



Myall Coast Archaeological Services

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Summary of Archaeological Studies and Findings Kings Hill Urban Release Area – October 2020

1. Introduction

This report has been prepared at the request of JW Planning, Newcastle NSW, to review and summarise the various Aboriginal Cultural Heritage assessments carried out by Myall Coast Archaeological Services over many years to inform the proposed development of the Kings Hill Urban Release Area, in the Port Stephens LGA. The purpose is to have a single document that clearly outlines the chronological assessment history, findings and plots the area/s of significance.

2. Assessment Personnel

The research and report were undertaken by Len Roberts, (BA [Arch.], Grad. Dip. Comp., Dip Sp. Ed.,) who also holds a certificate in Archaeological fieldwork, from Tel Aviv University, Israel. Len has worked on archaeological projects in Australia and overseas.

Len is a member (since 1990) and was Deputy Chairperson (2007 -2011) of Karuah Local Aboriginal Land Council.

He was appointed, in 1977, (under S32AV of the Local government Act 1919) as a part time, non- judicial expert (having, special knowledge of and experience in law, local government administration or town planning administration) member of the Local Government Appeals Tribunal from 1977 until it was replaced by the Land and Environment Court in 1980. He has been an expert witness before the Land and Environment court on Aboriginal heritage matters. He has been a Councillor in NSW Local Government for 30 years

Len has also taught English and Society (Australiana) at Beifang University, Yinchuan, China as an invited lecturer in second semester 2011.

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

The assessments have included Due Diligence assessments, gateway determinations, as well as consultation? and assessments under, Parts 3A, 4 and 5 of the EP & A Act. Len has completed various S90 applications, as well as identifying and recording more than 1,000 Aboriginal objects and has authored more than 120 reports in the last 15 years.

3. Background

In 2010 a Local Environmental Plan (LEP) was gazetted over various lands known as Kings Hill, north of Raymond Terrace (**Figure 1**). This plan was a zoning plan which identified suitable land uses permitted for the land (**Figure 2**). Various parts of the land were identified as being suitable for residential (R), business (B) and conservation (E) uses, and the plan established what is now known as the Kings Hill Urban Release Area (KHURA).

The appropriate landuse zones were identified through extensive and exhaustive studies commenced in 2002 and undertaken over an 8-year period as part of a Local Environmental Study (LES) carried out in collaboration with Port Stephens Council and various state government agencies.

The archaeological assessment for the Kings Hill LES was conducted by Roberts initially in 2002 but subsequent reviews were carried out prior to and post Gazettal of the LEP for the Kings Hill Precinct. The study area forms a parcel of land of about 810 ha, which includes 16 existing allotments of varying size.

The study area is bounded to the east by the Pacific Highway, to the north by Six Mile Road and an existing rural residential subdivision, off Winston Close to the west by Newline Road and the Williams River, and to the south by Hunter Water land (open paddocks forming part of the Grahamstown dam spillway) and an abandoned quarry. The assessments not only assessed the Kings Hill land but also the adjacent land for associated infrastructure including road access to the Pacific Highway, potential widening, and the proposed stormwater Channel between the Pacific Highway and Grahamstown Dam.

The various archaeological studies carried out since 2002 relating to KHURA include (**Figure 3**):

2002 Initial Study

Findings: Caves and ceremonial area identified. Work ceased and NPWS notified for advice.

2003 Continuation of Initial study (post consultation with NPWS) with additional land to the north included

Findings: Ridgeline (Songline), resource area (wetlands) and other probable ceremonial/signalling areas identified. The term "probable" applied to some areas as no tangible evidence observed. However, landscape and ethnographic records suggested significance.

2006 Part Lot 3 and Lot 11 DP 37430 additional lands in the southwest fronting Newline Road is adjacent to the Waste Facility and was a former waste facility and has been highly disturbed.

Findings: The integrity of the landscape and any archaeological potential has been compromised.

2013 Proposed subdivision of land off Newline Road for Hunter Land Pty Ltd

2015, 2018 and 2019 - assessment of Aboriginal Cultural Heritage for the proposed Pacific Highway interchange and stormwater Channel.

Findings: No Aboriginal Objects were identified and whilst subsurface evidence is always a possibility, it was deemed unlikely. It was determined that, from an Aboriginal Heritage perspective, the proposal could proceed with caution under the standard conditions.

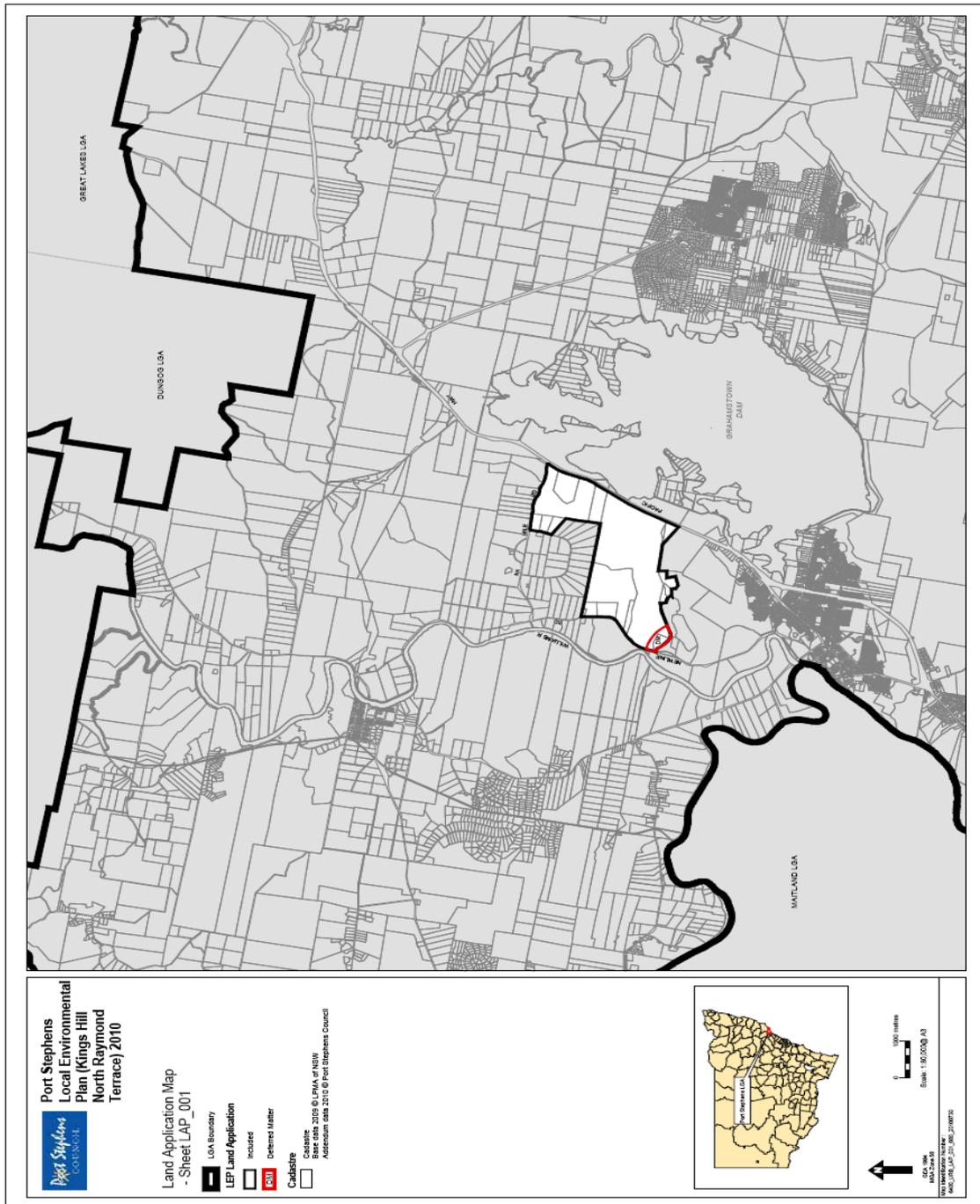


Figure 1 Area Covered by Kings Hill LEP

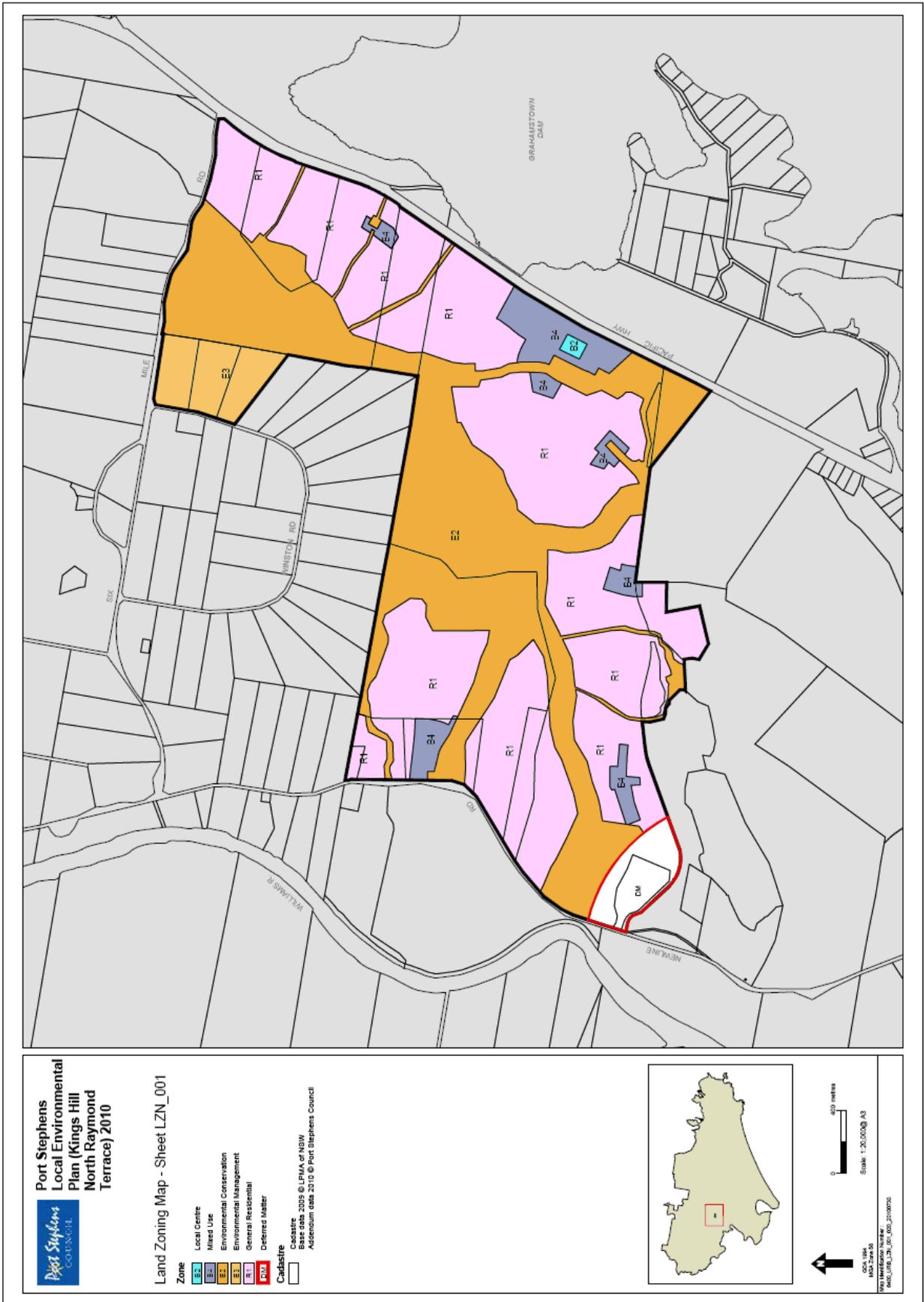


Figure 2 Gazetted Land use Zones of Kings Hill

Figure 3 illustrates the parcels of lands that were systematically studied between 2002 and 2019.

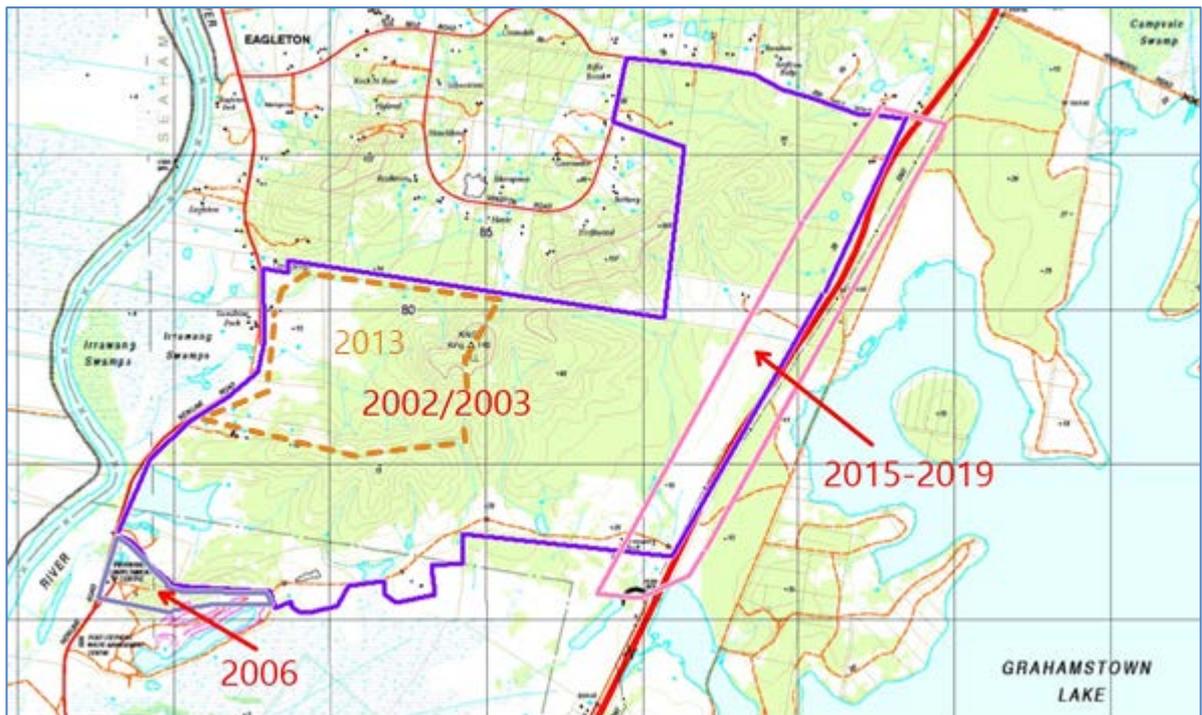


Figure 3 Study Chronology

4. Study Summary

Myall Coast Archaeological Services carried out an archaeological survey on the former Boral Land at North Raymond Terrace in March/April 2002.

The survey was undertaken by this archaeologist in conjunction with Mini Heath, Sites Officer, Worimi Local Aboriginal Land Council. The survey was based on the 'Predictive Landscape Model', which examines the landscape, ethno history, topography and mapping to predict the likelihood of archaeological evidence being found in the study area. Fieldwork is then undertaken to test the prediction. The assessment was carried out consistent with the NPWS methodology and best practice. It must be noted that even though the initial study was undertaken pre 2010 guidelines, it was undertaken consistent with those guidelines. NPWS at the time made the call that the study be conducted not only with the current guidelines which were best practice (and also the foundation of the 2010 guidelines) but that the future guidelines be trialled with this study. This meant that the assessment which was updated over time was always best practice and current so that it would withstand the test of time.

Oral sources, as well as mapping, tended to indicate the possibility of caves and rock shelters in the study area.

Caves and rock shelters were located on site at Kings Hill. They were overgrown with lantana and other weeds which made exploration difficult and accurate assessment impossible. Photographs of the caves were taken.

The find was preliminarily assessed as being of high significance. The survey was stopped and the client and NPWS notified of the discovery.

With the stopping of the field survey, the applicant entered discussions with Port Stephens Council and State Government Departments over the site.

Discussions with Port Stephens Council enlarged the study area to include other lands to the north of the original area.

NPWS responded to the applicant endorsing the decision to stop work and also indicated that a known site existed on the study area. NPWS also recommended further archaeological investigation over the entire study area if investigations into the rezoning were to continue.

In January 2003, Myall Coast Archaeological Services was commissioned to carry out further investigations over the total study area in line with NPWS recommendations and the location and database record of the recorded site in the study area.

This recorded site (38-4-49) was not previously indicated by the database search some 12 months earlier. Investigation of the site card revealed that it was a cave on Kings Hill recorded in 1968. Unfortunately, when the initial search of the database was undertaken it had not been transferred *across to the electronic database*. The Site Card lodged with NPWS stated,

"Southwest flank of Kings Hill - series of rock shelters – massive rock outcrop above. Almost certain to have been ceremonial site. Largest shelter has been much used by Europeans but has shallow deposit full of stone and charcoal. Caves very inaccessible."

Recorded by D.R. Moore in 1968 on field trip to Lower Hunter.

No other documentation regarding the registration has been able to be found.

A systematic survey of the enlarged study area was conducted over several days in January and February 2003 by this archaeologist and Mini Heath (WLALC). Particular attention was not only given to Kings Hill and associated ridgeline and hills but also drainage lines and areas of exposure such as fire trails and disturbed earthworks. In addition as the area was large and mostly covered in vegetation and pastures it was decided to monitor and examine the geotechnical works during excavation. This served two purposes.

1. *Soil analysis over the entire site which would indicate levels of deposition disturbance and*
2. *The opportunity to ensure subsurface archaeological potential was not accidentally destroyed.*

Areas with Finds are described in Section 6 (**below**) while other areas were found to be disturbed and therefore exempt from further investigation.

In 2006 an assessment of additional land adjacent to the current waste facility was undertaken but the land was not subsequently included into KHURA. The land met the definition of disturbed land and therefore was exempt from intensive studies.

In 2015 and 2018 studies were undertaken for the interchange access from the Pacific Highway and the later, the proposed Stormwater Channel alongside the Highway, but the then Roads and maritime Services (RMS) were unable to accept the studies as RMS had a requirement that any Aboriginal Heritage assessment needed to be authorised/undertaken by them.

In 2019 Myall Coast Archaeological Services, along with Worimi Local Aboriginal Land Council were engaged by RMS to undertake an assessment of the proposed interchange and channel with RMS.

This was a study with extensive fieldwork and foot survey over the proposed interchange and channel corridor. The land was observed to be primarily disturbed by the historical construction of the Pacific Highway and the Grahamstown Dam. No Aboriginal objects nor archaeological potential were observed.

5. Aboriginal occupation of the Study Area

Most of the written sources refer to the Aborigines around Port Stephens and although the bands around Raymond Terrace were similar if not related, their lifestyle was different as one group were coastal dwellers, the other river.

A picture of Aboriginal life around the Terrace and along the Williams River is well documented. There is no doubt that the nearby wetlands and rivers were a substantial source of food. Forays from nearby camping areas close to the river, into the wetlands, would have been a common day occurrence. They tended to live close to the River approximately 8 miles (12km) apart, frequently on the move within a specified area;

"carrying few personal possessions and relying on caves or quickly built bark gunyahs. They were skilled canoe makers, sailors, hunters and gatherers. They used fire for cooking; pasture management, for warmth and light at night, for the manufacture of weapons and in ceremonies" (Cynthia Hunter 1996 - Raymond Terrace and district : history and heritage p2)
Grant in his report on his voyages of discovery, notes the following about the Aborigines of the Raymond Terrace area:

The next morning, I left Colonel Paterson in company of Mr. Barrallier, who then proceeded oil the survey of the river. On our passage down it, we saw several natives with their canoes. As we passed the canoes we left some biscuits in them. In many of them we saw fires, ... I invited him on board the boat, and he readily accepted my invitation. When on board he was called to from the woods on the opposite shore by a number of voices, which surprized us a little, as we did not expect they were in such numbers...

Never did I witness stronger marks of surprize than were depicted on the stranger's countenance, when he heard the report of the gun, and saw the two ducks fall into the water. His astonishment was increased when he got on board the vessel; everything he beheld seemed to fill them with wonder and amazement...

I presented him with a small tomahawk, which pleased him very much, and he pronounced, with much earnestness the word, by which I then understood they call a hatchet mogo. He readily ate of whatever was set before him but refused salt and mustard; spirits he would not touch, but sugar he took freely. He endeavoured to repeat our words after us;

In his book, Williams River the Land and its People, R L Ford, gives an unequivocal account of the significance of the junction of the two rivers and its adjacent lands.

*“Dunidata wa Ibu waipala barin unmar gatina n bubagai bubai njirin
(The white man went away, the sun has set, it is getting dark, we will all lie down to sleep.)”*

European settlement occurred in favourable areas. Such favourable areas were occupied by Aboriginal people. They were *favourable* climactic conditions, safe, not only from intruders but also for young children. Close to water, food and other resources. European requirements were naturally and obviously the same as Aboriginal people.

The “Green Hills” of Raymond Terrace were green because of Aboriginal modification and use. These green hills were the place where the first Europeans camped upon Aboriginal grounds. It was the place where the first interactions that the Aboriginal people of the area had with sailing ships and steel axes and firearms. **Figure 4** identifies the interconnectedness of the landscape from the Williams River, through the wetlands, along the ridgeline to Six Mile Road and the high points along the way.

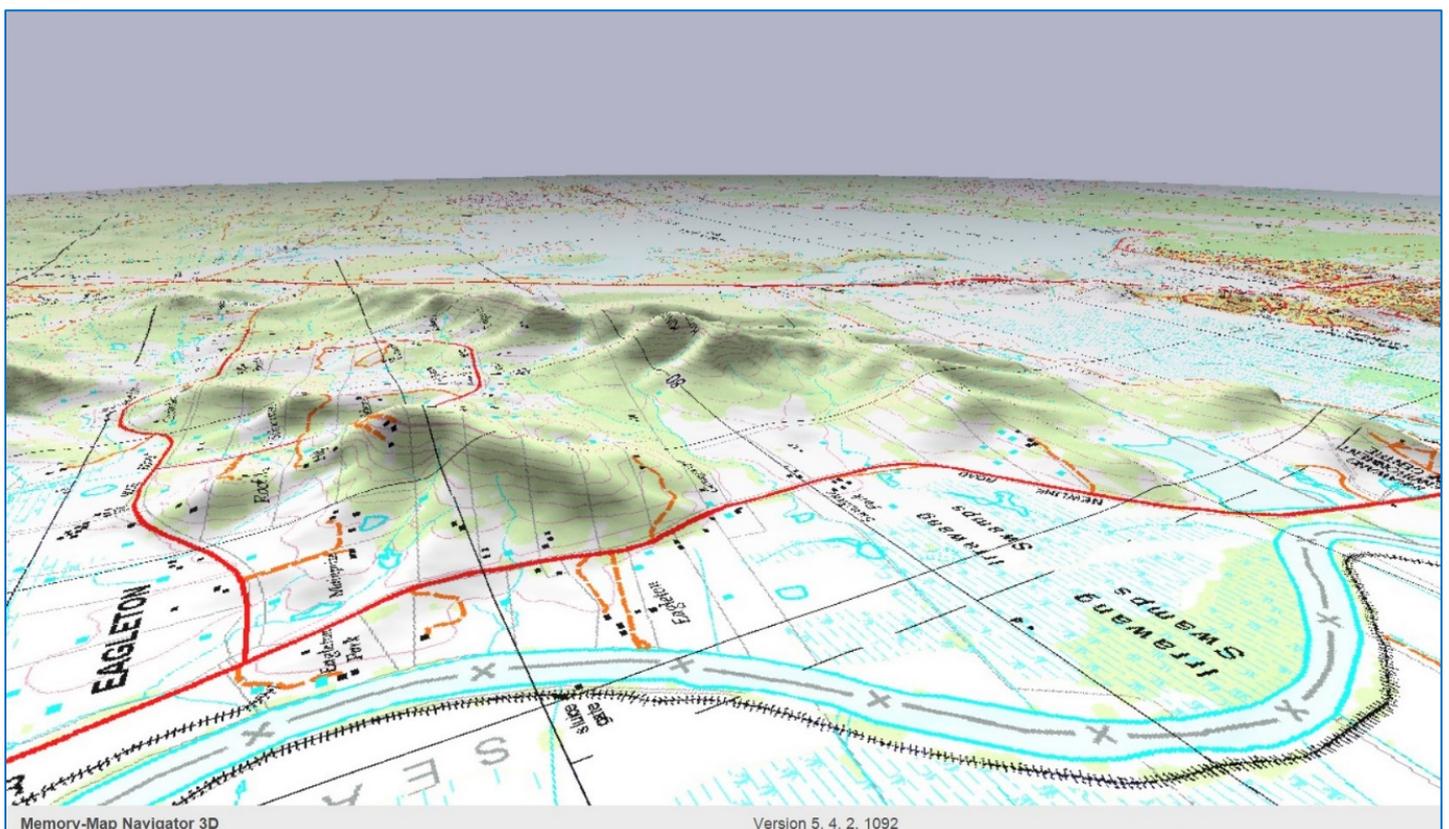


Figure 4 Aboriginal Landscape Connectivity

6. Finds

- *Caves and Shelters*

Series of rock shelters, caves and rock outcrops were located along the entire ridgeline. Despite the drought and clearing of some lantana Kings Hill and associated ridgeline was still overgrown with lantana and made access to a full inspection of the shelters and caves impossible.

- *Ceremonial grounds*

Kings Hill and the next hill to the north indicate ceremonial grounds. The topography and landform appear to meet the criteria and description of ceremonial places, in particular bora grounds and male ritual areas.

- *Lookout and communications*

The several high points along the ridgeline offer amazing and magnificent views for many, many miles. These would have been the high places that were used for signal places through fires and smoke.

- *Aboriginal Way (Songtrail)*

Although the ridgeline is steep along the sides and edges there is an easy walkway along the ridgetop. Ethno historical records indicate that Europeans used the ridgeline as a bridal trail and also a roadway during floods. This tends to strongly indicate the ridgetop was a transport corridor from the Williams River to Karuah, Port Stephens and the Tilligery and Tomaree Peninsulas, as well as the Barrington Tops. The establishment of the nearby Grahamstown dam has severely disturbed the landscape to such an extent that the full significance of the ridgeline to the total picture cannot be fully assessed.

No other artefactual evidence was found in the study area, even though, there was particular examination of the drainage lines, trails, exposed areas, nor during the geotechnical analysis. The land in the study area has been disturbed by European Activities since settlement.

This is evidenced by an historical land title search by Douglas Partners Pty Ltd in their Preliminary Site Investigation (PSI) involving Lot 4821 in DP852073 and Lot 41 in DP1037411 (August 2020) (land now owned by Kings Hill Developments Pty Ltd (KHD)). The PSI identifies land ownership records extending back to 1928, with the land used for farming/grazing/dairying activities, and more recently, as of 1961, additionally as a quarrying resource. The PSI involved site inspections across the whole of KHDs land to identify potential for land contamination as a result of widespread site disturbance resulting from former land uses activities.

This disturbance plus prolific pasture mitigates an archaeological field survey being productive in obtaining evidence of Aboriginal occupation. However, the ridgeline and the most elevated landscape attributes of the study area indicate strong historical importance to the Aboriginal people, with such areas set aside under the Kings Hill E2 Conservation land use zone.

Figure 5 illustrates the land use zone boundaries relative to the topography, and the north-west spine of Conservation zoned land comprising the ridgeline (shaded light grey) connecting the areas of highest cultural and archaeological significance (shaded red)

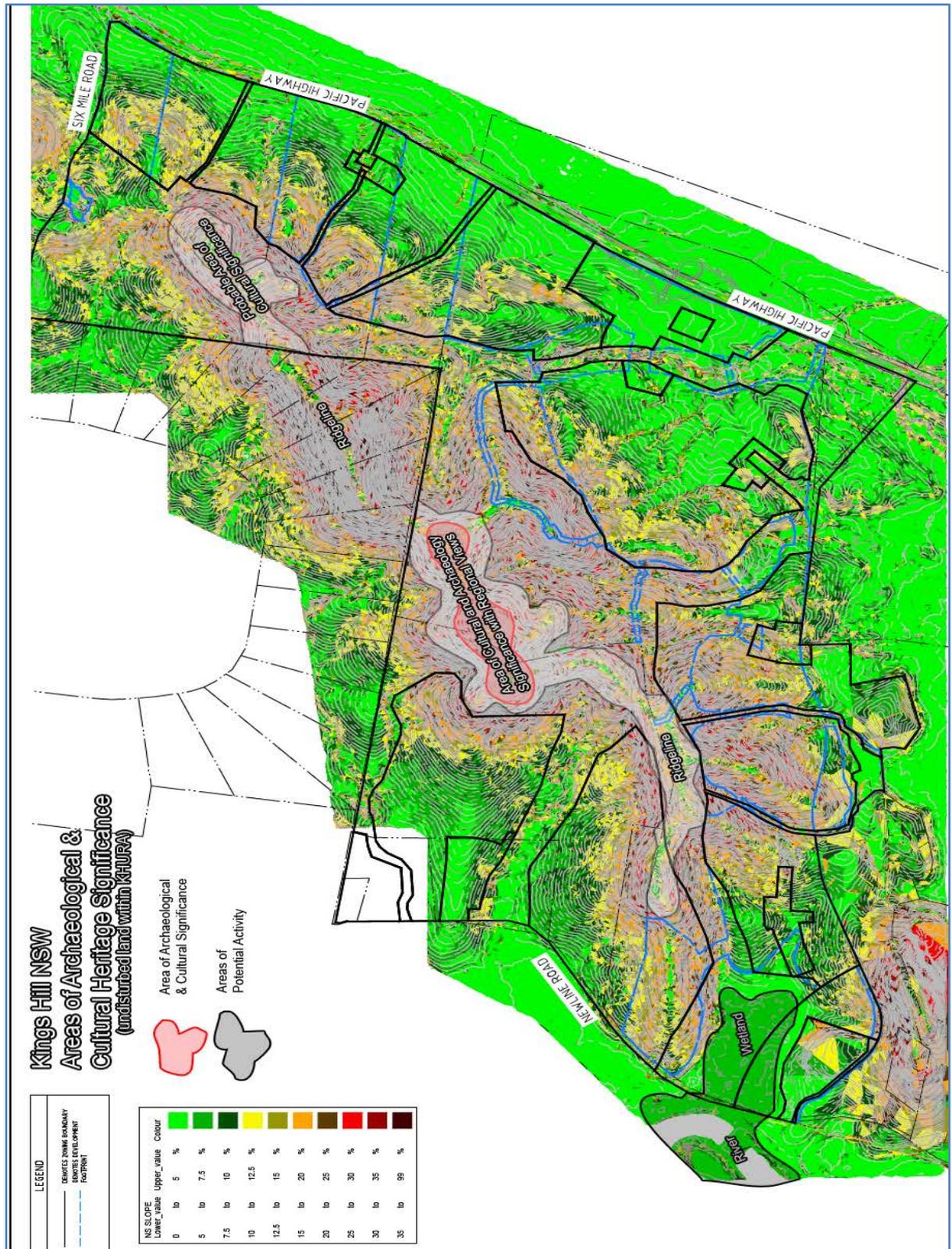


Figure 5 Aboriginal heritage Significance

7. Significance

The elevated ridgeline connecting the highest points within the Kings Hill urban release area is of extremely high Aboriginal Heritage significance (shaded red areas in **Figure 5**).

Significance is also attributed to the associated ridgeline, the wetlands and connectivity to the Williams River (shaded light grey areas in **Figure 5**). The rest of the urban release area is not considered significant. It must be noted that hills and other parts of the ridgeline outside the study area were not investigated but would appear to be of extreme significance as well.

Subsequently, the LES recommended that the area of Cultural Heritage significance be conserved. This area was designated as an E2 conservation zone in the Kings Hill LEP 2010.

The archaeological assessment was carried out in consultation with the Worimi and Karuah Local Aboriginal Land Councils, as well as Worimi traditional owner representatives. Further assessment of land within the Conservation Area is not required. However, a Plan of Management should be prepared in consultation with the Worimi Local Aboriginal Land Council to ensure recreation and any other land uses, as well as conservation activities within the Conservation zoned area, remain compatible with the areas of highest significance (red shaded areas in **Figure 5**) given the land is ultimately proposed to be vested in Port Stephens Council as a Conservation Area in public ownership.

All other land outside this conservation area did not contain any heritage characteristics and is therefore not subject to any further Aboriginal heritage assessment or future management.



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Executive summary of Archaeological investigation of various Lands - North Raymond Terrace

Note

This draft summary has been written as a non-technical report to overview the Aboriginal Heritage issues of the study area. The full report is available and is endorsed by the Worimi Local Aboriginal Land Council who have certified the findings and recommendations.

Background

Myall Coast Archaeological Services carried out an archaeological survey on the former Boral Land at North Raymond Terrace in March/April 2002.

The survey was undertaken by this archaeologist in conjunction with Mini Heath, Sites Officer, Worimi Local Aboriginal Land Council.

The survey was based on the 'Predictive Landscape Model', which examines the landscape, ethnohistory, topography and mapping to predict the likelihood of archaeological evidence being found in the study area. Fieldwork is then undertaken to test the prediction.

Oral sources, as well as mapping tended to indicate the possibility of caves and rock shelters in the study area.

Caves and rock shelters were located on site at Kings Hill. They were overgrown with lantana and other weeds which made exploration difficult and accurate assessment impossible. Photographs of the caves were taken.

The find was preliminarily assessed as being of high significance. The survey was stopped and the client and NPWS notified of the discovery. The following recommendations were made:

1. The area shown on the development plan as public reserve except for the wetlands needs to be excised from the development and further extensive archaeological work needs to be undertaken in the hill areas.
2. That if the public reserve hill area is excised from the development then there is no impediment for development of the rest of the area on archaeological grounds.
3. Before further archaeological work is undertaken on the hill areas, the Worimi Aboriginal Land Council be employed to sensitively remove the lantana and other unwanted weeds.

4. That the developer, Worimi Land Council, Port Stephens Council and NPWS consult to determine the most appropriate zoning, ownership and management of the Hill areas.
5. That the further archaeological work on the caves, which could take several years, be a project undertaken by a university as part of their research and teaching program

With the stopping of the field survey, the applicant entered into discussions with Port Stephens Council and State Government Departments over the site.

Along with these discussions, the applicant had the study area made accessible for further work through removal of some lantana and the clearing of existing fire trails.

Discussions with Port Stephens Council enlarged the study area to include other lands to the north of the original area.

NPWS responded to the applicant endorsing the decision to stop work and also indicated that a known site existed on the study area. NPWS also recommended further archaeological investigation over the entire study area, if investigations into the rezoning were to continue.

Current Investigation

• Background

In January 2003, Myall Coast Archaeological Services was commissioned to carry out further investigations over the total study area in line with NPWS recommendations.

Contact with NPWS Archaeologist, Jill Ruig was made, who advised that NPWS did not need to be involved at this stage and would wait the findings of the survey. Jill also advised the location and database record of the recorded site in the study area.

This recorded site (38-4-49) was not previously indicated by the database search some 12 months earlier. Investigation of the site card revealed that it was a cave on Kings Hill recorded in 1968. Unfortunately, when the initial search of the database was undertaken it had not been transferred across to the electronic database. The Site Card lodged with NPWS stated,

"Southwest flank of Kings Hill - series of rock shelters - massive rock outcrop above. Almost certain to have been ceremonial site. Largest shelter has been much used by Europeans but has shallow deposit full of stone and charcoal. Caves very inaccessible."

Recorded by D.R. Moore in 1968 on field trip to Lower Hunter. At this stage no other documentation regarding the registration has been able to be found.

• Field Survey

A systematic survey of the study area was conducted over several days in January and February 2003 by this archaeologist and Mini Heath (WLALC). Particular attention was not only given to Kings Hill and associated ridgeline and hills but also drainage lines and areas of exposure such as fire trails and disturbed earthworks. In addition as the

area was large and mostly covered in vegetation and pasture it was decided to monitor and examine the geotechnical works during excavation. This served two purposes;

1. Soil analysis over the entire site which would indicate levels of deposition disturbance and
2. The opportunity to ensure subsurface archaeological potential was not accidentally destroyed.

• **Finds**

1. Caves and Shelters

Series of rock shelters, caves and rock outcrops were located along the entire ridgeline. Despite the drought and clearing of some lantana Kings hill and associated ridgeline was still overgrown with lantana and made access to a full inspection of the shelters and caves impossible.

2. Ceremonial grounds

Kings hill and the next hill to the north indicate ceremonial grounds. The topography and landform appear to meet the criteria and description of ceremonial places. In particular bora grounds and male ritual areas.

3. Lookout and telecommunications

The several high points along the ridgeline offer incredible and magnificent views for many, many miles. These would have been the high places that were used for signal places through fires and smoke.

4. Aboriginal Way

Although the ridgeline is steep along the sides and edges there is an easy walkway along the ridgetop. Ethnohistorical records indicate that Europeans used the ridgeline as a bridal trail and also a roadway during floods. This tends to strongly indicate the ridgetop was a transport corridor from the Williams River to Karuah, Port Stephens and the Tilligery and Tomaree Peninsulas as well as the Barrington Tops. The establishment of the nearby Grahamstown dam has severely disturbed the landscape to such an extent that the full significance of the ridgeline to the total picture can not be fully assessed.

No artefactual evidence was found in the study area. Along the drainage lines, trails exposed areas or during the geotechnical analysis.

• **Significance**

Kings Hill and associated ridgeline is considered to be of Aboriginal Heritage significance. Significance is also attributed to the wetlands. The rest of the study area is not considered significant. It must be noted that hills and other parts of the ridgeline not in the study area were not investigated but would appear to be of significance as well.

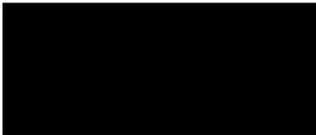
Recommendations

These recommendations are made in consultation with the Local Aboriginal Land Council and under the legal requirements of the NPWS Act 1974

- That steps be taken to enable, Kings Hill, associated ridgeline, caves and rock outcrops to be declared an Aboriginal Place and be known as Worimi Way Aboriginal Heritage Trail or similar naming recognition.
- That the approximate area as shown on map 7 form the basis for negotiation between the proponent, Worimi Aboriginal Land Council and Port Stephens Council to ground survey the area of significance to be declared an Aboriginal Place.

- That the above area confirmed by survey be rezoned with an appropriate zoning in recognition of Aboriginal Heritage, allowing for recreation and tourism.
- That the care, control and management of the culturally significant area to be negotiated between Port Stephens Council, Worimi Land Council and the proponent.
- That a management plan be formulated for the areas of cultural significance.
- That when a management plan is considered, the Land Council in consultation with NPWS and an appropriate university investigate archaeological research possibilities for the site.
- That provided the above recommendations are implemented there is no restriction to development over the rest of the study area for Aboriginal Cultural Heritage reasons.
- If however, in the process of land preparation, artefacts are found, then work must cease and the LALC and NPWS to be informed. To knowingly remove or destroy artefacts without a permit is an offence under section 90, of the NPWS Act, 1974.

Kind regards,





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Aboriginal Cultural Heritage Assessment And Constraints Management Plan

Various Lands North Raymond Terrace

Report to
JW Planning
Newcastle NSW
Monday, July 14, 2003

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Myall Coast Archaeological Services

Aboriginal Heritage Assessment

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I. Introduction

1.1 Background

Myall Coast Archaeological Services carried out an archaeological survey on the former Boral Land at North Raymond Terrace in March/April 2002. The survey was conducted in order to inform a rezoning proposal for the land converting from a rural to urban land use.

The survey was undertaken by this archaeologist in conjunction with Mini Heath, Sites Officer, Worimi Local Aboriginal Land Council.

Oral sources, as well as mapping tended to indicate the possibility of caves and rock shelters in the study area.

Caves and rock shelters were located on site at Kings Hill. They were overgrown with lantana and other weeds which made exploration difficult and accurate assessment impossible.

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Recorded by D.R. Moore in 1968 on field trip to Lower Hunter. At this stage no other documentation regarding the registration has been able to be found.

As a result of changes to section 90 of the NPW Act (2001), developers and consent authorities need to undertake due diligence when they assess the impacts of a development proposal on Aboriginal heritage. To make this work, the NPWS has developed draft Aboriginal Heritage Impact Assessment Guidelines.

In developing these Guidelines, NPWS has attempted to provide advice about the need for assessments to consider the full range of Aboriginal heritage values, rather than focusing only on pre-contact archaeological sites and objects. This is a response to emerging landscape-based understandings of Aboriginal heritage, and requires a shift in the degree of Aboriginal involvement in assessment processes.

1.2 Aboriginal Heritage

Aboriginal heritage is dynamic. It includes tangible and intangible expressions of culture that link generations of Aboriginal people over time. For Aboriginal people, relationships with country, people, beliefs, knowledge, law, language, symbols, ways of living, sea, land and objects all arise from their spiritual and cultural practices and associations. (Modified from p4 Australian Heritage Commission *Ask First*)

Aboriginal heritage includes landscapes and places that are important to Aboriginal people as part of their customary law, developing traditions, history and current practices. Aboriginal heritage landscapes, areas and places have associated heritage values which include spirituality, law, knowledge, practices, traditional resources or other beliefs and attachments. Aboriginal people have occupied the NSW landscape for at least 50,000 years. The evidence and important cultural meanings relating to this occupation are present throughout the landscape, as well as in documents and in the memories, stories and associations of Aboriginal people. Therefore, any activity, which impacts on the landscape, may impact on Aboriginal heritage.

1.3 Heritage Values

An area may contain evidence and associations that demonstrate one or any combination of the following Aboriginal heritage values. (This section is drawn from Australian Heritage Commission *Protecting Local Heritage Places: A guide for communities* and the *Australia ICOMOS Charter for Places of Cultural Significance (The Burra Charter)* and its associated Guidelines).

- **Social value** (sometimes termed *Aboriginal value*) refers to the spiritual, traditional, historical or contemporary associations and attachments which the place or area has for the present-day Aboriginal community. Places of social significance have associations with contemporary community identity. These places can have associations with tragic or warmly remembered experiences, periods or events. Communities can experience a sense of loss should a place of social significance be damaged or destroyed. These aspects of heritage significance can only be determined through consultative processes with one or more Aboriginal communities.
- **Historic value** refers to the associations of a place with a person, event, phase or activity of importance to the history of an Aboriginal community. Historic places may or may not have physical evidence of their historical importance (such as structures, planted vegetation or landscape modifications). Gaining a sufficient understanding of this aspect of significance will often require the collection of oral histories and archival or documentary research, as well as field documentation. These places may have 'shared'

historic values with other (non-Aboriginal) communities. Places of post-contact Aboriginal history have generally been poorly recognised in investigations of Aboriginal heritage, and the Aboriginal involvement and contribution to important regional historical themes is often missing from accepted historical narratives.

- *Scientific value* refers to the importance of a landscape, area, place or object because of its archaeological and/or other technical aspects. Assessment of scientific value is often based on the likely research potential of the area, place or object and will consider the importance of the data involved, its rarity, quality or representativeness, and the degree to which it may contribute further substantial information. In the past, a consideration of scientific (archaeological) value was the focus of most approvals assessment processes for Aboriginal heritage, and this will still be an important component of most assessment processes. The intent of these Guidelines is to ensure that these values are incorporated within a broader consideration of Aboriginal heritage significance.
- *Aesthetic value* refers to the sensory, scenic, architectural and creative aspects of the place. It is often closely linked with social values and may include consideration of form, scale, colour, texture, and material of the fabric or landscape, and the smell and sounds associated with the place and its use.

These aspects of the heritage significance of a place or object are commonly inter-related. Because all assessments of heritage values occur within a social and historical context, all potential heritage values will have a social or Aboriginal community heritage component.

1.4 Cultural Landscapes

The way perceptions, beliefs, stories, experiences and practices give shape, form and meaning to the landscape is termed a cultural landscape.

The NPWS recognises that, for Aboriginal people, the significance of individual features is derived from their inter-relatedness within the cultural landscape. This means that features cannot be assessed in isolation, and that any assessment must consider the feature and its associations in a holistic manner. This may require a range of assessment methods and will always require the close involvement and participation of Aboriginal people.

1.4 Involving Aboriginal people in the assessment of Aboriginal heritage

The NPWS acknowledges that it is primarily Aboriginal people who should determine the significance of their heritage. The NPWS recognises that Aboriginal heritage includes traditional, historical and contemporary associations of Aboriginal people with the environment as well as physical items within the environment.

In the assessment processes, the NPWS requires the applicant to demonstrate that Aboriginal people have been involved (or have had reasonable opportunity to be involved) in the identification, assessment and management decisions relating to their heritage.

1.5 Legislative Context

There are three pieces of NSW legislation, which provide the legislative context for Aboriginal heritage management in the state. They are:

- *National Parks and Wildlife Act 1974 (NPW Act)* provides statutory protection for all Aboriginal objects and Aboriginal places in NSW.

The NPW Act requires that reasonable precautions are taken and due diligence is exercised to determine whether an action would, or would be likely to, impact on an Aboriginal object or Aboriginal place. Without being able to demonstrate due diligence a person risks prosecution if Aboriginal objects or Aboriginal places are impacted upon and a Heritage Impact Permit has not been issued.

It is also an offence under Section 86 of the NPW Act to disturb or excavate land for the purpose of discovering an Aboriginal object, or disturb or move an Aboriginal object on any land, without first obtaining a permit under Section 87 of the NPW Act.

Under Section 91 of the NPW Act, it is a requirement to notify the Director-General of the NPWS of the location of an Aboriginal object. Failure to do this within reasonable time is an offence under the Act.

The NPW Act also provides for stop-work orders under Section 91AA if an action is likely to significantly affect an Aboriginal object or Aboriginal place. The order may require that an action is to cease or that no action is carried out in the vicinity of the Aboriginal object or Aboriginal place for a period of up to 40 days.

- *Environmental Planning & Assessment Act 1979 (EP&A Act)* establishes the requirement for formal assessment of Aboriginal heritage values in land use planning and development approval.

Part 4 also requires that in reaching a decision to grant development consent, a consent authority is to take into consideration the likely impacts of that development, including environmental impacts on both the natural and built environments, and social and economic impacts in the locality. This requires the consent authority to consider the impact on all Aboriginal heritage values, including natural resource uses or landscape features of spiritual importance, as well as the impact on Aboriginal objects and Aboriginal places.

- *Heritage Act 1977* provides statutory protection for items listed on the State Heritage Register and allows for the making of Interim Heritage Orders to protect items until an assessment of their heritage values can be undertaken.

Aboriginal heritage is primarily protected under the NPW Act but may be subject to the provisions of the Heritage Act if the item is listed on the State Heritage Register or subject to an Interim Heritage Order (IHO).

Development proposals that require specified approvals from State agencies are referred to as integrated development approvals (IDA). The IDA process has been established to coordinate approvals according to these three pieces of state legislation (where required). The IDA process requires applicants to provide agencies with sufficient information to allow them to provide general terms of approval, prior to the grant of any development consent.

The NPWS is an approval body in the IDA process when a development will impact on an Aboriginal object or Aboriginal place, thereby requiring a Heritage Impact Permit pursuant to Section 90 of the NPW Act.

The Heritage Council is one of the State government agencies included in the IDA process in relation to its responsibilities for heritage items under Section 58 of the Heritage Act.

The *Native Title Act 1993* (Commonwealth) provides the framework for recognising native title rights that may exist on certain types of land.

The Commonwealth's *Aboriginal and Torres Strait Islander Heritage Protection Act 1984* may also be relevant if an item of Aboriginal heritage significance to an Aboriginal community is under threat of injury or desecration and state-based processes are unable to protect it.

The Commonwealth Government's heritage and environmental assessment legislation may also be relevant to some proposals, particularly where there are heritage values of national significance present.

1.6 When is an Aboriginal Heritage Impact Assessment required?

Applicants should talk to relevant consent authorities about the level of Aboriginal Heritage Assessment that will be needed for their development application. However, it is unlikely that an Aboriginal Heritage Impact assessment would be required where:

- The proposed development is on land previously subject to intensive ground disturbance and the development will impact only on the area subject to the previous disturbance;
- The impact of the proposed activity is unlikely to cause any additional damage to Aboriginal objects than that which has already occurred; and
- The proposed development is in an area that has been identified in strategic planning, rezoning or other assessment studies as having low Aboriginal heritage potential.

1.7 Aboriginal Heritage Impact Assessment Process

For the purposes of obtaining a Section 90 Heritage Impact Permit or General Terms of Approval from NPWS, an assessment of the likely impacts (both direct and indirect) of a proposal on Aboriginal objects and Aboriginal places is required.

The assessment process includes:

- Consulting with Aboriginal people with cultural knowledge or responsibilities for country in which the proposal occurs;
- Identifying the Aboriginal heritage values associated with the area through both written and oral research and field investigations;
- Understanding the significance of the identified Aboriginal heritage values;
- Assessing the impact of the proposed development on Aboriginal objects and Aboriginal places;
- Describing and justifying the proposed outcomes and alternatives;
- Reporting on the Aboriginal heritage impact assessment process and its findings.

2. The Study

The study area forms a parcel of land of about 810 ha, which includes 16 existing allotments of varying size. It is bounded to the east by the Pacific Highway, to the north by Six Mile Road and an existing rural residential subdivision, off Winston Close to the west by Newline Road and the Williams River, and to the south by Hunter water corporation land (open paddocks forming part of the Grahamstown dam spillway) and an abandoned quarry.

Map 1 shows the regional location of the study area, while map 2 shows the study area with ownership boundaries.

Reference should be made to the September 2002 report by PPK (cited in appendix) for full details including site description, topography, drainage vegetation, existing development, geology, soil and landscape.

2.1 Aboriginal Community Involvement

The concerns of the local Aboriginal community are a priority for any study of Aboriginal cultural heritage. The survey aims to integrate archaeological and Aboriginal significance and management recommendations for sites, features or the landscape.

The project lies within the boundaries of the Worimi Local Aboriginal Land Council (LALC). This group participated in formulating this assessment.

2.2 Study objectives

The study was commissioned to:

- determine whether any Aboriginal archeological sites or objects were present in the study area likely to constrain development
- assess the significance of such sites
- evaluate potential impacts of likely development on any such sites or significance
- provide management recommendations to mitigate potential impacts

The objectives are:

1. To identify and map areas of Aboriginal Archeological potential and sensitivity, for archaeological values
2. Identify Aboriginal conservation/management options for the study area, taking into account the local and regional context.

The tasks are defined as:

1. Consultation with the Aboriginal community
2. Refinement of predictive models of Aboriginal use of the landscape and the distribution of evidence
3. Definition and matching of landsurface disturbance in terms of its potential for revealing or concealing archaeological material
4. To identify and map any areas of cultural significance

The study will take a landscaped approach to determine any potential Aboriginal archaeological evidence. This will require the identification of the range of landscape units, which are likely to contain Aboriginal archaeological evidence, rather than only attempting to identify individual sites across the study area. This will ensure that their landscape context is assessed for significance.

2.4 Methodology

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

Present archaeological evidence indicates that Aboriginal archaeological sites are most likely to occur along coastal and estuarine precincts. Sites within the hinterland are less common and generally less intensive.

The predictive or contextual model for the archaeological assessment of the site forms the basis for developing a picture of Aboriginal occupation. The predictive model takes into account the landform, geology, vegetation, previous archaeological data as well as the historical context of the area.

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

The study methodology was based on data research, field survey of the site and report compilation.

Data research included:

- maps and plans
- previous archaeological reports in the area and region
- historic and scientific literature
- NPWS Aboriginal sites data register
- consultation with Aboriginal community and other local people
- consultation with government officers

The Survey included

- design of survey strategy and prediction based on archaeological and landscape context
- field inspection of study site
- assessment of findings and potential impact

2.5 Study Personnel

The research and report was compiled by Len Roberts BA (Arch.), Grad. Dip. Comp., Dip Sp. Ed., consulting archaeologist, who also holds a certificate in Archaeological fieldwork from Tel Aviv University, Israel. Len has worked on archaeological projects in Australia and overseas.

The field survey was carried out by this archaeologist in conjunction with Mini Heath, site officer for the Local Aboriginal Land Council, who has extensive experience in archaeological fieldwork. Mini assisted in formulating the survey plan. The field work was carried out over several days in January and February 2003.

3.0 Aboriginal Heritage Values

3.1 Archaeological Heritage Protection

The *National Parks and Wildlife Act 1974* (NPW Act) provides for the protection of Aboriginal objects and Aboriginal places.

Under the Act:

An Aboriginal object is any deposit, object or material evidence (not being a handicraft made for sale) relating to Aboriginal habitation of the area that comprises NSW, being habitation before or concurrent with the occupation of that area by persons of non-Aboriginal extraction, and includes Aboriginal remains (as defined within the meaning of the NPW Act).

Aboriginal objects are confined to physical evidence and may also be referred to as 'Aboriginal sites', 'relics' or 'cultural material'. Aboriginal objects can include pre-contact features such as scarred trees, middens and artefact scatters, as well as physical evidence of post-contact use of the area such as Aboriginal built fencing or stockyards, fringe camps.

An "Aboriginal place" is a place which has been declared so by the Minister administering the NPW Act because he or she believes that the place is or was of special significance to Aboriginal culture. It may or may not contain Aboriginal objects.

It should be noted that the NPW Act does not provide protection for spiritual areas or natural resource areas that have no physical evidence of Aboriginal occupation or use, unless they have been declared an 'Aboriginal place'.

3.2 Regional Ethnohistory

SOCIAL

The survival of prehistoric people stranded on islands has been studied by Jones who has come to the conclusion that "in hunter-gatherer conditions, the limiting viable population may be somewhere in the range of four hundred to six hundred depending on local circumstances and the vagaries of chance."

This estimated minimum viable population of about five hundred was also the average size of a so-called tribe in Australia. The term tribe, which was adopted from 19th century Europe, has often been used to describe the organisation of Aboriginal society in Australia. Several anthropologists feel that 'tribe' does not accurately reflect the interaction and make-up of Aboriginal Australia, preferring the term 'band' to be the most appropriate term to describe the basic social and economic unit of Aboriginal society. It is described as a small-scale population, comprising between 2 to 6 extended family units, who together occupied and exploited a specific area.

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

LOCATION

It is believed that the Coastline of Eastern Australia has been much the same as it is today for the past 5000 years. The current coastline developed after rising of the seas drowned large tracts of land, but at the same time stabilisation of the sea level extended estuaries and tidal reaches, the zones of the shore most productive of fish and shellfish that were accessible to Aborigines. Lagoons formed at the mouths of rivers held back by Sandy barriers, which previously had been swept away by the constantly rising sea. And the drowning of river valleys led to the development of many food rich small bays and inlets.

In recent times the territories of Aboriginal tribes on the East Coast extended inland a considerable distance. Most encompass the drainage basin of one river and stretch from the shoreline up to the top of the coastal escarpment, at least 30 kilometres inland. There is no way of knowing how far back in time this territorial organisation goes, but it may well be quite ancient.

The evidence suggests a comparatively small early population, spread thinly around the Continent and concentrated in the places where food was most abundant: the coast and large inland lakes and rivers. Thousands of Aboriginal middens have been found on the southeastern coast of Australia. The least inhabited parts of mainland Australia were the snowy mountains and the desert centre of the Continent. According to Flood (p.219), "We now know that people were camping at least occasionally on the fringes of the snowy mountains, in treeless country at 730 metres above sea level and in the region North of Uluru, at Puritjarra, around 30 thousand years ago."

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

On the coast, according to Hood (p.219), "The most favoured campsite was a foredune close to a rock platform on the north side of a headland. Such a site, offered easy access to shellfish, a landing place for canoes, proximity to drinking water, shelter from prevailing winds, and soft sand for a bed."

ENVIRONMENTAL IMPACT

Several researchers have shown that the Australian Aboriginal has had a huge impact on the vegetation through use of fire. There were many reasons for the extensive burning. It was used for signalling and also to make travel easier by clearing undergrowth along the route. Aboriginal tracks were open by regular firing in the early timbered ranges. Throughout the Continent, burning was used as an aid to hunting, animals could be speared as they broke to escape the flames.

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

The term 'fire-stick farming' has been applied to this aspect of hunting.

There is an assumption that prior to European settlement the land was heavily forested. However, according to early settlers accounts and the Aboriginal oral history, this was not so. Walsh, (p26), cites extracts from the accounts of early explorers,

"The extracts from letters, diaries and journals of early European settlers, explorers and government officials describe a parklike landscape of grasslands and grassed open forest lands with very few areas of thick forest. The cessation of regular burning following European

settlement allowed a growth of thick forest of young trees that, together with an increasing understorey, choked out the grasses."

These grasslands provided perfect pastures for sheep, but when Aborigines were no longer present to maintain them with a regular fire regime, sour grass and scrub took over, gradually obliterating the open land, with considerable loss to the non-fire stick farmers.

Such regular, light burning was the pattern all over Australia at the time of first European contact. The fires were of low intensity, which meant that they consumed the litter of leaves and branches on the forest floors but did not burn down the trees.

Aborigines never put out their fires. Campfires were left burning, as were signal fires, including those lit in a sequence to indicate the direction of travel of humans or game.

Gould (p.82), "never encountered an occasion when a fire actually invaded an area that was already producing wild food crops". It seems that, as well as increasing their future food supply; the Aborigines also protected their present food resources. As Flood (p.252) put it, "Fire is the most versatile and important tool of hunter-gatherers. It is used for warmth, light, cooking, hunting, signaling, track making, and, whether intentionally or not, had the effect of improving the food supplies of prehistoric Australia."

RESOURCES

The food resources available controlled the Aboriginal population, which in turn were related to water resources: the areas with the highest rainfall were generally richest in food. The number of mouths that could be fed was regulated by the food available at the leanest time of year.

When food was difficult to obtain, the food quest simply required more time and effort rather than new strategies. Thus when times were hard, the people could simply move more often and further afield.

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

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

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

SIGNIFICANCE

An appreciation of the foregoing indicates the pattern of settlement and lifestyle of the Aborigines prior to European contact. In particular, it places the study site in the context of Aboriginal use or occupation.

Aboriginal people were able to exploit, and to survive in, a wide range of environments where European agriculture failed. They tended to congregate in bands of about 500 consisting of family groupings, generally limiting themselves to a river, lake or bay drainage basin, living off the abundant food supply that was easily available. Each family grouping would be about 8 miles (12-15km) apart (Bennett, 1926). They were not nomadic in the clinical sense, however they did move from campsite to campsite on a rotational basis, mainly for reasons of hygiene (Bennett, 1926). Extensive use was made of fire as a hunting tool, modifying the Australian vegetation. There was regular contact with other bands for social and economic purposes. Many of the paths followed would be along watercourses or from one water source to another.

SITE CONTEXT

The main catchment of the study area is the Williams River although the eastern side does have a catchment to Grahamstown Dam. The Williams River flows into the Hunter River, although the man made dam, Grahamstown Dam would be a significant and final catchment. It is impossible to assess the significance of Grahamstown dam on the previous landscape. The flooding of the valley has changed the landscape to such an extent that it is not possible to place the subject site in its total pre-European context. It is however possible to develop conclusions based on the landform pattern and historic record.

According to Horton (1994), the Band that would be of interest to this survey, would be the family groupings of the Worimi although documentation and oral Aboriginal history indicate the Wannaruah occupied the Williams River country. They had various base camps along the Williams 8-12 miles apart. The camps would have been near reliable watercourses. Although water gathering in the area, was often as simple as digging a hole. There are wells still in existence today in the Raymond Terrace area. The recent discovery of a well at the local newspaper office (Examiner) bears testimony to the practice. The hydrology of the subject site would not lend itself to easily dig for water, except on the margins of the wetlands. The main watercourses in the study area are on the western side and flow to the Williams River

The Worimi and Wannaruah not only had extensive relationships with one another but also then Awabakal, Darkinjung and the Gringai. They were all part of the Kattung speaking peoples

3.3 Previous Archaeological Work

In brief it is pertinent to state that within an arbitrarily defined radius of 10km, centred on the study area, a total of 48 sites are currently listed in the NP&WS Sites Register.

The main sites in descending order of frequency, were:

Open campsites	32
Middens	4
Isolated find	5
Quarry	1
Burial /ceremonial	4
Scarred tree	1
Shelter with deposit	1

This search did not indicate the site at Kings Hill, a set of caves that were occupied by the Aboriginals for shelter, ceremonial and communication purposes. The closest recorded site is a midden some 3km to the south east on the other side of Grahamstown dam. Other nearby sites are recorded along the Williams River

An examination of the location of the above objects not only places the study area in an overall archaeological context but also indicates the possible archaeological evidence to be found in the study area, if the study area was in an undisturbed state. This is important as it indicates the lifestyle of the aboriginal people in a landscape context.

The known objects are either located along creek lines, ridges and sand dunes.

The closest recorded object is a midden on the shores of Grahamstown Dam.

Only two systematic investigations have been carried out in the immediate vicinity of the study area, although a number of archaeological investigations have been carried out in the surrounding region.

Archaeological work in the vicinity has been conducted by Roberts on an adjacent smaller rural property and another by ERM for the widening of the Pacific Highway which borders the study area on the east. No archaeological objects were recorded.

Brayshaw in 1986 conducted a Study of Colonial Records of the Aborigines of the Hunter Valley and was able to present an account of the environment and way of life of the Aboriginals at the time of colonial settlement. Her study also indicated areas and landforms of Aboriginal use and occupation.

The assessment by Haglund of the Prehistoric Heritage in the Lake Macquarie Area, in 1986, is a definitive work, which catalogued the known sites at the time and identified possible generic locations for archaeological sites. Dean Jones and Mitchell (1993) conducted a similar assessment of archaeological sites in the Hunter valley. The above assessments indicated:

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

In addition, the work by Klaver and Heffernan (1991) which was an assessment of sites in the Greater Taree Council area, not only reinforced the possible locations, but also identified landscape attributes for ceremonial sites. Citing an earlier work by Fitzpatrick (1986), they stated, "Ceremonial grounds were said to comprise two rings, one on top of a low ridge and the other in a level place below. The latter was..."established in a roomy place, so that all the gins could camp there close to the ring."

The work by Haglund (1986) establishes the potential of an area very well.

A considerable proportion of the sites actually present in the landscape is likely to remain undetected except through deliberate testing of subsurface sediments through archaeological investigation, or through future disturbance through erosion or some development. All of the archaeological site types... may be hidden by accumulated sediment and/or a blanket of vegetation but open sites are particularly likely to remain hidden...

This is an important consideration, as it is still often the undetected sites that have been best preserved and retain most scientific potential. They will better retain this potential if discovered through controlled testing. When carrying out detailed surveys, consultants now note and record also the locations deemed most likely to contain archaeological material as PAD's (potential archaeological deposits).

The above work indicated that archaeological evidence was more likely to occur in undisturbed areas.

4.0 Landscape

Archaeological reports that have indicated Aboriginal sites and research literature have tended to show that there is a relationship of finds to landform. The differing landscape creates different land use. For instance swampy or poorly drained land would not be conducive to campsites or burial grounds. Whereas, caves and rock shelters would give rise to artwork, and practical purposes such as shelter or women's birthing areas.

4.1 Landscape Classification

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

Landform is basically divided into 2 classifications, the classification covering a larger area is known as Landform Pattern, which can then be subdivided into smaller areas known as Landform Elements.

About 40 types of landform pattern are defined and include, for example, floodplain, dunefield and hills. Whereas, about 70 of the smaller landform elements are defined, including cliff, footslopes and valley flat.

According to Speight (p.34), the significant kinds of landform pattern in Australia may be described and differentiated by the following attributes assessed within a circle of about 300m radius:

- Relief
- Modal slope
- Stream channel occurrence
- Mode of geomorphological activity
- Component landform elements.

It is important that boundaries of landform patterns are well established so that adjacent dissimilar landform patterns are not included and thereby keep the integrity of the description of the landform pattern in which the observation point is found.

The landscape pattern of the study area is part of the Williams River valley and consists of floodplain, river flats and hills and ridges. Map 3 indicates landscape and geographical features.

4.2 Landform and Geology

The site is part of a larger landscape of river flats and ridges. The subject site is part of the landscape and terrain of the northern end of the Sydney basin on Permian sediments, near the junction of the Lower Hunter plain and the Tomago Coastal Plain.

The subject site is dominated by the main ridgeline connecting to a ridge system running from the Williams River toward the east and the north. The Ridgeline consists of hills and plateaus of which Kings Hill is most prominent. This ridge tends to divide the wetlands of the Williams River floodplain and the now inundated wetlands of the Grahamstown (Ferodale) Dam.

The western side of the ridgeline consists of a broad and gentle plain or river flat <math><10^\circ</math> which generally runs toward the south west. The main drainage is an ephemeral creek originating at the top of the ridge flowing west to the wetlands. Other smaller shallow drainage lines also flow from the top. Man made dams have been constructed along some of the drainage lines.

The study area comprises a range of slopes from ridges to gentle slopes of <math><10^\circ</math>. The study area consists of low lying areas in the south west steepening toward a ridgeline that bisects the study area that runs in a north easterly direction. The area then slopes gently to flats on the eastern and southern sides. The lowest parts of the study area consist of wetlands. Areas below RL10 are subject to inundation from overflow from the Williams River. Additionally, natural drainage flow has been altered by the construction of the Pacific Highway, Grahamstown dam and Spillway and Newline Road. The flanks and head of gullies are typically steep of an average of 15° although some are much steeper. The steep area generally lies above RL40. Numerous rock outcrops occur on the ridgeline and vary in steepness. The ridgeline also has areas of flats or plateaus.

Vegetation cover is generally confined to the creeklines and steeper areas with much of the area cleared of trees and pastured.

Some of the area has been greatly disturbed by past anthropogenic activities including, quarries, affectation from a rubbish dump, and general farm household gardens and other activities.

4.2.2 Soils

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

- The possibility of archaeological evidence beneath the surface.
- The possibility of archaeological evidence destroyed through erosion or other natural phenomena.
- The possibility of archaeological evidence preserved through soil/sand deposition.
- The association of particular vegetation and hence particular fauna and therefore the probability of the area as a food/tool/stone/mineral resource.

Different soils encourage different potential for *in situ* and potential subsurface archaeological deposit.

The main soil features of interest are the depth of deposits, stability of the soil composition and the depositional age of the soil groups. Detailed analysis of the effects of different soils

on the burial process of archaeological remains can only be carried out during an excavation.

The classification of the soil according to the Newcastle Soil Landscape map is Bolwarra Heights landscape on the upper slopes and ridges (map 4). (Rolling hills on Permian sediments) This type of topography is generally described as low, broad crested hills with convex sideslopes and narrow incised drainage gullies. Parent rock is variable and can include sandstone, siltstone, mudstone, shale and erratics.

This type of soil classification tends to suggest high run-on and localised seasonal waterlogging on the lower slopes and plains.

The geotechnical survey indicated a "high water erosion hazard" typified by near surface silt/sands in the test pits.

The soil conditions, according to the geotechnical analysis (p.11), "vary across the study area in relation to both the underlying geography and topography. Test pits were located on lower slopes, spur lines, hillcrests and gullies, targeting various landscape types. The subsurface conditions encountered in the test pits... can be broadly divided into two categories:

1. Lower slopes with variable soil depths from 0m to >2m depth. Soil composition generally comprising near surface silt/sand overlying clays, overlying a variety of rock types.
2. Upper slopes, spur lines and hillcrests with shallow (less than 1m) to no soil cover. Soils generally sandy and silty overlying predominantly sandstone and conglomerate."

From an archaeological perspective the soil profile would tend to suggest that potential subsurface evidence is more likely to be in or on the margins of the wetlands. The deposition and depth of soil on the flats would be an inhibiting factor for archaeological excavation. The upper slopes etc. because of little soil deposition would not be conducive for archaeological excavation.

4.3 Vegetation

The vegetation on the site is predominantly pasture with native regrowth of trees and introduced weeds, particularly lantana on the hills and ridges.

The variety of vegetation that was probably on the study area at European contact would also have leant itself to the fostering of animal food resource even if in a small way. Many of the current animal and bird species found on the study area most probably existed on the site at European occupation although as to the abundance is speculative. The altering of the macro-environment by the construction of Grahamstown dam cannot be underestimated in inhibiting a true picture of the area as a food resource and occupation site.

4.4 Past Land Use

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

Durable evidence, such as stone and rock implements, is affected by European landuse. Easily recognisable implements such as stone axes, have found their way into many private collections, well before it became illegal to do so, with no record of the location of the find. Cultivation, with the associated stick raking and stone gathering also tended to destroy surface evidence. However cultivation and pastoral landuse also helped preserve the archaeological record. In some cases cultivation would expose evidence in others, cover the evidence.

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

4.4.1 European

The land has been used for pastoral and farming activities. According to maps of early land subdivision of the Raymond Terrace Area, provided by Cynthia Hunter in her book *History and Heritage*, the majority of the study area lay outside the early farming precincts. The early settlers tended to enjoy the more fertile and clearer lands closer to the river.

4.4.2 Aboriginal

The first reported sightings of Aboriginal people in the Port Stephens area was by the crew of the Endeavour, Captained by James Cook, on May 11th, 1770, who wrote;

"... as we sailed along the shore we saw many smokes and signs of the inhabitants"
(Historical Records of Australia, Vol.1 p216)

The Aborigines around Port Stephens were numerous and healthy, as they had abundant food supply. The earliest inhabitants were hunters and gatherers living off the abundant wildlife.

" The Aboriginal population was controlled by the food resources available,
Which in turn was related to water resources." (Flood 1995, p265)

The varied environment - terrestrial, rivers and estuaries, sand dunes and mountains provided a diet of oysters, fish, turtles, kangaroos, wallabies, possums, pigeons, bats, wild fruits and roots. This would mean that Port Stephens could sustain a large and healthy population.

The early historical records even dating back to Captain James Cook, notes the vitality and healthy appearance of the natives. However by the 1820's, records indicate that a large number of Aborigines died from introduced diseases from which they had no immunity.

From the recollections of William Scott who was born at Carrington, his father being employed by The AA Company, it is obvious that the Aboriginal population was quite large, but declined rapidly in the years since white settlement. By 1836 a smallpox epidemic and other introduced diseases had decimated the Aboriginal population. It seems by 1890 the local bands had been virtually wiped out.

Most of the written sources refer to the Aborigines around Port Stephens and although the bands around Raymond Terrace were similar if not related, their lifestyle was different as one group were coastal dwellers, the other river. A picture of Aboriginal life around the Terrace and along the Williams River is well documented. There is no doubt the wetlands were a substantial source of food. Forays from nearby camping areas close to the river, into the wetlands, would have been a common day occurrence.

They tended to live close to the River approximately 8 miles apart, frequently on the move within a specified area; "carrying few personal possessions and relying on caves or quickly built bark gunyahs. They were skilled canoe makers, sailors, hunters and gatherers. They used fire for cooking, pasture management, for warmth and light at night, for the manufacture of weapons and in ceremonies" (Hunter p2)

Regular burning would have occurred as a method of 'firestick- farming'. It would appear that the land was lightly forested and cleared of scrub undergrowth.

4.4.3 Historical

The ethnographic information would tend to suggest that Aboriginal occupation tended to be more confined to areas closer to the Williams River and the ridges and Hills to the north. It is unknown, but believed the area of the flooded town of Ferodale, (Grahamstown Dam) may have been part of the regional connectivity of the Williams River band with the clans on the Tillegerry Peninsula, Nelson bay, Karuah and the Stockton Bight area.

By 1836 a smallpox epidemic and other introduced diseases had decimated the Aboriginal population. Many of the Local Aboriginals had moved to Sydney Town or into Newcastle for labouring work. Being Aboriginal was not a barrier for labouring work.

4.4.4 Implications

The land in the study area has been disturbed by European Activities since settlement. This disturbance plus vegetation regrowth mitigates against an archaeological field survey being productive in obtaining evidence of Aboriginal objects.

5.0 Archaeological Potential

Based on the research, literature review, landscape and previous archaeological reports, it is possible to paint a picture of possible Aboriginal occupation.

The possible archaeological objects to be found on the study area include:
Artefact scatters, shelters, campsites and possibly scarred trees.

6.0 Assessment Criteria for classification of Archaeological Finds

Various criteria have been developed to apply to archaeological finds. Those used by Navin and Officer (1999), form the basis for assessment.

- ***Isolated finds***

An isolated find is a single stone artefact, not located within a rock shelter, and which occurs without any associated evidence of Aboriginal occupation within a radius of 60 metres. Isolated finds may be indicative of:

Random loss or deliberate discard of a single artefact,
The remnant of a now dispersed and disturbed artefact scatter.
An otherwise obscured or subsurface artefact scatter

Except in the case of the latter, isolated finds are considered to be constituent components of the background scatter present within any particular landform.

- ***Background scatter***

Background scatter is a concept used by archaeologists to refer to artifacts that cannot be usefully related to a place or focus of past activity (except for the net accumulation of

single artefact losses). Background scatters are a temporarily unrelated accumulation of artifacts across a large area and will vary in density according to the type and frequency of past occupation within that landscape. A background scatter can be defined as artifactual material where association between artefacts can only be described using large scale and inclusive temporal and spatial categories of past occupation.

Archaeologists often make a distinction between an isolated find and a site because an isolated find cannot reliably be related to a place or focus of past activity.

- **Sites**

A site is defined as any material evidence of past Aboriginal activity, which remains within a context or place that can be reliably related to that activity. . Sites include:

1. Occupation sites (shell middens, rockshelters and open campsites)
2. Aboriginal Reserves and Missions
3. Rock paintings
4. Rock engravings
5. Grinding grooves
6. Quarries
7. Ceremonial grounds
8. Stone arrangements
9. Carved and scarred trees
10. Burials
- II. Natural sacred sites

(For a description of the above see glossary in the appendix to this report)

Frequently encountered site types within southeastern Australia include:

- open artefact scatters,
- coastal and freshwater middens,
- Rock shelter sites including occupation deposit and/or rock art.
- Grinding groove sites and
- Scarred trees.

For the purposes of this section, only the methodologies used in the identification of these site types are outlined.

Most Aboriginal sites on the NSW Coast are identified by the presence of three main categories of artefacts:

- stone or shell artefacts situated on or in a sedimentary matrix
- marks located on or in rock surfaces
- scars on trees

Artefacts situated within or on, a sedimentary matrix in an open context are classed as a site when two or more occur no more than 60 metres away from any other constituent artefact. The 60-metre specification relates back to the definition of an isolated find (Peter above).

Any location containing one or more marks of Aboriginal origin on rock surfaces is classed as a site. Marks typically consist of grinding features such as grinding grooves for hatchet heads, and rock art such as engravings, drawings or paintings. The boundaries of these sites are defined according to the spatial extent of tile marks, or the extent of the overhang, depending on which is most applicable to the spatial and temporal integrity or the site.

- **Scarred Trees**

Trees with scars of Aboriginal origin form the other major type of artefactual evidence. Each tree is normally considered to be a separate site. The identification of a scar as Aboriginal in origin is dependent on a set of inter-related interpretive criteria. The credibility of alternative causal explanations such as natural traumas and other types of human scarring must be tested for each scar. (see appendix for diagnostic criteria for assessing scarred trees.)

7.0 Field Work

A systematic survey of the study area was conducted over several days in January and February 2003 by this archaeologist and Mini Heath (WLALC). Particular attention was not only given to Kings Hill and associated ridgeline and hills but also drainage lines and areas of exposure such as fire trails and disturbed earthworks. In addition as the area was large and mostly covered in vegetation and pasture it was decided to monitor and examine the geotechnical works during excavation. This served two purposes:

1. Soil analysis over the entire site which would indicate levels of deposition disturbance and
2. The opportunity to ensure subsurface archaeological potential was not accidentally destroyed.

Often, archaeological field surveys are conducted after (sometimes before) geotechnical analysis. The archaeological surveys tend then to find disturbed soil and very little indication of the potential of subsurface deposits. By observing the geotechnical analysis, not only is valuable information gained on the specific soil composition across the study area, but also as the soil layers are peeled away or cored, the type of stone or even possible objects can be identified. It would be problematic and unhelpful if during a geotechnical analysis an occupation site was unknowingly disturbed or uncovered and left unreported.

Importantly, the applicant by having the geotechnical survey observed by Aboriginal site officers and an archaeologist is showing due diligence and respect to Aboriginal culture.

Map (5) shows the location of the geotechnical test pits.

7.1 Strategy

The aim of the field survey was to verify or refute the findings of the desktop survey, which despite the low possibility of above ground artefactual evidence indicated positive archaeological potential, particularly along the ridgeline.

7.2 Method

Given the size of the study area, ownership and land tenure boundaries it was decided to divide the study area into several survey units. Where possible the survey units were aligned with the landform elements and or property boundaries. Although the geotechnical test pits were considered separate survey components they were also considered as part of the landscape in the particular survey unit. Map (6) indicates the survey units.

It was decided to circumnavigate the property along the boundary of each unit to gain an overall picture of the site and then systematically walk the area paying particular attention to the drainage lines. Each survey unit was investigated separately.

7.3 Coverage Data

The effectiveness of archaeological field survey is to a large degree related to the degree of ground surface visibility and obtrusiveness.

Visibility according to Schiffer (1978) can be defined as " the extent to which an observer can detect the presence of archaeological material at or below a given place." Areas with little or no vegetation, minimal soil deposition, or rapid rates of erosion, tend to be considered to have high visibility as archaeological evidence will not be covered by leaf litter, vegetation or soil deposits. Areas with soil build up, minimal erosion, pasture and vegetation cover will tend to have minimal visibility.

Schiffer also coined the term obtrusiveness for the ease with which the materials produced by a people are readily apparent. A society that produces monuments or tools out of durable materials and/or is generally sedentary is more likely to have archaeological evidence surviving the passage of time than a society whose tools are non-durable and/or tends to be nomadic. Obtrusiveness is the chance of archaeological evidence surviving over time either through durability or the concentration of artefact scatter within a given landscape.

The majority of the study area was either covered in pasture or dense vegetation. Good visibility was limited to tracks and gullies where exposure was excellent. The wetlands are permanently inundated whilst grass or pasture covers the margins of the wetlands. The ridges and rock outcrops offer some exposure but are mostly overgrown with lantana and other weeds. The units that contain the smaller hobby farms contain greater areas of disturbed land. Several quarries and logging dumps are evident in some parts of the study area.

A tabulated description of each survey unit is in the appendix as Table I.

In summary, despite the low obtrusiveness, vegetation cover and ground disturbance the effective survey coverage enabled adequate prediction of archaeological potential.

7.4 Findings

1. Caves and Shelters

Series of rock shelters, caves and rock outcrops were located along the ridgeline. No deposit was observed, however deposits may exist under the deposited soil layer in some of the caves. Despite the drought and clearing of some lantana, Kings Hill and associated ridgeline was still overgrown with lantana and made access to a full inspection of the shelters and caves impossible. Photographs of the area are in the appendix.

2. Ceremonial grounds

The relationship of Kings Hill and the next hill to the north, indicate ceremonial grounds. The topography and landform appear to meet the criteria and description of ceremonial places. Fitzpatrick (1986), "Ceremonial grounds were said to comprise two rings, one on top of a low ridge and the other in a level place below. The latter was..."established in a roomy place, so that all the gins could camp there close to the ring."

There are several flat roomy areas in close proximity to one another. They are covered in vegetation but not large trees. Soil depth is shallow and would not sustain large trees. Natural camping ceremonial grounds appear to be the most likely use.

In particular Bora grounds and separate male and female ritual areas appear probable.

3. Lookout and Communications

The several high points along the ridgeline offer incredible and magnificent views for many, many miles. There is no doubt that these would have been the high places that were used for signal places through fires and smoke. According to Scott, cited in Bennett p.34,

“They could communicate with each other at long distances and impart tidings by means of smoke signals ... The signals were made in simple fashion. A fire was lighted at a prominent coign, probably a recognised spot for the purpose and one looked to regularly by members of the tribe far afield ... That a regular dot-dash system was used was clear.”

4. Aboriginal Way

Although the ridgeline is steep along the sides and edges there is an easy walkway along the ridgetop. Ethnohistorical records indicate that Europeans used the ridgeline as a bridle trail and also a roadway during floods. This tends to strongly indicate the ridgetop was a transport corridor from the Williams River to Karuah, Port Stephens and the Tilligery and Tomaree Peninsulas. The establishment of the nearby Grahamstown dam has severely disturbed the landscape to such an extent that the full significance of the ridgeline to the cultural landscape can not be fully assessed.

No artefactual evidence was found in the study area. The drainage lines, trails and exposed areas were carefully examined. Nothing was revealed during the geotechnical analysis.

8.0 Discussion

Kings Hill and associated ridgeline (see attached map 7 for approximate area) is considered to be of extremely high Aboriginal Heritage significance. Significance is also attributed to the wetlands. The rest of the study area is not considered significant. It must be noted that hills and other parts of the ridgeline not in the study area were not investigated but would appear to be of high significance as well.

8.1 Significance Assessment

Using the criteria outlined earlier the significance of Kings Hill and its associated ridgeline in an Aboriginal cultural heritage context can be assessed as follows:

- **Aboriginal value**

Although the land is in private ownership it has long been recognised as an area of Aboriginal occupation not only by the local Aboriginal Community but also by the community as a whole. Anecdotal and historical records indicate a strong sense of connectivity to previous aboriginal communities. Destruction or inappropriate developmental impact would engender a sense of loss within the Aboriginal and wider community. The caves and rock shelters in particular are therefore assessed as having extremely high aboriginal value.

- **Historic value**

There can be doubt that the caves are of historical importance to the Aboriginal community. They are a window to the past way of life of the Aboriginal people of the area. Apart from the 1968 recording other

ethnohistoric and anecdotal records exist regarding the site. Further work needs to be undertaken to collect and collate the information that exists about the caves, ceremonial grounds and transport corridor, which unfortunately is not part of the brief for this report. Historic value of the area can be assessed as extremely high.

- *Scientific value*

Although accessibility to the network of caves and shelters was limited and restricted and no surface objects were observed, it is considered that further formal and methodical archaeological investigation would produce evidence. The natural formation of the network of caves and their good condition appear extremely typical of other known Aboriginal occupation sites. The caves are extremely rare for the area with the majority of the archaeological record generally confined to middens and artefact scatters. The caves appear to be similar in condition to the 1968 archaeological report. As the lantana and other imported vegetation is removed the caves and ridgeline would lend themselves to an overall landscape perspective.

The value of the caves for further scientific investigation is considered very high.

- *Aesthetic value*

The scenic aspect of the caves imbues one with a sense of creativity, belongingness and tranquillity. This sense coupled with the landscape contributes to an extremely high aesthetic value.

The Aboriginal Community has no hesitation in expressing high cultural significance to Kings Hill and associated ridgeline.

8.2 Management/conservation requirements for the study area

From the above discussion and from the field survey, it could be argued that the lack of recorded sites over the majority of the study area is due to the fact that the existing landsurface exposures no longer contain, over most of their area, a detectable incidence of artefacts. Reasons for the low detection in summary would be;

- build up vegetation particularly on the ridgeline
- cultivation and pasture improvement over decades
- level of land disturbance
- low obtrusiveness

If this were the case, it could mean that undetected sites and artefacts might remain in the study area as subsurface artefacts. This would require the area to be excavated to give a fuller picture of Aboriginal life in the area.

Whilst the above supposition is a truism, excavation is also a destructive process that does not necessarily achieve the desired or potential outcome. The object of heritage conservation and management is not to just protect sites in isolation but to protect their significance to people. An understanding of the study area in a "cultural landscape" lessens the need for excavation.

The Aboriginal community sees excavation as a last resort and would only recommend excavation:

- For greater understanding of Aboriginal heritage and culture and/or
- The proposed development is of a greater benefit to the Aboriginal Community and therefore warrants the removal/retrieval of potential objects.

Excavation may serve as a useful scientific tool around the caves, but is not necessary to determine significance of the study area from a cultural landscape perspective.

Recognition of the caves and ridgeline as culturally significant does not require excavation. Mere observation acknowledges significance. Recognition and respect can be achieved through appropriate planning zones. Further acknowledgment of the significance can be achieved through declaration of the area of significance as an Aboriginal Place.

An Aboriginal Place is afforded under section 90 of the NP&WS the same protection as objects. An Aboriginal Place can be declared on any land irrespective of ownership and tenure if the Minister for the Environment considers the area is of special significance to Aboriginal culture. The ownership of the land remains with the current owner.

Declaration as an aboriginal place does not detract or inhibit from the landowner entitlements but actually benefits the landowner in the following ways:

- A way of helping to conserve the unique cultural heritage for future generations
- An opportunity to contribute toward the process of reconciliation
- Protection in perpetuity of the aboriginal place
- Access to external funding grants for conservation and protection works; and
- Appropriate signage

9.0 Impact Assessment

As development of land with slopes in excess of 14° and the wetlands is not proposed, then **the areas of cultural significance will not be impacted.**

In addition if the areas of cultural significance are to be under the care, control and management of the Worimi Local Aboriginal Land Council and subsequently rehabilitated then a positive benefit will accrue. Further if a management plan for the areas of cultural significance is developed in conjunction with the Land Council then any impact of the development will be positive and add to the scientific and archaeological record. The Aboriginal cultural heritage for the study area would be enhanced.

10.0 Recommendations

These recommendations are made in consultation with the Local Aboriginal Land Council and under the legal requirements of the NPWS Act 1974

- That steps be taken to enable, Kings Hill, associated ridgeline, caves and rock outcrops to be declared an Aboriginal Place and be known as Worimi Way Aboriginal Heritage Trail or similar naming recognition.
- That the approximate area as shown on map 7 form the basis for negotiation between the proponent, Worimi Aboriginal Land Council and Port Stephens Council to ground survey the area of significance to be declared an Aboriginal Place.
- That the above area confirmed by survey be rezoned with an appropriate zoning in recognition of Aboriginal Heritage, allowing for recreation and tourism.
- That the care, control and management of the culturally significant area to be negotiated between Port Stephens Council, Worimi land Council and the proponent.
- That a management plan be formulated for the areas of cultural significance.
- That when a management plan is considered, the Land Council in consultation with NPWS and an appropriate university investigate archaeological research possibilities for the site.
- That provided the above recommendations are implemented there is no restriction to development over the rest of the study area for Aboriginal Cultural Heritage reasons.
- If however, in the process of land preparation, artefacts are found, then work must cease and the LALC and NPWS to be informed. To knowingly remove or destroy artefacts without a permit is an offence under section 90, of the NPWS Act, 1974.

11. Certification

This report was prepared in accordance with the brief given by JW Planning to assess of the impact of the proposed development on Aboriginal heritage and was undertaken to demonstrate due diligence.

To the best of our knowledge the report accurately reflects the archaeological survey, findings and results, as well as the input and recommendations of Worimi Aboriginal Land Council.

Signed
(Archaeologist)

Len Roberts
Aboriginal Heritage Assessment - North Raymond Terrace

Signed
(Worimi Aboriginal Land Council)

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13. Glossary

Aboriginal Site

1. Occupation Sites

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

- *Shell middens.* These sites are found on the coastline and along the edges of rivers and lakes, It is a deposit composed of the remains of edible shellfish and also usually contains fish and animal bones, stone tools and campfire charcoal.
- *Rock shelters with archaeological deposit.* In rock outcrops such as sandstone and granite, overhangs sometimes form creating useable shelters. Sediments from fires, roof fall, discarded stone tools and food remains, form a deposit protected within the shelter and this deposit can be excavated by archaeologists to study patterns of Aboriginal life.
- *Open campsites.* These sites are mostly surface and associated subsurface scatters of stone artefacts, sometimes with fireplaces. They exist throughout the landscape and are the most common site type in rural areas, while found in all environmental locations, larger and denser sites tend to be found on riverbanks and lower slopes racing watercourses, as well as ridgelines and other areas that offers movement routes. The study or open sites can assist in understanding patterns of Aboriginal land use.
- *Base camp.* This is the name applied to the major or main area of habitation. They tended to be close to a permanent water source and food source. Generally well sheltered. These camps would be rotated for hygiene reasons. They are different to smaller open campsites, which were mainly camps on transport routes or overnight areas on hunting forays.

2. Aboriginal Reserves and Missions

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

3. Rock Paintings

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

4. Rock Engravings

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

5. Grinding Grooves

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

6. Quarries

Quarry sites occur wherever there are outcrops of siliceous or igneous rock. Stone material was used in creating stone tools, which in turn were used to work wood and provide people with tools to assist in hunting and gathering activities. Siliceous rock is easily flaked and made useful cutting and scraping tools whereas igneous rock was preferred for edge-ground tools, particularly axes.

7. Ceremonial grounds

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

8. Stone arrangements

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

9. Carved and scarred trees

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

A range of diagnostic criteria has been developed to assist in the identification of Aboriginal scarred trees. The following criteria are based on archaeological work conducted by Simmons (1977) and Beesley (1989) It should be noted that these criteria have never been quantitatively tested or quantified using non-relative criteria such as absolute dating or an analysis of pre-occluded scar morphologies. This is because radiocarbon dating or dendrochronology is mostly inconclusive, and the removal of regrowth exposes trees to further damage.

1. **The scar does not normally run to ground level:** (scars resulting from fire, fungal attack or lightning nearly always reach ground level). However, ground termination does not necessarily discount an Aboriginal Origin (some ethno-historic examples of canoe scars reach the ground);
 1. (A). **If a scar extends to the ground, the sides of the original scar must be relatively parallel:** (natural scars tend to be triangular in shape):
2. **The scar is either approximately parallel sided or concave, and symmetrical:** (few natural scars are likely to have these properties except fire scars which may be symmetrical but are wider at the base than their apex. Surveyors marks are typically triangular and often adzed);
3. **The scar should be reasonably regular in outline and regrowth:** scars of natural origin tend to have irregular outlines and may have uneven regrowth:
4. **The ends of the scar should be shaped, either squared off, or pointed** (often as a result of regrowth): (a 'keyhole' profile with a 'tail' is suggestive of branch loss);
5. **A scar which contains adze or axe marks** on the original scar surface is likely to be the result of human scarring. Their morphology and distribution may lend support to an interpretation of an Aboriginal origin: (marks produced after the scarring event may need to be discounted);
6. **The tree must date to the time of Aboriginal bark exploitation within its region:** (an age of at least 100 years is prerequisite)
7. **The tree must be endemic to the region:** (and thus exclude historic plantings).

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

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

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

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

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

10. Burials

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

11. Natural sacred sites

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

Fire-stick Farming

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

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

Geographical

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

Swamp. An almost level, closed, or almost closed depression with a seasonal or permanent water table at or above the surface, commonly aggraded by overbank stream flow (Speight 1990: 33).

14. Appendix

- *Map 1 Location*
- *Map 2 Study area*
- *Map 3 Landscape and Geographical Features*
- *Map 4 Soils and Vegetation*
- *Map 5 Geotechnical Test Pits*
- *Map 6 Survey Units*
- *Map 7 Archaeological Significance*
- *Table 1 Survey Units and Constraints*



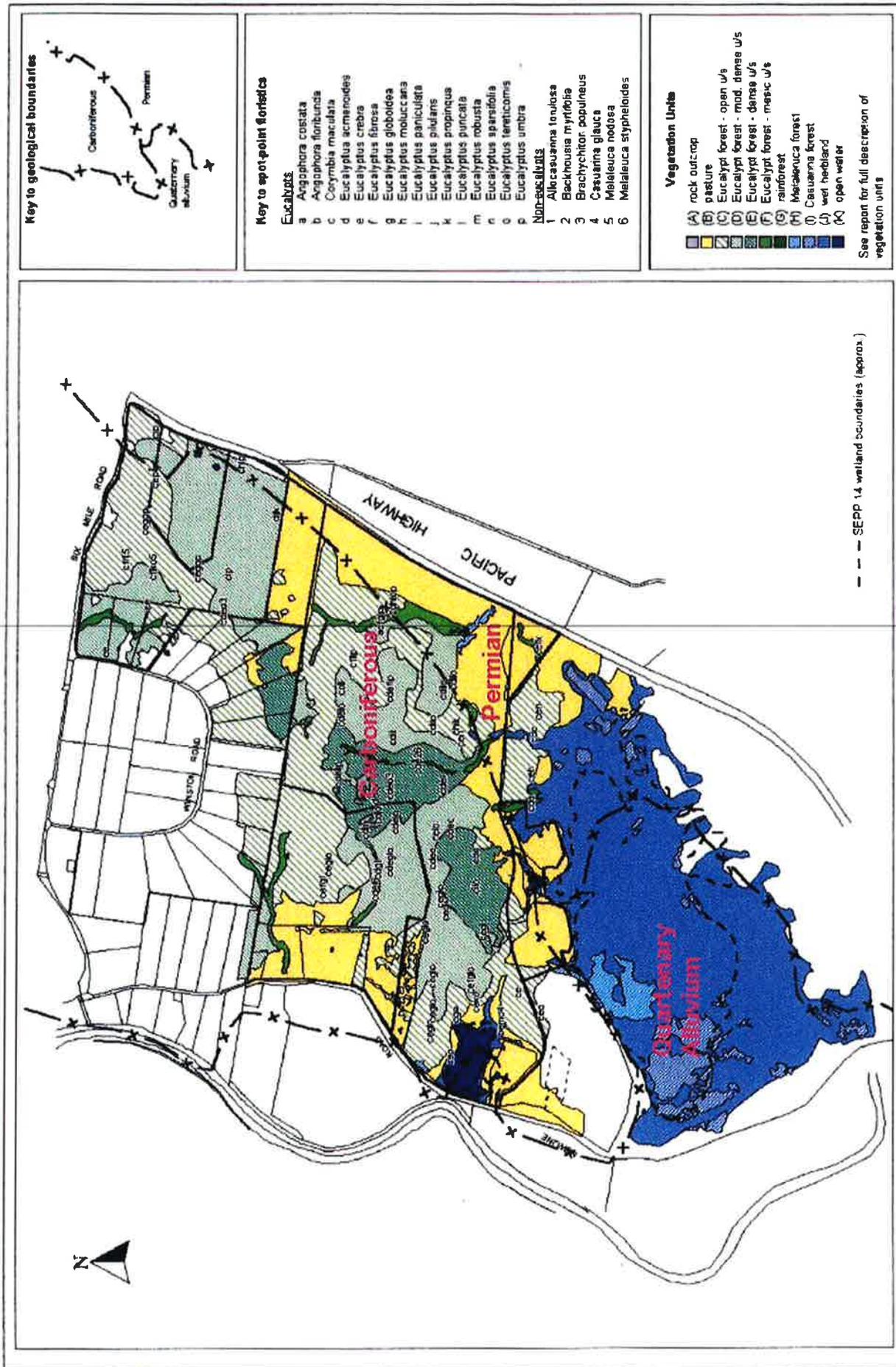
Map 2 Study Area



Landscape and Geographical Features



Map 3 Landscape and geographical Features – 3d View



Base Map: Sundevel Pty Ltd

Map Projection: GDA 94
Scale: 1:25,000

HWR Ecological

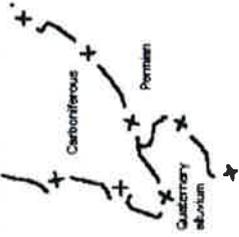
Version 1.1
10 Feb 2003

North Raymond Terrace
Urban Release Area

Soils and Vegetation

Map 4

Key to geological boundaries



Key to eucalypt floristics

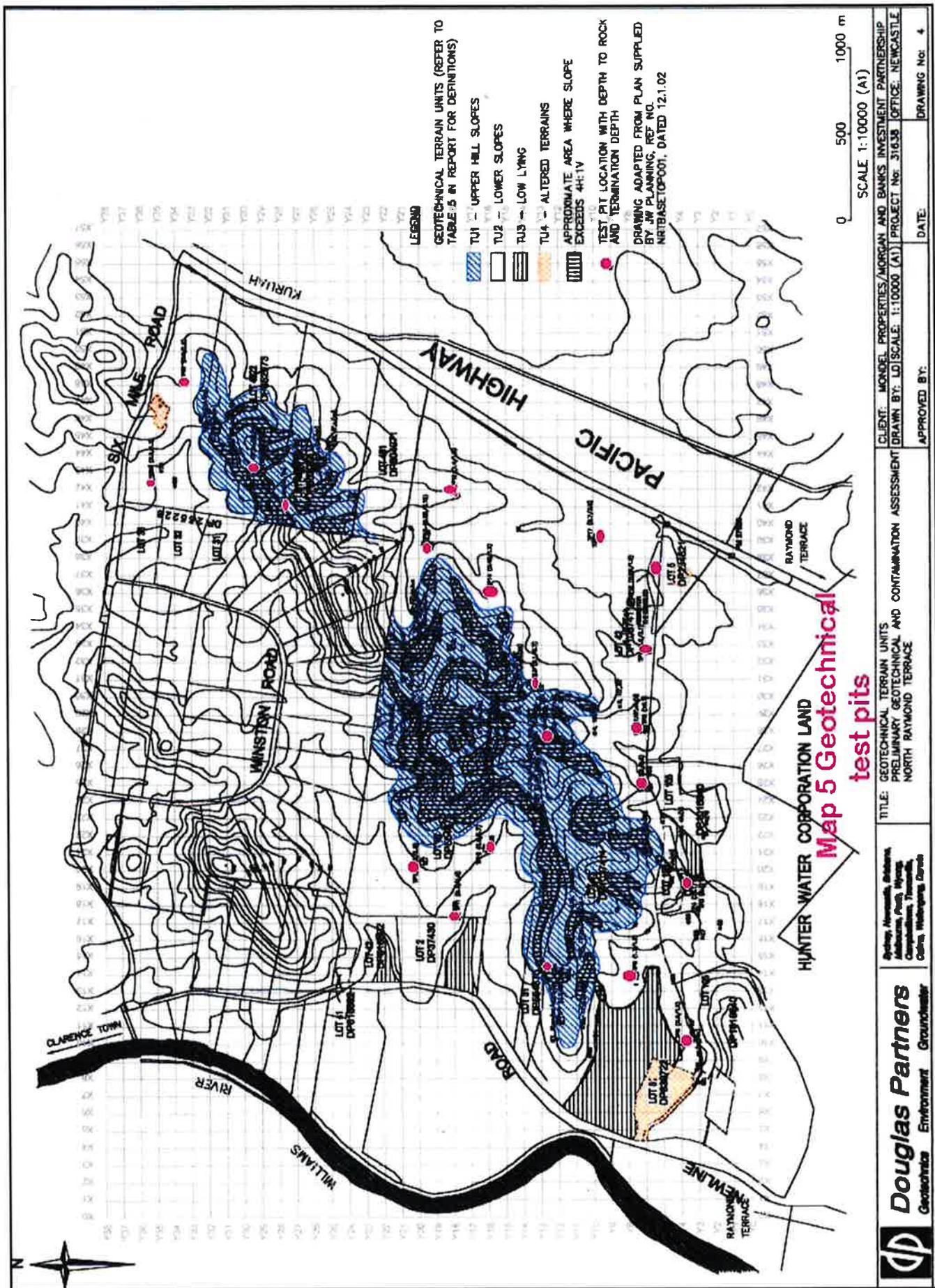
- Eucalypts**
- a *Angophora costata*
 - b *Angophora floribunda*
 - c *Corymbia maculata*
 - d *Eucalyptus acmenoides*
 - e *Eucalyptus crebra*
 - f *Eucalyptus fibrosa*
 - g *Eucalyptus globoides*
 - h *Eucalyptus moluccana*
 - i *Eucalyptus paniculata*
 - j *Eucalyptus pilularis*
 - k *Eucalyptus propinqua*
 - l *Eucalyptus punctata*
 - m *Eucalyptus robusta*
 - n *Eucalyptus sparsifolia*
 - o *Eucalyptus tereticornis*
 - p *Eucalyptus umbra*
- Non-eucalypts**
- 1 *Allocasuarina torulosa*
 - 2 *Backhousia myrtifolia*
 - 3 *Brachychiton populneus*
 - 4 *Casuarina glauca*
 - 5 *Mealeuca nodosa*
 - 6 *Mealeuca stypheloides*

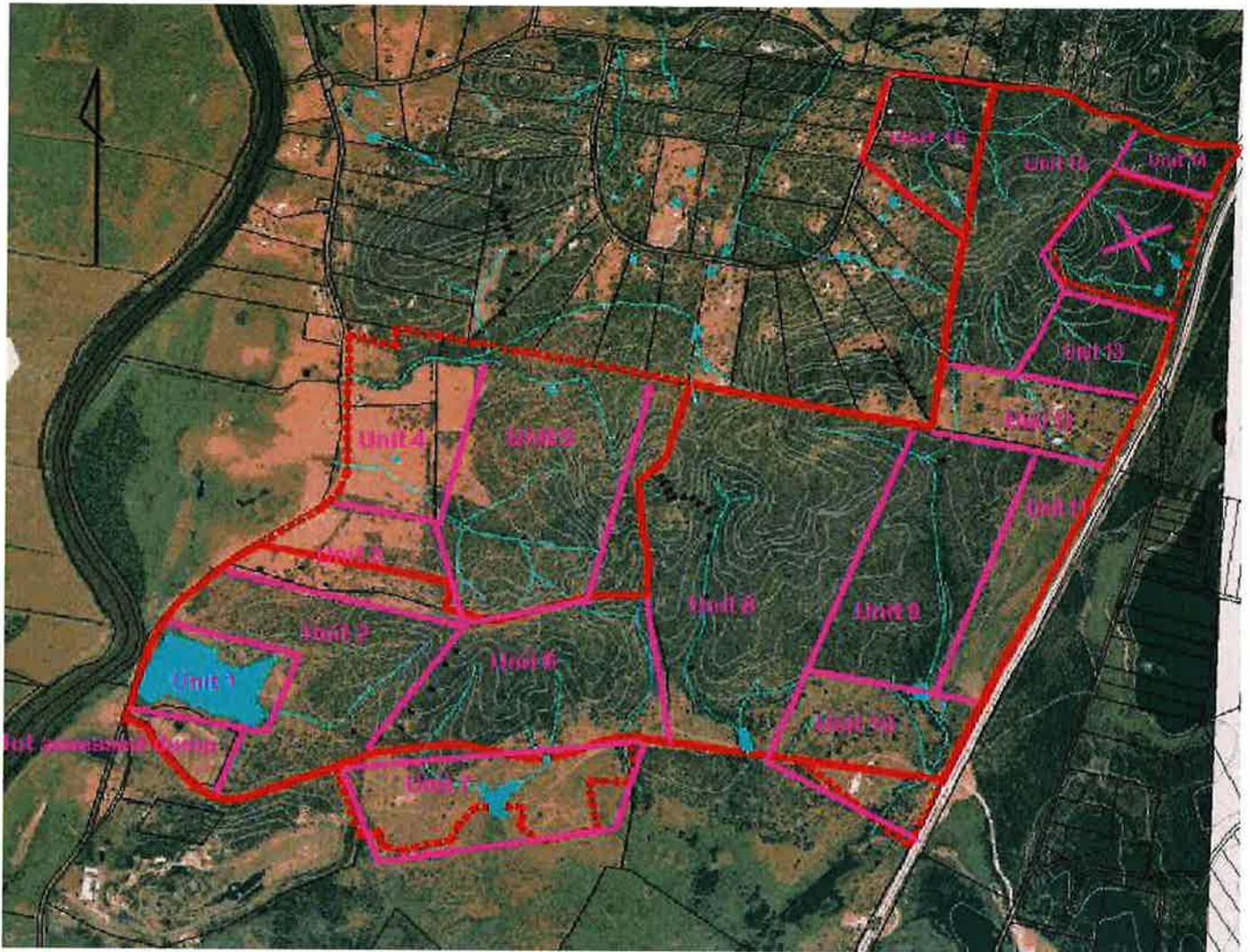
Vegetation Units

- (A) rock outcrop
- (B) pasture
- (C) Eucalypt forest - open w/s
- (D) Eucalypt forest - mod. dense w/s
- (E) Eucalypt forest - dense w/s
- (F) Eucalypt forest - mesc w/s
- (G) rainforest
- (H) *Macaranga* forest
- (I) *Casuarina* forest
- (J) wet heathland
- (K) open wetland

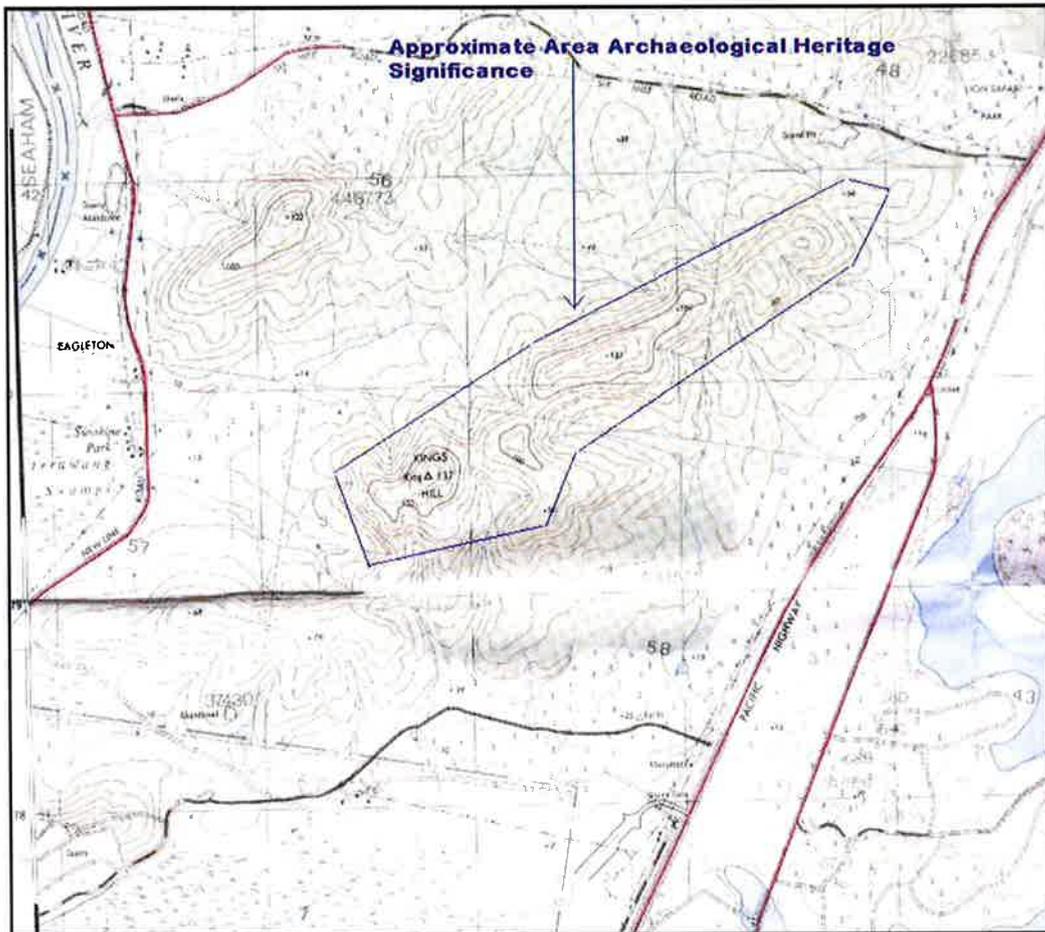
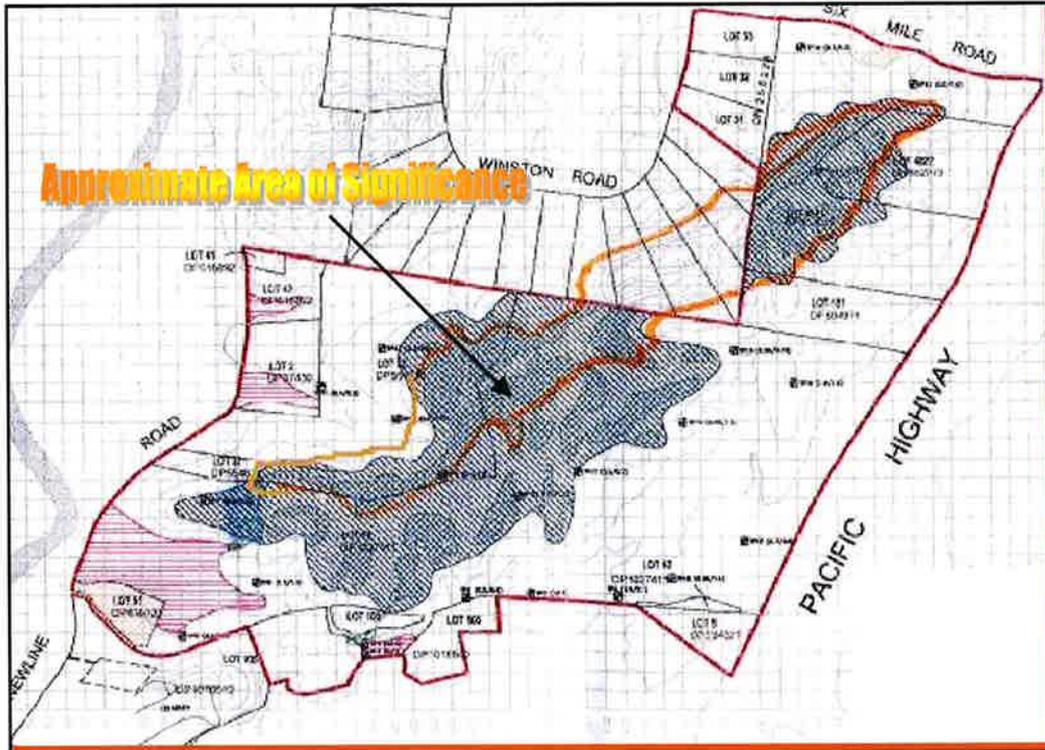
See report for full description of vegetation units

--- SEPP 14 wetland boundaries (approx.)

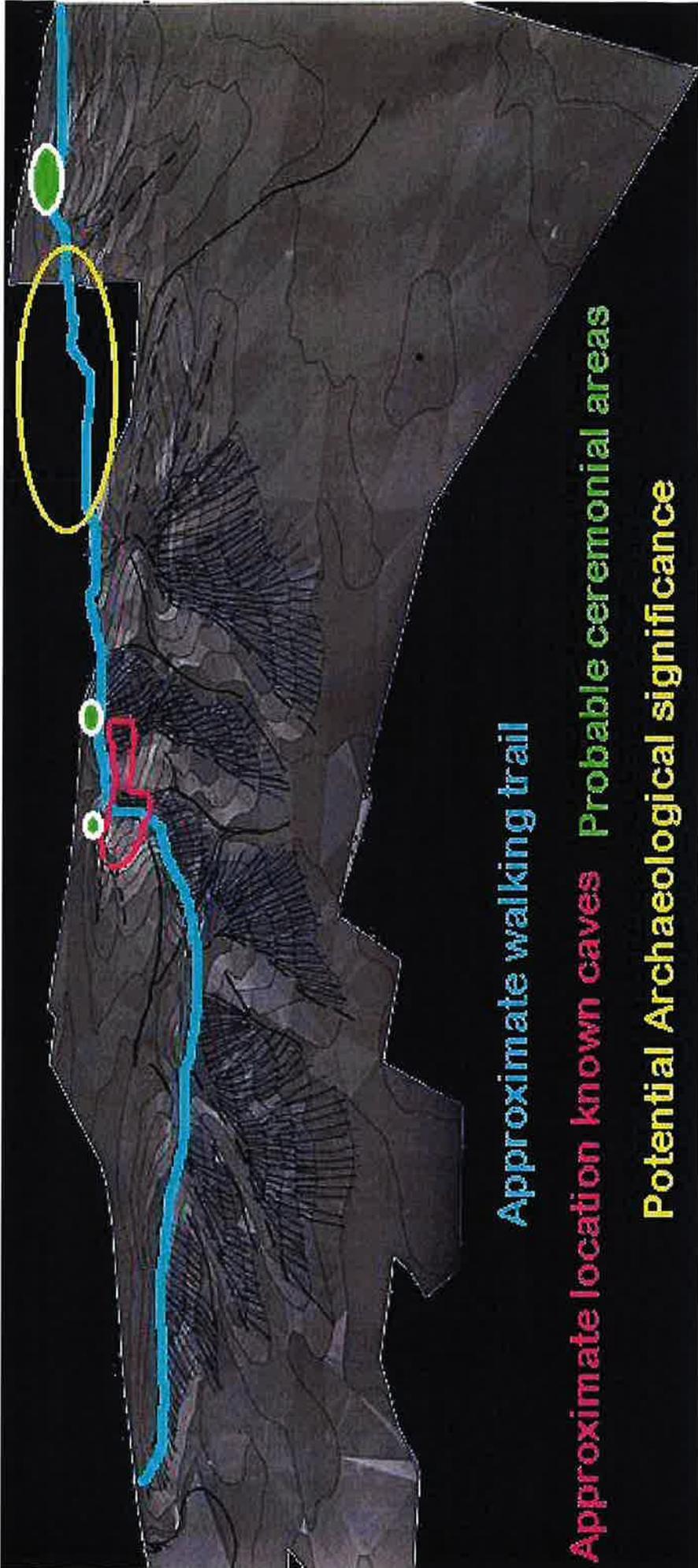




Map 6 Survey Units



Map 7 Area of Cultural Significance



Approximate walking trail

Approximate location known caves Probable ceremonial areas

Potential Archaeological significance

Map 8 location of areas of significance

Table A Landscape Survey Unit Description

Unit	Topography	Surface slopes	Geology & Soils	Drainage	Survey Constraints	Viability	Finds
1 Riverine Wetlands	Inundated wetlands or billabong. Some dead trees in water. Isolated trees around margin. Pasture on margins	Flat low lying	Unknown. Open water	Drains westerly to river but is a holding catchment	Inundation and pasture cover	poor	nil
2 Western slopes	Pasture with tree cover. Previously cleared paddock with regrowth over the past 30 years. Eucalypt forest with moderately dense undergrowth	<10%	Carboniferous deep alluvial soils	Some deep incised gullies to river and wetlands. Intermittent stream	Vegetation cover	fair	nil
3 River flats	Pasture sparse tree cover	Flats with moderate slope <5%	Carboniferous deep alluvial soils	Shallow pastured drainage channels	pasture	good	nil
4 River Flats	Pasture sparse tree cover	Flats with moderate slope <5%	Carboniferous deep alluvial soils	Shallow pastured drainage channels.	pasture	good	nil
5 Hill Slopes	Eucalypt forest with dense understorey of native and introduced species	Upper Slopes from 10-20%	Carboniferous shallow soils	Some deep incised gullies with creeks	Vegetation cover	Fair to very good particularly in gullies	nil

Unit	Topography	Surface slopes	Geology & Soils	Drainage	Survey Constraints	Visibility	Finds
6 Ridge and slopes	Upper hill slopes that includes areas exceeding 4h: 1v. Eucalypt forest with moderately dense understorey and also areas of mesic understorey. Some areas of pasture. Lantana	10 - 50%	Carboniferous with rock outcrops and shallow soils	Several deep rocky gullies intermittent water flow with some long lasting waterholes	Vegetation, steep slope	Very good in parts particularly creeks and gullies. Poor in parts.	nil
7 Southern flats	Lower slopes and flats containing man made water bodies. Intermittent creek.	<5% to flat	Quaternary deep soils	Swampy, low lying poor drainage	pasture	Fair to good	nil
8 Ridge, slopes and plateaus	Upper hill slopes, ridge and plateaus. Rock exposure tracks cattle and man made. Poor tree cover on ridge. Lantana prolific	Exceeding ly steep to flat gradual sloping ridgeline	Carboniferous Very shallow soils	Low water holding capacity some rock pools deep incised rock gullies and cliff faces. Fast runoff	Lantana, slope vegetation	Excellent in parts, rock outcrops very poor in other due to lantana	Caves, ceremonial grounds. Walking track
9 Hill slopes	Eucalypt forest with moderate to open understorey of native and introduced species	Upper Slopes from 5 - 15%	Carboniferous shallow soils with areas of deeper soils	Some gullies with creeks generally not eroded	Vegetation cover	good particularly in gullies	nil
10 South Western Flats	Pasture with sparse tree cover	5%	Permian soil depth variable but generally deep	Low lying creek lines pastured localised runoff. Soil has water holding capacity	pasture	Generally good	nil
11 Western	Pasture with sparse tree cover	5%	Permian soil depth	Low lying creek lines	pasture	Generally	nil

Unit	Topography	Surface slopes	Geology & Soils	Drainage	Survey Constraints	Visibility	Finds
flats			variable but generally deep	pastured localised runoff. Soil has water holding capacity		good	
12 Slopes flats	Pasture with sparse tree cover Altered terrain	>10% to flat. Rolling hills	Permian and Carboniferous soil depth variable but generally deep	Low lying creek lines pastured localised runoff. Soil has water holding capacity	Pasture and disturbed worked areas of small farm holding	Generally good	nil
13 slopes and gully	Upper hill slopes and lower slopes. Eucalypt forest with moderately dense understorey. Some areas of pasture. Lantana	20 – 10%	Carboniferous with some Permian soil depth variable but generally shallow	Gully run off to the east inhibited by highway	Vegetation disturbed logging areas	fair	nil
14 Slopes	Eucalypt forest open understorey. Logging trails and dumps. Altered terrain	<15%	Carboniferous soil depth variable	Localised drainage generally to the east Shallow pastured gullies	Altered terrain	good	nil
15 Slopes and ridge	Eucalypt forest with open to dense understorey. Logging still evident. Eroded trails and tracks. rock outcrops	Variable from flat to very steep	Carboniferous soil depth variable	Low water holding capacity some deep incised rock gullies and cliff faces. Fast runoff in places	Vegetation, slope and altered terrain	Fair to good	Walking track connecting to unit 8. Archaeological potential
16 Northern Slopes	Eucalypt forest with open to dense understorey. Eroded trails and tracks. Altered terrain. quarry	<10%	Carboniferous soil depth variable but generally shallow	Creek bisects unit from south to north Runoff to north and east	Altered terrain	good	nil



Looking from raymond terrace Northernmost residential area towards Kings hill



View of first cave





view from 2nd lot of caves



2 other caves

