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Aboriginal Heritage Assessment

**Lot 22 DP 791884,
Palmers Road, Pokolbin NSW**



**Report to
JW Planning
3rd March, 2017**

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Aboriginal Heritage Assessment

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1. Introduction

1.1 Background

This report has been prepared at the request of JW Planning, Newcastle, NSW, to assess the possible impact a proposed orchard and tourist development may have on Aboriginal Cultural Heritage at Lot 22 DP 791884, Palmers Road, Pokolbin, by:

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

Although this assessment deals with a particular parcel of land in particular, a wider study area was considered. This is necessary as any Aboriginal heritage management options need to be addressed in context of the wider landscape. Similarly any assessment of Aboriginal archaeology and heritage cannot be undertaken over individual pockets of land but potential impacts of the proposal on Aboriginal heritage of the entire project must be assessed in a local and regional context.

There is no specific proposal per se being considered under this assessment as the results of the assessment will help determine the final layout of the proposal. However, an indicative concept masterplan outlines the potential development footprint.

Figure 1 illustrates the regional location of the study area; Figure 2 shows the study area and Figure 3 the study area topography.

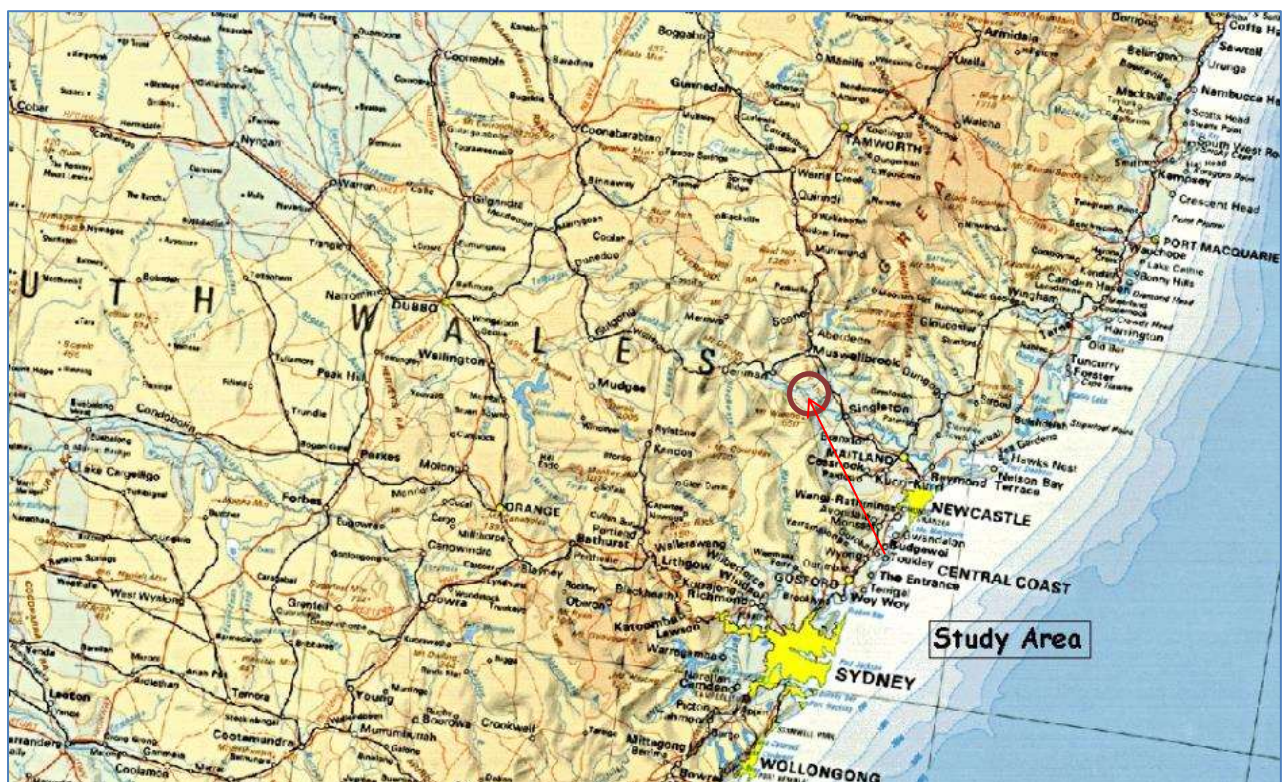


Figure 1 Regional Location

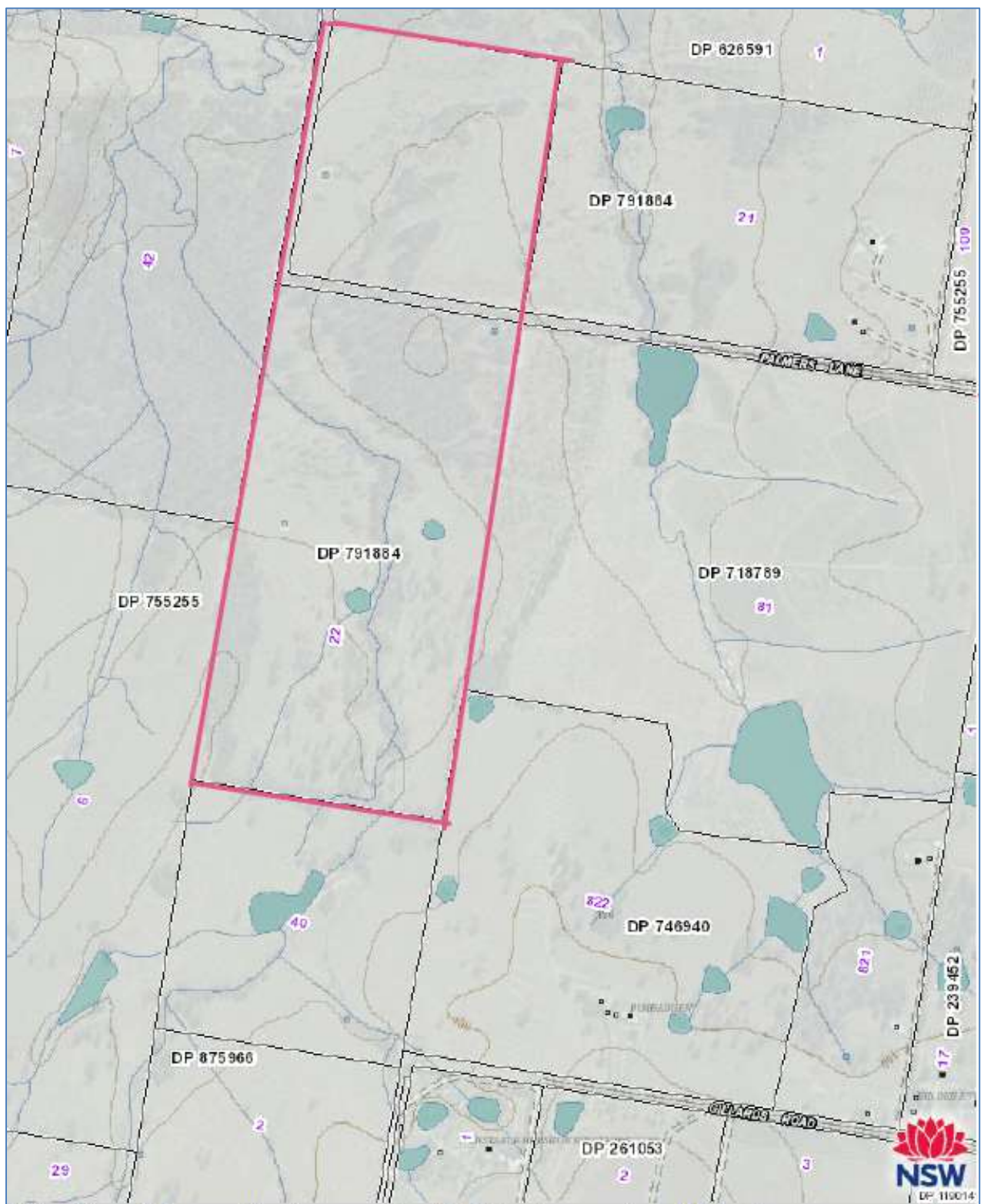


Figure 2 Study Area



Figure 3 Study Area Topography

1.2 Legislative Context

Under Section 52 Aboriginal Land Rights Act 1983, Local Aboriginal Land Council has the following functions in relation to Aboriginal culture and heritage:

- (a) to take action to protect the culture and heritage of Aboriginal persons in the Council's area, subject to any other law,
- (b) to promote awareness in the community of the culture and heritage of Aboriginal persons in the Council's area.

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

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

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

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

However under Section 87 there are certain defences and exemptions that permit harm.

The NPW Act provides several defences to prosecution for an offence. Where a person either knows or does not know they are harming an Aboriginal object, a person has a defence under section 87 where:

- The harm or desecration concerned was authorised by an Aboriginal heritage impact permit (AHIP), and the conditions to which that Aboriginal heritage impact permit was subject were not contravened.
- Due diligence was undertaken and it was reasonably determined that no Aboriginal object would be harmed.
- Was work on land that has been disturbed for maintenance of existing roads, fire and other trails and tracks, maintenance of existing utilities and other similar services
- Land is disturbed if it has been the subject of human activity that has changed the land's surface, being changes that remain clear and observable.

Harm does not include something that is trivial or negligible.

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

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

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

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

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

4.1 Development under Part 4 EP&A Act and activities under Part 5 EP&A Act

Consideration of the potential impacts of development on Aboriginal heritage is a key part of the environmental impact assessment process under the Environmental Planning and Assessment Act 1979 (EP&A Act). The standards in this code can be used or adapted by proponents to inform the initial assessment of the environmental impacts of an activity on Aboriginal heritage. An environmental impact assessment which meets all of the requirements of this code will satisfy the due diligence test. Alternatively, you could adapt the requirements of this code, provided it still meets the ordinary meaning of exercising due diligence (see section 7.7).

If it is found through this initial assessment process that Aboriginal objects will or are likely to be harmed, then further investigation and impact assessment will be required to prepare information about the types of objects and the nature of the harm. This is further explained at step 5 in section 8. If you are going to harm a known Aboriginal object you will need to apply for an AHIP. In this situation, the need to obtain the AHIP is in addition to any approval under the EP&A Act (unless the project is subject to Part 3A EP&A Act).

Whilst Due diligence is a legislated defence if one harms an Aboriginal Object, an assessment under the generic Due diligence code does not meet the requirements for assessment under the EP and A Act for planning proposals. A fuller assessment is required that assesses and considers Aboriginal cultural heritage values. However, such an archaeological and cultural heritage assessment is part of the legislated Due Diligence process.

The determination of significance is a matter for Aboriginal people and not a Government Department or authority.

Consent authorities must consult with an Aboriginal Land Council with respect to determining significance. Referral to OEH is only triggered if an Aboriginal Object is likely to be harmed and an AHIP is required. There may be a specific planning proposal requirement to refer the assessment to OEH. However such requirement could be seen as ultra vires.

2.0 Assessment Process

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

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

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

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

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

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

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

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

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

2.1 Assessment Personnel

The research, visual assessment and report were undertaken by Len Roberts, (BA [Arch.], Grad. Dip. Comp., Dip Sp. Ed.,) who also holds a certificate in Archaeological fieldwork, from Tel Aviv University, Israel. Len has worked on archaeological projects in Australia and overseas. Len is a member (since 1990) and was Deputy Chairperson (2007 -2011) of Karuah Local Aboriginal Land Council and currently Hon. CEO. He was appointed, in 1977, (under S32AV of the Local government Act 1919) as a part time, non- judicial expert (having, special knowledge of and experience in law, local government administration or town planning administration) member of the Local Government Appeals Tribunal from 1977 until it was replaced by the Land and Environment Court in 1980. He has been an expert witness before the Land and Environment court on Aboriginal heritage matters. Len has also taught English and Society (Australiana) at Beifang University, Yinchuan, China as an invited lecturer in second semester 2011.

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

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

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

The visual inspection component of this assessment was undertaken on 23/9/2016 by this archaeologist in conjunction with Tracey Skene of the Wannaruah people.

2.3 Assessment Methodology

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

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

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

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

- Research

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

- Predictive modelling;

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

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

- Visual Inspection

This involved the “ground truthing” of the above research with the study area’s potential to reveal/conceal archaeological evidence. The visual inspection was generally conducted in accordance with the Archaeological Code of Practice, even though the Code is specifically used to undertake test excavations and to apply for an AHIP. The details of the visual inspection are contained within section 4 of this report.

3.0 Preliminary Assessment

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

3.1 Description of Land and Activity

The proposed activity is to develop the land as a tourist facility with a orchards, groves, chapel, accommodation and associated infrastructure.

The land is generally 80-90m AHD and is generally flat. There are 2 drainage lines flowing from the south east corner and south west corner which join then join and flow westward to Mary Annes Creek,

There are groves of vegetation which contain some older trees but generally are regrowth of about 30 years of age. The land has been ploughed and pastured and used for grazing of cattle.

Figure 4 following, shows a conceptual development proposal utilising the existing vegetation.



Figure 4 Study area and concept plan

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

Whilst the NPW Act defines disturbed land as:

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

Whilst the definition, includes ploughed land as an example of disturbed land, cultivation, with the associated stick raking and stone gathering, tended to destroy surface evidence. However cultivation and pastoral land use, also helped preserve the archaeological record. In some cases cultivation would expose evidence in others, cover the evidence.

It would appear that the definition of disturbed for farming activities is a defence to continue with routine agricultural activities. That is, the disturbance of the land will not be greater than what has already occurred.

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

In this assessment whilst extensive cultivation has occurred, as the land profile has not been altered (except for dams and fencing etc.); it is assumed as non-disturbed.

Thus as this assessment is for a planning proposal, the greater proportion of the study area cannot be classified as disturbed in that *there have not been clear and observable changes to the land surface*. However, whilst there are no clear and observable changes to the landform, the soil profile/horizons have been modified and disturbed through pasture preparation and production.

3.3 Is the activity exempt?

No

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

No

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

No

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

No

3.7 Will the activity disturb the ground surface?

Yes

3.8 Does the Aboriginal Heritage Information Management System suggest potential?

No.

3.9 Is there archaeological potential because the proposal is:

- **within 200m of waters;**
No, but there is an intermittent, incised drainage channel on site, that flows to Mary Annes Creek, some 300m from the western boundary.
- **located within a sand dune;**
No
- **located on a ridge top, ridge line, or headland;**
No
- **located within 200m below or above a cliff face;**
No
- **within 20m of or in a cave, rock shelter, or a cave mouth;**
No

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

Yes.

3.11 Is Desktop assessment and visual inspection required?

Yes. Desktop assessment and visual inspection forms sections 4.0 and 5.0

3.12 Are further investigations and impact assessment required?

No.

4.0 Desktop Study

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

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

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

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

4.1 Aboriginal Cultural Context

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

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

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

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

According to Horton (1994), the Band that would be of interest to this survey, would be the family groupings of the Wonnaruah, although early accounts mention other various names all of whom may have been a family grouping of the Wonnaruah. They had various base camps along tributaries of the Hunter. The camps would have been near reliable watercourses. The pathways to other bands or to food, shelter or ceremonial resources were generally along creeks and associated watercourses

or ridgelines. The Wonnaruah had extensive relationships with the Awabakal, Gringai, Darkinjung and Worimi and particular travel routes are obvious from the landscape in the Hunter valley.

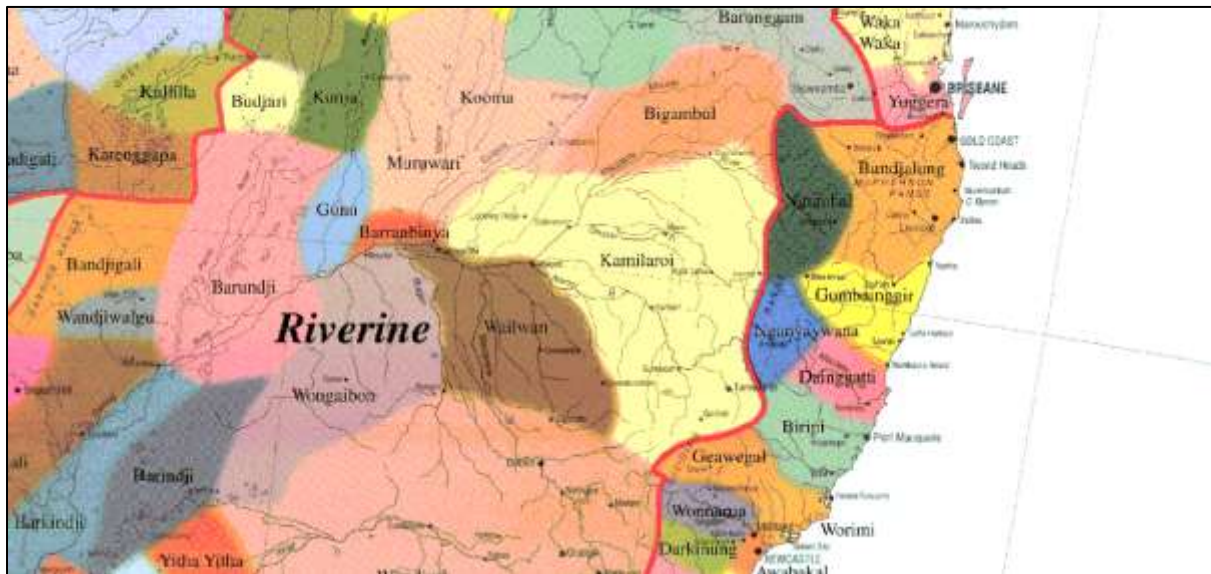


Figure 5 Horton's Map of Aboriginal Territorial Organisation

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

Trees were an important resource. In addition to providing the raw materials needed to produce products that were utilised in everyday life, trees also provided access to the birds and animals that made use of them. Tree climbing using steps gouged by hatchets, allowed aborigines to access a variety of foodstuffs including wild honey, possums, flying foxes koalas and bird eggs.

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

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

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

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

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

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

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

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

The above comment is probably the first recorded by a European with respect to Aboriginal society and culture. It sets the background or the context in which to assess the cultural significance of an area. From a first contact European perspective it appears that items of value were carried and kept whereas, items of little value discarded. Permanent dwellings were of no interest, nor European belongings. They were not wretched but happy and content. The environment and landscape provided for their needs.

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

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

4.2 Archaeological Record

There are hundreds of Objects listed on the AHIMS database within the Singleton and Cessnock Local Government areas. The majority of which have been identified through surveys for development or mining proposals.

Within a 1km radius of the study area, (See appendix B) there are no known Aboriginal Objects or Places. Within a mapped search area of approximately 5km radius of the subject area 59 Objects have been registered. Isolated artefacts have been identified by this archaeologist on property off

Broke Road. Developments in Pokolbin, Rothbury, and Cessnock have also identified artefacts. The majority of which tend to be scattered across the landscape rather than in concentrated pockets. Within the area between Cessnock and Branxton artefact scatters and isolated artefacts are the most frequently occurring site types with axe-grinding grooves also recorded.

The AHIMS database search area places the study area in a very broad archaeological context in which to assess archaeological potential. These individual sites may contain 1 or many artefacts. The difficulty with a database search is that whilst the database contains a list of known Objects within an area, it should be noted that in regards to the Database:

- Object records for many places are incomplete to varying degrees: grid references are not always accurate (due to errors on the part of field investigators or data processors) and unless the original site cards and associated reports are accompanied by detailed maps at 1:25,000 scale, it can be very difficult to check the accuracy of the grid references.
- Objects can be sometimes recorded more than once by different field investigators and registered as separate sites or not necessarily recorded.

Comment:

The majority of registered objects tend to be associated with water catchment areas such as Black Creek. The artefacts tend to be isolated artefacts or artefact scatters.

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

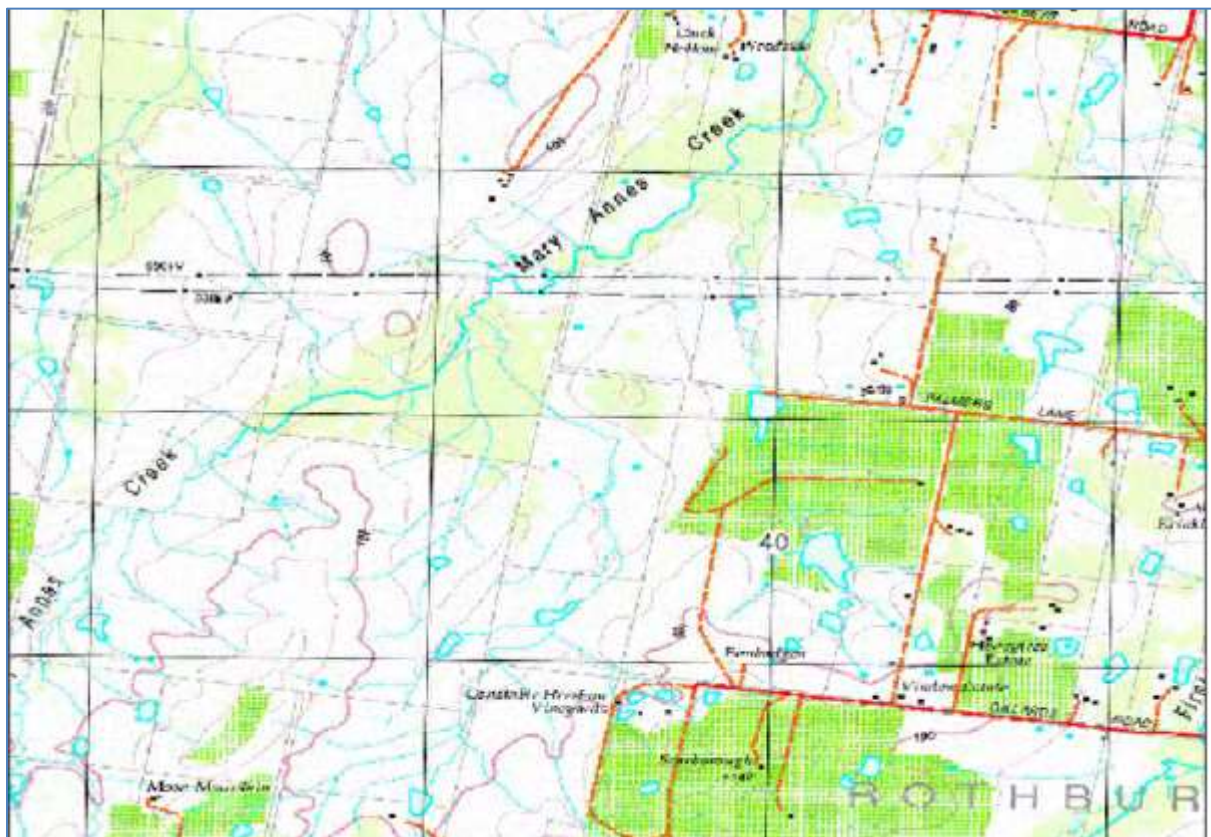


Figure 6 AHIMS Search Area as provided by AHIMS

- The two objects are a midden/artefact (38-2-0106) and artefact (38-3-0278)

An examination of the location of the landscape context of the artefacts reveals that they are generally associated with a water or food source. The artefact scatters tend to be found on elevated ground above swamplands and marsh along the creeks and estuaries. The middens tend to be located close to the ocean often along the fore dunes, but also in association with freshwater resources. Although the recorded objects are correlated with surveys, it is in all likelihood indicative of the paucity of evidence within the study area.

4.3 Previous Studies

Locally, several objects were located in a residential development near Mt View High School; other objects were artefact scatters in proximity to Bellbird Creek in a study and excavation by Angela Besant (2002). Several Objects have been found along the margins and within the landscape of Black Creek.

Several archaeological surveys have been conducted between Cessnock and Branxton. The results of these surveys are discussed below.

Brayshaw (1988) had surveyed a 225-hectare study area in 1988 for the Rothbury Country Club Resort. Virtually all exposures on the ridge slopes and ridge crests were inspected (Brayshaw 1988: 4) No evidence of Aboriginal occupation was located. Brayshaw (1988:4) notes that conditions of surface visibility were extremely low and limited the potential to identify artefact scatter sites. Brayshaw (1988:5) recommended that in the absence of evidence of Aboriginal occupation there were no archaeological constraints to the proposed development proceeding.

Davies (1991) has surveyed the route of a proposed Telecom optical fibre cable between Cessnock and Scone. The route traverses land adjacent to Allandale Road, along the eastern boundary of the Brayshaw 1988 study area. No sites were located in this area.

North of the current study area near Branxton, Brayshaw (1994) surveyed the route of the proposed Highway connection from the F3 to the New England Highway. An artefact scatter was located adjacent to Black Creek, two kilometres west of Branxton. The site comprised eleven artefacts of silcrete, chert, quartz and mudstone, and a probable sub-surface deposit. Sub-surface investigation was recommended to determine the nature and extent of the site (Brayshaw 1994:20).

Koettig (1988) surveyed the sixty-eight hectares of Portion 147, Pokolbin where a tourist facility was proposed. It is located at the base of the Broken Back Range. Koettig (1988) located five artefact scatters and twenty-two isolated artefacts. Conditions of surface visibility varied, but included a number of exposures in the form of vehicle tracks, erosion and gullying, across the range of landform units present.

The sites comprised between seven and sixty-seven artefacts at densities between one and ten artefacts per square metre. Raw materials were predominantly silcrete, indurated mudstone and quartz, but chert, quartzite, volcanic and other materials were also present. The sites were located on creek banks or basal slopes within one hundred metres of a watercourse (Koettig 1988). Through application of a technological analysis methodology developed by Hiscock at Sandy Hollow, Koettig (1988) assessed the sites as being up to 1,300 years of age. At three sites, evidence of reduction activities was present.

Test excavations were undertaken by Koettig (1989) which revealed a continuous distribution of artefacts along the basal slopes of the main watercourse. A range of artefact types and raw materials were recorded, including backed blades and artefacts with retouch or usewear. A hearth consisting of a number of large sandstone cobbles, packed into a circular shape measuring 0.5 x 0.6 metres in area was located. Charcoal obtained from this hearth has been dated to 2820 years Before Present (BP) (Brayshaw 1994:15).

While ploughing for lucerne crops has affected the ground surface of much of the area Koettig (1989:4) estimated that the extent of disturbance was limited to a depth of 0.12 metres. The hearth and majority of artefacts were located below 0.12 metres in depth. Koettig (1989) identified most of the sites as having high research potential and recommended that salvage of these sites was necessary to conserve the archaeological values.

Dean-Jones (1989) investigated the proposed Pokolbin Country Club site, at the junction of Allandale Road and Lovedale Road. The fifty-hectare property borders Black Creek. It consists of low gradient landform units, with soils mostly derived from weathered bedrock rather than alluvial sources. Despite conditions of low surface visibility, three artefact scatters and two isolated artefacts were recorded. The artefact occurrences were located within ten metres of Black Creek or its tributaries. Raw materials present included silcrete, chert, mudstone and fine-grained volcanics. The sites contained between seven and eleven artefacts each. Dean-Jones (1989) assessed the sites as being of moderate archaeological significance primarily on the criterion of representativeness and recommended that conservation measures be implemented for each of the sites.

Brayshaw (1985) surveyed the 377-hectare, Pokolbin Park Estate at Nulkaba. Similar landform units to those within the current study area are present. No archaeological sites were located. Similar results were obtained from a survey of an area proposed for residential development west of Cessnock (Brayshaw 1982).

Ruig (1995) surveyed a ten-hectare site for proposed extensions to the Cessnock landfill and located one isolated artefact. No sites were located within an adjacent twenty-five hectare property, Dean-Jones (1987), or within an adjacent four hundred-hectare property (McIntyre 1984). The latter result was attributed to conditions of extremely low surface visibility (McIntyre 1984).

Kuskie (1996) and (2002) surveyed the same area as Brayshaw (1985) and located at different time intervals a total of 30 sites. Kuskie in conjunction with Parkes (2002) surveyed a trunk sewer line from the development and located another 6 sites. The area known as the Vintage is also part of the Black Creek Flood Plain. It differs to the current study area in that it is flatter and contains a more significant drainage pattern of lagoons and creek lines. In general the sites are low-density artefact scatters with low numbers of artefacts, with 12 of the sites only containing one artefact. The predominant makeup of the artefacts is silcrete, siltstone quartz and volcanic materials. Many of the silcrete artefacts show use of heat treatment. The Kuskie and Parkes study (2002) identified a possible silcrete quarry at VS6. Most of the artefacts occur on basal slopes within 50-60m of a watercourse.

White (2002) prepared a Management plan over the Vintage development and commented on the significance of the archaeological record as follows (p9):

"In general, most of the development area appears to be of low archaeological significance. Individual sites and most of their landscape settings have been heavily disturbed by previous landuse and development works. Some locations ... can be enhanced ... Site VS6 is a possible silcrete quarry ... no other sites of this type is known in the Cessnock area ..."

Besant 2007 undertook a 14 km survey of an upland area was undertaken for proposed feeder routes just north of the study area and identified 8 Aboriginal sites. Aboriginal site frequency was

0.57 per kilometre surveyed. Identified sites include four isolated finds and four artefact scatters. Artefact raw materials included indurated mudstone, silcrete, basalt, chert and porcellanite. All sites were located within 500m of drainage lines.

AMBS (2009) undertook an assessment of a 54km transmission line easement between Kurri and Redbank part of which generally followed Old North Road. As a result of field investigations, 65 Aboriginal sites were identified, including two previously recorded sites. Most of the sites were isolated artefacts and of low significance and generally located through wash down and erosion.

This archaeologist undertook studies in the Pokolbin area:

- Old North Road (Roberts 2003) and later as part of the wider Huntlee assessment. Artefacts were located in the margins of the creek and a geological rock formation that was likely to have had significance to Aboriginal people in the past. An extensive conservation zone was established to protect the known heritage.
- Broke Road (Roberts 2004) a reinvestigation of the location of identified artefacts undertaken by Wildthing in 2003. Artefacts were observed in the creek corridors. Conservation zones were established to protect the isolated artefacts and scatters;
- roke Road (Roberts 2006) a peer review of the assessment undertaken by Mindaribba Land Council over a vineyard known as Moon mountain. No artefacts were observed.
- Oakey Creek Road (Roberts 2012) a vineyard with poor visibility and high a level of ground disturbance. No artefacts were located.
- Hermitage Road (Roberts 2012) a vineyard was surveyed for a camping ground/ caravan park. Artefacts were located in an exposed depression just off a vehicular track, in an obvious water flow path leading to the creek. It appears the artefacts were deposited after settling into position after recent rain events and storm runoff.

Objects have also been identified at Paxton, Ellalong and Millfield. These objects are generally related to archaeological studies under taken with development.

Relevance:

The study area forms part of the wider landscape where artefacts were found and suggests that the study area would have been used in a at least a transitory or resource way.

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

- **Importance of wetlands**

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

Relevance:

The study area is not located on or near a wetland

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

A report for the Brigalow country undertaken by the Resource and Assessment Council titled Aboriginal cultural heritage assessment NSW western regional assessments final report September 2002 – Brigalow Belt South Stage 2. This large scale landmark study analysed the finding of separate

independent studies and was able to establish an information base that highlighted Aboriginal association with forests, travelling stock routes (early roads), rural properties and towns.

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

Relevance:

The study area is at its closest point 300m from an intermittent water source, Mary Annes creek. Whilst water would be available seasonally it would not be conducive to regular and long term use.

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

A survey by Jo McDonald 1988 was an east west survey from Dubbo to Tamworth. The report found stream order influenced occupation pattern. Her analysis concluded that;

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

Stream order is a measure of the relative size of streams. The smallest tributaries are referred to as first-order streams, while the largest river in the world, the Amazon, is a twelfth-order waterway.

Relevance:

The study area has 2 minor drainage channels (1st order) commencing within its boundaries. They only carry water during rain events and do not hold water.

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

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

Relevance:

The study area has no attributes for ceremonial areas.

- **Relationship between Object type and landscape**

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

The above studies indicated:

- Open campsites would be near water holes
- Grinding grooves are more likely to be found in rocky outcrops exposed by erosion or in creek beds.
- Scarred trees may be present in any type of landscape, but this would depend on the age and type of tree.

- Artefacts are more likely to be found along creek and drainage lines
- Stone arrangements and ceremonial artefacts are more likely to be found in significant landscape aspects such as caves and hills.
- Artefacts can be found in any landscape in proximity to an abundant food/water source.
- Archaeological evidence is more likely to occur in undisturbed areas.

Relevance:

The study area has: disturbance through extensive cultivation; does not contain waterholes; no ceremonial attributes, no rock outcrops and limited drainage lines. However it does have some proximity to an abundant food/water source of Black creek.

- **Burials**

With respect to burials, work by Donlon (1990), where she analysed skeletons uncovered on beaches on the Central Coast of NSW, ethnographic reports by Bennett 1929, along with other research cited by Mulvaney and Kamminga (1999), has tended to indicate that whilst burials could be found almost anywhere and diverse in practice, intentional or formal burials, generally in Eastern NSW, consisted of isolated burials being placed in sandy type soil, near the high water mark, and sufficient soil depth to bury the person vertically in a sitting position and with various belongings. In the Central west of NSW according to Garnsey (1942: p.23ff), the body was placed in a squatting position; with the elbows placed on the knees and the head between the hands. In this position, the body was placed at the foot of a Coolabah tree facing east. A blaze on the tree was also carved in tribal markings to show the man's status. These carved trees were apparently only associated with the graves of the spiritual leaders. For the period of mourning, the body remained out of the ground. The only recorded cemeteries are within the Murray River corridor or at Broadbeach in Queensland. Most burials are discovered by accident.

Relevance:

The study area does not appear to have landscape conducive to burials.

- **Occupation Pattern**

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

The pattern of Aboriginal occupation was underpinned by 2 tenets:

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

Comment:

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

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

With respect to the study area it appears the elevated areas overlooking estuarine swamps or creeks were favoured short term occupation or foraging areas. Aboriginal objects are more likely to be found on these crests within 20cm of topsoil. Freshwater was a factor in establishing longer term camping.

4.4 Landscape

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

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

Landform is basically divided into 2 classifications, the classification covering a larger area is known as Landform Pattern, which can then 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. Relative elevation classes have been standardised and used throughout Australia. The landscape is divided into the following classes:

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

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

Comment:

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

The landform of the study area is generally part of a wider plain interspersed with low hills. As can be seen from figure 7 the study area is relatively flat with higher areas nearby. The following Figure shows the relative landform/ landscape profile of the wider area.



Figure 7 Landscape Context

4.5 Soils

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

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

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

The susceptibility of land to sheet and rill erosion is governed largely by the topsoil texture, slope of the land, length of slope and the probability of intense summer rainfalls. The topsoil or A horizon is where most nutrients, organic matter, seed and macroporosity so desirable for a seedbed exists. If this is stripped away through soil loss the fertility of the soil is lost and productivity reduced. The first few centimetres of soil also generally contain artefacts.

The following map details the soil profile. It shows the soil in the study area classified as CD2 which contains duplex soils ranging from sand to loam commonly 20cm or more thick. They have low to moderate permeabilities and are generally sodic causing intermittent perched water in the subsurface horizon and partial saturation of the upper subsoil during the wet season. The soil analysis indicates that the soil is well drained with water runoff site freely. Erosion from water is minimal and there appears little wind erosion. The top soil is coarse sandy loam.



Figure 7 Soil classification

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

Comment:

The study area soil is a floodplain on alluvium lithology and used for cropping/pasture. Surface condition is firm, profile is well drained and erosion hazard is moderate. The soil composition is sandy loam.

The implication for the study area is that there could be potential for subsurface archaeological deposits within the first 300mm provided the soil profile has not been disturbed.

4.6 Geological Features

The geological data allows for analysis of the landscape to determine any special features that may contribute to historical Aboriginal occupation. There may be particular outcrops or features that would suggest significant Aboriginal use. The following map shows the geological composition of the study area. It shows the study area has no unusual geological features.

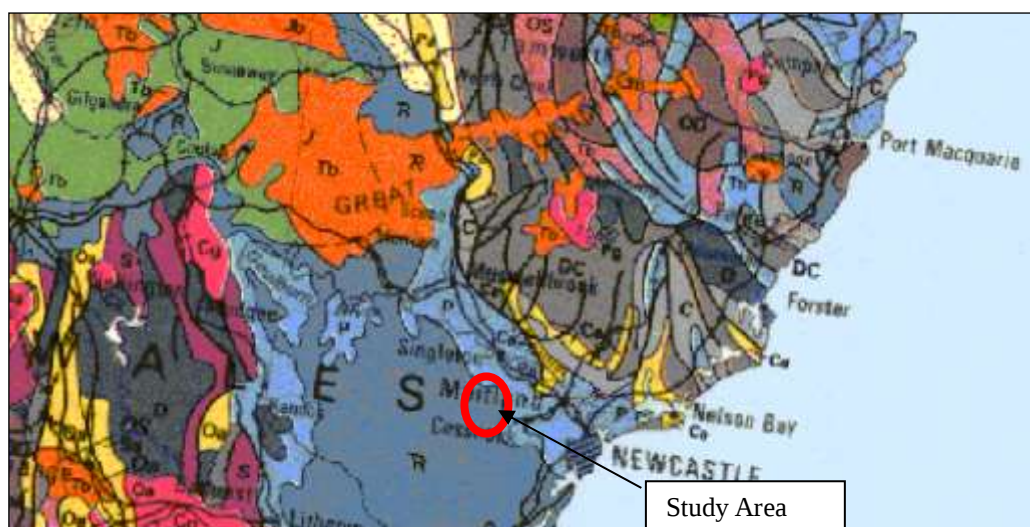


Figure 8 Geological Classification

Comment:

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

4.7 Past Land Use

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

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

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

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

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

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

- *Aboriginal*

The known archaeological evidence tends to suggest that base camps were probably along the ridgelines following various creeks and water lines, probably up to 12k (8 miles) apart and close to freshwater sources. It would appear that the subject site was used for hunting and gathering (with camp sites in more favourable areas).

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 found employment as timber getters, or worked in local mills or on the farms.

- *European*

Early Europeans began to acquire land in greater Cessnock as early as anywhere else in the Hunter Valley. The first land grant went to Benjamin Blackburn on the 21st February 1821 for four hundred acres at what are now Kurri Kurri and Pelaw Main. The early grants occurred in the five main valleys of greater Cessnock which includes the valley of Black Creek of which the study area forms a part. In 1825 John McDonald and his family began to acquire land on the southern side of the Molly Morgan range along Black Creek. In 1826 in the Black Creek Valley, John Campbell acquired 2560 acres which he called Cessnock and covers the study area as well as the majority of the town of Cessnock today. Much of the property was sold in an 1853 enabling the emergence of a private village.

The locality was situated at an intersection on the Great North Road. The first road to join Sydney with the Hunter Valley it was built by 3000 convicts between 1826 and 1834. The junction became a camping place for teamsters. By 1858 there were still no more than eleven adults.

With the opening up of the roads from Sydney via Singleton to Newcastle, maritime transport along the Hunter River and the Great Northern Road from Wiseman's through Wollombi district into Newcastle many settlers began to take up the free grants. In the period 1821 to waiting 31 of these free grants enabled many to settle in the greater Cessnock area.

After the Robertson Land Act of 1861 the way was opened for small landholders and people began to settle on small farms along Black Creek and Anvil Creek in the area to the north and north-west of Cessnock. They were mostly wheat-growers but a German winemaker named Bouffier established a vineyard at Cessnock around 1866. The township developed as a service centre to local farmers and travellers. Wheat-growing declined after rust destroyed the crop in 1870.

With a view to establishing a village in the area, land had been reserved for a church and school north of present-day Cessnock as early as 1829. St Luke's Anglican Church was finally built there in 1867, the original slab-construction St Patrick's Catholic Church in 1872 and a school in 1877. A village was laid out in 1884-85. Officially described as 'The Village of Pokolbin' it became known as Cessnock later in the decade. That name was transferred south to the town now called Cessnock in 1908 and the northern village became known by its local name, Nulkaba, which was officially adopted in 1927. By that time the farmland to the west had become known as Pokolbin.

The study area has a long history of farming practices with clearing, cultivation and establishment of pasture for grazing. Recently the land has been cultivated for a vineyard. The landscape has been heavily modified with levelling, deep ripping and irrigation infrastructure.

Comment:

The land in the study area has been disturbed by European Activities since 1820. The land has been used for various agricultural and rural pursuits. Although Aboriginal occupation occurred within the study area, evidence of such occupation appears remote, as the past land use has probably destroyed all but scattered and isolated stone artefacts.

4.8 Predictive Model

According to Orton (2000), "In archaeology, predictive modelling refers to a process that considers variables that may influence the location, distribution and density of sites, features or artefacts across the landscape. As well as a review of the results of previous archaeological work and available ethnographic information (to make judgements about past Aboriginal settlement of the landscape), the variables often included in a predictive model are environmental and topographic variables such as soils, distance from landscape features, slope, landform elements, and cultural resources."

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

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

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

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

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

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

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

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

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

Prediction of Site Type, Location and Density

Based on the foregoing information (Section 4) the likely site types to be found within the study area depending on the level of disturbance are:

Isolated stone artefacts

These can be located anywhere in the landscape and represent the remnant of a dispersed artefact scatter (open campsite), the simple loss or random discard of artefacts or anthropogenic and natural processes.

Stone artefact scatters (open campsites)

This type of site can range from as few as two stone artefacts to an extensive scatter containing a variety of tools and flaking debris, sometimes with associated materials such as bone, shell, ochre,

charcoal and hearth stones. An artefact scatter does not necessarily mark a place where actual camping was carried out, but may instead be the product of specialised and/or short-term activities involving some level of stoneworking or whilst in transit from one occupation area to another. Artefact scatters may occur as surface concentrations or indicate subsurface stratified deposits.

Scarred Trees

Whilst only one scarred or carved or modified tree has been identified in the general area, it is possible to observe a modified tree. Most modified trees have been either removed by past logging or destroyed by fire or naturally deteriorated.

Location

Artefacts in the wider area have been found on well-drained low-gradient footslope immediately adjacent to a swamp. Low crests or rises for instance, would have a high level of potential sensitivity. The potential location of artefacts within the study area is likely to be, if present, on a rise or bund overlooking the Frogilla Swamp. Artefacts may also occur subsurface in deposition areas.

Density

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

The overall prediction is that it is not likely that above ground evidence will be found within the study area due to long term agricultural use. However, if evidence was to be observed such evidence would be isolated artefacts or artefact scatters. Depending on the nature of the soil within the drainage area it is possible for surface and subsurface artefacts, given that creeks become collectors for archaeological deposits washed down from elsewhere.

5.0 Visual Inspection

The integration of the information consists of checking the predictive modelling against the on ground reality. The developed predictive modelling indicated that any archaeological evidence would be found in the non- disturbed areas of creek catchments and would generally consist of artefacts and maybe grinding grooves.

Although the entire study area was considered in this assessment, it needed also to be considered in context of the lands relationship to the water and land features nearby which would have impacted on the use of the study area by Aboriginal people

5.1 Strategy

The following was used to inform the visual inspection of the proposal.

- Vehicle traverse used for reconnaissance observations of the proposal area to inform and design a pedestrian survey strategy for the area and any other areas adjacent to the proposal considered not to be disturbed under the NPWS Act.

5.2 Method

- As the proposal is areal, the entire land area of the proposal was inspected by car for reconnaissance observations prior to implementing a survey strategy.
- Survey on foot of those areas deemed by observation to have even the slightest probability to contain evidence of Aboriginal occupation.
- Accurately define and name survey units
- Include representative photographs of survey units and landforms where informative
- Record landform and general soil information for each survey unit
- Record the land surface and vegetation conditions encountered during the survey and how these impact on the visibility of objects
- Record any Aboriginal objects (including those already registered on AHIMS or otherwise known) observed during the survey
- Record survey coverage and calculate survey effectiveness

5.3 Coverage Data

The effectiveness of archaeological field survey is to a large degree related to the degree of ground surface visibility. The dominant factor affecting the ground surface visibility was the disturbed and modified nature of the ground. Although the total amount of exposure was limited, it is believed there was sufficient landform type and exposure to indicate any potential archaeological material that may be present.

The characteristics of the survey and effective survey coverage are as follows:

As shown by the following 2 plates, the survey area was constrained by prolific pasture. The majority of trees present were of an age that was far too young to contain scars of Aboriginal origin. However, there were a few trees of good age. There was neither permanent water source on site nor any large areas of exposure. The main areas of exposure were around the dams, aged trees and drainage gullies.



Plate 1 pasture



Plate 2 pasture

Although the study area was a single landscape unit, the area was divided into survey units dependent upon areas of exposure such as dams.

<i>Survey unit</i>	<i>Topography</i>	<i>Surface slopes</i>	<i>Visibility</i>	<i>Area available for detection</i>	<i>Finds</i>	<i>Archaeological Survey constraints</i>
Entire site	Gentle slope	Generally <5%	Extremely poor almost non existent	10%	nil	pasture
Dam (nth)	n/a	n/a	good	80%	nil	Very pebbly soil
Spotted Gums	n/a	n/a	good	90%	nil	
Rock outcrop	n/a	n/a	fair	50%	nil	Soil coverage
Exposed track	n/a	n/a	good	90%	nil	disturbed
Drainage gully	n/a	n/a	good	60%	nil	Rock outcrop and erosion

Table1 Survey Effectiveness

The following plates illustrate each survey unit.

Dam Unit



Plate 3 Dam



Plate 4 Dam

Spotted Gum Unit



Plate 5 aged spotted gum



Plate 6 aged spotted gums

Rock outcrop Unit



Plate 7

Exposed Path Unit



Plate 8

Drainage Gully Unit



Plate 9



Plate 10

5.4 Findings

No Aboriginal objects were located. Although the land was heavily pastured and visibility poor over most of the area it was still possible (based on landscape attributes) to determine that subsurface objects were unlikely.

The drainage gullies were along rock outcrops. It would appear that the topsoil was thin with rock layers not far below the surface. The pebbly nature of the exposed soil indicates very strongly almost nil subsurface potential.

Overall despite the disturbed nature of the land through ploughing, pasture improvement and poor soil conditions, there were sufficient areas of exposure, particularly around aged trees and in gullies to indicate that there was little likelihood of observing archaeological evidence.

6.0 Identification of heritage values

6.1 Key principles in determining Occupation Pattern

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

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

1. Proximity to water

There is no reliable water on site. The nearest potential water is at Mary Annes Creek but in all reality Rothbury Creek to which Mary Annes creek flows Some 3km to the northwest.

2. Food resource

The study area is not a particular food resource area

3. Geological features

There is no unusual, unique and prominent geological attributes within the study area.

4. Ease of access

The study area is easily accessible on foot for all age groups; however, its flat dry landscape would not be conducive to camping.

5. Connectivity

The study area does not appear to link other areas.

6. Safety

The study area is not dangerous or close to dangerous landforms. There does not appear to be natural protection from harsh and extreme weather. There are no commanding views from various parts of the study area.

7. Archaeological evidence

Whilst no Aboriginal objects were identified within the study area, the spatial distribution is probably more indicative of the occupation of the total area landscape rather than just the immediate area itself. The overall lack of evidence probably also suffers from the pasture improved nature of much of the land.

Comment

Although the majority of the study area has been disturbed, it is still possible to suggest the occupation context and landuse. The information from the above 7 principles indicate:

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

The study area was probably used as a resource and rest area on the way to more permanent or intensive occupation sites. There does not appear to be any landscape attributes that would suggest more than occasional use.

6.2 Landscape Significance Assessment

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

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

- *Social value*

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

- *Historic value*

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

- *Scientific value*

There is no scientific value to the study area.

- *Aesthetic value*

The sensory, scenic, and creative milieu of various parts of the landscape evokes feelings of a sense of place and its past use, but does not evoke any special or unusual use.

Comment

Whilst all landscapes are of significance to Aboriginal people there are no observable areas of archaeological significance within the study area.

7.0 Recommendations

The following recommendations are specific management outcomes arising from this assessment and as a continuation of a due diligence process for management of the Aboriginal heritage values.

1. After applying the due diligence process including desktop assessment and visual inspection, it is reasonably concluded that an AHIP application is not warranted as Aboriginal Objects are not likely to be harmed.
2. Under the NPW Act 1974, it is the responsibility of all persons to ensure that harm does not occur to an Aboriginal object. Whilst undertaking works, if an Aboriginal object is found, work must stop and DECCW notified. An application for an AHIP may also be required. Some works may not be able to resume until an AHIP has been granted. Further investigation may be required depending on the type of Aboriginal object that is found. If human skeletal remains are found during the activity, work must stop immediately, the area secured to prevent unauthorised access and the NSW Police and DECCW contacted. The NPW Act requires that, if a person finds an Aboriginal object on land and the object is not already recorded on AHIMS, they are legally bound under s.89A of the NPW Act to notify DECCW as soon as possible of the object's location. This requirement applies to all people and to all situations.
3. As part of the due diligence process and duty of care obligations an Aboriginal Cultural Education Program should be developed by the proponent for the induction of personnel involved in the construction activities in the project area. The Local Aboriginal community may be able to assist in delivery of such induction.

8.0 Certification

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

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

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

Signed



(Archaeologist)

3/3/2017

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Maps

Central Mapping Authority

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

Aboriginal Australia

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

10.0 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. Sediment from fires, roof fall, discarded stone tools and food remains form a deposit protected within the shelter and this deposit can be excavated by archaeologists to study patterns of Aboriginal life.
- *Open campsites.* These sites are mostly surface and associated subsurface scatters of stone artefacts, sometimes with fireplaces. They exist throughout the landscape and are the most common site type in rural areas. While found in all environmental locations larger and denser sites tend to be found on riverbanks and lower slopes racing watercourses, as well as ridgelines and other areas that offers movement routes. The study of 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.

II. Natural sacred sites

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

Fire- stick Farming

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

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

Geographical

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

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

Legal

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

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

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

harm an object or place includes any act or omission that:

- (a) destroys, defaces or damages the object or place, or
- (b) in relation to an object—moves the object from the land on which it had been situated, or

(c) is specified by the regulations, or
(d) causes or permits the object or place to be harmed in a manner referred to in paragraph (a), (b) or (c),
but does not include any act or omission that:
(e) desecrates the object or place, or
(f) is trivial or negligible, or
(g) is excluded from this definition by the regulations.

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

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

11.0 Appendix

(A) AHIMS Results

APPENDIX A

Susan Roberts

Date: 12 March 2017

6783 Pacific Highway
Tea Gardens New South Wales 2324

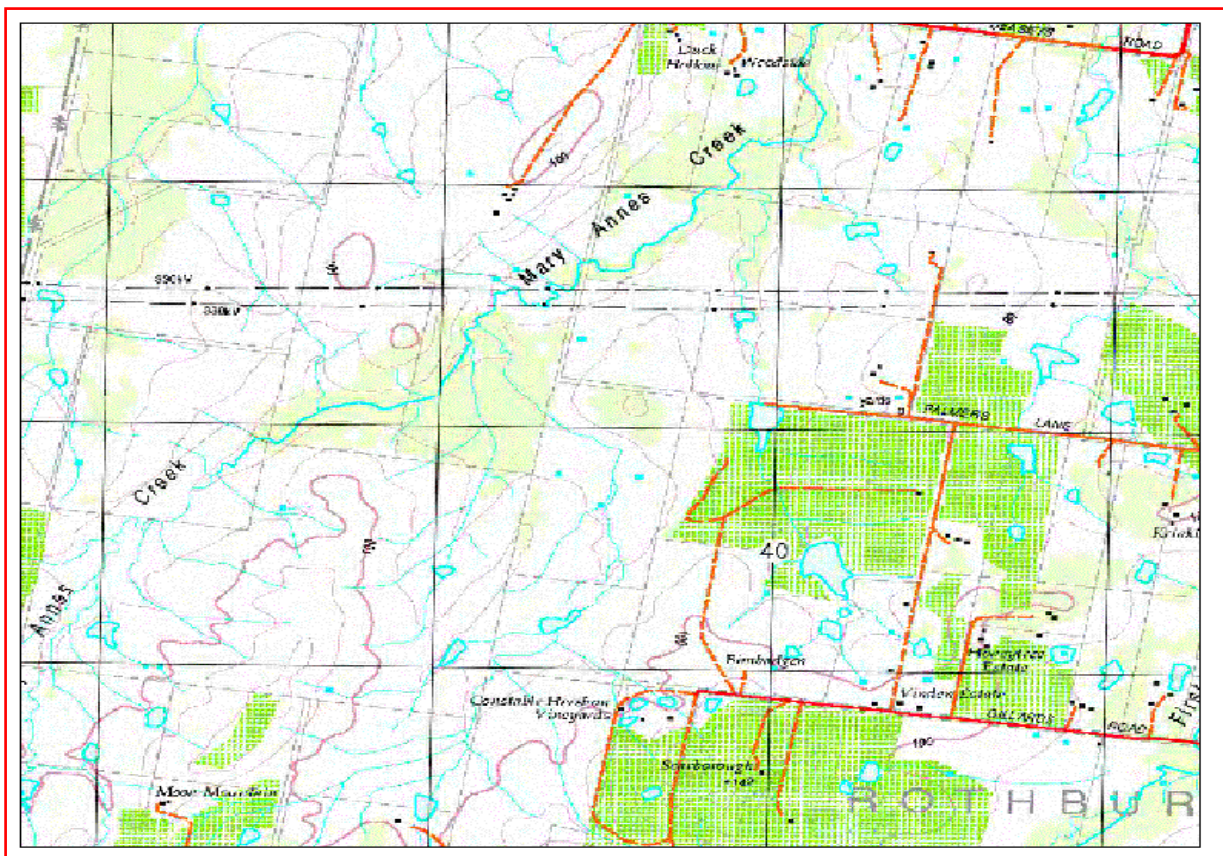
Attention: Susan Roberts

Email: sue@tallpines.net.au

Dear Sir or Madam:

AHIMS Web Service search for the following area at Lot : 22, DP:DP791884 with a Buffer of 1000 meters, conducted by Susan Roberts on 12 March 2017.

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



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

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

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

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

Important information about your AHIMS search

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