Rye Park Wind Farm
Aboriginal Cultural Heritage Assessment Report

A report to Epuron

October 2013

Proponent: Rye Park Wind Farm Pty Ltd
Local Government Area: Yass Valley, Boorowa, and Upper Lachlan Shire Councils

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SUMMARY

This summary presents an overview of the Aboriginal heritage study aims, results and recommendations.

New South Wales Archaeology Pty Ltd was commissioned in March 2012 by Epuron to undertake an Aboriginal cultural heritage assessment in relation to the proposed Rye Park Wind Farm. This report documents the proposed impact area, the assessment process, findings, interpretation of results and recommendations.

The assessment has been conducted in accordance with the *Draft Guidelines for Aboriginal Cultural Heritage Impact Assessment and Community Consultation* (NSW DEC July 2005), the NSW Office of Environment and Heritage's *Guide to investigating, assessing and reporting on Aboriginal cultural heritage in NSW* (OEH 2011) and *Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales* (NSW DECCW 2010a).

A process of Aboriginal community consultation has been undertaken in accordance with the *Draft Guidelines for Aboriginal Cultural Heritage Impact Assessment and Community Consultation* (NSW DEC July 2005) and OEH's *Aboriginal cultural heritage consultation requirements for proponents 2010* (NSW DECCW 2010b).

The study has sought to identify and record Aboriginal cultural areas, objects or places, assess the archaeological potential of the proposal areas, and formulate management recommendations based on the results of the community consultation, background research, field survey and a significance assessment.

The proposed Rye Park Wind Farm is defined as a State Significant Development. This Aboriginal Cultural Heritage Assessment Report (ACHAR) has been prepared to form a component of an Environmental Impact Statement (EIS) which addresses the NSW Planning & Infrastructure, Director General's environmental assessment requirements (DGRs).

Thirteen Aboriginal object locales were recorded during the field survey, 10 of which are single stone artefacts. Undetected or subsurface stone artefacts are predicted to be present in extremely low density. In addition, three quartz outcrops have been recorded which may have been used as stone procurement areas by Aboriginal people. Establishing the artefactual status of these has not been possible based on a visual assessment alone. However, as a precautionary measure it is recommended that they be avoided during construction by implementing a strategy of micro-siting of turbines, roads etc. Three European heritage items have been recorded, and while these do not warrant heritage listing, it is recommended that they also be avoided by micro-siting the relevant components during construction.

The Effective Survey Coverage achieved during the survey is considered to have been sufficient to characterise the nature of artefact distribution. The survey results are therefore assessed to be a relatively accurate reflection of the archaeological status and artefact density in the proposal area. Accordingly, based on the relevant predictive model of site distribution and the results of the field survey, the proposal area is assessed to be of generally low cultural and archaeological potential and significance. This assessment forms the basis for the formulation of recommendations relating to the proposal.

The Aboriginal object locales comprised of stone artefacts (and any undetected and subsurface artefacts) do not surpass archaeological and cultural significance thresholds which would act to preclude the construction of the proposed wind farm.

Based on a consideration of the predictive model applicable to the environmental context in which impacts are proposed, and the results of the study, it is concluded that the proposed impact areas do not warrant further investigation such as subsurface test excavation.

Given the nature and density of the artefact locales recorded and the low cultural and scientific significance rating they been accorded, unmitigated impacts is considered appropriate. A management strategy of impact avoidance is not warranted, except in respect of the three quartz outcrops. It is recommended also, that the three European heritage items are avoided during construction.

The following recommendations are provided in summary form (see Section 9):

- The proposal area does not warrant further archaeological investigation such as subsurface test excavation. The Effective Survey Coverage achieved during the field survey is considered to have been adequate for the purposes of determining the archaeological status of the proposal area.

- The recorded Aboriginal object locales and the predicted very low density subsurface artefact distribution in the proposal area does not surpass archaeological significance thresholds which would act to preclude the proposed impacts.

- The recorded Aboriginal object locales are assessed to be representative of an extremely low density distribution of stone artefacts. The archaeological and cultural heritage significance of these locales is assessed to be low. Accordingly unmitigated impact is considered to be appropriate.

- There are no identified archaeological and cultural heritage constraints relating to the proposal.

Acknowledgments

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The many property owners who assisted in various ways with information and access

Archaeological evidence confirms that Aboriginal people have had a long and continuous association with the Yass region for thousands of years. We would in particular like to acknowledge and pay our respects to the traditional owners of the country which is encompassed by the proposal.

1. INTRODUCTION

1.1 Introduction

NSW Archaeology Pty Ltd has been commissioned by Epuron to conduct an Aboriginal heritage (archaeological and cultural) assessment in relation to a proposed wind farm near Rye Park (the subject area), north of Yass and east of Boorowa. The area in which impacts are proposed is shown on Figure 1.

The Rye Park Wind Farm proposal would involve the construction and operation of up to 128 wind turbine generators. The turbines would be placed along a series of ridgelines and surrounding crests currently used for farming. The wind farm would produce up to 393 Megawatts (MW) of clean renewable energy.

The project would be assessed under Part 3 of the EP&A Act. It would be classed as State Significant Development (SSD) under State Environmental Planning Policy (State and Regional Development) 2011. This report addresses the Director-General's Requirements (DGRs) relating to archaeology and cultural heritage for the preparation of the Environmental Assessment for the project. The DGRs require:

- An assessment of the potential impact of the projects components on Aboriginal heritage values (archaeological and cultural);
- Effective consultation with Aboriginal stakeholders during the assessment and in development of mitigation options, consistent with the Guidelines for Aboriginal Cultural Heritage Impact Assessment and Community Consultation (DEC July 2005); *and*
- Consideration of impacts to European heritage values, as relevant.

The project site is located in the Yass Valley, Boorowa, and Upper Lachlan Shire Councils.

The proposal is comprised of the installation and construction, operation and decommissioning of the following infrastructure:

- Up to 128 wind turbine generators (wtg's);
- Electrical connections between wind turbines using a combination of underground cabling and overhead power lines;
- Underground communications cabling;
- Substations and transmission connections linking the wind turbines to an existing transmission system;
- Temporary construction facilities, site compounds, storage areas and batching plants;
- Access roads for installation and maintenance of wind turbines; and
- Onsite control rooms and equipment storage facilities.

The content and format of this report is set out in accordance with the NSW OEH (2011) *Guide to investigating, assessing and reporting on Aboriginal cultural heritage in NSW* document. The report aims to document:

- The Aboriginal objects and declared Aboriginal places (as relevant) located within the area of the proposed activity;
- The cultural heritage values, including the significance of the Aboriginal objects and declared Aboriginal places that exist across the whole area that will be affected by the proposed activity, and the significance of these values for the Aboriginal people who have a cultural association with the land;
- How the requirements for consultation with Aboriginal people have been met (as specified in clause 80C of the NPW Regulation);

- The views of those Aboriginal people regarding the likely impact of the proposed activity on their cultural heritage (if any submissions have been received as a part of the consultation requirements, these are included and our response outlined);
- The actual or likely harm posed to the Aboriginal objects or declared Aboriginal places from the proposed activity, with reference to the cultural heritage values identified;
- Any practical measures that may be taken to protect and conserve those Aboriginal objects or declared Aboriginal places; *and*
- Any practical measures that may be taken to avoid or mitigate any actual or likely harm, alternatives to harm, or, if this is not possible, to manage (minimise) harm.

The cultural heritage assessment has been managed by Julie Dibden, NSW Archaeology Pty Ltd. The field work component has been conducted by Julie Dibden and Andrew Pearce, NSW Archaeology Pty Ltd, and members of Buru Ngunawal Aboriginal Corporation, Karen Denny, Wally Bell and Tyrone Bell.

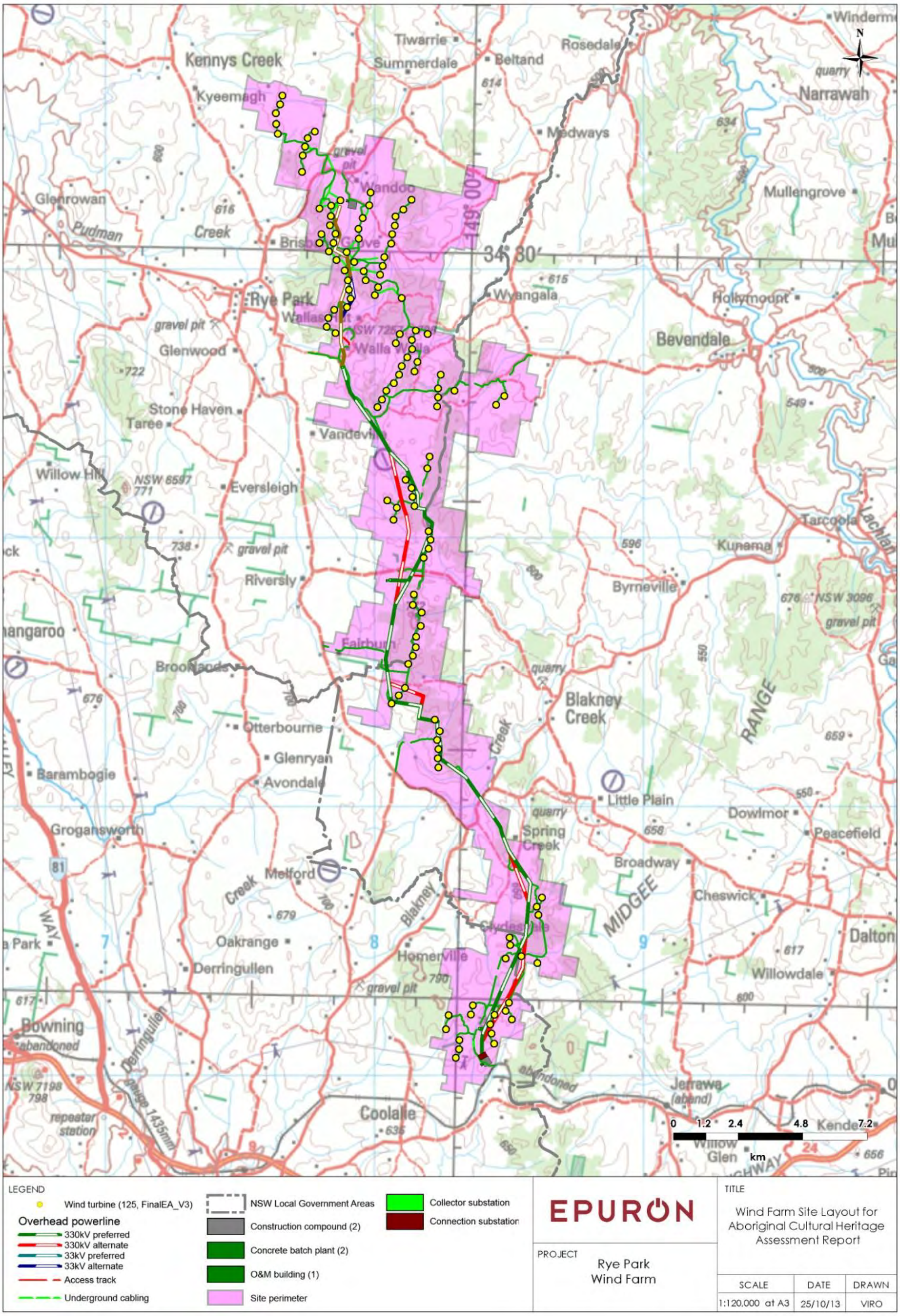

Figure 1 The location of the proposed Wind Farm (map supplied by the proponent).

2. DESCRIPTION OF THE AREA – BACKGROUND INFORMATION

In this section, background and relevant contextual information is complied, analysed and synthesised. The purpose of presenting this material is to gain an initial understanding of the cultural landscape. The following topics are addressed (*cf.* OEH 2011: 5):

- The physical setting or landscape;
- History of peoples living on that land; *and*
- Material evidence of Aboriginal land use.

2.1 The Physical Setting or Landscape

A consideration of landscape is necessary in archaeological work in order to characterise and predict the nature of Aboriginal occupation across the land. In Aboriginal society, landscape could be both the embodiment of Ancestral Beings and the basis of a social geography, and economic and technological endeavour. The various features and elements of the landscape are/were physical places that are known and understood within the context of social and cultural practice.

Given that the natural resources that Aboriginal people harvested and utilised were not evenly distributed across landscapes, Aboriginal occupation and the archaeological manifestations of that occupation will not be uniform across space. Therefore, examination of the environmental context is valuable for predicting the type and nature of archaeological sites which might be expected to occur. Factors which typically inform the archaeological potential of a landform include the presence or absence of water, animal and plant foods, stone and other resources, the nature of the terrain and the cultural meaning associated with a place.

Additionally, geomorphological and humanly activated processes need to be defined as these will influence the degree to which archaeological sites may be visible and/or conserved. Land which is heavily grassed and geomorphologically stable will prevent the detection of archaeological material, while places which have suffered disturbance may no longer retain artefacts or stratified deposits. A consideration of such factors is necessary in assessing site significance and formulating mitigation and management recommendations.

The following information describes the landscape context of the study area.

The proposed Rye Park Wind Farm would be located to the north of Yass and east of Boorowa. The wind farm site extends in a north/south alignment measuring approximately 40 kilometres along a series of contiguous ridgelines and hilltops. The site has been selected for its windy ridges and cleared grazing land (for example, see Plate 1). The proposal would involve approximately 40 properties that are currently used for sheep and cattle grazing. The area is on the Yass, Binnalong and Boorowa 1:50,000 topographic maps. For mapping purposes it is located in Zone 55.

The proposed wind farm site is situated in the Southern Tablelands of New South Wales and is part of the Eastern Uplands of south-eastern Australia (Jennings and Mabbutt 1977). The Eastern Uplands consists of a wide plateau which extends from the coastal escarpment on the east, to the slopes of its western side. The landscape has low relative relief, lies generally below 600m altitude and possesses slopes generally less that 5° with about 20% of the area containing steeper hills and ranges. The wind farm site is situated within the steeper country. The area has a strongly seasonal thermal climate (Jennings and Mabbutt 1977).

The area is in the Dalton Hills Landscape and this is described as linear ridges and undulating hills of steep dipping, folded Ordovician quartzose, greywackie, slate, chert and phyllite (NSW DECC 2008). The soils derived from this landscape include red soils on the upper slopes, grading to harsh yellow clay subsoils with hard setting A horizons on the lower slopes.

Plate 1 Typical ridge crest (south end of Survey Unit 11) on which wind turbines are proposed.

The geology across the majority of the site is Ordovician sedimentary sequences which outcrop variously as shale or slate (Branagan and Packham 2000). The porphyry of the Hawkins volcanics (Early Silurian) outcrops in the south-west near Bango Nature Reserve. The landforms in the wind farm area are very rocky. Low outcrops are common, particularly on crests and hillslopes where, in many cases, bedrock is present at greater than 50 per cent (Plates 2 and 3). The excessively rocky nature of much of the ridge crest is likely to have made these landforms unfavourable camp locations for Aboriginal people.

Plate 2 Typical rocky ground (north end of Survey Unit 7).

Plate 3 Typical rocky ground close up (SU1).

The dominant soils are red and yellow podzolic lithosols on crests and hillslopes, and red and yellow earths in valleys (Wasson *et al.* 1998). Soils on ridgelines are highly eroded lithosols. Over-grazing and wind is the likely to have been the primary agents of soil removal. Previous erosion has significant ramifications in regard to the stability and integrity, or otherwise, of artefact bearing soil formations, both on crests and within valleys. Plates 3 and 4 exemplify the eroded, skeletal nature of soils on the turbine ridges.

Soils within valleys are both alluvial and colluvial and, while undoubtedly disturbed are, of reasonable depth. In areas adjacent to drainage lines Post Settlement Alluvium is likely to be present above the original land surface. Land clearance commenced in the region with its occupation by early settlers during the early to mid 1800s. Following clearance, the arable land was utilised for both grazing and various cultivation endeavours including pasture improvement and cropping, while hilly land has been used exclusively for grazing. While the majority of the subject area, including the ridges, hill slopes and valleys, is cleared, there are large areas of regenerating treed country comprised solely of young regrowth (Plate 5).

As a result of the long history of grazing and cultivation, the proposal is located within a highly degraded landscape, where vegetation, soils and geomorphological processes have been dramatically altered by clearing, cropping and grazing (Wasson *et al.* 1998). Tree clearance, the grazing of sheep and cultivation in the Southern Tablelands, has resulted in increased runoff and erosion, both on hill slopes and valley floors, much of which commenced very soon after initial European occupation (Wasson *et al.* 1998). These erosional processes have led to significant changes to landscape processes. More recently dryland salinity has become a problem in the area as a result of earlier vegetation clearance.

Prior to European settlement, the vegetation on hill slopes was open forest dominated by Eucalyptus species; valley floors contained extensive grasslands and swamps (Wasson *et al.* 1998). The botanist and explorer Allan Cunningham visited the region in 1824 and described the vegetation structure and stream character he observed at that time. From descriptions by Cunningham, and others, Wasson *et al.* (1998) have concluded that streams in the region with a catchment of greater than

1000 km² possessed a continuous channel, while streams with smaller catchments had less distinct channels often described by early commentators as chains of ponds. The naturalist Lhotsky, in 1834 described the ponds as follows: 'They are commonly round or oval basins of from 20 – 200 feet in diameter or length, excavated or sunk in the superficies of an alluvial soil, which is commonly of a rich kind …' (cited in Wasson *et al.* 1998). The creeks located within the proposal area would all fall within the smaller catchment category as described above and, accordingly, are likely to have similarly possessed indistinct channels and chains of ponds. Now, however, these features are absent and instead channel incision has created eroded channels (for example, see Plate 7).

Plate 4. Rocky ground (Survey Unit 24).

Plate 5 Turbine ridge with regenerating bush to the right of the track; dead trees on the left exemplify recent attempts to control regrowth (Survey Unit 6).

Plate 6 Turbine ridge (Survey Unit 6); regrowth and dead and fallen timber.

Plate 7 An typical example of gully erosion in drainage lines (south end of Survey Unit 14) .

No major rivers flow through the proposal area, however, there are numerous lower order creeks which are likely to have been discontinuous channels with chains of ponds and possibly minor swamp features prior to European impacts. While not necessarily being places of abundant water, they are likely to have provided Aboriginal land users with a reasonably reliable local water source. Indeed, Malcolm Day, a landowner at the southern end of the wind farm, indicates that even in very dry conditions, springs flow through that country (pers. comm.). However, the elevated hill landforms (crests and slopes), by and large, are unlikely to have provided any potable water.

The proposal area can be characterised as a woodland resource zone. The ridge crests would have possessed limited biodiversity and a general lack of water. Accordingly, they are likely to have been utilised by Aboriginal people for a limited range of activities which may have included hunting and gathering and travel through country (Wally Bell per. comm.). Such activities are likely to have resulted in very low levels of artefact discard. The nature of stone artefacts discarded can be expected to have been correspondingly limited in terms of artefact diversity and complexity.

By comparison the valleys between the ridge lines and hills are likely to have possessed greater levels of biodiversity given the likely presence of chains of ponds and, possibly also, swamp features along drainage lines. In addition, a more reliable source of water is likely to have been present in valleys for much of the year. Such areas are likely to have been utilised more frequently and possibly by greater numbers of individuals at any one time; certainly the valleys are likely to have been the favoured camp locations while people occupied the broader local area. Accordingly, the levels of artefact discard in valleys can be predicted to be correspondingly higher; artefact diversity and complexity is also likely to be greater.

2.2 History of Peoples Living on the Land

Aboriginal people have occupied Australia for at least 40,000 years and possibly as long as 60,000 (Mulvaney and Kamminga 1999: 2). By 35,000 years before present (BP), all major environmental zones in Australia, including periglacial environments of Tasmania, were occupied (Mulvaney and Kamminga 1999: 114). At the time of early occupation, Australia experienced moderate temperatures. However, between 25,000 and 12,000 years BP (the Last Glacial Maximum), dry and either intensely hot or cold temperatures prevailed over the continent (Mulvaney and Kamminga 1999: 114). At this time, the mean monthly temperatures on land were 6 - 10°C lower; in southern Australia coldness, drought and winds acted to change the vegetation structure from forests to grass and shrublands (Mulvaney and Kamminga 1999: 115-116).

During the Last Glacial Maximum at about 24 - 22,000 years ago, sea levels fell to about 130 metres below present and, accordingly, the continent was correspondingly larger. With the cessation of glacial conditions, temperatures rose with a concomitant rise in sea levels. By c. 6000 BP sea levels had more or less stabilised to their current position. With the changes in climate during the Holocene Aboriginal occupants had to deal not only with reduced landmass, but changing hydrological systems and vegetation; forests again inhabited the grass and shrublands of the Late Glacial Maximum. As Mulvaney and Kamminga (1999: 120) have remarked:

> *When humans arrived on Sahul's[1] shores and dispersed across the continent, they faced a continual series of environmental challenges that persisted throughout the Pleistocene. The adaptability and endurance in colonising Sahul is one of humankinds' inspiring epics.*

In the late Pleistocene much of the land in the region was covered in snow, with glaciers in the mountains and the lower plains being treeless. Over time, the Aboriginal people experienced and adapted to steady and considerable changes in conditions associated with gradual climatic warming, including the alteration of vegetation and variation in the distribution of wildlife (Young 2000).

Human occupation of south-east NSW dates from at least 20,000 years ago as evidenced by dated sites including the Burrill Lake rock shelter (Lampert 1971), Cloggs Cave (Flood 1980) and New Guinea 2 (Ossa *et al.* 1995). The Bulee Brook 2 site in the south coast hinterland ranges, excavated by Boot (1994), provides evidence that occupation of this zone had occurred by at least 18,000 years

[1] Sahul is the name given to the single Pleistocene era continent which combined Australia with New Guinea and Tasmania.

ago. In the south-eastern highlands, excavation of the Birrigai rock-shelter has provided dates of occupation from 21,000±200 years BP (Flood *et al.* 1987: 16). Pleistocene occupation sites are rare, however, and the majority of recorded sites date from the mid to late Holocene. It is nevertheless reasonable to assume that the Yass/Rye Park area was occupied and utilised by Aboriginal people from the late Pleistocene onwards.

The earliest European reports regarding the Aborigines of the region are provided through the written observations of the first explorers, adventurers and settlers to the district. These sources present only fragmentary and incomplete accounts of the traditional culture of those Aboriginal groups who inhabited the area. Very soon after European contact, with increasing numbers of white settlers after the 1820s, much of the Aboriginal language and lifestyle had changed before it could accurately be recorded. Because of this, reliable information is limited regarding traditional Aboriginal culture and social geography at the time of European arrival.

The primary focus of archaeological research in Australia throughout the 1960s, 1970s and 1980s was the examination of the relationship between Aboriginal people and their environment, and the mechanisms of adaptation in what was apparently a land of harsh conditions and scanty, or at best, seasonal resources. The bulk of archaeological research that has been undertaken in the region has been focused on examining these issues.

However, prior to the 1960s, most archaeological research was aimed at defining change in the archaeological record; this was before direct dating techniques became available and, accordingly, the issue of time was handled by identifying differences in archaeological materials in archaeological deposit – specific artefacts in different layers of deposits were used to define different cultural periods. With the application of direct dating techniques in the 1960s, research shifted away from the use of artefacts for defining different time periods, towards seeking to explain the nature of different artefacts and assemblages of artefacts and food remains in terms of adaptation to the environment. The 1960s also saw a shift towards the use of explicit scientific methods of reasoning in archaeological practice. This impetus influenced archaeologists to focus on research topics which were believed to be answerable within a scientific methodology. Topics dealing with site locational models, subsistence, technology and environmental adaptation were addressed. The following section outlines research conducted within the region.

Witter (1980) constructed a model of site distribution for the area situated between Canberra and Dalton. He argued that large lowland camps were found exclusively in river valleys or gently sloping land, while medium sized lowland camps were found mainly on escarpments and saddles. Witter (1980) suggested that mid to late Holocene occupation of the area was focused around both tributary and major stream valleys. He argued that seasonal movement entailed occupation of the tributary valleys and lower slopes during winter in order to be above cold air drainage but below cooler elevations. Additionally, these locations would have provided reliable water and the exploitation of a diversity of resource zones. During summer the larger valley bottoms and higher elevated zones were predicted to have been used.

Witter (1980) constructed two models of Holocene adaptation which he termed Riverine Oriented and Plateau Oriented. The Riverine model was defined as a subsistence regime based on the semi-arid plains which was focused on the exploitation of aquatic plants such as *Typha* and *Triglochia* and animals such as fish and crustacea. This economy was focused on the plains woodlands close to major rivers with seasonal usage of semi-arid and dry temperate uplands. The Plateau subsistence regime was considered to be based on *Acacia* as a vegetable staple. This economy was focused on ridges slopes and flats, however, with camp sites tethered to water.

Pearson (1981) completed a regionally based investigation of Aboriginal and early European settlement patterns in the Upper Macquarie River region. He excavated three rock shelters which revealed Aboriginal occupation of the area dating from 7000 years BP. Pearson characterised Aboriginal site patterning as follows:

- Aboriginal sites were strongly related to water sources. Distance to water varied from 10 to 500 m and generally the average distance to water decreased as site size increased;
- Sites were located on hilly and undulating landforms rather than on river flats or the banks of waterways. However, the regional incidence of landform variation biased this sample;
- Site location was influenced by good drainage and views over water courses and river flats;
- Most sites were located in open woodland contexts with smaller numbers being present in grassland or forest contexts;
- Burial sites and grinding grooves were situated close to habitation areas;
- Ceremonial sites were located away from habitation areas;
- Stone arrangements were located away from campsites in isolated places; they are associated with small hills and knolls or flat land;
- Quarry sites were located where suitable sources were present and reasonably accessible.

Based on an examination of early historical material, Pearson (1981) argued that the region was inhabited by a small number of clan groups each of which were comprised of 80 to 150 people. These groups were divided into smaller 'daily' units of up to 20 people. Pearson (1981) suggests that the 'daily' units made short moves between camp sites which resulted in elongated site formation such as continuous artefact scatters along creeks. Pearson presented ethnographic evidence which suggested that camp sites were not used for longer than three nights and that large sites therefore probably represented accumulations of short term visits.

Pearson (1981) also considered the issue of the reliance upon food staples. He argued that rather than a reliance on a singular food type, a wider based economy was practised with the implication that such a non-specialised economy would probably not have been affected by periodic shortfalls in certain foods and that human movement would have been similarly unaffected.

According to Witter and Hughes (1983), the low hill areas of the Lachlan catchment contained sites which are generally situated on valley flanks. They noted that sites are widely distributed with a higher frequency situated along water courses than in less well drained areas away from creeks and rivers. They posited a model suggesting that the economic focus was within major streams and valleys, with occasional usage of the dryer inland zones. Witter and Hughes (1983) suggested that during dry periods occupation was confined to major stream valleys and that in wetter times people would have moved along temporarily watered headwater streams and onto plateau areas.

White (1986) conducted a general study of the Wiradjuru in which the Witter model (as outlined above) was applied. White (1986) however, explored the basic notions of Riverine and Plateau further, emphasizing the regional division by stressing the comparative importance of less seasonally influenced terrestrial hunting in the east. In the Western Slopes region riverine plains '... interfinger (sic) with the higher land', and White argued that the economy in such country probably consisted of an annual regime which was dependant on the use of both riverine and plateau environments.

The Yass region was occupied by Aboriginal speakers of at least two languages, Wiradjuri and Ngunawal. G.A. Robinson (in Mackaness 1941) noted that the people of Yass were called Onerwal [Ngunawal] (White and Cane 1986). According to Jackson-Nakano (2002), the Aboriginal group who occupied the Yass and Boorowa districts in the early years of European settlement were the Wallabalooa tribe. Jackson-Nakano (2002) also indicates that, according to Bayley (who wrote a brief history of Yass), *Warrambalulah* was the Aboriginal name for the area on which the first township of Yass was settled in 1836.

Following European occupation, Aboriginal society changed from autonomy and economic independence to both economic dependence on, and enforced settlement, by Europeans (White and Cane 1986). It is possibly the latter situation which is now most recalled by Aboriginal people who were either directly affected, or now remembered on behalf of earlier generations; the local camps and reserves in Yass, and elsewhere, are now focal places in the memory of these times.

White and Cane (1986) have defined three phases of this history. When Europeans began to occupy the district, Aboriginal people moved seasonally between an autonomous economic practice based on hunting, fishing and so on, and engagement with the settler society whereby European foodstuffs were obtained. It is probable that during that time, Europeans and Aborigines forged a mutually beneficial relationship, entailing amongst other things, the exchange of labour, foods and protection. Jackson-Nakano (2002) suggests that prominent members of the Wallabalooa group such as Jacky King, Billy the Bull and his brother Andy Lane forged very good relations with the earliest European settlers on their lands, in particular, the Humes, Broughtons, Kennedys, Walkers and Howells. While engaging with settler society, this practice by Aboriginal people, was done so on their own terms. From 1851, reserves of land were set aside for Aboriginal people, however, generally they were avoided and not used. Instead people preferred living on stations located in their own country or the outskirts of towns such as Yass (White and Cane 1986). White and Cane (1986) note that reports in the Yass Courier of 1857 and 1858 refer to the Blacks Camp, which may refer to the same Yass River Camp used later in the 19th century and earlier 20th century.

In the period from the 1830s through until the 1860s, the 'Yass Blacks' were a dominant group and allegedly terrorised and conducted raiding parties on other groups as far a field as Bega and Eden. King Andy frequently went on raids in the Goulburn, Cowra, Molong and Wellington districts (Jackson-Nakano 2002). The territorial expansion conducted by the local Aboriginal people was facilitated, at least in part, by the strong ties which they established with the European settlers and their vast properties.

With the passing of the Robertson Land Acts in 1861, closer settlement by small-scale free selectors reduced the capacity for Aboriginal people to maintain their occupation of country. However, from this time Aboriginal people began to acquire their own parcels of land by purchase or gazettal, and to farm it. Of particular relevance to the current study, several of these properties were located in the Rye Park area at Brickey's Creek, Blakeney Creek and Flakeney Creek (Kaibala 1998). Between 1850s and the 1950s, Aboriginal families lived on farmlets and reserve land and did odd jobs for farmers or seasonal work on stations in the local area (Kaibala 1998).

By the 1880s, the European community at Yass began to demand that Aboriginal people around the town should be controlled. A parcel of land measuring 6 ½ acres at Oak Hill near the water works at Yass was set aside. With timber and iron provided by the Aborigines Protection Board 13 houses were built in 1888. One year later the land area of Oak Hill was reduced to 2 ½ acres (White and Cane 1986). By 1890, 78 people were recorded as living at this site in 12 houses and four bark huts. Similarly to earlier times, the occupation of the Oak Hill site was mutually beneficial to both Aborigines and Europeans. Aboriginal people were able to have ready access to the town economy, continue to live in family groups while being separate from whites, and work within the local economy. On the other hand, Europeans were happy to have Aborigines away from town but close enough to have access to their labour (White and Cane 1986).

However, in 1899 pressure mounted to remove the Aboriginal people from Yass. Inducements to encourage people to move to other reserves failed and by 1909 the Edgerton site, located 20 kilometres from Yass, was selected by the Aborigines Protection Board. While some people moved to Edgerton, others petitioned to remain at Oak Hill. This request was refused and the North Yass site was revoked. By 1916, however, Edgerton was abandoned with the people having moved back into Yass and camped at Yass Junction with the men working on railway works (White and Cane 1986). People moved back to Oak Hill to a location at the bottom of the hill called The Rocks on the Yass River (White and Cane 1986).

This period until 1930, continued to be one of great difficulty for Aboriginal people, both elsewhere in the state but specifically at Yass (White and Cane 1986). It was during this time that children were removed from their families; between 1900 and 1915 fifteen children were removed from Aboriginal families in Yass. With the proposal to construct water works at Oak Hill at around 1925 Aboriginal people were again asked to leave the site. A new reserve was established in an attempt to remove people. This site known as Hollywood is located south of Yass near the cemetery; in 1934 people were moved to the new site, although one or two families remained at Oak Hill.

The Hollywood site was a failure from many points of view, and by 1940 Aborigines had begun to return to North Yass; this was objected to by whites. However, the situation for the remaining families at Hollywood was becoming untenable also due to the recognition of its inadequate situation (White and Cane 1986). Thereafter a period of resettlement including placing people in a limited number of houses in the town and movement to other reserves located well away from Yass began; Oak Hill also continued to be occupied.

Aboriginal people continue to live in Yass and surroundings areas and maintain strong links and concern for the sites of their ancestors.

2.3 Material Evidence

A search of the NSW OEH Aboriginal Heritage Management Information System (AHIMS) has been conducted for this project on the 11 April 2012 (Client Service ID: 67566). The search area measured 756 km² and encompassed the area between eastings 672000 – 690000, and northings 6147000 – 6189000.

Three Aboriginal object sites, none of which are in the proposed impact area, are recorded on AHIMS as present in the search area (see Appendix 1). The AHIMS register only includes sites which have been reported to NSW OEH. Generally, sites are only recorded during targeted surveys undertaken in either development or research contexts. Accordingly, this search cannot be considered to be an actual or exhaustive inventory of Aboriginal objects situated within the local area or indeed within the subject area itself.

The most common Aboriginal object recordings in the region are distributions of stone artefacts. Rare site types include rock shelters, scarred trees, quarry and procurement sites, burials, stone arrangements, contact sites, carved trees and traditional story or other ceremonial places. The distribution of each site type is related, at least in part, to variance in topography and ground surface geology.

One previously recorded Aboriginal site, AHIMS #51-4-0058 is located along Flakeney Creek Road near to the project boundary (see Figure 3). The original recording indicates artefacts on the road, spread over a distance of 181 metres (x 5m wide). This site was inspected during the current study. Artefacts were found distributed along the edge of the road. No exposures were present off road, however, artefacts would be present across the broader toeslope landform in low density and a relatively undisturbed context. It is possible that this site could sustain impacts if the road were to be upgraded for site access during construction of the wind farm. The current disturbance at the site measures c. 3 metres wide (the road).

Searches have been conducted of the NSW State Heritage Inventory and the Australian Heritage database. No Aboriginal heritage sites are listed on these as being in the proposed activity area.

The following discussion in Section 2.3.1 will present a review of previous archaeological work in the region for the purposes of producing a predictive model of site type and location relevant to the study area.

2.3.1 Previous Environmental Impact Assessment

There have been no previous archaeological studies conducted within the study area itself and few have been undertaken within the immediate local area. However, a number have been undertaken in the broader region in response to statutory requirements for environmental impact assessment.

The following discussion includes a review of archaeological work and its results conducted within the regional area.

Clark (1977) excavated three open artefact scatter sites at Waterhole Flat Creek, situated nine kilometres east of Boorowa. A variety of artefact types were recovered including backed blades, scrapers, adze flakes, bipolar flakes and cores. Smaller artefacts were made primarily on quartz, with chert, silcrete and rhyodacite also used. Larger artefacts including hatchets, unifacially and bifacially flaked choppers, anvils, hammerstones and grinding stones were also recovered.

Silcox (1991) recorded five open artefact scatters near the confluence of Castles Creek and Boorowa River, one kilometre upstream from Boorowa. These sites were located in exposures on the surfaces of river terraces. The number of artefacts recorded was low and no distinctive artefact types were present. Raw materials, however, were similar to those noted by Clark (1977).

Witter (1980) surveyed a proposed natural gas pipeline route from Dalton to Canberra. The survey crossed the Yass River and hilly country in the centre of the Upper Yass River catchment. Witter recorded 11 open campsites and 32 isolated finds. The majority of artefacts were comprised of quartz. Witter (1981) subsequently excavated one site and collected a total of 400 artefacts from six others. Backed blades were a prominent element in these collections. Silcrete was the principal raw material. Other materials included felsite, volcanics and quartz. Witter (1981:46) concluded that quartz was probably the predominant stone type utilised in the region.

Koettig and Silcox (1983) surveyed the route of the proposed freeway bypass north and east of Yass. Eight artefact scatters and 50 isolated finds were found within the 14 km x 200 m survey area. Seven of the sites were located on low ridges and slopes and one on creek flats. All of the sites were found within 200 metres of a watercourse.

Witter and Hughes (1983) began a survey of transmission lines from Wagga Wagga to Yass which completed by Packard and Hughes (1983). Two 'land systems' were identified in the study area: the plateau consisting of gently rolling hills, largely cleared of timber, and major stream valleys. Archaeological sites were rare in the hills and occurred mainly in areas close to major valleys. Witter and Hughes (1983) argued that this association probably reflects more than simply access to drinking water, noting that the valleys have the greatest vegetation diversity and contain a variety of aquatic food plants in streams. The initial survey located four Aboriginal sites, 13 isolated finds and a possible Aboriginal scarred tree. Packard and Hughes (1983) recorded five small artefact scatters, eight isolated finds and two possible Aboriginal scarred trees. Artefactual material was principally debitage. Quartz was the most common lithic material, with negligible percentages of acid volcanics and chert. Sites were located mainly in ploughed paddocks near creeks.

Packard (1984) conducted an investigation of the association of Aboriginal archaeological sites with modern areas of salinisation and salt scalding in the Yass River Basin. Of the 61 known salting sites, 35 were included in the analysis. Site location was found to range in elevation from 560 m-755 m asl, slope gradient less than 5° and most of the sites had north-west, north or easterly aspects (Packard 1984: 50). A wide range of artefact and stone types was found at most of the sites, suggesting that a range of activities had been carried out (Packard 1984: 54).

In 1985 Silcox and Koettig surveyed the route of the proposed alternate Yass bypass. The survey located three surface and two subsurface artefact scatters and six isolated finds. Eighty per cent of the sites were situated on ridgeline slopes or crests within 200 metres of creeks. This site locational pattern was noted to reflect in part the fact that creek or river valleys were not usually flat and that spurs and slopes usually terminated immediately adjacent to creeks. Surface artefact densities ranged from $1/30m^2$ to $1/40m^2$. Subsurface densities averaged $18/m^2$. Ninety per cent of the artefacts were unmodified flakes and flaked pieces; quartz was the dominant raw material. Silcox and Koettig concluded from the Yass By-pass studies that the pattern of distribution of sites in the Southern

Tablelands was a predominance of small sites (less than 50 artefacts and often less than 10) interspersed with occasional medium sites of up to 300 artefacts, and on occasion, very large sites.

Koettig (1986a) investigated a proposed water pipeline route between Bowning and Yass and located two small artefact scatters and two Aboriginal scarred trees near Derringullen Creek, a permanent water course. The two artefact scatters consisted of three artefacts each. Subsequent subsurface testing was carried out at an area identified to be of high potential near Derringullen Creek. The area was relatively flat ground consisting of a series of three main spurs separated by shallow drainage channels and extending c. 700m adjacent to the creek. The testing located a consistent, however, very low density artefact distribution (Koettig 1986b).
Silcox and Koettig (1988) carried out a survey and test excavation within a six kilometre proposed alternative route for the Barton Highway extension at Yass. Five isolated finds and a surface scatter of >150 artefacts were recorded during the survey, with two additional sites located during subsurface testing. Average artefact density of excavated sites was found to vary between very low and low; density varied between 2.3/m² to 12/m². No artefacts were retrieved from one of the test locations, a broad end of a spur overlooking a wide valley of an ephemeral creek. Artefacts comprised flakes, flaked pieces, cores and a backed blade. Fifty seven per cent of the artefacts were of silcrete. Other raw materials recorded were quartz, indurated mudstone, volcanic and chert.

Dean-Jones (1990) conducted an assessment of a proposed hard rock quarry near Gunning. The study area included a crest and upper slopes of a hill north of the Lachlan River. No sites were recorded and this result was seen to be consistent with the predictive model of site location relevant to the area.

During a survey of a proposed fibre optic cable route between Cootamundra and Hall, ACT, Kuskie (1992) located a small artefact scatter on a broad elevated terrace on the southern side of the Yass River. The site comprised a retouched chert flake, a chert flaked piece and a broken acid volcanic flake.

Paton (1993) surveyed a proposed optical fibre cable route from Gunning to Dalton and Dalton to Flacknell Creek Road. The route traversed 21 kilometres of undulating hills in the Upper Lachlan River catchment. No Aboriginal sites were recorded and this result was deemed to be consistent with the predictive model of site location relevant to the area.

Robert Paton Archaeological Studies (1993) conducted a linear survey in relation to a proposed optical fibre cable route between Canberra and Orange. A section of this route extended from Boorowa to Cowra. Four open sites were recorded. Sites were found to be small and in disturbed contexts. All were found in association with permanent or semi permanent water. All artefacts, except one, were made of quartz.

Klaver (1993) recorded seven artefact scatters near Bookham in respect of the proposed Hume Highway Bypass. The sites were all low density artefact scatters consisting of mostly chert and quartzite flakes.

Navin and Officer (1995) conducted a survey of the Bogo Quarry situated on Black Range. The study area consisted of a low hill. One artefact scatter and two isolated finds were recorded. The scatter was found on low gradient basal slopes 400-500 m south of Stony Creek.

Oakley (1995) surveyed a number of proposed Optus towers in the region, one of which was Mt Bowning. No sites were found; the site was highly eroded and found to be of low potential.

Saunders (2000) recorded an Aboriginal open campsite of eight stone artefacts located by Ngunawal ACT and District Aboriginal Council of Elders Association monitors in the Powertel fibre optic cable easement approximately 20m south of the Yass River and 200m north of Yass River Road, northwest of Gundaroo. Saunders also recorded an Aboriginal artefact scatter located by Ngunawal ACT and

District Aboriginal Council of Elders Association monitors 50m north of Dalton Open Camp Site (NPWS Site 51-5-003). The monitors collected 50 stone artefacts from the site.

Navin Officer Heritage Consultants (2001) investigated the site of the Yass substation located in an area of low gradient slopes, drainage lines and alluvial flats along the middle reaches of Booroo Ponds Creek. A small low density artefact scatter was found on a spur crest. The scatter comprised three flakes and a flaked piece. Raw materials were volcanic, silcrete and chert. The spur crest in the vicinity of the exposed artefacts was considered to have archaeological potential.

Jo McDonald Cultural Heritage Management Pty Ltd (JMcCHM 2003) undertook a survey of the Gunning Wind Farm, situated on the Cullerin Range. The Gunning Wind Farm proposal area consists of range crest and valley topography elevated at 840 meters (asl). Four sites containing stone artefact scatters and three isolated artefacts were recorded across the proposal area (JMcCHM 2003). One of the scatters was identified as a quartz quarry; blocky quartz was found to outcrop at the site. The majority of recorded artefacts were identified as quartz, however, quartzite, silcrete and red agate was also recorded. Steep hill tops were considered to be of low archaeological potential, while elevated contexts close to water were considered to be of higher sensitivity.

Austral Archaeology Pty Ltd (2005) conducted a program of subsurface test excavation at the proposed Gunning Wind farm site. The works entailed grader scrapes and no artefacts were recovered.

Dibden (2006a) recorded nine locales containing stone artefacts during an assessment of the proposed Conroys Gap Wind Farm. Artefact density calculations based on surface indicators indicate that all artefact locales contain low density artefact distributions. The Survey Units present in the study area were each assessed to be of low or very low archaeological potential based on various factors including nature of the topography, steep gradients and the distance from reliable water.

Dibden (2006b) recorded four locales containing stone artefacts during the study of the proposed Cullerin Wind Farm, situated north of Yass. Four locales containing stone artefacts were recorded. Artefact density calculations based on a consideration of effective survey coverage indicate that all artefact locales, and the Survey Units in which they are situated, contain low density artefact distributions.

OzArk Environmental and Heritage Management (2007) conducted a survey of the Wagga Wagga – Yass 132kV transmission line. The proposal related to pole replacement works in an existing easement. Four Aboriginal artefact scatters only were recorded during the field survey of the entire route.

Austral Archaeology Pty Ltd (2008) surveyed a transmission line associated with the Gunning Wind farm and a number of other small discrete impact proposals. 25 sites were recorded, defined as 13 open artefacts scatters, 9 isolated finds, two areas of PAD and a scarred tree. The majority of finds were located on ridgetops, which Austral Archaeology Pty Ltd (2008) suggest reflects the use of these landforms for vantage points and movement through country. Austral Archaeology Pty Ltd (2008) argued that the diversity of the raw materials, lack of conjoined artefacts and related materials found in proximity suggested sporadic use over a long time rather than focused activities which might be expected to have taken place in more permanent habitation sites.

Dibden (2008) surveyed the proposed Yass Valley Wind Farm and recorded 116 Aboriginal object sites, most of which were low density stone artefact scatters. Artefact locales were frequently recorded on knolls and saddles of ridge crests and within valley bottom contexts. The majority of locales contained either single or otherwise very few artefacts. The majority of locales on crests are situated on deflated and eroded soil profiles. Given the relatively large areas of exposure encountered (in drought conditions), and the very few artefacts recorded, it was concluded that artefact density, generally was very low. This result was consistent with the relevant predictive model of Aboriginal land use.

Navin Officer Heritage Consultants (2009) conducted a cultural heritage assessment in relation to the proposed Dalton Peaking Power Plant, located some four kilometres north of the township of Dalton. Areas of proposed impact included a 15 hectare power plant site, a three kilometre long (corridor width 25 – 50 metres) gas pipeline, as well as an access road and communications tower. In total the survey area measured some 36 hectares of which 29.88 hectares was surveyed, over basal, upper and simple slopes, as well as spur crests and drainage lines. In the area of the proposed power plant, in conditions of moderate ground surface visibility, ten Aboriginal sites were located and two areas with potential archaeological deposit. The ten sites were comprised of six isolated finds, three low density artefacts scatters and one low density artefact scatter with potential archaeological deposit. Almost all sites were located on slopes, and were comprised of stone artefacts predominantly derived from silcrete, with some quartz and fine grained volcanic.

Thereafter a second survey was conducted in relation to the Dalton Peaking Power Plant (Navin Officer Heritage Consultants 2011) as the result of a rerouting of the proposed pipeline alignment. The survey area was 3.4 kilometres long, covering 15.3 hectares. In this survey three low density artefact scatters were recorded, located on crests and adjoining slopes, and comprised of stone artefacts predominantly derived from silcrete, with some chert, and minor representations of quartz and quartzite. Sites were described as being representative of 'background scatter and/or low density artefact distributions … a common site type across the South East Highlands'.

Based on the above review and a consideration of the topography, geomorphology and hydrology of the study area the type of sites known to occur in the region and the potential for their presence within the study area are described in Section 2.3.2 below.

2.3.2 Predictive Model of Aboriginal Site Distribution

The type of sites known to occur in the region and the potential for their presence within the study area are listed as follows:

Stone Artefacts
Stone artefacts will be widely distributed across the landscape in a virtual continuum, with significant variations in density in relation to different environmental contexts. Artefact density and site complexity is expected to be greater near reliable water and the confluence of a number of different resource zones.

The detection of artefact scatters depends on ground surface factors and whether or not the potential archaeological bearing soil profile is visible. Prior ground disturbance, vegetation cover and surface wash can act to obscure artefact scatter presence.

Given the environmental context of the proposed wind farm, stone artefacts are predicted to be present in variable density across the landscape. On ridge and hill crests and slopes artefacts are likely to be present in low to very low densities only. In open valleys it is predicted that artefact density is likely to be higher and also, artefacts can be expected to be distributed as continuous occurrence across discrete landforms, especially close to streams.

Grinding Grooves
Grinding grooves are found in rock surfaces and result from the manufacture and maintenance of ground edge tools. Grinding grooves are only found on sedimentary rocks such as sandstone. Given the absence of suitable rock exposures in the study area grinding groove sites are unlikely to be present.

Burials Sites

In the Yass district traditionally Aboriginal people buried their dead in dug graves in rocky soils, usually on the tops of stony hills (White and Cane 1986). Other practices included the disposal of dead in caves (such as that on the Murrumbidgee near Burrinjuck described by Bennett in 1834), hollow trees and in graves dug into antbeds.

White and Cane (1986) note that traditional burial practices continued throughout the early period of European occupation into the 1870s.

The potential for burials to be present is always possible. Given the nature of this site type they are rarely located during field survey. However, given that burials in the local area were reportedly on stony hills it is likely, given the high erosional contexts of these landforms, they are unlikely to have survived.

Rock Shelter Sites

Rock shelters sites are unlikely to be present in the study area given the absence of large vertical stone outcrops.

Scarred and Carved Trees

Scarred and Carved trees result from either domestic or ceremonial bark removal. Carved trees associated with burial grounds and other ceremonial places have been recorded in the wider region. In an Aboriginal land use context this site type would most likely have been situated on flat or low gradient landform units in areas suitable for either habitation and/or ceremonial purposes.

Bark removal by European people through the entire historic period and by natural processes such as fire blistering and branch fall make the identification of scarring from a causal point of view very difficult. Accordingly, given the propensity for trees to bear scarring from natural causes their positive identification is impossible unless culturally specific variables such as stone hatchet cut marks or incised designs are evident and rigorous criteria in regard to tree species/age/size and it specific characteristics in regard to regrowth is adopted.

Nevertheless, the likelihood of trees bearing cultural scarring remaining extant and *in situ* is low given events such as land clearance and bushfires. Generally scarred trees will only survive if they have been carefully protected (such as the trees associated with Yuranigh's grave at Molong where successive generations of European landholders have actively cared for them).

The study area has been extensively cleared and the vast majority of live trees are young. While not impossible this site type is unlikely to have survived and therefore be present.

Stone Quarry and Procurement Sites

A lithic quarry is the location of an exploited stone source (Hiscock & Mitchell 1993:32). Sites will only be located where exposures of a stone type suitable for use in artefact manufacture occur. Quarries are rare site types in the region. One has been recorded near Galong north of the proposal area. This site is an intrusive dike of a dacite-like material which was extracted for flaked stone (Witter and Hughes 1983). A possible quartz quarry was recorded during the survey of the proposed Gunning Wind Farm (JMcCHM 2003). However, caution is required in regard to determining the natural or artefactual status of quartz outcrops which may be fractured by farming practices (*cf.* National Heritage Consultants 2010) or prospecting.

Ceremonial Places and Sacred Geography

Burbung and ceremonial sites are places which were used for ritual and ceremonial purposes. Possibly the most significant ceremonial practices known were those which were concerned with initiation and other rites of passage such as those associated with death. Sites associated with these ceremonies are burbung grounds and burial sites. Additionally, secret rituals were undertaken by individuals such as clever men. These rituals were commonly undertaken in 'natural' locations such as water holes. Pearson (1981) made the following predictions in regard to ceremonial site patterning in the region:

- Burial sites were situated close to habitation areas;
- Ceremonial sites were located away from habitation areas;
- Stone arrangements were located away from campsites in isolated places; they are associated with small hills and knolls or flat land.

In addition to site specific types and locales, Aboriginal people invested the landscape with meaning and significance; this is commonly referred to as a sacred geography. Natural features are those physical places which are intimately associated with spirits or the dwelling/activity places of certain mythical beings (*cf.* Knight 2001; Boot 2002). Boot (2002) refers to the sacred and secular meaning of landscape to Aboriginal people which has '... legitimated their occupation as the guardians of the places created by their spiritual ancestors'.

Knight's (2001) Masters research conducted in the area of the Weddin Mountains examined the cultural construction and social practice of inhabiting a sacred landscape. This approach is a departure from a consideration of the land and its resources as being a determinant of behaviour, to one in which land is regarded as a *text* – within this conception, land and its individual features, are redolent with meanings and significances which are religiously and ritually centred, rather than economically based.

Knight's (*cf.* 2001:1) work was possible in great measure by the historical record which explicitly defines Weddin as a site of ritual significance. However, the research was additionally driven by a theoretical approach to 'cultural landscapes'. Landscape is redefined away from considerations of its material features which provide a backdrop to human activity, towards a view that a landscape *is rather*, a conceptual entity. According to this view the natural world does not exist outside of its conceptual or cognitive apprehension. The landscape becomes known within a naming process or narrative; thus the landscape is brought into being and understanding – within this process: - '... explanatory parables...' such as legends and mythology are the embodiment of the landscape narrative (Knight 2001: 6).

These narratives are relative to a particular culture, and it is this, which makes an archaeological investigation of the cultural landscape such a thorny one. At distance in time and cultural geography, and especially in the absence of specific ethnographic information, how can the archaeologist attempt to investigate and know these narratives? Knight (2001: 11) employed the concept of the landscape as *mentifact,* whereby archaeological interpretation is concerned with the reconstruction of the landscape as a reflection of prehistoric cosmologies. He argued that this can be reconstructed by exploring the systematic relationships between sites and their topographic setting. This is defined as an *inherent* approach as it is concerned with the role of landscape in both everyday and sacred life. This view is concerned with an integration of the sacred and profane rather than their existence as separate categories of social life: - where "Cult activity may have existed as an inextricably 'embedded' component of daily life, where significant locations and ritual aspects of material culture were thoroughly incorporated into secular ranges and uses" (Knight 2001:13). In this regard Knight (2001: 14) correctly points out that no dichotomy between the material and ideational world existed within Aboriginal life.

Knight (2001: 15) argued that the notion of sacred space is of central concern within an inherent perspective on interpreting cultural landscape. Within human cosmologies locales within the landscape are constructed as being sacred space; this process of the construction of sacred space has been termed *hierophany* by Eliade (1961 in Knight 2001: 15). However, while Knight (2001: 15) suggests that physical entities such as stones, trees, or topographic features such as mountains, caves and rocky outcrops may be subject to such processes of transformation or construction, in reality in Aboriginal society any natural feature of less obvious significance can and should be included within this listing. Aboriginal constructions of heirophany can include the most insignificant landscape feature and objects of less fixed temporal existence such as animals and plants. While the outside observer readily 'sees' and apprehends mountains and rocky features, more subtle elements of the natural world are easily passed 'unseen'. This point is one which suggests that the personal cultural geography of the archaeologist can severely impact upon the interpretation of the sacred landscape. Knight (2001) does acknowledge this to some extent illustrating the issue by referring to the example of "Jump Up Rock" situated north of Weddin. This place is only understood to have been an important landscape feature by recourse to prior knowledge regarding the meaning of the site name; the hill itself is insignificant and therefore not readily apprehended through an outsiders gaze as being of special significance.

Knight (2001: 16) refers to the issue of peculiarities of form (eg shape, colour, size or texture) and natural distinctiveness (e.g. isolated mountains or rocky features within a plains context) as being an important distinguishing feature of sacred locales. Knight (2001: 16) argues that the construction of sacred space in such a manner is particularly relevant to people for whom the natural domain is the dwelling place of/or the manifestation of their deities. Knight (2001: 16) again draws from Eliade (1964) to suggest that it is at the sacred place that the three fundamental cosmological worlds, the everyday, the upper and underworld may converge; typically the upper world will be associated as a point of 'access' with tall things such as trees while the underworld will be associated with pools and caves. Eliade contends that places where all three worlds can possibly connect, the *axis mundi*, are of a heightened order of sacredness. Hierophanies are therefore natural features which are ascribed sacredness. Additionally, Knight (2001: 17) refers to their ability to provide a landscape based opportunity for people to commune with other worldly deities and associated power because they may constitute spatial access between worlds via ritual.

Guided by these theoretical considerations Knight (2001: 20) engaged with Bradley's (cited in Knight 2001) model of the 'archaeology of natural places' in order to provide guidance for investigating the cultural landscape of the Weddin Mountains and its environs. Bradley (2000) has argued that natural places can be explored archaeologically in order to determine the nature of their role in human cosmologies by attending to four archaeological categories: - Votive offerings, rock art, production sites and monuments. This model was developed within a European context, with its attendant biases of concepts and archaeological categories; clearly not all concepts, some of which are clearly Eurocentric, will be applicable in Australia. Nor will all these data sets be found within the Australian context.

Knight (2001) gives consideration to the types of natural places which might be ascribed sacred significance. These include mountains, woodlands and groves, springs pools and lagoons, rock outcrops and caves and sinkholes. He argues that Aboriginal cosmology is expressed via the natural landscape and sacred places were those which were directly related to the Dreaming. He says that these sacred sites typically are those which are remarkable or important physiographically such as caves, rocks and so on.

Given the potential for natural features to have been important places within an Aboriginal cosmological frame of reference, the survey has sought to identify outstanding natural features present in the study area. It is, however, noted that the landscape of the entire proposal area is expressed as an abundance of hills and ridges and that, therefore, high places are unlikely to standout as unusual or significant.

Contact Sites

These sites are those which contain evidence of Aboriginal occupation during the period of early European occupation in a local area. Evidence of this period of 'contact' could potentially be Aboriginal flaked glass, burials with historic grave goods or markers, and debris from 'fringe camps' where Aborigines who were employed by, or traded with, the white community may have lived or camped. The most likely location for contact period occupation sites would be camp sites adjacent to permanent water, and located in relative proximity to centres of European occupation such as towns and homesteads. The potential for such sites to be present in the proposal area is possible, however, considered to be unlikely given the location of impacts away from towns or homesteads.

2.3.3 Field Inspection – Methodology

The methodology for the field survey entailed a pedestrian traverse of the proposed activity area. The field survey was aimed at locating Aboriginal objects. An assessment was also made of prior land disturbance, survey coverage variables (ground exposure and archaeological visibility) and the potential archaeological sensitivity of the land.

The approach to recording in the current study has been a 'nonsite' methodology (*cf.* Dunnell 1993; Shott 1995). The density and nature of the artefact distribution will vary across the landscape in accordance with a number of behavioural factors which resulted in artefact discard. While cultural factors will have informed the nature of land use, and the resultant artefact discard, environmental variables are those which can be utilised archaeologically in order to analyse the variability in artefact density and nature across the landscape. Accordingly, in this study, while the artefact is the elementary unit recorded, Survey Units are utilised as a framework of recording, analysis (*cf.* Wandsnider and Camilli 1992) and ultimately, the formulation of recommendations.

The field recording and mapping has been conducted using a mobile GIS system. The location of Aboriginal object locales, European items and Survey Units has been made using ArcGIS software and a Trimble GPS. In order to ensure consistency in data collection all field records were made in Microsoft Access database's formulated specifically for the Rye Park Wind Farm project. Three separate databases were used for recording Survey Unit data, Aboriginal Object data and Historical features data. The data collected forms the basis for the documentation of survey results. The variables recorded are defined below.

Survey Unit Variables

Landscape variables utilised are conventional categories taken from the *Australian Soil and Land Survey Field Handbook* (McDonald *et al.* 1998):

Landforms form the primary basis for defining Survey Unit boundaries. The following landform variables were recorded:

Morphological type:

- Crest: - element that stands above all or almost all points in the adjacent terrain – smoothly convex upwards in downslope profile. The margin is at the limit of observed curvature.
- Simple slope: - element adjacent below crest or flat and adjacent above a flat or depression.
- Flat: - planar element, neither crest or depression and is level or very gently inclined.
- Open depression: - extends at same elevation or lower beyond locality where it is observed.

Slope class and value:

- Level: 0 - 1%.
- Very gentle: 1 - 3%.
- Gentle: 3 - 10%.
- Moderate: 10 - 32%.
- Steep: 32 - 56%.

Geology

The type of geology was recorded and as well the abundance of rock outcrop – *as defined below*. The level of visual interference from background quartz shatter was noted.

- No rock outcrop: - no bedrock exposed.
- Very slightly rocky: - <2% bedrock exposed.
- Slightly rocky: - 2-10% bedrock exposed.
- Rocky : - 10-20 % bedrock exposed.
- Very rocky: - 20-50% bedrock exposed.
- Rockland: - >50% bedrock exposed.

Soil

Soil type and depth was recorded. The potential for soil to contain subsurface archaeological deposit (based on depth) was recorded as Low, Moderate or High. This observation is based solely on the potential for soil to contain artefacts; it does not imply that artefacts will be present or absent.

Geomorphological processes

The following gradational categories were recorded:

- eroded
- eroded or aggraded
- aggraded

Geomorphological agents

The following geomorphological agents were recorded:

- gravity: *collapse or particle fall*
- precipitation: *creep; landslide; sheet flow*
- stream flow: *channelled or unchannelled*
- wind
- biological: *human; nonhuman*

Survey coverage variables were also recorded; these are described further below.

Aboriginal Object Recording

For the purposes of defining the artefact distribution in space it has been labelled as a locale (eg. Survey Unit 1/Locale 1). GPS referenced locational information was captured as WGS84 readings and transformed to GDA coordinates.

The measurable area in which artefacts are observed has been noted and if relevant, a broader area encompassing both visible and predicted subsurface artefacts has been defined. In addition, locale specific assessments of survey coverage variables have been made. The prior disturbance to the locale has been noted. Artefact numbers in each locale have been recorded and a prediction of artefact density noted, based on observed density taking into consideration Effective Survey Coverage, and a consideration of environmental context.

Survey Coverage Variables

Survey Coverage Variables are a measure of ground surveyed during the study and the type of archaeological visibility present within that surveyed area. Survey coverage variables provide a measure with which to assess the effectiveness of the survey so as to provide an informed basis for the formulation of management strategies.

Specifically, an analysis of survey coverage is necessary in order to determine whether or not the opportunity to observe stone artefacts in or on the ground was achieved during the survey. In the event that it is determined that ground exposures provided a minimal opportunity to record stone artefacts, it may be necessary to undertake archaeological test excavation for determining whether or not stone artefacts are present. Conversely, if ground exposures encountered provided an ideal opportunity to record the presence of stone artefacts, the survey results may be considered to be adequate and, accordingly, no further archaeological work may be required.

Two variables were used to measure ground surface visibility during the study; the area of ground exposure encountered, and the quality and type of ground visibility (archaeological visibility) within those exposures. The survey coverage variables estimated during the survey are defined as follows:

Ground Exposure – an estimate of the total area inspected which contained exposures of bare ground; and

Archaeology Visibility – an estimate of the average levels of potential archaeological surface visibility within those exposures of bare ground. Archaeological visibility is generally less than ground exposure as it is dependent on adequate breaching of the bare ground surface which provides a view of the subsurface soil context. Based on subsurface test excavation results conducted in a range of different soil types across New South Wales it is understood that artefacts are primarily situated within 10 - 30 cm of the ground profile; reasonable archaeological visibility therefore requires breaching of the ground surface to at least a depth of 10 cm.

Based on the two visibility variables as defined above, an estimate (Net Effective Exposure) of the archaeological potential of exposure area within a survey unit has been calculated. The Effective Survey Coverage (ESC) calculation is a percentage estimate of the proportion of the Survey Unit which provided the potential to view archaeological material.

The data collected forms the basis for the documentation of survey results outlined in the section below.

2.3.4 Field Inspection – Results

The survey results are described below. The location of Survey Unit areas and Aboriginal object site recordings are shown on Figures 2, 3, 4 and 5.

Survey Coverage

The area has undergone relatively high levels of prior disturbance associated with agriculture. Original land clearance and subsequent farming practices have impacted the entire proposal area. These impacts include, amongst others, cultivation, fencing, dam construction, and grazing by hard hoofed animals. Previous farming practices are assessed to have caused reasonably high levels of impact to ground surfaces and to any Aboriginal objects which may once have been present.

The trees in the proposal area and its surrounds are predominately regrowth, estimated to be around 50 years old (or less). All trees located within areas of direct impact were inspected during the survey and no evidence of Aboriginal scarring is evident.

Archaeological visibility within many areas of ground exposure was moderate as the result of the ground surface being penetrated by ploughing, vehicle traffic, weathering and stock treadage.

Seventy kilometres of linear impact areas were surveyed during the field work; the area measures c. 352 hectares (Table 1). It is estimated that approximately 105 hectares of that area was subject to physical survey inspection. Ground exposures inspected included bare earth, erosion scalds, animal tracks and roads and measured 12 hectares in area. Of that ground exposure area archaeological visibility inspected (the potential artefact bearing soil profile) is estimated to have been 10 hectares. Effective Survey Coverage is calculated to have been 3.1% of the proposal area.

While an extensive area of land has been surveyed, including the majority of the proposal, not all impact areas were subject to visual inspection. For example, while the majority of turbine ridges have been inspected, some access road and overhead transmission lines have not. Since undertaking the survey, some minor changes to the layout have been made. Accordingly, some areas remain unsurveyed, while others would now be located outside of the proposal. However, the survey results can be reasonably confidently extrapolated to any unsurveyed areas, and it is concluded that the proposed wind farm area is of low archaeological potential and sensitivity.

Table 1 Survey coverage variables.

SU	Length m	Area sq m	Actually Inspected	Exposure (average) %	Exposure sq m	Visibility (average) %	Visibility sq m	Effective Survey Coverage
SU1	1130	56495	16949	30	5085	80	4068	7.2
SU2	973	48642	14593	1	146	60	88	0.18
SU3	4582	229099	68730	5	3436	90	3093	1.35
SU4	867	43365	13010	1	130	90	117	0.27
SU5	687	34327	10298	1	103	90	93	0.27
SU6	2317	115861	34758	30	10428	80	8342	7.2
SU7	2350	117521	35256	20	7051	80	5641	4.8
SU8	2093	104661	31398	1	314	40	126	0.12
SU9	642	32097	9629	2	193	40	77	0.24
SU10	582	29080	8724	1	87	40	35	0.12
SU11	2544	127207	38162	20	7632	90	6869	5.4
SU12	1283	64138	19241	50	9621	90	8659	13.5
SU13	4726	236285	70886	20	14177	90	12759	5.4
SU14	2050	102509	30753	1	308	90	277	0.27
SU15	2521	126053	37816	1	378	90	340	0.27
SU16	2121	106043	31813	5	1591	90	1432	1.35
SU17	1151	57541	17262	30	5179	90	4661	8.1
SU18	2621	131026	39308	10	3931	90	3538	2.7
SU19	2969	148428	44528	30	13359	90	12023	8.1
SU20	1724	86215	25865	5	1293	90	1164	1.35
SU21	3206	160280	48084	5	2404	90	2164	1.35
SU22	1887	94350	28305	2	566	80	453	0.48
SU23	8347	417370	125211	10	12521	90	11269	2.7
SU24	4319	215936	64781	2	1296	90	1166	0.54
SU25	5524	276212	82864	20	16573	90	14915	5.4
SU26	4418	220920	66276	10	6628	90	5965	2.7
SU27	2890	144494	43348	1	433	60	260	0.18
Total	70523	3526157	1057847		124861		109591	3.1

Table 2 Description of Survey Units

Name	Comments	Proposed impacts
SU1	SU1 is a relatively narrow (c. 20m), gently undulating ridge crest (Plate 8). The geology is shale/slate and soils are thin and very rocky (shale shatter, cobbles and bedrock). Quartz gravels are sparse. Some areas are treed with regrowth (at south end) and elsewhere given over to pasture. Exposures were primarily bare earth (Plate 3).	Wind turbine generators, access track and underground electrical connections
SU2	SU2 is a wide valley comprised of very gently undulating simple slopes	Access track and possibly

Name	Comments	Proposed impacts
	(Plate 9). Quartz gravels are sparse. Exposures were infrequent due to generally thick grass cover.	underground electrical connections
SU3	SU1 is a generally narrow (c. 20m), gently undulating ridge crest. The geology is shale and soils are thin and very rocky (shale shatter, cobbles and bedrock). Quartz gravels are sparse except for near south end where it is moderate to high. It is sparsely treed with scrubby pasture (Plate 10) and a thickly treed area at south end in a very steep gully. Exposures were bare earth, and animal and vehicle tracks.	Wind turbine generators, access track and underground electrical connections
SU4	SU4 is a broad, gently undulating ridge crest. The geology is porphyry volcanic and soils are a relatively deep loam. Porphyry cobbles are common across the landform. The landform is sparely treed and is given over to pasture. Exposures were infrequent due to generally thick grass cover.	Wind turbine generators, access track and underground electrical connections
SU5	SU5 is a simple slope with a gentle to moderate gradient with an easterly aspect. The landform is given over to pasture. Exposures were infrequent due to generally thick grass cover.	Access track and possibly underground electrical connections
SU6	SU6 is an undulating ridge crest with gentle to moderate gradient slopes. The geology is shale and soils are thin and very rocky (shale shatter, cobbles and bedrock). Quartz gravels are sparse. It is thickly treed with regrowth along most of the SU (Plates 5 & 6). Exposures were bare earth, and animal and vehicle tracks.	Wind turbine generators, access track and underground electrical connections
SU7	SU6 is series of ridge crests (some very narrow ie c. 10m) and knolls with gentle to moderate (and occasionally very steep) gradient slopes. The geology is shale and soils are thin and very rocky (shale shatter, cobbles and bedrock). Quartz gravels are sparse generally, but high in localised occurrences. It is given over to pasture (Plate 11). Exposures were bare earth, erosion, and animal and vehicle tracks.	Wind turbine generators, access track and underground electrical connections
SU8	SU4 is a broad, gently undulating ridge crest. The geology is porphyry volcanic and soils are a relatively deep loam. Porphyry tors (especially on knolls) and cobbles are common across the landform. The landform is sparely treed and is given over to pasture (Plate 12). Exposures were infrequent due to generally thick grass cover.	Wind turbine generators, access track and underground electrical connections
SU9	SU4 is a gently undulating ridge crest. The geology is porphyry volcanic and soils are a relatively deep loam. Porphyry cobbles are common across the landform. The landform is sparely treed and is given over to pasture. Exposures were infrequent due to generally thick grass cover.	Wind turbine generators, access track and underground electrical connections
SU10	SU10 is a low rise in a valley. It has a very gentle gradient and south-westerly aspect. It is covered with thick grass and effective survey coverage was low.	Substation
SU11	SU11 is an undulating narrow (20-30 m) ridge crest with gentle to moderate gradient slopes. The geology is shale and soils are thin and very rocky (shale shatter, cobbles and bedrock). Quartz gravels are sparse. It is sparsely treed with scrubby pasture (Plate 1). Exposures were bare earth, and animal and vehicle tracks.	Wind turbine generators, access track and underground electrical connections
SU12	A series of grassed, generally very steep (up to 38°), simple slopes (Plate 15). The geology is shale and soils are thin and very rocky (shale shatter, cobbles and bedrock). Quartz gravels are sparse. Exposures were bare earth and animal tracks.	Access track and possibly underground electrical connections
SU13	SU11 is an undulating broad ridge crest with gentle to moderate gradient slopes. The geology is shale and soils are thin and very rocky (shale shatter, cobbles and bedrock). Quartz gravels are sparse. It is thickly treed with regrowth along most of the SU (Plate 16). Exposures were bare earth, and animal and vehicle tracks.	Wind turbine generators, access track and underground electrical connections
SU14	A series of grassed, gentle to moderate gradient, simple slopes and spur crests (Plate 17). The geology is shale and soils are thin and very rocky (shale shatter, cobbles and bedrock). Quartz gravels are sparse. Minimal exposures were bare earth and animal tracks.	Wind turbine generators, access track and underground electrical connections
SU15	A series of grassed, gentle to moderate gradient undulating lower slopes, drainage depressions and spur crests (Plate 18). The geology is shale and soils are thin and rocky (shale shatter, cobbles and bedrock). Quartz gravels are sparse. Minimal exposures were bare earth and animal tracks.	Transmission line
SU16	A series of grassed, moderate gradient, simple slopes, drainage depressions and spur crests. The geology is shale and soils are thin and rocky (shale shatter, cobbles and bedrock). Quartz gravels are sparse. Exposures were bare earth and animal.	Transmission line
SU17	SU17 is an undulating narrow (30 m) ridge crest with gentle to moderate gradient slopes. The geology is shale and soils are thin and very rocky	Wind turbine generators, access track and

Name	Comments	Proposed impacts
	(shale shatter, cobbles and bedrock). Quartz gravels are sparse, except within areas in which quartz bedrock outcrops and near south end. The landform is grassed and with sparse trees (Plate 19). Exposures were bare earth and animal tracks.	underground electrical connections
SU18	SU18 is a series of gently to moderately undulating ridge crests. The geology is shale/slate and soils are thin and very rocky (shale shatter, cobbles and bedrock). Quartz gravels are sparse. Some areas are treed with regrowth (at south end) and elsewhere given over to pasture. Exposures were primarily bare earth.	Wind turbine generators, access track and underground electrical connections
SU19	SU19 is an undulating narrow ridge crest with gentle to moderate gradient slopes. The geology is shale and soils are thin and very rocky (shale shatter, cobbles and bedrock). Quartz gravels are sparse. It is sparsely treed with scrubby pasture (Plate 20). Exposures were bare earth, and animal and vehicle tracks.	Wind turbine generators, access track and underground electrical connections
SU20	SU20 is a series of gently to moderately (occasionally steep) undulating ridge crests. The geology is shale/slate and soils are thin and very rocky (shale shatter, cobbles and bedrock). Quartz gravels are sparse. Some areas are treed with regrowth and elsewhere contains thick Sifton bush (Plate 21). Exposures were primarily bare earth.	Wind turbine generators, access track and underground electrical connections
SU21	SU21 is an undulating narrow ridge crest with gentle to moderate gradient slopes. The geology is shale and soils are thin and very rocky (shale shatter, cobbles and bedrock). Quartz gravels are sparse. It is sparsely treed with thick Sifton bush (Plate 22). Exposures were bare earth, and animal and tracks.	Wind turbine generators, access track and underground electrical connections
SU22	SU22 is a series of moderately (occasionally steep) undulating ridge crests. The geology is shale/slate and soils are thin and very rocky (shale shatter, cobbles and bedrock). Quartz gravels are sparse. It is mostly treed with regrowth and elsewhere with thick Sifton bush. Exposures were primarily bare earth.	Wind turbine generators, access track and underground electrical connections
SU23	SU23 is a series of gently and moderately (occasionally steep) undulating ridge crests. The geology is shale/slate and soils are thin and very rocky (shale shatter, cobbles and bedrock). Quartz gravels are sparse. It is grassed at the northern and southern ends and treed with regrowth and thick Sifton bush in the mid area (Plate 23). Exposures were primarily bare earth, with some animal and vehicle tracks.	Wind turbine generators, access track and underground electrical connections
SU24	SU24 is a series of gently and moderately (occasionally steep) undulating ridge crests. The geology is shale/slate and soils are thin and very rocky. Quartz gravels are sparse. It is grassed at the northern end and treed with regrowth scrub and thick Sifton bush in the south (Plate 24). Exposures were primarily bare earth, with some animal tracks.	Wind turbine generators, access track and underground electrical connections
SU25	SU25 is a narrow gently and moderately (occasionally steep) undulating ridge crest. The geology is shale/slate and soils are thin and very rocky. Quartz gravels are sparse. It is grassed in the mid area (Plate 25) and treed with regrowth scrub and Sifton bush in the north and south. Exposures were primarily bare earth, with some animal and vehicle tracks.	Wind turbine generators, access track and underground electrical connections
SU26	SU26 is a relatively narrow gently and moderately (occasionally steep) undulating ridge crest. At the south end knolls are very rocky. The geology is shale/slate and soils are thin and very rocky (shale shatter, cobbles and bedrock). Quartz gravels are sparse. It is grassed at the northern end (Plate 26) and treed with regrowth scrub in the south. Exposures were primarily bare earth, with some animal and vehicle tracks.	Wind turbine generators, access track and underground electrical connections
SU27	SU27 is a relatively narrow gently and moderately undulating ridge crest. The geology is shale/slate and soils are thin and very rocky (shale shatter, cobbles and bedrock). Quartz gravels are sparse. It is grassed (Plate 27). Exposures were primarily bare earth, with some animal tracks.	Wind turbine generators, access track and underground electrical connections

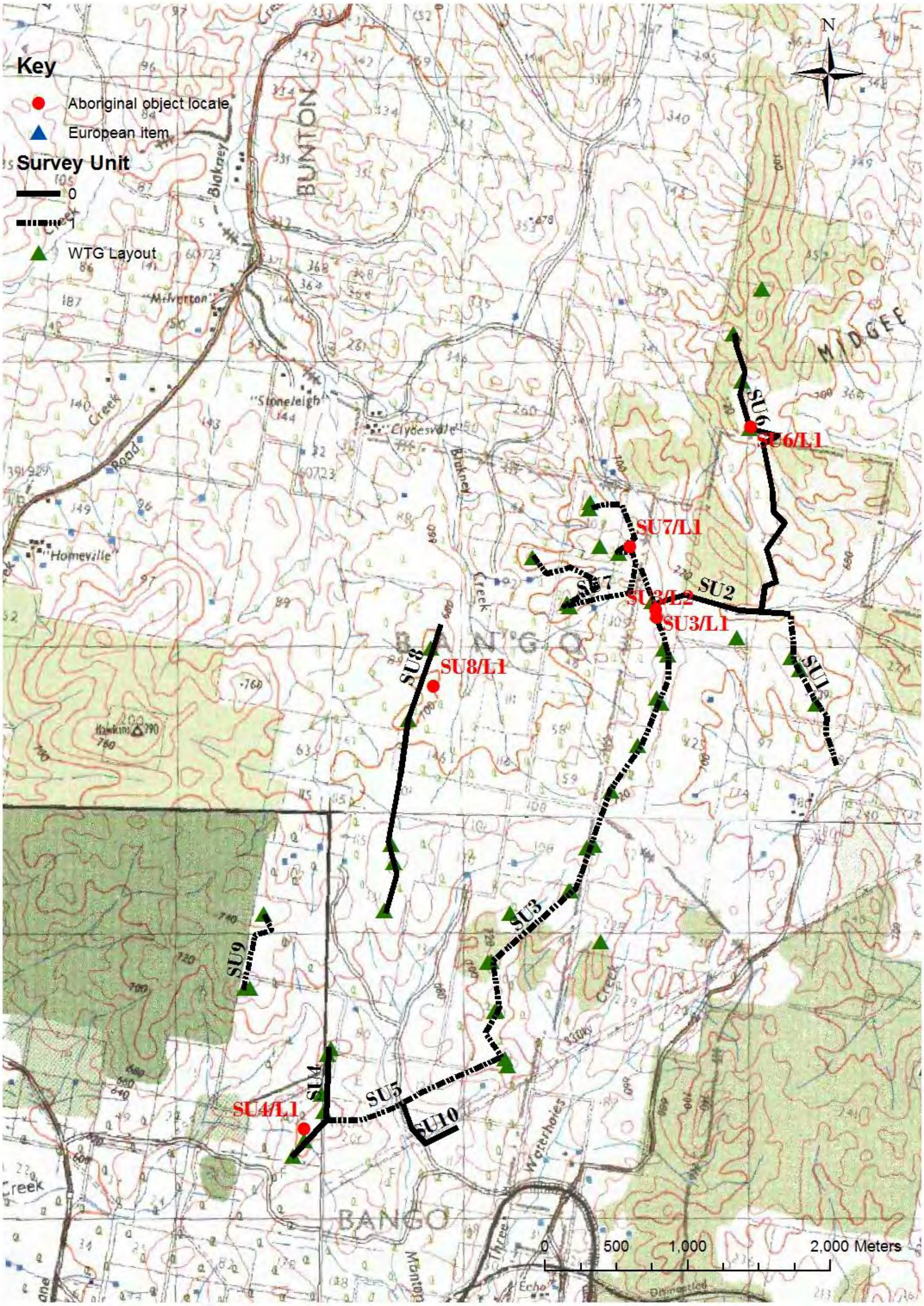

Figure 2 Location of Survey Units and Aboriginal object locales in respect of proposed wind turbine generator layout; south end of proposal area.

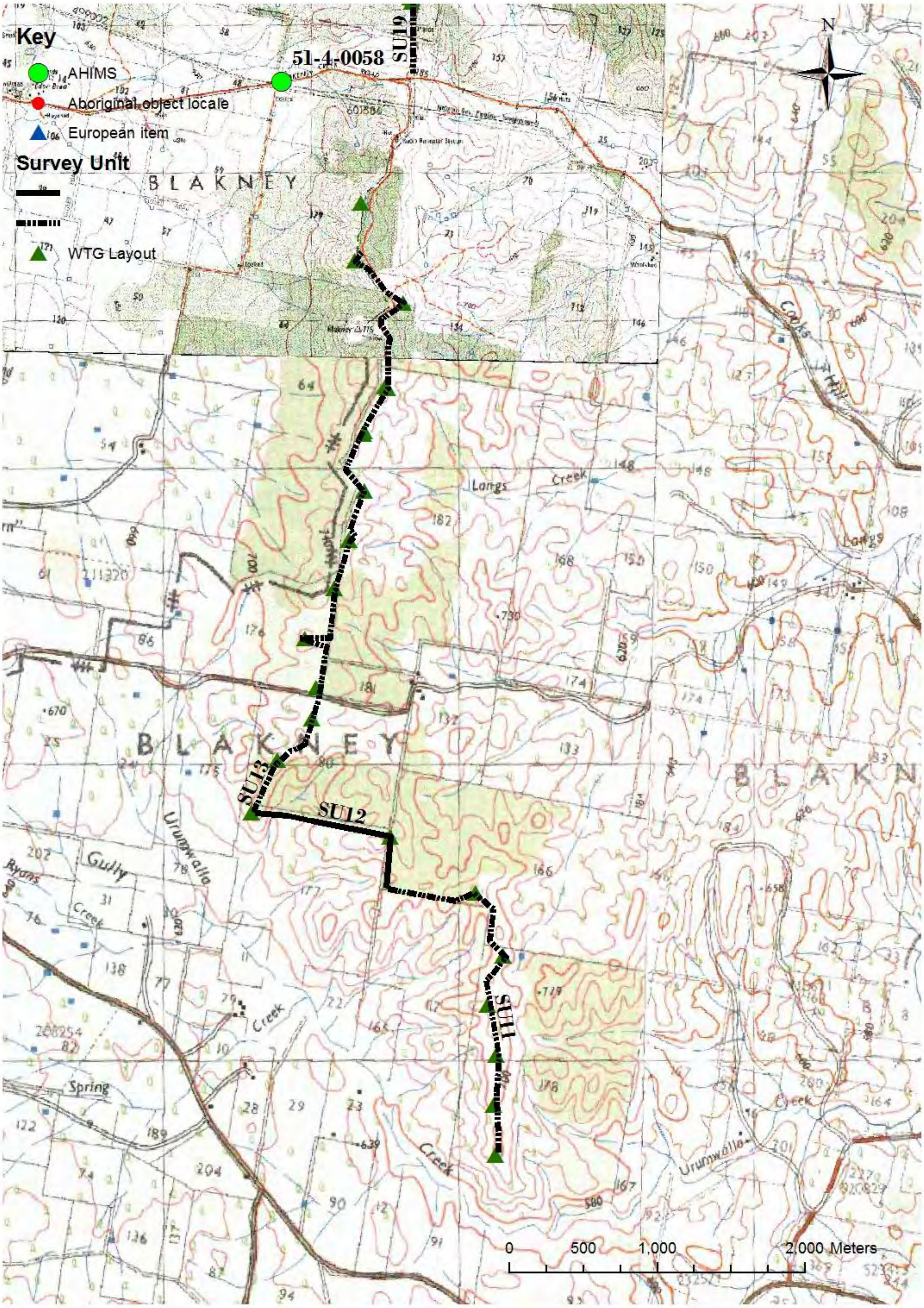

Figure 3 Location of Survey Units and Aboriginal object locales in respect of proposed wind turbine generator layout; south-mid end of proposal area.

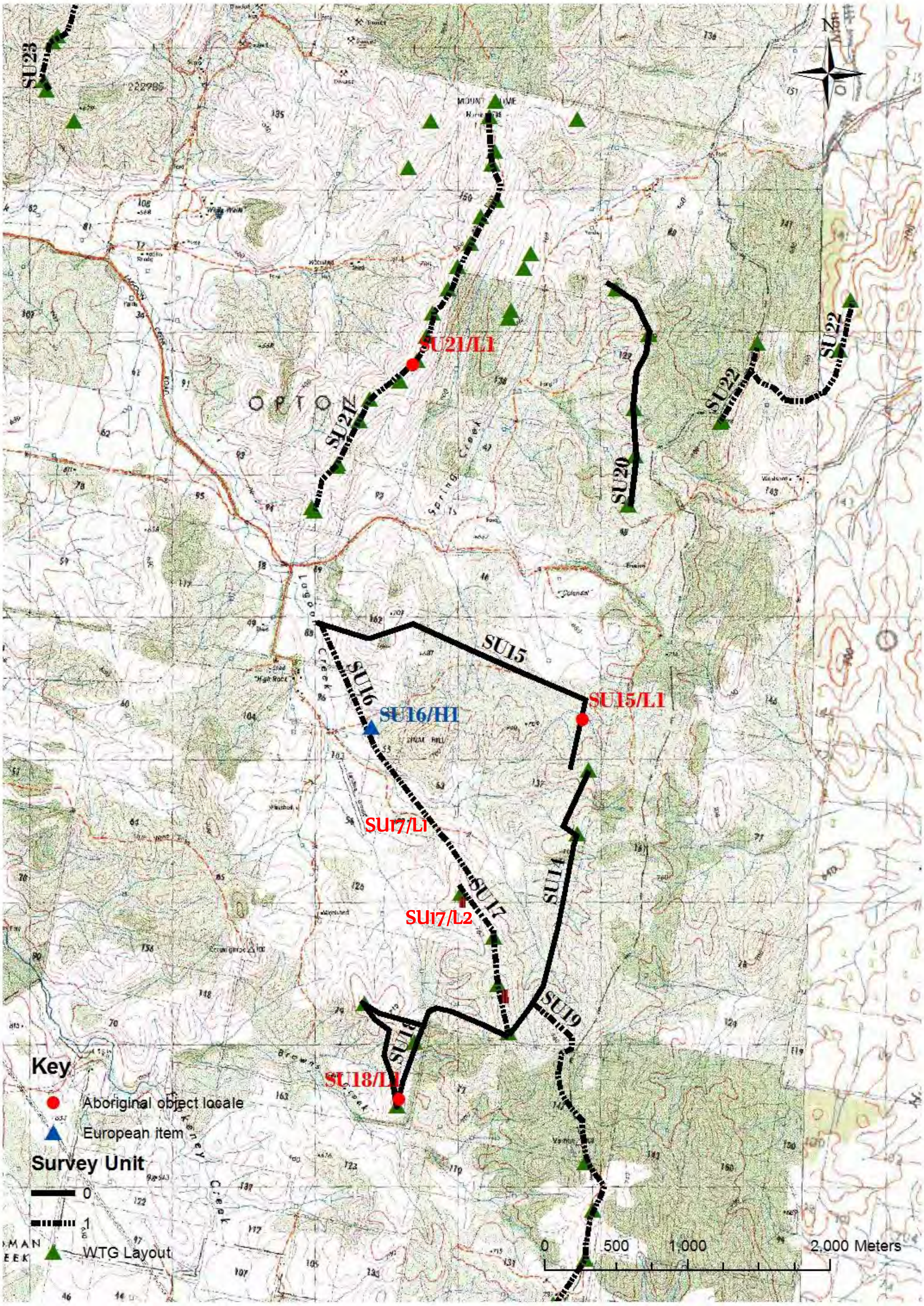

Figure 4 Location of Survey Units and Aboriginal object locales in respect of proposed wind turbine generator layout; north-mid end of proposal area.

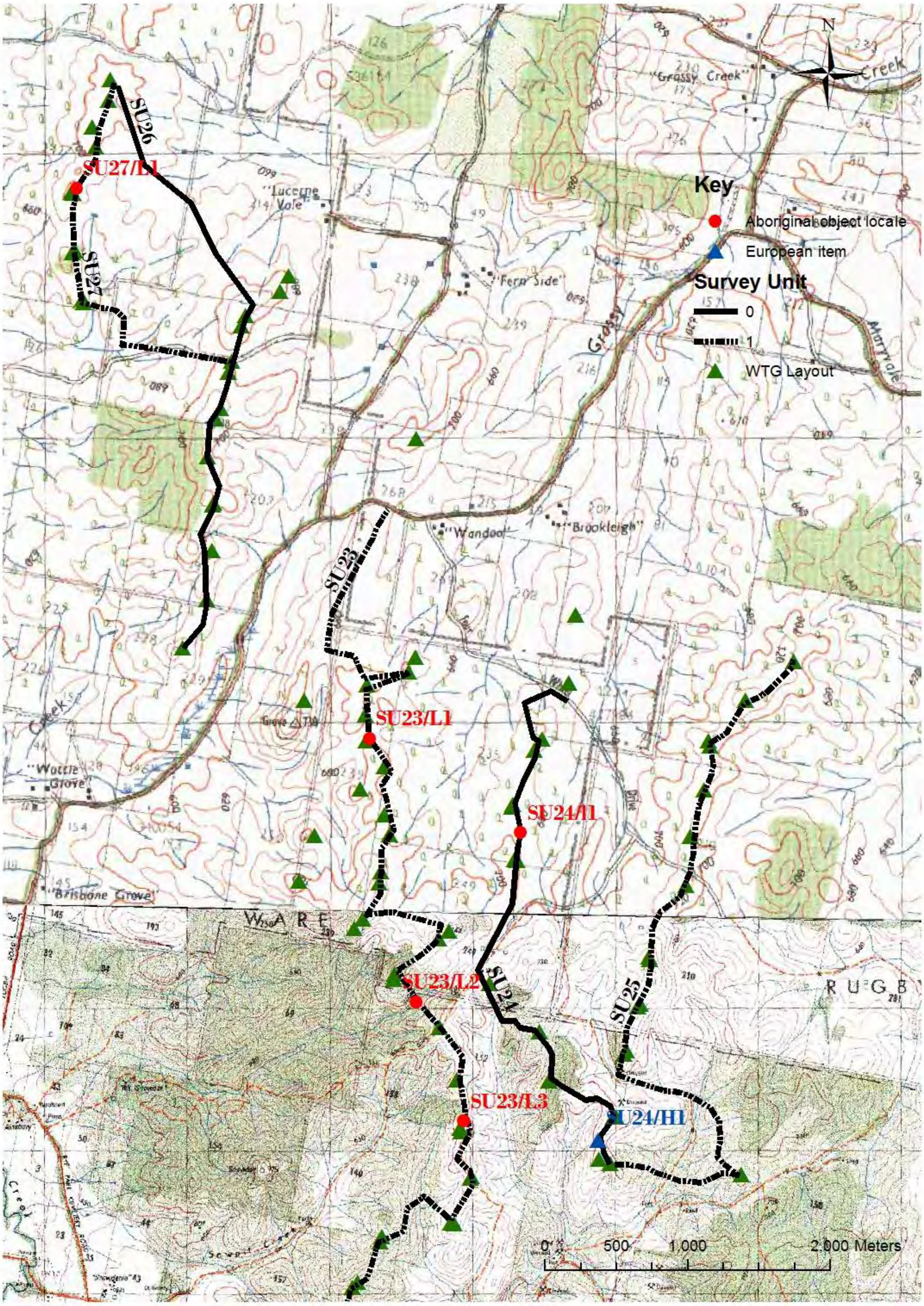

Figure 5 Location of Survey Units and Aboriginal object locales in respect of proposed wind turbine generator layout; north end of proposal area.

Plate 8 Proposed turbine location on Survey Unit 1; looking 140°.

Plate 9 The valley of Survey Unit 2 looking 250°.

Plate 10 Midway along Survey Unit 3 looking 190°, note wind monitoring mast in distance.

Plate 11 A turbine ridge in Survey Unit 7 looking 130°.

Plate 12 Survey Unit 8 in middle distance; photo taken from SU7 and looking south-west.

Plate 13 Survey Unit 9 looking south.

Plate 14 Survey Unit 10 looking 50°.

Plate 15 Survey Unit 12 looking east.

Plate 16 Midway along SU13 looking south.

Plate 17 Survey Unit 14 looking south.

Plate 18 Survey Unit 15 looking 285°.

Plate 19 Survey Unit 17 looking 155. Note narrow crest, rocky outcrops and fallen timber.

Plate 20 Survey Unit 19 looking 180° at a proposed turbine site. Note rocky ground and high exposure.

Plate 21 Survey Unit 20; north end looking 100°.

Plate 22 Survey Unit 21 near north end looking south. Note rocky ground and Sifton bush, as far as the eye can see.

Plate 23 Survey Unit 23, north end looking south.

Plate 24 Survey Unit 24, south end. Note Mt Hume (north end SU21) in distance.

Plate 25 Survey Unit 25 looking 10°.

Plate 26 North end of Survey Unit 26 looking north.

Plate 27 Survey Unit 27 looking south; note, SU27/L1 in distance.

Aboriginal Object Recordings

The Aboriginal object locales recorded during the survey are summarised in Table 3 and described in further detail below.

Table 3 Summary of Aboriginal object locales recorded during the field survey.

Name	Comments	Easting	Northing
SU3/L1	1 artefact on an existing farm track in SU3	685473	6154461
SU3/L2	2 artefacts on an existing farm track in SU3	685479	6154403
SU4/L1	1 artefact on ridge in SU4	683008	6150815
SU6/L1	1 artefact on ridge adjacent to track in SU6	686132	6155741
SU7/L1	1 artefact in large erosion scour on ridge in SU7	685287	6154897
SU8/L1	1 artefact in a sheep track	683916	6153919
SU15/L1	2 artefacts in an erosion scour in SU15	681986	6173467
SU17/L1	Possible quartz stone procurement area (spa)	681143	6172183
SU17/L2	Possible quartz stone procurement area (spa)	681444	6171527
SU18/L1	1 artefact on a moderate gradient simple slope	680701	6170806
SU21/L1	1 artefact on a ridge crest in SU21	680799	6175957
SU23/L1	1 artefact on a farm track in SU23	678390	6182077
SU23/L2	2 artefacts adjacent to a drainage line in SU23	678717	6180230
SU23/L3	1 artefact on a farm track in SU23	679052	6179394
SU24/L1	5 artefacts on a farm track in SU24	679451	6181416
SU27/L1	Possible quartz stone procurement area (spa)	676340	6185935

Survey Unit 3/Locale 1 685473e 6154461n Trimble GPS (GDA)

One stone artefact was recorded on a farm track in Survey Unit 3 (Plate 28). The landform is a narrow ridge crest with a northerly aspect and gentle gradient. The broad area of erosion measures >50 x 3 m, of which 90% was ground exposure, possessing 95% archaeological visibility. The effective survey coverage is relatively high, and given that one artefact only was recorded, artefact density is assessed to be very low.

The recorded artefact is a fine grained, grey silcrete broken flake (longitudinal fracture) measuring 41 x 32 x 14 mm.

The locale may contain additional artefacts but these would be present in very low density. Because of the skeletal nature of the soil, the site has no subsurface potential. The geomorphological context is erosional.

Plate 28 The location of SU3/L1 looking 160°.

Survey Unit 3/Locale 2 685479e 6154403n Trimble GPS (GDA)

Two stone artefacts were recorded over a distance of 5 metres on a farm track in Survey Unit 3 (Plate 29). The landform is a narrow ridge crest with an open aspect and very gentle gradient. The broad area of erosion measures >50 x 3 m, of which 90% was ground exposure, possessing 95% archaeological visibility. The effective survey coverage is relatively high, and given that one artefact only was recorded, artefact density is assessed to be very low.

The recorded artefacts are:

- grey silcrete broken flake (longitudinal fracture) measuring 46 x 18 x 8 mm (distal end missing);
- light brown silcrete flake (medial portion) measuring 24 x 15 x 4 mm.

The locale may contain additional artefacts but these would be present in very low density. Because of the skeletal nature of the soil, the site has no subsurface potential. The geomorphological context is erosional.

Plate 29 The location of SU3/L2 looking 140°.

Survey Unit 4/Locale 1 683008e 6150815n Trimble GPS (GDA)

One stone artefact was on a ridge crest in Survey Unit 4 (Plate 30). The artefact was found in a bare earth exposure. In the area, ground exposure was estimated to be c. 1% (very low) with 90% archaeological visibility. The effective survey coverage is low.

The recorded artefact is a tuff broken flake (proximal end) measuring 7 x 6 x 2 mm.

The locale may contain additional artefacts but these would be present in very low density. The site has subsurface potential given some depth to the soils, but artefact density is predicted to be very low. The geomorphological context is nevertheless erosional.

Plate 30 SU4/L1 looking east.

Survey Unit 6/Locale 1 686132e 6155741n Trimble GPS (GDA)

One stone artefact was on a ridge crest in Survey Unit 6 (Plate 31). The artefact was found in a bare earth exposure adjacent to a fire trail. In the area, ground exposure was estimated to be c. 85% with 70% archaeological visibility. The effective survey coverage is high.

The recorded artefact is a black chert flake measuring 32 x 23 x 5 mm.

The locale may contain additional artefacts but these would be present in very low density. Because of the skeletal nature of the soil, the site has no subsurface potential. The geomorphological context is erosional.

Plate 31 Location of SU6/L1 looking north.