PROPOSED CAPITAL WIND FARM

TARAGO REGION, NSW

Aboriginal Archaeological & Cultural Heritage Assessment

FINAL REPORT

Prepared by
Austral Archaeology Pty Ltd
Archaeological and Cultural Heritage Consultants

For

Connell Wagner Pty Ltd

On Behalf of

Renewable Power Ventures

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Austral Archaeology Pty Ltd
92 Percival Road Stanmore NSW 2048
Certified Quality System to AS/NZS ISO9001:2000
Austral Archaeology Pty Ltd ABN 25 008 174 829
Telephone 02 9568 6701 Fax 02 9568 6702 Web www.australarchaeology.com.au

EXECUTIVE SUMMARY

Renewable Power Ventures (RPV) proposes the construction of Capital Wind Farm on the Southern Tablelands in New South Wales located between the townships of Tarago and Bungendore. The study area is bounded by Lake George to the west, Bungendore/Tarago Road to the east and south and Taylors Creek Road to the north.

The development proposal on which this assessment is based has undergone several revisions throughout 2005. The final development layout involves the construction of 63 wind turbines grouped in three locations (Groses Hill, Hammond Hill and Ellenden), a substation, site offices and batch plants, vehicle access roads, and the installation of underground power cables, control cables and overhead transmission lines connecting the substation and the turbine groups.

Austral Archaeology Pty Ltd was commissioned by Connell Wagner PPI on behalf of RPV to undertake the Aboriginal archaeological and cultural heritage assessment of the proposed Capital Wind Farm development site in preparation for an Environmental Impact Statement. The investigation involved determination of the known archaeological and environmental context of the study area and assessment of the identified and potential archaeological resource on the basis of known development impacts. As the project evolved and elements were revised, Connell Wagner PPI and Austral Archaeology Pty Ltd determined that additional assessment of the new components was required to adequately cover the impact areas. As a result, survey and assessment of the study area was undertaken in two parts, Stages 1 and 2.

Stage 1 took in the original development area which was significantly larger than the present footprint. Since then, the proposal has been revised to cover a reduced area and also incorporate new components. It is now largely concentrated to the east of Lake George and parts of these areas were not previously included in the development proposal. Subsequently, Stage 2 assessed these areas.

This report outlines the results of the assessment which are most pertinent to the final development plan. Eliminated project components which were the subject of Stage 1 have not been included in the final assessment if they are no longer relevant. Similarly, recorded archaeological sites located as part of Stage 1 in areas now excluded from the development footprint are referred to as part of the identified local archaeological record.

Consultation with local Aboriginal stakeholders has been ongoing throughout the project and was undertaken in accordance with changes to the New South Wales National Parks and Wildlife Act 1974 regarding the Aboriginal community consultation process (Department of Environment and Conservation Interim Community Consultation Requirements for Applications [National Parks and Wildlife Act 1974: Part 6 Approvals]). Pejar Local Aboriginal Land Council (PLALC), Buru Ngunawal Aboriginal Corporation (BNAC) and Gundungurra Tribal Council Aboriginal Corporation (GTCAC) have been kept informed of the changing project scope. The three groups have been involved in the staged fieldwork and have provided input regarding the archaeological and cultural values of the project area.

Five Aboriginal archaeological surface sites were recorded during the assessment within the current development area. These consisted of two small artefact scatters and three isolated finds. Four sites were associated with gently sloping topography surrounding creek tributaries and the remaining site was located on a moderate sloping ridge top. Six areas of potential archaeological deposit were also identified; one of these is associated with a recorded surface site and four others were nominated on the basis of topographic features, location and/or their estimated research potential. Not all recorded surface sites will be impacted by the proposed development. Moreover, two previous recorded surface sites within the project area will not be impacted by the current proposal.

On the basis of the desktop research, Aboriginal stakeholder consultation and field surveys, the study area is considered to have distinct areas of high, moderate and low archaeological and cultural sensitivity. Areas of high and moderate archaeological sensitivity are focussed on slightly elevated, gently sloping topography associated with local resource bases and reliable

watercourses. The eastern edge of Lake George is considered to be a zone of high archaeological and cultural sensitivity and as such, should be considered in the planning process. Areas of low archaeological sensitivity are considered to be the high, steep and rocky ridgelines within the study area which are not conducive to occupation by Aboriginal people because of topographic features and their distance to resources and freshwater.

Recommendations
On the basis of the assessment, heritage management strategies and mitigation measures have been formulated in accordance with a desire to avoid significant Aboriginal archaeological and cultural heritage sites and areas of archaeological potential where possible.

The following recommendations and management strategies are provided for the proposed works associated with the Capital Wind Farm development area:

1 – Development opportunities
There are currently no known heritage constraints associated with the following components:

- Groses Hill Group Turbines 4-17 and its associated Batch Plant;
- Ellenden Group Turbines 22-28, 30-34;
- The Alternate Batch Plant Site between Ellenden and Hammond Hill Groups; and
- Hammond Hill Group Turbines 35-63 and the associated Site Office and Batch Plant.

2 – Development constraints
There are areas of archaeological sensitivity and potential archaeological deposit (PAD) associated with the following components:

- Hammonds Hill Group: an area of PAD between Turbines 52 and 53 where an access road alignment is proposed;
- Groses Hill Group: Turbines 1-3 above Lake George;
- Ellenden Group: Red Hill Turbines 18-21 and Turbine 29;
- The access road/crossing of Wrights Creek southeast of the Ellenden Group; and
- The proposed substation location on Dry Creek

It is recommended that all archaeological surface sites and areas of PAD be avoided by the development proposal. These include five identified Aboriginal sites and five areas of potential archaeological deposit associated with Lake George and the permanent creeklines which traverse the study area. Ideally, a buffer of up to 50 - 100 m around identified sites and areas of PAD should be established.

In particular, the design of the vehicle access routes between Turbines 52 and 53 should be reconsidered to avoid impact to a small but archaeologically sensitive corridor which retains both potential archaeological and cultural value.

3 – Archaeological test excavation
If areas of archaeological and cultural sensitivity are likely to be impacted by the proposed development, targeted test excavation by a qualified archaeologist is recommended. A testing programme should aim to establish the archaeological and cultural significance of any deposit recovered. Specifically, test locations should focus on the areas of archaeological potential listed above because of their research potential.

Test excavation is proposed in areas of high archaeological potential where development impact is unavoidable, as a mitigation measure. These areas include:

- Groses Hill Group: Turbines 1-3 above Lake George;
- Ellenden Group: Red Hill Turbines 18-21 and Turbine 29;
- The access road/crossing of Wrights Creek southeast of the Ellenden Group; and
- The proposed substation location on Dry Creek

A Section 87 Permit application should be sought from NSW Department of Environment and Conservation prior to the commencement of archaeological testing. The excavation procedure should be developed in consultation with NSW Department of Environment and Conservation

and local Aboriginal stakeholders. These groups should be invited to participate in the testing programme.

4 – Construction of roads, cabling routes and overhead transmission lines
Given the overlying high degree of archaeological sensitivity of the study area around Lake George, it is recommended that proposed access roads and cabling corridor follow existing vehicle tracks to avoid disturbance to this sensitive archaeological and cultural zone. Where possible, cabling should be contained within the access road corridors. If this is not viable, then cabling should aim to avoid areas of highest archaeological sensitivity such as higher order creeklines and tributary confluences.

Where creek banks are subject to minor drainage works as a result of road construction and cable installation, the working easement at creeklines should be reduced where possible. Trenches for power and control cables are anticipated to be 0.5 to 1 m wide and about 1 m deep. Upgrading of existing tracks and the construction of new access tracks connecting the turbine locations, the substation complex and may require widening to about 5 m, bend modification, grade adjustments at minor creek crossings, resurfacing and associated drainage. Additional tracks will be constructed to access turbine sites and extra widening by a further 2.5m on each side will be required to accommodate construction machinery. In each case, easements should not exceed their construction width to ensure minimal impact to archaeologically sensitive creeklines.

While the installation of the overhead transmission lines are considered to be of minimal environmental impact, the scoping of specific footing locations should take areas of archaeological sensitivity into consideration and aim to avoid creek banks also.

5 – Overall project timing
It is imperative that all further archaeological investigation, specifically archaeological testing, be conducted prior to the commencement of any bulk earth works. This is required to allow time for obtaining any further permits and/or consents (Section 90 Consent) should *in situ* deposits be located.

It should be noted that any surface archaeological sites which will be impacted by the development will require a Section 90 Consent permit obtained from the NSW Department of Environment and Conservation prior to their destruction.

6 – Stop work provision
It should be noted that all Aboriginal Objects and Places are protected in NSW. As such, in the event that Aboriginal archaeological material or deposits are encountered that are not described in this report, works within 100 metre radius of the find must cease immediately to allow a qualified archaeologist to make an assessment of the find. The archaeologist may need to consult with the NSW Department of Environment and Conservation, Conservation Planning Unit, Environment Protection and Regulation Division regarding the finds.

Copies of this report have been distributed to Pejar Local Aboriginal Land Council, Gundungurra Tribal Council Aboriginal Corporation, Buru Ngunawal Aboriginal Corporation and NSW Department of Environment and Conservation (Queanbeyan).

TABLE OF CONTENTS

1.0 INTRODUCTION

1.1 Introduction

Renewable Power Ventures is proposing the establishment of a wind farm east of Lake George near Tarago in the Southern Tablelands in New South Wales.

Austral Archaeology Pty Ltd was commissioned by Connell Wagner PPI on behalf of Renewable Power Ventures to undertake an Aboriginal archaeological and cultural heritage assessment to identify and assess the potential development impacts of the proposal on the known and potential archaeological resource. The cultural values of the study area were also considered in the assessment with input given by Pejar Local Aboriginal Land Council, Gundungurra Tribal Council Aboriginal Corporation and Buru Ngunawal Aboriginal Corporation.

As development components were revised, additional assessment of the new works was required to cover the impact area. As a result, survey and assessment of the study area was undertaken in two parts. Stage 1 (December 2004) took in the significantly larger original development area. The proposal has since been revised and is now largely concentrated on the ridges east of Lake George. Stage 2 focussed on the reduced project area and in particular, the new areas not previously addressed during Stage 1. Recorded archaeological sites located during Stage 1 which are now excluded from the development footprint, are nevertheless referred to as part of the identified local archaeological record that is outlined in this report.

Accordingly, this report incorporates the results of both stages of the assessment presented in relation to the revised layout as described in this report.

1.2 Project Description

A summary of the development proposal on which the assessment was based is outlined below. The project description has been modified to include fewer turbines and now covers a smaller impact area centred around the eastern edges of Lake George. This report addresses the project impacts as defined below. A full description of the project is provided in the EIS.

The proposed wind farm will consist of 63 wind turbines which may produce 134 megawatts of electrical energy. The wind farm is designed to be operated automatically once constructed.

The wind turbines will be located in three groups; Groses Hill, Ellenden and Hammonds Hill as shown in Figure 1.1. Individual turbines will be located at sites where they will access suitable wind energy without significant interference to the wind energy characteristics at neighbouring turbine sites and to address a range of environmental considerations.

The turbine footings will require excavation of an area of about 15 x 15 m to a depth of up to 3m. Excess soil and rock excavated from the footing may be used to form a level pad near the base of the turbine tower on which a large crane can be located for the erection of the wind turbine. The extent of the work area including the crane pad and turbine footing will be less than 1000 m^2. Three bladed horizontal axis turbines will be mounted on towers about 80 m in height with the top of the blade sweep for each turbine having a height in the order of about 124 m.

Construction of the towers will require establishment of hardstands for cranes to operate from. These will not require any excavation in their construction, and will cover an area of 30 m by 30m. Some fill from excavated turbine footings may be used in works to level the hardstands

The turbines will be connected by underground cables to a substation where the output voltage will be increased from 33,000 volts to 330,000 volts for connection to the grid voltage. The substation complex could cover an area of about 60 by 150 metres and includes a facilities building approximately 20 x 30 m in area. The substation will be located adjacent to an existing 330,000 volt transmission line operated by TransGrid located in a valley south

east of Hammonds Hill. Trenches for power and control cables are anticipated to be 0.5 to 1 m wide and about 1 m deep.

Upgrading of existing tracks and the construction of new access tracks to the three turbine groups connecting these with the substation complex, and associated minor drainage works is also planned. Where possible, existing roads and tracks will be used to access the project facilities. These tracks may require upgrading that where necessary, may include road widening to 5 m, bend modification to ensure adequate curvature for long loads, grade adjustments at minor creek crossings, resurfacing and associated drainage to ensure that track erosion is minimised. Additional tracks will also need to be constructed to provide access to all turbine sites. This work may include extra track widening (up to another 2.5 m on each side in some cases) to accommodate construction vehicles. Some tracks may also require benching on steeper ridge slopes such as at the northern end of the Hammonds Hill ridge (between Turbines 47 & 48).

The design layout depicted in Figure 1.1 (October 2005) was the basis of the Stage 2 assessment. As discussed, aspects of design including the detailed site layout and equipment specifications are being finalised and this assessment is based on typical equipment that is being considered at the time. The actual equipment and the layout used will depend on the outcome of the environmental studies and planning approvals, results of the tendering process and the types of equipment that are available at that time.

1.3 Study Objectives

The main objectives of the assessment project as outlined in this report are:

1. to establish the history of Aboriginal occupation of the study area through the identification of known Aboriginal heritage items and sites, and landscapes of archaeological and cultural sensitivity;

2. to consult with relevant stakeholders with an interest in the study area in order to establish areas of archaeological and cultural sensitivity and assess their significance. Aboriginal community groups consulted with regard to Aboriginal heritage included Pejar Local Aboriginal Land Council, Buru Ngunawal Aboriginal Corporation and Gundungurra Tribal Council Aboriginal Corporation;

3. to conduct a field survey to locate and document surface Aboriginal archaeological and/or cultural heritage sites and identify any areas of potential archaeological sensitivity within the study area;

4 on the basis of a desktop study and field survey, assess the significance of all sites recorded with in the study area in accordance with established significance criteria; and

5 provide strategic advice regarding opportunities and constraints in terms of known and potential areas of Aboriginal cultural heritage and develop appropriate management strategies to ensure that significant archaeological and cultural landscapes are protected, where possible and that future impact to sites of lesser significance are mitigated as required.

All management recommendations have been formulated in consultation with relevant stakeholders as required by legislative requirements and best practice cultural heritage management principles.

1.4 Stakeholder Consultation

Consultation with key stakeholder groups has been ongoing throughout the Aboriginal heritage assessment. Discussions have occurred with Connell Wagner PPI, Pejar Local Aboriginal Land Council (PLALC), Buru Ngunawal Aboriginal Corporation (BNAC) and Gundungurra Tribal Council Aboriginal Corporation (GTCAC).

Discussions regarding the evolving project's development have been ongoing with Jeff Bembrick, Connell Wagner PPI Project Manager. Austral Archaeology Pty Ltd initially informed the Aboriginal stakeholder groups of the project scope after establishing relevant interest groups.

The study area falls within the boundaries of the PLALC. Accordingly, they were involved in the Stage 1 survey. BNAC representing the Ngunawal people were also indicated as relevant stakeholders and were involved in the December 2004 fieldwork.

GTNAC, the Registered Native Title Claimant in the region, became involved in the project after additional information for the project was sought by Austral Archaeology Pty Ltd in accordance with changes to the *New South Wales National Parks and Wildlife Act 1974* with regard to the Aboriginal community consultation process (Department of Environment and Conservation Interim Community Consultation Requirements for Applications [National Parks and Wildlife Act 1974: Part 6 Approvals]).

In light of the changes, Austral Archaeology Pty Ltd notified GTCAC of the project as the registered Native Title Claimant in the Tarago area. RPV then nominated PLALC and GTCAC as stakeholders to be involved in Stage 2: this process is outlined in the Interim Community Consultation Requirements. BNAC have been notified of the Stage 2 process and given the opportunity to comment on the final draft report.

The views of the local Aboriginal community group were also sought with regard to any potential archaeological and/or cultural constraints that may warrant consideration during the project. No specific concerns were raised by the PLALC, BNAC or GTCAC. The findings and recommendations of this archaeological report have been reviewed by the PLALC, GTNAC and BNAC and a written submission sought from each organisation about the study area's potential cultural values and their thoughts on the proposal's impact on significant areas. These submissions are pending and will be forwarded to DEC as received.

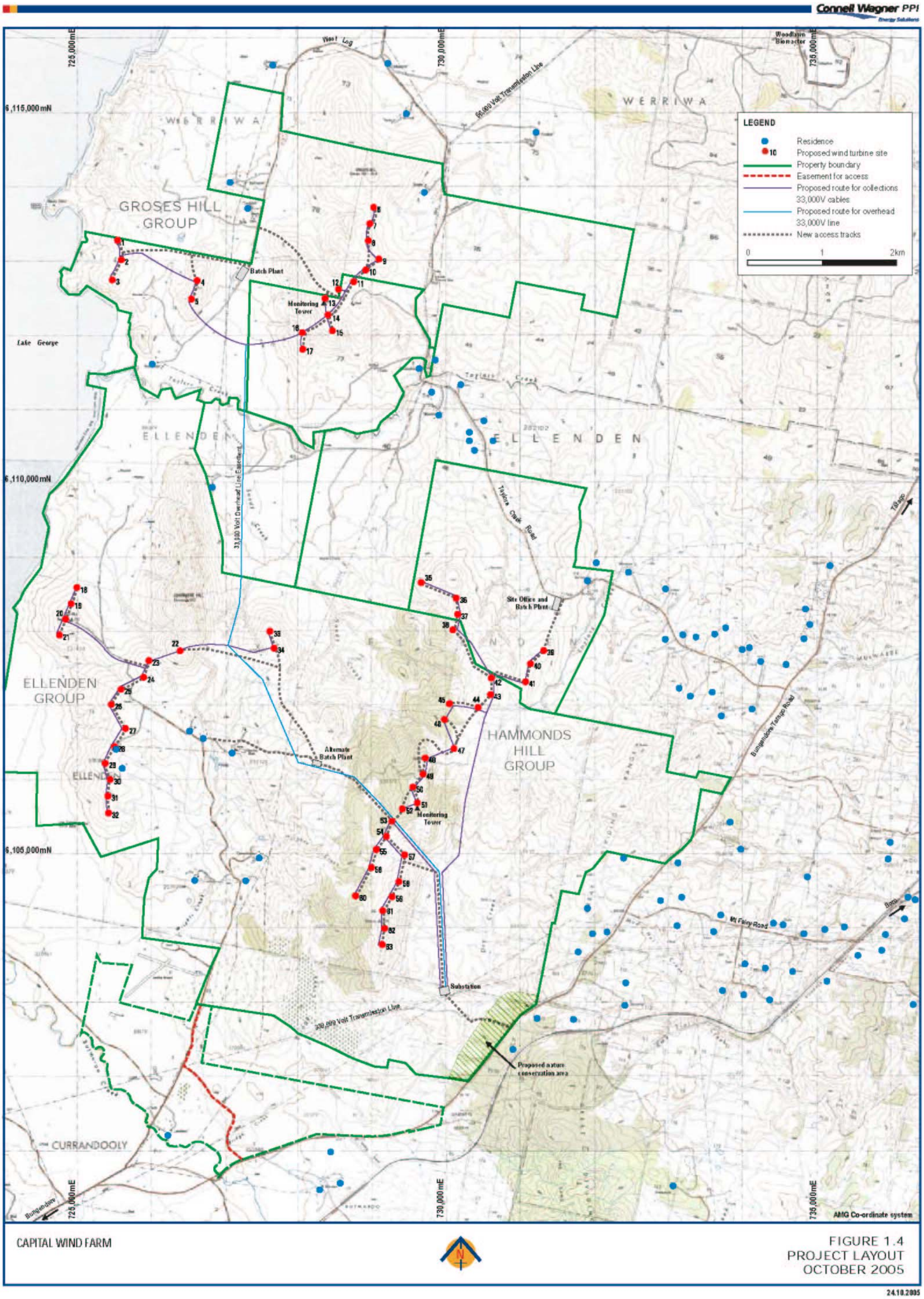


Figure 1.1 Final development footprint, October 2005 (Source: Connell Wagner PPI)

1.5 Aboriginal Heritage Legislative Framework

Aboriginal cultural heritage in Australia is protected and managed under the *Environment Protection and Biodiversity Act 1999* and the *Aboriginal and Torres Strait Islander Heritage Protection Amendment Act 1987*. Aboriginal cultural heritage in NSW is also protected under the *National Parks and Wildlife Act 1974.* Aboriginal sites in New South Wales are commonly investigated and assessed under the *Environmental Planning and Assessment Act 1979.* Principles for assessment and conservation management are provided by the non-statutory *ICOMOS Australia Burra Charter (1999)*.

1.5.1 Environment Protection and Biodiversity Act 1999

A new national heritage system started on 1st January 2004. Under a raft of changes, three new Acts come into force. The *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) [amended in 2003 under the *Environment and Heritage Legislation Amendment Act (No 1)*] now includes "national heritage" as a new matter of National Environmental Significance and protects listed places to the fullest extent under the Constitution. A National Heritage List will be established and comprise natural, historic and indigenous places that are of outstanding national heritage value to the Australian nation. The *Australian Heritage Council Act 2003* establishes a new heritage advisory body to the Minister of the Environment and Heritage, the Australian Heritage Council, and retains the Register of the National Estate. The *Australian Heritage Council (Consequential and Transitional Provisions Act 2003*) repeals the *Australian Heritage Commission Act 1975*, amends various Acts as a consequence of this repeal and allows for the transition to the new heritage system.

These changes establish a new framework for the identification, protection and care of nationally significant places, and require the Commonwealth, for the first time, to publicly identify and care for Commonwealth owned and leased heritage places. In summary, the changes:

- repeal the *Australian Heritage Commission Act 1975*;
- replace the Australian Heritage Commission with a new Australian Heritage Council;
- retain the Register of the National Estate (RNE);
- regulate Commonwealth identification, conservation and protection of its own heritage properties and establishes the Commonwealth Heritage List;
- establish the National Heritage List protecting places of national significance;
- provide protection for places overseas which are of Australian national heritage significance (such as Anzac Cove);
- provide strong civil and criminal penalties for breaches of the Act;
- ensure broad community engagement with national heritage protection through the provision of community consultation and public disclosure mechanisms.

Actions (defined under the EPBC Act) that have or are likely to have a significant impact on a matter of national environmental significance or a place listed on the National Heritage List or the Commonwealth Heritage List, require approval from the Commonwealth Environment Minister under the EPBC Act. Approval is also required for actions that are likely to have a significant impact on the environment of Commonwealth land (even if taken outside Commonwealth land) and actions taken by the Commonwealth that will have a significant impact on the environment anywhere in the world.

Aboriginal sites and places may be listed on the National List if they are of outstanding significance or on the Register of the National Estate (RNE) if significant in terms of their association with a particular community or social group for social, cultural or spiritual reasons. Listing in the RNE does not affect State authorities/owners or private individuals whereas National Listing will. Note that items of local level significance may be included on the RNE.

1.5.2 Aboriginal and Torres Strait Islander Heritage Protection Amendment Act 1987

This Federal Act administered by the Aboriginal and Torres Strait Islander Commission, provides blanket protection for Aboriginal heritage in circumstances where such protection is not available at a state level. This Act comes under Commonwealth jurisdiction which means that it can override state and territory provisions.

1.5.3 New South Wales National Parks and Wildlife Act 1974

All Aboriginal Objects (formerly "relics" prior to amendment of the Act [*Amendment Act 2001 No.130*]) are protected under Section 90 of the *National Parks and Wildlife Act 1974*. Sites of traditional Aboriginal significance that do not necessarily contain archaeological materials may be gazetted as Aboriginal places and are also protected under Section 90. This protection applies to all Aboriginal Objects, regardless of their significance or land tenure. Under Section 90, it is an offence for a person to destroy, deface, damage or desecrate an Aboriginal Object or Aboriginal Place without the prior issue of a Consent Permit by the Director-General of the National Parks and Wildlife Service (NPWS). The amended Act requires that due diligence must be taken to avoid impacts on Aboriginal Objects.

1.5.4 Environmental Planning and Assessment Act 1979

The *Environmental Planning and Assessment Act 1979* (EP&A Act) requires that impacts on the environment, including cultural heritage, are considered prior to land development. Local Environmental Plans (LEPs) prepared in accordance with the EP&A Act provide guidance on the level of environmental assessment required. Parts IV and V of the EP&A Act stipulate the manner by which consent authorities (i.e. Department of Infrastructure, Planning and Natural Resources and local councils) approve development applications by ensuring that consideration of potential impacts on the environment, inclusive of Aboriginal heritage, are addressed prior to development commencement. This usually involves the preparation of a Review of Environmental Factors (REF), Statement of Environmental Effects (SEE) or an Environmental Impact Statement (EIS) including a full archaeological assessment.

1.5.5 The Burra Charter 1999

The *Burra Charter (1999)* also provides guidance for the conservation and management of places of cultural significance (cultural heritage places). The Charter was adopted by Australia ICOMOS (the Australian National Committee of ICOMOS) in 1979 with recent revisions adopted in 1999. The Charter sets a standard of practice for those who provide advice, make decisions about, or undertake works to places of cultural significance, including owners, managers and custodians.

In summary, Aboriginal Objects, (including "sites") in New South Wales are protected. A Heritage Impact Permit for Aboriginal sites must be obtained from the Department of Environment and Conservation (NSW) Aboriginal Heritage Unit prior to impact on a site. Heritage Impact Permit applications are determined on the basis of the significance of the heritage object or place according to the *Burra Charter (1999)*. DEC requires local Aboriginal groups play an active role in the heritage assessment process and are given the opportunity to comment on each application with their views taken into consideration by DEC when determination of the application takes place.

1.6 Project Team and Acknowledgements

This project was directed by Justin McCarthy (NSW Manager, Austral Archaeology). The Aboriginal heritage assessment was managed by Megan Mebberson (Senior Archaeologist), the survey was conducted by Megan Mebberson and Ashley Matic (Archaeologist). The report was prepared by Megan Mebberson, Ashley Matic, Lucy McNicol and Evan Raper.

Austral Archaeology would like to acknowledge the participation of the following people who have contributed to the preparation of this report.

Jeff Bembrick	Connell Wagner PPI
Justin Boney	Pejar Local Aboriginal Land Council
Wally Bell	Buru Ngunawal Aboriginal Corporation
Tyrone Bell	Buru Ngunawal Aboriginal Corporation
Robert Graham	Gundungurra Tribal Council Aboriginal Corporation

2.0 ENVIRONMENTAL BACKGROUND

2.1 The Study Area

The Capital Wind Farm study area is located in the Southern Tablelands region of New South Wales between the townships of Tarago and Bungendore approximately two hours southwest of Sydney. The region is dominated by rural/residential properties with much of the area cleared of vegetation although some ridge tops and creek corridors are still quite densely vegetated.

The study area covers approximately 20 km^2. The site is bounded by Lake George to the west, the Bungendore/Tarago Road to the south east and Taylors Creek Road to the north. The site is predominantly cleared pasture land which has been subject to ongoing grazing practices since the onset of European settlement. The local topography is characterised by low creek flats, undulating low, rolling hills rising to steep hills and rocky ridgelines. There are numerous, generally ephemeral creeks running through the study area including Sandy Creek, Taylors Creek, Wrights Creek, Dry Creek and Bridge Creek. Given the diverse nature of the study area topography, the abundance of permanent and ephemeral drainage lines throughout and the proximity of Lake George, the local landscape would have afforded a rich resource base providing Aboriginal people in the past with shelter, food and raw materials. In addition, the creeks and high ridges may have provided travelling corridors through the landscape.

The following sections outline the environmental context of the study area and the historic land uses which have affected the landscape since settlement. The degree to which the original soil context has been disturbed has significant ramifications for the preservation of archaeological deposits. The archaeological potential of the study area is considered in terms of past land disturbance in Section 3.0.

2.2 Geological Context and Soil Landscapes

Most of the study area sits atop the Ellenden Granite formation which consists of early Devonian pink and grey adamellite and granodiorite.

The western part of the Ellenden Group in the vicinity of Red Hill, is an area identified as the Lockhart Basic Intrusive Complex that is indicated to comprise amphibolites and gabbro. These more basic rocks are darker in colour and distinguishable in the field from the pink Ellenden Granite.

To the south in the valley where the substation will be located, mapping indicates the presence of Ordovician metasediments, referred to as the Birkenburn Beds. Lithologies present include a flysch sequence, quartz rich greywacke, shale, slate and minor chert. The unit exhibits considerable variation and appears to have a layered structure that would result in variation of lithological characteristics across the areas where it is exposed. The valley where the substation would be located exhibits severe erosion.

Areas of alluvium are present along Taylors Creek. Lake George itself contains a considerable thickness of sediment that has accumulated in the former valley topographic regime since the uplift of the Cullarin Block on the western side of Lake George.

The study area covers several major soil landscapes; the major characteristics of which are listed below.

2.2.1 Lower Boro

Characterised by undulating rises and low hills on granites, Lower Boro is a vestigial landscape on the Braidwood Rises physiographic region. Local relief ranges from 10-90 m at elevations between 600 and 800m elevation. Slopes are long (>300 m), waning and inclines range from moderate to gentle (< 20 - < 10%). Some rock outcrops exist as tors on the landscape.

Much of the woodland to open-forest (dry sclerophyll forest) that formerly vegetated the area has been cleared, although many landforms in the landscape feature remnant vegetation. On

mid and upper slopes this consists of broad-leaved peppermint (*Eucalyptus dives*), snow gum (*Eucalyptus pauciflora*), brittle gum (*Eucalyptus mannifera*), scribbly gum (*Eucalyptus rosii*) and black wattle (*Acacia mearnsii*). On lower slopes yellow box (*Eucalyptus melliadora*) occurs, while black she-oak (*Allocasuarina littoralis*) and hickory wattle (*Acacia falcormis*) are found on crests and rocky knolls. Silver Banksia (*Banksia marginate*) and various shrubs and herbs occur on areas of sandy soil.

Soil materials in Lower Boro vary based on landform, with crests featuring < 30 cm of brown loam overlying bedrock. On upper slopes < 20 cm of brown loam overlies < 40 cm of dull brown sandy loam and < 40cm of bright brown sandy clay, while on midslopes up to 25 cm of brown loam overlies < 40 cm of dull brown sandy loam and < 60 cm of bright brown sandy clay. On areas of impeded drainage, lower slopes and minor drainage lines up to 20 cm of brown loam overlies 40 cm of dull brown sandy loam and 40 - 100 cm of bright brown sandy clay. On major drainage lines the soil is typically aggraded with various alluvial layers, particularly sands and organic loams (Jenkins 1996:50-52).

2.2.2 Hammonds Hill

Hammonds Hill is an erosional landscape characterised by rolling to steep hills to low hills on the granites of the Butmaroo Sand Hills Physiographic region. Local relief through the landscape ranges from 60-180m with elevations between 740 and 940 m. Slopes are moderately to steeply inclined (> 20%). The variant of this landscape encountered in the study area differs in that the local relief is lower (< 80 m) and the slopes are gentler (10-20%).

Vegetation has been almost completely cleared, but consists of open-forest (dry sclerophyll) with isolated blackwood (*Acacia melanoxylon*), scribbly gum (*Eucalyptus rosii*) and brittle gum (*Eucalyptus mannifera*). Minor sheet erosion is common on the landscape, as is gully erosion (generally 1.5-3.0 m deep). The landscape also features some saline scalds.

The dominant soil materials in the landscape consist of a dark brown loam as topsoil with a brown massive loam sometimes occurring beneath this horizon, and subsoil consisting of either a brown light clay or yellow brown massive light clay. On crests and near tors up to 15 cm of dark brown loam sits on bedrock or on a thin layer brown massive loam, while on midslopes and upper slopes up to 20 cm of the dark brown sits on less than 40 cm of brown light clay, with the brown massive loam sometimes occurring between the two. On lower slopes up to 20 cm of the dark brown loam sits on <40 cm of yellow brown massive light clay, with the brown massive loam again sometimes present between these horizons. Finally, around drainage lines and on lower slopes up to 30 cm of dark brown loam overlies between 30 and 60 cm of yellow brown massive light clay (Jenkins 1996:104-106).

2.2.3 Larbert

Flat to gently undulating floodplain is the common landform in Larbert, an alluvial landscape on the Braidwood Rises and Oallen Relict Rises physiographic regions. Local relief does not exceed 20 m.

The landscape has been extensively cleared of woodland, and consists mainly of grassland and swamps. Yellow box (*Eucalyptus melliodora*), apple box (*Eucalyptus bridgesiana*), snow gum (*Eucalyptus pauciflora*), ribbon gum (*Eucalyptus viminalis*) are examples of remnant tree species, while violet kunzea (*Kunzea parvifolia*) and *Melaleuca parvistaminea* are common in areas of regeneration.

The soil profile is dependant on the landform in which it exists in Larbert, and a number of different materials exist within the landscape. In old terraces, up to 20 cm of dark brown loam overlies up to 30 cm of yellowish brown sandy loam, which in turn overlies <40 cm of yellowish brown medium clay and 30 to 60 cm of alkaline medium clay. In younger lower terraces, up to 30 cm of brown loamy sand overlies <30 cm of yellowish brown sandy loam, which sits atop >30 cm of reddish brown light clay, although soils may vary dependant on their source material. In drainage depressions and back swamps various brownish black waterlogged alluvial layers occur, with depths commonly over 100 cm. On floodplains, up to 50 cm of brown sand overlies >100 cm of brownish black sandy loam, and along drainage lines soil materials consist of unconsolidated sands and gravels to undetermined depth (Jenkins 1996:135-138).

2.2.4 Taylors Creek

Taylors Creek is another erosional landscape, characterised by undulating low hills on granite of Butmaroo Sand Hills physiographic region. Elevations range from 680 to 860m with local relief 50-90m. Slopes range from 5-10%, with rounded crests, and rock outcrops as tors are common. A variant of the landscape also occurs in the study area, similar to Taylors Creek but with a greater incidence of rock outcrop as tors.

Again, much of the local vegetation (open-forest to woodland) has been cleared, with isolated individuals and small stands of snow gum (*Eucalyptus pauciflora*), ribbon gum (*Eucalyptus viminalis*), yellow box (*Eucalyptus melliodora*), silver wattle (*Acacia dealbata*), black wattle (*Acacia mearnsii*), blackwood (*Acacia Melanoxylon*), and *Hakea* species. Bracken (*Pteridium esculentum*) occurs on sand patches. Severe gully erosion (<1.5m deep) and minor gully erosion are common in the landscape, and stream bank erosion occurs along watercourses throughout the landscape. Some sheet erosion also occurs in the landscape in isolated patches.

On crests or adjacent to outcrops, the dominant soil materials are 20 cm of brown sandy loam on bedrock, although occasionally <20 cm of brown sandy loam sits on <20 cm of bright brown clay loam, with clear to gradual boundaries. On upper slopes and midslopes up to 20 cm of brown sandy loam overlies <20 cm of bright brown clay loam, which in turn overlies <40 cm of reddish brown massive clay. Lower slopes and drainage lines feature <25 cm of brown sandy loam overlies less than 30 cm of dull yellowish sandy loam which overlies 30-80 cm of blocky mottled clay. Small patches of fine yellow Aeolian sand have been blown into the landscape, and particularly feature on upper lee slopes (Jenkins 1996:118-120).

2.2.5 Summary

In summary, the study area is dominated by local relief between 680 m and 900 m elevation with loamy matrix soils which are deepest on lower slopes. In these areas, the soils are moderately deep while on steeper slopes and ridge tops and crests, soils are typically less than 20 cm deep. Rocky outcrops also dominate higher crests and ridge tops.

In terms of archaeological potential, landscapes with stable, moderately deep topsoils on gentle elevated topography are most likely to yield substantial intact archaeological deposits in contrast to those with little topsoil on steeper elevations where erosion and soil movement is common. In the latter situation, redeposited archaeological material may be present at the base of slope, having been washed down from higher elevations.

2.3 Land Use Practices

Since European settlement of the area, the study area has been primarily used as improved pasture for the purposes of sheep and cattle production with much of it having been cleared of native vegetation prior to its use as pasture. Once cleared, the area would have been affected by early agricultural practices such as ploughing and stock grazing. Early agricultural practices would have been concentrated along the rich terraces and plains surrounding the major waterways associated with Lake George as these soils were considered more suitable for cultivation. The upper hill slopes and crests would have proven unsuitable and therefore many would have been left uncleared.

The wider study area has also been affected through the development of roads, tracks, railways, powerlines, sand mining, pine plantations, rural settlement and the construction of associated shedding and yards etc. There were also several metalliferous mines in the area that are now closed. Exploration activities and infrastructure development associated with the mines has also left its mark throughout the wider study area.

2.4 Potential Land Use Impacts on the Archaeological Resource

The activities described in Section 2.3 would have had a variety of effects on the archaeological resource in the study area. Vegetation clearance may have resulted in the loss of many of the scarred trees as well as local subsurface disturbance, particularly during the removal of stumps to make the land suitable for cultivation. Regular ploughing will churn the top layer of soil to the depth of the ploughshare (usually between 10-15 cm) therefore potentially affecting site integrity. However, localised artefact movement is common and does

not necessarily affect overall site context. Moreover, *in-situ* archaeological deposits have been recorded below the zone of disturbance in many areas of New South Wales.

3.0 ARCHAEOLOGICAL BACKGROUND

3.1 The Southern Tablelands Archaeological Context

Archaeological investigation of the Tarago region and in particular, the Lake George area has been conducted over the last 10 years in response to the spread of urban development. Previous studies provide a broad picture of the archaeological context of the local area which is summarised in Section 3.3.

Local topography, geology and historical land use patterns have contributed to our knowledge of the types of archaeological sites observed across the local landscape and the landforms in which they are found. The main trends seen include:

- low density surface open artefact scatters and isolated finds occurring on gentle slopes and alluvial flats near creeklines and around the sandy edges of Lake George. Major confluences and Lake George itself, are prime locations for occupation sites;
- open archaeological sites are not expected to occur on steeper slopes;
- a paucity of scarred trees due to land clearance;
- subsurface archaeological deposits will be recovered in areas where no visible surface archaeological remains are evident. The likelihood of substantial, *in situ* subsurface deposits are greatest in areas of relatively undisturbed, deep soils on flatter ground and footslopes;
- raw materials found in assemblages include silcrete, fine grain siliceous material, quartz and quartzite; and
- artefact assemblages usually comprise flaked debitage and a small proportion of formal tool types associated with the manufacture of backed artefacts attributed to late Holocene occupation.

3.2 Heritage Database Search Results

A search of National, State and local heritage databases was undertaken to establish the archaeological context of the study area. The results of these searches are presented below. Prior to the current investigation, one previously recorded Aboriginal Object had been located within the study area boundaries. This is the South Red Hill 1 site (Packard, 1987) on the eastern shore of Lake George. The site will not be affected by the current wind farm proposal but signals the increased likelihood of archaeological sites in the vicinity of this site.

3.2.1 Aboriginal Heritage Information Management System Search Results

A search of the Department of Environment and Conservation (NSW) Information Systems Unit Aboriginal Heritage Information Management System (AHIMS) was conducted during Stage 1 covering an area totalling approximately 340 km² covering an area slightly larger than the original Capital Wind Farm project area. A total of six registered Aboriginal sites were listed, none of which fall within the project area boundaries.

The small number of recorded sites in the region reflects the minimal level of previous research conducted in the area rather than the actual number of archaeological sites across the landscape; a lack of major development in the area has contributed to the paucity of archaeological investigation in the region. A summary of recorded site types from this search are presented in Table 3.1. The sites are shown in Figure 3.1. Two additional sites not listed on the DEC AHIMS have been included on Figure 3.1. These include Bridge Creek 1, a subsurface archaeological deposit, (Lance 1985) and Nardoo, a surface scatter and associated subsurface deposit (Flood 1980 as cited in Lance 1985). These latter sites are discussed in Section 3.3.

Site Type	Frequency	Percentage (%)
Isolated find	1	17
Open camp site	5	83
Total	**6**	**100**

Table 3.1 Summary of results of DEC AHIMS search.

In addition, nine surface sites that were originally located in the Stage 1 investigation are no longer within the development area. These are listed in Table 3.2 below. The smaller open artefact scatters and isolated finds were recorded on a broad ridgeline with an average elevation of 850 m ASL. The partially vegetated ridgeline was relatively flat and broad but steep sided with numerous dry and heavily eroded ephemeral creek gullies emerging from these slopes. Kalbilli 8 and 9 were located on a flat to gently sloping sandy topography in close proximity (about 100 m) to a larger creekline (second to third order).

Site No.	Site Type	Site Contents	AMG Coordinates
Kalbilli 1	open artefact scatter	Two artefacts: flake, broken flakes of grey chert	739662 E 6105402 N
Kalbilli 2	isolated find	One grey silcrete flaked piece	739360 E 6104605N
Kalbilli 3	open artefact scatter	Six artefacts: broken flake, flake, flake pieces of grey silcrete, chert, fine grained siliceous	739345 E 6104459 N
Kalbilli 4	open artefact scatter	Five artefacts: broken flake, flake, flake pieces made from chert	738864 E 6104235 N
Kalbilli 5	open artefact scatter	Eight artefacts: broken flake, flake, flake pieces of chert and quartzite	739746 E 6106055 N
Kalbilli 6	open artefact scatter	Two artefacts: flaked piece, broken flake of fine grain siliceous material	739772 E 6106140 N
Kalbilli 7	isolated find	One flaked piece/grey fine grained siliceous material	739985 E 6106719 N
Kalbilli 8	open artefact scatter	Two artefacts: flakes, flaked pieces of chert, fine grained siliceous material	741038 E 6106245 N
Kalbilli 9	open artefact scatter	35 artefacts: flakes, flaked pieces, broken flakes of chert, fine grained siliceous material	741725 E 6106652 N

Table 3.2 Additional sites recorded in Stage 1 no longer included in development area

The presence of these sites gives an indication of archaeological sensitivity of wider study area however, the local landscape in this area west of the Bungendore/Tarago Road is generally characterised by long footslopes and broad low ridge lines in contrast to the current study area which is dominated by high, steep rocky ridges. The Kalbilli landscape does not generally feature rock outcrops and the soils are deep sandy loam in comparison to the granite covered slopes closer to Lake George which tends to consist of loamy soils underlain by hard clays. Overall, the landscape in which the Kalbilli sites were recorded tends to be generally more conducive to Aboriginal occupation than rocky high ridges closer to Lake George. However this does not negate the possibility of similar sites being present on the lower gentler slopes of the current study area in areas of relative intactness.

It should be noted that of the previously recorded sites, two are within the boundaries of the current development area and two are located directly south. None of these sites, however, will be directly impacted by the development.

3.2.2 Other Heritage Register Search Results

Searches of the Australian Heritage Places Inventory (AHPI), the Register of the National Estate (RNE) and the NSW Heritage Office State Heritage Register (SHR) websites did not identify any recorded Aboriginal Objects or Places in or around the study area.

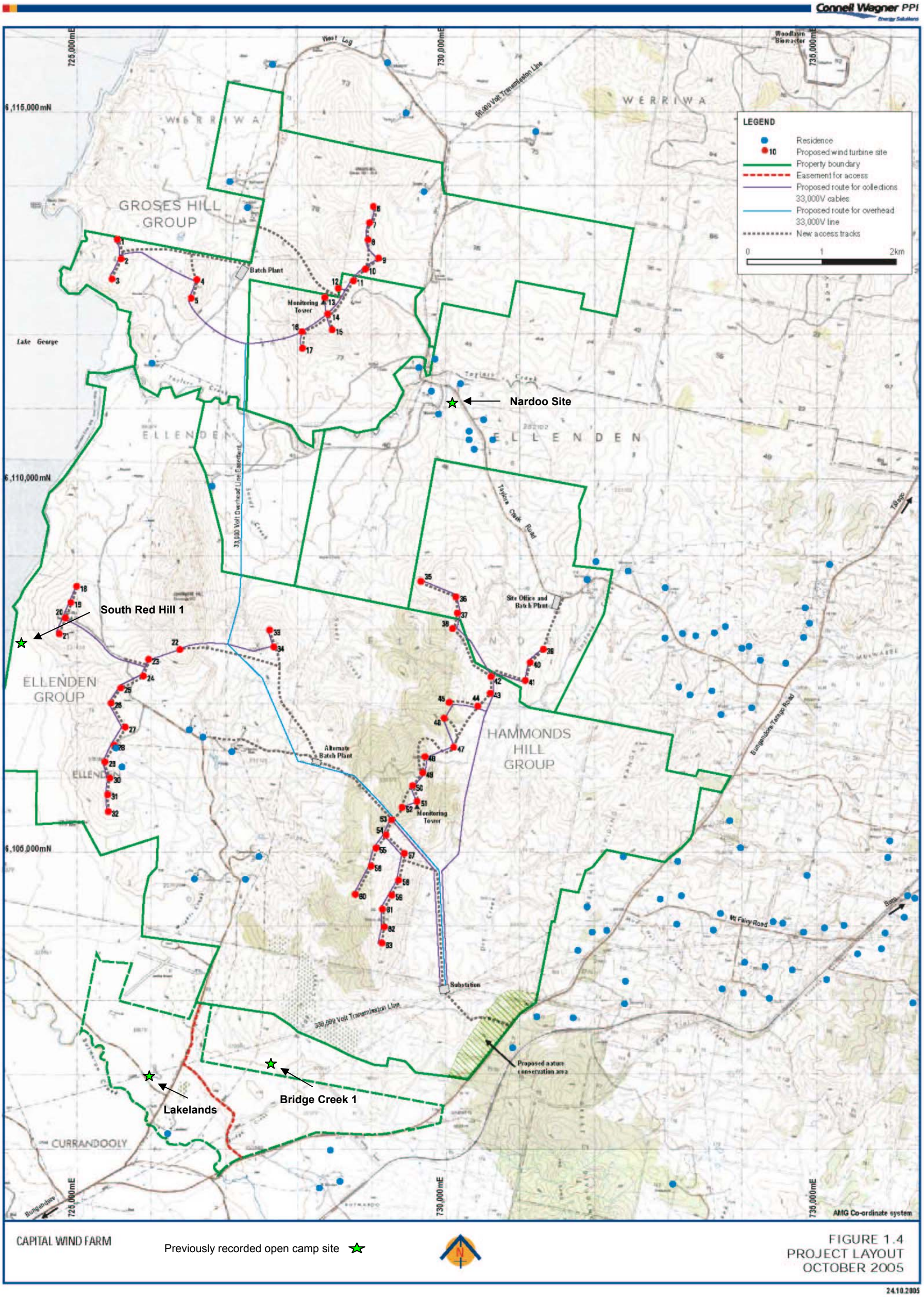


Figure 3.1 Archaeological sites previously recorded in and close to the development area

3.3 Previous Archaeological Investigations in the Study Area Vicinity

A number of investigations were undertaken in the surrounding region in the early 1980s. This included an investigation by Lance (1985) in the Bungendore area recording one subsurface archaeological deposit, Bridge Creek 1. This site was identified as part of an investigation by ANU Archaeological Consultancies for a proposed sand quarry on the "Currandooly" property located 4 km south west of the proposed Capital Wind Farm substation site (See Figure 3.1).

An initial survey was carried out which did not locate any surface archaeological sites, prior to subsurface testing in the sandy deposits in the eastern part of the proposed mining lease. The site was uncovered during the backhoe excavation of "a number" of pits (no dimensions given) to determine the presence of subsurface archaeological deposits. Sand from each pit was sampled and artefacts yielded from two pits and one spoil heap. A 1 x 1 m pit was also dug in detail to establish the context and nature of this deposit. Artefacts were provenanced from between 20 -80 cm within the deposit. Two distinct concentrations were identified at 30-40 cm and 50-60 cm. A total of 38 artefacts were recorded of which 34 (almost 90%) were manufactured from quartz, a naturally occurring raw material in the region. The remaining four artefacts were produced from silcrete. The majority of artefacts were unmodified flakes and flaked pieces although a quartz core and one of the silcrete pieces showed flake scars. A broken backed blade was also recovered from a backhoe pit (1985: 4).

From the limited test excavations conducted by Lance, it was concluded that the western 90% of the sand deposit investigated represented a "background scatter" where artefact density was a maximum of one artefact/m^2. On this basis, Lance determined that this section of the sand feature was not archaeologically significant and that was not defined as a site (although it would be classified as such according to current standard practice). Mining in this area was recommended to proceed. The remaining 10% of the sand deposit located adjacent to bridge Creek (no distances given) was deemed to be of greater regional significance as a stratified archaeological deposit indicating occupation by Aboriginal people in the last 5,000 years. This assessment is based on a single test pit which yielded an artefact density of 40 artefacts/m^2. There is no indication that this level of artefact density continues and the extent of the site. Lance also concludes that the site was abandoned prior to European settlement of the area due to the fact that no artefacts were found in the top 20 cm of the site (1985: 6). Given the nature of the sand feature, an "unconsolidated wind blown sand" deposit which is therefore subject to localised and frequent movement, and the lack of any dated material from the site, this theory remains unsubstantiated.

The part of the site deemed to be of greater archaeological significance was excluded from the area to be mined (1985: 8).

Lance also references three other sites in the region, namely the Nardoo site, Butmaroo 1 and East Lake George 1 These sites were excavated in the 1980s.

The Nardoo site was located to the north of the Hammonds Hill ridgeline west of Taylors Creek (Figure 3.1). Flood (1980 in Lance 1985:5) excavated the site uncovering "large numbers of stone artefacts including backed blades" (ibid). The site was dated to around 800 years old on the basis of artefact types and radiocarbon dated charcoal.

The Butmaroo site (not shown in Figure 3.1) lies 5-6 km south east of the proposed substation site and is located on a sandsheet on a drainage divide between Lake George and the Shoalhaven River catchment (Hughes *et al*., 1984 in Lance 1985: 4). Lance reports that artefacts were uncovered by bulldozers and that subsequent archaeological excavations revealed densities between 1-100 artefacts/ m^2. This deposit contained an upper layer of mainly quartz artefacts underlain by another sand horizon which contained a mixed assemblage silcrete and quartz artefacts, some of which were backed pieces. A lag layer underlying this horizon was radiocarbon dated to approximately 6,000 years (1985: 5).

Hughes *et al*. also investigated a deposit on the shoreline of Lake George (East Lake George 1) just outside the Capital Wind Farm south western boundary. While no artefact numbers are given, Lance (1985) reports that the assemblage primarily consisted of quartz artefacts: none of the assemblage included backed blades. This, in combination with geomorphological

evidence which indicated that the sand in which the site was located was recent, suggested that the site was no more than 1,000 years old (1985: 5).

Packard (1987) as part of a doctorate research programme toward a thesis on the archaeology on the Southern Tablelands locating two open camp sites in 'Ellenden' and 'Lakelands' (Figure 3.1) at Bungendore approximately southwest from the current proposed development.

The South Red Hill 1 site at 'Ellenden' was located on a relict beach ridge of Lake George approximately 300 m away from the lake's edge immediately southwest of Turbine 21 in the Ellenden Group (Figure 3.1). Artefactual material was spread along this ridge for approximately 4 km by approximately 80 m in width. Artefact densities varied across the area from as high as one artefact per m^2 to one artefact per 100 m^2, the amount of visible artefacts dependent predominantly on the ground visibility along the ridge. The artefact assemblage consisted of mainly flaked material although a small number of edge ground axes, hammerstone/anvil stones, unretouched flaked and some quartz bipolar flakes were also recorded. Quartz was the dominant raw material with only small amounts of fine grained siliceous and volcanic material found.

The Lakelands site was not clearly defined by Packard as the site boundaries were difficult to determine because artefacts were found in many areas of surface exposure from this area to the shoreline of the modern Lake George, approximately 4 km to the east. This site is outside the Capital Wind Farm project area boundary. The assemblage(s) consisted of predominantly flaked stone artefacts with densities ranging from five artefacts per m^2 to one artefact per 10 m^2. Quartz was the dominant raw material although a slight trend of increasing proportions of silcrete and fine grained siliceous material away from the lake was identified. Artefact types included microblade/backed blades, unretouched quartz flakes, bipolar cores, edge ground axes and anvil/hammer stones.

Navin Officer Heritage Consultants Pty Ltd (1998) conducted a cultural heritage assessment of the proposed landfill / rehabilitation project at the Woodlawn Mine, Tarago, located approximately 8 km north east of the development. The focus of the archaeological survey was for a proposed intermodal rail facility. In total they recorded four archaeological sites; one isolated find and three artefact scatters. The isolated find was a quartz flake located on the upper slopes of a small spur line east of the Mulwaree River. The potential for the site to be larger and to contain more artefacts was considered moderate however the artefact was visible as a result of wombat/rabbit diggings therefore the potential for the site to contain *in situ* material was considered low.

The other three sites were also located east of the Mulwaree River and consisted of low density artefact scatters, containing two, two, and seven artefacts respectively. The dominant artefact types within the assemblage were quartz flakes although two cores (quartz and chert) were also recorded. Crisps Creek 2 was recorded on the upper slopes of a small spur line while the other sites were recorded on the basal slopes of a spur line. The potential for all three sites to be larger in area and to contain additional artefacts was considered to be moderate.

Bowen (2000) conducted an archaeological survey for a proposed sand quarry, north of Ondyong Point on the northeast side of Lake George outside the current study area. The area surveyed was approximately 500 x 200 m in addition to a 100 m buffer zone surrounding the development site.

Past archaeological research in the Lake George region has revealed that elevated sand deposits, with a flat level surface, close to a water source are likely zones for Aboriginal camping places (Flood 1980). The sand deposit proposed for quarrying was located next to Lake George and possessed a level elevated ground surface, therefore Bowen regarded the site as having high archaeological potential. Extensive wombat burrowing had exposed large areas of the ground surface and the sand profile despite the ground being predominantly covered by bracken bush. Only one archaeological site consisting of two quartz flakes and one area of potential archaeological deposit (PAD) were identified during the survey.

The artefact scatter was located on the spoil mounds created through wombat burrowing and therefore was not considered to be *in situ*. As a result of the extensive burrowing across the site and particularly in the PAD, Bowen concluded that the capacity to reveal *in situ* archaeological material with the potential to show new information regarding past Aboriginal activities as low. Bowen recommended bucket sampling and sieving to collect any cultural material present in the sand deposit when the quarrying was initiated.

Finally, URS prepared an Environmental Impact Statement (2004) for a development application for the Woodlawn Wind Farm near Tarago. As part of this investigation Biosis Research Pty Ltd undertook an Aboriginal and historical heritage assessment of the area. An area of 60 m^2 was surveyed at each of the 33 proposed turbine locations. Areas along the proposed access roads and cable trenches were surveyed in linear transects approximately 15 m wide with transects also completed across the proposed viewing platform area that was approximately 1.25 ha.

In total, Biosis located 15 Aboriginal archaeological sites. Of these, 14 sites were found within the development area (at turbine locations and in access areas) and one site at the proposed viewing platform. The number of sites recorded in the study area (seven artefact scatters and eight isolated finds) was considered relatively high when compared to previous investigations undertaken in the surrounding region. Despite this, the sites were considered to be representative of 'background scatter' that occur in virtually all landscape contexts within the Southern Tablelands. The artefact density across the sites was calculated at approximately 2 artefacts per hectare or approximately 6 artefacts per hectare when adjusted for effective survey coverage. The artefact density and lack of identified large sites was considered indicative of an area used by transient Aboriginal visitors on route to nearby larger resource zones.

Over 18% of all artefacts were recorded along low ridgelines within Woodlawn Wind Farm and as a result, were considered to be the most archaeologically sensitive landforms. When the artefact numbers were combined with those recovered in open depressions (32%), the total represented approximately 50% of the entire assemblage. A further 25% of the artefacts were located on the knoll that was the proposed location for the viewing platform. Biosis concluded that the focus for activities associated with the Aboriginal occupation at the Woodlawn Wind Farm was predominantly on the low ridge flats and open depressions. (URS 2004:12-11).

Overall the majority of sites were described as having low archaeological significance. The two artefact scatters considered to have moderate significance were subsequently avoided in a revision of the proposed development.

3.4 Summary of Site Types Common in the Region

On the basis of registered archaeological sites in the region and the results of past archaeological investigations, two site types are likely to occur in the study area. These include:

- Open camp sites

These are surface sites commonly referred to as open artefact scatters. They may include archaeological remains such as stone artefacts, faunal and shell remains, charcoal and baked clay. Occasionally, such sites contain hearths. Surface scatters are usually exposed by erosion, agricultural events and vehicle and animal tracks in areas where surface visibility is increased due to lack of vegetation. Surface sites can also be indicators of associated subsurface archaeological deposits which may remain intact dependant on the degree of land disturbance which has occurred in the past.

- Isolated finds

Single artefacts are commonly found across the landscape as individual pieces which have no associated archaeological context. Isolated finds may be the result of either opportunistic resource use or discard.

Scarred trees are unlikely to occur in the development area given the high level of vegetation clearance that has taken place.

3.5 Predictive Statement

Locational data for sites is based on the existing archaeological record, local topography, access to and distance from permanent water, and degree of previous land disturbance.

The Capital Wind Farm study area is located in close proximity to Lake George and five permanent watercourses on topography ranging from undulating low hills, rolling to steep hills and high broad ridgelines.

Aboriginal people are likely to have exploited local resources centred on waterways and the surrounding low slopes in the past. The availability of water, food and raw material resources is known to influence site location. Thus Aboriginal sites are more common along permanent creek and lake margins and alluvial flats and these landforms are therefore the most likely topographical features to yield sites. Gently undulating topography, including crests of low rises and spurs, was more commonly utilised than steep slopes. The creek banks around the permanent watercourses in the study area, and the crests of lower ridgelines are therefore considered to be the areas of greatest archaeological potential within the study area.

In light of this, the likelihood of sites on gentler topography close to Lake George or on reliable creeklines is moderate to high. Contrastingly, on high, steep sided rocky ridges, the presence of extensive occupation sites is not expected. This is not to say that the ridges were not visited by Aboriginal people, but rather, they are likely to have been areas that people travelled through or used as vantage points but not camped in, due to their vulnerability to bad weather, even when vegetated.

Based on site types, frequencies and distribution across the wider landscape, open camp sites and isolated finds are most likely to occur within the Capital Wind Farm study area. While archaeological sites are found in all topographies, the surrounds of Lake George and creek confluences are known as prime site locations for Aboriginal occupation. It is anticipated that substantial sites will be concentrated close to reliable water within the alluvial flats and low slopes surrounding creeklines, although smaller open sites of decreasing artefact density may also be located throughout the landscape further away from creeklines. Open sites are likely to contain stone artefacts of fine grain siliceous material, silcrete quartz and quartzite, and may also yield charcoal and faunal remains, depending on the acidity of the local soils.

The clearing of vegetation within much of the study area reduces the likelihood of scarred trees remaining, however, this site type may be present within any stand of mature trees.

The potential for intact surface and subsurface Aboriginal cultural remains is predicted to be higher in undisturbed areas on gentle topography with easy access to fresh water. Excavated stratified archaeological deposits have been recovered in sand sheets in the Bungendore/ Lake George area confirming the presence of undetected subsurface material on lower slopes: these are all associated with permanent creeklines or Lake George.

4.0 ABORIGINAL ARCHAEOLOGICAL SURVEY

4.1 Introduction

The assessment field survey was undertaken in two phases in accordance with design revisions throughout 2005. As outlined in Section 1.2, the final development layout provides for the construction of 63 wind turbines and associated infrastructure, and the installation of underground power cables, control cables and overhead transmission lines connecting the substation and the turbine groups. As elements were revised, additional assessment of the new components was deemed necessary to adequately cover the impact area and survey was undertaken in Stages 1 and 2.

Stage 1 took in the original development area which was significantly larger than the present footprint The proposal has been significantly revised and, as a result, the study area is now reduced and is focussed on moderate to high ridges within 7 km of Lake George. Associated infrastructure has also been revised in response to the changes to the wind farm layout. Stage 2 considered any new areas which were not previously included in the initial development proposal and not assessed during Stage 1.Elements of Stage 1 within the current project area were also revisited to provide the GTCAC representative with a complete understanding of the development.

As such, the survey methodology for the assessment focussed on areas of greatest development impact in areas of predicted high, medium and low archaeological sensitivity. Given the enormity of the study area, this approach enabled coverage of different landscape elements with variable archaeological sensitivity. This in turn allowed extrapolation of the results to predict areas of archaeological potential across the study area where heritage impacts would be greatest.

This section outlines the survey units which are most pertinent to the final development plan. Eliminated project components which were the subject of Stage 1 have not been included in the final assessment if they are no longer relevant. Original survey units which are still within the development area have been retained. Their inclusion provides a clearer picture of the landforms covered, the degree of surface visibility across the study area and the archaeological potential of the wider landscape as a whole.

4.2 Survey Methodology

Prior to inspection, the degree of previous land disturbance within the study area was calculated to assist with inspection methodology. Low ground disturbance has occurred throughout the study area due to land clearance with some areas subjected to severe disturbance through road and dam construction. These latter activities have potentially disturbed or destroyed the archaeological context of surface archaeological material and subsurface archaeological deposits in parts of the study area and are likely to have caused artefact displacement (i.e. the removal of archaeological material from its original context). With this in mind, the ridge tops and their surround were targeted for detailed inspection as zones where occupation sites may remain intact and scarred trees may be present.

4.2.1 Degree of Disturbance

For the purposes of assessing the archaeological potential of the proposed turbine and substation sites, the degree of disturbance across the study area has been estimated. Four categories have been assigned (Table 4.1) with associated impacts of past land use practices on the archaeological resource summarised for each category.

Degree of Disturbance	Impact Description	Impact on Archaeological Resource
Undisturbed	No apparent disturbance to original land surface	*In situ* archaeological deposits may be present
Low	Non-mechanical vegetation clearance and stock grazing	Archaeological material will retain some spatial integrity although localised displacement is expected.
Moderate	Mechanical vegetation clearance and cultivation (ploughing), sheet/gully erosion	Archaeological materials may be present, although localised spatial displacement and artefact damage likely; *in situ* deposits may remain beyond plough zone.
Severe	Removal of topsoil via excavation for residential development, road and infrastructure construction, landscaped gardens, sheer erosion through natural causes and development	While archaeological sites may be destroyed, remnant dispersed archaeological material may survive. The context of such material may be unknown.

Table 4.1 Disturbance Categories

The study area is characterised by several mid to steep gradient ridge lines surrounded by undulating plains and gently rolling slopes. On the basis of topography and development potential, ten broad survey units were identified within the study area. These were:

- Survey Unit 1 Access road and batch plant west of Western Leg Road, Groses Hill Group;
- Survey Unit 2 Taylors Creek site office and batch plant at northern end of Hammonds Hill Group and new turbine locations;
- Survey Unit 3 Ridgelines to the north and east of the Hammonds Hill Group. The area forms part of the Great Dividing Range;
- Survey Unit 4 Ridgeline to the west of the 'Big Hill' ridge west of Hammonds Hill Group;
- Survey Unit 5 Potential substation site along Dry Creek south east of the Hammonds Hill Group and access track from Bungendore/Tarago Road;
- Survey Unit 6 Red Hill and southern end of Governors Hill parallel to Lake George in Ellenden Group;
- Survey Unit 7 Main ridge on southern end of Groses Hill Group;
- Survey Unit 8 Main ridge on northern end of Groses Hill Group;
- Survey Unit 9 Access track routes between Southern Hammonds Hill Group and Ellenden Group including the alternate batch plant site; and
- Survey Unit 10 Access track route east of Ellenden Group crossing Wrights Creek.

The general location of survey areas are shown in Figure 4.1. Overall ground surface visibility within the study area was expected to be low due to low thick grazing pasture and native grasses. The survey aimed to cover all representative landforms focusing on areas of high to moderate potential archaeological sensitivity where, based on the predictive model, archaeological sites are most likely to occur, and areas of greatest ground surface visibility. These were targeted for detailed inspection.

Survey was conducted on foot across much of the study area, while areas with very low surface visibility in pastured fields and on high, rocky ridgelines were covered by car. Where the survey was conducted on foot, four to five field walkers would traverse the landscape approximately 5-10 m apart. Areas of good ground exposure, such as creek banks, gullies and erosion scars were carefully inspected by all participants. The relevant 1:25000 topographic maps were used in the field to guide inspection.

4.2.2 Ground Surface Visibility

As part of the survey methodology, the level of ground surface visibility for each survey unit was estimated to assist in calculation of the effectiveness of survey coverage across the

study area. Ground surface visibility (GSV) refers to the amount of ground surface which can be observed during the survey.

Visibility can be influenced by natural processes such as erosion or the character of native vegetation (such as seasonal die back). Visibility can also be influenced by land use practices such as ploughing or grading. Visibility is expressed in terms of percentage of the ground surface that is visible to the observer on foot. An assessment of the surface visibility is useful in describing the general conditions of the area surveyed. Visibility is also affected by the obtrusiveness of a feature. It is used to describe how conspicuous a site is within a particular landscape, and thus the chances of finding a particular site. For example, an artefact scatter is generally not obtrusive, especially in areas of high vegetation or scrub cover, yet a scarred tree is generally obtrusive.

The following table (Table 4.2) provides a guide to the assessment of ground surface visibility based on a percentage rating. It is by no means an objective method of assessment, and it is open to the assessment and interpretation of the field observer. However, it can be regarded as simply a guide to describing the ground surface visibility in a standard format.

Ground Surface Visibility	Percentage Rating
Very Poor – Ground surface difficult to see with heavy vegetation, scrub, foliage or debris cover, dense tree or scrub cover.	0-9% ground surface visible
Poor – Ground surface visible in patches with moderate levels of vegetation, scrub, and/or tree cover. Isolated exposures formed by animal tracks, erosion, scalds, blowouts etc.	10-29% ground surface visible
Fair – Moderate sized patches of ground surface visible through erosion in animal /stock tracks, unsealed walking tracks, blowouts etc. Soil surface visible as moderate to small patches across a larger section of the study area. Moderate level vegetation, scrub and/or tree cover.	30-49% ground surface visible
Good – Greater amount of ground surface area visible through erosion, scalds, blowouts, recent ploughing, grading or clearing. Moderate to low level of vegetation, tree or scrub cover.	50-69% ground surface visible
Very Good – Higher incidence of ground surface visible due to previous land-use practices such as ploughing, grading etc. Low level vegetation/scrub cover.	70-89% ground surface visible
Excellent – High incidence of soil surface visible through previous land use practices such as ploughing, grading etc. Minimal level vegetation/scrub cover.	90-100% ground surface visible

Table 4.2 Ground Surface Visibility

4.2.3 Areas of Aboriginal Archaeological Potential and Sensitivity

The archaeological potential and sensitivity of the study area was determined through its association with known surface archaeological manifestations and/or landforms conducive to Aboriginal occupation. On this basis, areas of archaeological potential been divided into categories of high, moderate and low archaeological sensitivity in accordance with their estimated potential to yield subsurface cultural deposits. It should be noted that archaeological sites occur on most landforms and that subsurface archaeological deposits are commonly recovered in areas where no visible surface archaeological remains are evident. Categories are described below and are used in survey unit descriptions which follow.

- *Areas of high sensitivity* are locations where surface archaeological features (e.g. artefact scatters) are evident and/or where there is great potential to yield substantial subsurface archaeological deposits based on landform type and degree of disturbance in accordance with established archaeological models for the southern tablelands. Areas of highest potential include alluvial flats and low slopes located in close proximity to permanent water sources within the first 50 to 100 m of the creekline. More complex sites are usually located close to water sources with major confluences being key locations for occupation sites. Archaeological material will also be present beyond immediate creek surrounds in decreasing artefact densities.

- *Areas of moderate sensitivity* are identified by surface archaeological evidence and/or their potential to yield archaeological deposits based on landforms and degree of disturbance. For example, areas where the original landscape has been partially disturbed by past land uses to a degree where subsurface archaeological deposits are still likely to remain, are

identified as moderately sensitive. Other areas include landforms that are suitable for Aboriginal occupation but are perhaps not optimal locations within the surrounding landscape. Areas of moderate potential include low slopes located in close proximity to ephemeral, lower order water sources (1st and 2nd order) or between 100 and 200 m of a permanent creekline. Archaeological deposits are expected to yield lower artefact densities than those in areas of high sensitivity.

- *Areas of low sensitivity* are those where the original landscape has been more substantially disturbed by past land uses or where landforms are not conducive to Aboriginal occupation (i.e. swamps, marshes, steep slopes and ridgelines). As a result, archaeological deposits are less likely to be present, or if affected by disturbance, are less likely to remain intact. Such locations include high ridge tops and crests in rocky environments away from natural resources and water. It should be noted that high points in the landscape which may have low archaeological sensitivity may have been used as vantage points and/or travelling routes by Aboriginal people in the past and as such, may have significant cultural value.

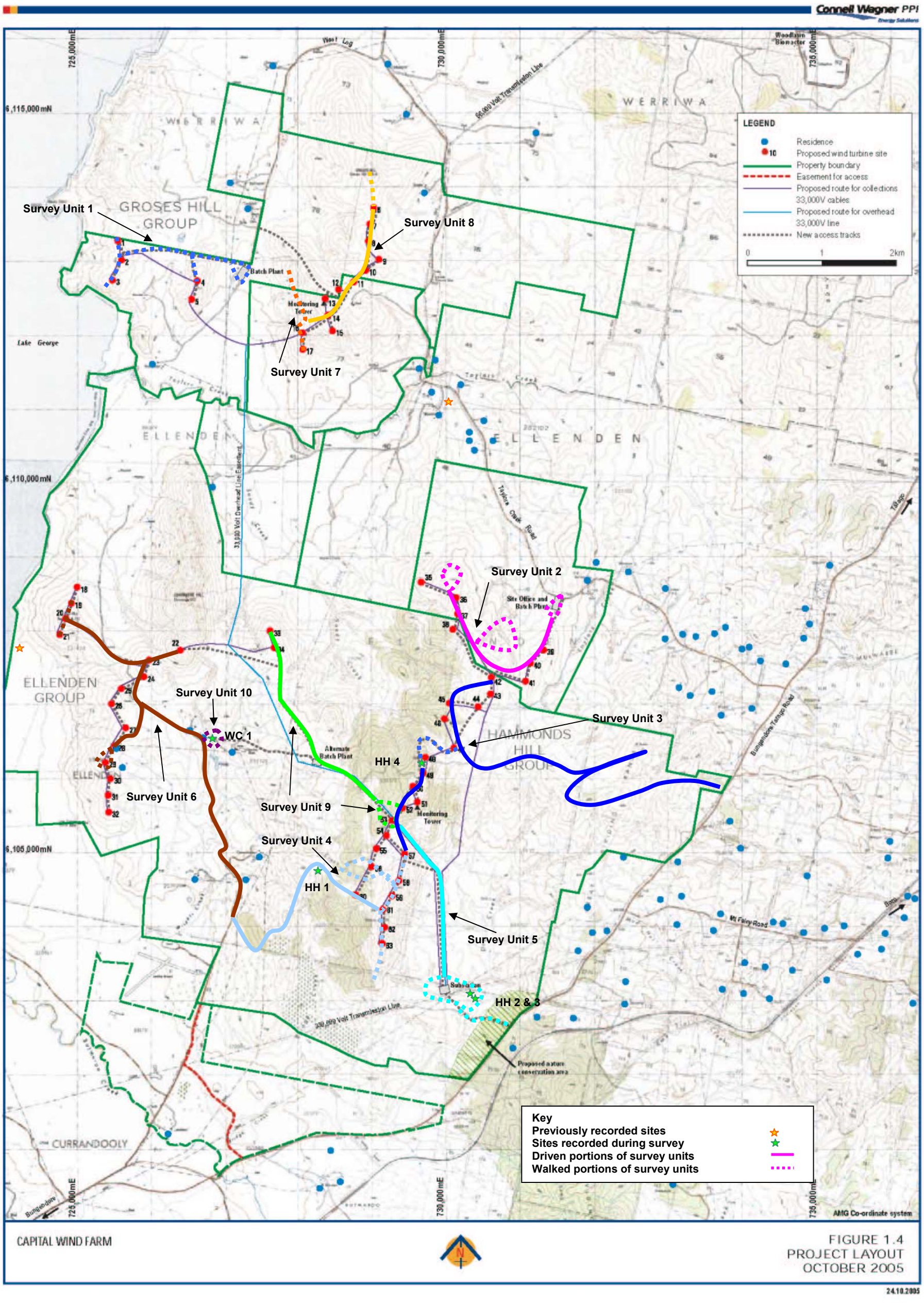


Figure 4.1 Survey Units: combined Stage 1 and 2 with recorded surface sites [Note: solid line denotes driven routes, dashed line denotes walked routes]
(Source: Connell Wagner PPI)

4.3 Survey Results

Megan Mebberson (Senior Archaeologist) conducted the Stage 1 and Stage 2 inspection of the study area with the assistance of Ashley Matic (Archaeologist). Stage 1 fieldwork was assisted by Justin Boney (PLALC Sites Officer), Wally Bell (BNAC Sites Officer) and Tyrone Bell (BNAC Sites Officer). Three days of fieldwork were conducted between the 15th and 17th December 2004 for Stage 1.

Supplementary fieldwork for Stage 2 was conducted between 26th and 27th October 2005 following changes to the proposed design of the wind farm. Megan Mebberson (Senior Archaeologist) also conducted this inspection with the assistance of Ashley Matic (Archaeologist), Justin Boney (PLALC Sites Officer) and Robert Graham (GTCAC Sites Officer). Jeff Bembrick (Connell Wagner Project Manager) guided the field team around the development area on both occasions and indicated the proposed turbine locations and infrastructure, providing advice concerning possible impacts and geological information.

Inspection focused on locations marked as potential turbine sites, substation complex, batch plants and sites office. Existing dirt roads and tracks which may be utilised for the development and some of the probable cable routes were also inspected where possible.

Ground surface visibility was minimal in most areas with the exception of the creek surrounds, natural erosion gullies and existing vehicle tracks. Areas of erosion created by the grazing stock were also carefully inspected as were large granite outcrops along the ridgelines. Due to a general lack of suitable ground surface visibility, some proposed access and cable routes were not inspected during the surveys.

As a result of the two surveys, five Aboriginal archaeological surface sites were recorded (Figure 4.1). These consisted of two small artefact scatters and three isolated finds. Most of the sites were associated with flatter landforms and creek tributaries. Four sites were located in the Hammond Hill Group and the remaining site was recorded between this group and the Ellenden Group.

4.4 Survey Unit Descriptions

Inspection of the study area is now outlined by individual survey units with specific areas of archaeological sensitivity subject to detailed inspection described within each unit. It should be noted that the landscape diagram shown in each unit indicates the general topographic feature traversed during survey to illustrate the nature of each survey unit.

Survey Unit 1 Access road from Groses Hill batch plant and Turbines 1-5
AMG Start: 7327325 E 6112965 N (batch plant)
AMG End: 725400 E 6112600 N (Turbine 3)

Typical landscape features encountered in Survey Unit

Total survey area: 1500 x 25 m

Topography gently undulating gully and hillslopes, rocky crests

Distance to water 200-500 m to Lake George and ephemeral tributary

Stream order 1st order

Land use cleared and pasture, thistles

Aspect south west **Gradient** gentle to moderate

Disturbance type land clearance

Degree of disturbance low

Vegetation/ground cover none in track, grass cover to 20-30 cm in most areas

Presence of raw materials/resources granite boulders, quartz

Observed soil type pink to red gravelly dry topsoil between 5-20 cm deep on ridge crests

GSV within eroded track and along creek bank 25-50%; beyond track, 10-25%

Exposure type track & creek bank exposure

Depth of erosion between 5 – 10 cm

Aboriginal archaeological sites 0

Archaeological potential low at batch plant and Turbines 4-5; moderate to high at Turbines 1-3

This survey unit followed the access track from the proposed Groses Hill Group batch plant to the central and western ridgelines of the turbine group. Visibility along the track was good with poor visibility in the areas beyond the track. The unit was characterised by gently to moderately undulating hill slopes and rocky crests. No surface sites were recorded during the investigation of this unit.

The ephemeral creekline between Turbines 1-3 and 4-5 was inspected in detail in the vicinity of the proposed creek crossing. While no surface archaeology was recorded, this and the many creeklines and their banks in the study area are archaeologically sensitive landforms and care should be taken when working in these locations. It is acknowledged that archaeological investigation at each impacted creekline is not viable and, as such, bank modification and work easements at creek crossings should be minimised. Construction guidelines should be produced to warn contractors of these and other sensitive areas.

While much of this survey unit is considered to be of low archaeological potential, the location of Turbines 1-3 close the eastern edge of Lake George renders them of high archaeological and possibly cultural sensitivity. Turbine 3 will be located at the southern end of the crest overlooking Lake George. The proposed turbine pad is covered with granite boulders and the topsoil depth is approximately 10 - 15 cm. given this location directly overlooks the lake, there remains a moderate to high potential for subsurface archaeological material despite the rocky surrounds. As with the Red Hill ridgeline (Turbines 18-21), the immediate shores of Lake George are very archaeologically sensitive and as such, PAD is likely to remain undetected along the eastern edge of the lake.

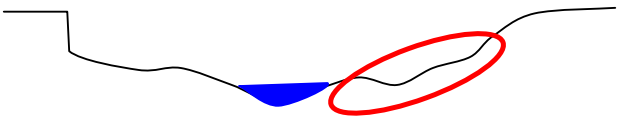
Plate 4.1 View east along access road to batch plant in Survey Unit 1

Plate 4.2 Ephemeral creekline in Survey Unit 1 between Turbines 1-3 and 4-5

Plate 4.3 Ground surface along ridge of Turbines 1-3

Plate 4.4 View directly south over Lake George at Turbine 3 in Survey Unit 1

Survey Unit 2 Batch plant & site office at northern end of Hammonds Hill Group and new turbine locations (Turbines 35-42)
AMG Start: 731508 E 6108347 N
(site office)
AMG End: 730080 E 6108725 N
(Turbine 35)



Typical landscape features encountered in Survey Unit

Total survey area: 3000 x 25 m

Topography moderately undulating hill slopes and ridge crest

Distance to water 0- 500 m

Stream order 1st order

Land use cleared pasture with some remnant native vegetation on crests

Aspect west to south west **Gradient** gentle to moderate

Disturbance type land clearance

Degree of disturbance low

Vegetation/ground cover low pasture and grass

Presence of raw materials/resources granite, quartz

Observed soil type Brown silt underlain by red clay mixed with conglomerate

GSV generally <5%; 50-75% in erosion gullies

Exposure type Large amount of natural erosion

Depth of erosion 1-1.5m

Aboriginal archaeological sites 0

Archaeological potential low

This survey unit took in the northernmost portion of the Hammonds Hill Group (new Turbines 35-42) along the hill ridge and associated proposed batch plant and site office. This unit was characterised by gentle to moderate hill slopes and ridges with generally poor ground surface visibility. Extensive gully erosion has occurred between the two main ridges included in the group. These gullies were inspected in detail as they afforded good ground surface visibility. No sites were identified during the investigation of this unit. Similarly, the site office/batch plant site and the nearby rough track was inspected in detail. Much of the office site is currently under crop.

Generally, the development impacts in this survey unit are limited to the ridge tops where soils are shallow and away from archaeologically sensitive zones associated with ephemeral drainage lines. As discussed, the drainage gullies which were surveyed on foot in this area had good ground surface visibility due to a high degree of erosion: no archaeology was recorded. Consequently, no specific areas of archaeological potential were identified in this unit.

Plate 4.5 Erosion gully at 730917 E 6107355 N between Turbines 35-38 and 39-42

Plate 4.6 Surrounds of Turbine 36

Plate 4.7 Example of grounds surface visibility at Site Office location

Plate 4.8 View north from Site Office

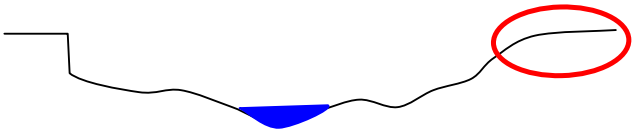
Survey Unit 3 North-eastern hills forming part of the Great Dividing Range in Hammonds Hill Group including new access track

AMG Start: 732481 E 6105423 N

AMG End: 730910 E 6105846 N

Total survey area: 3000 x 25 m

Topography steep ridgeline and rocky crests, high undulating slopes



Typical landscape features encountered in Survey Unit

Distance to water < 200 m

Stream order 1st order

Land use cleared pasture with some remnant vegetation on crests

Aspect predominantly south to south west
Gradient Moderate to steep

Disturbance type land clearance

Degree of disturbance low

Vegetation/ground cover thick grass varying form ankle to knee high

Presence of raw materials/resources granite boulders, tors, quartz

Observed soil type coarse, sandy gravel filled silt on central ridge

GSV <1% in eastern portion (hence vehicle survey); on central ridge within access tracks and natural erosion areas, 50-75%. Beyond track on central ridge, approx. 5-10%

Exposure type Some natural erosion on gully lines

Depth of erosion 5-10 cm

Aboriginal archaeological sites 1

Archaeological potential low

The eastern portion of Survey Unit 3 covered the early design layout where turbines where located in an east-west alignment from the central Hammond Hill ridge to the Bungendore/Tarago Road. This alignment was surveyed by car as the ground surface visibility was very low. The high ridge tops were quite broad and covered with granite boulders and knee high grass. A small number of ground exposures in the east of the survey unit were examined on foot but no archaeology observed. The main ridge top is steep sided and affords a good vantage point across the landscape. It is likely that Aboriginal people travelled through the area but due to the steepness of the feature, its rocky context and distance to water, it is not considered to be an area conducive to long term occupation.

As part of the Stage 2 survey carried out in this unit, the route of a new access track to Turbine 48 which extends along the top of the ridge was also examined. The existing access road can not be used due to its steep grade and an alternate route will be constructed to access the top of the ridge. ground surface visibility was good to very good along the existing steep eastern track, but poor beyond it. One new site (an isolated find) was identified during this additional survey on the ridge top between Turbines 48 and 49. This indicates Aboriginal people visited the ridge top. It is however unlikely that an extensive camp site is associated with the isolated find due to the topography of the ridge, its exposure to the elements (even with native vegetation) and its distance to reliable water. Justin Boney (PLALC) and Robert Graham (GTCAC) agreed that the ridge would have been travelled but that it was not a place where Aboriginal people in the past would have camped. Therefore, no PAD was identified within the survey unit.

Plate 4.9 View west up the new access track to Turbine 48

Plate 4.10 Hammond Hill 4- an isolated flake of fine grained siliceous material located between Turbines 48 and 49 on the vehicle track

Plate 4.11 View of ground surface at end of Survey Unit 3 near Turbine 57

Plate 4.12 View of sheet erosion near small waterhole along Survey Unit 3

Site Descriptions

Site Name: Hammonds Hill 4 **AMG Co ords:** 729691 E 61061811 N

Number of artefacts: 1 **Artefact types:** Flake grey FGS

Summary isolated find located on track along top of ridge at northern end close to Turbine 48

Subsurface potential low

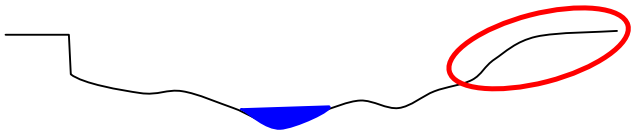
Survey Unit 4 Ridgeline to the west of the 'Big Hill' ridge and the southern slopes of "Big Hill" in Hammonds Hill Group

AMG Start: 727811 E 6104153 N

AMG End: 728443 E 6104373 N

Total survey area: 2500x 25 m

Topography southern rocky slope of main ridgeline and vegetated saddles



Typical landscape features encountered in Survey Unit

Distance to water 300 m

Stream order 1st order

Land use cleared pasture

Aspect south **Gradient** Moderate to very steep

Disturbance type land clearance

Degree of disturbance low

Vegetation/ground cover natural grasses and remnant vegetation

Presence of raw materials/resources granite

Observed soil type sandy brown loam, 10-20 cm depth on ridge

GSV <10% in most places, 25-50% in creek gully

Exposure type Natural weathering, patchy but continual erosion along ridge slope

Depth of erosion 10 to 20 cm

Aboriginal archaeological sites 1

Site type artefact scatter

Archaeological potential overall potential low on ridge top but on lower gradients, moderate potential

This unit originally covered several turbines stretching west along a low broad ridgeline to the west of the main Big Hill/ Hammond Hill ridge and also along the southern end of the abovementioned ridgeline. In general the ground surface was heavily grassed and covered with granite boulders affording minimal ground surface visibility. Erosion gullies to the west and east of the main ridgeline were inspected in detail as they provided the best ground surface visibility. As a result, site Hammonds Hill 1 was recorded in an open erosion gully on the top of a broad ridgeline connected with the main Big Hill ridge. No further sites were located on the eastern side of Big Hill despite some improved ground surface visibility on the lower extent of this ridgeline. Due to design revisions, HH 1 is no longer at risk of impact.

The Stage 2 survey also examined the proposed access vehicle track route in the vicinity of Turbine 56 at the southern end of the Hammonds Hill Group which was located upslope from two first order tributaries of Wrights Creek. This portion of the unit was inspected on foot and was characterised by gently sloping hills on the main ridgeline of the Hammonds Hill group and moved downhill over moderate slopes along areas of extensive gully erosion within the tributaries. Ground surface visibility was low over much of the unit with areas of good exposure associated with the eroded gull however no Aboriginal archaeological sites were identified despite this. A cable route is proposed adjacent to the tributary near Turbine 56. As all creek surrounds are archaeologically sensitive, impact to these zones should be minimised if not avoided where possible. Discussions in the field indicated there may be scope to align the cable further upslope to avoid the creek: this option is recommended.

Plate 4.13 View of erosion at site Hammonds Hill 1

Site Descriptions

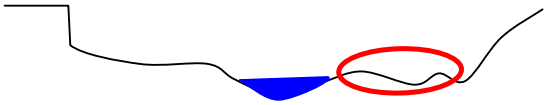
Site Name: Hammonds Hill 1 **AMG Co ords:** 728282 E 6104821 N

Number of artefacts: 3 **Artefact types:** Flakes & broken flakes, quartz & brown chert materials

Summary site located in erosion gully in the vicinity of Wrights Creek, west of the main ridgeline along the basal slopes. This site is likely to be associated with PAD extending across the slope towards the creekline

Subsurface potential moderate to high

Survey Unit 5 Proposed substation sites along tributaries of Dry Creek in Hammonds Hill Group, access road and cabling/overhead transmission routes



Typical landscape features encountered in Survey Unit

AMG Start: 730266 E 6103190 N

AMG End: 730850 E 6102670 N

Total survey area: 2500 x 25 m

Topography creek gully, banks and footslopes

Distance to water 0 to 500 m

Stream order 1st and 2nd order confluence

Land use cleared grazing pasture, area of natural vegetation

Aspect East-west **Gradient** gentle-

Disturbance type land clearance

Degree of disturbance low

Vegetation/ground cover natural grasses

Presence of raw materials/resources creek cobbles, quartz

Observed soil type sandy, brown loam

GSV between 25-50 % in natural erosion, creek gullies and rough vehicle tracks, otherwise reduced to 10-25%

Exposure type natural gully erosion

Depth of erosion variable

Aboriginal archaeological sites 2

Site type isolated finds

Archaeological potential low on steep slopes towards Hammonds Hill, moderate to high on the lower gentle slopes surrounding Dry Creek

Survey in this unit was conducted on foot on the lower slopes and by vehicle along the proposed cabling/access road/overhead transmission line route across the steep eastern ridge side of Hammonds Hill. Vehicle coverage was opted for along the ridge side due to the combined factors of limited ground surface visibility and gradient. The lower reaches of the eastern ridge side contains numerous first order tributaries which, by definition are archaeologically sensitive. As with all creeklines, the level of impact to the immediate creek banks and confluence areas, should be minimised and works should be undertaken with heritage issues in mind.

Two isolated artefacts (HH 2 and 3) were located during Stage 1 survey on the low slopes surrounding the confluence of first and second order drainage lines associated with Dry Creek. Despite the general paucity of archaeological material in the area, there remains the probability that subsurface PAD is present at this location, given the presence of a semi reliable water course surrounded by elevated gentle banks.

The Stage 2 survey examined this area again as the alternate site for the substation had been moved approximately 200 m to the northwest of the original site. Ground surface visibility and topography were generally the same across this new area as with the original, given that the new location is still within the confluence of several creek lines (including one semi-permanent) and on elevated ground, the initial assessment of PAD present at this location still stands.

Stage 2 survey also examined a proposed access road route to the substation site from the Bungendore-Tarago Road. This is an established ungraded track over a distance of 600-700 m up a gently graded hill slope. GSV on the track itself was very good, although beyond the track was very poor. No Aboriginal artefact material or specific areas of PAD were identified in this portion of the survey unit away from the creek banks.

Plate 4.14 View of erosion within an ephemeral creek line in the vicinity of the alternate substation site

Site Descriptions

Site Name: Hammonds Hill 2 **AMG Co-ords:** 730407 E 6103170 N

Number of artefacts: 1 **Artefact types:** Broken flake of quartz

Summary Isolated find

Subsurface potential moderate to high in vicinity

Site Name: Hammonds Hill 3 **AMG Co ords:** 730491 E 6103106 N

Number of artefacts: 1 **Artefact types:** Flake of quartz

Summary Isolated find

Subsurface potential moderate to high in general vicinity. It is likely that the two isolated finds represent a larger spread of material which remains undetected in the substation area.

Plate 4.15 view across alternate substation site to Hammonds Hill

Plate 4.16 Stratigraphy within the tributary near the alternate substation site showing the depth of topsoil @ 731042 E 6103211 N

Plate 4.17 Gentle low slopes surrounding the creekline at the original substation site

Plate 4.18 Proposed access track to the south east of the substation site which joins the Bungendore/Tarago Road in Survey Unit 5

Survey Unit 6 Red Hill and south of Governors Hill adjacent to Lake George in the Ellenden Group

AMG Start: 724297 E 6108134 N

AMG End: 725513 E 6106404 N

Total survey area: 3000 x 25 m

Topography low broad ridges overlooking Lake George and the main access road between Ellenden and Hammonds Hill Groups

Typical landscape features encountered in Survey Unit

Distance to water 200 - 500 m

Stream order 1st and 2nd order confluences and Lake George

Land use cleared pasture

Aspect south west **Gradient** Moderate to very steep at base of Governors Hill

Disturbance type land clearance, ploughed

Degree of disturbance low

Vegetation/ground cover natural & pasture grasses, thistles

Presence of raw materials/resources local creek cobbles, granite boulders

Observed soil type Loose red/brown silty soil, 20 cm deep on Red Hill

GSV overall <5% but in limited natural exposures 5 -10% and within vehicle access tracks 50%

Exposure type erosion caused by land clearance on Red Hill and southern Ellenden group ridge and on graded vehicle track

Depth of erosion < 10 cm

Aboriginal archaeological sites 0

Archaeological potential throughout this survey unit, ground surface visibility was generally very low due to thick grass and thistles on most slopes. However, moderate to high archaeological potential is expected on Red Hill (Turbines 18-21) and connecting low broad ridgeline overlooking Lake George including Turbines 29-32 due to their proximity to Lake George and the broad hillcrests which afford extensive views across the lake and the surrounding area. Previous archaeological research in the wider area indicates that the shores of Lake George are highly archaeologically sensitive and as such, PAD is likely to remain undetected along the eastern edge of the lake. Turbine sites 18-21 were identified as areas of PAD for this reason. Like Turbines 1-3, their proximity to Lake George renders them as areas which warrant further archaeological investigation prior to their impact.

The very steep southern end of Governors Hill was also traversed in Stage 1. No ground surface visibility on this slope was nil and the steep slope and ridge top was covered in granite boulders and thick knee high grass and thistles. While the Governors Hill ridge line is not considered conducive to Aboriginal occupation, the ridge affords panoramic views in all directions and overlooks Lake George. Undoubtedly the area was visited by Aboriginal people and therefore may have important landscape and/or cultural values.

Stage 2 survey work included new turbine locations on the south eastern face of the ridge (Turbines 28-32). The area was characterised by gently undulating hills on gentle broad crests. Minimal ground surface visibility was encountered due to thick vegetation cover and granite boulders. No sites were identified in this southern portion but the immediate area of Turbine 29 is of interest in this group as for the same reasons as those of Red Hill.

Plate 4.19 Red Hill trig station in Survey Unit 6 looking south west over Lake George

Plate 4.20 Ground surface visibility on Red Hill

Plate 4.21 Vehicle track exposure to Red Hill

Plate 4.22 View north west from Turbine 29 to Red Hill

Plate 4.23 View south west from Turbine 29 to Bungendore

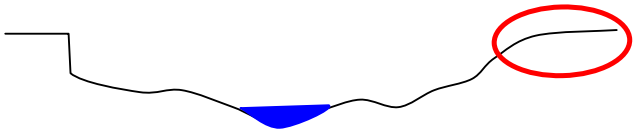
Survey Unit 7 Southern end of main ridge in Groses Hill Group (Stage 1)

AMG Start: 728020 E 6112900 N

AMG End: 728470 E 6112000 N

Total survey area: 900 x 25 m

Topography high ridgeline



Typical landscape features encountered in Survey Unit

Distance to water > 400 m

Stream order 1st order

Land use cleared, grazed

Aspect south **Gradient** moderate to very steep

Disturbance type land clearance

Degree of disturbance low

Vegetation/ground cover low pasture and native grasses

Presence of raw materials/resources quartz, granite boulders

Observed soil type red loose gravelly topsoil in exposures, 15 cm deep on ridge top

GSV poor 10-25%

Exposure type natural erosion

Depth of erosion < 5 cm

Aboriginal archaeological sites 0

Archaeological potential low

The main Groses Hill ridgeline was quite high in comparison to the two adjoining ridgelines to the west. The broad crest was covered with granite boulders and high grass affording very little ground surface visibility. The adjoining ridges were similar in this respect. Adjacent to Turbines 2 to 7 were two ephemeral 1st order creeklines which converge beyond the turbine impact area to the east. These ridge lines are not considered conducive to Aboriginal occupation but afford panoramic views overlooking Lake George to the west and across the landscape to the east also. The area would have been visited by Aboriginal people and may have important landscape and/or cultural values.

Plate 4.24 View to south from start of Survey Unit 7

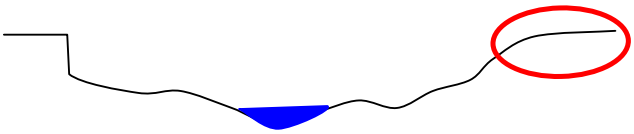
Plate 4.25 View of northern end of Survey Unit 7

Survey Unit 8 Northern end of main ridge in Groses Hill Group incorporating Groses Hill trig station

AMG Start: 728957 E 6114178 N

AMG End: 728978 E 6114296 N

Total survey area: 1500 x 25 m



Typical landscape features encountered in Survey Unit

Topography broad ridgeline and steep slopes

Distance to water 200 m

Stream order 1st order creeklines

Land use cleared

Aspect north **Gradient** flat to gentle on broad ridge top

Disturbance type land clearance and weed infestation

Degree of disturbance low

Vegetation/ground cover low pasture

Presence of raw materials/resources granite boulders

Observed soil type medium brown, gravel interspersed granite tors

GSV very poor <5%

Exposure type natural erosion

Depth of erosion < 5 cm

Aboriginal archaeological sites 0

Archaeological potential low

The landscape along this Survey Unit is identical to that of Survey Unit 7. This ridge line is not considered conducive to Aboriginal occupation but affords panoramic views overlooking Lake George.

Plate 4.26 Groses Hill trig station

Plate 4.27 View of ground surface at Turbine 1 showing granite tors

Survey Unit 9 Proposed access vehicle routes on western face of Hammonds Hill group and cabling/access route to batch plant and Turbines 33 & 34 (Stage 2)

Typical landscape features encountered in Survey Unit

AMG Start: 729096 E 6105669 N to 729275 E 6105466 N (on foot)

AMG End: 729275 E 6105466 N to 727600 E 6108000 N (by vehicle)

Total survey area: 2000 x 10 m

Topography undulating hillslopes and saddles

Distance to water 0-500 m

Stream order 1st order

Land use pockets of native vegetation between vast cleared areas

Aspect south west **Gradient** gentle to moderate

Disturbance type land clearance

Degree of disturbance low

Vegetation/ground cover Grass cover to 20-30 cm

Presence of raw materials/resources: granite boulders, quartz

Observed soil type Mid brown, gravelly, with weathered granite

GSV < 5% over the majority of the unit from Hammonds Hill to Turbine 33; 10-25% in naturally vegetated area on Hammonds Hill saddle and 50-75% in small vehicle and stock tracks

Exposure type natural erosion, vehicle tracks

Depth of erosion up to 10 cm

Aboriginal archaeological sites 0

Archaeological potential low-moderate

This unit took in two natural drainage lines down the western face of the ridgeline and saddle in the Hammonds Hill Group that has been selected as potential construction road and cabling routes. The area featured low ground surface visibility as it was heavily grassed and was also quite wet underfoot as several ground water soaks emerged on the surface. While no Aboriginal archaeological surface sites were identified in this portion of the survey unit, it represents a relatively intact environment which is rare in the study area and should be retained if possible. The area also has the potential to yield subsurface deposits as it is sheltered from the elements and would have attracted fauna as a result. The surrounding landscape was also inspected and a possible alternate route found to the south of this saddle where a rough existing track is present. If possible, the final road/cable route should consider the status of this area and preserve its archaeological sensitivity.

The remainder of the access road/cabling route runs across the western slopes of the Hammonds Hill ridge and traverses numerous first order tributaries where much of the native vegetation remains. In general, the area is archaeologically sensitive as a place where Aboriginal people would have frequented for food resources.

The alternate batch plant site and Turbines 33 and 34 are within cleared paddocks. The landscape undulates gently here and a sand/granite quarry is located south of Turbine 33. there were no specific Aboriginal heritage issues associated with these locations.

Plate 4.28 Ground surface visibility within the saddle portion of Survey Unit 9

Plate 4.29 View north across saddle in area of archaeological sensitivity in Survey Unit 9

Survey Unit 10 Proposed access track crossing at Wrights Creek between Ellenden and Hammonds Hill Groups

AMG Start: 726867 E 6106346 N

AMG End: 726777 E 6106349 N

Total survey area: 100 x 20 m

Typical landscape features encountered in Survey Unit

Topography gently undulating creek banks

Distance to water 0-30 m

Stream order confluence of 1st & 2nd order tributaries

Land use cleared, thistles

Aspect south **Gradient** gentle

Disturbance type land clearance, graded and dressed vehicle track/creek crossing

Degree of disturbance low to moderate

Vegetation/ground cover low grasses around track

Presence of raw materials/resources: creek cobles, granite, quartz

Observed soil type Light brown, dry gravel filled loam

GSV 50-75% within creek bank and on vehicle track, < 15% beyond these

Exposure type natural erosion, graded & eroded vehicle track

Depth of erosion up to 2 m around creek

Aboriginal archaeological sites 1

Archaeological potential high

This unit was inspected during Stage 2 as a new component. The area examined was along the established graded and dressed road crossing of Wrights Creek between the main project access road and the Hammonds Hill Group. Survey including both the highly eroded road surface itself and the heavily eroded creek banks adjacent to it. The survey unit traversed the area between the confluence of two creek lines in an area of high archaeological sensitivity. Ground surface visibility was very good within the road and along the creek banks. Several artefacts were noted on the roadway within the eroding topsoil and in the bank of the creek itself. These were flakes and flaked pieces of grey fine grained siliceous material and a heavily worn basalt ground edge axe located in the middle of the track.

Despite the presence of gravel on the track side probably used to dress the road surface, it is unlikely that these artefacts were brought in as part of this material. The gravel was quite coarse and is available locally, however, the artefacts were eroding out of the *in situ* topsoil which was sitting on underlying red clay. The road dressing was remnant and had either been washed or eroded away due to use with the underlying natural soils clearly visible on the majority of the track. Five artefacts were found in a small concentration in the centre of the road way where the road was least used (despite the fact that the dressing was gone here); the ground edged axe was found close by. The artefacts were found within a potentially disturbed context however, an additional artefact found *in situ* within the soil profile of the creek bank was made of the same material as that of the assemblage from the road. It therefore seems likely that these materials are from the immediate area. Moreover, no artefacts were located in the remnant gravel spoil by the road side. Justin Boney (PLALC) and Robert Graham (GTCAC) confirmed that the artefacts were likely to be from the area in which they were found, given the immediate landforms and the inherent sensitivity of the creek confluence.

Consequently, the area at the creek crossing is considered to be of high archaeological potential with in situ subsurface deposits present within the creek confluence and the immediate banks and surrounding hillslopes. The area is highly conducive to Aboriginal visitation and occupation and as a result, where intact soil profiles are to be impacted beyond the existing roadway, further archaeological investigation is warranted. Should the present roadway be suitable for construction access then impact to the surrounding landscape should be kept to a minimum.

Plate 4.30 view north along the highly eroded arm of Wrights Creek

Plate 4.31 Artefact eroding from western bank of Wrights Creek @ 726847 E 6106360 N

Plate 4.32 View of soil profile along western creek bank where artefact was recorded *in situ*

Plate 4.33 Worn basalt ground edged axe found within road margins

Plate 4.34 View along formed road and creek crossing where WC 1 was located

Plate 4.35 View of ground edged axe showing reworking along one margin

Site Descriptions

Site Name: Wrights Creek 1

AMG Co-ords: centred around 726857 E 6106344 N

Number of artefacts: 7

Artefact types: flakes and flaked pieces of grey fine grained siliceous material and silcrete, also ground edge axe

Summary Open scatter found on highly eroded roadway and in eroding topsoil of creek bank within an area of approximately 30 m

Subsurface potential moderate to high with the potential for *in situ* deposits

4.5 Effective Survey Coverage

Effective survey coverage is an estimate of the ground surface visually examined during field survey. It is determined by dividing the actual area surveyed by the estimated ground surface visibility rating as set out by the NSW Department of Environment and Conservation. It does not reflect the total area traversed but rather an estimate of the ground surface which was visible during survey. This represents a direct correlation between the detection of surface archaeological sites and ground conditions. Thus a survey unit which traverses a permanent creekline, low slopes and smaller tributaries should be expected to yield archaeological sites, however a dense covering of vegetation (thick pasture grass, natural woodland) will inhibit detection of such sites. The effective survey coverage for this unit therefore would be proportionately lower than the total surveyed area.

Effective survey coverage for the current study is presented in Table 4.3 below.

Survey Unit	Ground Surface Visibility Rating	Estimated Size of Survey Unit	Effective Survey Coverage
1	average 25%	1,500 x 25 375,000 m^2	93,750 m^2
2	average 5%	3,000 x 25 m 75,000m^2	3,750 m^2
3	average 5%	3,000 x 25 m 75,000 m^2	3,750 m^2
4	10%	2,500 x 25 m 62,500 m^2	6,250 m^2
5	average 25%	2,500 x 25 m 62,500 m^2	15,625 m^2
6	average 20%	3,000 x 25 m 75,000 m^2	15,000 m^2
7	average 15%	900 x 25 m 22,500 m^2	3,375 m^2
8	<5%	1,500 x 25 m 37,500 m^2	1,875 m^2
9	average 15%	2000 x 10 m 12,500 m^2	3,000 m^2
10	average 20%	100 x 20 m 2,000 m^2	400 m^2

Table 4.3 Summary of Effective Survey Coverage

Overall, the most effective survey coverage was achieved within Survey Units 1, 5, 6 and 10 where visibility was slightly increased due to more ground exposures through erosion caused by prolonged agricultural land uses, vegetation clearance or the presence of existing tracks and roadways. Ground surface visibility throughout the study area was generally very low.

The paucity of archaeological evidence seen across the project area is likely to realistically reflect reduced archaeological visibility rather than the potential for undetected cultural material to be present along the development corridor. Despite this, inspection of the major landforms within the study area was achieved and observations made in the field in combination with knowledge of the local archaeological record are considered adequate to extrapolate the potential level of impact by the proposal on areas of archaeological sensitivity.

4.6 Summary of Archaeological Survey Results

A total of five Aboriginal archaeological sites were recorded during survey. These consisted of one small artefact scatter and four isolated finds; the majority of which were associated with flatter landforms along the ridges that were surveyed, with others associated with creek tributaries in the area.

Of these sites, Wrights Creek 1 is considered the only site likely to have associated subsurface *in situ* archaeological deposit. Due to design changes, only Hammonds Hill 4 and Wrights Creek 1 are currently subject to development impact. Moreover, the two previously recorded sites within the wider development footprint will not be impacted.

As the study area is in close proximity to Lake George and has several semi-permanent creeklines running through it, the lower broad ridge tops and surrounding footslopes and creek gullies are considered to be the most likely topography on which Aboriginal occupation occurred. The shores and hills on the eastern edge of Lake George are of high archaeological sensitivity despite the paucity of Aboriginal archaeological material located in the vicinity during survey. It should be noted that the lack of material recorded, particularly in the Lake George zone, does not preclude that Aboriginal sites are present across the landscape. Given the low degree of ground surface visibility throughout the majority of the study area, these findings are not unexpected.

4.6.1 Areas of Aboriginal Archaeological Potential

The lower gentle slopes, creek gullies and flatter broad ridge crests associated with permanent and semi-permanent water sources within the study area are all conducive to occupation by Aboriginal people in the past. The underlying geology and soils are also likely to have supported a rich resource base utilised by Aboriginal people, particularly around Lake George and the main creeklines including Sandy Creek, Dry Creek and Wrights Creek in the west.

Areas of potential are linked by topography, proximity to water and the level of previous land disturbance in the immediate area. Those portions of the study area which have remained undeveloped or have been subject to vegetation clearance and grazing, retain a higher potential for intact soil profiles than those where heavy earthmoving events (such as dammed portions of tributaries and mechanical clearing) have occurred.

Within this framework, six broad areas of archaeological potential have been identified within the study area. Some are associated with recorded surface sites while others are distinguished by topographic features, location and soil landscape. The PADs are broadly mapped in Figure 4.2 and their approximate AMG coordinates given in Table 4.4.

PAD No.	Level of Potential	AMG Coordinates
Turbines 1-3 Groses Hill	Moderate to high	725400 E 6112600 N
Red Hill, Ellenden (Turbines 18-21)	Moderate to high	725000 E 6108000 N
Turbine 29 Ellenden	Moderate	725500 E 6107200 N
Wrights Creek 1	High	726857 E 6106344 N
Access route between Turbines 52 and 53	Moderate	729096 E 6105669 N
Alternate substation location	Moderate to high	729990 E 6103101 N

Table 4.4 Approximate locations of PAD sites

The potential archaeological value of each area has been considered in the formulation of heritage recommendations set out in Sections 6.0. A summary of inspection findings are presented in Table 4.5 below.

Survey Unit	Summary of Heritage Results
1	No surface Aboriginal heritage sites identified. Low to moderate potential for most of the Survey Unit with moderate to high archaeological potential with subsurface archaeological deposits likely along the ridge where Turbines 1-3 are proposed.
2	No surface Aboriginal heritage sites or areas of archaeological potential identified. No further heritage issues.
3	One surface Aboriginal heritage site (HH 4) identified. No specific areas of archaeological potential along high ridge tops. No further heritage issues.
4	One surface Aboriginal heritage site identified (HH 1) which will not be impacted by the development. The undisturbed areas around the unnamed creek line where HH 1 was found where minimal disturbance has occurred are areas of moderate to high archaeological potential. No further heritage issues.
5	Two surface Aboriginal heritage sites identified (HH 2 & 3). Areas of moderate to high archaeological potential identified associated with tributaries of Dry Creek at alternate substation site.
6	No surface Aboriginal heritage sites identified. Areas of moderate to high archaeological potential identified at the top of Red Hill (Turbines 18-21), along the adjoining southern ridge (Turbine 29) overlooking Lake George.
7	No surface Aboriginal heritage sites identified. Low potential for subsurface archaeological deposits along ridge. No further heritage issues.
8	No surface Aboriginal heritage sites identified. Low potential for subsurface archaeological deposits along ridge. No further heritage issues.
9	No surface Aboriginal heritage sites identified. An area of moderate archaeological potential identified between Turbines 52 and 53 along a proposed access route.
10	One surface Aboriginal heritage sites identified (WC 1). High potential for subsurface archaeological deposits associated with WC 1.

Table 4.5 Summary of results in survey units.

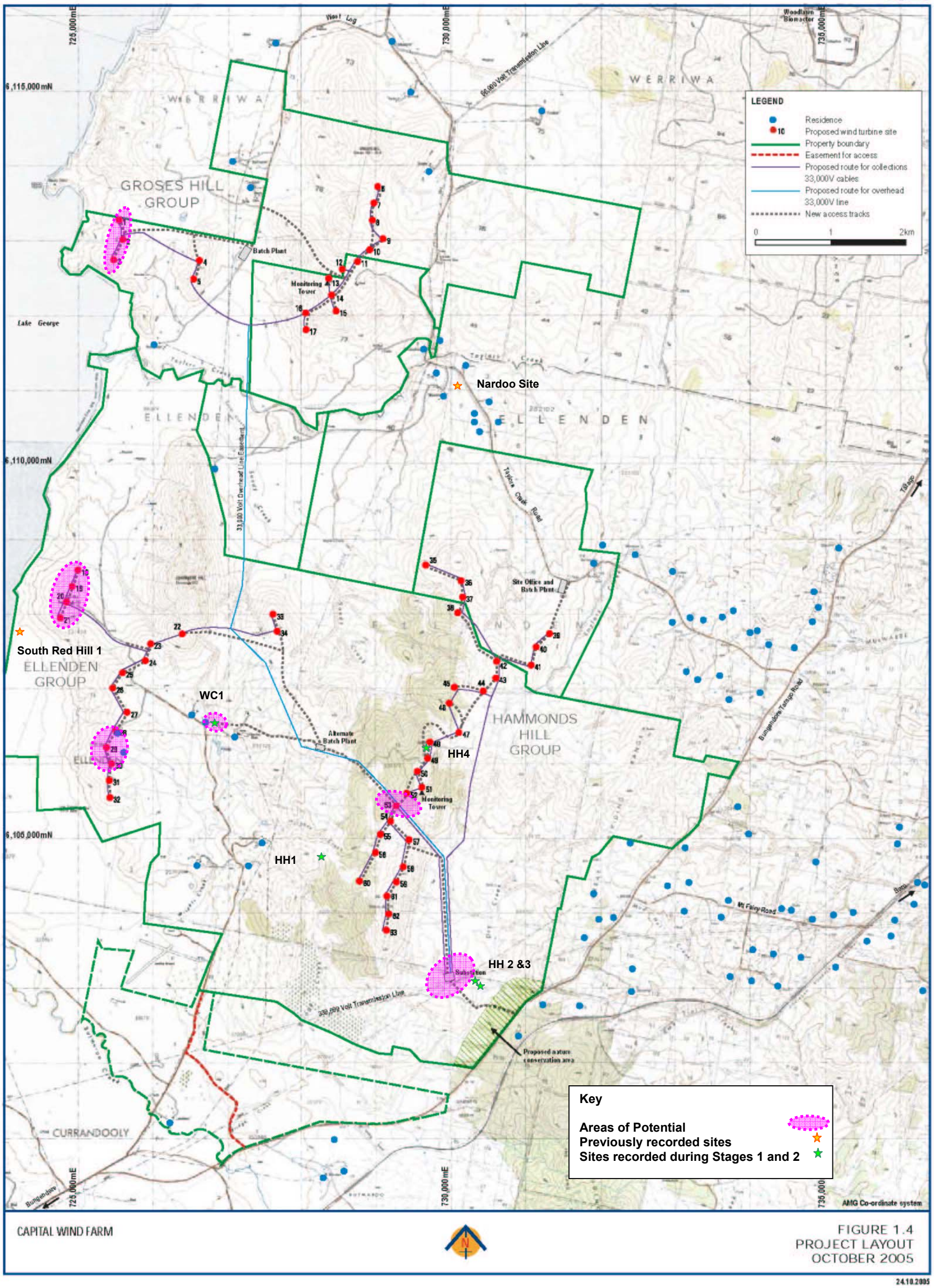


Figure 4.2 Development area showing recorded sites and areas of potential (Source: Connell Wagner PPI)

5.0 ASSESSMENT OF HERITAGE SIGNIFICANCE

5.1 Introduction to the Heritage Assessment Process

An assessment of significance seeks to determine and establish the importance or value that a relic or site may have to the community at large. The concept of cultural significance is intrinsically connected to the relic or place, its location, setting and relationship with other items in its surrounds. The assessment of cultural significance is ideally a holistic approach that draws upon the response these factors evoke from the Aboriginal community.

Archaeological sites require a different approach to significance assessment because the extent of the heritage resource and the degree to which it can contribute to our understanding of history is not fully known at the outset. It is also the significance of the type of information that can be revealed by potential archaeological deposits, especially where the information is not available through any other source and the contribution it can make to our understanding of a place, which may also be of cultural heritage significance.

5.2 Basis for Assessment of Aboriginal Sites

The Department of Environment and Conservation (NSW) Aboriginal Heritage Unit (formerly the NSW National Parks and Wildlife Service) assessment criteria for archaeological significance have been developed to deal specifically with archaeological resources and cover:

A) Research Potential. This criterion is designed to qualify the significance of potential research which may be carried out at a site. Significance is apportioned according to the amount of new information which might be contained in the deposit, rather than the potential to yield a large number of artefacts. A site may have high significance under this criterion if it has an intact stratigraphic sequence and good integrity, the potential to provide a chronology extending into the past, or if it is connected to other sites within the region. Within this criterion are the subsets of representativeness and rarity. Representativeness is the ability of the site to demonstrate a representative type of site or deposit. This is important to maintain a contingency sample of all site types. Rarity is often described within the framework of representativeness as it relates to the distinctive features of a site which set it apart from similar sites.

B) Educational Potential. This criterion allows the educational value of a site to be considered as a component of significance. Under this criterion, an archaeologist may assess the potential of a site to educate the general public. NPWS has acknowledged that this criterion is open to misinterpretation by archaeologists who have the ability to convey the value of a site to other archaeologists. NPWS recommends that, in cases where significance is determined on educational potential, the onus is on the archaeologist go to the public for an assessment of this value.

C) Aesthetic Significance. Aesthetic significance is not inherent in a place, but arises from the response that people have to it. It is pertinent to remember that this response can vary dramatically between cultures and social groups, therefore an assessment of significance based on aesthetic value should incorporate the views of different cultures.

For a full description of assessment procedures refer to the Aboriginal Cultural Heritage: Standards and Guidelines Kit (NPWS 1997). These criteria have been designed to deal specifically with the archaeological resource, however they do not provide a framework for the assessment of social significance to the Aboriginal community. For this reason, the criteria for assessment provided in the *Australia ICOMOS charter for the conservation of places of cultural significance* (the Burra Charter) are sometimes also used to assess significance as they provide a framework for a more holistic assessment of significance.

5.2.1 Preliminary Assessment of Aboriginal Sites in the Capital Wind Farm Study Area

Five Aboriginal objects and sites were located during survey that require assessment. Of these, Hammonds Hill 1 and Wrights Creek 1 are small artefact scatters and Hammonds Hill 2, 3 and 4 are isolated finds (single artefacts). All identified sites are considered to be subject to localised movement through ground clearance and as a result of the continual stock

grazing which has occurred across the study area. However, the level of ground disturbance throughout the study area is generally low and as such most of the identified sites are considered to be relatively intact. The exception is Wrights Creek 1 which was located within a disturbed context. However, given the degree of archaeological sensitivity of the local landscape in which it was found, the artefacts are considered to have of local origin and are highly likely to be associated with subsurface deposits.

The artefact scatters have limited aesthetic value but Hammonds Hill 1 and Wrights Creek 1 have moderate to high research potential because of their topographic location and the intact soil profiles in which they were found. These sites are somewhat representative of the local archaeological resource however they are considered to be of moderate significance mainly as a result of their research potential. Due to design changes, it should be noted that Hammonds Hill 1 will not directly impacted.

As single artefacts, sites Hammonds Hill 2, 3 and 4 are considered to be of low significance in terms of educational or aesthetic value, however in the archaeological context of the study area and the landscapes in which these artefacts were found, they are indicators of possibly larger archaeological sites. Hammonds Hill 2 and 3 are associated with PAD which, by definition, have research potential. Hammonds Hill 4 will be impacted by the development while Hammonds Hill 2 and 3 will not be affected. The latter sites are however, indicative of the archaeological sensitivity of the confluence zone in which the substation sites have been proposed.

In addition, the locations in which Turbines 1- 3 18-21 and 29 are proposed and the access road route between Turbines 52 and 53, are considered to be areas where subsurface archaeological deposits (PAD) are likely to remain undetected. Despite the lack of surface archaeological evidence in these areas, large continuous surface sites have been previously recorded close to Lake George and these identified locations similarly may yield subsurface deposits given their proximity to the lake. While the archaeological significance of these areas cannot be determined by the current study, subsurface excavation is recommended in these areas where impact is unavoidable, to establish the nature and extent of any subsurface deposits within these sensitive landscapes.

In summary, the archaeological sites recorded within the Capital Wind Farm development zone indicate that the area is likely to yield further archaeological deposits. The low level of previous ground disturbance across the much of the site supports this theory. Overall, the western part of the study area, and in particular the lower gently sloping hills and broad ridge crests, is considered to be of higher archaeological sensitivity than the eastern half because of its proximity to Lake George and the propensity of permanent creeklines.

The high steep ridgelines in the development area are unlikely to contain substantial archaeological deposits given their rugged topography and rocky landscape.

5.2.2 Aboriginal Landscape Values

No specific landscape values have been raised thus far by the PLALC, BNAC or GTCAC. At the time of writing, a report from BNAC had been received regarding the development and the archaeological and cultural values (Appendix B). Reports from PLALC and GTNAC are pending.

6.0 CONCLUSIONS AND MANAGEMENT RECOMMENDATIONS

6.1 Conclusions

The archaeological and cultural heritage assessment of the Capital Wind Farm site located five Aboriginal archaeological sites consisting of two small artefact scatters and three isolated finds. Of these, only two are subject to direct impact by the development. Sites were associated with flatter landforms along the broad ridge crests with the others associated with areas of archaeological potential focussed on permanent creeks which run through the study area.

In addition to these sites, six areas of archaeological sensitivity which are subject to development impact have been distinguished. One of these is associated with an identified surface site and five others are identified on the basis of topographic features, location and their estimated research potential.

The paucity of archaeological material found within the Capital Wind Farm site does not preclude the presence of Aboriginal sites across the landscape, particularly on landforms which are known to be archaeologically sensitive. The topography of the immediate study area increases its potential to yield archaeological deposits. Much of the property has been subject to minimal disturbance as a result of land clearance and grazing. These activities are likely to have affected the archaeological resource; however, intact archaeological sites may be encountered in identified areas where minimal ground disturbance has occurred. As a result, the identified archaeological resource and the potential cultural deposits distinguished in the development area are likely to have archaeological integrity and have moderate to high archaeological potential.

6.2 The Proposed Work and Potential Heritage Impacts

The proposed wind farm on which the assessment was based will consist of 63 wind turbines located in three groups; Groses Hill, Ellenden and Hammonds Hill. Turbine footings will require excavation of an area of about 15 x 15 m to a depth of up to 3m. Excess soil and rock excavated from the footing may be used to form a level pad near the base of the turbine tower on which a large crane can be located for the erection of the wind turbine. The extent of the work area including the crane pad and turbine footing will be less than 1000 m^2.

Construction of the towers will require establishment of hardstands for cranes to operate from. These will not require any excavation in their construction and will cover an area of 30 m by 30m. Some fill from excavated turbine footings may be used in works to level the hardstands.

Turbines will be connected by underground cables to a substation complex. The substation will cover an area of about 60 by 150 metres and include a facilities building approximately 20 x 30 m in area. It will be located adjacent to an existing TransGrid transmission line located in a valley south east of Hammonds Hill. Trenches for power and control cables are anticipated to be 0.5 to 1 m wide and about 1 m deep.

Upgrading of existing tracks and the construction of new access tracks to the three turbine groups connecting these with the substation complex, and associated minor drainage works are also planned. Where possible, existing roads and tracks will be used to access the project facilities. These tracks may require upgrading that may include road widening to 5 m, bend modification to ensure adequate curvature for long loads, grade adjustments at minor creek crossings, resurfacing and associated drainage to ensure that track erosion is minimised. Additional tracks will also need to be constructed to provide access to all turbine sites. This work may include extra track widening (up to another 2.5 m on each side in some cases) to accommodate construction vehicles. Some tracks may also require benching on steeper ridge slopes such as at the northern end of the Hammonds Hill ridge (between Turbines 47 & 48).

Aspects of design including the detailed site layout and equipment specifications are being finalised and this assessment is based on typical equipment that is being considered at the time. The actual equipment and the layout used will depend on the outcome of the environmental studies and planning approvals, results of the tendering process and the types of equipment that are available at that time.

These activities will involve substantial ground disturbance from vegetation clearing and targeted earthworks during turbine, substation and cable installation and the construction of additional access roads in specific locations. Rehabilitation of excavated areas and revegetation works will also occur. Heavy vehicle traffic will also impact the land surface within the targeted impact areas and within cable and road corridors. These activities have the capacity to damage the context of any surface site or subsurface archaeological deposit and/or destroy an archaeological site via soil removal.

6.3 Recommendations

On the basis of the assessments, heritage management strategies and mitigation measures have been formulated in accordance with a desire to avoid significant Aboriginal archaeological and cultural heritage sites and areas of archaeological potential where possible.

The following recommendations and management strategies are provided for the proposed works associated with the Capital Wind Farm development area:

1 – Development Opportunities

There are currently no known heritage constraints associated with the following components:

- Groses Hill Group Turbines 4-17 and its associated Batch Plant;
- Ellenden Group Turbines 22-28, 30-34;
- The Alternate Batch Plant Site between Ellenden and Hammond Hill Groups; and
- Hammond Hill Group Turbines 35-63 and the associated Site Office and Batch Plant.

2 – Development Constraints

There are areas of archaeological sensitivity and potential archaeological deposit (PAD) associated with the following components:

- Hammonds Hill Group: an area of PAD between Turbines 52 and 53 where an access road alignment is proposed;
- Groses Hill Group: Turbines 1-3 above Lake George;
- Ellenden Group: Red Hill Turbines 18-21 and Turbine 29;
- The access road/crossing of Wrights Creek southeast of the Ellenden Group; and
- The proposed substation location on Dry Creek

It is recommended that all archaeological surface sites and areas of PAD be avoided by the development proposal. These include five identified Aboriginal sites and five areas of potential archaeological deposit associated with Lake George and the permanent creeklines which traverse the study area. Ideally, a buffer of up to 50 - 100 m around identified sites and areas of PAD should be established.

In particular, the design of the vehicle access routes between Turbines 52 and 53 should be reconsidered to avoid impact to a small but environmentally and archaeological sensitive corridor which retains both potential archaeological and cultural value.

2 – Archaeological test excavation

If areas of archaeological and cultural sensitivity are likely to be impacted by the proposed development, targeted test excavation by a qualified archaeologist is recommended. A testing programme should aim to establish the archaeological and cultural significance of any deposit recovered. Specifically, test locations should focus on the areas of archaeological potential listed above because of their research potential.

Test excavation is proposed in areas of high archaeological potential where development impact is unavoidable, as a mitigation measure. These areas include:

- Groses Hill Group: Turbines 1-3 above Lake George;
- Ellenden Group: Red Hill Turbines 18-21 and Turbine 29;
- The access road/crossing of Wrights Creek southeast of the Ellenden Group; and
- The proposed substation location on Dry Creek

A Section 87 Permit application should be sought from NSW Department of Environment and Conservation prior to the commencement of archaeological testing. The excavation procedure should be developed in consultation with NSW Department of Environment and Conservation

and local Aboriginal stakeholders. These groups should be invited to participate in the testing programme.

3 – Construction of roads, cabling routes and overhead transmission lines
Given the overlying high degree of archaeological sensitivity of the study area around Lake George, it is recommended that proposed access roads and cabling corridor follow existing vehicle tracks to avoid disturbance to this sensitive archaeological and cultural zone. Where possible, cabling should be contained within the access road corridors. If this is not viable, then cabling should aim to avoid areas of highest archaeological sensitivity such as higher order creeklines and tributary confluences.

Where creek banks are subject to minor drainage works as a result of road construction and cable installation, the working easement at creeklines should be reduced where possible. Trenches for power and control cables are anticipated to be 0.5 to 1 m wide and about 1 m deep. Upgrading of existing tracks and the construction of new access tracks connecting the turbine locations, the substation complex and may require widening to about 5 m, bend modification, grade adjustments at minor creek crossings, resurfacing and associated drainage. Additional tracks will be constructed to access turbine sites and extra widening by a further 2.5m on each side will be required to accommodate construction machinery. In each case, easements should not exceed their construction width to ensure minimal impact to archaeologically sensitive creeklines.

While the installation of the overhead transmission lines are considered to be of minimal environmental impact, the scoping of specific footing locations should take areas of archaeological sensitivity into consideration and aim to avoid creek banks also.

5 – Overall project timing
It is imperative that all further archaeological investigation, specifically archaeological testing, be conducted prior to the commencement of any bulk earth works. This is required to allow time for obtaining any further permits and/or consents (Section 90 Consent) should *in situ* deposits be located.

It should be noted that any surface archaeological sites which will be impacted by the development will require a Section 90 Consent permit obtained from the NSW Department of Environment and Conservation prior to their destruction.

5 – Stop work provision
It should be noted that all Aboriginal Objects and Places are protected in NSW. As such, in the event that Aboriginal archaeological material or deposits are encountered that are not described in this report, works within 100 metre radius of the find must cease immediately to allow a qualified archaeologist to make an assessment of the find. The archaeologist may need to consult with the NSW Department of Environment and Conservation, Conservation Planning Unit, Environment Protection and Regulation Division regarding the finds.

Copies of this report should be distributed to Pejar Local Aboriginal Land Council, Gundungurra Tribal Council Aboriginal Corporation, Buru Ngunawal Aboriginal Corporation and NSW Department of Environment and Conservation (Queanbeyan).

9.0 REFERENCES

Publications

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Webpages

http://www.ahc.gov.au

http://www.heritage.gov.au/ahpi

http://www.heritage.nsw.gov.au/

Hammonds Hill 1

Type	Material	Length	Width	Thick	Retouch	Comments
Broken Flake	Brown Chert	12	10	2	-	Dist. Snap
Flake	Quartz	18	9	2	-	-
Flake	Quartz	12	10	2	-	-

Hammonds Hill 2

Type	Material	Length	Width	Thick	Retouch	Comments
Broken Flake	Quartz	26	13	5	-	Distal Portion

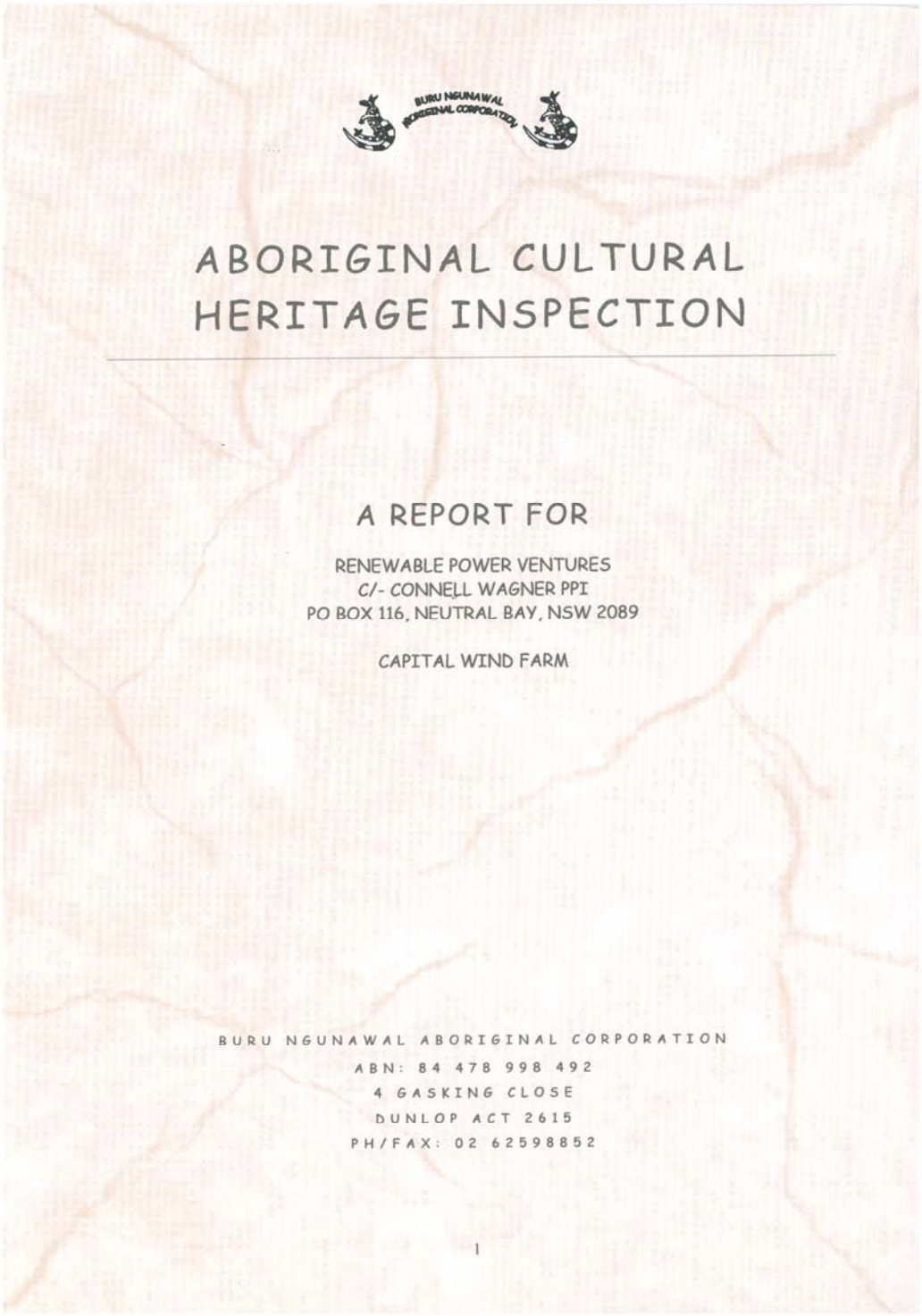
Hammonds Hill 2

Type	Material	Length	Width	Thick	Retouch	Comments
Flake	Quartz	10	5	2	-	-

Hammonds Hill 4	Material	Length	Width	Thick	Retouch	Comments
Flake	Grey FGS	31	43	16	-	
Raw Material	Grey FGS	42	52	15	-	Unworked

Wrights Creek 1	Material	Length	Width	Thick	Retouch	Comments
Flake	Grey FGS	10	2	5	-	-
Flake	Grey FGS	30	15	8	-	-
Flake Piece	Grey FGS	10	6	8	-	-
Flake	Grey FGS	12	12	2	-	-
Flake Piece	Silcrete	20	15	6	-	-
Flake	Grey FGS	15	11	4	-	In creek bank 726847 6106360
Hand Axe	Basalt	165	95	40	Y	Very worn, 726820 161361

The Buru Ngunawal Aboriginal Corporation document presented here reports on the survey conducted for this project in December 2004. It includes areas which are not reported in this assessment.



BURU NGUNAWAL ABORIGINAL CORPORATION

ABORIGINAL CULTURAL HERITAGE INSPECTION

A REPORT FOR

RENEWABLE POWER VENTURES
C/- CONNELL WAGNER PPI
PO BOX 116, NEUTRAL BAY, NSW 2089

CAPITAL WIND FARM

BURU NGUNAWAL ABORIGINAL CORPORATION
ABN: 84 478 998 492
4 GASKING CLOSE
DUNLOP ACT 2615
PH/FAX: 02 62598852

1

BURU NGUNAWAL ABORIGINAL CORPORATION

4 Gasking Close, DUNLOP ACT 2615
Ph: 02 62598852 Fax: 02 62596657
ABN : 84 478 998 492

RECEIVED - CONNELL WAGNER
31 JAN 2005

23 January 2005

Connell Wagner PPI
PO Box 538
NEUTRAL BAY NSW 2089

Attention: Mr Jeff Bembrick

CULTURAL HERITAGE INSPECTION

Dear Jeff,

Thank you for the opportunity to participate in the cultural heritage inspection of the proposed Wind Farm at Tarago for evidence of Aboriginal occupation by the local Ngunawal people. As you may appreciate any planned work to be undertaken in the area that lies within our tribal boundaries will impact on our cultural heritage. We therefore appreciate that the proper protocol of advising and consulting with us has finally occurred.

On the 13th to the 17th of December 2004 an inspection was carried out by representatives of our organisation under your guidance.

Please find attached our report in relation to this inspection and an invoice for payment of our services as agreed.

If you have any queries in relation to this matter please contact me.

Yours faithfully
DBell

Don Bell
Chair

PROJECT No:_____ C.W. DOC. No:_____
P. LEADER: J. Bembrick FILE No:

TO	ACTION REQUIRED	ACTIONED BY DATE

PURPOSE

To provide commentary on the findings of the Aboriginal Cultural Heritage guided inspection of study area for evidence of Aboriginal occupation by the Ngunawal people at the proposed Wind Farm at Tarago, NSW. This inspection was undertaken by the Buru Ngunawal Aboriginal Corporation (BNAC) whose members are registered as the Traditional Owners, under the Commonwealth *Native Title Act 1993*, who are the claimants for this region. *(See map at attachment 1)*

This report encompasses the area identified as Capital Wind Farm by Connell Wagner PPI.

BACKGROUND

In December 2004 the Connell Wagner PPI organisation commissioned the Buru Ngunawal Aboriginal Corporation, Pejar Local Aboriginal Land Council and archaeologists Ms Megan Mebberson and Mr Ashley from Austral Archaeology Pty Ltd to conduct an Indigenous cultural heritage survey of the Wind Farm project area at Tarago, NSW. Mr Wally Bell a Ngunawal descendant undertook the inspection on behalf of BNAC and Mr Justin Boney represented Pejar Local Aboriginal Land Council. The timeframe in which to complete the inspection was one (1) working week with an additional day to complete the report write-up.

BNAC organisation's brief was to inspect the project area and to identify cultural heritage sites or artefacts and to provide a report detailing such findings and making comments on the results of the site inspections and short term and long term management recommendations.

ABORIGINAL CULTURAL MONITORS

Under the auspices of the organisation's Cultural Heritage Management Plan, BNAC provides a cultural monitoring service to companies, corporations etc. planning to undertake major construction works on Ngunawal traditional land. The principal objective of this Cultural Heritage Management Plan is to lay the foundations for the protection and management of Aboriginal cultural heritage during the construction and operation of associated work areas that are within the boundaries of the Ngunawal people.

These are usually local Aboriginal people who have been identified as having expertise and experience in the field of Aboriginal cultural and heritage monitoring. Our organisation provides local Aboriginal people to monitor construction and developing works in regard to the protection of cultural heritage

sites on Ngunawal traditional land. BNAC's Cultural Heritage Management Plan accommodates two (2) monitors on site at all times.

The local Aboriginal people used as cultural sites monitors are proficient in identifying Aboriginal Cultural and Heritage sites and are complimented with specific skills required for work of this nature. These people are very skilled in what they do because they live the culture.

ARCHAEOLOGIST

BNAC nominates an experienced archaeologist acceptable to both parties, to assist in the formal archaeological components of the survey. In this respect the organisation would have nominated Mr Wilfred Shawcross as their preferred choice. Mr Shawcross has impeccable qualifications and considerable experience in work of this nature. He has been a university teacher and archaeological researcher for over 40 years and has done field work in the U K, Greece, Libya, Kenya, New Zealand, Tonga and Australia. Mr Shawcross identifies that his particular area of expertise includes stone tool identification, and analysis and bone identification and midden analysis. However Connell Wagner has engaged Ms Megan Mebberson from Austral Archaeology P/L to conduct this particular survey. We do not have any objections to working with Ms Mebberson.

METHODOLOGY

The BNAC in its consideration of the inspection believe that a full on foot survey is the only way to conduct a quality assessment of the entire project area as indicated on the map provided. The area inspected proved to be an area that is accessible and that has been impacted upon by native vegetation clearing and the grazing of livestock.

These assessments included all landform terrains including:

- Slopes of all kinds;
- Crests, Spur lines;
- Hilltops, Ridgelines; and
- Waterways, Creeks.

DESCRIPTION OF VARIED TYPES OF ABORIGINAL SITES

There are mythological sites, ceremonials sites, open air sites of campsites, workplaces, burial grounds and past contact sites. Most of these also fall into the category of being an archaeological site.

There are many sites identified which remind us that they have been lost in the name of progress. The sites are like sites all over Australia and serve to remind us that the area surveyed has an Aboriginal history which goes back over 70,000 years. These sites are important because they show that local Ngunawal people have a rich culture, and a history recorded in the earth as the soul of our people and is recognisable symbols of our identity. These sites provide windows on the past from which we can learn to begin to understand.

Religious and Belief Sites

Burial Sites

Are sites where Aboriginal people have been buried and can be either prehistorically/traditional or more recent (mission or reserves). A burial site in NSW can occur in caves, middens, open campsites, trees or a traditional burial ground. Earth mounds, carved trees or stone arrangements mark these sites.

Ceremonial Grounds

Are specially constructed sites to maintain traditional ceremonies and play a major part especially in the initiation of young boy's.

Often Aboriginals of different groups would meet at these grounds. For instance, it is believed that the Ngunawal, Narigo and Monaro people met in areas of the Brindabella Mountains, for joint ceremonial purposes.

There are many sites scattered throughout that are testimony to the ceremonial sites and are usually marked by Bora rings. A Bora ring is the name given to a raised platform of circular dirt.

Rock engravings can also identify ceremonial sites. In the Brindabella Mountain ranges and associated mountain ranges there would be over 50 sites. Most are

centred in the central area on the ridgeline running north and south of the local mountains ranges, including the Brindabellas.

This area appears to have had ceremonial activity. Engravings required more time to complete and also it is believed that they had a sacred significance playing a major part in ritual as the reworking of the lines may be in conjunction with the initiation stories.

Stone Arrangements

May also identify a ceremonial ground. There are stone arrangements in the Brindabella Mountains.

Carved Trees

Are trees with carving on them in geometric pattern line designs. In some cases these are part of a burial or ceremonial site that often involve more than one tree. They are usually only found in certain areas depending on the group that inhabited the area.

Art Sites

Also have links to ceremonial sites that are mainly found on rock surfaces, sandstone or granite boulders.

Engravings

Are also art sites on flat exposed rocks and sandstone ridges.

Paintings

Are found on walls and ceilings of rock shelters. The pictures are less than life size, bodies are filled in with colour. The subject is varied, but tracks are not very common and there are a lot of caves containing hand stencils. They are usually found in association with occupation sites.

Tabba (Ngunawal)

This is commonly referred to as an artefact. An artefact is described as being any portable object or evidence of stone tools being made or modified by human activity.

Archaeological Sites

Are sites which show where Aboriginal people occupied the land, where they have lived or where they made their tools and implements.

Camp Sites

Are often marked by the presence of stone tools, tiny rock fragments, the remains of fires. They can occur out in open as well as in cave shelters. When excavated they have shown a continuous occupation of the land over thousands of years.

Quarry Sites

Are used for raw materials, for the mining of ochre, or quarrying of stone for tools.

Axe Grinding Grooves

Are dents where stone axes, spears, and other tools have been sharpened. They are mostly found near creek beds and water. There is usually more than one groove and they can be shallow or as deep as 10mm depending on the amount of time they have been in use.

Fish Traps

Are structures in creeks or rivers usually walls of stone placed to trap fish by the current of water.

Middens

Are the rubbish dumps. They contain large amounts of left over shell from meals of shellfish. Included in this pile are stones, charcoal, bones and sometimes human burials. They tell us about what type of food they ate.

Natural Landscape Features

Locations of natural landscapes which have spiritual significance. They have not been altered and require Aboriginal people with knowledge to document the use of these places.

HISTORICAL PERSPECTIVES: *A LIVING TRADITION*

Historically, the Ngunawal people have lived in this area for many thousands of years, and prior to white settlement our people did not have to worry about their culture and heritage. Aboriginal cultural identity and heritage becomes threatened when land developers pay little importance to traditional local Indigenous cultures and customs. This is what happened when early British settlers felt free to declare Australia a colony because they considered it as "terra nullius" meaning that the land was unoccupied and unowned.

In addition to early white settlement, more recently introduced policies of assimilation and integration added further problems to Indigenous people's recognition for heritage and cultural identity. The assimilation policy in that it was a policy to *"get Indigenous people to live like white people"* was a major factor against Indigenous people's struggle for their cultural identity.

Assimilation offers to reward those who submerge their own cultural identity in the dominant group with a minimal degree of acceptance.

ISSUES FOR CONSIDERATION

Local Aboriginal Cultural property rights are fundamental to the continuation and maintenance of their heritage. This refers to heritage and comprises all objects, sites and knowledge, the nature or use of which has been transmitted or continues to be transmitted from generation to generation, and which is regarded as pertaining to a particular Aboriginal group or its territory.

Heritage Includes:

- Literacy, performing and artistic works including, songs, music, dances, stones, ceremonies, symbols, language and designs.
- Scientific, agricultural, technical and ecological knowledge (Including cultigens, medicines and the phenotypes of flora and fauna).
- All items of moveable cultural property.
- Human remains and tissues.
- Immovable cultural property (including sacred and historically significant sites and burial grounds).

- ❖ Documentation of Indigenous peoples' heritage in archives, film, photographs, videotape or audiotape and all forms of media.

The heritage of an Indigenous people is a living one and includes objects, knowledge and literary and artistic works which may be created in the future based on that heritage.

Ultimately, any definition of Indigenous Cultural and Intellectual Property should reflect the perspective of a particular Aboriginal group.

MANAGEMENT ISSUES

There is strong evidence that the sites identified have been heavily impacted on and in most cases totally destroyed. Current rehabilitation exercises are only providing a band-aid solution to the problem. There are many management issues that require addressing to establish more uniform approaches to stabilise contributions towards the protection of Aboriginal cultural sites.

Our efforts to identify sites of cultural significance in developmental areas is made more difficult because of ignorance of Indigenous culture which prevented our attempts to salvage and identify a lot more cultural sites then we have.

New sites and previously recorded sites identified require short term and long term best practice management strategies development and implementation. Short term, we recommend that identified areas be fenced off and public access to these areas is denied. We would also suggest that the areas are flagged and a Ngunawal elder or a cultural sites officer must accompany work access to the areas. Heavy vehicle access to these areas should be avoided at all times

In terms of a long-term approach, we see the development and implementation of a strategic "best practice" cultural and heritage management plan as being essential. This will ensure qualitative long-term cultural management practices and that long term preservation and maintenance of these sites is the core focus of the plan.

Any plan of this nature would need to be supported under the direction of local Elders of the Ngunawal people.

CONSULTATION

BNAC reserves the right to consultation as the registered Native Title Claimants for the region that lies within its tribal boundary. This means that as Traditional Owners and native title claimants we must be consulted and that any consultation carried out with other archaeologists or Aboriginal people commissioned to conduct similar surveys and not involving us in their projects in any way, shape or form cannot be supported or endorsed by us.

COMMENTS

To date past practices by non-Indigenous people has committed cultural genocide on Ngunawal traditional lands. The Aboriginal cultural and heritage sites identified in this region have all been heavily impacted on and in most cases totally destroyed.

As Australia evolves into the 21st century we are only just beginning to recognise the importance of Aboriginal sites as part of our cultural heritage.

Local Ngunawal people have always known the importance of these sites to their existence. They serve as an important reminder of why we need to preserve and protect all facets of heritage. We have seen over the past two decades many of our sites being lost or destroyed in the name of progress.

The continued destruction of Aboriginal sites is denying our future generation valuable insight into a rich and absorbing culture. Much damage has been done through ignorance and in the name of commercial land development. Under the National Parks and Wildlife Act it is an offence to knowingly destroy an Aboriginal Cultural Site.

Furthermore, our sites provide a link back to the dreaming and demonstrate that our people have a social, economic cultural and spiritual heritage. It is important to state that land developments, road infrastructures, buildings and other constructions come and go, but you destroy our culture you destroy our existence.

RESULTS

During the inspection several culturally significant sites were found. The site Reynolds between Areynolds11 and AReynolds9 to the Pines at the access track is a particularly significant site. The site at Rowley from the creekline at Rowley8 and along the access track is again a significant site. There were isolated

artefacts found along the route as well as a site along the access track to the main gate at Gibson Kalbilli. The other proposed areas did not seem to contain any evidence of artefacts although at times it was difficult to assess as there was dense grass vegetation.

There were a total of three (3) Aboriginal sites of significance uncovered during the inspection. A site is most likely to be found in underdeveloped and uninhabited areas or next to an existing site.

As previously mentioned, the above items in the inspection area were found (see photographs of samples at attachment 2) and we provide comments below as to our recommendations in regard to these artefacts.

RECOMMENDATIONS

1. That the Southern Cultural Heritage Unit, NSW Parks and Wildlife Service, Queanbeyan be advised of the results of this inspection;

2. That the proper arrangements are put in place so that sites at Reynolds, Rowley and Gibson Kalbilli are protected from accidental damage;

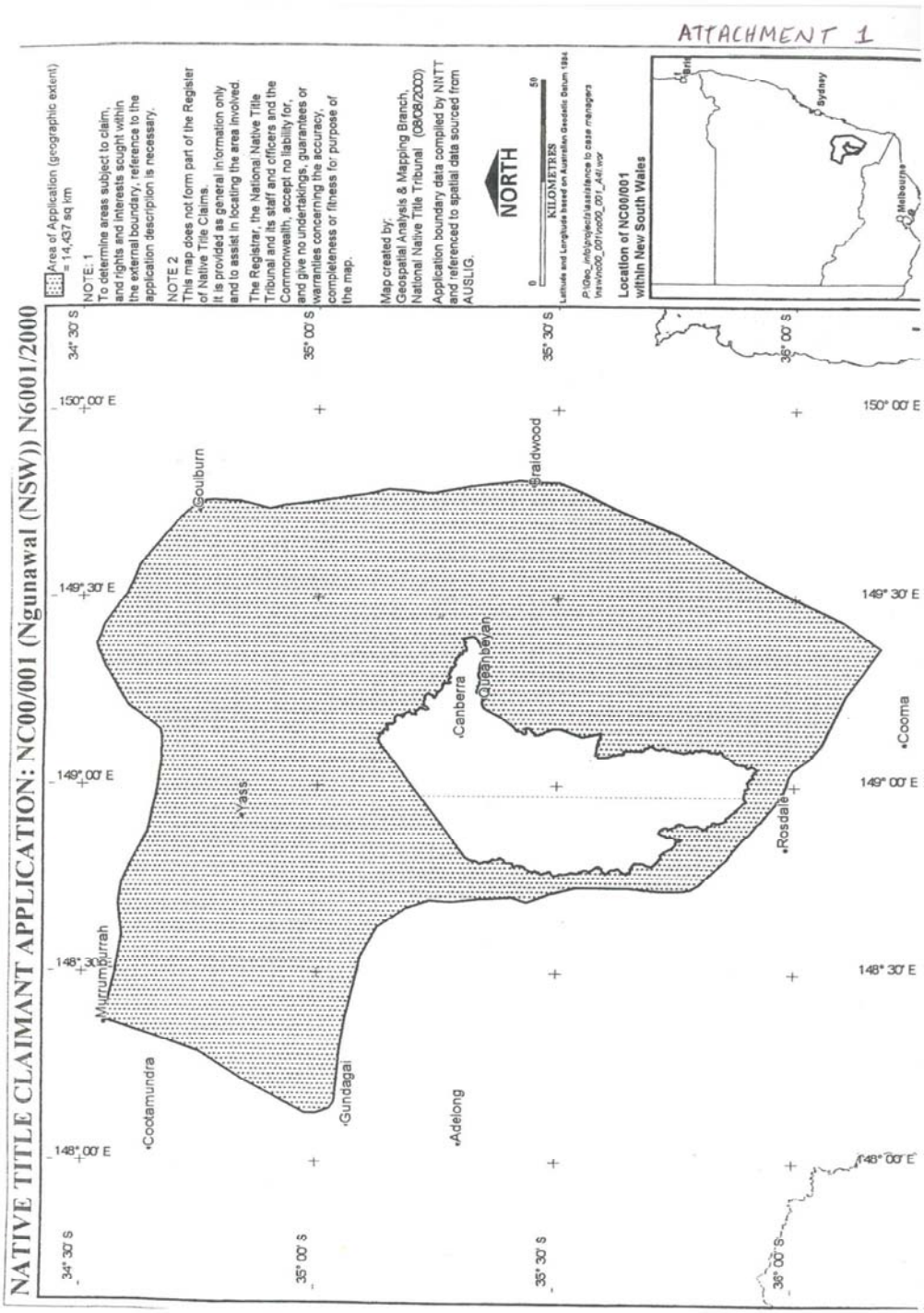
3. That test pitting be carried out at these site locations prior to work commencing as these are sensitive areas;

4. That Connell Wagner PPI in its dealings with the organisation responsible for the installation of the power transmission line inform them that they have an obligation to involve BNAC in its consultations; and

5. That we be fully informed as to all actions to be undertaken as regards the artefacts and the proposed development work.

D Bell

Don Bell
Ngunawal Elder


ATTACHMENT 1
NATIVE TITLE CLAIMANT APPLICATION: NC00/001 (Ngunawal (NSW)) N6001/2000
Area of Application (geographic extent) = 14,437 sq km
NOTE 1
To determine areas subject to claim, and rights and interests sought within the external boundary, reference to the application description is necessary.
NOTE 2
This map does not form part of the Register of Native Title Claims.
It is provided as general information only and to assist in locating the area involved.
The Registrar, the National Native Title Tribunal and its staff and officers and the Commonwealth, accept no liability for, and give no undertakings, guarantees or warranties concerning the accuracy, completeness or fitness for purpose of the map.
Map created by:
Geospatial Analysis & Mapping Branch,
National Native Title Tribunal (08/08/2000)
Application boundary data compiled by NNTT and referenced to spatial data sourced from AUSLIG.
NORTH
0 50
KILOMETRES
Latitude and Longitude based on Australian Geodetic Datum 1984
P:\Geo_info\projects\assistance to case managers\nsw\nc00_001\nc00_001_A4l.wor
Location of NC00/001
within New South Wales
Sydney
Melbourne
34° 30' S
35° 00' S
35° 30' S
36° 00' S
150° 00' E
149° 30' E
149° 00' E
148° 30' E
148° 00' E
Goulburn
Braidwood
Yass
Canberra
Queanbeyan
Cooma
Rosdale
Murrumburrah
Coota mundra
Gundagai
Adelong

ATTACHMENT 2

AReynolds11 site

Manuport – Grinding stone at AReynolds11

11

Example - Quartz flakes with large silcrete flake at AReynolds11

Silcrete flake at AReynolds11

Artefacts at Rowley

Black chert flakes

Broken polished axehead piece