

Kyoto energypark

Appendix H

Aboriginal Heritage Assessment
Myall Coast Archaeological Services
(16 September 2008)



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Aboriginal Heritage Assessment

Kyoto Energy Park.
Scone, NSW

Report to
Pamada Pty Ltd
Sydney. NSW
Tuesday, 16 September 2008

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Myall Coast Archaeological Services

Aboriginal Heritage Assessment

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1.0 Introduction

Project:

The proposal is to build an alternate energy park consisting of wind solar and water electricity generation. The project is to be assessed under Part 3A of the Environmental and Assessment Act 1979.

Figure 1 details the location of the properties within a geographic context from the township of Scone on which the facilities are intended to be built. The two properties are each accessed from Bunnan Road at separate locations (Figure 3). Figures 2 and 3 show the approximate location of the proposed facilities.

The proposal is to deliver up to 200MW of renewable energy fed into a local grid. The proposal will include up to 47 Wind Turbine generators, a solar Thermal plant, a Closed Loop Hydro Electric Plant, a substation, associated cabling for connection to the existing transmission network, maintenance facilities and a visitors centre.

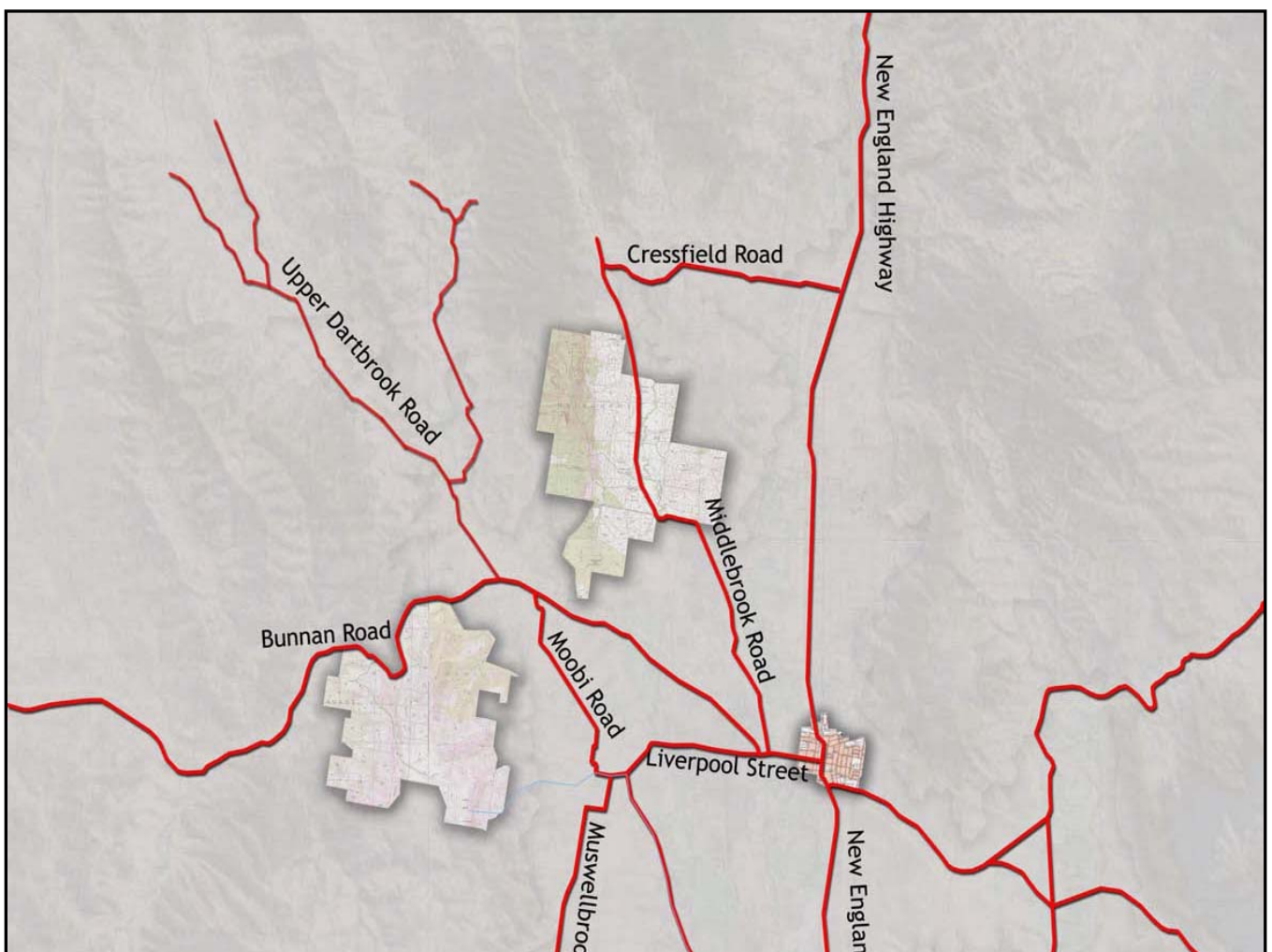


Figure 1 Geographical location

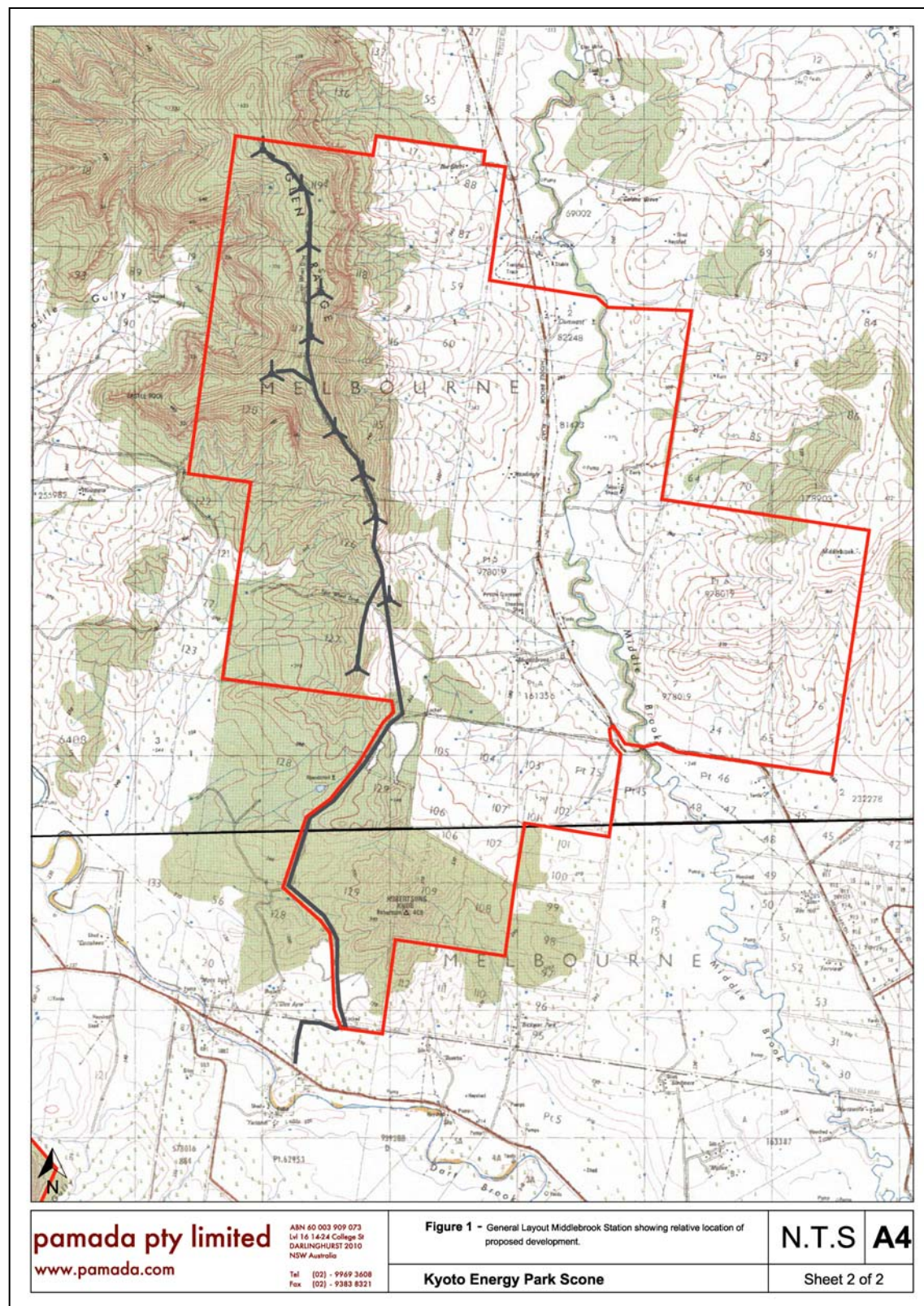


Figure 2 Middlebrook Road Property

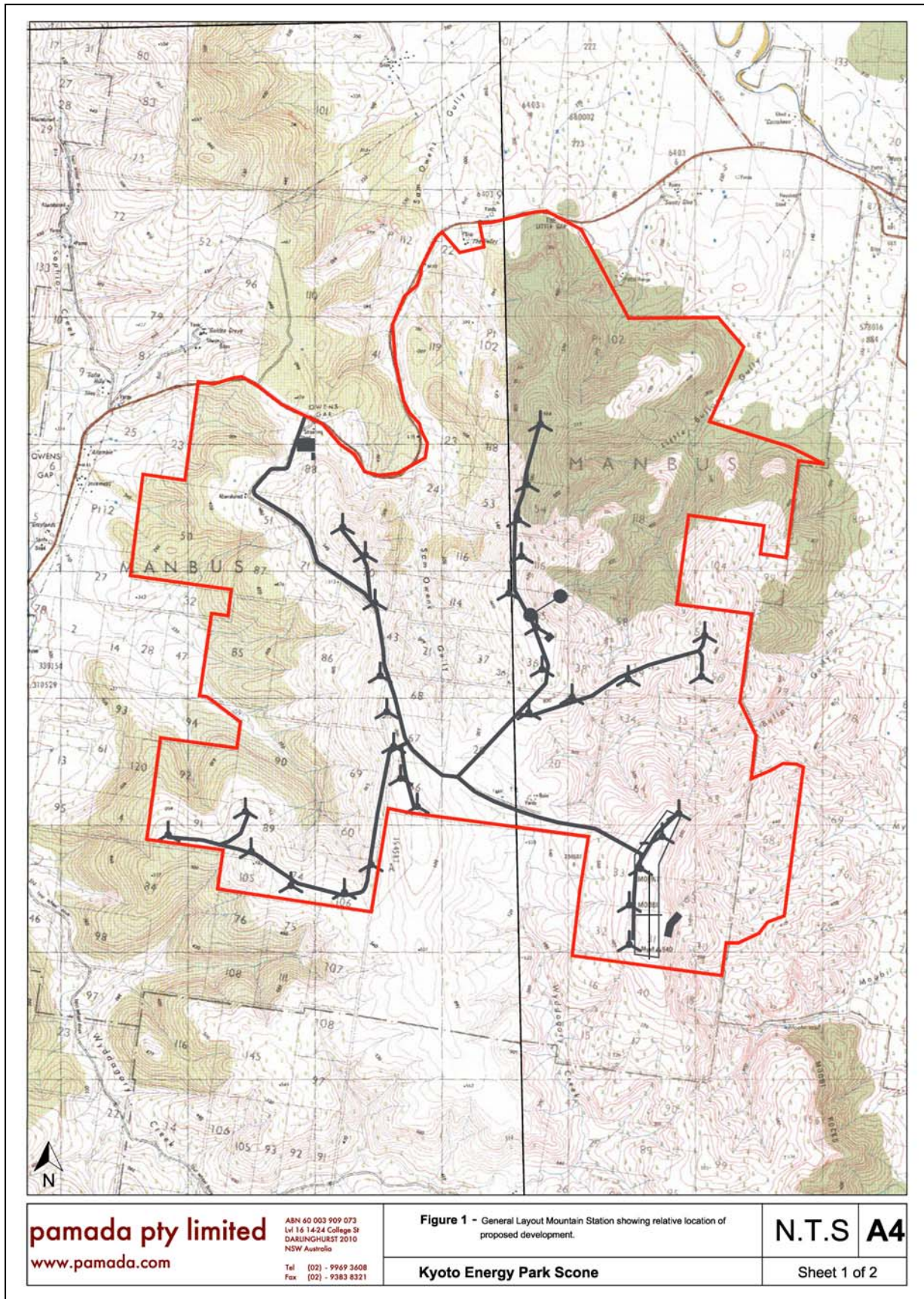


Figure 3 Bunnan Road Property

Process:

The Director General of the Department of Planning in his requirements to assess the application has asked that the focus be on a tiered assessment approach and justifiable and appropriate level of consultation with relevant local Aboriginal communities and Local Aboriginal Land Councils. The Director General issued the following requirement regarding cultural heritage (DGR):

The Environmental Assessment must include an Archaeological Assessment, Methodology and Research Design for any proposed archaeological monitoring, in consultation with the NSW Heritage Office, Aboriginal Community and DEC in accordance with the Department of Environment and Conservation's draft Guidelines for Aboriginal Cultural Heritage Impact Assessment and Community Consultation'.

It must be made clear from the outset that the Guidelines referred to above apply only when one requires a research (monitoring) or destruction permit for an Aboriginal object or place.

The DGR basically defined the brief as preliminary assessment in conjunction with the Aboriginal community, identification of any impacts on Aboriginal Objects or Places and appropriate permits obtained for that impact or research.

In summary, the process requires consultation with the Aboriginal community, determining potential impact of the project on Aboriginal heritage and identification of landscape that may have potential for containing Aboriginal Objects or archaeological evidence of Aboriginal occupation.

Identification of Aboriginal Stakeholders:

In order to determine the appropriate knowledge holders within the community, the Department of Environment and Conservation Guidelines, (NPWS Guidelines for Aboriginal Heritage Impact Assessment in the Exploration and Mining Industries 1997) were followed. Figure 4 is the flow chart setting out the process. As the project is to be assessed under 75F(2) of the Environmental and Assessment Act 1979, the application step is not to NPWS for Consent, but to the Minister for Planning.

Although only a requirement for applications to the Department of Conservation (DECC) for part 6 consent permits, the guidelines for identifying Aboriginal people who may be knowledge holders were also followed. This was to ensure that the appropriate and relevant Aboriginal communities were not only consulted about the project but were included in assessing possible impact upon their culture.

The Wonnarua People have been recognised by the Native Title process and are registered Native Title Claimants (Figure 5). This is important, as registered Native Title Claimants have particular rights under Native Title legislation which overrides the Assessment process. The proposal is in the Wannarua Local Aboriginal Land Council area (Figure 6).

An advertisement as per the DECC (part 6) guidelines was placed in the local paper; Scone Advocate 28/6/07 on page 20. (Figure 7) in addition letters were sent to known individuals and organisations that had previously been identified through other assessments. (Figure 8)

FLOW CHART FOR GENERAL EXPLORATION AND ABORIGINAL HERITAGE

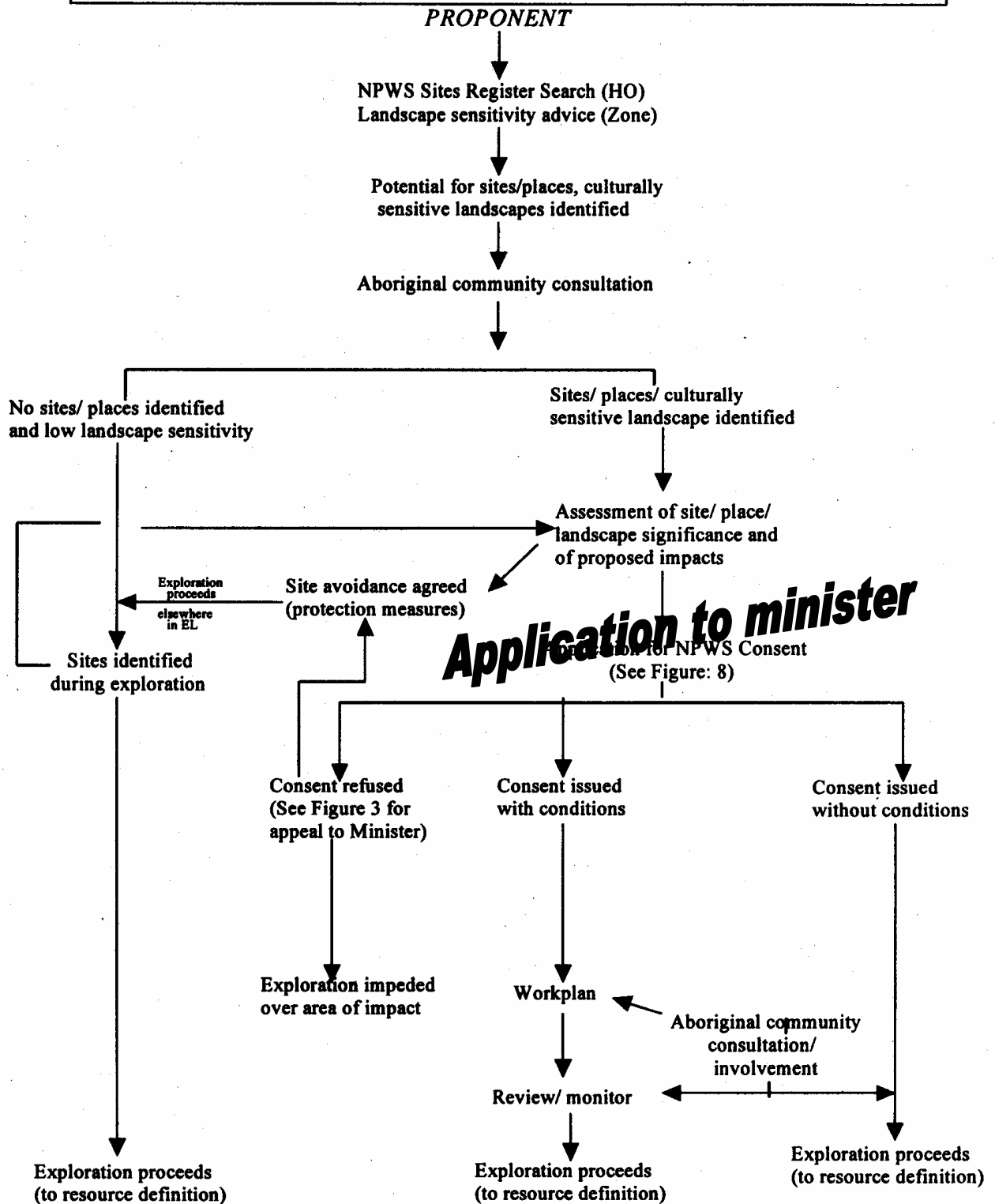
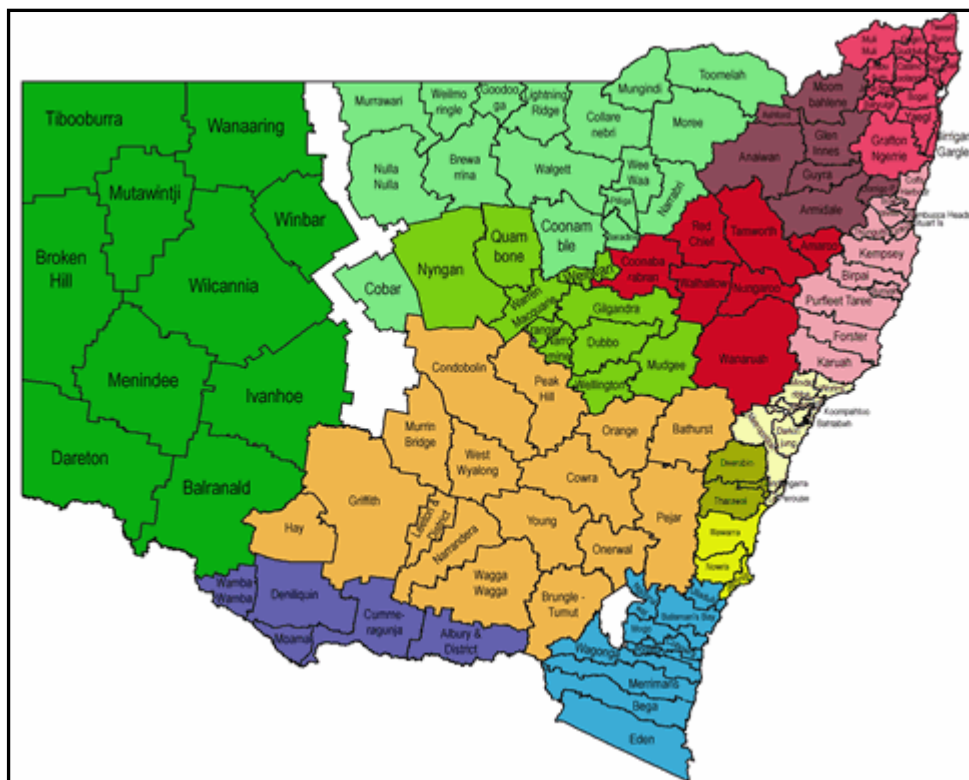


Figure 4 Cultural Assessment Process

[illegible]

The following map of Aboriginal Land council boundaries in NSW clearly indicates that the proposal falls within the Wonnarua Aboriginal Land Council.



KYOTO Energy Park
Aboriginal Heritage Impact Assessment
Len Roberts – Myall Coast Archaeological Services

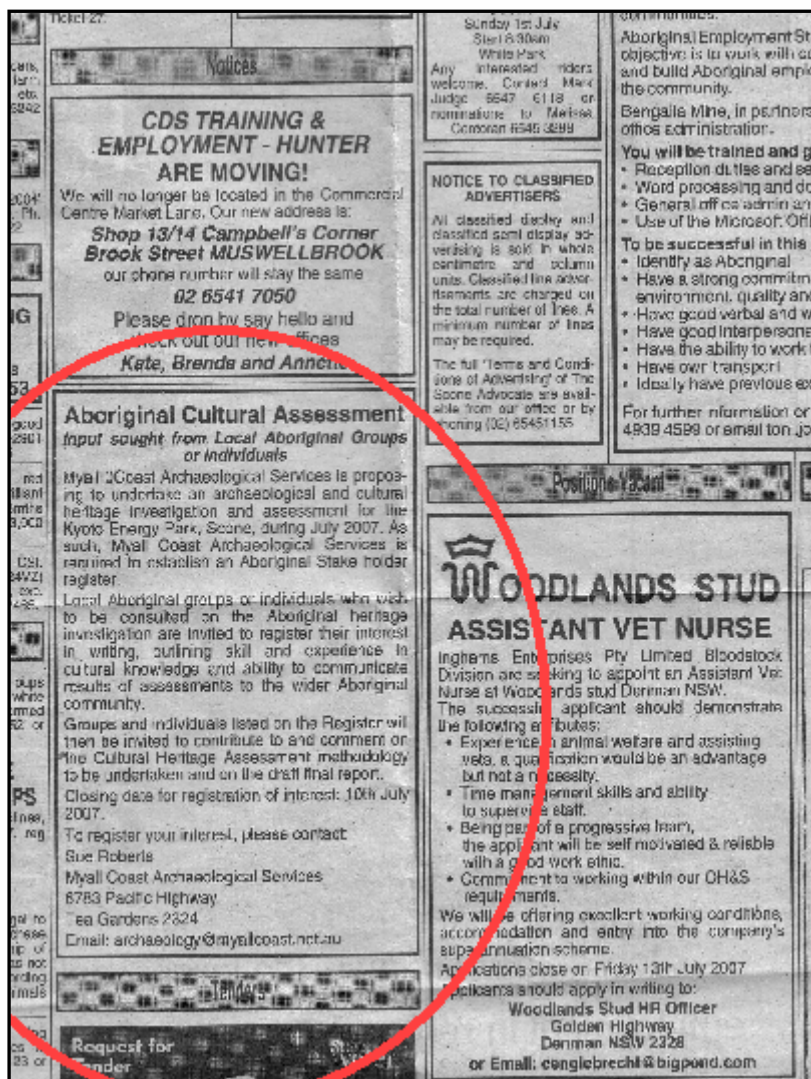


Figure 7 Advertisement- Scone Advocate 28/6/2007 p. 20

The wording was as follows:

Aboriginal Cultural Assessment

Input sought from Local Aboriginal Groups or Individuals

Myall Coast Archaeological Services is proposing to undertake an archaeological and cultural heritage investigation and assessment for the Kyoto Energy Park, Scone, during July 2007. As such, Myall Coast Archaeological Services is required to establish an Aboriginal Stake holder register.

Local Aboriginal groups or individuals who wish to be consulted on the Aboriginal heritage investigation are invited to register their interest in writing, outlining skill and experience in cultural knowledge and ability to communicate results of assessments to the wider Aboriginal community.

Groups and individuals listed on the Register will then be invited to contribute to and comment on the Cultural Heritage Assessment methodology to be undertaken and on the draft final report.

Closing date for registration of interest: 10th July 2007

To register your interest, please contact:

Sue Roberts
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Myall Coast Archaeological Services

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Dear

Invitation

Scone Energy Park

Cultural Assessment

You are cordially invited to attend an information and presentation session on the proposed Energy Park (wind, solar and water) to be developed at Scone.

The purpose of the presentation is to advise the Aboriginal Community about the project prior to undertaking a Cultural assessment by Knowledge Holders of Country.

Expressions of interest were advertised in the Scone Advocate 28/6/07 and a stakeholder register established.

In addition to the advertisement the Land Council and Registered Native Title Claimants were advised and included on the stakeholder Register.

As a known Aboriginal community representative the invitation has been extended to you.

Date: Monday, 30th July

Time: 10 am

Venue: Wonnarua Land Council

RSVP Tracey Skene or Len Roberts by 28th July for catering purposes.

Kind regards,

Len Roberts

19/7/07

Figure 8 Letter of Invitation

The following organisations/individuals who responded were registered as stakeholders for the project and were not only consulted about all aspects of the project but produced an independent preliminary Aboriginal Cultural Assessment. Some organisations had several representatives attend various meetings.

Stakeholder	Address	Mailing address	Phone/fax
Hunter Valley Aboriginal Corporation	180-182 Bridge Street Muswellbrook 2333	PO Box 579 Muswellbrook 2333	65431180
Hunter Valley Cultural Consultants			
Upper Hunter Heritage Consultants	160 Sydney Street Muswellbrook 2333		0422910898
Giwiirr Consultants	8 Fitzgerald Ave, Muswellbrook 2333		65410506
Aboriginal Native Title Consultants	69 Toobruk Ave, Muswellbrook 2333		0417725956
Ungooroo Cultural and Community Services	8 Blaxland ave Singleton 2330		
Wanaruah Local Aboriginal Land Council	17-19 Maitland St Muswellbrook NSW 2333	PO Box 127 Muswellbrook 2333	02 6543 1288 02 6542 5377
Tracey Skene	7 Crawford place Millfield, 2325		0437899496
Wannaruah People		PO Box 3043 Singleton 2330	65 731103

Table 1 Stakeholder Register

Consultation

Initial Consultation

Location: Wannarua Land Council Muswellbrook

30/7/07 In Attendance
Barry and Colleen Stair, John and Margaret Matthews, Frank Irving, Kylie Griffith, Donna Sampson, Christine Matthews, Tracey Skene

Apologies
Rhonda Ward, Arthur Fletcher, Rodney Matthews, Victor Perry, Des Hickey, Maree Waugh

Familiarisation Inspection

Location: Middlebrook Station, Mountain Station

13/8/07 In Attendance
Barry and Colleen Stair, John and Margaret Matthews, Frank Irving, Donna Sampson, Michelle Stair

Apologies
Rhonda Ward, Arthur Fletcher, Rodney Matthews, Victor Perry, Tracey Skene, Christine Matthews, Maree Waugh

Survey and Inspection

Location: Middlebrook Station, Mountain Station

30/8/07 In Attendance

Barry and Colleen Stair, John and Margaret Matthews, Rhonda Ward, Tracey Skene, Maree Waugh

Finalisation of Aboriginal Cultural Assessment

Location: Wannarua Land Council Muswellbrook

18/9/07 In Attendance

Barry and Colleen Stair, John and Margaret Matthews, Rhonda Ward, Tracey Skene, Maree Waugh, Melissa Matthews, Frank Irving, Darryl Matthews, Michelle Stair, Donna Sampson, Christine Matthews

2.0 The Study

2.1 Study Personnel

The research and report was compiled by Len Roberts BA (Arch.), Grad. Dip. Comp., Dip Sp. Ed., consulting archaeologist, who also holds, a certificate in Archaeological fieldwork from Tel Aviv University, Israel. Len has worked on archaeological projects in Australia and overseas. Len also holds a certificate from the Local Government Learning Solutions in Heritage Planning Practice, 2004.

The proposed location of facilities was inspected by Myall Coast Archaeological Service in conjunction with representatives of the stakeholders all of whom have varying experience as knowledge holders and expert in artefact recognition, to "ground truth" the desktop analysis.

2.2 Method

The analysis and assessment of the study area's archaeological potential and the impact of the proposal required the completion of 3 tasks;

1. Research

This involved a review of primary and secondary sources including written material, maps, plans, AHIMS database and other reports as well as discussion with Aboriginal Community representatives.

2. Analysis of the research to produce a model of 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. Landscape
3. Soils
4. Geological Features
5. Archaeological record
6. Previous Studies
7. Past land use

8. Community Consultation
9. Identification, by plotting on a map, potential areas of impact of the proposed development on Aboriginal objects and archaeological potential;
10. Inspection of study area

And;

3. Aboriginal Cultural Assessment undertaken by knowledge holders of country. (The registered stakeholders.)

2.3 Aboriginal Heritage Values

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

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

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

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

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

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

2.4 Cultural Landscapes

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

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

3.0 Study Area context

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.

An appreciation of known Objects, previous studies, landscape context, the history, settlement and lifestyle of the Aborigines prior to European contact places the study area in the context of Aboriginal use or occupation. It also enables the development of a predictive model of archaeological evidence.

3.1 Aboriginal heritage Information Management System

The AHIMS database maintained by DECC was consulted to determine known Objects within the proposed development corridors.

According to the AHIMS database kept with the Department of Environment and Climate Change (DECC) whilst there are no known objects within the study area and immediate vicinity there are Aboriginal objects within a 20km radius to the proposal. All have been identified through survey, mainly mining. The Stakeholders were not aware of others; however they were aware of the overall sensitivity of the landscape as special places but were unaware of any specific matter within the study 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.
- Not all reports and cards are available for inspection.
- Recent studies have not as yet been registered.

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

The known relics are either located along waterways, wetlands and exposed tracks.

The recorded objects are directly related to surveys undertaken in the area. For cultural reasons, the location of the Objects shown on the Database is not attached to this report

Within the wider region some areas revealed an abundance of Objects whilst others revealed none. Such a dichotomy of observation of artefacts may be affected by a number of possible factors singularly or in combination; and in order to adequately assess the observational record it is important to address those factors;

- Differences in observer styles
Whilst observer styles will always play a part in observation of artefacts, it must be noted that within a wide variety of landscape and area the same study teams had areas of high concentration and no concentration of artefacts. Differing archaeological survey teams had the same Aboriginal Sites Officers and therefore minimised style difference. Several areas were surveyed by differing teams independent of each other at different times with no marked difference in the archaeological record. Despite observer styles the survey teams consistently reinforced the pattern of artefact distribution across the landscape. In addition the archaeologists undertaking the surveys are well qualified and experienced and therefore any differences in observer styles appear not to have affected the archaeological observation.
- Survey visibility
That is, the extent to which an observer can detect the presence of archaeological material at or below a given place and is generally affected by

seasonal factors such as grass cover, level of water in creeks etc. It is a given, that the archaeological record is affected by surface visibility, however it would appear that the visibility across the study areas has been consistent and therefore archaeological observation is equally consistently affected. Surface visibility is not a factor that has created the differing observational record.

- Integrity of soil profile and landscape

Whether a study area will contain archaeological evidence is dependent on the level of disturbance of a site. Filling, levelling ploughing road construction and other processes will affect observation. The various studies have generally indicated rural and pastoral use of the land at the time the studies were undertaken.

- Depositional qualities of the study area

This perhaps is probably the fundamental aspect for concealing/revealing objects. Stone artefacts on slopes will be affected by natural surface processes. Initially deposited on the surface an object will be subjected to differing rates of burial and exposure, dependent upon climactic conditions and bioturbation agents. Objects are known to migrate vertically downwards within a soil profile or be carried over the surface toward a lower landscape by means of wind, rain and other natural processes. Thus a range of natural processes will influence artefact distribution and any interpretation of such distribution must consider the effects and intensity of such natural processes. However, for the purpose of this analysis it is not so much where the objects were found but that objects were found in varying densities, indicating a varying degree of Aboriginal occupation.

- Aboriginal Occupation Patterns

The observation or non - observation of artefacts or objects in a given place may be directly proportional to the level of Aboriginal occupation. Taking into account the various natural processes within a landscape and the factors as outlined previously may suggest quite emphatically a pattern of Aboriginal occupation. Areas of danger to children, poor amenity and adverse exposure to the elements, would not be used as frequently if at all, to more favourable locations.

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.

3.2 Landscape

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

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

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

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

The relative elevation of landscape features can provide a consistent model for landform description, as this factor will have a major effect on landscape behaviour ie. Differing erosional potentials due to gravity (mountains versus plains). The classification defined in the table below, has been used to provide consistency in relating landscape dimensions with general concepts of landform ie. *When does a hill become a mountain?* This classification system is strictly morphological and indicates the amplitude of the landscape.

Relative elevation classes have been standardised and used throughout Australia. The standard text used is called the "Soil and Land Field Handbook" (McDonald *et al*, 1990, Ed 2, p36). 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

However, definitional issues arise in determining the measuring points (i.e. *Where is the bottom of the hill or mountain defined?*) The combination of slope classes with relative elevation provides an extra dimension or shape to the morphology description - eg. flat, gently undulating or undulating plains (see McDonald *et al*, 1990, Ed 2, p36).

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

- Relief
- modal slope
- Stream channel occurrence
- Mode of geomorphologic activity
- Component landform elements.

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

Landforms as well as having morphological characteristics (surface dimensions) have been formed by processes. Many landform types are defined by process, such as dunes and karst topography. Dunes for example may fit into a number of relative relief classes but are distinguished by their composition and formation process.

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.

There are many different landform patterns within the study area, but the development infrastructure is confined to the Ridgeline.

The landform profile of the overall location of the facilities is basically a high ridgeline of a hilltop/mountain spur which is an adjunct to the Great Dividing Range. However, in summary the linear extent of the proposal covers in excess of 10km from Moobi Mountain) in the south through to Glen Range in the north and varies in height around 600m.

3.3 SOILS

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

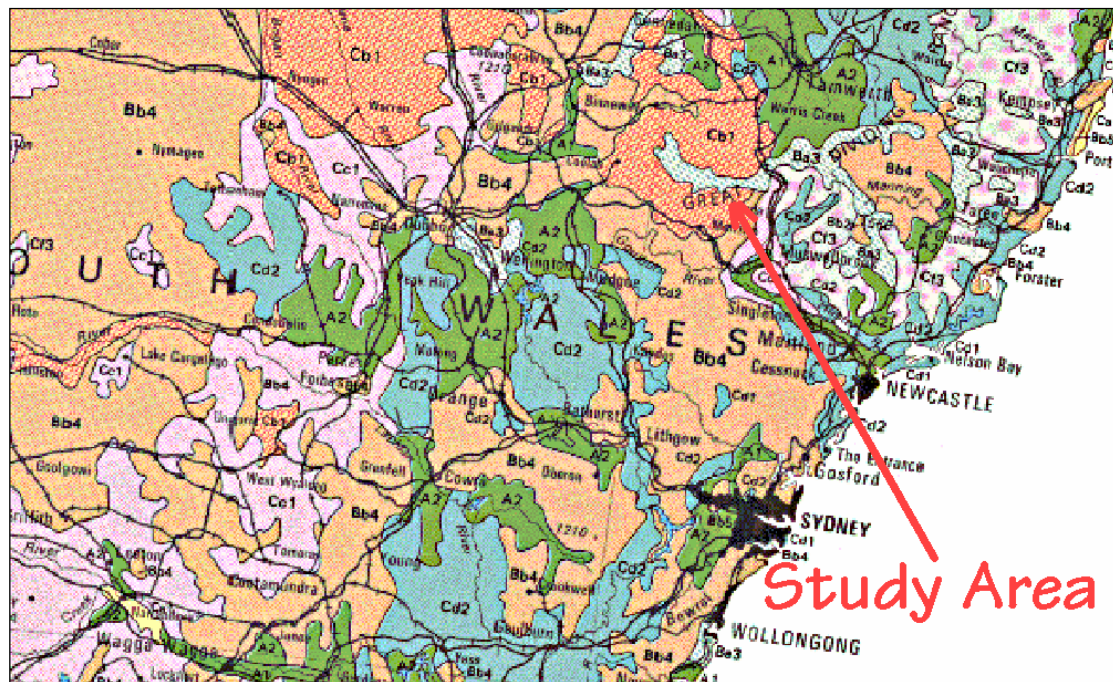
- The possibility of archaeological evidence beneath the surface.
- The possibility of archaeological evidence destroyed through erosion or other natural phenomena.
- The possibility of archaeological evidence preserved through soil/sand deposition.

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 soil in the study is shallow and subject to runoff. There is a strong bedrock just below the soil surface. Based on the soil analysis any subsurface deposits are likely to be shallow. The implication for archaeological evidence is that anthropological activities which disturb the topsoil are likely to also disturb the integrity of the archaeological record and generally uncover and recover any deposits. This tends to suggest that areas that have been subjected to grazing, ploughing and grading will generally tend to have surface rather than subsurface evidence and any evidence whether surface or subsurface will likely be scattered and generally dispersed with runoff.

The following map details and soil profile.



SOURCE

Specially compiled 1976-77 by K. H. Northcote, Division of Soils, CSIRO, Adelaide, from 'A Soil Map of Australia' (1:5 000 000) accompanying *A Description of Australian Soils* by K. H. Northcote and others (Commonwealth Scientific and Industrial Research Organization, Australia, 1975).

Figure 5 Soil Profile

3.4 Geological Features

The geological data allows for analysis of the landscape to determine any special features that may contribute to Aboriginal occupation in prehistory. There may be particular outcrops or features that would suggest significant Aboriginal use.

There are features adjacent to and in some cases along the corridor that suggest strong social or historical significance. However they are well known and easily identifiable waterbodies, wetlands, rock outcrops and hills that are able to be avoided or under bored to ensure that they are not impacted

It is important that agreed mitigation measures are in place prior to construction.

The following map shows the geological composition of the study area.

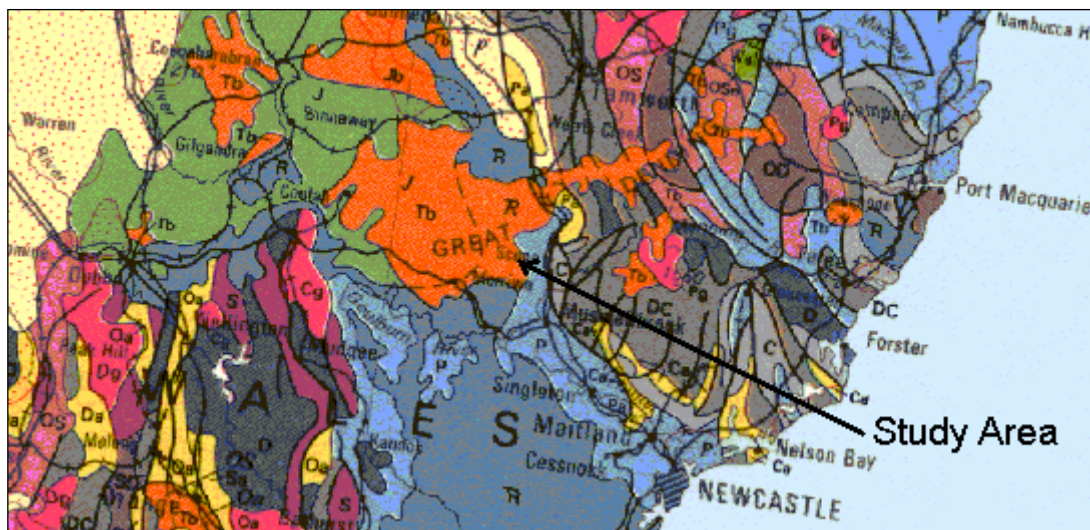


Figure 6a Geological Context

The underlying geology of the study area is volcanic composition of tertiary basalt probably lain down in the Triassic period. As can be seen by comparing the geological map with the soil map there is a general correlation between geological data and soil type. This is not surprising in that soil is formed by natural processes which alter landform and geological features.

The geological composition suggests that subsurface deposits are highly unlikely as there would be limited covering material available. Archaeological evidence would therefore be exposed to the elements, weathering and erosional processes.

3.5 Previous Studies

Although there are no known studies within the immediate vicinity of the study area, there have been extensive studies nearby for mining proposals. However whilst they have identified thousands of Objects they do not shed any great insight on this study area. They do reinforce the pattern and type of archaeological evidence.

On a regional basis, several studies have been undertaken which have proven to be definitive works and a canon for understanding archaeological potential.

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.

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. The purpose of that study was to obtain data to assist in “improving cultural heritage management... and landforms and their relationship with Aboriginal heritage.

This large scale landmark study was able to establish an information base that highlighted Aboriginal association with forests, travelling stock routes, rural properties and towns.

Perhaps the most important finding from the study that has implication for the current project is contained at 4.5 and referred to relationship between Objects and distance from water as well as the importance of stock routes which were originally and generally aboriginal trails, to the Aboriginal community.

The relevant section is included in its entirety.

4.5 DISTANCE FROM WATER OF SITES – BBSB

4.5.1 Summary Information from the distance from water Aboriginal sites has been extrapolated from three separate surveys carried out within the bioregion. They include the results from a site survey for a gas pipeline (AGL 1999), Stage 1 of the BBSB assessment for the Goonoo and Pilliga State Forests (NPWS 2000) and the results of the BBSB Stage 2 assessment. All three studies share similar results of distance from water for Aboriginal sites among the landforms identified and mapped.

4.5.2 Sites associated with water localities - AGL

The AGL study demonstrated that an Aboriginal site survey of 226.2 km was able to distinguish a pattern of Aboriginal site distribution, despite a narrow survey width which averaged approximately 20 metres. Interpretation of the results produced predictive statements about Aboriginal site distribution across various landform features, particularly watercourses. Of the sites recorded, 50% were within 200 metres of water (TABLE 8). Adequate sampling of many landforms encountered was restricted due to poor surface conditions at the time work was undertaken (AGL 1999:14). The pipeline survey occurred in areas of the Talbragar Valley Province, Pilliga Province and Liverpool Plains Province.

Prior to the BBSB Stage 1 assessment, it was widely believed that the rain fed creeks behaved in a hierarchical network of stream flow. The dominant class of ordered streams that occurred in the forests was formed on the higher contoured slopes and then as larger drainage streams on the flatter alluvial plains. From this general viewpoint, the interpretation of forest usage by Aboriginal people would be considered as sporadic, reflecting a response to the intermittent flow of rain fed streams of a marginal landscape.

Results of the sites survey and geomorphological study indicate a different story. 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. From what is understood of the chains of ponds, the relationship between vegetation and the morphological structure of the soils resulted in water being available for prolonged periods. A diversity of plant foods would have been associated with these features.

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.

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

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: 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. In the burial of an important individual, a strip of bark about five foot long and two foot wide was stripped from the eastern side of the tree and placed in a slanting position over the corpse. The 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.

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 of other studies within the vicinity of the corridor enabled a generalised predictive model for archaeological evidence distribution. Using stream order, she made the following general predictions about Aboriginal site location - and the nature of these sites

1. *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 the following way:*
 - *In the headwaters of upper tributaries (i.e. first order creeks) archaeological evidence will be sparse and represent little more than a background scatter;*
 - *In the middle reaches of minor tributaries (second order creeks) archaeological evidence will be sparse but indicate*

focussed activity (e.g. one-off camp locations, single episode knapping floors);

- *In the lower reaches of tributary creeks (third order creeks) will be archaeological evidence for more frequent occupation. This will include repeated occupation by small groups, knapping floors (perhaps used and reused), and evidence of more concentrated activities;*
- *On major creeklines and rivers (fourth order) archaeological evidence will indicate more permanent or repeated occupation. Sites will be complex, with a range of lithic activities represented, and may even be stratified;*
- *Creek junctions may provide foci for site activity; the size of the confluence (in terms of stream ranking nodes) could be expected to influence the size of the site;*
- *Ridgetop locations between drainage lines will usually contain limited archaeological evidence although isolated knapping floors or other forms of one-off occupation may be in evidence in such a location.*

The following table summarises the occupation type and location of Aboriginal settlement east of Murrurundi was tabulated by Mary Dallas and is of value in obtaining an overview of Aboriginal settlement

Occupation Pattern	Activity Location	Proximity to Water	Proximity to Food	Archaeological Expectations
Transitory movement	All landscape zones, often on ridge and spur crest, watercourses and valley flats	Not important	Not important	*Assemblages of low density & diversity *Evidence of tool maintenance & repair *Evidence for stone knapping
Hunting and/or gathering without camping	All landscape zones	Not important	Near food resources	*Assemblages of low density & diversity *Evidence of tool maintenance & repair *Evidence for stone knapping *High frequency of used tools
Camping by small groups	Frequently associated with permanent & temporary water	Nearby	Near food resources	*Assemblages of low to moderate density & diversity * Evidence of tool maintenance & repair *Evidence for stone knapping * Hearths
Nuclear family base camp	Level or gently undulating ground	Nearby reliable source	Near food resources	*Assemblages of high density & diversity *Evidence of tool maintenance & repair, casual knapping *Heat treatment pits, stone-lined ovens *Grindstones

Community base camp	Level or gently undulating ground	Nearby reliable source	Near food resources	<ul style="list-style-type: none"> *Assemblages of high density & diversity *Evidence of tool maintenance & repair, casual knapping *Heat treatment pits, stone-lined ovens *Grindstones & ochre *Evidence for heat treatment unlikely *Large area > 100sqm with isolated campsites
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Table 2 Aboriginal Occupation Model

3.6 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. Cultivation, with the associated stick raking and stone gathering also 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.

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

3.7 Cultural Context

SOCIAL

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

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

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

LOCATION

In recent times the territories of Aboriginal tribes 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. There is no way of knowing how far back in time this territorial organisation goes, but it may well be quite ancient.

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

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

On the coast, according to Flood (p.219), "The most favoured campsite was a foredune close to a rock platform on the north side of a headland. Such a site, offered easy access to shellfish, a landing place for canoes, proximity to drinking water, shelter from prevailing winds, and soft sand for a bed." Inland, the camps would have been near reliable watercourses and protected from prevailing winds. If hills were nearby, they may have had winter camps in rockshelters or caves. JW Fawcett (1898, p.152), stated of the Wonnaruah "in choosing their site [camp] proximity to freshwater was one essential, some food supply a second, whilst a vantage ground in case of attack from an enemy was a third. Pearson (1981), made similar observations of the Wiradjuri (Western Plains, NSW) for suitable camp site location: accessibility to water; Level ground with good drainage; Elevation above cold air currents and lingering frost prone valley systems often with good views of the river flats and water courses; Sheltered from cold winter winds and with adequate summer cooling breezes; and, Adequate fuel supplies.

ENVIRONMENTAL IMPACT

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

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

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

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

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

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

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

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

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

RESOURCES

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

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

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

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

"From what I have said of the natives of New Holland they may appear to some to be the most wretched people on earth, but in reality they are far

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

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

4.0 Predictive Model

It would appear that provided the various natural and anthropogenic processes are taken into account, the distribution of artefacts as observed from the foregoing information indicates archaeological evidence is more likely to occur in undisturbed areas near water supply and exposed tracks but it is important to consider all landscape elements.

Assuming intact landscape integrity, it was determined that the following Aboriginal objects have the likelihood of being identified within the project corridor.

- Isolated finds
- Open camp sites (temporary)
- Shelters with deposits
- Shelters with art
- Scarred trees
- Ceremonial areas
- Song trail

5.0 Archaeological Assessment

Seven key principles emerge from the foregoing which enables the development of a pattern for desktop assessment and field survey to determine probable Aboriginal land use of the study area.

1. Proximity to water
How close is the study area to reliable water?
2. Food resource
Does the study area contain favourable, seasonal or special food resources?
3. Geological features

Are there any unusual, unique or prominent geological attributes within or adjacent to the study area?

4. Ease of access

Is the study area easily accessible on foot for all age groups?

5. Connectivity

Is the study area linked to significant landscape features or does it unite other areas?

6. Safety

Is the study area dangerous or close to dangerous or unhealthy landscapes? How protective is the study area from the elements and how beneficial is the view?

7. Archaeological evidence

What evidence is there of Aboriginal Occupation and how significant is it? What story does it tell?

5.1 Desktop Study

The study area is elevated with commanding views to the north east and south. It is a prominent ridgeline that connects to the Great Dividing Range. Mount Moobi is a clearly identified peak from the valley floor many kilometres away. The study area overlooks Castle Rock which has historical significance and in all probability significance in Aboriginal history. The geological nature of the study area suggests the possibility of caves and shelters. Permanent water does not appear likely although the possibility exists of temporary rock pools. The shallow nature of the soil, erosional opportunities and past land use appears to diminish the possibility of archaeological evidence.

5.2 Field Survey

The field survey was conducted in two parts.

1. A preliminary inspection of the corridor with all available stakeholders by bus and inspection of each proposed facility location. The purpose of the preliminary inspection was to gain an overall understanding of the size and location of the project as well as determining the terms of reference for the field survey.
2. Specific field survey and examination of each facility site and its surrounds by nominated representatives of the stakeholders who had particular expertise in site assessment.

The final inspection of each site was undertaken by foot and the soil and landscape of each area was inspected. The weather was conducive to inspection and the overall visibility was good.

As the landscape for each facility was basically the same, the following table summarises the landscape, finds and constraints.

<i>Landscape</i>	<i>Visibility</i>	<i>Area available for detection</i>	<i>Finds</i>	<i>Survey constraints</i>
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Ridgeline with short cropped pasture. Although cropped pasture it was so short as not to affect visibility. Exposed rock was visible in places. Any artefacts would have been readily observable.	Very good	100%	Nil	Long term grazing and soil disturbance
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Table 2 Effective Survey coverage

Figures 2 and 3 show the location of the facilities and the following table identifies the facilities by coordinates.

AMG56 - AGD84 datum grid

Component		Coordinates	
WTG		x	y
<i>Mountain Station</i>			
1		286223.832	6453348.114
2		286402.197	6453127.087
3		286478.004	6452751.199
4		286518.926	6452177.717
5		286571.782	6451894.072
6		286625.956	6451622.634
7		286666.657	6451322.634
8		286722.846	6451065.439
9		286717.831	6450769.152
10		286237.743	6450474.359
11		285816.224	6450525.948
12		285503.309	6450795.132
13		284849.537	6450925.738
14		285457.419	6451109.655
15		287781.665	6454157.124
16		287677.121	6453680.607
17		287608.688	6453403.892
18		287631.497	6453117.84
19		287532.824	6452826.105
20		287752.16	6452555.973
21		287794.262	6452227.303
22		287690.54	6451888.027
23		288029.38	6452006.437
24		288472.954	6452151.522
25		289076.053	6452495.675
26		289048.665	6452173.25
27		288480.99	6450063.035
28		288481.384	6450371.757
29		288570.068	6450659.999
30		288740.134	6450911.881
31		288871.154	6451094.433
<i>Middlebrook Station</i>			
32		291744.401	6458695.337
33		291994.637	6459234.468
34		291886.112	6459880.997
35		291788.933	6460220.407

36	291570.706	6460556.785
37	291073.475	6461007.234
38	291383.862	6461297.947
39	291458.043	6461645.839
40	291360.839	6462019.944
41	291306.075	6462464.532
42	291003.661	6462764.784

Solar plant	288637.11	6450293.865
Closed –loop mini hydro plant	287820.42	6452727.863
Substation	285899.733	6453930.699
Mobile Concrete batching plant	285442.919	6453596.595
Maintenance facility	285840.787	6453464.832
Manager's residence	287882.309	6452455.253
Visitor's and Education Centre	288630.979	6450639.571
Access roads (mainly existing)	varies	
Transmission line routes	varies	

Table 3 Co-ordinates for facilities

5.3 Study Results

Using the 7 key principles identified above it is possible to place the study area into Aboriginal occupation context and use.

The study area is a high ridge top which is a finger spur of the Great Dividing Range overlooking the Kingdon Ponds and Middlebrook Valleys as well as the Hunter and Pages River floodplains. The geological features of the study area mark the study area as prominent landscapes in the region which would have been important markers in Aboriginal prehistory. The study area does not contain permanent or reliable area so camping would have been seasonal and short stay. Access would not have been easy although accessible from the northern and southern extremities. The two ridgelines were good vantage points and would have leant themselves to signalling and ceremonial places. Caves and rock shelters would be accessible from the study area as would have special places. The study area would have been used as a connection to these places and probably of greater importance for men and women rather than for the clan as a whole particularly as the steepness of the boundaries of the ridges would not have been safe for children. Good shelter from the elements would have been available and particularly beneficial during times of great flood.

No artefacts were observed, nor areas of potential identified. This is probably due to the long term agricultural practices and seasonal runoff which would have allowed any artefacts to be washed of site. In addition the study area was not conducive to lengthy camping and extensive use there fore evidence would not be

prolific. Studies undertaken near Muswellbrook under similar landuse although not necessarily similar landscape have revealed prolific archaeological evidence of occupation.

It is extremely likely that the study area was important to Aboriginal people as an area of connectivity and as something special; however tangible evidence of such importance would not be available except maybe for those special places offsite to which the study area is connected.

6.0 Aboriginal Cultural Assessment

Aboriginal cultural assessment is separate to and should not be confused with archaeological assessment. Only Aboriginal knowledge holders of country can undertake cultural assessment. Archaeological assessment is used to determine the extent area, stratigraphic and scientific significance of identified Aboriginal objects.

The stakeholders were then consulted about the impact of the corridor and were asked to identify further areas of sensitivity.

Each of the stakeholders provided an assessment of the proposal and made recommendations. The recommendations can be summarised follows:

1. Location

The stakeholders have no concerns about the location of the development.

2. Further Assessment

The stakeholders do not believe further assessment such as test pits etc (S87 permits) are warranted.

3. Agreement

An agreement between stakeholders and the proponent should be put in place before construction. This agreement needs to consider compensation for involvement of the Wonnarua people with respect to impact to the landscape. (Culture and Heritage)

4. Work opportunities

The stakeholders would like the opportunity to negotiate opportunities for work on the project. They understand the importance of a united and efficient approach and are in the process of coming together to try and develop a coordinated approach to work possibilities.

Every stakeholder was involved in developing the cultural assessment and recommendations. An Aboriginal Cultural Impact Certificate was signed to identify the preferred and united recommendations. The Certificate is detailed below.

Certificate

under Part 3A

of the Environmental Planning and Assessment Act, 1979

Consideration of environmental impact Aboriginal Culture

This is to certify that

Kyoto Energy Park, Scone

Has been assessed by representatives of the Aboriginal Community
and from an Aboriginal Heritage perspective is able to proceed
subject to the following recommendations:

That the proponent enter into a legal and binding agreement with
the Aboriginal Community prior to commencement of construction.

Such agreement to include:

- Ongoing yearly compensation for impact on the Aboriginal
cultural landscape through a trust fund
- Enhancement and recognition of Aboriginal culture within an
information centre for the project

Signed:

Name	Organisation
Melissa Matthews	U.A.H.C.
Michele Star	G. Miller
Christine Matthews	H.V.C.C.
Wanawan LALC	W.L.A.C.C.
Troy Skene	C.A./MCAS
Rhonda Ward	U.C.C.S.
John Matthew	G.I.R.I.R.I.
M. Robert	A.W.C.
F. IRVING	A.W.A.C.
Rachel Matthews	U.H.H.U.
Mance Waugh	W.L.A.C.C.
Bazzy Smith	C.P.T. and (H.V.C.C.)
	H.V.A.C.

Date: September 18th, 2007

7.0 Significance Assessment

As Aboriginal Objects were not observed nor areas of potential deposits identified the assessment of significance of such evidence is not possible.

However, it is important to stress that the significance of a cultural landscape is not dependent on archaeological evidence being significant in itself but the interrelatedness of the individual objects to the cultural landscape as a whole. The finding of an artefact in a particular spot of the landscape does not necessarily make that spot or the object significant. What is significant is the understanding as to how and why the object is located where it is. The object may be a result of a wash down from a campsite location above. The lack of observable objects also does not indicate a lack of significance, particularly when the landscape lacks integrity.

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. 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 in section 2.3 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 are many areas along the corridor that have social value to Aboriginal communities. The ridgelines were Aboriginal Song trails and their importance to Aboriginal people cannot be understated. They are the last vestiges of land that has traditional associations that can readily be identified and understood in a total landscape context.

The ridgelines are assessed as having social value.

- *Historic value*

The historic value of the ridgelines and associated geological features both traditionally and contemporary is of significance, e.g. Castle Rock. The development corridor is along the original walking tracks of the Aboriginal people. Some of the significant landscapes and probable ceremonial areas can only be accessed by the ridgeline corridor. During research for European heritage, anecdotal evidence held by the Scone Historical society revealed Aboriginal people would drop rocks from the ridgelines to scare off shepherds so that sheep could be killed and eaten. The use of the ridgelines by the Aboriginal people has entered into Scone folklore.

The ridgelines are assessed as having historic value.

- *Scientific value*

The importance of the landscape and surrounding area of the proposed corridor will not affect the scientific value of the area. No Objects were observed nor any area of subsurface potential identified.

There is no scientific value applicable to the study area.

- *Aesthetic value*

The sensory, scenic, and creative milieu of the landscape and its commanding views over the floodplain and mountain system is of extreme significance. The aesthetic value is probably the most significant attribute.

The ridgelines are assessed as having aesthetic value.

8.0 Impact Assessment

Identification of sensitivity based on landscape, known artefact distribution and predictive modelling was instrumental in developing and establishing probable Aboriginal Occupation of the study area. There is no uncertainty that the study area was used by the Aboriginal community. The probable use was based around its views and connectivity. It would have been a song trail, connectivity to special and ceremonial places and as a lookout/ signalling area. However, it is equally certain that the development is not going to impact upon known Aboriginal objects and places.

The building of the infrastructure and development of the project will not alter the geological landscape. There is no intention to irrevocably destroy the existing country side. There may be impact upon the study area as a backdrop from the valley floor some distance away, however such an impact is not one that will destroy deface or damage an Aboriginal Object or place.

9.0 Discussion

The process for this assessment enabled known Objects and culturally sensitive landscape to be identified. Extensive consultation with the Aboriginal stakeholders was held and more importantly the development corridor was assessed by the Aboriginal community who provided written comments regarding the impact.

During the consultation process it was evident that in order for benefit of the recommendations to be achieved the Aboriginal community needs to work together.

Whilst there will not be any impact to Aboriginal objects and Places, nonetheless important Aboriginal traditional landscape will be affected by the project. It is important that the Aboriginal community be compensated for such disturbance.

The assessment has met the Director General requirements for Aboriginal Cultural Assessment

10.0 Recommendations

The following recommendations are made in the light of the extensive research and consultation with the Aboriginal Community.

1. There is no impediment to the Scone Energy Park development within the proposed corridor with respect to Aboriginal Cultural heritage as studies have established that all known Objects and areas of potential will be avoided.
2. That the proponent enters into a negotiated agreement with the registered Aboriginal communities prior to construction regarding overall loss of Aboriginal Cultural value and enhancement of Aboriginal Cultural value.

3. That any negotiated agreement needs to consider;
 - the comments and requests of the Aboriginal stakeholders
 - practical and achievable outcomes
4. Based on investigations and survey assessment during this report, the Aboriginal stakeholders are satisfied that no impact on Aboriginal Cultural Heritage or direct impact to any known objects is likely to occur.

Prior to construction however, the project will undergo a final design phase during which micro-siting of the turbines may be required. An allowance for micro-siting of each turbine by up to 150 m is required for best practice engineering design and construction. In the event of any change in the exact locations of either or both turbines due to the micro-siting process, further inspection of turbine locations are to be undertaken by the original Aboriginal stakeholders for inspection of Aboriginal objects.

11.0 Certification

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

To the best of our knowledge the report accurately reflects the archaeological potential, findings and results, as well as the input and recommendations of the registered Aboriginal stakeholders.



Signed
(Archaeologist)

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Maps

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.

Australia Geology

Source: *Specially compiled in 1979-80 by G.W-Addario, W.D. Palfreyman, A.J. Stewart, J.M. Bultitude and R.A. Chan, Bureau of Mineral Resources, Geology and Geophysics, Canberra. Geological data published and unpublished information by BMR, State geological surveys, the Commonwealth Scientific and Industrial Research Organisation, universities and companies.*

Australia Soil Resources

Source: *Specially compiled 1976-77 by K.H. Northcote, Division of Soils, CSIRO, Adelaide, from 'A Soil Map of Australia' (1:5000 000) accompanying A Description of Australian Soils by K. H. Northcote and others(Commonwealth Scientific and Industrial Research Organisation, Australia, 1975*

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14. Glossary

Before defining the various terms used in this report it is important to classify archaeological evidence by type. Various criteria have been developed to apply to archaeological finds. Those used by Navin and Officer (1999), have been followed.

- ***Isolated finds***

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

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

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

- ***Background scatter***

Background scatter is a concept used by archaeologists to refer to artefacts that cannot be usefully related to a place or focus of past activity (except for the net accumulation of single artefact losses). Background scatters are a temporarily unrelated accumulation of artefacts across a large area and will vary in density according to the type and frequency of past occupation within that landscape. A background scatter can be defined as artefactual material where association between artefacts can only be described using large scale and inclusive temporal and spatial categories of past occupation.

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

- ***Sites***

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

Sites include:

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

Frequently encountered site types within south-eastern Australia include open artefact scatters, coastal and freshwater middens, rock shelter sites including occupation deposit and/or rock art. Grinding groove sites and scarred trees. For the purposes of this section, only the methodologies used in the identification of these site types are outlined.

Most Aboriginal sites on the NSW Coast are identified by the presence of three main categories of artefacts: stone or shell artefacts situated on or in a sedimentary matrix, marks located on or in rock surfaces, and scars on trees. Artefacts situated within or on, a sedimentary matrix in an open context are classed as a site when two or more occur no more than 60 metres away from any other constituent artefact. The 60-metre specification relates back to the definition of an isolated find (Refer above).

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

- ***Scarred Trees***

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

Aboriginal Site

I. Occupation Sites

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

- *Shell middens.* These sites are found on the coastline and along the edges of rivers and lakes. It is a deposit composed of the remains of edible shellfish and also usually contains fish and animal bones, stone tools and campfire charcoal.
- *Rock shelters with archaeological deposit.* In rock outcrops such as sandstone and granite, overhangs sometimes form creating useable shelters. Sediments from fires, roof fall, discarded stone tools and food remains form a deposit protected within the shelter and this deposit can be excavated by archaeologists to study patterns of Aboriginal life.
- *Open campsites.* These sites are mostly surface and associated subsurface scatters of stone artefacts, sometimes with fireplaces. They exist throughout the landscape and are the most common site type in rural areas. While found in all environmental locations larger and denser sites tend to be found on riverbanks and lower slopes facing 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 of several diagnostic criteria or the balance of 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 (Speight 1990: 33).