New South Wales Archaeology Pty Ltd ACN 106044366

Addendum

Rye Park Wind Farm

Aboriginal Cultural Heritage Assessment Report

Date: November 2015

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Proponent: Rye Park Renewables Pty Ltd

Local Government Area: Yass Valley, Boorowa, and Upper Lachlan Shire Councils

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SUMMARY

New South Wales Archaeology Pty Ltd conducted an assessment of the proposed Rye Park Wind Farm in 2012. This was documented in a final report in 2013 (Dibden 2013).

Changes have been made to the layout as a result of detailed design and further consultation. Rye Park Renewables Pty Ltd is now seeking Project Approval for the amended project from the NSW Department of Planning and Environment (DoP&E).

This Addendum report documents the Aboriginal Cultural Heritage Assessment undertaken in respect of changes to the project layout.

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).

During the current assessment further consultation has been conducted with the Registered Aboriginal Parties. This ongoing Aboriginal community consultation is being 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 area and formulate management recommendations based on the results of the community consultation, background research, field survey and a significance assessment.

A new search of the NSW OEH Aboriginal Heritage Management Information System (AHIMS) has been conducted for this project (AHIMS Reference: 193956). Some 17 Aboriginal object sites are listed for the search area, the majority of which were recorded during the 2012 survey in the subject area. As a result of changes to the project layout, many of these are now outside the development footprint area.

A field survey for Aboriginal areas, objects and places has been conducted in order to assess new and previously unsurveyed areas in the project. During the initial assessment, 13 Aboriginal object locales were recorded. In addition, three quartz outcrops were indentified which may have been used as stone procurement areas by Aboriginal people. In the 2015 field survey, 20 Aboriginal object locales were recorded.

The recent survey has confirmed the conclusions reached during the original assessment. Generally, the high ridge crests on which turbines are proposed are of low archaeological

sensitivity, potential and significance. However, some areas in which impacts would occur that are situated in valleys in close proximity to water courses are assessed to be of some greater archaeological and heritage value and significance.

As a result of the assessment the following conclusions and recommendations are made (see Section 7 & 9) for detailed recommendations in regard to management and mitigation):

- No further archaeological investigations are required in respect of the proposal. No areas were identified that could be characterised as places with a high probability of possessing subsurface Aboriginal objects with high potential conservation value. Accordingly, archaeological test excavation has not been undertaken in respect of the proposal as it could not be justified (*cf*. NSW DECCW 2010a: 24).

- Management and mitigation strategies are set out in Section 7. These strategies should be used to formulate appropriate Statements of Commitment to condition Development Approval.

- A Cultural Heritage Management Plan should be developed for the appropriate management and mitigation of development impacts during any further planning and project construction. The development of an appropriate Cultural Heritage Management Plan should be undertaken by the project archaeologist in consultation with the proponent, registered Aboriginal parties and the NSW Office of Environment and Heritage.

  The Cultural Heritage Management Plan would be prepared to guide the process for the management and mitigation of impacts to Aboriginal cultural heritage and to set out procedures relating to the conduct of additional archaeological assessment, if required, and the management of any further Aboriginal cultural heritage values which may be identified.

- Personnel involved in the construction and development phases of the project should be trained in procedures to implement recommendations relating to cultural heritage, as necessary.

- Cultural heritage should be included within any environmental audit of impacts proposed to be undertaken during the construction phase of the development.

Acknowledgments

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Andrew Wilson, Epuron
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Buru Ngunawal Aboriginal Corporation for assistance with field work

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 to conduct an Aboriginal heritage (archaeological and cultural) assessment in relation to a modification to the proposed Rye Park Wind Farm (the subject area), north of Yass and east of Boorowa. The area in which impacts are proposed is shown on Figure 1. This report forms an addendum to the original assessment conducted in 2012, as documented in Dibden (2013a).

The proponent for the project is Rye Park Renewables Pty Ltd, a wholly owned subsidiary of Trustpower Pty Ltd, an Australian renewable energy company.

An application for development of the Rye Park Wind Farm was lodged with the Department of Planning and Environment in January 2011. The Director General's Requirements were issued on 14 February 2011 and 16 August 2011 to guide the work required in assessing the proposal. An Environmental Assessment (EA) for the Rye Park Wind Farm was submitted to the Department of Planning and Environment in early 2014 and placed on public exhibition from 2 May 2014 until 4 July 2014.

An amended Environmental Impact Statement (EIS) is being compiled of which this report will form a part. A final project infrastructure layout has been produced and the updated environmental assessment takes account of those changes made since the exhibition of the EA.

This addendum heritage report documents a further assessment of the project which addresses changes to the layout and areas which had not been surveyed originally.

The Rye Park Wind Farm proposal would involve the construction and operation of up to 109 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 1,028,000 MWh of electricity per year.

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

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

- Up to 109 wind turbine generators (wtgs);
- 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 (*Australian National University: BA with honours; PhD*), NSW Archaeology Pty Ltd. The field work component has been conducted by Julie Dibden and Andrew Pearce, NSW Archaeology Pty Ltd, and Wally Bell, Buru Ngunawal Aboriginal Corporation.

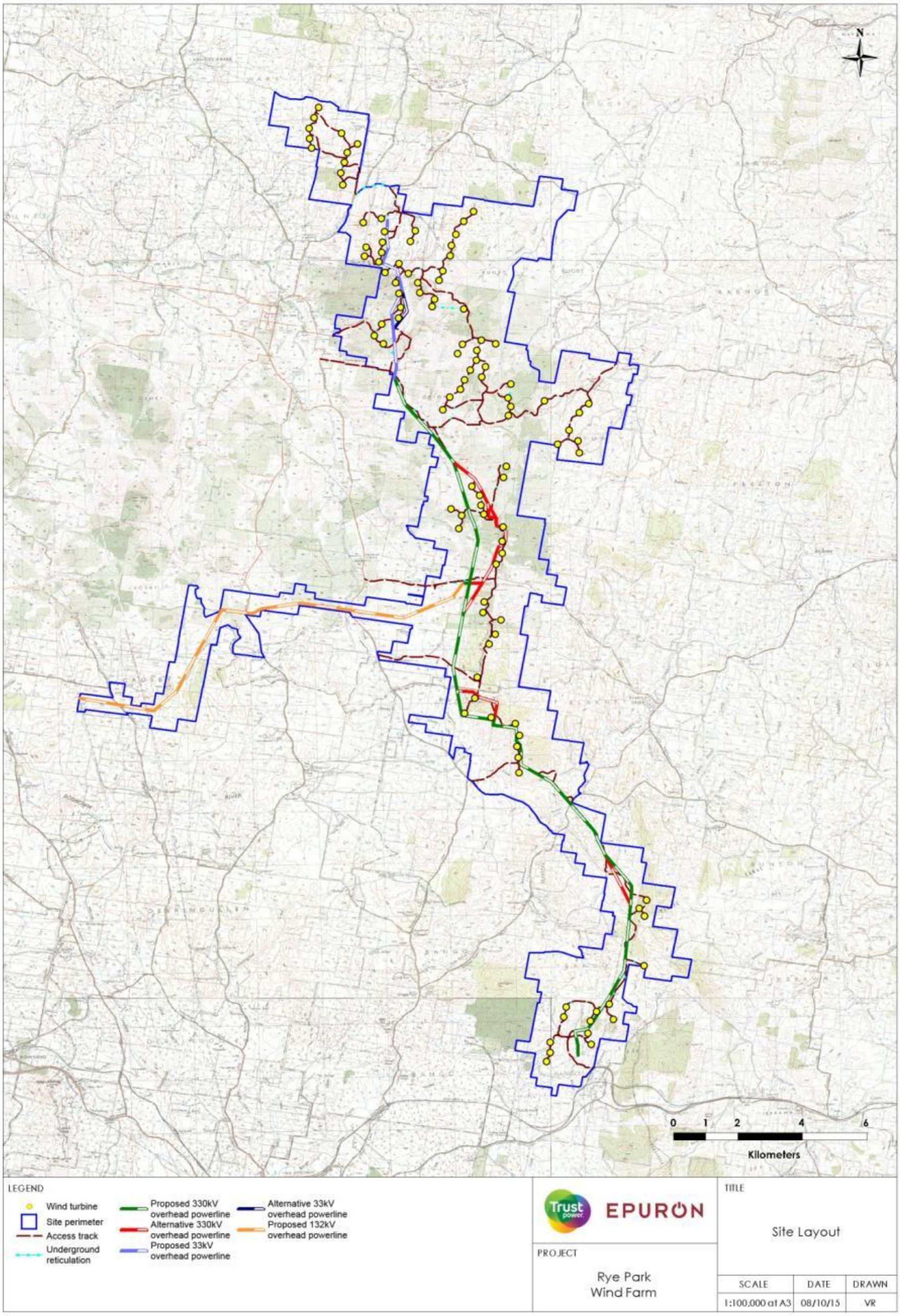

Figure 1 The layout of the proposed Wind Farm (map supplied by the proponent).

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. 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 5º 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.

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, and is frequently rockland (cf. McDonald *et al.* 1998). The excessively rocky nature of much of the landscape is likely to have made these landforms unfavourable camping places for Aboriginal people.

Plate 1 Typical rockland on turbine ridges: SU46.


Plate 2 Lithosol on a low elevation crest within a valley context: SU37.

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. Within valleys also, landforms are also eroded and frequently soils are 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 1 and 2 exemplify the eroded, skeletal nature of soils across the wind farm site.

Soils within valleys on basal slopes or flats are both alluvial and colluvial and, while undoubtedly disturbed are usually 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. The landscape is also often covered in the weed, Sifton Bush (Plate 3).

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.

Plate 3 Typical back country covered in Sifton Bush: SU34.

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 km^2 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 4).

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 seasonal 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. 2012). 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. 2012). 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, at least seasonally. 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.

Plate 4 Active sheet and gully erosion incising the channel of a 2nd order stream: SU30.

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 - 10ºC 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. 6,000 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 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.

As far as possible, an ethnographic and historical review of Aboriginal life in the region will be outlined below. However, our ethnographic understanding of Aboriginal people in this area, and the historical dimension of the colonial encounter has been reconstructed from scant historical records produced during a context of death and dispossession (Swain 1993: 115), and is sketchy and severely limited. Stanner (1977) has described the colonial and post-colonial past as a 'history of indifference', and this portrays both the substantive situation which prevailed and the general lack of regard for this history. 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

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

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.

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 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.

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 7,000 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 a 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 the 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 concerns 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 km^2 and encompassed the area between eastings 672000 – 690000, and northings 6147000 – 6189000. An updated search for the same area has been undertaken in respect of this addendum report on 7 October 2015 (Client Service ID: 193956).

Seventeen Aboriginal object sites are recorded on AHIMS as present in the search area (Table 1; Figures 2-10), the majority of which were recorded during the initial Rye Park Wind Farm survey (Dibden 2013a). 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 old recorded Aboriginal site, AHIMS #51-4-0058 is located along Flakeney Creek Road (see Figure 7). 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).

The previously recorded Rye Park Wind Farm sites are documented in Dibden (2013a).
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.

Table 1 List of AHIMS Aboriginal sites.

Site ID	Site name	Datum	Easting	Northing	Context	Site features	Recorders
51-6-0099	Rye Park Pioneer Cemetery	AGD	676900	6178000	Open site	Burial : -	Ms Adrienne Howe-Piening
51-4-0058	Flakeney Creek	AGD	680880	6168786	Open site	Artefact : -	Mr Giles Hamm
51-4-0053	Flakeney Creek 1	AGD	677180	6171760	Open site	Modified Tree (Carved or Scarred) : -	Petra Schell
51-5-0203	Rye Park SU3/Locale 1	GDA	685473	6154461	Open site	Artefact : 1	Dr Julie Dibden
51-4-0284	Rye Park SU4/Locale 1	GDA	683008	6150815	Open site	Artefact : 1	Dr Julie Dibden
51-5-0204	Rye Park SU6/Locale 1	GDA	686132	6155741	Open site	Artefact : 1	Dr Julie Dibden
51-5-0205	Rye Park SU7/Locale 1	GDA	685287	6154897	Open site	Artefact : 1	Dr Julie Dibden
51-5-0206	Rye Park SU8/Locale 1	GDA	683916	6153919	Open site	Artefact : 1	Dr Julie Dibden
51-5-0207	Rye Park SU3/Locale 2	GDA	685479	6154403	Open site	Artefact : 2	Dr Julie Dibden
51-4-0285	Rye Park SU18/Locale 1	GDA	680701	6170806	Open site	Artefact : 1	Dr Julie Dibden
51-4-0286	Rye Park SU15/Locale 1	GDA	681986	6173467	Open site	Artefact : 2	Dr Julie Dibden
51-4-0287	Rye Park SU21/Locale 1	GDA	680799	6175957	Open site	Artefact : -	Dr Julie Dibden
51-1-0117	Rye Park SU23/Locale 1	GDA	678390	6182077	Open site	Artefact : 1	Dr Julie Dibden
51-4-0288	Rye Park SU23/Locale 2	GDA	678717	6180230	Open site	Artefact : 2	Dr Julie Dibden
51-4-0289	Rye Park SU23/Locale 3	GDA	679052	6179394	Open site	Artefact : 1	Dr Julie Dibden
51-1-0118	Rye Park SU24/Locale 1	GDA	679451	6181416	Open site	Artefact : 5	Dr Julie Dibden
51-4-0307	Blakney Ck Sth scar tree	AGD	680722	6154613	Open site	Modified Tree (Carved or Scarred) : 1	Mr Paul House

2.3.1 Previous Environmental Impact Assessment

Prior to the original Rye Park Wind Farm survey (Dibden 2013a), there have been no previous archaeological studies conducted within the study area itself and few had 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 region.

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 was 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^{o} 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 bypass 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/m^2 to 12/m^2. 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, rather spectacularly, no artefacts were recovered. The result is not surprising.

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 indicated 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 indicated 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. Some 25 sites were recorded, defined as 13 open artefacts scatters, nine 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 and two areas with potential archaeological deposit were located. 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'.

Dibden (2013a) recorded thirteen Aboriginal object locales during the initial field survey of the Rye Park Wind Farm, ten of which were single stone artefacts. The majority of the area surveyed was elevated ridge crests and undetected or subsurface stone artefacts were predicted to be present in extremely low density. In addition, three quartz outcrops were recorded which may have been used as stone procurement areas by Aboriginal people. Given the extensive survey coverage and adequate Effective Survey Coverage, the paucity of stone artefacts was considered to be an accurate reflection of the artefactual status of the proposal area. That is, the wind turbine ridges were assessed to contain very low density artefact distributions. Accordingly, undetected or subsurface stone artefacts were predicted to be present in extremely low density. The archaeological results were also in keeping with the information provided to us by the Buru Ngunawal Aboriginal Corporation people. Given the location of the wind turbine ridges well away from water, Wally Bell (pers. comm. 2012) indicated that the area would have been used '… for travel through country, *if that*'.

Dibden (2013b) surveyed a total of 93.4 kilometres of linear impact areas on a series of gently to moderately undulating amorphous ridgelines and hilltops during a survey of the proposed Bango Wind Farm. Fourteen Aboriginal object locales were recorded during the field survey. Undetected or subsurface stone artefacts were predicted to be present in extremely low density. Based on the relevant predictive model of site distribution and the results of the field survey, the subject area was assessed to be of generally low cultural and archaeological potential and significance. A part of the Rye Park proposal traverses a part of SU 26 in the Bango Wind Farm area (see Dibden 2013b: Map 13).

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 subject 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.

A pattern of low artefact density in elevated contexts has been confirmed by numerous previous wind farm studies in the region (for example, see Austral Archaeology PL 2005, 2008, 2009; Dibden 2006a, 2006b, 2008, 2012, 2013a & 2013b; Reeves and Thomson 2004).

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 simple slopes, artefacts are likely to be present in 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 occurrences across discrete landforms, especially close to streams.

Grinding Grooves

The location of sites with grinding grooves is dependent on the presence of a suitable rock surface, usually fine grained homogeneous sandstone, and a water source. Grinding groove sites may consist of a single groove, or a large number which are sometimes arranged in patterns and groups. They commonly occur as an open site, however, are sometimes found in shelter contexts. Usually grinding grooves are located on horizontal sandstone exposures, but they can occasionally be found on vertical surfaces.

A broad temporal framework for the age of grinding groove sites can be inferred on the basis of the age of ground-edge hatchet heads found within archaeological deposits. Across Australia, there is significant variation in the timing of the introduction of ground-edge hatchet technology, and in the south-east, the earliest hatchet heads date to the fourth millennium BP (Dibden 1996: 35; Attenbrow 2004: 241), and no earlier than 3,500 years ago (Hiscock 2008: 155). Grinding groove sites in the local area can be no older than 3,500 years. Given that hatchets were used at the time of European occupation, the use of some grinding groove sites may have spanned this temporal range.

Grinding hatchet heads on stone creates indelible marks on the rock surface and land. Grinding groove sites may have become significant and meaningful locales over time given their reference to an important item of material culture and their strong material presence in the landscape. Sites containing high groove counts are now visually significant marked locales. While the original motivation which led people to choose to grind hatchet heads at a specific place is now not well understood, it is possible over time and as a place became increasingly embellished with grooves, that the meaning and significance of that locale was changed correspondingly. Grinding groove sites may have provided a physical and conceptual reference to the ancestral past and activities of previous generations (Dibden 2011). Because of the enduring materiality of grinding grooves, they may have been meaningfully constituted expressions of place and mnemonic of past events and personal and group history (cf. Peterson 1972: 16).

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 probable that 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 methodological approach adopted in this assessment attends particularly to location and relationality as a means of contextualising the material evidence of cultural practice across space. Given the nature of the physiography, different places within the region are likely to have been utilised for different purposes, and also by different categories of people. Landscape is more than a set of 'objective' topographic features. Landscapes are constructed out of cultural and social engagement; they are '... topographies of the social and cultural as much as they are physical contours' (David & Thomas 2008: 35). The conceptual approach to understanding landscape in this assessment is based on a concern with experience, occupation and bodily practice (*cf.* Thomas 2008: 305). The location of material evidence in different environmental and topographic contexts across the study area has the potential to be informative of different activities and social contexts. Landform and environmental elements, as measurable empirical space, will be employed methodologically to explore landuse, occupation and the nature of both recorded and unseen (ie subsurface) material evidence. Given the vast space encompassed by the subject area, this methodology allows for the identification, at a fine level of spatial resolution, of elements representative of the patterns of social life and how these may vary over space.

The practical 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 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).

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

A field survey was conducted from 7 - 11 September 2015. The results are described below. The location of Survey Unit areas and Aboriginal object site recordings are shown on Figures 2 - 10. For practical ease of reference, the Survey Units and Aboriginal object locales recorded in Dibden (2013a) are included in this current report. Given that some Survey Units recorded in Dibden (2013a) are no no-longer in the proposal or otherwise change, proposed impacts are updated as relevant (Table 2). Survey Units recorded in the 2015 field survey (Table 3) are numbered sequentially and follow those defined in Dibden (2013a).

Survey Coverage

The results of this addendum study are entirely comparable to that previously surveyed (Dibden 2013a). The ridge crests and simple slope landforms are highly eroded. Frequently topsoil is absent and the ground surface is simply bedrock shatter, cobbles and outcrops. These landforms have relatively high ground exposure and the generally absence of artefact recordings is assessed to be a true reflection of their archaeological status.

Lower simple slopes and flats were targeted during the addendum survey given that new impact areas are proposed in these contexts. Generally ground exposure and archaeological visibility was low in these areas, however, occasional large erosional scours were inspected and these were frequently found to contain relatively high artefact numbers. This result is in keeping with the predictive model of site location as outlined in Dibden (2013a).

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.

Approximately 40 kilometres of linear impact areas were surveyed during the field work; the area measures c. 198 hectares (Table 2). Ground exposures inspected included bare earth, erosion scalds, animal tracks and roads, and measured 17 hectares. Of that ground exposure area, archaeological visibility inspected (the potential artefact bearing soil profile) is estimated to have been 12 hectares. Effective Survey Coverage is calculated to have been 7% of the surveyed area.

Generally, ground exposure was relatively high on crests and simple slopes. However, as a result of several previous years of good rain, in lower valley contexts, ground surfaces were well covered with pasture. In summary, while Effective Survey Coverage was low, it is nevertheless concluded that the areas of exposure and visibility which were inspected were adequate in size to allow for a reasonably accurate assessment of artefact presence, density and variability across the landscape.

Given the relatively small number of site recordings despite surveying large areas of land and the low archaeological sensitivity of the majority of the proposal areas, a total survey has not been warranted. However, the survey results can be reasonably confidently extrapolated to any unsurveyed areas (see Tables 3 and 4), and it is concluded that the proposed wind farm subject area is generally of low archaeological and cultural potential and sensitivity. The exception to this is flats and basal simple slopes adjacent and close to higher order streams.

The majority of overhead electricity lines have not been surveyed. At this time, the location of individual power poles is not known. The impact areas in which they would be constructed are generally steep, simple slope landforms, with either very low or negligible archaeological potential.

Table 2 Survey Coverage Variables.

SU	Length m	Area Sq m	Exposure (average) %	Exposure sq m	Visibility (average) %	Visibility sq m	Effective Survey Coverage
28	1071	53550	15	8033	80	6426	12.0
29	3057	152850	10	15285	70	10700	7.0
30	642	32100	15	4815	50	2408	7.5
31	832	41600	15	6240	80	4992	12.0
32	1345	67250	15	10088	80	8070	12.0
33	1414	70700	10	7070	80	5656	8.0
34	4671	233550	15	35033	80	28026	12.0
35	409	20450	10	2045	80	1636	8.0
36	676	33800	10	3380	90	3042	9.0
37	2583	129150	15	19373	90	17435	13.5
38	3244	162200	15	24330	90	21897	13.5
39	2678	133900	5	6695	80	5356	4.0
40	3337	166850	1	1669	80	1335	0.8
41	1259	62950	1	630	80	504	0.8
42	4693	234650	1	2347	80	1877	0.8
43	152	7600	30	2280	80	1824	24.0
44	218	10900	30	3270	80	2616	24.0
45	405	20250	0	0	0	0	0.0
46	853	42650	40	17060	90	15354	36.0
47	1319	65950	1	660	90	594	0.9
48	2928	146400	1	1464	90	1318	0.9
49	1822	91100	1	911	90	820	0.9
total	39608	1980400		172674		141884	7.2

Table 3 Description of Survey Units and Aboriginal objects recorded in Dibden (2013a).

Name	Comments	Aboriginal objects	Proposed impacts
SU1	SU1 is a relatively narrow (c. 20m), gently undulating ridge crest. 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.	Predicted artefact density: very low. Nil objects.	nil
SU2	SU2 is a wide valley comprised of very gently undulating simple slopes. Quartz gravels are sparse. Exposures were infrequent due to generally thick grass cover.	Predicted artefact density: low. Nil objects.	nil
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 and a thickly treed area at south end in a very steep gully. Exposures were bare earth, and animal and vehicle tracks.	Predicted artefact density: very low. SU3/L1 SU3/L2	Wind turbine generators, access track, underground electrical connections & overhead powerline
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.	Predicted artefact density: very low. SU4/L1	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.	Predicted artefact density: very low. Nil objects.	nil
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. Exposures were bare earth, and animal and vehicle tracks.	Predicted artefact density: very low. SU6/L1	Wind turbine generators, access track and underground electrical connections SU6/L1: nil impacts
SU6A	This SU is unsurveyed. It is a ridge crest.	Predicted artefact density: very low. Nil known objects.	Wind turbine generators, access track, underground electrical connections & overhead powerline
SU7	SU7 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. Exposures were bare earth, erosion, and animal and vehicle tracks.	Predicted artefact density: very low. SU7/L1	nil
SU8	SU8 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. Exposures were infrequent	Predicted artefact density: very low. SU8/L1	Wind turbine generators, access track and underground electrical connections

Name	Comments	Aboriginal objects	Proposed impacts
	due to generally thick grass cover.		SU8/L1: nil impacts
SU9	SU9 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.	Predicted artefact density: very low. Nil objects.	nil
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.	Predicted artefact density: low. Nil known objects.	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. Exposures were bare earth, and animal and vehicle tracks.	Predicted artefact density: very low. Nil known objects.	Wind turbine generators, access track, underground electrical connections & overhead powerline
SU12	A series of grassed, generally very steep (up to 38°), simple slopes. 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.	Predicted artefact density: negligible. Nil known objects.	Overhead powerline
SU12A	This SU is unsurveyed. It is a series of generally moderate to steep simple slopes	Predicted artefact density: negligible. Nil known objects.	Overhead powerline and access
SU13	SU13 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. Exposures were bare earth, and animal and vehicle tracks.	Predicted artefact density: very low. Nil known objects.	Wind turbine generators, access track and underground electrical connections
SU14	A series of grassed, gentle to moderate gradient, simple slopes and spur crests. 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.	Predicted artefact density: very low. Nil known objects.	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. 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.	Predicted artefact density: very low. SU15/L1.	nil
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.	Predicted artefact density: very low. Nil known objects.	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 (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. Exposures were bare earth and animal tracks.	Predicted artefact density: very low. SU17/L1 SU17/L2	Wind turbine generators, access track, underground electrical connections & overhead powerline
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	Predicted artefact density: very low.	Wind turbine generators, access track and underground electrical

Name	Comments	Aboriginal objects	Proposed impacts
	areas are treed with regrowth (at south end) and elsewhere given over to pasture. Exposures were primarily bare earth.	SU18/L1	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. Exposures were bare earth, and animal and vehicle tracks.	Predicted artefact density: very low. Nil known objects.	Wind turbine generators, access track and underground electrical connections
SU19A	SU19A is unsurveyed. It is a ridge crest.	Predicted artefact density: very low.	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. Exposures were primarily bare earth.	Predicted artefact density: very low. Nil known objects.	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. Exposures were bare earth, and animal and tracks.	Predicted artefact density: very low. SU21/L1	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.	Predicted artefact density: very low. Nil known objects.	nil
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. Exposures were primarily bare earth, with some animal and vehicle tracks.	Predicted artefact density: very low. SU23/L1 SU23/L2 SU23/L3	Wind turbine generators, access track and underground electrical connections SU23/L2: nil impacts
SU23A	SU23A is unsurveyed. It is steep simple slopes.	Predicted artefact density: negligible. Nil known objects.	Access and overhead transmission lines
SU23B	SU23B is unsurveyed. It is a series of basal simple slopes.	Predicted artefact density: low/moderate. Nil known objects.	Access
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. Exposures were	Predicted artefact density: very low. SU24/L1	Wind turbine generators, access track and underground electrical connections

Name	Comments	Aboriginal objects	Proposed impacts
	primarily bare earth, with some animal tracks.		
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 and treed with regrowth scrub and Sifton bush in the north and south. Exposures were primarily bare earth, with some animal and vehicle tracks.	Predicted artefact density: very low. SU24/L1	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 and treed with regrowth scrub in the south. Exposures were primarily bare earth, with some animal and vehicle tracks.	Predicted artefact density: very low. Nil known objects.	Wind turbine generators, access track and underground electrical connections
SU26A	SU26A is unsurveyed. It is a broad ridge crest.	Predicted artefact density: very low. Nil known objects.	Wind turbine generators, access track and underground electrical connections
SU26B	SU26A is unsurveyed. It is a moderate to steep gradient simple slope.	Predicted artefact density: negligible. Nil known objects.	Access track
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. Exposures were primarily bare earth, with some animal tracks.	Predicted artefact density: very low. SU27/L1	Wind turbine generators, access track and underground electrical connections

Table 4 Description of Survey Units recorded during the 2015 field survey.

Name	Comments	Aboriginal objects	Proposed impacts
SU28	SU28 is a series of gently undulating crests and simple slopes. The geology is shale/slate and soils are very rocky with high levels of shale shatter. The landforms are eroded. Quartz gravels are sparse. An ephemeral 2nd order drainage line is highly eroded. Some areas are treed with regrowth and Sifton bush (at south end) and elsewhere given over to pasture. Exposures were primarily a formed road and adjacent bare earth and erosion. The existing road is well formed and disturbed over a width of c. 6m.	Predicted artefact density: very low. SU28/L1 SU28/L2	Access road on existing formed road
SU29	SU29 is a series of gently to moderately undulating, east facing simple slopes. The geology is shale/slate and soils are thin and very rocky (shale shatter, cobbles and bedrock). Quartz gravels are sparse. The SU is pasture. Exposures were tracks, bare earth and erosion.	Predicted artefact density: very low. SU29/L1	Access track, underground electrical, concrete batching plant, part construction compound and wind turbine generators
SU30	SU30 is a basal simple slope/flat. The background geology is shale/slate, however, soils are aggrading, deep silty loam. A 2nd order drainage line is highly eroded. The SU has pasture on the west side of creek and sifton bush on the east. Exposures were bare earth, graded road and drainage, and erosional scours.	Predicted artefact density: moderate. SU30/L1 SU30/L2 SU30/L3	Access track and part construction compound
SU31	SU31 is a series of gently to moderately undulating simple slopes. The geology is shale/slate and soils are thin and very rocky (shale shatter, cobbles and bedrock). Quartz gravels are sparse. The SU is pasture at north end and regrowth scrub at south end. Exposures were tracks, bare earth and erosion.	Predicted artefact density: very low. Nil known objects.	Overhead powerline
SU32	SU32 is forested steep simple slopes and gentle spur crests. The geology is shale/slate and soils are thin and very rocky (shale shatter, cobbles and bedrock). Quartz gravels are sparse. Exposures were old graded tracks, bare earth and erosion.	Predicted artefact density: very low. Nil known objects.	Access track, underground electrical and wind turbine generators
SU32A	SU32A is unsurveyed. It is a ridge crest.	Predicted artefact density: very low. Nil known objects.	Access track, underground electrical and wind turbine generators
SU33	SU33 is valley floor comprised of flats and very gentle simple (basal) slopes. The geology is shale/slate and soils are very rocky (shale shatter, cobbles and bedrock). Quartz gravels are sparse. Exposures were graded tracks, bare earth and erosion. The area closer to the creek is a relatively deep alluvium.	Predicted artefact density: low/moderate. SU33/L1 SU33/L2 SU33/L3 SU33/L4 SU33/L5 SU33/L6	Access track

Name	Comments	Aboriginal objects	Proposed impacts
SU34	SU34 is series of moderate to steep simple slopes and ridge crests. The geology is shale/slate and soils are thin and very rocky lithosol (shale shatter, cobbles and bedrock). Exposures were old graded tracks, bare earth and erosion.	Predicted artefact density: very low. SU34/L1	Access track, underground electrical and wind turbine generators
SU33A	SU33A is unsurveyed. It is a series of simple slopes of low gradient.	Predicted artefact density: low. Nil known objects.	Access track
SU35	SU35 is a drainage depression. The geology is shale/slate and soils are thin and very rocky (shale shatter, cobbles and bedrock). Exposures bare earth and erosion.	Predicted artefact density: low. Nil known objects.	Access track
SU36	SU36 is a series of moderately to steeply undulating crests. The geology is shale/slate and soils are thin and very rocky lithosols (shale shatter, cobbles and bedrock). Quartz gravels are sparse. The SU is covered with Sifton bush. Exposures were bare earth and erosion.	Predicted artefact density: very low. Nil known objects.	Access track and wind turbine generators
SU37	SU37 is a series of gently undulating low crests and simple slopes. The geology is shale/slate and soils are thin and very rocky (shale shatter, cobbles and bedrock). Quartz gravels are sparse. The SU is pasture at east end and regrowth scrub/sifton bush at west end. Exposures were tracks, bare earth and erosion.	Predicted artefact density: low. SU37/L1 SU37/L2 SU37/L3	Access track
SU38	SU38 is a series of moderately to steeply undulating crests. The geology is shale/slate and soils are thin and very rocky (shale shatter, cobbles and bedrock). Quartz gravels are sparse. The SU is covered with Sifton bush. Exposures were old tracks, bare earth and erosion.	Predicted artefact density: very low. Nil known objects.	Access track and wind turbine generators
SU39	SU39 is a series of gently undulating basal simple slopes. The geology is shale/slate and soils are thin and very rocky (shale shatter, cobbles and bedrock). Quartz gravels are sparse. The SU is pasture. Exposures were bare earth and erosion.	Predicted artefact density: very low. Nil known objects.	Overhead powerline and substation
SU40	SU40 is a series of gently undulating simple slopes and relatively low crests. The geology is shale/slate and soils are thin and very rocky (shale shatter, cobbles and bedrock). Quartz gravels are sparse. The SU is pasture. Exposures were bare earth and erosion.	Predicted artefact density: very low to low. SU40/L1	Overhead powerline
SU40A	SU40A is unsurveyed. It is a series of gently undulating simple slopes and relatively low crests	Predicted artefact density: negligible. Nil known objects.	Overhead powerline
SU41	SU41 is a series of gently undulating simple slopes. The geology is shale/slate and soils are thin and very rocky (shale shatter, cobbles and bedrock). Quartz gravels are sparse. The SU is pasture. Exposures were bare earth and erosion.	Predicted artefact density: very low. Nil known objects.	Overhead powerline and substation

Name	Comments	Aboriginal objects	Proposed impacts
SU42	SU41 is a series of gently undulating simple slopes. The geology is shale/slate and soils are thin and very rocky (shale shatter, cobbles and bedrock). Quartz gravels are sparse. The SU is pasture. Exposures were road, bare earth and erosion.	Predicted artefact density: very low. SU42/L1 AHIMS 51-4-58	Overhead powerline, substation, construction compound and office
SU42A	This SU is unsurveyed. It is a series of generally gentle to moderate simple slopes	Predicted artefact density: negligible. AHIMS 51-4-58	Overhead powerline and access
SU43	SU43 is a knoll on a ridge crest. The geology is shale/slate and soils are thin and very rocky (shale shatter, cobbles and bedrock). Quartz gravels are sparse. Exposures were bare earth and erosion.	Predicted artefact density: very low. Nil known objects.	Access track and wind turbine generator
SU44	SU44 is a spur crest on a ridge crest. The geology is shale/slate and soils are thin and very rocky (shale shatter, cobbles and bedrock). Quartz gravels are sparse. Exposures were bare earth and erosion.	Predicted artefact density: very low. Nil known objects.	Access track and wind turbine generator
SU45	SU45 is simple slope in a wide valley. It is very gently inclined and east facing. The site is pasture and no visibility was present.	Predicted artefact density: very low. Nil known objects.	Construction compound and Office
SU46	SU46 is a ridge crest. The geology is shale/slate and soils are thin and very rocky lithosol (shale shatter, cobbles and bedrock). Quartz gravels are sparse. Exposures were bare earth and erosion.	Predicted artefact density: very low. Nil known objects.	Access track and wind turbine generator
SU47	SU47 is a drainage depression/basal slope interface in a valley. It is very gently inclined and east facing. The site is regrowth scrub. Exposures are bare earth and large areas of sheet and rill erosion. The SU is highly disturbed.	Predicted artefact density: low. SU47/L1 SU47/L2	Access track and overhead powerline
SU48	SU48 is a series of moderately undulating crests. The geology is shale/slate and soils are thin and very rocky (shale shatter, cobbles and bedrock). Quartz gravels are sparse. The SU is pasture. Exposures were old road, bare earth and erosion.	Predicted artefact density: very low. Nil known objects.	Access track and overhead powerline
SU48A	SU48A is unsurveyed. It is moderate gradient simple slopes.	Predicted artefact density: negligible. Nil known objects.	Access track and overhead powerline
SU49	SU49 is a drainage depression/basal slope interface in a valley. It is very gently inclined and east facing. The site is pasture.	Predicted artefact density: low. Nil known objects.	Construction compound, substation, concrete batching plant and access track
SU49A	SU49A is unsurveyed. It is a series of gentle simple slopes	Predicted artefact density: very low. Nil known objects	Access tracks and overhead powerline

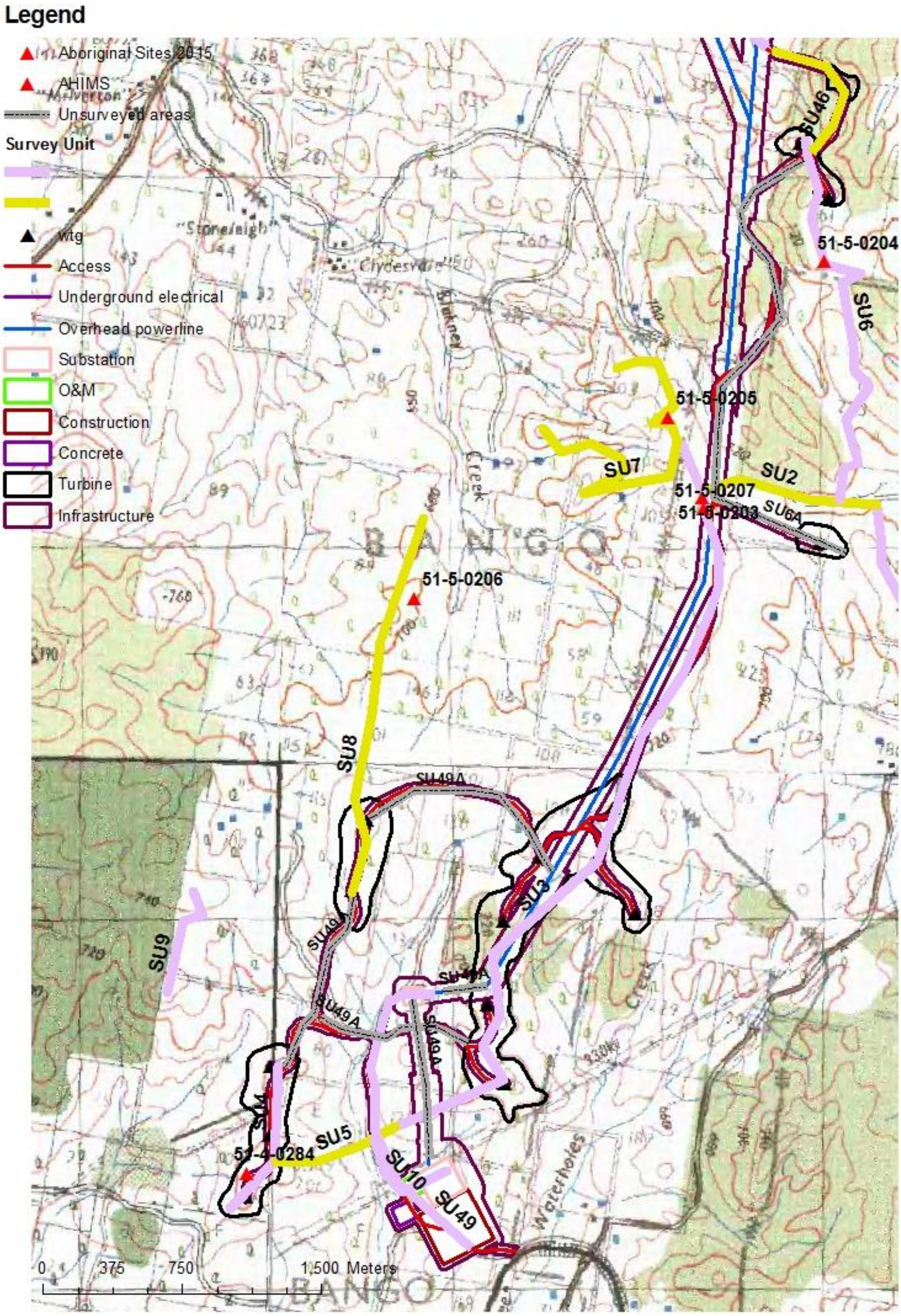

Figure 2 Location of Survey Units and Aboriginal object locales in respect of proposed wind turbine generator layout; south end of proposal area.

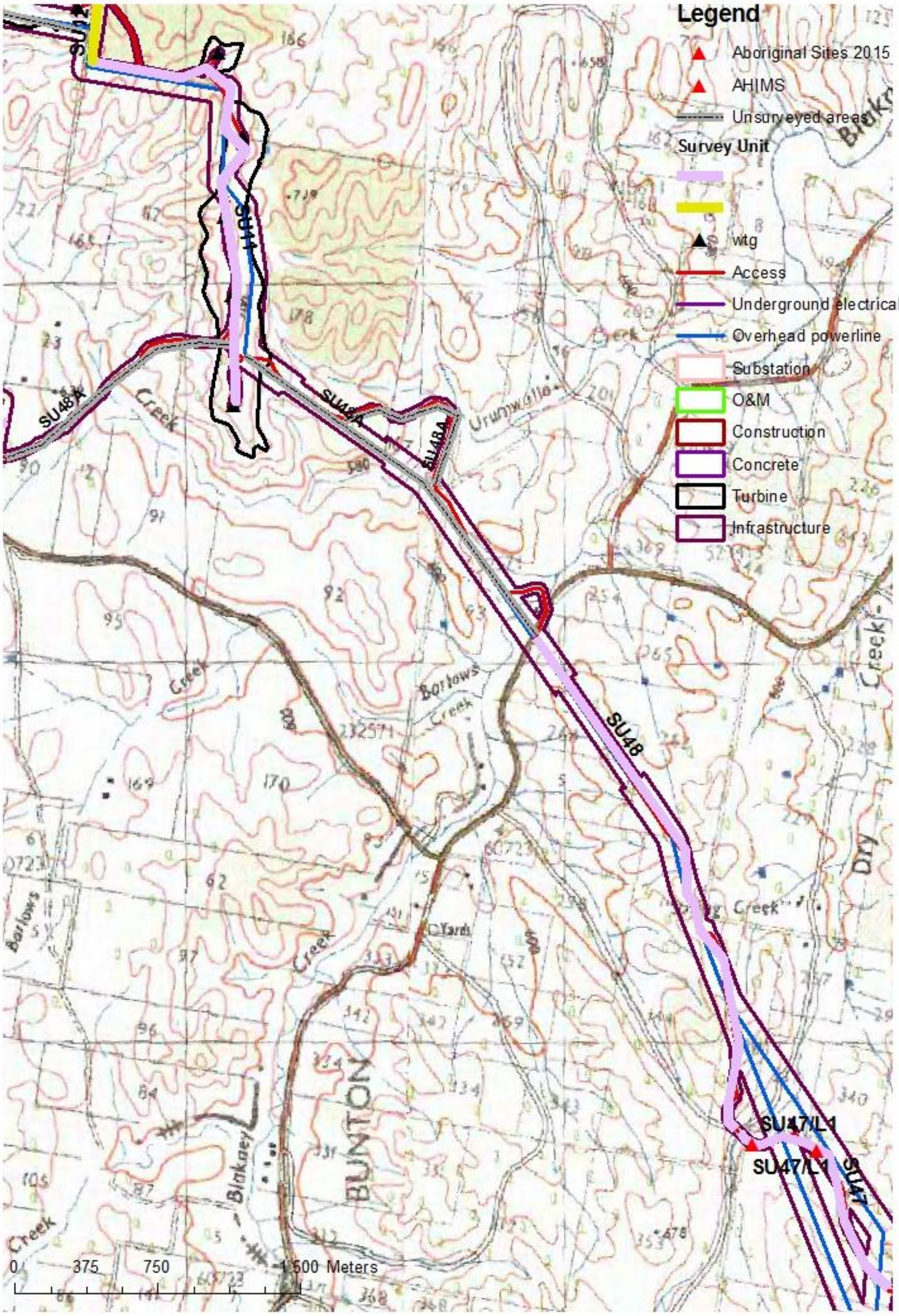

Figure 3 Location of Survey Units and Aboriginal object locales in respect of proposed wind turbine generator layout; south-mid end of proposal area.

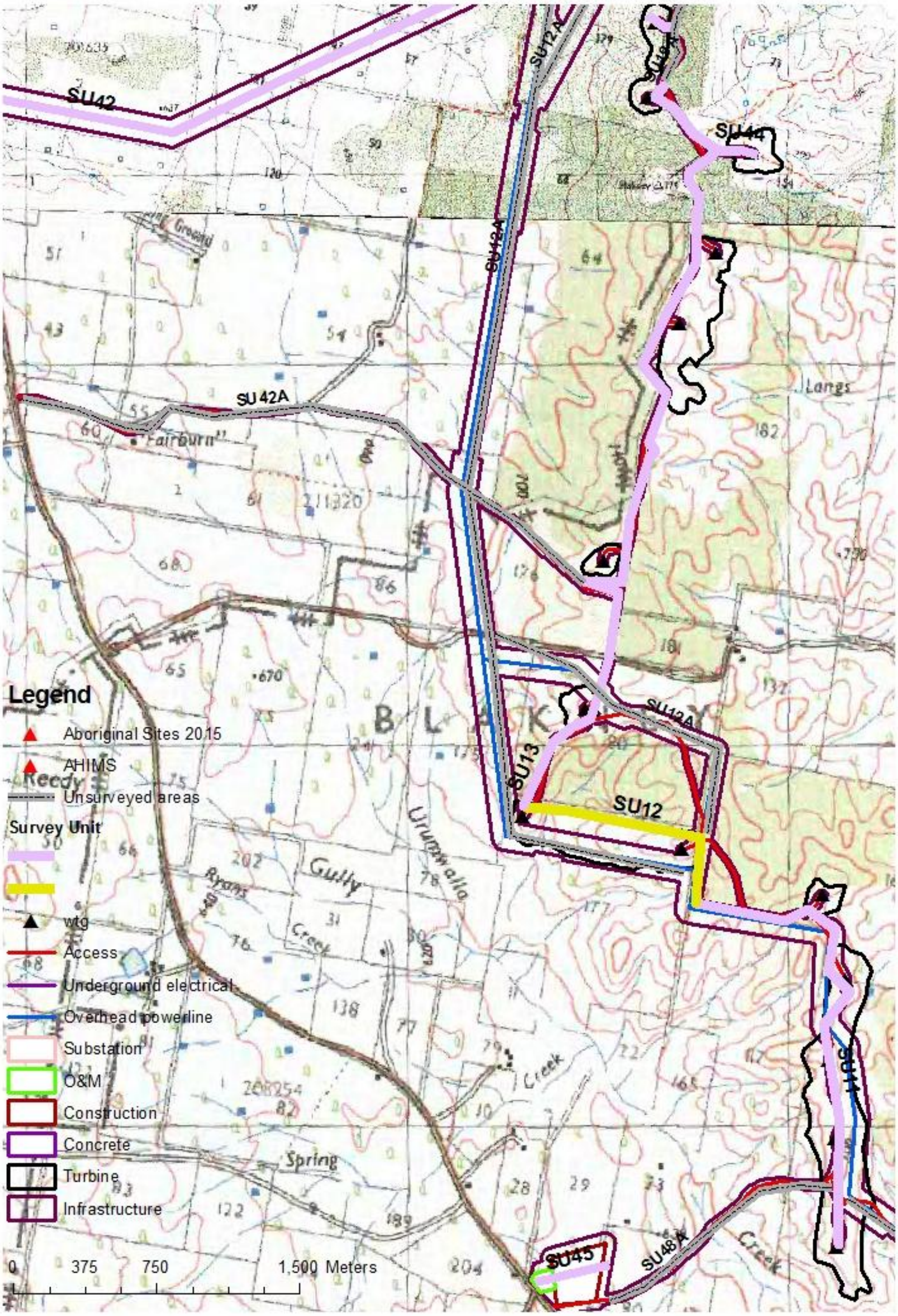

Figure 4 Location of Survey Units and Aboriginal object locales in respect of proposed wind turbine generator layout; mid end of proposal area.

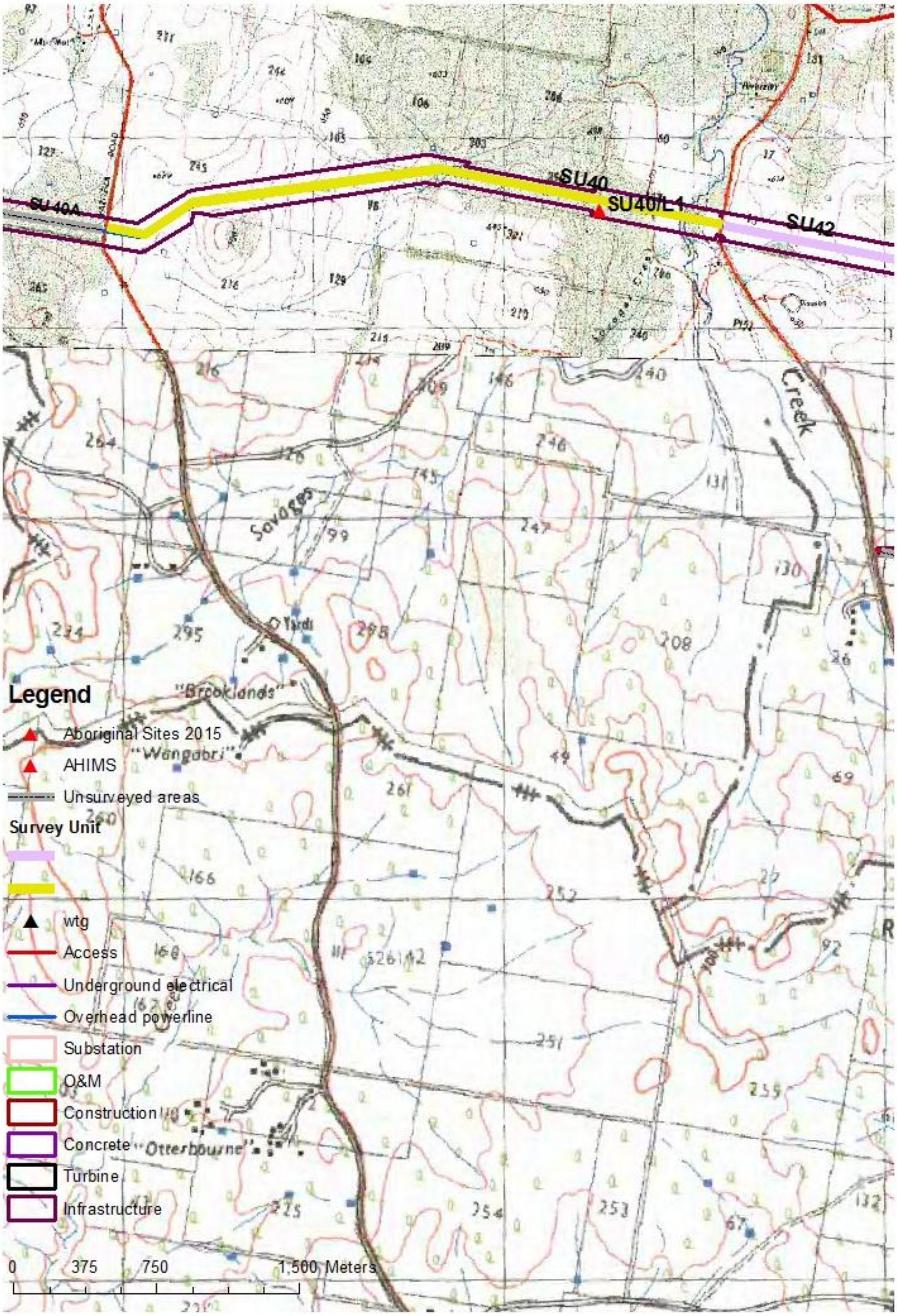

Figure 5 Location of Survey Units and Aboriginal object locales in respect of proposed layout - Overhead Electricity.

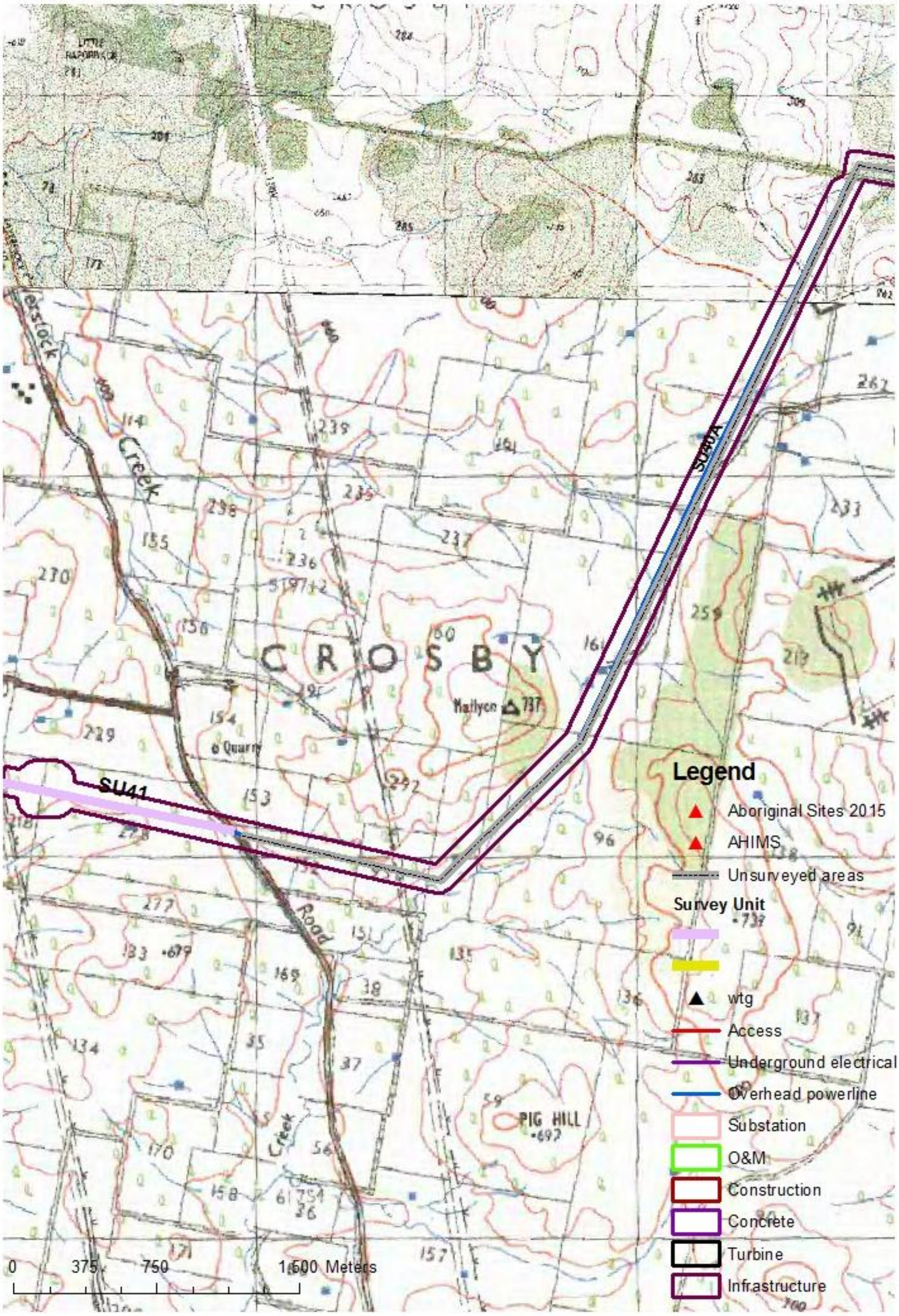

Figure 6 Location of Survey Units in respect of proposed layout - Overhead Electricity.

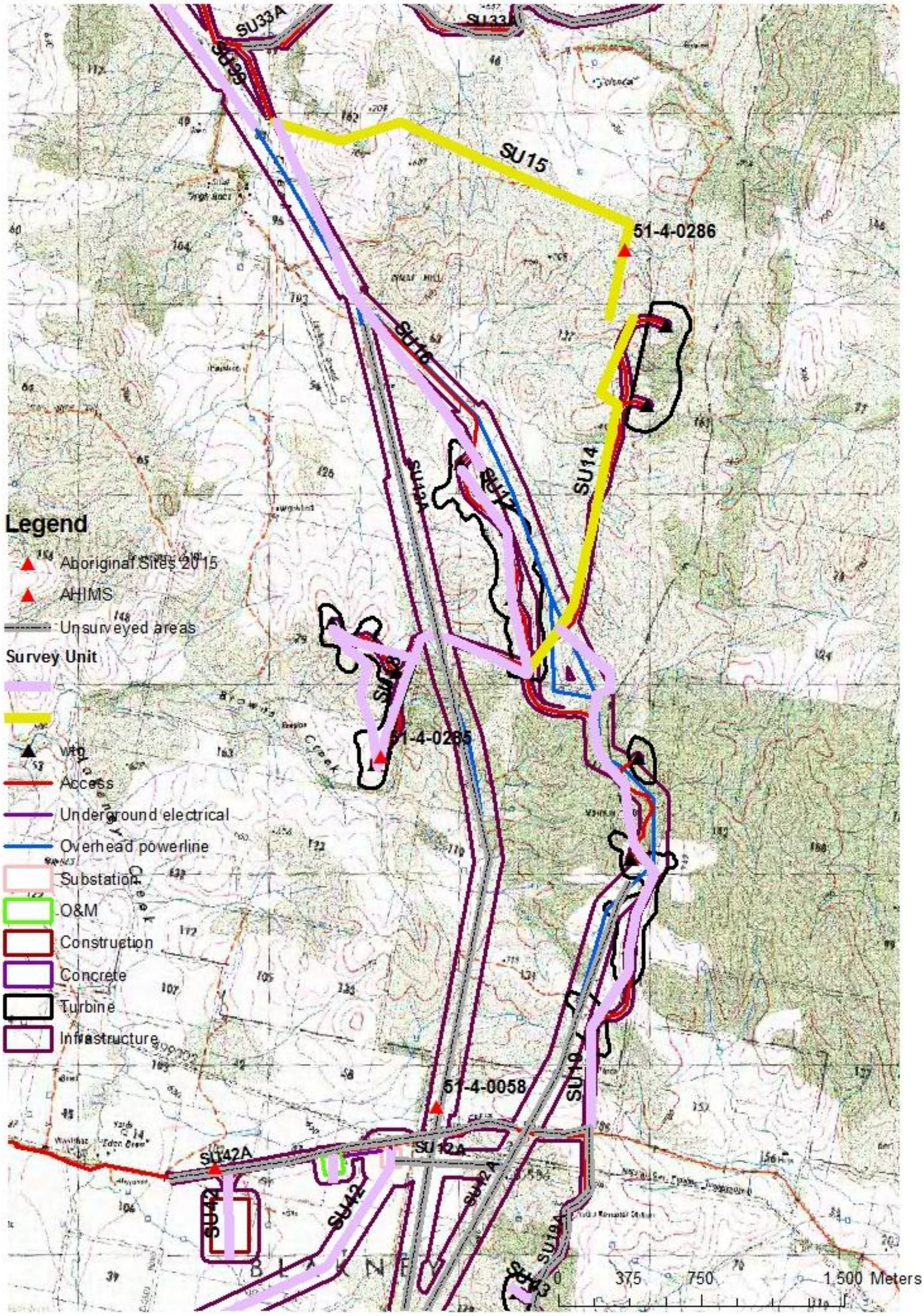

Figure 7 Location of Survey Units and Aboriginal object locales in respect of proposed wind turbine generator layout; mid end of proposal area.

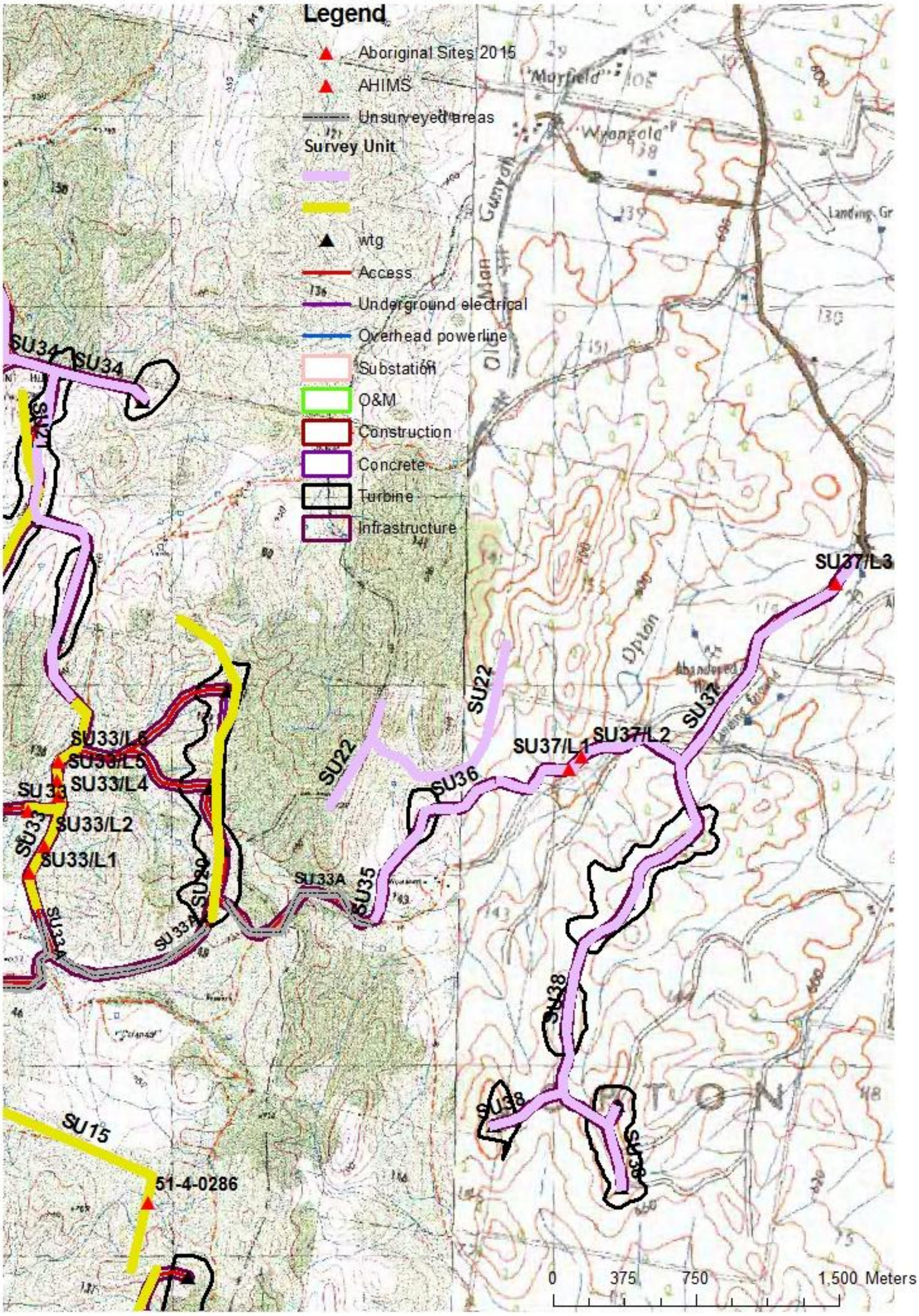

Figure 8 Location of Survey Units and Aboriginal object locales in respect of proposed wind turbine generator layout; mid north-east end of proposal area.

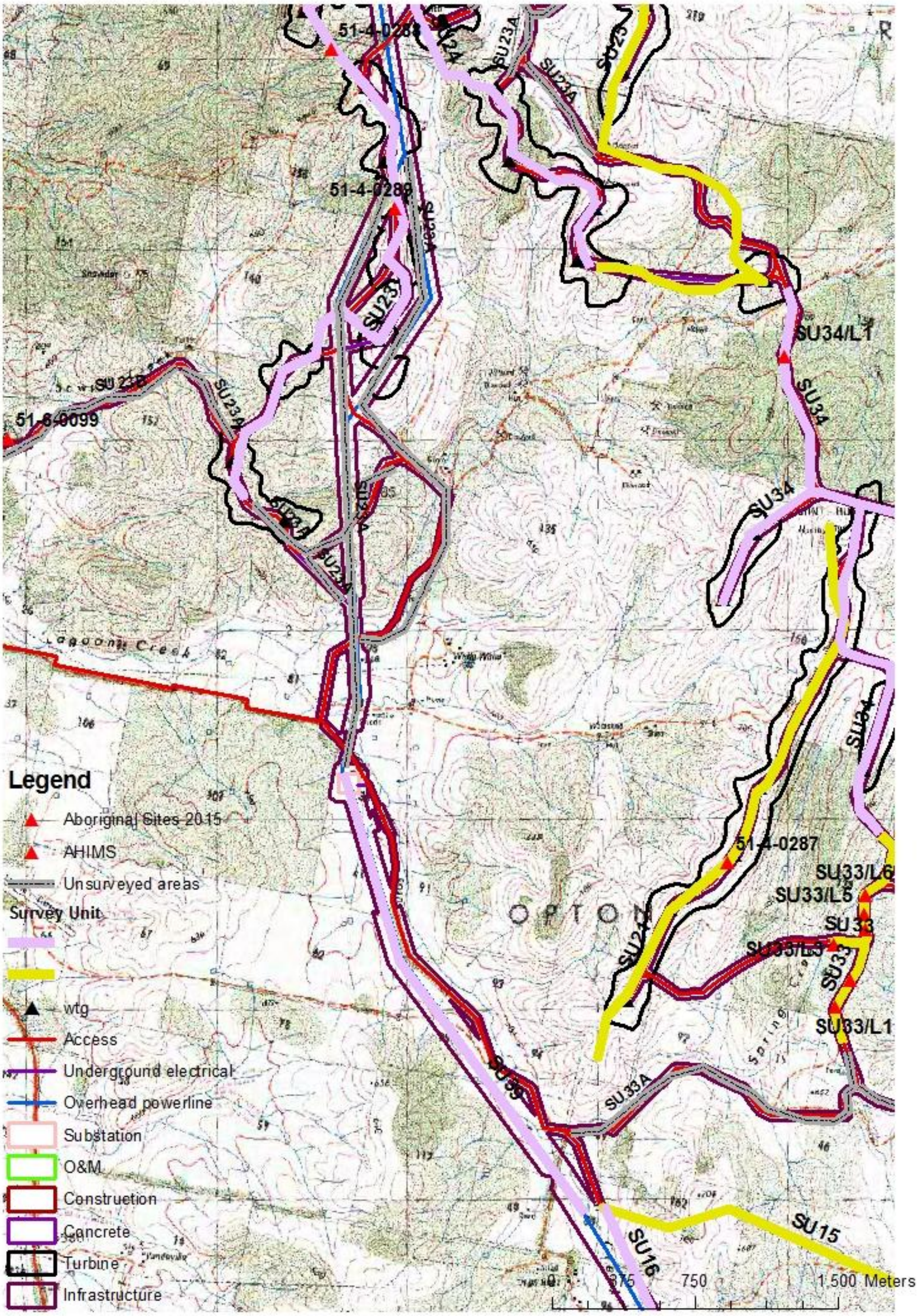

Figure 9 Location of Survey Units and Aboriginal object locales in respect of proposed wind turbine generator layout; mid north-west end of proposal area.

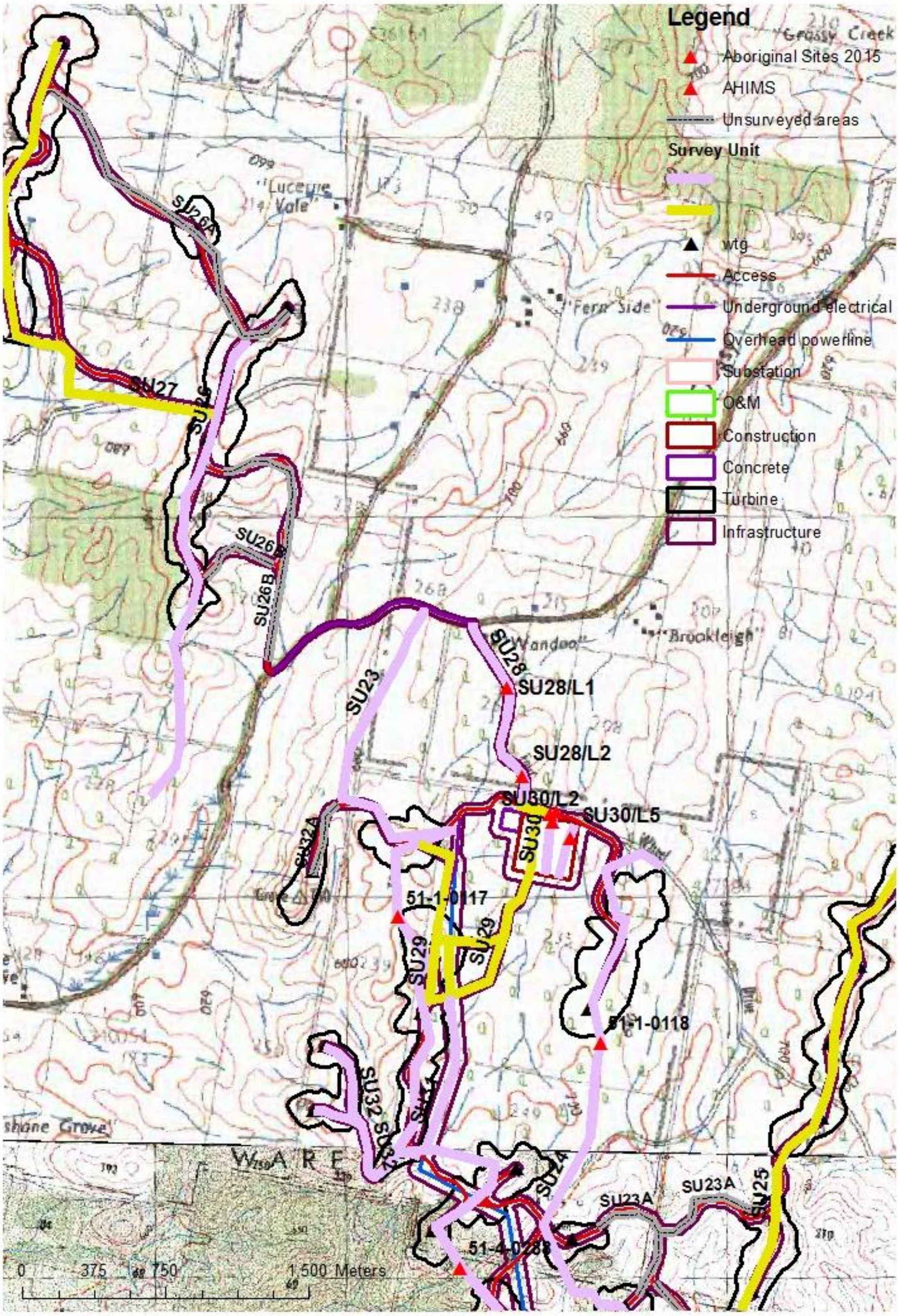

Figure 10 Location of Survey Units and Aboriginal object locales in respect of proposed wind turbine generator layout; north end of proposal area.

Aboriginal Object Recordings

The Aboriginal object locales recorded during the 2012 survey are summarised in Table 4. These sites are described fully in Dibden (2013a). The Aboriginal object sites recorded in 2015 are summarised in Table 5 and described in detail below. The stone artefacts are listed in Table 6.

Table 5 Summary of Aboriginal object locales recorded during the 2012 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

Table 6 Summary of Aboriginal object locales recorded during the 2015 field survey.

Name	Comments	Easting	Northing
SU28/L1	4 artefacts in an erosion scour adjacent to a farm track	678957	6183284
SU28/L2	1 artefact in a bare earth exposure adjacent to a farm road	679038	6182816
SU29/L1	1 artefact on the edge of a farm road	679186	6182619
SU30/L1	Artefacts and subsurface deposit in erosion scours	679220	6182629
SU30/L2	Artefacts and subsurface deposit in erosion scours	679230	6182617
SU30/L3	Artefacts and subsurface deposit in erosion scours	679295	6182491
SU33/L1	9 artefacts on a farm track	681363	6175199
SU33/L2	2 artefacts on a 2m long section of farm track	681445	6175339
SU33/L3	11 artefacts in an erosion scour adjacent to a drainage line	681355	6175527
SU33/L4	3 artefacts on a 0.5 m long section of farm track	681520	6175605
SU33/L5	1 artefact on a farm track	681512	6175688
SU33/L6	8 artefacts on a section of farm track	681520	6175786
SU34/L1	1 artefact on an old overgrown track in regrowth forest	681097	6178616
SU37/L1	3 artefacts on a section of farm track	684203	6175746
SU37/L2	17 artefacts on a farm track, table drain and bare earth	684264	6175810
SU37/L3	1 artefact on a farm track	685603	6176720
SU40/L1	1 artefact in an erosion feature	676618	6167800
SU42/L1	1 artefact adjacent to a road	679835	6168650
SU47/L1	1 artefact in a large erosion scour	685439	6157620
SU47/L2	3 artefacts in bare earth patches	685099	6157656

Table 7 List of stone artefacts recorded during the 2015 fieldwork.

#	Site #	Material	Colour	Type	Size	Comments
1	SU28/L1	Chert	Dark grey	Core fragment	3	
2	SU28/L1	Chert	Dark grey	Unmodified flake	5	
3	SU28/L1	Chert	Dark grey	Flaked piece	3	
4	SU28/L1	Chert	Dark grey	Flake	3	
5	SU28/L2	Chert	Dark grey	Core fragment	4	30% terrestrial cortex
6	SU29/L1	Silcrete	Light grey	Core fragment	3	
7	SU30/L1	Silcrete	Grey	Flake	2	
8	SU30/L1	Silcrete	Grey	Flake	2	
9	SU30/L1	Quartz	Milky	Compression flake	4	
10	SU30/L1	Silcrete	Grey	Flake	2	
11	SU30/L1	Silcrete	Grey	Flake	2	
12	SU30/L1	Silcrete	Grey	Flake	2	
13	SU30/L1	Silcrete	Grey	Flake	2	
14	SU30/L1	Quartz	Milky	Core	4	Single platform, numerous scars
15	SU30/L1	Quartz	Milky	Flake fragment	3	
16	SU30/L1	Silcrete	Brown	Medial flake portion	2	
17	SU30/L1	Silcrete	Grey	Flake	5	
18	SU30/L1	Silcrete	Grey	Flake fragment	2	
19	SU30/L1	Chert	Black	Flake	3	
20	SU30/L1	Chert	Black	Flake fragment	2	
21	SU30/L1	Silcrete	Brown	Flake	2	
22	SU30/L1	Silcrete	Grey	Flake	2	
23	SU30/L1	Silcrete	Grey	Proximal flake portion	3	
24	SU30/L1	Silcrete	Brown	Flake	2	
25	SU30/L1	Silcrete	White	Flake fragment	3	
26	SU30/L1	Quartz	Milky	Flake fragment	1	
27	SU30/L1	Silcrete	Grey	Medial flake portion	2	
28	SU30/L1	Quartz	Milky	Flake fragment	2	
29	SU30/L1	Quartz	Milky	Flake fragment	2	
30	SU30/L2	Quartz	Milky	Flake	2	
31	SU30/L2	Chert	Black	Flake fragment	4	
32	SU30/L2	Quartz	Milky	Flake fragment	2	
33	SU30/L2	Chert	Black	Flake fragment	2	
34	SU30/L2	Chert	Black	Medial flake portion	1	
35	SU30/L2	Chert	Black	Flake fragment	2	
36	SU30/L2	Chert	Black	Flake	3	
37	SU30/L2	Quartz	Milky	Flake fragment	3	
38	SU30/L2	Quartz	Milky	Flake fragment	2	
39	SU30/L2	Quartz	Milky	Flake fragment	1	
40	SU30/L2	Quartz	Translucent	Flake fragment	1	
41	SU30/L2	Quartz	Translucent	Flaked piece	2	
42	SU30/L2	Quartz	Milky	Flaked piece	2	
43	SU30/L2	Silcrete	Brown	Flake fragment	2	
44	SU30/L2	Chert	Grey	Flake	3	
45	SU30/L2	Chert	Grey	Flake fragment	3	

#	Site #	Material	Colour	Type	Size	Comments
46	SU30/L2	Chert	Grey	Flake fragment	2	
47	SU30/L2	Quartz	Milky	Core fragment	4	
48	SU30/L2	Quartz	Milky	Flake fragment	2	
49	SU30/L2	Chert	Black	Flake fragment	3	
50	SU30/L2	Quartz	Milky	Flake fragment	2	
51	SU30/L2	Chert	Grey	Core fragment	3	
52	SU30/L3	Quartz	Milky	Flake	4	Longitudinally split
53	SU30/L3	Quartz	Milky	Flake fragment	4	
54	SU30/L3	Quartz	Milky	Flaked piece	large	Embedded in ground
55	SU30/L3	Silcrete	Brown	Flake	3	
56	SU30/L3	Chert	Black	Bondi point	32 x 11 x 6	Broken tip
57	SU30/L3	Quartz	Milky	Flaked piece	5	
58	SU30/L3	Quartz	Milky	Flaked piece	2	
59	SU30/L3	Quartz	Milky	Bifacial core	6	
60	SU30/L3	Quartz	Milky	Flake fragment	2	
61	SU30/L3	Quartz	Milky	Flake fragment	2	
62	SU30/L3	Quartz	Milky	Flake fragment	1	
63	SU30/L3	Silcrete	Grey	Flake	4	Silcrete material predominantly grey, but with a tinge of red
64	SU30/L3	Silcrete	Grey	Flake	4	
65	SU30/L3	Chert	Brown/purple	Flake	3	
66	SU30/L3	Quartz	Milky	Flake	2	
67	SU30/L3	Silcrete	Grey	Flake	3	Part of c. 40 artefacts most probably representing a knapping event, over an area of c. 3 x 3 m.
68	SU30/L3	Silcrete	Brown	Flake	4	
69	SU30/L3	Quartz	Milky	Flake	2	
70	SU30/L3	Chert	Brown	Flake	2	
71	SU30/L3	Chert	Brown	Flake	2	
72	SU30/L3	Chert	Brown	Flake	3	
7	SU30/L3	Chert	Brown	Flake	2	
3	SU30/L3	Silcrete	Orange mottled	Flake	2	
74	SU30/L3	Quartz	Milky	Flake	1	
75	SU30/L3	Quartz	Milky	Flake	2	
76	SU30/L3	Quartz	Milky	Flake	2	
77	SU30/L3	Quartz	Milky	Flake	2	
78	SU30/L3	Quartz	Milky	Flake	2	
79	SU30/L3	Quartz	Milky	Flake	1	
80	SU30/L3	Chert	Black	Backed artefact	23 x 15 x 5	Triangular crescent shaped, backed on 2 margins
81	SU30/L3	Quartz	Milky	Flake	2	
82	SU30/L3	Quartz	Milky	Flake	3	
83	SU30/L3	Chert	Black	Flaked piece	4	
84	SU30/L3	Quartz	Milky	Flake fragment	3	
85	SU30/L3	Chert	Black	Flake fragment	2	
86	SU30/L3	Silcrete	Brown	Flake fragment	2	
87	SU30/L3	Quartz	Milky	Flake	2	

#	Site #	Material	Colour	Type	Size	Comments
88	SU30/L3	Quartz	Milky	Flake	3	
89	SU30/L3	Quartz	Milky	Flake fragment	2	
90	SU30/L3	Silcrete	Brown	Flake fragment	4	
91	SU30/L3	Silcrete	Brown	Bondi point	26 x 9 x 4	
92	SU30/L3	Chert	Black	Flake fragment	2	
93	SU30/L3	Quartz	Milky	Flaked piece	3	
94	SU30/L3	Quartz	Milky	Flake	3	
95	SU30/L3	Quartz	Milky	Flake	2	
96	SU30/L3	Quartz	Milky	Flake	2	
97	SU30/L3	Chert	Black	Flake fragment	3	
98	SU30/L3	Chert	Black	Bondi point	21 x 9 x 4	
99	SU30/L3	Chert	Black	Flaked piece	2	
100	SU30/L3	Chert	Grey	Flake	2	
101	SU30/L3	Chert	Grey	Flaked piece	1	
102	SU30/L3	Quartz	Milky	Flake	3	
103	SU30/L3	Quartz	Milky	Flake	3	
104	SU30/L3	Quartz	Milky	Flake fragment	2	
105	SU30/L3	Quartz	Milky	Flake	3	
106	SU30/L3	Quartz	Milky	Flake fragment	2	
107	SU30/L3	Chert	Grey	Flake	2	
108	SU30/L3	Chert	Grey	Flaked piece	1	
109	SU30/L3	Quartz	Milky	Flake fragment	1	
110	SU30/L3	Quartz	Milky	Flake fragment	2	
111	SU30/L3	Quartz	Milky	Flake fragment	2	
112	SU30/L3	Quartz	Milky	Flake fragment	1	
113	SU30/L3	Silcrete	Grey	Blade flake	7	
114	SU30/L3	Silcrete	Brown	Flake	3	
115	SU37/L1	Quartz	Milky	Flake	5	
116	SU37/L1	Quartz	Milky	Flaked piece	4	
117	SU37/L1	Quartz	Milky	Flake fragment	3	
118	SU37/L2	Chert	Black	Flake	2	
119	SU37/L2	Chert	Black	Flake	2	
120	SU37/L2	Chert	Black	Flake fragment	3	
121	SU37/L2	Chert	Black	Flake	3	
122	SU37/L2	Quartz	Milky	Flake	3	
123	SU37/L2	Chert	Black	Flake	3	
124	SU37/L2	Chert	Black	Flake	3	
125	SU37/L2	Chert	Black	Flake fragment	3	
126	SU37/L2	Chert	Black	Medial flake portion	2	
127	SU37/L2	Chert	Black	Flake	2	
128	SU37/L2	Chert	Black	Flake	3	
129	SU37/L2	Chert	Black	Flake	2	
130	SU37/L2	Quartz	Milky	Flake fragment	2	
131	SU37/L2	Chert	Black	Flake fragment	2	
132	SU37/L2	Chert	Black	Core	3	
133	SU37/L2	Chert	Black	Flake fragment	3	
134	SU37/L2	Chert	Black	Flaked piece	2	
135	SU37/L3	Chert	Black	Core fragment		
136	SU40/L1	Quartz	Milky	Compression flake	5	Bifacial crushing at one end
137	SU42/L1	Rhyolite	Brown	Flake	3	
138	SU47/L1	Silcrete	Brown	Flake	6	Overhang removal
139	SU47/L2	Tuff	Brown	Bifacial core	6	50% terrestrial cortex

#	Site #	Material	Colour	Type	Size	Comments
140	SU47/L2	Quartz	Milky	Proximal flake portion	2	
141	SU47/L2	?	weathered	flake	7	
142	SU47/L2	?	weathered	flaked peice	6	
143	SU33/L1	Chert	Black	Flake fragment	2	
144	SU33/L1	Silcrete	Brown	Flake fragment	1	
145	SU33/L1	Chert	Black	Proximal flake portion	1	
146	SU33/L1	Silcrete	Brown	Proximal flake portion	2	
147	SU33/L1	Chert	Black	Flake fragment	1	
148	SU33/L1	Silcrete	Brown	Flaked piece	1	
149	SU33/L1	Chert	Black	Flaked piece	2	
150	SU33/L1	Chert	Black	Distal flake portion	2	
151	SU33/L1	Silcrete	Brown	Flake fragment	1	SU33/L1 could be two dispersed knapping events
152	SU33/L2	Tuff	Brown	Flake	3	
153	SU33/L2	Quartz	Milky	Possible flake	1	
154	SU33/L3	Quartz	Milky	Flake fragment	2	
155	SU33/L3	Quartz	Milky	Medial flake portion	2	
156	SU33/L3	Quartz	Milky	Flake	2	
157	SU33/L3	Quartz	Milky	Flake fragment	2	
158	SU33/L3	Quartz	Milky	Compression flake	3	
159	SU33/L3	Quartz	Milky	Flake fragment	2	
160	SU33/L3	Quartz	Milky	Flake fragment	2	
161	SU33/L3	Quartz	Milky	Flake	2	
162	SU33/L3	Quartz	Milky	Flake fragment	2	
163	SU33/L3	Quartz	Milky	Core fragment	5	
164	SU33/L3	Quartz	Milky	Flaked piece	2	
165	SU33/L4	Silcrete	Grey	Bifacial core	5	
167	SU33/L4	Silcrete	Grey	Flake fragment	1	
168	SU33/L4	Silcrete	Grey	Flake fragment	2	
169	SU33/L5	Silcrete	Grey	Core fragment	3	
170	SU33/L6	Quartz	Milky	Flake fragment	3	
171	SU33/L6	Quartz	Milky	Flake	2	
172	SU33/L6	Quartz	Milky	Flake fragment	3	
173	SU33/L6	Quartz	Milky	Flake fragment	2	
174	SU33/L6	Quartz	Milky	Flake fragment	2	
175	SU33/L6	Quartz	Milky	Medial flake portion	2	
176	SU33/L6	Quartz	Milky	Flake fragment	2	
177	SU33/L6	Silcrete	Brown	Flake	2	
178	SU34/L1	Tuff	Brown	Flake	3	

Rye Park Survey Unit 28/Locale 1

Four stone artefacts were recorded in an area of severe sheet and gully erosion (Plate 5; Figure 11). The landform is a drainage line/flat. The broad area of erosion measures >100 x 30m, of which 80% was ground exposure, possessing 80% archaeological visibility. The effective survey coverage is relatively high, and given that four artefact only were recorded, artefact density is assessed to be very low. The artefacts are dark grey chert flaking debitage. Three found together are probably part of a knapping event (Plate 6). The locale may contain additional artefacts but these would be present in very low density. The geomorphological context is erosional. Accordingly, the site has limited subsurface potential.

Plate 5 SU28/L1 looking 30°.

Plate 6 SU28/L1 Three artefacts found together.

Figure 11 Location of SU28/L1. Note extensive erosion.

Rye Park Survey Unit 28/Locale 2

One stone artefact was recorded in an area of bare earth exposure (Plate 7; Figure 12). The landform is a slight saddle on a crest. The broad area of exposure measures 30 x 10m, of which 70% was ground exposure, possessing 70% archaeological visibility. The effective survey coverage is relatively high. Given that one artefact only was recorded, artefact density is assessed to be very low. The artefact is a dark grey chert core (Plate 8). The geomorphological context is erosional. Accordingly, the site has limited subsurface potential.

Plate 7 SU28/L2 looking 210°.

Plate 8 The core fragment in SU28/L2.

Figure 12 Location of SU28/L2.

Rye Park Survey Unit 29/Locale 1

One stone artefact was recorded on the side of a farm road (Plate 9; Figure 13). The landform is a simple slope with a gentle gradient and easterly aspect. The broad area of exposure measures >50 x 5m, of which 90% was ground exposure, possessing 20% archaeological visibility. The effective survey coverage is moderate. Given that one artefact only was recorded, artefact density is assessed to be very low. The artefact is a grey core fragment (Plate 10). The geomorphological context is erosional. Nevertheless, the site has subsurface potential. The soil is rocky with high levels of shale shatter.

Plate 9 SU29/L1 looking 270°.

Plate 10 The core fragment in SU29/L1.

Figure 13 Location of SU29/L1.

Rye Park Survey Unit 30/Locale 1

This locale is several sheet erosional scours with stone artefacts (Plate 11; Figure 14). The site is on the north side of a farm road and west of a creek. The landform is a drainage depression/flat landform. A large area of exposure measures c. 20 x 10m, of which 90% was ground exposure, possessing 50% archaeological visibility. Two smaller, adjacent exposures are present. The depth of erosion varied between 10-20 cm. The effective survey coverage is relatively high. Two adjacent, smaller areas of erosion also contained artefacts. Some 23 artefacts were recorded in detail and it was estimated that another 120 were visible. All artefacts are flaking debitage of silcrete, quartz and chert. The geomorphological context is erosional. Nevertheless, the site has subsurface potential primarily in adjacent undisturbed areas. The soil is a deep silty loam. It is predicted that the flat landform would contain artefacts in moderate density. While the wider landform is disturbed, artefact clustering suggests some archaeological integrity exists. Artefacts in the large scour exhibited varying levels of disturbance. At the northern end, artefacts appeared to be more or less *in situ*.

Plate 11 The large sheet erosion scour in SU30/L1; looking west. Note clustering of artefacts in northwest end where erosion is less severe.

Rye Park Survey Unit 30/Locale 2

This locale is several sheet/ erosional scours with 22 stone artefacts (Plate 12; Figure 14). An area of gully erosion and excavated table drain adjacent to the road also has artefacts (Plate 13). The site is on the south side of a farm road, opposite SU30/L1 and west of a creek. The landform is a drainage depression/flat landform. A large area of exposure measures c. 25 x 10m, of which 90% was ground exposure, possessing 10% archaeological visibility. The depth of erosion is relatively deep (c. 40 cm) and fewer artefacts were observed. The effective survey coverage is relatively high. All artefacts are flaking debitage of quartz and chert. The geomorphological context is erosional. Nevertheless, the site has subsurface potential primarily in adjacent undisturbed areas. The soil is a deep silty loam. It is predicted that the flat landform would contain artefacts in moderate density. The flat appears to have furrows from previous ploughing.

Plate 12 The large erosional scour in SU30/L2; looking 210°.

Plate 13 North end of SU30/L2; looking 190°. The gully erosion and table drain with farm road in foreground.

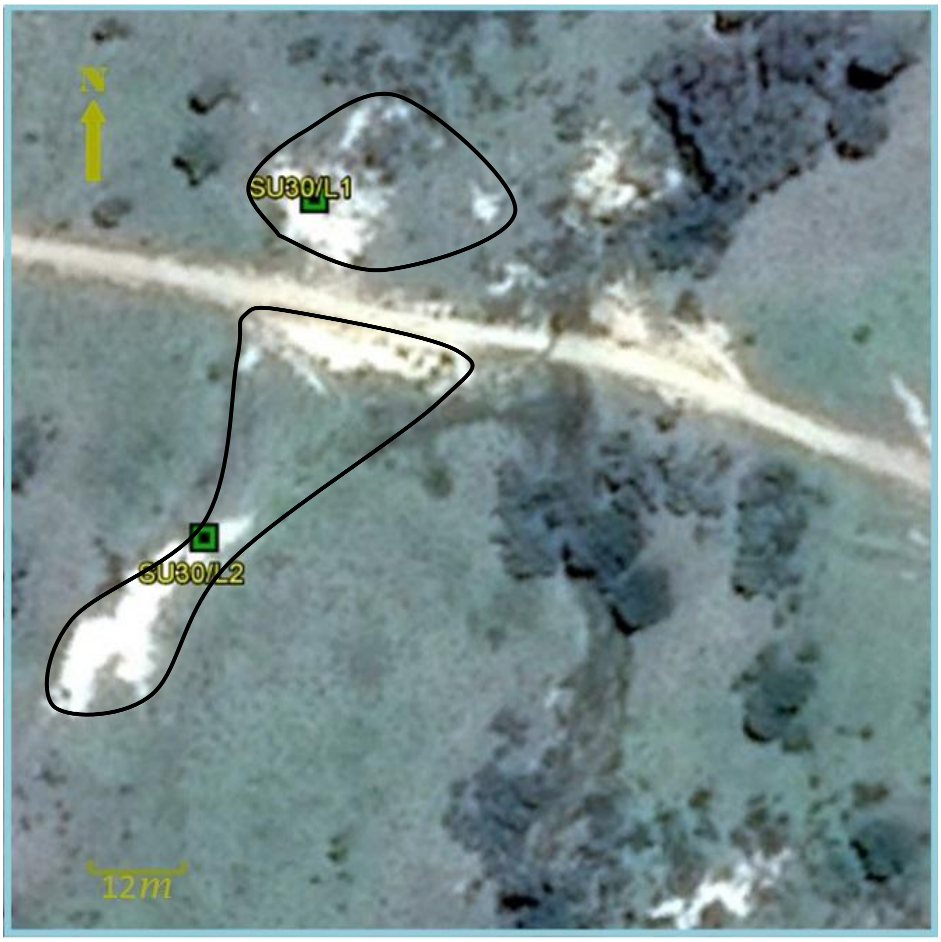

Figure 14 Location of SU30/L1 and SU30/L2.

Rye Park Survey Unit 30/Locale 3

This locale is a large area of small sheet erosion scours with 64 recorded stone artefacts (Plate 14; Figure 15). An additional 30 artefacts were counted in a 3 x 3 m area which contained a knapping event. The site is on the south side of a farm road, on the east side of the creek. The landform is a simple slope landform with a very gentle gradient and westerly aspect. The area is overgrown with Sifton bush. A exposure measures c. 100 square meters in total, of which 90% was ground exposure, possessing 50% archaeological visibility. The effective survey coverage is relatively high. The majority of artefacts are flaking debitage of quartz and chert. Four retouched artefacts were recorded (eg. Plates 15 & 16). The geomorphological context is erosional. Nevertheless, the site has subsurface potential primarily in adjacent undisturbed areas. However, the presence of a knapping event of grey silcrete indicates some spatial integrity of the archaeology even in erosion scours. The soil is a deep gravelly, silty loam. It is predicted that the landform would contain artefacts in moderate density.

Plate 14 A part of SU30/L3 looking 20°.

Plate 15 SU30/L3: Artefact #58.

Plate 16 SU30/L3: Artefact #101.

Figure 15 Location of SU30/L3.

Rye Park Survey Unit 33/Locale 1

Nine stone artefacts were recorded along a 29 m length of graded farm road (Plate 17; Figure 16). The landform is a crest/simple slope with a gentle gradient and westerly aspect. The broader area measures >100 x 4m, of which 90% was ground exposure, possessing 30% archaeological visibility. The effective survey coverage is moderate, and given that nine artefact only were recorded, artefact density is assessed to be low. The artefacts are dark grey chert and silcrete flaking debitage. They are possible representative of two dispersed knapping events (Plate 18). The locale may contain additional artefacts but these would be present in very low density. The geomorphological context is erosional. The soil is a very rocky lithosol and bedrock is exposed in the road. Accordingly, the site area has limited subsurface potential.

Plate 17 SU33/L1

Plate 18 SU33/L1 A sample of the silcrete and chert artefacts.

Figure 16 Location of SU33/L1 and SU30/L2.

Rye Park Survey Unit 33/Locale 2

Two stone artefacts were recorded along a 2 m length of graded farm road (Plate 19; Figure 17). The landform is a simple slope with a very gentle gradient and westerly aspect. The broader area measures >50 x 4m, of which 95% was ground exposure, possessing 70% archaeological visibility. The effective survey coverage is relatively high, and given that two artefacts only were recorded, artefact density is assessed to be low and patchy. The artefacts are tuff and quartz flaking debitage (Plate 20). The locale may contain additional artefacts but these would be present in very low density. The geomorphological context is erosional. The soil is a rocky lithosol. Accordingly, the site area has limited subsurface potential.

Plate 19 SU33/L2

Plate 20 SU33/L2 artefacts.

Rye Park Survey Unit 33/Locale 3

Some 11 stone artefacts were recorded in an area of erosion at the edge of a drainage line (Plate 21; Figure 12). The landform is a drainage depression. The erosion measures c. 5 x 5m and is eroded to c. 20 cm deep. of that area 95% was ground exposure, possessing 80% archaeological visibility. The effective survey coverage is relatively high, and given that 11 artefacts only were recorded, artefact density is assessed to be low. The artefacts are all quartz flaking debitage and may be part of a related knapping event. The locale is likely to contain additional artefacts and these are predicted to be present in a patchy distribution and low/moderate density. The geomorphological context is aggrading/ erosional. The soil is a deep silty loam with high levels of background shale shatter. The broader site area has subsurface potential.

Plate 21 SU33/L3 looking south.

Figure 17 Location of SU33/L3.

Rye Park Survey Unit 33/Locale 4

Three stone artefacts were recorded along a 0.5 m length of graded farm road (Plate 22; Figure 18). The landform is a simple slope with a very gentle gradient and westerly aspect. The broader area measures >50 x 4m, of which 95% was ground exposure, possessing 70% archaeological visibility. The effective survey coverage is relatively high, and given that three artefacts only were recorded, artefact density is assessed to be low and patchy. The artefacts are silcrete flaking debitage, and likely to be part of a single knapping event (Plate 23). The locale may contain additional artefacts but these would be present in a patchy distribution and low density. The geomorphological context is erosional. The soil is a rocky lithosol. Accordingly, the site area has limited subsurface potential.

Plate 22 SU33/L4

Plate 23 SU33/L4 artefacts.

Figure 18 Location of SU33/L4, SU33/L5 and SU33/L6.

Rye Park Survey Unit 33/Locale 5

One stone artefact was recorded on graded farm road (Plate 24; Figure 18). The landform is a simple slope with a very gentle gradient and westerly aspect. The broader area measures >50 x 4m, of which 95% was ground exposure, possessing 70% archaeological visibility. The effective survey coverage is relatively high, and given that one artefact only was recorded, artefact density is assessed to be low and patchy. The artefact is a silcrete core. The locale may contain additional artefacts but these would be present in a patchy distribution and low density. The geomorphological context is erosional. The soil is a rocky lithosol. Accordingly, the site area has limited subsurface potential.

Plate 24 SUU33/L5 looking 150°.

Rye Park Survey Unit 33/Locale 6

Eight stone artefacts were recorded on graded farm road (Plate 25; Figure 16). The landform is a simple slope with a gentle gradient and southerly aspect. The broader area measures >50 x 4m, of which 85% was ground exposure, possessing 70% archaeological visibility. The effective survey coverage is relatively high, and given that eight artefacts only were recorded, artefact density is assessed to be low and patchy. The artefacts are primarily quartz debitage. The locale may contain additional artefacts but these would be present in a patchy distribution and low density. The geomorphological context is erosional. The soil is a rocky lithosol. Accordingly, the site area has limited subsurface potential.

Plate 25 SU33/L6 looking south.

Rye Park Survey Unit 34/Locale 1

One stone artefact was recorded on old farm road (Plate 26; Figure 19). The landform is a crest with a gentle gradient and open aspect. The broader area measures 6 x 2m, of which 80% was ground exposure, possessing 90% 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 artefact is a tuff flake. The locale may contain additional artefacts but these would be present in very low density. The geomorphological context is erosional. The soil is a rocky lithosol. Accordingly, the site area has limited subsurface potential.

Plate 26 SU34/L1 looking 200°.

Figure 19 Location of SU34/L1.

Rye Park Survey Unit 37/Locale 1

Three milky quartz lithic fragments (probable stone artefacts) were recorded on a farm road (Plates 27 & 28; Figure 20). The landform is a crest with a gentle gradient and southerly aspect. The broader area measures >50 x 4m, of which 90% was ground exposure, possessing 90% archaeological visibility. The effective survey coverage is relatively high, and given that three ?artefacts only were recorded, artefact density is assessed to be low and patchy. The locale is likely to contain additional artefacts but these would be present in a patchy distribution and very low density. The geomorphological context is erosional. The soil is a rocky lithosol. Accordingly, the site area has no subsurface potential.

Plate 27 SU37/L1

Plate 28 SU37/L1 artefacts.

Figure 20 Location of SU 37/L1 and SU37/L2.

Rye Park Survey Unit 37/Locale 2

Some 17 stone artefacts were recorded on a farm road, table drain and adjacent erosional exposures (Plate 29; Figure 20). The landform is a simple slope with a gentle gradient and north-east aspect. The broader area measures 40 x 40m, of which 60% was ground exposure, possessing 70% archaeological visibility. The effective survey coverage is relatively high, and artefact density is assessed to be low. The geomorphological context is erosional. The soil is a silty loam with high shale shatter. The site area has limited subsurface potential.


Plate 29 SU37/L2 looking 180°.

Rye Park Survey Unit 37/Locale 3

One stone artefact was recorded on a farm road (Plate 30 & 31; Figure 21). The landform is a low crest with a gentle gradient and northerly aspect. The broader area measures >50 x 4m, of which 90% was ground exposure, possessing 70% archaeological visibility. The effective survey coverage is relatively high, and artefact density is assessed to be very low and patchy. The artefact is a chert blade core fragment. The geomorphological context is erosional. The soil is a silty loam with high shale shatter. The site area has limited subsurface potential.


Plate 30 SU37/L3


Plate 31 SU37/L3 artefact.

Figure 21 Location of SU37/L3.

Rye Park Survey Unit 40/Locale 1

One stone artefact was recorded in a section of gully erosion in a farm paddock (Plate 32; Figure 22). The landform is a simple slope with a very gentle gradient and easterly aspect. An area of erosion (bare earth) measures c. 50 x 0.5m, of which 90% was ground exposure, possessing 90% archaeological visibility. The effective survey coverage is relatively high, and artefact density is assessed to be very low and patchy. The artefact is a milky quartz compression flake (Plate 33). The geomorphological context is erosional. The soil is a silty loam with high shale shatter. The site area has limited subsurface potential.

Plate 32 SU40/L1

Plate 33 SU40/L1 artefact.

Figure 22 Location of SU40/L1.

Rye Park Survey Unit 42/Locale 1

One stone artefact was recorded on the edge of Flakeny Creek Road (Plate 34; Figure 23). The landform is a simple slope with a very low crest of very gentle gradient and open aspect. An area of bare earth measures c. >100 x 4m, of which 100% was ground exposure, possessing 80% archaeological visibility. The effective survey coverage is high, and artefact density is assessed to be very low and patchy. The artefact is a rhyolite compression flake. The geomorphological context is erosional. The soil is a lithosol with high shale shatter and bedrock at or just below the ground surface. The site area has limited subsurface potential.

Plate 34 SU42/L1 looking 240°.

Figure 23 Location of SU42/L1.

Rye Park Survey Unit 47/Locale 1

One stone artefact was recorded in a large erosion scald - sheet and gully (Plate 35; Figure 24). The landform is a in a drainage depression. An area of erosion measures c. 60 x 20m, of which 95% was ground exposure, possessing 40% archaeological visibility. The effective survey coverage is high, and artefact density is assessed to be very low and patchy. The artefact is a silcrete flake (Plate 36). The geomorphological context is erosional. The soil is a silty loam with very high shale shatter. The site area has limited subsurface potential.

Plate 35 SU47/L1.

Plate 36 SU47/L1 artefact.

Figure 24 Location of SU47/L1.

Rye Park Survey Unit 47/Locale 2

Four stone artefact was recorded across a large area on a basal simple slope (Plate 37 - 38; Figure 25). The landform slopes to the northwest and is of very gentle gradient. The area is highly disturbed by erosion control earthworks and previous use for stock yards, of which 10% was ground exposure, possessing 40% archaeological visibility. The effective survey coverage is relatively low; artefact density is predicted to be low/moderate. The artefact is a silcrete flake. The geomorphological context is aggrading/erosional. The soil is a silty loam with very high shale shatter and moderate background quartz. The site area has subsurface potential although some areas will be disturbed.

Plate 37 SU47/L2.

Plate 38 SU47/L2 artefact #142.

Figure 25 Location of SU47/L2.

3. CONSULTATION PROCESS

A process of Aboriginal community consultation has been undertaken as a component of this assessment, and has been conducted in accordance with the guidelines as set out in 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).

Consultation for this project commenced in 2012, as documented below.

3.1 Consultation

In order to identify, notify and register Aboriginal people who may hold cultural knowledge relevant to determining the cultural significant of Aboriginal objects and/or places in the area of the proposed project, the following procedure was implemented (Copies of all documentation relating to this process conducted in 2012 was submitted to OEH [Queanbeyan] in separate correspondence dated 8 August 2012). Current communications are documented in this report.

Correspondence dated 10 April 2012 was sent to:

- OEH Queanbeyan office
- Onerwal Local Aboriginal Land Council
- the Registrar, Aboriginal Land Rights Act 1983
- the National Native Title Tribunal, requesting a list of registered native title claimants, native title holders and registered Indigenous Land Use Agreements
- Native Title Services Corporation Limited (NTSCORP Limited)
- Yass Valley Shire Council
- Upper Lachlan Shire Council
- Boorowa Shire Council
- the Lachlan Catchment Management Authority, requesting contact details for any established Aboriginal reference group

In addition an advertisement was placed in the 11 April 2012 edition of the Yass Tribune newspaper (closing date for registration of interest was noted as 25 April 2012).

Following advice received from NSW OEH (16 April 2012) and the National Native Title Tribunal (19 July 2012), further correspondence was sent to:

- Yukkumbruk
- Peter Falk Consultancy
- Pejar Local Aboriginal Land Council

- Gundungurra Aboriginal Heritage Association Inc
- Yass Valley Indigenous Consultative Committee Community Development
- Ngunnawal Heritage Aboriginal Corporation
- Arnold Williams - Ngunnawal Elders Corporation
- Yurwang Gundana Consultancy Cultural Heritage Services
- Buru Ngunawal Aboriginal Corporation
- Carl and Tina Brown
- Gunjeewong Cultural Heritage Aboriginal Corporation
- Gundungurra Tribal Council Aboriginal Corporation

The registered Aboriginal parties for this project are:

- Buru Ngunawal Aboriginal Corporation
- Gundungurra Aboriginal Heritage Association Inc
- Carl and Tina Brown
- Gunjeewong Cultural Heritage Aboriginal Corporation
- Onerwal Local Aboriginal Land Council

An outline of the scope of the project, the proposed cultural heritage assessment process and the heritage assessment methodology was forwarded to the registered parties on varying dates, immediately following receipt of their registration of interest. No responses were received from registered parties in regard to the consultation process and methodology. However, Wally Bell, Buru Ngunawal Aboriginal Corporation provided valuable information in regard to the archaeological sensitivity and potential of the study area. Sharyn Halls, Gundungurra Aboriginal Heritage Association, discussed her ancestors connections to Blakney Creek, located in the local area.

For review and comment, a copy of the draft report (original report) was forwarded to the registered parties; no responses were received.

In July 2015, further correspondence was sent to the RAPs. Advice was provided that the project Environmental Assessment (EA), which included the Aboriginal Cultural Heritage Assessment report, had been placed on public exhibition from 2 May 2014 to 4 July 2014 and that some modifications to the wind farm design and infrastructure layout had taken place.

We advised that, accordingly, the heritage assessment needed to be updated. RAPS were advised of the further assessment and were invited to apply to assist with the fieldwork. Two applications were received, one of which was accepted.

A draft of this Addendum report will be provided to RAPS for the review and consideration of management options.

4. SUMMARY AND ANALYSIS OF BACKGROUND INFORMATION

In the previous section of this report, the results of the background research and the field survey have been outlined. The purpose of this section of the Aboriginal cultural heritage assessment report is to explain the results.

The proposal area is likely to contain stone artefacts across the majority, if not all the Survey Units defined during this assessment. Accordingly, the stone artefact locales recorded are expected to be indicative of the archaeological status of the proposal area only, rather than a comprehensive inventory.

In the initial report (Dibden 2013a), it was concluded that the turbine ridges are generally of low archaeological potential. That is, the proposed impact areas on ridges are assessed to contain very low density artefact distribution. The results of the current assessment confirm this conclusion. The archaeological results are also in keeping with the information kindly provided to us by the Buru Ngunawal Aboriginal Corporation people. Given the location of the wind turbine ridges well away from water, Wally Bell (pers. comm. 2012) indicates that the area would have been used '… for travel through country, *if that'*. During the recent field work one artefact locale only was found on a high ridge (SU34/L1).

From an archaeological perspective, the results can be compared and contrasted to previous studies. Packard and Hughes (1983) found that sites were rarely present on the elevated topographies of the region. A pattern of low artefact density in elevated contexts has been confirmed by numerous previous wind farm studies in the region (for example, see Austral Archaeology PL 2005, 2008, 2009; Dibden 2006a, 2006b, 2008, 2012, 2013a & 2013b; Reeves and Thomson 2004).

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 occurrences across discrete landforms, especially close to streams. The fieldwork results are in agreement with this prediction. Nineteen artefact locales were found in lower topographies. However, generally these are also representative of low or very low density artefact distributions. The exception to this pattern is gradational landforms situated close to 2nd order or higher water courses. Four artefact locales were found in such contexts and these are predicted to contain moderate density artefact distributions with subsurface deposit (SU30/l1, SU30/L2, SU30/L3 and SU33/L3).

Given the relatively small number of site recordings, despite surveying very large areas of land, and the predictions of generally low archaeological and cultural sensitivity, a total survey has not been considered to be warranted. However, the survey results can be reasonably confidently extrapolated to any unsurveyed areas and it is concluded that the turbine ridges are of very low archaeological and cultural potential and sensitivity. The majority of internal overhead electricity lines have not been surveyed. At this time, the location of individual power poles is not known. The impact areas in which they would be constructed are steep, simple slope landforms, with either very low or negligible archaeological potential. Large sections of the Overhead Transmission line which extends westward from the wind farm have been surveyed and found to be of generally low archaeological potential. At this time, it is not considered warranted to conduct any further survey of this component of the project.

It is concluded that there are no information gaps which are of a significant magnitude to warrant any further consideration at this time.

5. CULTURAL HERITAGE VALUES AND STATEMENT OF SIGNIFICANCE

The following significance assessment criteria is derived from the relevant aspects of ICOMOS Burra Charter (Australian ICOMOS 1999).

Aboriginal cultural heritage sites are assessed under the following categories of significance:

- Social or cultural value to contemporary Aboriginal people;
- Historical value;
- Scientific/archaeological value;
- Aesthetic value.

Aboriginal cultural significance

The Aboriginal community will value a place in accordance with a variety of factors including contemporary associations and beliefs and historical relationships. Most heritage evidence is highly valued by Aboriginal people given its symbolic embodiment and physical relationship with their ancestral past.

Archaeological value

The assessment of archaeological value involves determining the potential of a place to provide information which is of value in scientific analysis and the resolution of potential archaeological research questions. Relevant research topics may be defined and addressed within the academy, the context of cultural heritage management or Aboriginal communities. Increasingly, research issues are being constructed with reference to the broader landscape rather than focusing specifically on individual site locales. In order to assess scientific value sites are evaluated in terms of nature of the evidence, whether or not they contain undisturbed artefactual material, occur within a context which enables the testing of certain propositions, are very old or contain significant time depth, contain large artefactual assemblages or material diversity, have unusual characteristics, are of good preservation, or are a part of a larger site complex. Increasingly, a range of site types, including low density artefact distributions, are regarded to be just as important as high density sites for providing research opportunities.

In order to assess the criteria of archaeological significance further, and also to consider the criteria of rarity, consideration can be given to the distribution of stone artefacts across the continent. There are two estimates of the quantity of accumulated stone artefacts in Australia (Wright 1983:118; Kamminga 1991:14; 2002). Wright estimated an average of 500,000 débitage items and 24,000 finished tools per square kilometre, which equates to a total of about 180 billion finished stone tools and four trillion stone débitage items in Australia. Kamminga's estimates, which were determined from a different set of variables, provide a conservative estimate of 200 billion stone tools and 40 million tonnes of flaking débitage (see Kamminga 1991:14; 2002). These two estimates are similar, and suggest that the actual number of stone tools and items of flaking débitage in Australia is in the trillions. The stone artefacts distributed in the proposed activity area cannot, therefore, be considered to be rare.

The vast majority of stone artefacts found in Australia comprise flaking debris (termed débitage) from stone tool making. While it can be reasonably inferred from a range of ethnographic and archaeological evidence that discarded stone artefacts and flaking debris was not valued by the maker, in certain circumstances these objects may to varying degrees have archaeological research potential and/or Aboriginal social value. However, only in very exceptional circumstances is archaeological research potential high for particular sites (Kamminga, J. pers. comm. June 2009).

Aesthetic value

Aesthetic value relates to aspects of sensory perception. This value is culturally contingent.

5.1 Statement of Significance

The Indigenous cultural value of the landscape in general, as well as the Aboriginal objects it contains, is considerably higher than the scientific value. Both the landscape and the objects which are encompassed within it, are material testament to the lives of Indigenous people's ancestors and the focus of their current identity, concerns and aspirations. Therefore, the proposed impacts will have an impact on the cultural significance which attaches to the area.

The archaeological significance of each Aboriginal artefact locale in the subject area is set out in the table below.

Table 8 Archaeological significance of Aboriginal object locales in the Rye Park Wind Farm.

Name	Description	Significance	Criteria
SU3/L1	1 artefact on an existing farm track in SU3	Low local scientific significance.	Common site type Low educational value Low aesthetic value Low research potential: disturbed; predicted very low density.
SU3/L2	2 artefacts on an existing farm track in SU3	Low local scientific significance.	Common site type Low educational value Low aesthetic value Low research potential: disturbed; predicted very low density.
SU4/L1	1 artefact on ridge in SU4	Low local scientific significance.	Common site type Low educational value Low aesthetic value Low research potential: disturbed; predicted very low density.
SU6/L1	1 artefact on ridge adjacent to track in SU6	Low local scientific significance.	Common site type Low educational value Low aesthetic value Low research potential: disturbed;

Name	Description	Significance	Criteria
			predicted very low density.
SU7/L1	1 artefact in large erosion scour on ridge in SU7	Low local scientific significance.	Common site type Low educational value Low aesthetic value Low research potential: disturbed; predicted very low density.
SU8/L1	1 artefact in a sheep track	Low local scientific significance.	Common site type Low educational value Low aesthetic value Low research potential: disturbed; predicted very low density.
SU15/L1	2 artefacts in an erosion scour in SU15	Low local scientific significance.	Common site type Low educational value Low aesthetic value Low research potential: disturbed; predicted very low density.
SU17/L1	Possible quartz stone procurement area (spa)	Potentially moderate local significance	Rare site type Low educational value Moderate aesthetic value Research potential
SU17/L2	Possible quartz stone procurement area (spa)	Potentially moderate local significance	Rare site type Low educational value Moderate aesthetic value Research potential
SU18/L1	1 artefact on a moderate gradient simple slope	Low local scientific significance.	Common site type Low educational value Low aesthetic value Low research potential: disturbed; predicted very low density.
SU21/L1	1 artefact on a ridge crest in SU21	Low local scientific significance.	Common site type Low educational value Low aesthetic value Low research potential: disturbed; predicted very low density.
SU23/L1	1 artefact on a farm track in SU23	Low local scientific significance.	Common site type Low educational value Low aesthetic value Low research potential: disturbed; predicted very low density.
SU23/L2	2 artefacts adjacent to a drainage line in SU23	Low local scientific significance.	Common site type Low educational value Low aesthetic value Low research potential: disturbed; predicted very low density.
SU23/L3	1 artefact on a farm track in SU23	Low local scientific significance.	Common site type Low educational value Low aesthetic value Low research potential: disturbed; predicted very low density.
SU24/L1	5 artefacts on a farm track in SU24	Low local scientific significance.	Common site type Low educational value Low aesthetic value Low research potential: disturbed; predicted very low density.
SU27/L1	Possible quartz stone procurement area (spa)	Potentially moderate local	Rare site type Low educational value

Name	Description	Significance	Criteria
		significance	Moderate aesthetic value Research potential
SU28/L1	4 artefacts in an erosion scour adjacent to a farm track	Low local scientific significance.	Common site type Low educational value Low aesthetic value Low research potential: disturbed; predicted very low density.
SU28/L2	1 artefact in a bare earth exposure adjacent to a farm road	Low local scientific significance.	Common site type Low educational value Low aesthetic value Low research potential: disturbed; predicted very low density.
SU29/L1	1 artefact on the edge of a farm road	Low local scientific significance.	Common site type Low educational value Low aesthetic value Low research potential: disturbed; predicted very low density.
SU30/L1	Artefacts in erosion scours and associated subsurface deposit	Moderate local scientific significance	Common site type Low educational value Low aesthetic value Research potential: relatively undisturbed archaeological deposit
SU30/L2	Artefacts in erosion scours and associated subsurface deposit	Moderate local scientific significance	Common site type Low educational value Low aesthetic value Research potential: relatively undisturbed archaeological deposit
SU30/L3	Artefacts in erosion scours and associated subsurface deposit	Moderate local scientific significance	Common site type Low educational value Low aesthetic value Research potential: relatively undisturbed archaeological deposit
SU33/L1	9 artefacts on a farm track	Low local scientific significance.	Common site type Low educational value Low aesthetic value Low research potential: disturbed; predicted very low density.
SU33/L2	2 artefacts on a 2m long section of farm track	Low local scientific significance.	Common site type Low educational value Low aesthetic value Low research potential: disturbed; predicted very low density.
SU33/L3	Artefacts in an erosion scour and associated subsurface deposit	Moderate local scientific significance	Common site type Low educational value Low aesthetic value Research potential: relatively undisturbed archaeological deposit
SU33/L4	3 artefacts on a 0.5 m long section of farm track	Low local scientific significance.	Common site type Low educational value Low aesthetic value Low research potential: disturbed; predicted low density.
SU33/L5	1 artefact on a farm track	Low local scientific significance.	Common site type Low educational value Low aesthetic value Low research potential: disturbed;

Name	Description	Significance	Criteria
			predicted low density.
SU33/L6	8 artefacts on a section of farm track	Low local scientific significance.	Common site type Low educational value Low aesthetic value Low research potential: disturbed; predicted low density.
SU34/L1	1 artefact on an old overgrown track in regrowth forest	Low local scientific significance.	Common site type Low educational value Low aesthetic value Low research potential: disturbed; predicted very low density.
SU37/L1	3 artefacts on a section of farm track	Low local scientific significance.	Common site type Low educational value Low aesthetic value Low research potential: disturbed; predicted very low density.
SU37/L2	17 artefacts on a section of farm track, table drain and bare earth	Low local scientific significance.	Common site type Low educational value Low aesthetic value Low research potential: disturbed; predicted low density.
SU37/L3	1 artefact on a farm track	Low local scientific significance.	Common site type Low educational value Low aesthetic value Low research potential: disturbed; predicted very low density.
SU40/L1	1 artefact in an erosion feature	Low local scientific significance.	Common site type Low educational value Low aesthetic value Low research potential: disturbed; predicted very low density.
SU42/L1	1 artefact adjacent to a road	Low local scientific significance.	Common site type Low educational value Low aesthetic value Low research potential: disturbed; predicted very low density.
SU47/L1	1 artefact in a large erosion scour	Low local scientific significance.	Common site type Low educational value Low aesthetic value Low research potential: disturbed; predicted very low density.
SU47/L2	3 artefacts in bare earth patches	Low local scientific significance.	Common site type Low educational value Low aesthetic value Low research potential: disturbed; predicted low/moderate density.

6. THE PROPOSED ACTIVITY

In this section the nature and extent of the proposed activity and any potential harm to Aboriginal areas, objects and/or places is identified.

A full description of the proposal and its potential impact on the landscape and heritage resource is described. A summary of the impact history of the study area has been described in Section 2 and is not repeated here. However, it is emphasised that prior and existing land uses have caused significant changes to geomorphological processes in the area with an associated effect on the archaeological resource.

Potential impacts to archaeology and heritage during the construction phase of the wind farm proposal relate to site preparation, operation of vehicles and machinery and the installation of infrastructure. This may involve earthworks and excavations and vegetation clearing.

6.1 Proposed Impacts

The proposal would involve the construction, operation, and decommissioning of the wind farm. The proposed impact areas are shown in Figures 2, 3, 4 and 5. Up to 109 wind turbine generators are proposed. Each turbine would have three blades likely to be up to 112m diameter mounted on a tubular steel tower up to 100 metres high, with capacity between 1.5 and 3.6 MW.

The proposal would involve the following construction:

- Electrical connections between wind turbines and on-site substations, which would be a combination of underground cable and overhead power lines;
- Onsite control buildings and equipment storage facilities for each precinct;
- A temporary concrete batching plant at each precinct;
- Access roads within the precincts in addition to minor upgrades to access on local roads, as required, for the installation and maintenance of wind turbines;
- A number of freestanding permanent monitoring masts for wind speed verification and monitoring.

A description of the individual components and their related impacts are outlined as follows:

Turbines

The ground disturbance associated with each turbine will include the construction of reinforced concrete footings excavated to a maximum size of 15 x 15 metres. A hardstand area adjacent to the turbine footings which could measure up to 40 x 20 metres is required for a crane. A delivery area for the various components is also necessary. In most cases it is anticipated that the turbine access track could be used as a delivery area. Each tower will have a transformer which will be housed either within the base of the tower, in the nacelle (located on the tower), or adjacent to the tower as a small pod mount transformer.

Electrical Connections

The onsite electrical works will include on-site power reticulation cabling (underground and overhead) linking the turbines to a Substation. Underground cabling is proposed between the turbines, with overhead cabling proposed in some locations to connect the turbines to the substation and/or the existing transmission system. Underground cabling would be laid out in trenches measuring 1 - 1.5 metres deep and 0.5 - 1 metres wide and where possible the trench routes will follow access tracks, with short spur connections to each turbine. Overhead cabling would require an easement of c. 40 - 60 metres wide and would be erected on 30 - 40 metres high single steel or concrete poles spaced 150 - 300 metres apart, with spans avoiding all wet areas. Postholes would be 3 - 5 metres deep and c. 3 - 5 metres in diameter.

Substation

Several substation are proposed and would convert power from onsite reticulation voltage to a transmission voltage of 132kV suitable to connect to the existing 330 kV transmission system. The substations would occupy an area measuring c. 250 x 250 metres. The substation would be fenced and the ground covered with crushed rock and partly by concrete pads for equipment, walkways and cable covers.

Construction Compounds

Several construction compounds are proposed. These would each measure several hectares.

On-site Control and Facilities Building

An on-site Control and Facilities Building which will house instrumentation, control and communications equipment is proposed. The building would measure up to 25 x 15 metres and would be built on a concrete slab. Control and communications cabling is also required to extend from the Control and Facilities Building to each turbine and to the site Substation. The control cabling will be installed using the same method and route as the power cabling.

6.2 Type of Harm

The proposed works would entail ground disturbance and, accordingly, the construction of the wind farm has the potential to cause impacts to any Aboriginal areas, places or objects which may be present within the zones of direct impact.

Impacts will be located on land currently utilised for sheep grazing. Previous land use has resulted in relatively significant environmental impacts and a generally degraded landscape. European activated geomorphological processes and other natural processes associated with land degradation, will have caused significant prior impacts to Aboriginal objects within the proposal area.

However, irrespective of prior impacts the proposed works entail ground disturbance and accordingly the project has the potential to cause additional impacts to any Aboriginal objects which may be present within the individual components of the proposal. The nature of impacts relating to each Aboriginal object locale is set out in the table below.

Table 9 Impact Assessment.

Survey Unit	Type of harm	Degree of harm	Consequence of harm
SU1	Nil		
SU2 No known objects	Direct	Partial	Partial loss of value
SU3 including: SU3/L1 #51-5-203 SU3/L2 #51-5-207	Direct	Partial SU3/L1 and SU3/L2 are in turbine envelope but outside areas of direct impacts	Partial loss of value
SU4 including: SU4/L1 #51-4-284	Direct	Partial SU4/L1 is in turbine envelope but outside areas of direct impacts	Partial loss of value
SU5	Nil		
SU6 including: SU6/L1 #51-5-204	Direct	Partial - The SU is now largely outside proposed impacts; SU6/L1 is outside areas of direct impacts	Partial loss of value
SU7 including: SU7/L1 #51-5-205	Nil		
SU8 including: SU8/L1 #51-5-206	Direct	Partial - The SU is now largely outside proposed impacts; SU8/L1 is outside areas of direct impacts	Partial loss of value
SU9	Nil		
SU10 No known objects	Direct	Partial	Partial loss of value
SU11 No known objects	Direct	Partial	Partial loss of value
SU12 No known objects	Direct	Partial	Partial loss of value
SU13 No known objects	Direct	Partial	Partial loss of value
SU14 No known objects	Direct	Partial	Partial loss of value
SU15 including: SU15/L1 #51-4-286	Nil		
SU16 No known objects	Direct	Partial	Partial loss of value
SU17 SU17/L1 SU17/L2	Direct	Partial	Partial loss of value
SU18 including: SU18/L1 #51-4-285	Direct	Partial	Partial loss of value

Survey Unit	Type of harm	Degree of harm	Consequence of harm
SU19 No known objects	Direct	Partial	Partial loss of value
SU20 No known objects	Direct	Partial	Partial loss of value
SU21 including: SU21/L1 #51-4-287	Direct	Partial	Partial loss of value
SU22 No known objects	Nil	Partial	Partial loss of value
SU23 including: SU23/L1 #51-1-117 SU23/L2 #51-4-288 SU23/L3 #51-4-289	Direct	Partial SU23/L1 and SU23/L2 are outside areas of direct impacts	Partial loss of value
SU24 including: SU24/L1 #51-1-118	Nil	Partial SU24/L1 is outside areas of direct impact	Partial loss of value
SU25 No known objects	Direct	Partial	Partial loss of value
SU26 No known objects	Direct	Partial	Partial loss of value
SU27 SU27/L1	Direct	Partial	Partial loss of value
SU28 including: SU28/L1 SU28/L2	Direct	Partial	Partial loss of value
SU29 including: SU29/L1	Direct	Partial	Partial loss of value
SU30 including: SU30/L1 SU30/L2 SU30/L3	Direct	Partial	Partial loss of value
SU31 No known objects	Direct	Partial	Partial loss of value
SU32 No known objects	Direct	Partial	Partial loss of value
SU33 including: SU33/L1 SU33/L2 SU33/L3 SU33/L4 SU33/L5 SU33/L6	Direct	Partial	Partial loss of value
SU34 including: SU34/L1	Direct	Partial	Partial loss of value
SU35 No known objects	Direct	Partial	Partial loss of value
SU36 No known objects	Direct	Partial	Partial loss of value
SU37 including: SU37/L1 SU37/L2	Direct	Partial	Partial loss of value

Survey Unit	Type of harm	Degree of harm	Consequence of harm
SU38 No known objects	Direct	Partial	Partial loss of value
SU39 No known objects	Direct	Partial	Partial loss of value
SU40 including: SU40/L1	Direct	Partial	Partial loss of value
SU41 No known objects	Direct	Partial	Partial loss of value
SU42 including: SU42/L1 AHIMS #51-4-58	Direct	Partial	Partial loss of value
SU43 No known objects	Direct	Partial	Partial loss of value
SU44 No known objects	Direct	Partial	Partial loss of value
SU45 No known objects	Direct	Partial	Partial loss of value
SU46 No known objects	Direct	Partial	Partial loss of value
SU47 including: SU47/L1 SU47/L2	Direct	Partial	Partial loss of value
SU48 No known objects	Direct	Partial	Partial loss of value
SU49 No known objects	Direct	Partial	Partial loss of value

7. AVOIDING AND/OR MINIMISING HARM

Ecologically Sustainable Development (ESD) is defined in the Protection of the Environment Administration Act 1991. Section 6(2) of that Act states that ESD requires the effective integration of economic and environmental considerations in decision-making processes and that ESD can be achieved through the implementation of:

(a) the precautionary principle,

(b) inter-generational equity,

(c) conservation of biological diversity and ecological integrity,

(d) improved valuation, pricing and incentive mechanisms.

The principles of ecologically sustainable development and the matter of cumulative harm have been considered for this project. The area is in a vast rural region and hence existing and future impacts are low, despite the construction of numerous wind farms in the region. The majority of cultural values, including archaeological, which attach to the landform and the broader landscape remain intact across the region.

Furthermore, the land is significantly disturbed and eroded as a result of previous impacts. While the proposed activity is a 'new' impact, the earth in which artefacts are situated has sustained over a century of disturbance. Avoidance or the mitigation of harm has been considered as an option in relation to the proposed activities. The cultural and archaeological heritage significance of the proposal area has not been assessed to be of sufficient significance to warrant the implementation of avoidance strategies for all sites (the exception to this is in regard to the 3 SPAs – see below).

However, a program of impact mitigation is proposed to off-set overall development impacts.

A number of management strategies are possible and these are each given consideration below.

7.1 Management and Mitigation Strategies - Options

Further Investigation

The field survey has been focused on recording artefactual material present on visible ground surfaces. Further archaeological investigation would entail subsurface excavation undertaken as test pits for the purposes of identifying the presence of artefact bearing soil deposits and their nature, extent, integrity and significance.

Further archaeological investigation in the form of subsurface test excavation can be appropriate in certain situations. These generally arise when a proposed development is expected to involve ground disturbance in areas which are assessed to have potential to contain high density artefactual material and when the Effective Survey Coverage achieved during a survey of a project area is low due to ground cover, vegetation etc.

No areas of the proposal area have been identified which warrant further archaeological investigation in order to formulate appropriate management and mitigation strategies. Based on a consideration of the predictive model of site type applicable to the environmental context in which impacts are proposed, the archaeological potential of the proposed impact areas is assessed not to warrant further investigation. It has not been demonstrated that Aboriginal objects with potential conservation value have a high probability of being present in the subject area. Accordingly, test excavation conducted under OEH's *Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales* (DECCW 2010: 24) is not necessary.

Furthermore, the environmental context in which impacts are proposed contain highly eroded landforms, most of which are weathered to bedrock. Accordingly, subsurface excavation is generally impractical except for gradational landform contexts in drainage depressions.

Conservation

Conservation is a suitable management option in any situation, however, it is not always feasible to achieve. Such a strategy is generally adopted in relation to sites which are assessed to be of high cultural and scientific significance, but can be adopted in relation to any site type.

In the case at hand, avoidance of impacts (or minimisation of impacts) in regard to the recorded artefacts locales is not considered to be warranted (with the exceptions listed below). Such a strategy, would in any case, likely result in impacts to other Aboriginal objects (as predicted) which may not have been recorded because of subsurface incidence or lack of obtrusiveness.

In respect of the three possible SPAs, it is recommended, that given the possibility that they are stone procurement areas which would have elevated archaeological and cultural significance, these should be avoided during construction. An active strategy of impact avoidance would need to be implemented in order to ensure their conservation, and this is considered to be warranted. It is noted that the proponent has already adopted an impact avoidance strategy in regard to these three sites.

It is also recommended that as much as practicable, impacts be minimised in flat, gradational landforms located adjacent to 2nd order or higher streams. Such landforms have a high potential to contain subsurface archaeological deposit with moderate density artefacts, such as for example, SU30/L1, SU30/L2, SU30/L3 and SU33/L3.

Mitigated Impacts

Mitigated impact usually takes the form of partial impacts only (i.e. conservation of part of an Aboriginal artefact locale or Survey Unit) and/or salvage in the form of further research and archaeological analysis prior to impacts. Such a management strategy is generally appropriate when Aboriginal objects are assessed to be of moderate or high significance to the scientific and/or Aboriginal community and when avoidance of impacts and hence full conservation is not feasible. Salvage can include the surface collection or subsurface excavation of Aboriginal objects and subsequent research and analysis.

It is assessed that the majority of the archaeological resource in the proposal area does not surpass significance thresholds which warrant any form of impact mitigation in this regard. However, note recommendations above under heading *Conservation* in regard to the three SPAs and gradation landforms adjacent to 2nd order or higher streams.

It is recommended that a strategy of impact mitigation is implemented in regard to SU30/L1, SU30/L2, SU30/L3 and SU33/L3. It is proposed that a program of sub-surface excavation be undertaken in these locales as a form of impact mitigation to off-set overall development impacts.

Unmitigated Impacts

Unmitigated impact to Aboriginal objects can be given consideration when they are assessed to be of low archaeological and cultural significance and otherwise in situations where conservation is simply not feasible.

The majority of Aboriginal object locales identified (with the exception of SU30/L1, SU30/L2, SU30/L3 and SU33/L3) have been assessed to be of low cultural and archaeological heritage significance. In addition, any undetected or subsurface artefacts are likewise assessed to be of low archaeological sensitivity. Given the nature and artefact density in the proposal area, and the low scientific significance rating they been accorded, unmitigated impacts are appropriate.

7.1 Management and Mitigation Strategies

Specific management and mitigation strategies for each Survey Unit are outlined in the table below.

Table 10 Management and mitigation strategies for each Survey Unit.

Survey Unit	Degree of harm	Management
SU1	nil	n/a
SU2 No known objects	Partial	Unmitigated impact
SU3 including: SU3/L1 #51-5-203 SU3/L2 #51-5-207	Partial SU3/L1 and SU3/L2 are in turbine envelope but outside areas of direct impacts	Unmitigated impact
SU4 including: SU4/L1 #51-4-284	Partial SU4/L1 is in turbine envelope but outside areas of direct impacts	Unmitigated impact
SU5	nil	n/a
SU6 including:	Partial - The SU is now largely	Unmitigated impact

Survey Unit	Degree of harm	Management
SU6/L1 #51-5-204	outside proposed impacts; SU6/L1 is outside areas of direct impacts	
SU7 including: SU7/L1 #51-5-205	nil	n/a
SU8 including: SU8/L1 #51-5-206	Partial - The SU is now largely outside proposed impacts; SU8/L1 is outside areas of direct impacts	Unmitigated impact
SU9	nil	n/a
SU10 No known objects	Partial	Unmitigated impact
SU11 No known objects	Partial	Unmitigated impact
SU12 No known objects	Partial	Unmitigated impact
SU13 No known objects	Partial	Unmitigated impact
SU14 No known objects	Partial	Unmitigated impact
SU15 including: SU15/L1 #51-4-286	nil	n/a
SU16 No known objects	Partial	Unmitigated impact
SU17 SU17/L1 SU17/L2	Partial	Conservation of SU17/L1 and SU17/L2; elsewhere unmitigated impact
SU18 including: SU18/L1 #51-4-285	Partial	Unmitigated impact
SU19 No known objects	Partial	Unmitigated impact
SU20 No known objects	Partial	Unmitigated impact
SU21 including: SU21/L1 #51-4-287	Partial	Unmitigated impact
SU22 No known objects	Partial	Unmitigated impact
SU23 including: SU23/L1 #51-1-117 SU23/L2 #51-4-288 SU23/L3 #51-4-289	Partial SU23/L1 and SU23/L2 are outside areas of direct impacts	Unmitigated impact
SU24 including: SU24/L1 #51-1-118	Partial SU24/L1 is outside areas of direct impact	Unmitigated impact
SU25 No known objects	Partial	Unmitigated impact
SU26 No known objects	Partial	Unmitigated impact
SU27 SU27/L1	Partial	Conservation of SU27/L1; elsewhere unmitigated impact
SU28 including:	Partial	Unmitigated impact

Survey Unit	Degree of harm	Management
SU28/L1 SU28/L2		
SU29 including: SU29/L1	Partial	Unmitigated impact
SU30 including: SU30/L1 SU30/L2 SU30/L3	Partial	Mitigated impact: Salvage excavation of a portion of each locale
SU31 No known objects	Partial	Unmitigated impact
SU32 No known objects	Partial	Unmitigated impact
SU33 including: SU33/L1 SU33/L2 SU33/L3 SU33/L4 SU33/L5 SU33/L6	Partial	Mitigated impact: Salvage excavation of SU33/L3; Elsewhere unmitigated impact
SU34 including: SU34/L1	Partial	Unmitigated impact
SU35 No known objects	Partial	Unmitigated impact
SU36 No known objects	Partial	Unmitigated impact
SU37 including: SU37/L1 SU37/L2	Partial	Unmitigated impact
SU38 No known objects	Partial	Unmitigated impact
SU39 No known objects	Partial	Unmitigated impact
SU40 including: SU40/L1	Partial	Unmitigated impact
SU41 No known objects	Partial	Unmitigated impact
SU42 including: SU42/L1 AHIMS #51-4-58	Partial	Unmitigated impact
SU43 No known objects	Partial	Unmitigated impact
SU44 No known objects	Partial	Unmitigated impact
SU45 No known objects	Partial	Unmitigated impact
SU46 No known objects	Partial	Unmitigated impact
SU47 including: SU47/L1 SU47/L2	Partial	Unmitigated impact
SU48	Partial	Unmitigated impact

Survey Unit	Degree of harm	Management
No known objects		
SU49 No known objects	Partial	Unmitigated impact

8. STATUTORY INFORMATION

The NPW Act provides statutory protection for all Aboriginal objects and Aboriginal Places.

An 'Aboriginal object' is defined as

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

An Aboriginal place is an area declared by the Minister to be an Aboriginal place for the purposes of the Act (s84), being a place that in the opinion of the Minister *is or was of special significance with respect to Aboriginal culture*.

Under s90 of the NPW Act a person must not destroy, damage or deface or knowingly cause or permit the destruction, damage or defacement of an Aboriginal object or Aboriginal Place without first obtaining the s90 consent Aboriginal Heritage Impact Permit (AHIP). Consents which enable a person to impact an Aboriginal object are issued by the OEH upon review of a s90 Aboriginal Heritage Impact Permit application.

Under Section 89J of the Environmental Planning and Assessment Act 1979, the following authorisations are not required for State significant development that is authorised by a development consent granted after the commencement of this Division (and accordingly the provisions of any Act that prohibit an activity without such an authority do not apply):

- an Aboriginal heritage impact permit under section 90 of the National Parks and Wildlife Act 1974.

9. RECOMMENDATIONS

The following recommendations are made on the basis of:

- A consideration of the relevant section of the Environmental Planning and Assessment Act (see Section 8 Statutory Information).
- The results of the investigation as documented in this report.
- Consideration of the type of development proposed and the nature of proposed impacts.
- The discussion is Section 7 regarding impact mitigation and management.

The following recommendations are provided:

1. No further archaeological investigations are required in respect of the proposal. No areas were identified that could be characterised as places with a high probability of possessing subsurface Aboriginal objects with high potential conservation value. Accordingly, archaeological test excavation has not been undertaken in respect of the proposal as it could not be justified (*cf.* NSW DECCW 2010a: 24).

2. Management and mitigation strategies are set out in Table 9, Section 7. These strategies for should be used to formulate appropriate Statements of Commitment to condition Development Approval.

   It is recommended that a program of archaeological excavation be conducted in Aboriginal Artefact locales SU30/L1, SU30/L2, SU30/L3 and SU33/L3 as a form of impact mitigation to off-set overall development impacts.

3. A Cultural Heritage Management Plan should be developed for the appropriate management and mitigation of development impacts during any further planning and project construction. The development of an appropriate Cultural Heritage Management Plan should be undertaken by the project archaeologist in consultation with the proponent, registered Aboriginal parties and the NSW Office of Environment and Heritage.

   The Cultural Heritage Management Plan would be prepared to guide the process for the management and mitigation of impacts to Aboriginal cultural heritage and to set out procedures relating to the conduct of additional archaeological assessment, if required, and the management of any further Aboriginal cultural heritage values which may be identified.

4. Personnel involved in the construction and management phases of the project should be trained in procedures to implement recommendations relating to cultural heritage, as necessary.

5. **Cultural heritage should be included within any environmental audit of impacts proposed to be undertaken during the construction phase of the development.**

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GLOSSARY

Aboriginal object - A statutory term, meaning: '… any deposit, object or material evidence (not being a handicraft made for sale) relating to the Aboriginal habitation of the area that comprises NSW, being habitation before or concurrent with (or both) the occupation of that area by persons of non-Aboriginal extraction, and includes Aboriginal remains' (s.5 NPW Act).

Declared Aboriginal place - A statutory term, meaning any place declared to be an Aboriginal place (under s.84 of the NPW Act) by the Minister administering the NPW Act, by order published in the NSW Government Gazette, because the Minister is of the opinion that the place is or was of special significance with respect to Aboriginal culture. It may or may not contain Aboriginal objects.

Development area - Area proposed to be impacted as part of a specified activity or development proposal.

Harm - A statutory term meaning '… any act or omission that destroys, defaces, damages an object or place or, in relation to an object – moves the object from the land on which it had been situated' (s.5 NPW Act).

Place - An area of cultural value to Aboriginal people in the area (whether or not it is an Aboriginal place declared under s.84 of the Act).

Proponent - A person proposing an activity that may harm Aboriginal objects or declared Aboriginal places and who may apply for an AHIP under the NPW Act.

Proposed activity - The activity or works being proposed.

Subject area - The area that is the subject of archaeological investigation. Ordinarily this would include the area that is being considered for development approval, inclusive of the proposed development footprint and all associated land parcels. To avoid doubt, the subject area should be determined and presented on a project-by-project basis. In this instance the subject area is the development footprint.