1%
5	upper slopes	430	10	4300	10%	10%	430	43.0	1%
6	valley floor and footslopes	300	5	1500	8%	22%	120	26.4	2%
7	valley floor and footslopes	210	5	1050	5%	10%	52.5	5.3	1%
8	upper slopes	560	6	3360	6%	10%	201.6	20.2	1%
9	ridge spur	460	10	4600	12%	20%	552	110.4	2%
10	ridge spur	310	8	2480	15%	20%	372	74.4	3%
									Average 4%

The tree did not show any obvious toe hold scars which would be expected for the Aboriginal people to reach the top of such a large scar during the bark removal process. The possibility of the deep scar having healed over these was also noted.

Further investigations on the age of the tree were undertaken by Advanced Treescape Consulting (refer to *Annex C*). The tree was subsequently identified as being 150 to 200 years old, making it a sapling in the early 1800's and unlikely to be used for bark removal and/or canoe manufacture.

Following additional consultation with the local Aboriginal community, it was concluded that this scar tree was not of Aboriginal origin and does not pose any constraint to the proposed development of the study area.

6.3 POTENTIAL ARCHAEOLOGICAL DEPOSIT

It is essential to consider the potential for archaeological material to be present in areas of poor visibility and/or in a subsurface context. In relation to the management of the archaeological resource and legislative requirements, the likelihood that subsurface archaeological deposits may be present within an area has implications for any proposed development activity.

In terms of archaeological assessment, not all potential deposits necessarily contribute to our understanding of past human activities. The primary scientific importance of subsurface deposits lies in their potential to provide information that will assist in interpretation of the archaeological record through time and space. For this reason, areas described as potential archaeological deposits should satisfy one or more of the following criteria.

- be likely to contain sufficiently high numbers of artefacts to allow for statistically viable detailed analysis and intra- and inter-site comparison of artefact assemblages;
- exhibit minimal disturbance and a high level of integrity; and/or
- have the potential to contain dateable materials, either in chronological or absolute terms.

As discussed within the predictive model, open stone artefact scatters have a low potential to occur along the banks of the drainage lines within the study area. This is unlikely to pose any constraints to the proposed development and has not been recorded as a PAD. No artefacts were recorded during the site investigations although this may be the product of limited visibility.

6.4 IMPACT ASSESSMENT

No sites or areas of cultural sensitivity have been recorded within the study area. The proposed rezoning and subsequent development will not directly impact on any known areas of the archaeological record.

7 SIGNIFICANCE ASSESSMENT

The assessment of significance is an integral component in the formulation of management and mitigation plans in relation to cultural heritage resources (Pearson and Sullivan 1994:21). Cultural heritage management recommendations are typically made in response to an assessment of cultural significance. The Burra Charter (Australia ICOMOS Burra Charter 1999) defines cultural significance in terms of the aesthetic, historic, scientific and social value of a heritage item or place. In relation to Aboriginal cultural material, considerations of social and scientific significance are generally weighted most heavily, although other factors may also be of relevance. This report will be provided to the Aboriginal community for input prior to finalisation of the report. Feedback from the Aboriginal community regarding social significance will be an important component of the significance assessment.

For management purposes, the levels of site significance can be described as follows:

- sites that are assessed to be of high significance should be conserved and warrant protection against development;
- sites that are assessed to be of moderate significance should be conserved if possible, however in the event that these may be affected by development, management strategies should be implemented to mitigate against the impact; and
- sites that are assessed to be of low significance should be conserved if possible, but should not represent an obstacle to development.

7.1 ABORIGINAL (SOCIAL) SIGNIFICANCE

The assessment of social significance is the prerogative of the Aboriginal community and typically involves the consideration of a site or sites in conjunction with the archaeological, cultural and natural aspects of the surrounding landscape.

During the field survey, no specific comments were made by the Aboriginal community representatives regarding areas or sites of particular cultural value. The areas of red and yellow ochre along the eastern ridge and upper slopes were not identified as being a quarry or of notable Aboriginal significance. Comments from the Aboriginal community in response to the draft copy of this report will provide additional information regarding the significance of the survey area to Aboriginal people and has been included in *Annex B*.

7.2 ARCHAEOLOGICAL (SCIENTIFIC) SIGNIFICANCE

The archaeological significance of an Aboriginal site, object or place is assessed according to its potential to address research questions and provide additional information of value to interpretations of past human activities (Australia ICOMOS Incorporated 2000:12). The assessment of scientific significance should consider the rarity and representativeness of the site, its integrity and connectedness in relation to research potential.

No sites or areas of cultural sensitivity have been recorded within the study area. There is limited potential for additional artefacts to be present in the surrounding area.

8 MANAGEMENT MITIGATION MEASUREMENTS

No sites or areas of cultural sensitivity have been recorded within the study area during the various field surveys. The proposed rezoning and subsequent development will not directly impact on any areas of the known archaeological record and no further archaeological investigations are warranted.

The following recommendations are made in light of the predictive modelling, field survey, input of the Aboriginal stakeholders and the relevant legislation protecting Aboriginal heritage in NSW:

- monitoring of clearing and initial excavation works within 40 m of the western creek line should be undertaken by representatives of the local Aboriginal community. This would not be undertaken as an archaeological activity;

- monitoring of clearing and initial excavation works along the ridge lines and underneath the electricity transmission lines where low rock outcrops were noted should be undertaken. This monitoring should be undertaken by representatives of the local Aboriginal community and would involve low impact scraping or soaking of the grass and topsoil to reveal the extent of the sandstone platforms prior to any impact occurring. This would not be undertaken as an archaeological activity;

- if during clearing or construction works Aboriginal artefacts or sites are recovered an immediate stop work protocol should be in place in the immediate vicinity of the site. A qualified archaeologist should at this time be contacted, the site recorded and its archaeological and cultural significance assessed. A section 87 permit and/or section 90 consent should be sought from the DECC for the site prior to further development impact. Once any required excavation and/or recording has occurred any salvage can be undertaken and works may continue; and

- in the unlikely event of discovery of skeletal material all works should cease, and the police, relevant local Aboriginal community groups and a suitably experienced archaeologist or physical anthropologist should be contacted to assess the material before determining the correct management action.

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Annex A

Archaeological Survey, Silcox 1996

ARCHAEOLOGICAL SURVEY FOR PROPOSED REZONING, KING'S ROAD, TERRIGAL, NSW.

Report to
INTEGRATED SITE PLANNING AND MANAGEMENT
70 Hills Street
GOSFORD NSW 2250

By
REX SILCOX
Consultant Archaeologist
26 Fawcett Street, Mayfield
NEWCASTLE NSW 2304

June, 1996

CONTENTS

1. INTRODUCTION

The study area is located on the Central Coast of New South Wales, east of the town of Gosford and midway between the settlements of Erina and Terrigal (Figure 1). It is proposed to rezone an area of c. 20ha for residential development on King's Road, Terrigal. A number of areas are to be set aside from the proposed development, to be retained as 'open space' or to protect significant vegetation (Figure 2). This study was commissioned by Integrated Site Planning and Management, Gosford, on behalf of Crighton Properties, Terrigal.

The study area lies on the southern side of King's Road, east of its junction with Mobbs Road. It is bordered on its western side and along most of its eastern side by existing residential development. The southern boundary is formed by extensive areas of eucalypt woodland, including the Kincumba Mountain Reserve along its south-western edge.

The survey was carried out on 7 June, 1996, by consultant archaeologist Rex Silcox accompanied by three members of the Darkinjung Local Aboriginal Land Council. No Aboriginal archaeological sites, potential Aboriginal site locations or locations of potential historical significance were identified within the study area during the survey.

2. ABORIGINAL INVOLVEMENT

The study area lies in the the district administered by the Darkinjung Local Aboriginal Land Council, based in Wyong. The Sites Officer of the Land Council, Kevin Duncan, was contacted prior to the survey and the proposed development and archaeological survey was discussed. It was arranged that Mr Duncan would accompany the archaeologist to inspect the area and would prepare a brief report on the participation of the Land Council in the investigation. Andrew Sim, the Chairperson of the Land Council, and Tony Donovan, a member of the Land Council, were also present during the survey.

In discussions following the survey, Mr Duncan considered that the Land Council would have no objections to the proposed development proceeding as planned. A written statement confirming this position is in preparation and will be forwarded when it becomes available.

A copy of this report will be sent to the Land Council for their records.

3. ENVIRONMENTAL SETTING

The study area lies towards the north-eastern end of the Sydney Basin, near the mouth of the Hawkesbury River system. It is located in the *Erina Hills* physiographic region (Murphy, 1993) which extends between the coast, Brisbane Water and Tuggerah Lake. This region is dominated by the *Erina* Soil Landscape System (Murphy, 1993), an erosional landscape based on the Terrigal Formation of the Narrabeen Group of

FIGURE 1: LOCATION OF STUDY AREA

Scale 1:25,000

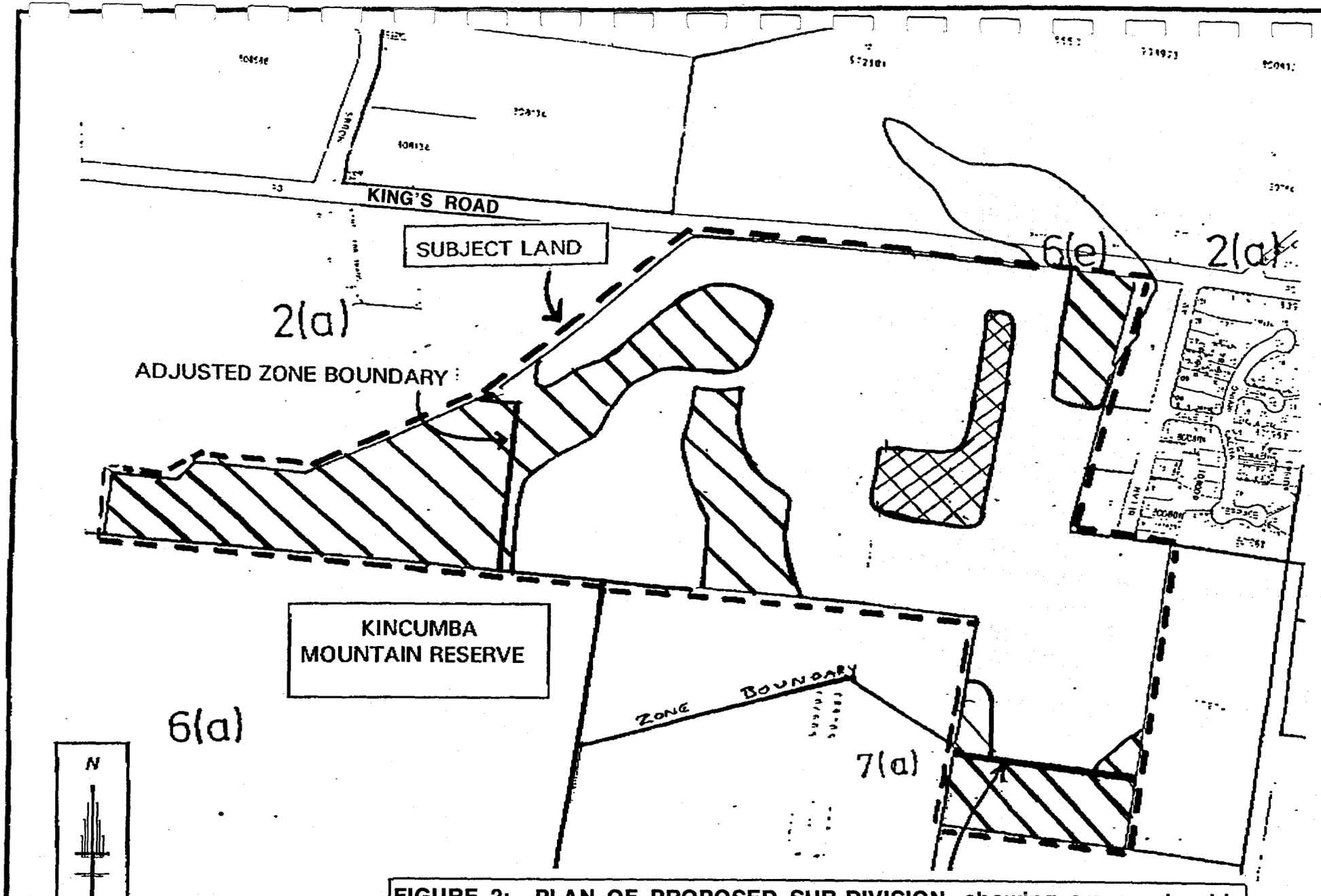

FIGURE 2: PLAN OF PROPOSED SUB-DIVISION, showing areas set aside

- protection under Section 88B
- proposed open space

sedimentary bedrock consisting of lithic and quartz sandstone and siltstone, minor sedimentary breccia, claystone and conglomerate. This bedrock formed minor outcrops at several locations on upper slopes in the study area. The landscape is generally characterised by undulating topography formed by low hills with moderately broad ridges and crests (100 -300m) and gentle to moderate slopes (<25%). Valleys are moderately narrow (300-800m) and are infilled with Quaternary alluvium.

The study area lies at an elevation of between 30 and 60m ASL, c.2.5km from the nearest section of coastline (Terrigal Beach). It lies at the northern end of a prominent ridge system which extends between Erina and Kincumber. The proposed development extends across three short, steep-sided valleys which drain northwards into a tributary of an unnamed creek system which flows to the east to Terrigal Lagoon. The two western valleys are drained by deep narrow, steep-sided channels which have incised through recent colluvial infill and are densely vegetated by a mixture of introduced and native trees, shrubs and vines. The bottom of the eastern valley is more open and rounded and is drained by a shallow, partly grassed creekline.

The native vegetation in the region consisted predominantly of tall open forest, with open heath occurring in exposed locations along the coast. Common tall forest species in the area include blackbutt (*E. pilularis*), turpentine (*Syncarpia glomulifera*), spotted gum (*E. maculata*), smooth-barked apple (*Angophora costata*), grey ironbark (*E. paniculata*) and Sydney blue gum (*E. saligna*).

The two western valleys in the study area retain a considerable amount of original tree cover, especially along the creek channels and the steeper slopes on the ridges separating the valleys. The easternmost valley has been more extensively cleared for grazing, although several dense stands of trees persist on the upper ridge slopes and along drainage lines. As part of the development planned for the area, it is proposed to retain several areas occupied by dense stands of mature timber or other ecologically significant vegetation, along stream channels and on upper slopes, either for 'open space' or under Section 88B (Figure 2).

The study area has been affected by the proximity of intensive settlement, resulting in the influx of a variety of introduced grass and weed species, especially lantana and various creepers which have proliferated in the deeper stream channels of the western valleys. Much of the understorey vegetation and regrowth originally occupying the narrow creek flats and slopes in these valleys has been extensively cleared leaving only scattered mature trees and and a ground cover of grass.

Since European settlement of the Gosford-Wyong area began in 1823, the clearing and working of land for agricultural purposes, the quarrying of mineral resources and the spread of urban development has resulted in the destruction of much of the material remains of the earlier Aboriginal society. This process is continuing, with an increasing threat from the demands of a rapidly expanding population. Current land use in many areas is changing from traditional rural industries to urban or rural-residential development, tending to displace activities such as citrus orchards and poultry raising.

4. ARCHAEOLOGICAL BACKGROUND

4.1 Regional Context

A number of extensive studies have been conducted in the Central Coast region. Attenbrow (1982) investigated the nearby Mangrove Creek catchment area, with results that indicate that occupation of the region was probably older and more prolonged than previously believed. The earliest settlement has been dated to approximately 11,000 BP, although very few rock shelters were occupied prior to 5,000 BP (Attenbrow, 1982: 74).

A comprehensive investigation of a region closer to the location of the present enquiry was carried out by Vinnicombe (1980). This project encompassed 3 areas - Lower Mangrove Creek, Upper Mangrove Creek, Brisbane Water/Bouddi Peninsula - each area representing a sample of a different ecosystem. The Brisbane Water/Bouddi Peninsula area was of most relevance to the present enquiry, forming an ecosystem consisting predominantly of open coastline (rocky headlands and beaches) and coastal estuarine environments. A survey transect, 5km long and 2 km wide and divided into 5 catchments, extended along the eastern shore of Brisbane Water, between Putty Beach and Empire Bay. A total of 111 sites were discovered in this area, consisting of 60 rock shelters (18 containing artwork), 43 middens, 5 engraving sites (2 associated with axe grinding grooves) and 3 axe grinding groove sites.

The results of the study suggested that this area contained the greatest overall density of sites of any of the 3 areas examined, although art sites were under represented. Most shelter sites and engraving sites tended to be concentrated in the Hawkesbury Sandstone landscape, although Narrabeen Group sandstone is the predominant rock type on the peninsula. Within the sandstone landscape, the distribution of shelter sites was related to the suitable exposure and erosion of the bedrock. Vinnicombe (XI:3) found that rock shelters used for habitation were more likely to occur near the base of slopes at valley floors, while rock shelters containing art were more likely to be found just below the plateau escarpment.

Grinding groove sites tended to occur on exposures of Hawkesbury Sandstone in creek beds at the heads of valleys, in proximity to the tops of waterfalls, near springs or seepage points Engravings were mostly found on Hawkesbury Sandstone platforms on ridge tops or near the heads of valleys. Open campsites were rare, but this was believed to be a consequence of the difficulty in their detection in the Hawkesbury Sandstone landscape. it was considered that these sites could occur wherever suitably flat ground was available near a water supply, whether on ridge tops or creek flats.

On the basis of the overall study, Vinnicombe (XIV:5-6) proposed a land use model involving the seasonal exploitation of resources in association with limited population movements between the coastal zone and the hinterland. During winter, there would have been less emphasis on marine resources, associated with an increased population in exploitation of inland environments, but the variety of micro-systems comprising the coastal environment would probably have provided a reliable continuous resource base during this season. It was therefore unlikely that winter population density along the coastal margins was greatly reduced below its spring-summer levels.

Movement between coastal and inland ecosystems and exploitation of the intermediate zones were not confined to any particular part of the year.

In a more recent overview of recorded Aboriginal heritage in the Gosford City area, Dallas and Bell (1989) identified 4 major landsystems and associated suites of site types :

1. **coastal lakes/lagoons** - a rich food resource zone (fish, shellfish, waterfowl) where open middens, campsites and burials can be expected on Quaternary deposits adjacent to the water, while in areas where sandstone outcrops occur, rock shelters containing occupation deposit and /or art may be found.

2. **coastal plain** - of limited occurrence, with an easily weathered bedrock type offering little opportunity for the creation of shelter sites or engravings.

3. **coastal hills** - a number of prominent ridgelines capped by Hawkesbury Sandstone providing outcrops suitable for engravings, axe grinding grooves, rock shelters containing occupation deposit and/or art. In the valley bottoms, where alluvial deposits occur, any open sites would have been liable to destruction from prolonged agricultural activities.

4. **upland plateaus** - a high concentration of sites are widespread across the Hawkesbury Sandstone of this landscape unit, consisting of rock shelters with occupation deposit and/or art, engravings, and axe grinding grooves. Middens are prevalent along tidal water courses.

In general, it appears from these studies that sites are likely to occur wherever suitable conditions are present, and are distributed across all environmental zones, although the major concentration of subsistence sites tends to be associated with the coastal lakes/lagoon environments and the upland plateaus.

Dallas and Bell (1989) also identified a number of archaeologically sensitive areas where sites were concentrated and particular care would be required in the planning of future development. These areas included the prominent Mt Avoca ridge immediately to the south-west of the current study location and the margins of the several coastal lagoons along the open coastline to the east.

4.2 Local Context

A search of the NP&WS Site Register revealed that, in an arbitrarily selected area of 10km x10km, centred on the survey location, a total of 41 sites has been recorded. These comprised 18 rock engraving sites (1 associated with axe grinding grooves), 17 middens, 4 axe grinding groove sites, 1 rock shelter with midden deposit, 1 shelter with charcoal art, 1 burial associated with a midden, and 1 open campsite. Most of the engraving and grinding groove sites were located in the elevated landscape to the south-west of the present study area, while the middens were scattered around the margins of the coastal lagoons and on rocky headlands along the open coast and around the protected lagoons, particularly Cockle Creek.

As far as can be determined, there has been only one systematic archaeological survey carried out in the near vicinity of the current study location. This survey was undertaken on a small proposed subdivision on the northern side of King's Road (Silcox, 1994), almost directly opposite the present study area. No sites or potential site locations were identified.

5. SURVEY PROCEDURE

The survey team covered almost the entire study area, on foot. Visibility over most of the area was very low (<10%) due to either dense grass or a cover of leaf litter amongst the denser clusters of trees. Occasional patches of higher visibility (30%-80%) were provided mainly by several stock tracks and trampled areas in gateways, the eroded edges of several gullies, the margins of several dams and by exposures around the bases of a number of trees. These locations probably accounted for much less than 1% of the total study area.

6. RESULTS & DISCUSSION

No archaeological sites or potential site locations were noted within the study area during the survey.

Several low outcrops of Narrabeen Sandstone bedrock were present on the upper slopes in the western valleys but these were generally less than 50cm above the ground surface and displayed extremely rough surfaces. There was therefore no potential for the occurrence of rock shelters, engravings, axe grinding grooves or other site types associated with sandstone outcrops.

It appears that open campsites are a rare occurrence in the rugged landscape of the Gosford -Wyong area.This is probably due partly to difficulty in detection because of poor visibility, to differential conditions for preservation, and to a preference for rock shelters in areas where suitable bedrock outcrops are common.

Potentially sensitive areas which might form suitable camping locations and where archaeological deposit might accumulate were virtually absent in the area surveyed. The flats bordering the creeks that drain the western valleys were narrow and appear to have been already disturbed to some extent by the removal of the original understorey vegetation. A proportion of these flats will be retained as open space. It is not known to what extent these creeks may have provided a reliable water supply, but they are associated with very small catchments and were probably ephemeral. On balance, the flats in this section of the study area do not warrant any further investigation.

Towards the downstream end of the minor creekline which runs through the eastern valley and the north-eastern corner of the study area, an area of creek flats with some potential as a campsite location was noted on the eastern side of the creek. However, it appears that this location lies mostly in private farmland outside the present study area.

It will not be affected by the proposed rezoning and will therefore not warrant any further investigation. The potential for open campsite locations is probably higher further downstream along the main creek valley closer to Terrigal Lagoon, where wider alluvial flats and lower slopes occur in proximity to a more reliable water supply.

On balance, therefore, there appears to be no basis for any further archaeological investigation of the study area and the proposed rezoning should be allowed to proceed.

7. RECOMMENDATIONS

On the basis of the findings of the archaeological survey and the above discussion, it is recommended that;

1. no further archaeological investigation is warranted at the location of the proposed development.

2. the proposed rezoning of the land for residential development should be allowed to proceed as planned.

REFERENCES

Attenbrow, V. (1982) The Archaeology of Upper Mangrove Creek Catchment - Research in Progress in S. Bowdler (ed) *Coastal Archaeology in Eastern Australia: Proceedings of the 1980 Valla Conference on Australian Prehistory* Department of Prehistory, Research School of Pacific Studies, ANU, Canberra.

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Murphy, C. L. (1993) *Soil Landscapes of the Gosford - Lake MacQuarie 1:100,000 Sheet.* Report, Department of Conservation and Land Management.

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Silcox, R. 1994 Archaeological Survey of Lots 1 and 2, DP808134, Karalta Road, Terrigal. Report to Wallis & Moore Pty Ltd, Sydney.

Vinnicombe, P. (1980) *Predilection and Prediction: A Study of Aboriginal Sites in the Gosford-Wyong Region* . Report to the NP&WS (NSW).

PHOTO 1: View of landscape in western end of study area, showing typical low visibility.

PHOTO 2: View of landscape in eastern valley, looking north.

Annex B

Consultation Log

Table B.1 Stage 1 – Advisory Requests

Organisation	Contact	Date Sent	Comment
Central Coast Express Advocate	N/A	30-May-08	Ad to appear on Wednesday 4 June 2008, given response date of 19 June 2008
Native Title Services	N/A	30-May-08	Fax requesting groups to consult. Search of NNTT website of Gosford LGA shows 7 applications, all finalised.
DEC	N/A	30-May-08	Letter requesting groups to consult.
Registrar of Aboriginal Owners	Adam Black	30-May-08	Fax requesting groups to consult.
Gosford City Council	N/A	30-May-08	Letter requesting groups to consult.
Darkinjung LALC	N/A	30-May-08	Letter requesting groups to consult.
Guringai Tribal Link Aboriginal Corp.	N/A	12-Jun-08	Letter requesting groups to consult.
Wonnaruah1 Sites Officer	N/A	12-Jun-08	Letter requesting groups to consult.
Mimaga Wajaar Pty Ltd	N/A	12-Jun-08	Letter requesting groups to consult.
Mur-Roo-Ma Inc.	Anthony Anderson	12-Jun-08	Letter requesting groups to consult.
Darkinjung CDEP	N/A	12-Jun-08	Letter requesting groups to consult.
Nur-Run-Gee Pty Ltd	Leanne Anderson	12-Jun-08	Letter requesting groups to consult.

Table B.2 Stage 1 –Responses Received re: Advisory Requests

Organisation	Contact person	Date	Comments
Registrar of Aboriginal Owners	Kylie McLeod	03-Jun-08	Email advising that there are no registered Aboriginal owners for the study area.
DECC	Brett Nudd	05-Jun-08	Letter identifying an additional six groups likley to have an interest in the project.

Table B.3 Stage 1 - Aboriginal Group Registrations Received

Organisation	Contact person	Date	Comments
Darkinjung LALC	Deborah Swan	13-Jun-08	Letter and fax registering an interest in the project.
Guringai Tribal Link Aboriginal Corp.	Tracey-lee Howie	19-Jun-08	Letter and fax registering an interest in the project.

Table B.4 Stage 2 – Briefing and Methodology Advice Sent

Organisation	Contact person	Date	Comments
Darkinjung LALC	Deborah Swan	27-Jun-08	Email proposed methodology with a response date of 18 July. Follow up phone call on 27 June 2008. Follow up email on 15 July 2008.
Guringai Tribal Link Aboriginal Corp.	Tracey-lee Howie	27-Jun-08	Email proposed methodology with a response date of 18 July. Follow up phone call on 27 June 2008. Follow up email on 15 July 2008.

Table B.5 Stage 2 – Aboriginal Group Comments Received

Organisation	Contact person	Date Rec'd	Comments
Guringai Tribal Link Aboriginal Corp.	Tracey-lee Howie	01-Jul-08	Email agreeing with the methodology and confirmation of fieldwork for Friday 18 July 2008.
Darkinjung LALC	Deborah Swan	03-Jul-08	Email agreeing with the methodology and confirmation of fieldwork for Friday 18 July 2008.

Table B.6 Stage 3 – Draft Report Sent

Organisation	Contact person	Date Sent	Feedback Received & Date
Guringai Tribal Link Aboriginal Corp.	Tracey-lee Howie	30-Oct-08	
Darkinjung LALC	Deborah Swan	30-Oct-08	

Table B.7 Stage 3 – Responses to Draft Report Recieved

Organisation	Contact person	Date Received	Feedback Received & Date
Guringai Tribal Link Aboriginal Corp.	Tracey-lee Howie	20-Nov-08	Provided response by email stating their approval of the information and recommendations in the draft report, particularly monitoring of all excavation works within 40m of the western creek line and ridgelines.
Darkinjung LALC	Deborah Swan	01-Dec-08	Provided response by fax stating their approval of the information and recommendations in the draft report. They also made note that any artefacts uncovered during monitoring and excavation works will have to recorded and all statutory requirements adhered to (i.e s87 and/or s90 consent).

Guringai Tribal Link
Aboriginal Corporation
ABN 18 351 198 069. ICN 4270
(Traditional Owners of the NSW Central Coast)

PO Box 4061,
Wyongah NSW 2259
Phone:(02) 4392 8743
Fax:(02) 4396 9525
Mobile: 0404 182 049
Email: guringai@kooee.com.au

20th November, 2008

Joanne Woodhouse
Archaeologist,
Environmental Resources
Management Australia Pty.Ltd.
PO Box 71
Thornton, NSW, 2322
Emailed to: joanne.woodhouse@erm.com

Dear Joanne,
Please find following;
* GTLAC report and recommendations for proposed Rezoning at Terrigal.

Thank you for including the Guringai Mob in this project.
We look forward to working with you in the future.

Tracey-lee Howie
Senior
Female Cultural
Heritage Officer
(contacts above)

ABORIGINAL CULTURAL HERITAGE ASSESSMENT REPORT

FOR PROPOSED REZONING

and

DEVELOPMENT

of the

PARKSIDE at TERRIGAL

KINGS AVENUE, TERRIGAL.

Prepared by Guringai Tribal Link Aboriginal Corporation

for

Environmental Resources Management

on behalf of

Crighton Properties Pty.Ltd.

INTRODUCTION;

Guringai Tribal Link Aboriginal Corporation(GTLAC) was contacted by Environmental Resources Management Australia (ERM) in regards to an Aboriginal Cultural Heritage Assessment for the proposed Rezoning and Development of several Lots of land at Terrigal. (Lot 2 DP1111392, Lots 8 & 9 DP876102, Lot 202 DP831864, Lot 4 DP37914 and Lot 1 DP381971.

This assessment was to establish the presence or absence of Aboriginal materials/artefacts, scar trees, rock engravings, camping/hunting areas and identify potential impacts to native flora and fauna within the survey area.

PROPOSAL:

Crighton Properties Pty.Ltd are applying to Council for the rezoning of Lot 2 DP111392, Lots 8 & 9 DP876102, Lot 202 DP831864, Lot 4 DP37914 and Lot 1 DP381971, Kings Av, Terrigal.

These lots are currently zoned as E2 Environmental Conservation and E3 Environmental Management. It is proposed to amend these lots to E2 and R2 Low Density Residential. Lots zoned at E2 are to remain zoned E2 and it is proposed that this land will be dedicated to Gosford Council's Coastal Open Space System.

STUDY AREA:

The study area is within the Gosford City Council Area is situated on the southern side of Kings Avenue, Terrigal and north of Kincumber Mountain Reserve, approx.8kms north/east of Gosford City.

The study area comprises of Lot 2 DP1111392, Lots 8 & 9 DP876102, Lot 202 DP831864, Lot 4 DP37914 and Lot 1 DP381971, totaling approx. 50hectares.

There is a large creek with very steep banks in the north/western corner of the study area. This creek is heavily wooded on the south/western edge consisting of eucalypt species, cabbage tree palms, Jillypilly trees and native strawberries. Lantana, privet and other weeds are also present in this area.

Sandstone outcrops are visible in exposed areas across ridge tops and slopes of the study area.

METHODOLOGY;

The survey was conducted on foot by myself (Tracey Howie).GTLAC, Joanne Woodhouse, Archaeologist representatives for ERM and Deborah Swan, representing Dakinjung Local Aboriginal Land Council (DLALC).

HISTORICAL INFORMATION:

The study area for the proposed Rezoning and development has been and still is, home to the Guringai speaking Mob for generations and seasonally occupied in various locations by the Darginyung people. Pre and post European settlement.

These areas were once rich in etable vegetation and animals. The Guringai Mob hunted and gathered on these Lands for centuries and lived as one with the Land in harmony. Only taking what was required and caring for the land with practices such as Fire Stick Farming to replenish the vegetation, and dispose of leaf litter.

Well known and documented members of the Guringai mob were; Boongaree, Matora, Mosquito, Jewfish, Cora(Gooseberry), Flathead, Long Dick, Sophy (Booratora) and Charlotte Ashby.(nee.Webb).

Thier presence in this area was initially recorded pre 1790. References to these Guringai speaking people are located on Government Blanket list and Court Bench records taken in the Gosford/Wyong areas and Colonial Secretary minutes, which are held at Gosford City Library and early recordings from surveyors John Fraser,Chappell, journals written by Rev.L.E.Threlkeld, Rev. Glennie, Matthew Flinders, Augustus Earl, R.H Mathews and current AIATSIS maps.

The traditional areas occupied by the Guringai speaking comprises of; All of Port Jackson catchment, including the tributaries of Middle Harbour and Lane Cove River, the Broken Bay catchment, including tributaries of Brisbane Water, Cowan Creek and Pitt Water,the water shed along Peats Ridge, following along the range through to Kulnura, as well as the Lakes of the Central Coast to lower Lake Macquarie.

Guringai - People of the Coast.

Darginyung - People of the Ranges

Darug - People of the Plains. (as described by J.Fraser 1892)

Charlotte Webb was the very first recorded Aboriginal birth on the Central Coast. She was born in 1823. Charlotte was the daughter of Sophy (Booratora), daughter of Boongaree and Matora. Sophy was sexually assulted by Ship-building merchant, James Webb. Charlotte was the result of this rape.

Darginyung were first recorded in the Wyong area in the early 1800's, when Colonial secretary, William Cape, opened fire on several Guringai men, woman and children for stealing corn from his fields. Cape sent out 14 men on horse back to "eradicate the problem with whatever force deemed necessary." To support the Guringai, tribal members from the Wollomi and Sugar Loaf areas ascended on Wyong. Several branches of descendants of these tribal groups remained on the central Coast in the Wyong area.

Well known and documented Darginyung man was Billy Faulkner. His presence was initially recorded on the Central Coast in the 1860's. Billy Faulkner was found drowned in Tuggerah Lake in 1875.

FINDINGS:

No Aboriginal sites were located at the time of this survey.

One large eucalypt was identified as a possible Scar tree, however after further investigations by Russell Kingdom, Horticulturist/Arboriculturist of Advance Tree Consulting, is was established that the scarring on the tree in question was not of Aboriginal origin due to the age of the tree.

RECORDED ABORIGINAL SITES IN AREA:

Searches on the AHIMS database identifies 51 previously recorded Aboriginal sites within the surrounding areas of the proposed Rezoning and Development.

The study area joins Kincumber Mountain to the south, which is a very significant area to the Guringai Mob and the local Aboriginal community.

DISCUSSION:

Although no Aboriginal sites were identified at the time of the survey, areas such as along the creek line and drainage lines and in areas containing sandstone platforms/outcrops were well utilised by the Guringai mob pre (& post) European settlement and the potential of relocating Aboriginal sites in such areas can not be neglected.

Many Aboriginal sites have been buried by vegetation over growth across the Central Coast and due to very few Archaeological excavations being performed in this area, many are being destroyed by development.

RECOMMENDATIONS:

Further investigations will be required prior to development.

Although no Aboriginal sites or objects were identified during this survey, the potential of such objects being located during the initial stages of the proposed development can not be neglected.

Prior to any earth works, GTLAC recommend that monitoring of low impact clearing of the vegetation within 40mtrs of the creek area to the west to be conducted with GTLAC and DLALC and monitoring of initial earthworks in this area prior to construction.

It is also recommended that further investigations be conducted in areas containing sandstone platforms/ outcrops, to determine the presence or absence of any Aboriginal objects or sites that have a potential to be present in these areas. This can only be determined by establishing the extent of the platforms and exposing the surface. This would be done by means of very low impact scraping of the grass and brushing away the soil or by soaking the grass covering the sandstone and peeling gently away as to avoid any impacts to the sandstone.

Should any Aboriginal objects be identified during the investigations, they will be recorded and an approrpriate course of action determined prior to further works in that area. (Section 87 permit and/or section 90 consent from DECC)

Should any skeletal remains be unearthed, all works must cease and the Police, GTLAC, DLALC and NPW(DECC) must be notified and an experienced Archaeologist or Physical Anthropologist contacted to determine the best method of management.

Those persons responsible for the management of any works on site for the proposed development will ensure that all staff, contractors and others involved in the development or construction are informed of and fully understand the Statutory Legislations protecting Aboriginal sites, Aboriginal objects and Places of Significance to the Aboriginal Community.

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 destruction or defacement of or damage to, an Aboriginal object or Aboriginal place without first obtaining the consent of the Department of Environment and Climate Change.

Should any sites be located during the processes of the proposed works, work must cease in that area and the Department of Environment and Climate Change, GTLAC and DLALC are to be notified immediately.

This report was written and compiled for ERM and Crighton Partners by Tracey Howie, Senior Female Cultural Heritage Officer, Guringai Tribal Link Aboriginal Corporation. PO Box 4061, Wyongah, NSW, 2259.

Should you have any queries about this report and the information contained in it, please don't hesitate to contact me on 0404 182 049 or 4392 8743. email: guringai@kooee.com.au.

MANUA OOMULIYAN GOORI

Fax to:

Joanne Woodhouse

(02) 4964 2152

ABORIGINAL COMMUNITY COMMENTS

This form is designed to make providing feedback easier and is not obligatory. Should you wish to provide feedback in another form, you are encouraged to do so or if you wish to use this form, please complete, sign and return to ERM on the fax number listed above or at PO Box 71, Thornton NSW 2322.

I, Deborah Swan *(please insert your name)*

of Darkinjung L.A.L.C. *(please insert the name of your group)*

agree with the recommendations in the survey report provided by ERM for the Parkside Aboriginal Cultural Heritage Assessment at Terrigal NSW.

(AND/OR)

would like to make the following comments about the Aboriginal significance assessment and/or recommendations provided by ERM for the Parkside Aboriginal Cultural Heritage Assessment at Terrigal NSW:

I would also like to make note that just because no Aboriginal sites of cultural Sensitivity were Located today, dosen't mean that when earth is remaved / disturbed or digging takes place that Artifacts could be located & all Statutory requirements need to be adhered to.

Signed: D. Swan **Date:** 28/11/08.

Position within organization: Culture & Heritage Officer.

Annex C

Advanced Tree Consulting Arborist Report, 2008

Advanced Treescape Consulting

Arboriculturist & Horticulturist

A.B.N 30 138 200 388

Mobile: 0408 439 186
Office: 43 402 964
Fax: 43 405 089
P.O. Box 7192,
KARIONG NSW 2250
Email: advancedtreescape@bigpond.com

FOUNDING MEMBER OF
INSTITUTE OF AUSTRALIAN CONSULTING ARBORICULTURISTS

26th August, 2008.

Chris Smith
Project Co-ordinator
Crighton Properties
PO Box 3369
TUGGERAH NSW 2259

Dear Chris

Re: Possible Indigenous Scar Tree within the Kings Road, Terrigal Development

Upon inspection I was shown a very large and mature *Eucalyptus pilularis* (Blackbutt). I estimate the height of the tree to be 40 metres. This tree has a very large scar down the western side and when viewed from various angles one can see where the wound was originally (see photographs).

We must also note that there is a scar on the eastern side of the tree which has been burnt out and the tree is piped. A quick inspection of the amount of damage to the trunk area clearly indicates that this tree has exceeded Mattheck's 70:30 ratio and this tree is structurally defective and should not be retained within any future development.

The upper crown of the tree has only 1 possible habitat site in an old broken branch and it is acceptable to say that a *E. pilularis* (Blackbutt) with a habitat sites is a minimum of 180 years old. This tree does not have any. There is one major scaffold branch that has been damaged severely by parrots which indicates that they are aware of some softwood pathogens within the tree and they are actually preparing it by damaging the bark on the upper side of the scaffold branch for it to fail and create a habitat site.

My reckoning is that this tree at a maximum would be no more 150-200 years old. That would put the tree as a sapling around the early 1800's.

In my experience, which I have now carried out inspections on many scar trees, scar trees generally have to be trees that would be at least 300-400 years old, the reason being that there is no point for the indigenous peoples to mark a junior sapling tree as it would be lost in the forest. They would normally have marked a large specimen that was a standout tree so that it could be identified from a distance to assist with them in locating the tree.

From talking to indigenous people the scar trees were basically their road signs or signage for them that indicated that there was either good hunting, fishing, tools or even possibly a sacred area within the immediate area.

This individual tree has a 6-7 metre long scar. It has not been taken from the full circumference of the trunk of the tree and 2 of my photographs clearly show the old previous edge of the scar line.

I have seen documentary movies with indigenous people making canoes and their technique is to remove all but 10-15% of the bark off the tree leaving a fine slither up one side of the tree to ensure that the tree does not fall into a necrotic decline. This tree does not have this characteristic.

We also must note that there is a scar on the other side of the tree and my opinion of this wound is that it is probably caused by a tree felling exercise in which a scaffold branch has fallen down the tree and ripped the bark off the tree.

Within the immediate area of less than 50 metres I have photographed 3 other trees that have quite significant scars on them and each of these could also have been likened to a possible aboriginal scar tree.

On my site inspection, Chris Smith from Crighton Properties and I walked over past the dam and to the east of this initial tree marked as No. 26 on Conachers plan and I was able to see at least 8-10 trees that had large trunk wounds on them. Some of these trees are of a similar antiquity to the first tree but why these trees haven't been identified I'm not sure but they are clearly victims to mechanical damage caused by tree felling, underscrubbing and stump removals by machinery and I don't believe that they have been damaged as indigenous scar trees.

None of the trees in the immediate area that have been scarred have what I consider the age class to be 300-400 years old which means that they would not be a scar tree.

These trees to my mind are mechanically damaged or another possibility for these scars is that bark was used as an early settlers roofing material. The age class of the trees would make this a possibility.

I doubt that there is an indigenous connection.

I trust the above meets with your approval. If you have any queries please do not hesitate to contact me directly on 0408 439 186. I would be only too happy to go on site and discuss the matter further.

Yours sincerely,

Russell Kingdom

R. J. Kingdom MIACA MAIH MNAAA
Grad. Dip. Hort.
Dip. Hort
Dip. Hort/Arboriculture
Arboriculturist & Horticulturist
Advanced Treescape Consulting

Figure 1 Showing the site and subject tree

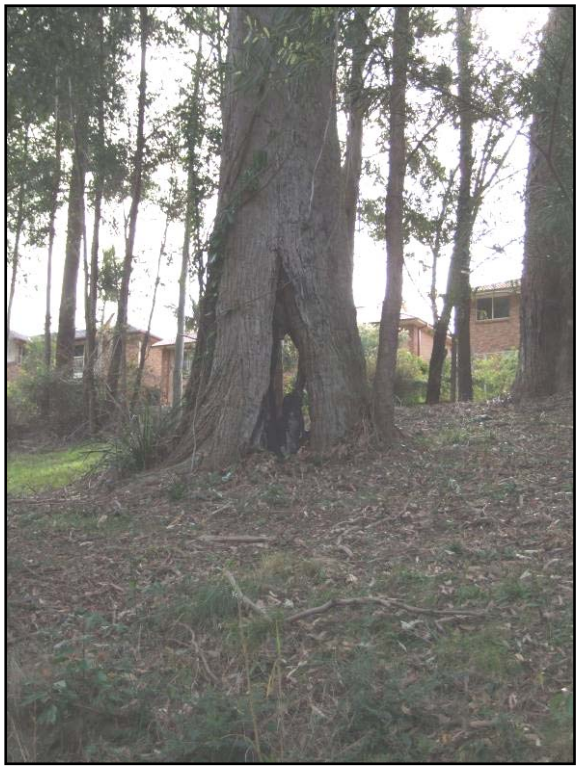

Figure 2 A view of trunk of another tree close to the subject tree
Note: the trunk is hollow

Figure 3 A view of scar

Figure 4 A view of the scar from the northern side

Figure 5 Showing existing damage to scaffold branch

Figure 6 The only possible habitat site in the crown of this tree

ERM consulting services worldwide **www.erm.com**

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