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ARCHAEOLOGICAL SURVEY and CONSTRAINTS STUDY Various Lots, Alton road and Freeman's Drive Cooranbong

Report to
JW Planning
Newcastle
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Aboriginal Heritage Assessment
Cooranbong North Urban Investigation Area

Table of Contents

- Map 8 Areas for further study
- Flowchart 1
- Flowchart 2

1. Introduction

JW Planning commissioned Myall Coast Archaeological Services to undertake a Cultural Heritage Assessment (The Study) over land Lot 1 DP 825266 (known as Pocock Land), 27.03 ha On Avondale Road, Cooranbong, for a residential rezoning application

Previously, in February 2002, MCAS had undertaken an archaeological study on Avondale Airport Lands. Subsequent to that study, further land holdings had been identified to be included in the rezoning application process. That additional land was known as "Avondale Greens" and MCAS undertook additional studies in September 2002. The 'Pocock Land ' has now been included for investigation.

The "Avondale Airport Lands", "The Avondale Greens" and the "Pocock Land" are adjacent and contiguous to one another and form a parcel called the North Cooranbong Investigation Area for proposed rezoning from rural to urban. Other contiguous lands are also likely to be included and consideration was given to those lands as well. (The Study Area).

The current study, while investigating the "Pocock Land" in particular, has drawn the two earlier studies into this one report. Although, each parcel will be dealt with as a separate survey unit, they were investigated and examined as a total landscape context. This allowed for each parcel to be assessed for cultural significance in isolation and then examined in the light of a broader cultural pattern.

The regional location of the study area is shown in the appendix as Map 1. The layout of the study areas and their dimensions are shown on maps 2, 3 and 4.

Since the first study in 2002, changes have been made to the NPWS Act governing Cultural Heritage studies and this report encompasses and meets those changes.

1.1 Background

As a result of the 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. The NPWS has developed draft Aboriginal Heritage Impact Assessment Guidelines 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 formal Aboriginal involvement as well as consultation in the assessment process.

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 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.

1.2 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.

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'.

- *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.

1.3 When is an Aboriginal Heritage Impact Assessment required?

The NPWS Guidelines state 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.

(Flowchart 1 in the appendix outlines when an Impact assessment is required)

1.4 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.

(Flowchart 2 in the appendix outlines the Aboriginal Heritage Impact Assessment process)

2. The Study

2.1 Aboriginal Community Involvement

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

The project lies within the boundaries of the Koompahtoo Local Aboriginal Land Council (LALC). This group participated in formulating this assessment. Since the completion of the earlier studies, the Koompahtoo Land Council was placed in the hands of an administrator and does not function as a Land council. However, the Aboriginal community still exists and meets to discuss relevant community matters. Ray smith who was involved in the previous studies continued the Koompahtoo community involvement with this study. Ray reports to the Aboriginal community of the area.

2.2 Study objectives

The study was commissioned to:

- determine whether any Aboriginal archaeological 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 Archaeological 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:

2. Consultation with the Aboriginal community

3. Refinement of predictive models of Aboriginal use of the landscape and the distribution of evidence

4. Definition and matching of landsurface disturbance in terms of its potential for revealing or concealing archaeological material

5. 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. The landscape approach as well as previous archaeological work in the area will determine a predictive model of Aboriginal occupation of the study area.

2.3 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

2.4 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 Ray Smith, site officer for the Local Aboriginal Land Council, who has extensive experience in archaeological fieldwork. Ray assisted in formulating the survey plan. The fieldwork was carried out over several days in January, February, August 2002 and July 2003.

3 Aboriginal Heritage Values

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.

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.

3.1 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 and the Land rights Act 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.

4 Context

4.1 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 Flood (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." Inland, the camps would have been near reliable watercourses and protected from prevailing winds. If hills were nearby, they may have had winter camps in rockshelters or caves. JW Fawcett (1898, p.152), stated of the Wonaruah "in choosing their site [camp] proximity to freshwater was one essential, some food supply a second, whilst a vantage ground in case of attack from an enemy was a third.

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 Aboriginals 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, signalling, 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.

4.2 Site Context

The main catchment of the total study area is Felled Timber Creek, which originates from the mountain ridge some 10km north of the study area. That creek flows directly into Dora

Creek and into Lake Macquarie. A small section of the creek flows through the western section (lot A) of the study area. The study area itself is not a significant catchment.

According to Horton (1994), the Band that would be of interest to this survey, would be the family groupings of the Awabakal. They probably had various base camps on the shores of Lake Macquarie. The camps would have been near reliable watercourses. The main watercourses on the study area are intermittent and generally drainage channels. After rain the channels would flow but would empty at the cessation of rain. The study area in general does not appear to be an area that would have been intensively used by the Awabakal. However any tributary of Dora Creek, no matter how insignificant, would have been a resource for the Aboriginals of the area.

The Awabakal had extensive relationships with the Wonnarua to the Northwest, The Worimi to the North, the Kuringai to the southeast and the Darkinjung to the West. (See map 5). The pathways to other bands or to food, shelter or ceremonial resources were generally along creeks and associated watercourses. Whilst Dora Creek would have been the major and most significant waterway, Felled Timber Creek would have had some form of subsidiary use from time to time.

4.3 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 42 sites are currently listed in the NP&WS Sites Register. The listing covers the margins of Lake Macquarie and some of the sites, which are predominantly coastal, are not necessarily applicable to the study area.

The main sites in descending order of frequency, were:

Open campsites	17
Isolated Finds	12
Middens	6
Axe Grinding grooves	3
Shelter	3
Scarred tree	1

An examination of the location of the above relics 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 relics are either located along major creeklines such as Dora Creek to the south east of the study area, or, in the hills to the west and north of the study area.

The rock shelters are in the hills with the majority of the open campsites and isolated finds. The middens are along the water's edge of Lake Macquarie or creeks entering Lake Macquarie.
The closest recorded site is some 2km to the northwest, an open campsite along a tributary of Felled Timber Creek. Another open campsite was found on Mt Nellinda over 3km to the north. The next closest site is some 3km to the southeast, an open campsite on Dora Creek.

Few 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.

Although, there are very few archaeological reports that can be reviewed regarding the study site, the information does tend to indicate the type of sites that could be expected and reinforces other studies as to where they are likely to be

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. Archaeological investigations by Kuskie (1994), Silcox and Ruig (1995) and Effenberger and Baker (1996) on margins of various wetlands indicate that artefacts could be found on all types of landscapes abutting wetlands but generally at a lower density. 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.
- Artefacts can be found in any landscape in proximity to an abundant food source.

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."" This accords with this author's findings at North Arm Cove and Kings Hill, Raymond Terrace.

The work by Haglund (1986) establishes the potential of the 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. Accumulated sediment and/or a blanket of vegetation… may hide all of the archaeological site types 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 surveys showed that archaeological evidence was more likely to occur in undisturbed areas.

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 area around Cooranbong was generally used for pastoral and mining pursuits as well as timber getting. Timber would have been used in the mines. The area is in a mine subsidence district. The subject site was part of a rural holding since Europeans first settled the area. Various rural/residential subdivisions have occurred over the Cooranbong area and the study area is the residual legacy of those earlier developments.

According to locals, the "Airport Lands" has basically remained bush and has had several fires through it. There are at least two former gravel quarries on site. Parts of the area have been used as effluent drying grounds.

The current land use is basically bush, which is used for illegal rubbish dumping, particularly old cars. There is evidence that timber for firewood is also gathered from the site. One third of the site is given over to airport facilities including runways.

Whereas the Avondale Greens has been largely modified through residential and small rural enterprises such as Chicken farming particularly over the last 50 years.

The Pocock Land on the other hand has been a family grazing property for a long time. Cultivation has occurred and drainage channels created and modified to allow for better use of the land. It has been extensively cleared although regrowth in parts has occurred over the last 20 years or so.

4.4.2 Aboriginal

The known archaeological evidence tends to suggest that base camps were probably around Lake Macquarie, close to freshwater sources to the east and in particular along Dora Creek

(known as the Cooranbong Clan) and the Mountains to the west. Martinsville to the west has well documented Aboriginal occupation.. It would appear that the subject area may have only been used for hunting and gathering and not for long stay accommodation. In summary, Aboriginal occupation in the area consisted of transient movement along ridge or creek lines between major campsite locations during hunting and gathering activities and/or ceremonial purposes.

It is believed from oral and historical sources that ceremonial grounds were near Mt Nellinda. A walking trail went from Dora Creek to the Wattagans via Mt Nellinda.

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. Others settled on the mission started by Reverend Threlkeld in the 1830's.

4.4.4 Implications

It would appear that the Awabakal has not intensively occupied the land in the study area. This along with the disturbance of the land since European settlement would tend to suggest archaeological evidence is unlikely to be observed through field survey.

4.5 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.

4.6Landscape 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 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.

4.7 Landform and Geology

Gently undulating rises on Munmorah Conglomerate north of Tuggerah Lakes and west of Lake Macquarie on the Central coast Lowlands. The subject site is undulating rises with local relief to 20m and slope gradients less than 10%. Long gently inclined slopes are the major landform elements. Drainage lines are broad and rock outcrops are non existent.

The site is part of the geological Narrabeen group - Clifton subgroup - Munmorah Conglomerate formation which contains pebbly sandstone grey green and grey siltstone and claystone.

4.8 Soils

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

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

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

According to the soil landscape series sheet 9131-9231, the site totally lies within the Doyalson Soil Landscape. The area is predominantly Do4, which is a light grey sandy clay loam. It has very low fertility, low permeability, and strongly acid and high potential aluminium toxicity. The acidic nature of the soil would tend to destroy, over time, archaeological evidence such as wood and bone.

5 Archaeological Potential

Based on the research, literature review, landscape and previous archaeological reports, the possible archaeological sites to be found on the subject site include:

Isolated finds and open campsites. Burial sites do not appear to be a possibility, nor does ceremonial features.

However as the complete study area has been disturbed through past anthropogenic activities including logging, dumping, intensive rural and residential development the finding of any object appears extremely remote.

6 Assessment Criteria of Aboriginal 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 artefacts 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 artefacts 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 artefactual 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
11. 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, and 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 lire 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 Survey

7.1 Strategy

The aim of the field survey was to verify or refute the findings of the desktop survey, which indicated poor archaeological potential.

7.2 Method

It was decided to circumnavigate the property along the boundary 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 Survey Effectiveness

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.

Past Aboriginal activities are not well represented by surviving material evidence. This is partly because many activities did not leave material evidence eg. tools were reused, but it is also because very little cultural material survives. Wooden or bone tools in particular are easily destroyed by fire or rot overtime due to the generally acidic nature of the soil or attack by insects and fungi. An exception to this is shellfish, which are very durable. Easily recognised stone implements have been gathered overtime before it was illegal to do so. Other stone tools that are not easily recognisable are often discarded or buried by natural or anthropogenic processes.

The survival of material that is durable is also affected by recent land use. Cultivation and other anthropogenic activities have destroyed many archaeological sites. However, cultivation can also help expose sites that would otherwise be covered.

A brief description of each survey area is as follows:

• Airport Lands

Land comprising of lots 1-11 at Cooranbong Aerodrome, Cooranbong and is part of the Avondale College land holdings and includes the aerodrome just north of the Cooranbong village area. (Map 2)

Rural properties border the study area to the north. To the west, the site fronts Nellinda Road, which is generally unformed. Maitland Road borders the southeast corner, while, rural residential dwellings and Avondale Road border the site to the east. The centre of the site contains an existing airport and associated buildings. The proposal involves rezoning to allow redevelopment of the site into rural residential with associated roads and open space.

Surface conditions

A public airstrip and associated works and buildings bisect the subject site. This airstrip covered approximately the middle third of the site.
To the northern of the airstrip site was well vegetated and appeared relatively undisturbed. It was also approximately a third of the area of the total site.
The southern third was less densely vegetated, highly disturbed through rubbish dumping, gravel pit and nightsoil dumps. The are had also undergone a fairly recent and extensive bushfire.

Vegetation

The vegetation on the site is regrowth, which has been influenced by past land practices. The site has been disturbed by past anthropogenic activities including fire and clearing.

The vegetation within the study area is predominantly Open Forest (dominated by various species), containing scribbly gum, red bloodwood and smoothed bark apple. The understorey is generally various banksia. The area north of the landing ground has a greater concentration of vegetation than the rest of the area and contains stands of swamp mahogany.

The current vegetation does not give a good indication of the archaeological potential as it is basically regrowth and may not be indicative of what was there over 100 years ago, although the poor fertility does indicate a continuation of similar vegetation.

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

Landscape/survey Units
The site can be generally divided into 3 landscape and survey units

- The northern section is basically a gentle modal slope ranging from 20m to 15m.
- The middle section is the landing ground that has been cut and filled and has a constant relief of about 15m.
- The southern section which is an even more gently undulating modal slope ranging from 10m to 8m

As the site has been artificially broken into 3 distinct units by the landing ground, the obvious survey / landscape units are therefore;

- Southern slope
- Northern slope
- Landing ground

Map 6 shows the landscape units.

Coverage Data
There was no exposed rock. The possibility of the area containing axe-grinding grooves was negligible. Artwork possibility was non-existent. The trees on the property were either not old enough, or the appropriate type for scar trees, such as stringy bark. The area does not appear to have been suitable for camping, as there is no water source on site. The survey was conducted after a period of heavy and prolonged rain and yet there was no indication of a reliable or even temporary water source. The site in a total catchment landscape context suffers from more appropriate camping areas being nearby. The site was probably more conducive as an occasional food source.

The driveway and vehicular tracks were man made and built up with gravel.

Although the total amount of exposure was extremely limited, it is believed there was sufficient landform type to indicate any potential archaeological material that may be present. In summary, the Landing ground had no visibility due to extensive clearing and grass or tarmac cover. It was heavily disturbed through earthworks for the aerodrome.

The southern unit had undergone a recent bushfire and the ground was covered in leaf litter. Vegetation was relatively sparse. The bushfire allowed for greater visibility, but the area has obviously been disturbed over a long period of time.

The northern unit had a greater concentration of and variety of vegetation. The vegetation restricted the survey in this unit. Although no apparent signs of permanent water were

obvious, there were several more pronounced drainage gullies and the type of vegetation indicated the possibility of a wetter area. This unit had the potential of a greater attraction

to fauna and could possibly have some archaeological significance. A summary of the effective survey coverage follows.

Landscape unit	**Topography**	*Surface slopes*	**Visibility**	*Area available for detection*	**finds**	*Archaeological Survey constraints*
Southern Slope	Burnt out, south facing slope, Scattered tree coverage. Leaf litter. Highly disturbed. Contained effluent disposal ponds and flats	<10%	<75% overall	75%	nil	Leaf litter but good surface visibility
Northern Slope	Well vegetated, South to east facing slope, Good tree coverage (regrowth) several man made tracks and roads. Contained former quarries and areas used as rubbish dumps. Old dams	<10%	Extremely poor <25% overall	<25%	Nil	Well vegetated
Landing Ground	Well-grassed, tarmac, highly disturbed with aeroground earthworks and buildings.	<10%	Extremely poor nil overall	nil	Nil	little exposure due to high disturbance

Survey coverage data – Airport Lands

Findings

No artefacts or Aboriginal object of any kind was found. Plants that were used in the past as food source were observed. The vegetation would have been conducive to attracting fauna.

• Avondale Greens

Small rural holdings with houses at Alton Road and Freemans Drive, Cooranbong, comprising 5 separate parcels of land known as:

(a) Lot 1 DP170378 (10.76ha)
(b) Lot Pt 15 DP 182756 (1.38ha)
(c) Lot 2 DP 825266 (6.05ha)
(d) Lot 1 DP 348173 (.8ha)
(e) Lot 21 DP865588 (3.5ha)

The study area consists of small rural /residential holdings and includes land adjacent to and contiguous with the Cooranbong village area. Larger rural properties border the study area to the north and west. (Map 3)

The study area consists of a small area of creek flats with a gentle west-facing slope with local relief to 10m and slope gradients less than 10%. A long, gently inclined slope is the major landform element. Drainage lines are broad and rock outcrops are non existent. A road that has been cut into the slope bisects the slope.

The area is well pastured and contains many improvements such as sheds and dwellings. The landscape for most part has been altered through anthropogenic activities.

Vegetation

The vegetation on the site is regrowth, which has been influenced by past land practices. The site has been disturbed by past anthropogenic activities including fire and clearing.

The vegetation within the study area is predominantly cleared grassland with pockets of Open Forest (dominated by various species). Most of the vegetation on lots D and E is introduced and could be typically described as an English garden.

The current vegetation does not give a good indication of the archaeological potential as it is basically regrowth and not indicative of what was there over 100 years ago, although the poor fertility does indicate the possibility of sparse or insignificant vegetation with respect to Aboriginal food resources.

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.

Landscape/survey Units

Given the various holdings of the study area, the division of the site into survey areas is readily transparent.

However the same cannot be said for the landscape units. Although the major landscape features are intact, the study area has been significantly modified through, filling, levelling, construction and pasture improvement.

The landscape is basically a west-facing slope with a height of 10m sloping toward the flats of Felled Timber Creek. The majority of this particular slope has been taken up with residential development and the landscape attributes are somewhat diminished.

The site can be generally divided into survey units based on land subdivision. Map 3 shows the survey units.

A brief description of each survey unit is as follows:

A. (10.76ha) Can be divided into 3 landscape elements. Eastern slope, creek flat and Western flat. The Western flat is well pastured with light intermittent young tree cover. No exposure. Tracks are also well grassed. Thick pasture carries a substantial herd of cattle. The creek flat is thickly pastured to water's edge with little exposure

except in creek bed where water receded. Intermittent pools of water to some depth. Lightly timbered along creek. Creek has been modified and erosion negligible. Little water flow despite recent rain at time of survey. Eastern Slope heavily disturbed with pasture, chicken sheds, roads and residence. No visibility. The creek would have been of significance but its disturbed nature would constrain further subsurface work. The proposal will have at least a 40-metre buffer to the creek and therefore will not impact on potential Aboriginal cultural heritage. Excavation within the creek buffer is not recommended. The creek offsite appears to be less disturbed and may contain potential archaeological evidence.

B. (1.38ha)Small flat area totally disturbed and landform elements modified. Grass cover only around residence and garden. The area around sheds covered in gravel/ road base. No visibility at all.

C. (6.05ha)Flat area well pastured, thinly wooded with young trees. No exposure, no tracks. Signs of having been completely cleared and ploughed. No visibility.

D. (.8ha) Small flat area comprising of residence, garage, gardens and lawn. No exposure Trees mainly introduced. No visibility

E. (3.5ha) Northern part of this unit forms part of the garden of unit D. Best described as an "English" type of garden. Tress and shrubs mostly introduced. Well grassed. The rest of the area is well pastured with some young tree coverage along the driveway and in centre of block along wide well grassed drainage line. No visibility

There was no exposed rock. The possibility of the area containing axe-grinding grooves was negligible. Artwork possibility was non-existent. The trees on the property were either not old enough, or the appropriate type for scar trees, such as stringy bark. Area (A) appears to be the only suitable area for sustained camping, as it has an intermittent but reliable water source. The site in a total catchment landscape context suffers from more appropriate camping areas located well away from the study area. The site was probably more conducive as an occasional food source and transport corridor.
The driveway and vehicular tracks were man made and built up with gravel and or concrete.

Although the total amount of exposure was extremely limited, it is believed there was sufficient landform type to indicate any potential archaeological material that may be present.

There did not appear to be any potential for archaeological evidence either on or below the surface.

Findings
No artefacts or Aboriginal Site of any kind was found. Plants that were used in the past as food source were observed. The vegetation would have been conducive to attracting fauna**.**

- **Pocock Land**

The subject property is known as 86 Avondale road Cooranbong (lot 1 DP825266and is 27.03 ha has an 80m frontage to Avondale road on the east and opens out to about 160m to Alton Road to the west. (Map 4)

The site is gently sloping to flat with a generally southerly aspect. One third of the site is open pastureland, another third, drainage and associated wetlands and another third open vegetation regrowth. The area fronting Avondale Road contains a dwelling and associated rural infrastructure including stock and round yards.

Vegetation

Light paperbark vegetation abuts the drainage channel that basically runs west to east. The Southwestern third of the property contains predominantly open regrowth forest of various eucalypt species including stringybark and roughbark apple. It is apparent that the regrowth area has been totally cleared in the past as the trees are of a similar age and growth.

The area fronting Avondale road, near the house contains ornamental and fruit trees. The rest of the land is open pasture and is used for grazing.

Landscape/survey Units

The subject site readily falls into 4 distinct survey units: Southwestern slope, Drainage Basin, Northern slope and House Paddock. (Map 7)

A brief description of each survey unit is as follows:

Unit 1 Southwestern Slope

This unit is vegetated with trees and has little understorey. Pasture covers the ground and at the time of the survey was quite prolific. Very little exposure except for tracks along the fenceline and for vehicular access through the unit. This unit is well drained and appears not to hold much water. It did not contain any areas of potential archaeological deposit or indicate the possibility of subsurface artefacts.

Unit 2 Drainage Basin

Commences in the northwestern end of the property and collects runoff from the adjacent Airport Lands. It bisects the property in a diagonal fashion and contains several dams. The margins of the basin are wetlands although vegetation is sparse due to clearing after bushfires a few years ago. There is evidence that man made channels were created in the past to formalise the flow. Water was flowing in the channel at time of survey and was clear. It is extremely likely that the wetlands would have been of some significance to past Aboriginal occupation although probably not intensive. There was sufficient exposure through tracks and shallow bank stream erosion to give a good indication that little archaeological evidence would likely be obtained through subsurface investigation. The proposal indicates that there will be a 40m buffer surrounding the basin. Therefore the development is not likely to impact on aboriginal heritage.

Unit 3 Northern Slope

A pastured gentle hillslope with a southern aspect. A dam is contained in the area. Good pasture constrained visibility, however dam walls were very visible. The area had ben cultivated and well used in the past and would not contain any archaeological evidence and does not appear to contain any archaeological potential.

Unit 4 House paddock

This unit is a defacto residential area and the landscape has been altered through gardens orchards, house and sheds and stock yards. It did not and is unlikely to yield any archaeological evidence.

Findings

No artefacts or Aboriginal Site of any kind was found. Plants that were used in the past as food source were observed. The vegetation would have been conducive to attracting fauna**.** The drainage channel/ wetlands has been disturbed and altered. It is probable that the drainage channel was a source for food and water. However it is also probable that the drainage channel was the beginning of a much greater water/food source to only a few hundred metres to the east, which is now a landscaped water feature for a residential subdivision. Whilst this wetland area on the Pocock Land may have had some archaeological potential this potential is unlikely to be realised due to the disturbed nature of the landscape and has lost its contextual significance with the residential development to the east.

Other Areas

The urban investigation study area contains several land holdings forming 3 distinct units (Map 4):

- (OA1) residential type blocks fronting Avondale Road which are heavily disturbed and would not warrant further archaeological investigation.

- (OA2) Small rural holdings on eastern side of Alton Road and appear to be heavily disturbed through residential use and previous Chicken farming. They do not warrant further archaeological investigation.

- (OA3) Land holdings on the western and southern side of Alton Road, with access to Felled Timber Creek. Indications are that this area could be Potential Archaeological deposits and if to be considered for urban investigation further archaeological study would be necessary. (Map 8)

8.0 Discussion

While it is probable that aborigines utilised the resources of the study area it is unlikely that their activities would have left much lasting evidence of their visit other than perhaps the odd isolated artefact particularly as there has been significant disturbance to the top soil. Archaeological evidence was not discovered through field survey. However, undetected sites and artefacts might remain in the study area as subsurface artefacts.

Although it is highly probable that no artefactual material will be found, even if present, it is important, in order to demonstrate due diligence, that preliminary earthworks are carefully observed to ensure that if objects are unearthed, that any opportunity there may be to add to the archaeological record is not accidentally destroyed.

The question that needs to be answered by any survey is:

Will the proposal impact on any Aboriginal heritage or potential Aboriginal heritage?

This is best answered by assessing the significance of the study area in the light of the criteria for Aboriginal Cultural Heritage values as outlined in section 3 of this report.

8.1 Significance Assessment

It is important to stress that the significance of a cultural landscape is not dependent on archaeological evidence being significant in itself but the interrelatedness of the individual objects to the cultural landscape as a whole. The finding of an artefact in a particular spot of the landscape does not necessarily make that spot or the object significant. What is significant is the understanding as to how and why the object is located where it is. The object may be a result of a washdown from a campsite location above. The landscape in itself may be culturally significant.

Through understanding the cultural landscape in an holistic manner one may be able to appreciate the associations that may exist between Aboriginal objects and other features within the landscape.

Leaving aside the other areas identified for further archaeological work, using the criteria outlined earlier for Aboriginal Heritage Values, the significance of the study area in an Aboriginal Cultural Heritage context can be assessed as follows:

- *Social value*
  As no objects or potential objects were neither found nor Potential Archaeological Deposits indicated and;
  As the aboriginal Community does not attribute any special social value to the study area,
  Then, the study area is assessed as having no social value.

- *Historic value*
  As no objects or potential objects were neither found nor Potential Archaeological Deposits indicated and;
  As the historic record does not indicate historic value to the study area,
  Then, the study area is assessed as having no historic value.

- *Scientific value*
  As no objects or potential objects were neither found nor Potential Archaeological Deposits indicated and;
  The topography, geology and soil do not suggest possible Aboriginal Occupation sites,
  Then, the study area is assessed as having no scientific value.
- *Aesthetic value*
  As no objects or potential objects were neither found nor Potential Archaeological Deposits indicated and;
  The landscape does not contain any unusual or extraordinary features or aspect and;
  As the land has been extensively disturbed and altered,
  Then, the study area is assessed as having no aesthetic value.

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 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
- level of land disturbance
- poor visibility and 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 at all cost, but to protect their significance to people. An understanding of the study area in a "cultural landscape" lessens the need for excavation. Aboriginal Cultural assessment is not about scientific knowledge but about a sense of place, recognition and "belongingness to the Country". Scientific investigation may aid in the understanding of belongingness but it is not the means to an end or the pinnacle of knowledge.

The Aboriginal community sees excavation as a last resort and would only recommend excavation when subsurface objects are located or potentially significant areas are identified and only then;

- 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 is not seen as an investigative tool to arbitrarily determine what may or may not be there. The areas that may contain slight potential are those areas within 40 metres of drainage or creek lines, but as they are to be excluded from the development excavation is not warranted.

With the possibility of the existence of subsurface artefacts conservation managers often propose the creation of conservation zones that encompass landform elements that may contain artefacts. Whilst that may be considered an appropriate way to conserve the past, it does not take into account the dynamic nature of Aboriginal heritage.

There is no legislative basis for conservation zones. The NPWS role is only to "look after" known Aboriginal Objects and declared Aboriginal Places. A Consent Authority would have great difficulty legally defending the requirement for a conservation zone. The new guidelines from NPWS recognise this and place emphasis on Aboriginal community consultation and involvement to determine Aboriginal cultural significance

Although it is highly probable that no artefactual material will be found, even if present, it is important in order to demonstrate due diligence that preliminary earthworks are carefully

observed to ensure that if objects are unearthed, that a window into what potential there may be for the presence of additional archaeological material is not accidentally destroyed.

9.0 Impact Assessment

In assessing the development in accordance with the guidelines, if there is no impact on aboriginal places or objects then the development is not an integrated development and referral to NPWS is not required nor is a permit under section 90 of the NPWS Act.

However, if the proposal does impact upon cultural heritage then it is an integrated development and consent under section 90 of the NPWS act may be required for the proposal to proceed.

The development proposal over the "Airport Lands", "Avondale Greens" and the "Pocock Land" of the study area does not impact on known or potential Aboriginal Cultural Heritage. This is particularly so as the proposed development will be well away from creek and drainage lines.

The areas for further consideration **(except as marked for Cultural Assessment required**) could also be developed without impacting on Aboriginal Cultural Heritage and further Assessment is not necessary.

It is important to note that the are marked cultural assessment required is outside the current study area and is only included in this report as the brief required consideration of possible constraints

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

- Except for the area marked, Further Assessment Required (Map 8) as there is no impact on Aboriginal Places or Objects or Potential Aboriginal Deposits, there is no impediment to the proposed development for Aboriginal Cultural reasons.

- That, as the development is not an integrated development, referral to NPWS is not required and neither is a permit under section 90 of the NPWS Act for the development to proceed.

- That the proponent inform all workers to be diligent when undertaking land preparation and if however, in the process of land preparation, artefacts are found, then work must cease and the LALC and NPWS to be informed. To remove or destroy artefacts without a permit is an offence under section 90, of the NPWS Act, 1974.

- That if the area designated on Map 8 as potential Archaeological Deposits is to be considered for development then an Aboriginal Cultural assessment must be conducted.

11. Certification

This report was prepared in accordance with the brief given by JW Planning to assess 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 Koompahtoo Aboriginal Community.

Signed
(Archaeologist)

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13. Glossary

Aboriginal Site

I. Occupation Sites

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

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

- *Rock shelters with archaeological deposit.* In rock outcrops such as sandstone and granite, overhangs sometimes form creating useable shelters. 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 (l989) It should be noted that these criteria have never been quantitatively tested or quantified using non-relative criteria such as absolute dating or an analysis of pre-occluded scar morphologies. This is because radiocarbon dating or dendrochronology is mostly inconclusive. and the removal of regrowth exposes trees to further damage.

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

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

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

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

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

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

6. **The tree must date to the time of Aboriginal bark exploitation within its region**: (an age *of at least* l00 years is prerequisite)

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

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

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

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

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

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

10. Burials

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

II. Natural sacred sites

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

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

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

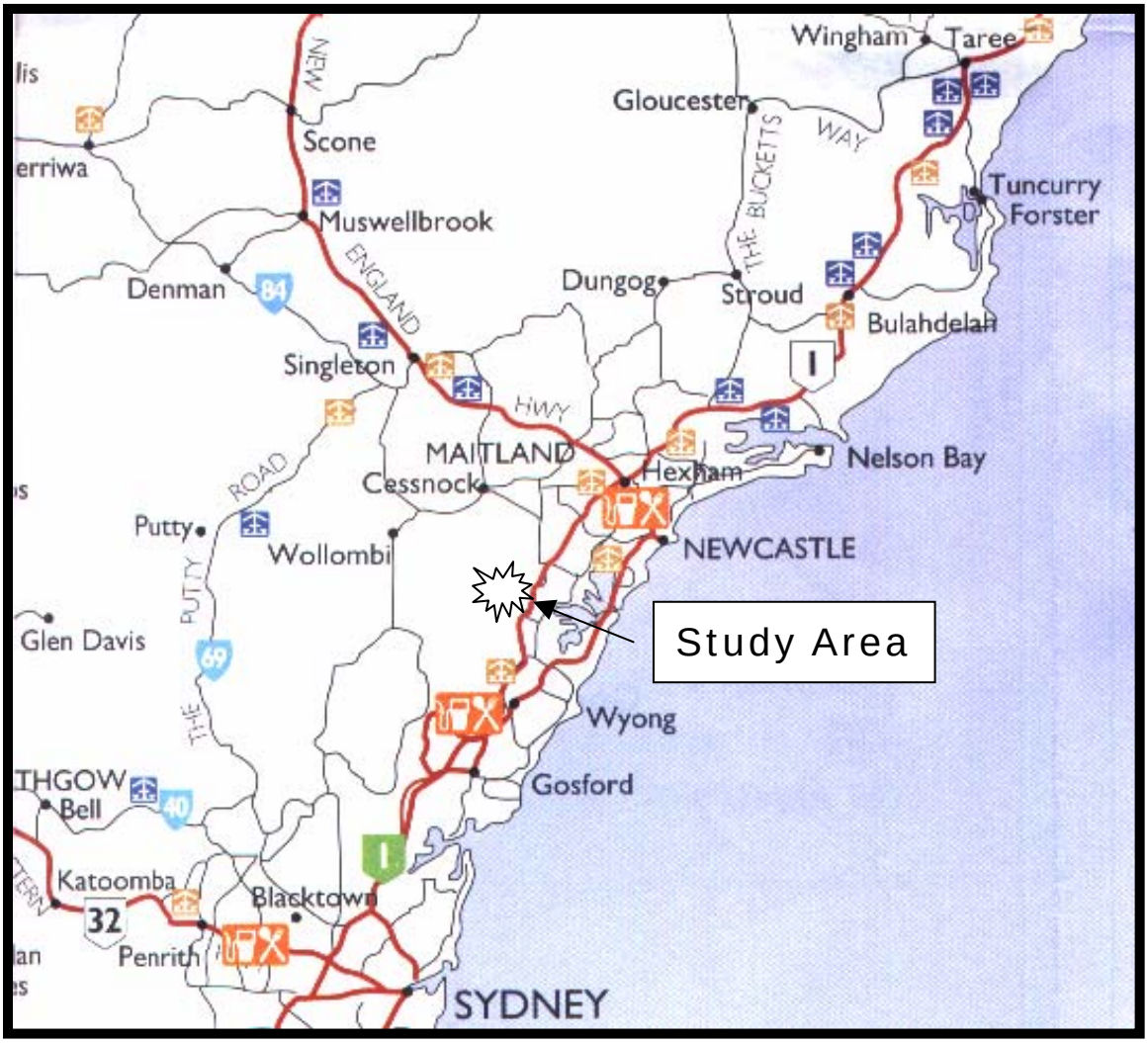
Geographical

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

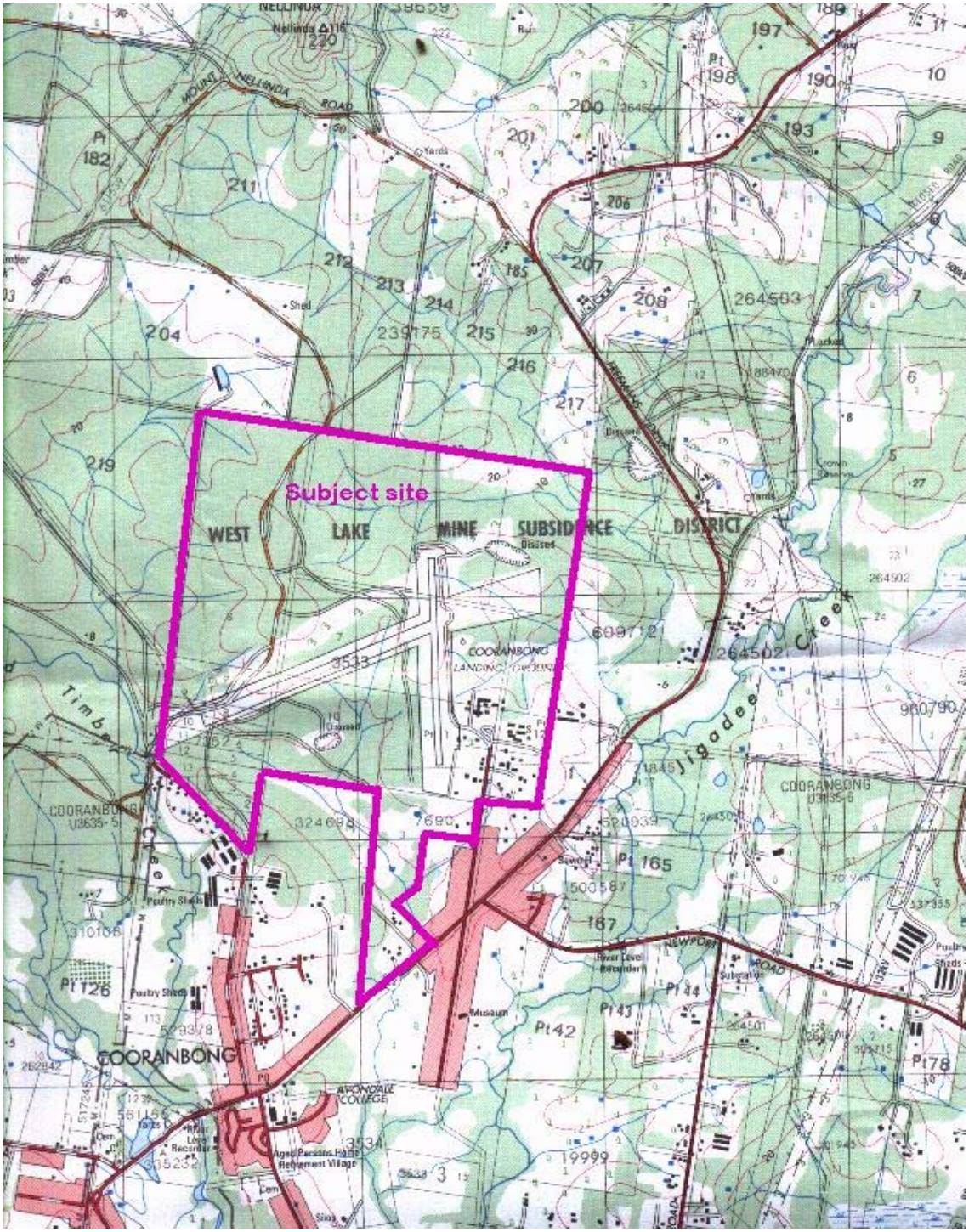
Swamp. An almost level, closed, or almost closed depression with a seasonal or permanent water table at or above the surface, commonly aggraded by overbank stream flow (Speight1990: 33).

14. Appendix

- *Map 1 Location*
- *Map 2 Study area Airport Lands*
- *Map 3 Study area Avondale Greens*
- *Map 4 Study area Pocock Land*
- *Map 5 Aboriginal Areas*
- *Map 6 Survey Units Airport Lands*
- *Map 7 Survey Units Pocock Land*
- *Map 8 Areas for further study*

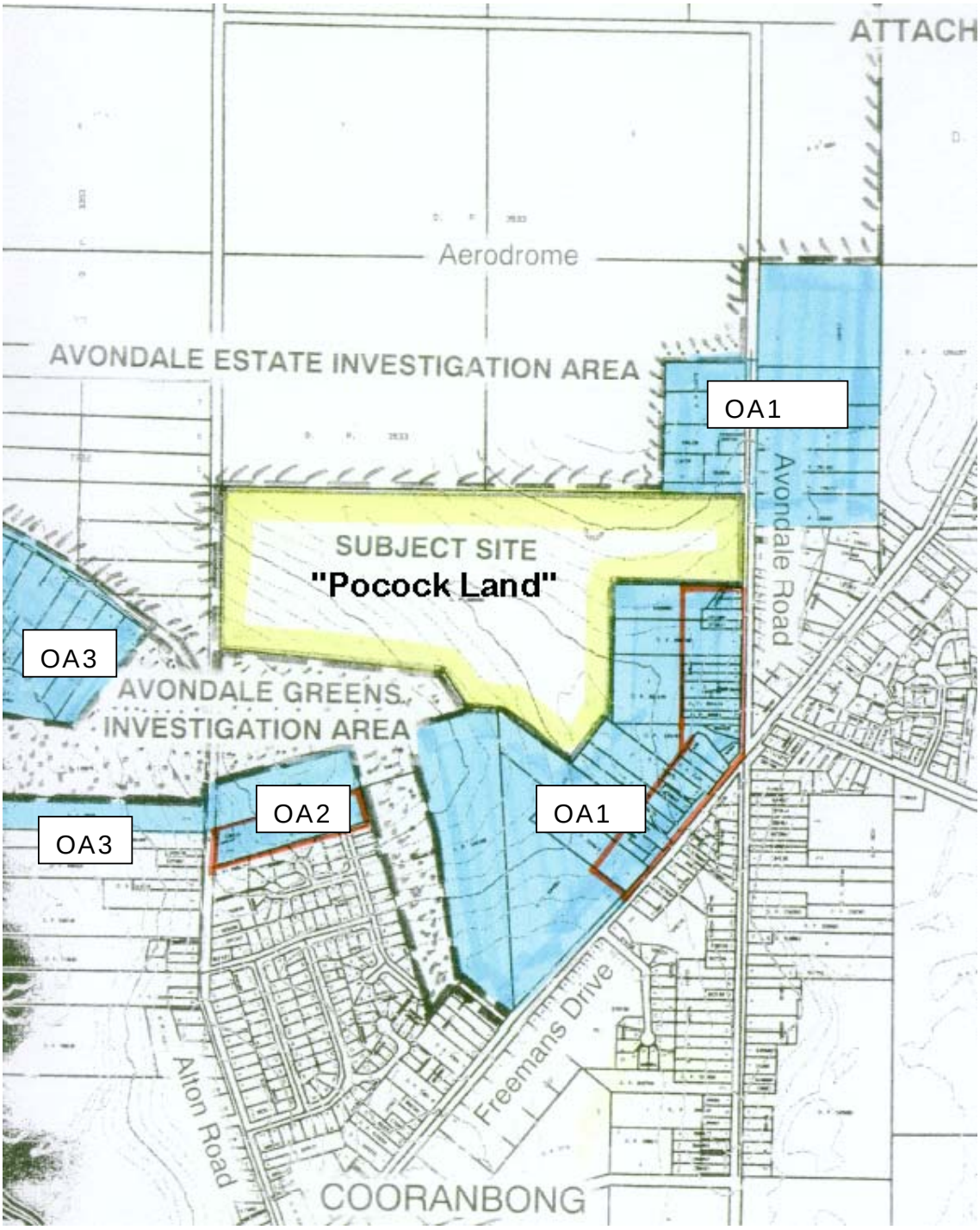


Map 1 Regional Location of Study Area

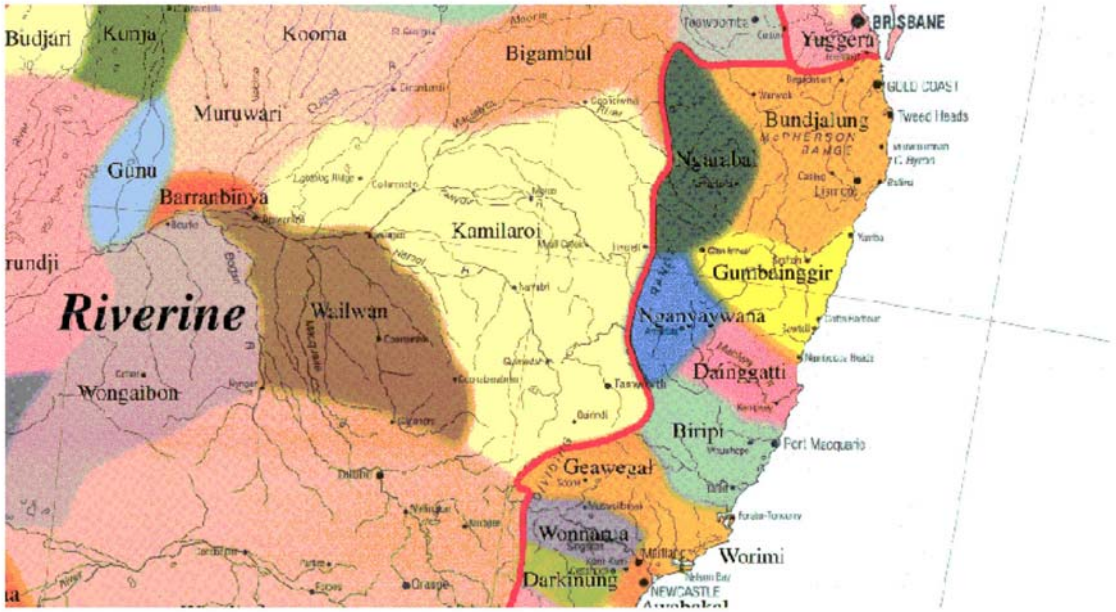


Map 2 Study area Airport Lands

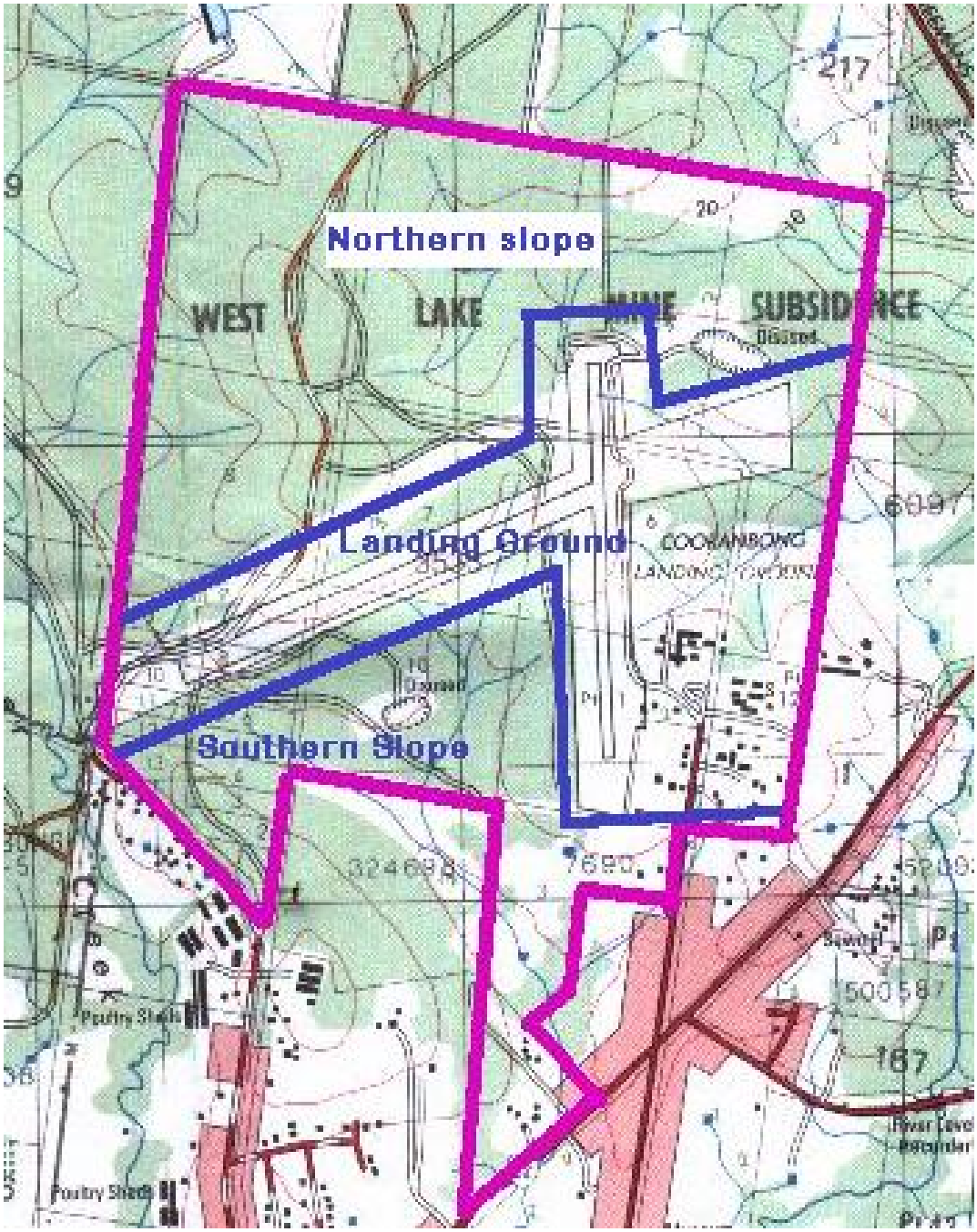
Map 3 Avondale Greens



Map 4 Pocock Land
and other areas of probable Urban development (in blue)



Map 5 Aboriginal Areas

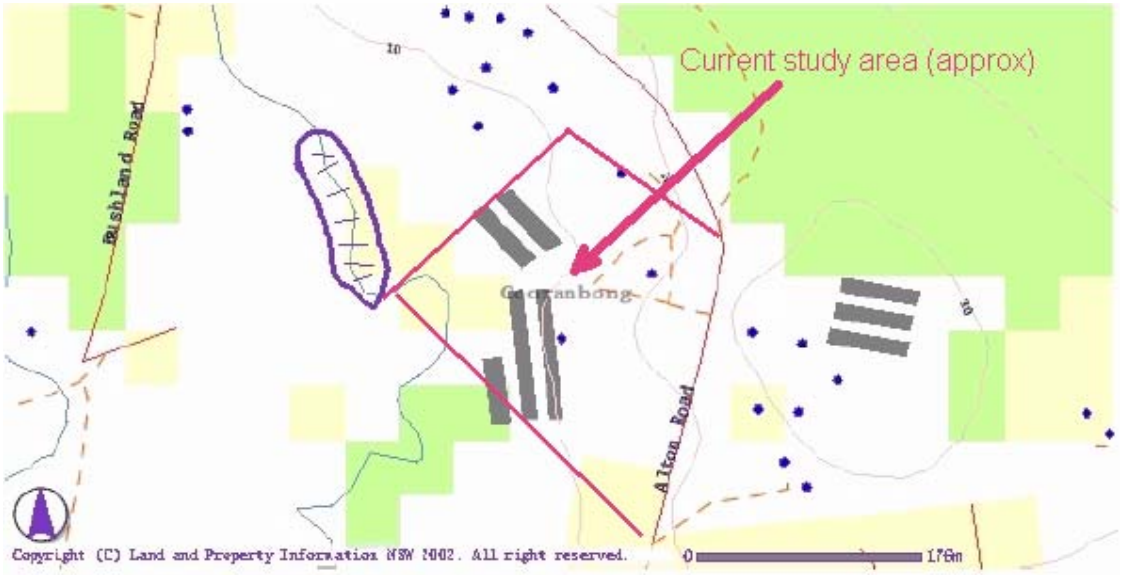


Landscape Units
Airport lands

Map 6

Map 7 Survey Units Pocock Land

Further Investigation required
Potential Archaeological significance



Further Investigation required
Potential Archaeological significance

Map 8

Further Investigation required if development is to considered for an expanded area.