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Jemalong 50MW PV Project

Aboriginal Cultural Heritage Assessment Report

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SUMMARY

This summary presents an overview of the legislative context, proposed development, subject area, study aims, conclusions and recommendations.

This Aboriginal Cultural Heritage Assessment Report (ACHAR) is prepared for nghenvironmental, on behalf of Vast Solar Pty Limited (Vast Solar) in respect of a proposed Jemalong 50MW PV Project (photovoltaic solar farm) at Jemalong Station, west of Forbes (the subject area). The facility would be developed on the site of the existing application (SSD 14_6588) for the originally proposed Jemalong Solar Station 30 MW CSP Plant and associated infrastructure (CSP Plant). This report is a revised document which reflects the change in development infrastructure.

The National Parks and Wildlife Act 1974 (NPW Act) is the primary legislation for the protection of some aspects of Aboriginal cultural heritage in NSW. One of the objectives of the NPW Act is:

> *… the conservation of objects, places or features (including biological diversity) of cultural value within the landscape, including but not limited to: (i) places, objects and features of significance to Aboriginal people … (s.2A(1)(b)).*

Part 6 of the NPW Act is administered by the NSW Office of Environment and Heritage (NSW OEH) and provides specific protection for Aboriginal objects and declared Aboriginal places by establishing offences of harm. Harm is defined to mean destroying, defacing or damaging an Aboriginal object or declared Aboriginal place, or moving an object from the land. Anyone proposing to carry out an activity that may harm an Aboriginal object or declared Aboriginal place must investigate, assess and report on harm that may be caused by the activity.

The proposal to construct and operate the photovoltaic solar farm requires development consent under Part 4 of the *Environmental Planning and Assessment Act 1979* (EP&A Act). Section 89C of the EP&A Act provides that development will be State Significant Development (SSD) if it is declared to be SSD by a State Environmental Planning Policy (SEPP). *State Environmental Planning Policy (State and Regional Development) 2011* declared the original Jemalong Solar Station to be SSD as it is development for the purpose of electricity generating works with a capital cost of greater than $30 million (clause 20, Schedule 1).

In most development contexts an Aboriginal Heritage Impact Permit (AHIP) under section 90 of the National Parks and Wildlife Act 1974 would be required if harm to Aboriginal objects and/or declared Aboriginal places is proposed. When this is the case, an Aboriginal Cultural Heritage Assessment Report (ACHAR) is necessary to support the AHIP application.

However, under Section 89J of the Environmental Planning and Assessment Act 1979, an AHIP is not required. Nevertheless, the Department of Planning and Environments Secretary's environmental assessment requirements (SEARs) identify *Heritage* to be a

key issue to be addressed in an Environmental Impact Assessment. This Aboriginal Cultural Heritage Assessment Report (ACHAR) has been prepared to address the SEARs for the original proposal. The management and mitigation measures outlined in this report in respect of the Aboriginal heritage identified during the assessment should inform the Statements of Commitments (SoCs) which would condition the approval process.

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

A process of Aboriginal community consultation has been undertaken as a component of this assessment, and has been conducted in accordance 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 search of the NSW OEH Aboriginal Heritage Management Information System (AHIMS) has been conducted for this project (AHIMS Reference: 149272). Five Aboriginal object sites are listed for the search area, none of which occur in the subject area.

A field survey for Aboriginal areas, objects and places has been conducted. The subject area was found to be highly disturbed by previous agricultural land use. A number of low density stone artefact locales were recorded, the majority of which are situated outside the area in which impacts would occur. Generally, the subject area (a broad amorphous flood plain) has been found to be of low archaeological sensitivity and significance. However, some areas situated in close proximity to Thurumbidgee Lagoon are assessed to be of some greater archaeological potential and significance. These have been excluded from development impacts in the current proposal.

As a result of the assessment the following conclusions and recommendations are made (see Sections 7 & 9 for detailed recommendations):

- The predicted very low density subsurface artefact distribution in the majority of the subject area does not surpass archaeological significance thresholds which would act to preclude the proposal.

- The recorded Aboriginal object locales in the subject area are located outside proposed impacts.
- The 66kv HV line has been moved eastward away from the lagoon so that the predicted sensitive area within 200m of the lagoon is avoided. Parts of this new alignment were not surveyed in 2014. Additional survey will need to be carried out during the design phase.

Acknowledgments

Donna Johnson, Condobolin Local Aboriginal Land Council;
Richard Coe, Condobolin Local Aboriginal Land Council for field assistance;

Archaeological evidence confirms that Aboriginal people have had a long and continuous association with the 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.

Figure 1 Location of the subject area (map supplied by client).

1. INTRODUCTION

Vast Solar is an Australian company developing solar energy generating technology known as Concentrating Solar Thermal (CST). NSW Archaeology Pty Ltd was originally engaged to prepare an Aboriginal Cultural Heritage Assessment Report in respect of that proposal (Dibden 2015). In light of the proposed development, this report documents the current proposed photovoltaic solar farm in respect of the original assessment.

The subject area is situated 36 kilometres west-south-west of Forbes, within the Forbes Shire Local Government Area (Figure 1). The site is located on the 15,478 hectare Jemalong Station, owned by the Twynam Agricultural Group. The Jemalong 50MW PV Project would be sited in a 165 hectare cultivation paddock used for cropping and grazing (Lot 13 DP753118). The site is accessed from the Lachlan Valley Way, via Wilbertroy Lane and Naroo Lane.

The photovoltaic solar farm would connect to an existing Essential Energy substation located three kilometres north of the site. A new powerline between the photovoltaic solar farm and the substation would be required.

The content and format of the 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 located within the area of the proposed activity, as relevant;
- 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, as relevant;
- 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 relevant);
- 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, as relevant;
- Any practical measures that may be taken to protect and conserve those Aboriginal objects or declared Aboriginal places (if relevant); *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 (if relevant).

This heritage assessment has been conducted by Dr Julie Dibden (ANU: BA honours; PhD) and Tom Knight (ANU: BA, MLitt, MA). Assistance in the field has been provided

by Richard Coe, Condobolin Local Aboriginal Land Council. The fieldwork work was undertaken in December 2014. The original development footprint encompasses the new project. Accordingly, a new survey has not been necessary in respect of this revised report.

2. DESCRIPTION OF THE AREA – BACKGROUND INFORMATION

In this section, background and relevant contextual information is compiled, analysed and synthesized. The purpose of presenting this material is to gain an initial understanding of the cultural landscape; the following topics are addressed (*cf.* NSW 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

Aboriginal people have occupied NSW for more than 42,000 years (Bowler *et al.* 2003). Evidence and cultural meanings relating to occupation are present throughout the landscape (NSW OEH 2011: iii). A consideration of landscape is particularly valuable in archaeological modelling for the purposes of characterising and predicting 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, the examination of environmental context is valuable for predicting the type and nature of archaeological sites which might be expected to occur. Factors that typically inform the archaeological potential of landscape 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 locational and landscape context of the subject area.

The subject area is on the Jemalong 8431S 1:25,000 topographic map. For mapping purposes it is in Zone 55. The photovoltaic solar farm would be built in Lot 13

DP753118, while the transmission line would traverse Lots 5 DP1118332, Lot 48 DP753118 and Lot 1 DP118332, in the Parish of Towyal, County of Gipps. The proposed access roads (existing formed roads), Wilbertroy Lane and Naroo Lane, are in crown reserves.

Jemalong is located in the central north-west of the South Western Slopes Bioregion, part of the International Biogeographic Regionalisation of Australia (Commonwealth Department of Environment, Water, Heritage and the Arts, 2011). The South Western Slopes Bioregion is an extensive area of foothills and isolated ranges comprising the lower inland slopes of the Great Dividing Range. Part of this is the Mid Lachlan subregion, characterised by open plains, low north-south trending ranges and cross-cut by the Lachlan River and associated channels. The Lachlan River catchment spans 85,000 km2 of central western New South Wales and forms part of the Murray–Darling basin (Kemp 2010).

The Lachlan basin experiences a temperate climate with mild winters. Streams are mostly rainfed although snowfall may occur above 900 m. Rainfall in the highland catchment in the east, averages 650 mm distributed evenly throughout the year, but precipitation decreases with distance inland with a mean of 520 mm occurring at Forbes (Kemp 2010).

Alluvial plains make up 78 percent of the Murray–Darling basin (of which the subject area is a part), but most of the water and sediment to the river is supplied by its small highland catchment. Four major tributaries rise from this area, namely the Abercrombie, Belubula and Boorowa Rivers and Mandagery Creek (Kemp 2010). After leaving the highlands, the Lachlan has no perennial tributaries. The channel contracts with distance downstream and channel gradient decreases from 0.0006 at the highland slopes to 0.00003 on the lower plains. Downstream from Hillston, the Lachlan dissipates its remaining water in distributaries that terminate in ephemeral wetlands or lakes, failing in most years to reach its confluence with the Murrumbidgee. Repeated avulsion of the lower Lachlan has produced a network of distributaries that may have been active channels in the Pleistocene when higher discharges produced overflowing lakes and laterally active rivers in the western part of the basin. In the Holocene, these channel belts became stable and most of the drainage and sedimentation is internal, although the longevity of shallow wetland depressions indicates low sedimentation rates in the rivers terminal reaches (Kemp 2010).

In the section of the Lachlan that the subject area is located, the floodplain is unconfined and the river maintains a single channel, with higher flows diverted to flood channels when flow overtops the banks. These subsidiary channels have beds elevated several metres above the main channel, and diverted flood flows may be held in anabranches that run for several tens of kilometres before returning to the parent stream (Kemp 2010). Anabranches occur between Warroo and Kiacatoo west of the subject area. These operate at levels below bankfull stage and wander freely on a broad floodplain (Kemp 2010).

In the less-confined reach where the subject area is situated, large flood features are more subdued. Floodplain widths vary, but anabranches may direct floodwaters to ephemeral lakes and lagoons in more distant parts of the alluvial plain, such as the lagoon north of the proposal area.

The South Western Slopes botanical region is an intensively and extensively disturbed area of NSW. Given a combination of mainly flat to undulating country, fertile soils and reliable rainfall, European settlement proceeding rapidly between 1829 and 1845. This led to large scale modification of the landscape for cropping and grazing of domestic stock over the next 100 years (Burrows 1999).

The photovoltaic solar farm would be constructed in cultivation paddocks located approximately 3.3 kilometres south of the Lachlan River (see Figure 2; Plate 1). The landform is located on the riverine floodplain. Small pockets of Poplar Box woodland which range in size from 0.1 to 0.5 hectares occur across the site and these would be retained. The paddock measures 165 hectares, of which Vast Solar proposes to develop the western half.

The soils are quaternary aeolian and fluviatile undifferentiated sand, silt and gravels which may extend to depths of 100m (Knight 2001: 35). These deposits are overlain with red brown earths and brown, red or grey clays. Prior to European clearance, the subject area is likely to have been well wooded, as described by Oxley (1920). Knight (2001: 39) indicates that a mosaic patterning of woodland and scrub is probable.

Plate 1 The east end of the paddock in which the Solar Thermal Plant would be constructed; looking west.

The floodplain of which the subject area is a part, is a large, featureless and amorphous landform and is generally of low archaeological potential. However, the subject area is situated immediately to the south of Thurumbidgee Lagoon, a large meandering overflow channel. This feature is shallow and generally dry, although at the time of fieldwork after some rain, a depression in its western end retained water. The lagoon forms a part of an overflow drainage line which extends southwest from a bend in the Lachlan River. The land adjacent (within c. 200m) to the lagoon is archaeologically sensitive given the presence of water, albeit at best ephemeral, located at some distance from the river, and would likely have been targeted seasonally while people hunted and moved away from the main river. The lagoon would also have been targeted for the exploitation of flora and fauna, again, at least seasonally. As a result, the materials associated with this landuse, such as stone artefacts, hearths and perhaps human interments, would remain present in areas proximate to the lagoon. It is considered unlikely that these would occur in any significant density further than c. 100 - 200 meters from the lagoon.

Figure 2 The subject area in its topographic context.

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 (Bowler *et al*. 2003; 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 across 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. 6000 BP sea levels had more or less stabilised to their current position. With the changes in climate during the Holocene Aboriginal occupants had to deal not only with reduced landmass, but changing hydrological systems and vegetation; forests again inhabited the grass and shrublands of the Late Glacial Maximum. As Mulvaney and Kamminga (1999: 120) have remarked:

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

The study area is situated within land which today is seen as having traditionally been occupied by the Wiradjuri peoples. This attribution of group relationship was made by Tindale (1974) based on notions of affiliation due to a shared language throughout a broadly distributed Aboriginal population. The Wiradjuri inhabited a widespread area which extended from the Great Dividing Range west to the Macquarie, Lachlan and the Murrumbidgee rivers (Coe 1989).

However, Tindale's (1974) modelling was based on an uncritical adoption of the Radcliffe-Brown model of social organization in which the band is perceived as the most important structural feature in Aboriginal social organisation. Tindale's tribal boundaries were largely defined according to what he understood to be language groups (Flood 1980: 107). His work was conceptualized according to a model of band social organisation in which the 'horde' or clan was considered to be the group which possessed political power and proprietary rights to land (Rumsey 1989: 70). The 'tribes' which Tindale determined to have existed were seen as coterminous with language groups with the implication that these groupings were territorial units.

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

The assumptions inherent in this conflation of language group with tribe are no longer seen to be relevant and, furthermore, the concept of tribe as a territorial group is not regarded as being correct or useful. In Aboriginal society people were multilingual rather than monolingual. Therefore conceiving of language groups as bounded social groupings is not appropriate (Rumsey 1989: 74). In the Radcliffe-Brown model, the land/language relationship was seen as indirect: the estate of a tribe was seen as the aggregation of all the clan estates who spoke the same language. This relationship is now viewed to be direct – it is recognised that the importance of land/language relations in Aboriginal society is that particular languages and particular tracts of country were directly linked according to Dreaming activity (Rumsey 1989: 74-75).

While it was previously assumed that tribes or language groups functioned as politically cohesive corporate groups, more recently it has been recognised that linguistic groupings do not structure the Aboriginal social and geographical landscape. Sutton and Rigsby (1979: 722) argue that Tindale's tribal boundaries are not meaningful at either a demographic or political level. In order to overcome Tindale's limited and flowed tribal boundary model, recourse must be made to more contemporary anthropological concepts and understanding.

Nevertheless, knowledge and understanding of Aboriginal social life and organisation in south-eastern New South Wales at the time of European occupation is limited. 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 biased. Stanner (1977) has described the colonial and post-colonial past as a 'history of indifference', and this portrays both the substantive situation which prevailed at that time, and the subsequent lack of regard for this history. For a considerable period of time after Europeans arrived in Australia, no concerted ethnographic investigations were undertaken to learn about the culture and society of Aboriginal peoples. As a result, in trying to reconstruct the complex traditional cultures of varying Aboriginal groups, investigators of today are necessarily required to piece together, as best as possible, fragmentary information derived from the generally incidental annotations of disparate early observers.

A person's identity is likely to have included totemic identity and specific relationships to country inherited via birth rights, place of birth and so on. People would have travelled to and resided in different tracts of country, forging temporary groups of varying personnel and clan composition for the fulfilment of a variety of economic, familial and ceremonial purposes. Archaeological conceptions of social groupings need to consider the multidimensional nature of groups based on clan, gender and age identities which are likely to have been both contemporaneously and generationally fluid.

The explorers Oxley and Cunningham travelled through the Lachlan Valley in 1817. Oxley (1817) observed:

> *About a mile from this place we fell in with a small tribe of natives, consisting of eight men; their women we did not see. They did not appear any way alarmed*

> *at the sight of us, but came boldly up: they were covered with cloaks made from opossum skins; their faces daubed with a red and yellow pigment, with neatly worked nets bound round their hair: the front tooth in the upper row was wanting in them all: they were unarmed, having nothing with them but their stone hatchets. It appeared from their conduct that they had either seen or heard of white people before, and were anxious to depart, accompanying the motion of going with a wave of their hand (cited in Whitehead 2003:105).*

The major rivers and associated tributaries are likely to have been the focus of livelihood and supplied a variety of consistent and plentiful food including fish, water fowl and shellfish. On August 22, 1817, John Oxley, travelling up the Macquarie River from the Wellington Valley, observed 'an abundance of fish and emus … swans and ducks' as well as very large mussels growing among the reeds in many stretches of the river (Oxley 1820).

Riverine resources were supplemented with kangaroos and emus. According to Thomas Mitchell, Surveyor-General of the Colony of NSW, possums formed an important part of people's diet, as well as being used for making warm winter cloaks, arm bands and other items of clothing. Mitchell, who conducted several expeditions into the interior in the 1830s and1840s, wrote that possums were found in the hollow trunks of upper branches of tall trees which were climbed by cutting notches into the trunks.

Vegetable foods formed a significant part of the diet. The Wiradjuri exploited daisy yams (*Microseis scapigera*) and a range of other roots and tubers, including lily and orchid tubers and Kurrajong roots (*Brachychiton populneum*) (Gott 1983, White 1986: 57-58). Kurrajong and Acacia seeds would be ground for flour, as would certain grass seeds, such as oat grass or kangaroo grass (*Themeda australis*).

A detailed discussion of local Wiradjuri social organisation and beliefs is set out in Knight (2001) and is not repeated here.

2.3 Material Evidence

A search of the NSW OEH Aboriginal Heritage Management Information System (AHIMS) has been conducted for this project on the 29 September 2014 (AHIMS Reference: 149272). The search area measured 400 km² and encompassed the area between eastings 550000 – 570000, and northings 6294000 – 6314000. Five Aboriginal object sites are listed for the search area, although one is incorrect – see below (Table 1, Appendix 2). The location of Aboriginal object sites, as per the AHIMS grid references are shown in Figure 3.

It is noted that the AHIMS register only includes sites which have been reported to the NSW OEH. Generally, sites are only recorded during targeted surveys undertaken in either development or research contexts. Accordingly, this AHIMS search cannot be considered to be an actual or exhaustive inventory of Aboriginal objects situated within the local area or indeed within the study area.

It is also noted that sites listed on AHIMS may be variable in their accuracy; it is not uncommon for grid references and/or the datum to be incorrect. AHIMS Site #43-2-0062 is removed from the list in Table 1 as it is located in Wentworth, western NSW.

Searches have been conducted of the NSW State Heritage Inventory and the Australian Heritage Database. No Aboriginal sites for the area were listed in either database.

Table 1 AHIMS Sites.

Site ID	Site name	Easting	Northing	Primary contact	Site types
43-2-0066	Forbes-Jemalong Scarred Tree 4	564219	6305337		Scarred Tree
43-4-0017	MD 25	564850	6299800		Scarred Tree
43-2-0001	Warroo;	555925	6310110		Midden
43-2-0002	Bedgerebong; Allawa Skeleton;	560511	6308327		Burial/s

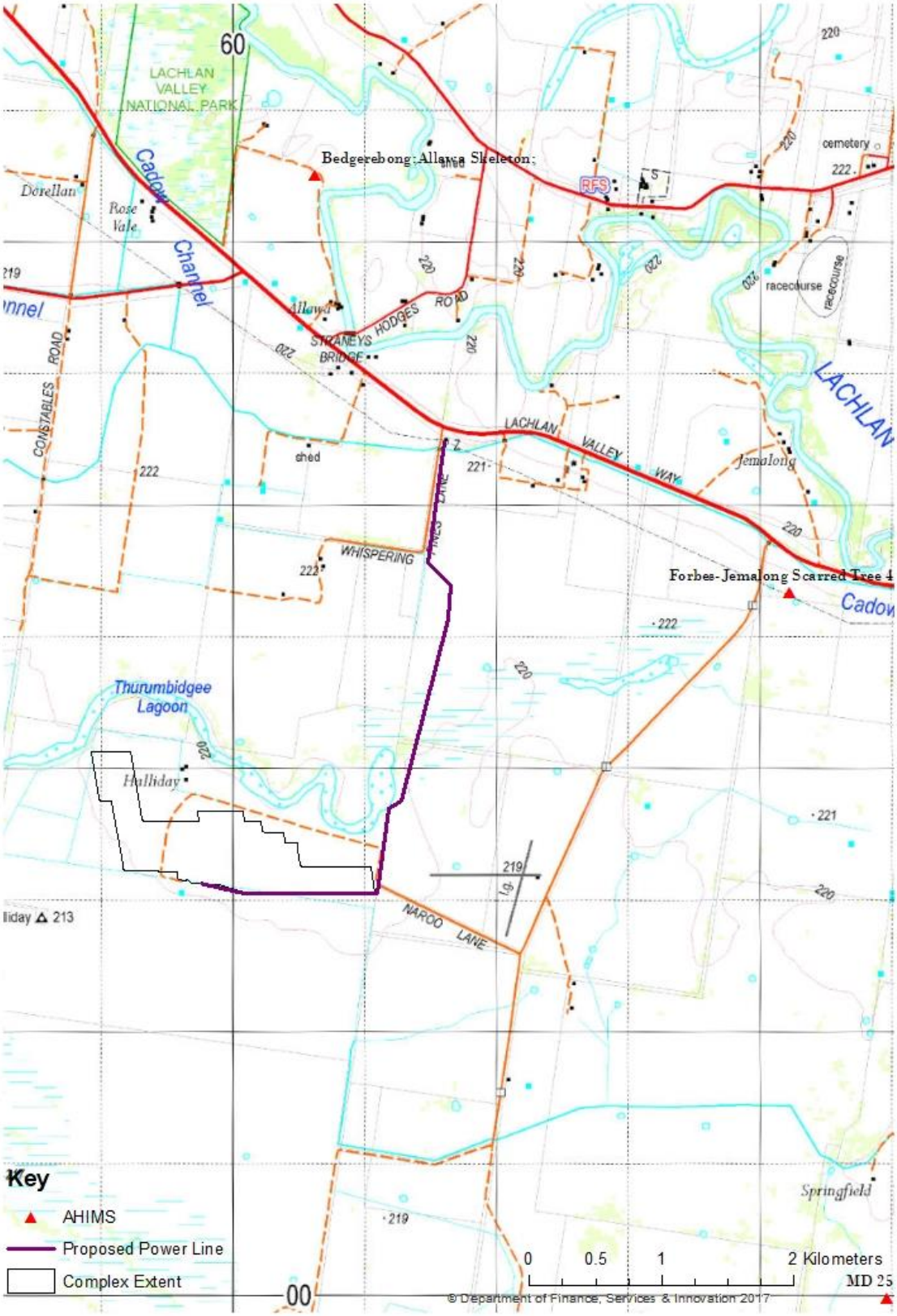

Figure 3 Location of AHIMS sites in relation to the proposal area (datum changed to GDA for mapping).

2.3.1 Previous Archaeological Assessments in the Local Area

Aboriginal occupation in the Darling Basin, which encompasses part of the Wiradjuri territory to the west, has been dated to 40,000 years (Haglund 1985). Closer to the study area, archaeological excavations in the western Blue Mountains have shown Aboriginal occupation to 12,000 years BP (Lourandos 1997). A date of just over 7,000 years BP has been calculated for deposit retrieved from Granites 2 shelter, about 50km northeast of Manildra (Pearson 1981). A similar date was derived from the dating of the skeletal remains of a male individual found in a cave near Cowra (Pardoe and Webb 1986).

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. The 1960s 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. Rather limited topics such as site locational models, subsistence, technology and environmental adaptation were addressed.

Numerous studies have been undertaken, both in an academic and consultancy context, in the broader region of the Western Slopes and adjoining plains region of NSW. Consideration of a predictive model of site type and site location within a geographical context relevant to the study area can be made through recourse to these previous studies. The following section outlines research conducted within the region.

Although no academic investigations have been conducted that specifically examine the local area, some academic research has been undertaken within the broader central west region. These focus on regions reasonably near to the study area, and encompass areas that possess comparable environmental and topographic contexts. Accordingly, the results of these studies may be applied to the current study as corollaries for inferred patterns of Aboriginal land usage prior to European occupation.

Pearson (1981) conducted a comprehensive study of the upper Macquarie region in relation to his PhD dissertation. In addition to carrying out extensive research of historical sources and reviewing ethnographic data, Pearson (1981) excavated three rock shelters and compiled information about other known archaeological sites in his study area. He determined that the Wiradjuri functioned primarily in small groups of variable size, dependent on the season. These groups were comprised of immediate relations, the smallest being the basic family unit, but groupings could coalesce to form a collective band of between 80-150 people during feasting in times of plentiful food, or for ceremony.

Between them, in smaller groups of up to 20 people, they exploited the resources of a common territory which had a radius of up to 65 km, but which was generally centred on a particular home base location that possessed a reliable watercourse (Pearson 1981).

Pearson (1981) developed a pattern of Aboriginal occupation through the analysis of site location attributes in relation to just over 40 recorded open campsites within four sample areas in the region. He found that archaeological sites could be grouped into two main types, occupation sites, and non-occupation sites, the latter including scarred or carved trees, ceremonial sites, grinding grooves and burial sites. Through analysis of the location of these sites he proposed the following model for the prediction of site location (Pearson 1981):

- The distance of sites from water ranged from 10 to 500 m. However, larger sites were generally located nearer to water (Pearson's average distance from water being 90 m);
- Both good soil drainage and views over watercourses were important site location factors;
- Level ground, shelter from prevailing winds, and elevation above cold air (Pearson's average elevation being 9.1 m) also influenced site location;
- The majority of sites were situated in places that would originally have been comprised of open woodlands in order to source adequate fuel;
- Burial sites and grinding grooves were located as close to habitation as possible. However grinding grooves occur only where there is suitable outcropping sandstone, and burial sites are generally found in areas where soils are of sufficient depth and penetrability for the purposes of interment;
- Ceremonial sites such as earth rings were situated away from campsites;
- Similarly, stone arrangements were also located away from campsites, in isolated places, and were more likely to be located on small hills or knolls, although they can also occur on flat land;
- Scarred or carved trees were distributed with no obvious patterning other than their proximity to watercourses, and in areas more frequently used for camps;
- Quarry sites were located where known outcrops of serviceable stone were reasonably accessible.

Pearson suggests that Aboriginal campsites were rarely used for longer than three nights and that sites with evidence of extensive archaeological deposit probably represent accumulations of material over a series of short visits.

To the north of the study area Koettig (1985) undertook a comprehensive study relating to Aboriginal occupation of the Dubbo area. Following a desktop review, Koettig (1985) commenced a systematic survey of a variety of landform units and stream order contexts so as to ascertain the relationship of site type and site location to specific environmental settings within three principal physiographic zones. As a result of this study Koettig (1985) proposed that: Aboriginal sites will be distributed throughout all landscape units; Open artefact scatters, scarred or carved trees and grinding grooves are the most common site types. The location and comparative size of sites is principally determined by environmental and social influences. While site location dictated by social determinants

cannot be predicted, some modelling of site type and site location in relation to environmental factors may be made. Those factors include:

- Proximity to water:- although sites were found in all landscape settings including hills and ridges distant from water, the largest campsites were located close to permanent watercourses.
- Availability of food resources:- While the widest range of foods was found along major watercourses in association with the available permanent water, some foods were seasonal and located away from permanent watercourses.
- Geological formation:- Certain site types occur in particular settings. Grinding grooves are located where there are suitable sandstone outcrops, while quarries are found where there is a useable and accessible stone resource. Burials are most likely to be found in sandy deposits such as those that exist on alluvial flats.

White (1986) conducted a general study of the Wiradjuru. White (1986) explored the basic notions of Riverine and Plateau habitats. 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.

Paton and Hughes (1984) assessed two areas along the Lachlan River between Condobolin and Hillston. The results of this study noted that site densities were highest along the Lachlan River and 'extremely' high artefact frequencies occurred close to the river (up to one artefact per square metre –*it is hard to see how this could be considered high density*), decreasing rapidly with distance from the river. These results led the authors to the conclusion that Aboriginal people primarily focussed their activity along the resource-rich Lachlan River and the nearby wetlands and lakes. Occupation of the surrounding areas where water was scarce and the land less fertile would have been sporadic.

Lance (1985) undertook a survey in relation to a proposed transmission line that extended 145 kilometres from Wellington to Forbes. Two scarred trees, 14 isolated finds and 16 open camp sites were recorded. While over half the sites (58%) were comprised of 10 artefacts or less, 12% of the sites were made up of scatters of over 100 stone artefacts.

Huys and Johnston (1995) conducted a linear survey between Lake Cowal and Forbes for a proposed transmission line installation, for the proposed North Limited open cut mine on Lake Cowal. The route ran north east from Lake Cowal to the southern floodplain of the Lachlan River at Thurumbalgee Lagoon (Huys and Johnston 1995). Six artefact scatters were recorded north of Lake Cowal, two of which were located in the northern reaches of the proposed easement. These were both small (two artefacts per site), and interpreted as providing support for their prediction of low to very low artefact density sites occurring in that section of their study area (Huys and Johnston 1995: 22).

Navin Officer Heritage Consultants (2007) conducted an assessment of the proposed Peaking Power Plant and associated gas pipeline near Parkes. The area was comprised of

open plain, comparable to that of the subject area. No Aboriginal objects were recorded but a *possible* scarred tree was described.

OzArk EHM (2011) conducted an Aboriginal and historic heritage assessment at three locations within an area that would be impacted by the proposed Hera Project to extract gold and base metals near the township of Nymagee in Western NSW. The area occurs in low ridge country classified as being of the Yackerboon Land System. The area comprises ridge crests and slopes. The majority of the Project Site area was on an alluvial plain below a prominent feature in the landscape, The Peak. No Aboriginal object sites were found and the area was assessed to be of low potential.

2.3.2 Predictive Model of Aboriginal Site Distribution

Purcell (NPWS no date) conducted an analyses of site distribution in the Lachlan Valley catchment and concluded that the single most determining factor influencing the distribution of Aboriginal sites across the landscape is water.

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

Stone Artefacts

Stone artefacts are located either on the ground surface and/or in subsurface contexts. Typically stone artefacts are representative of debris which results from flaking stone and will include unmodified flakes (and fragments), cores and flaked pieces. Actual stone tools such as deliberately formed artefacts (for example, scrapers, backed artefacts or adzes) or pieces which possess evidence of use are generally present in low frequencies only. The detection of artefacts depends on ground surface factors and whether or not the potential archaeological bearing soil profile is visible. Breaching of at least 10 cm of the topsoil is usually necessary in order to view the potential artefact soil bearing profile.

Given the environmental context, it is predicted that stone artefacts will be present in the proposal area in generally very low to negligible density. The exception would be in areas situated within close proximity to the lagoon where artefact density is likely to be relatively higher.

Grinding Grooves

Grinding grooves are always located on sandstone exposures and are the result of the manufacture and maintenance of ground edge tools. Such tools were generally made of stone, however, bone and shell were also ground to fine points.

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.

Given that there are no sandstone outcrops in the study area, this site type will not be found during the study.

Burials

Burial sites have been recorded within the wider region, and are typically found in deep soil deposits. Burials are considered unlikely to be present in the area of proposed Solar Plant, but may occur adjacent to the lagoon.

Rock Shelter Sites

Rock shelters consist of any form of rock overhang which contains artefacts and/or art. Common archaeological features of rock shelter sites are: surface artefacts, occupation deposit such as stone artefacts, shell, bone and charcoal, rock drawings, paintings and stencils, engraved imagery, potential archaeological deposit and grinding grooves.
Given the absence of large vertical stone exposures this site type will not be present in the subject area.

Scarred and Carved Trees

Scarred and carved trees result from the removal of bark from trees by Aboriginal people for either domestic or ceremonial purposes. These site types can occur anywhere that trees of sufficient age are present, however, in an Aboriginal land use context 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 in the study area 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.

It is noted that the proposal area has been subject to comprehensive clearance and that any trees present are the result of regrowth. This site type will not be present in the study area.

Stone Quarry and Procurement Sites

Stone quarry and procurement sites are exposures of stone material which have been exploited by Aboriginal people as a source of raw material (Hiscock & Mitchell 1993:32). These sites will commonly have evidence of exploitation including extraction and preliminary flaking preparation. The presence of these site types is dependent on the surface exposure of suitable stone. Given the lack of exposed rock in the study area, stone quarry and procurement sites are unlikely to be recorded during the current study.

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.

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 features 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 (*cf.* also, Boot 2002: 288). 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 (e.g. 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 subject area is significantly disturbed, reasonably amorphous and relatively indistinct in the surrounding topography so that places are unlikely to standout as unusual or significant in this setting. However, the lagoon situated north of the proposed Solar Plant is a natural feature which may well have been conceived within a more nuanced frame of reference, as suggested by its name which is almost certainly Wiradjuri. No cultural knowledge relating to the subject area has been received during the formal process of consultation we have undertaken.

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 but considered unlikely.

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 study 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 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, Landform Units are utilised as a framework of recording, analysis (*cf.* Wandsnider and Camilli 1992) and ultimately, the formulation of recommendations. The subject area is part of one landform unit, a flood plain.

The data collected during this field assessment forms the basis for the documentation of survey results outlined in the section below. 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).

Survey Coverage Variables

Survey coverage variables were also recorded; these are described further below. 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 (GE) – an estimate of the total area inspected which contained exposures of bare ground; and

Archaeology Visibility (AV) – 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 the New South Wales south-east 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 - NEE) 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.

2.3.4 Field Inspection – Results

In accordance with the OEH *Code of Practice for Archaeological Investigation of Aboriginal Objects in NSW*, the purpose of a field survey is to record the material traces and evidence of Aboriginal land use that are:

- Visible at or on the ground surface, or
- Exposed in section or visible as features (e.g. rock shelters with rock-art),

and to identify those areas where it can be inferred that, although not visible, material traces have a high likelihood of being present under the ground surface (DECCW 2010a: 12).

Survey Coverage and Results

A field assessment has been conducted by Dr Julie Dibden (ANU: BA honours; PhD), Tom Knight (ANU: BA, MLitt, MA) and Richard Coe (Condobolin LALC). 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 study area has been subject to a comprehensive pedestrian survey over two days in December 2014 by three people. The field survey was aimed at locating Aboriginal objects, areas and places. 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. Field survey was designed to assess the archaeological sensitivity of all areas where impacts are proposed.

In the Solar Plant site, 33 parallel, linear transects were walked in a north/south alignment with each person approximately 15 metres apart (measuring a total transect length of c. 28 kms). Each transect covered an area c. 50 m wide. The proposed transmission line was walked as a single transect (3.3 kms). Accordingly, this pedestrian survey methodology encompassed visual inspection of the all ground surfaces within the areas where impacts are proposed impacts and can be considered comprehensive.

Survey results are summarised in Table 2 and Aboriginal object locales are shown in Figure 4.

Table 2 Summary description of Aboriginal object locales recorded during fieldwork.

Name	Easting	Northing	Description
Jemalong Locale 1	559588	6304182	1 stone artefact
Jemalong Locale 2	561268	6303933	1 stone artefact with potential for subsurface deposit
Jemalong Locale 3	561308	6304024	5 stone artefacts with low potential for subsurface deposit (highly disturbed)
Jemalong Locale 4	561389	6305052	1 stone artefact
Jemalong Locale 5	559560	6303959	1 stone artefact
Jemalong Locale 6	560246	6303063	1 stone artefact

Six Aboriginal object locales were recorded during the field survey, each of which is described in detail further below.

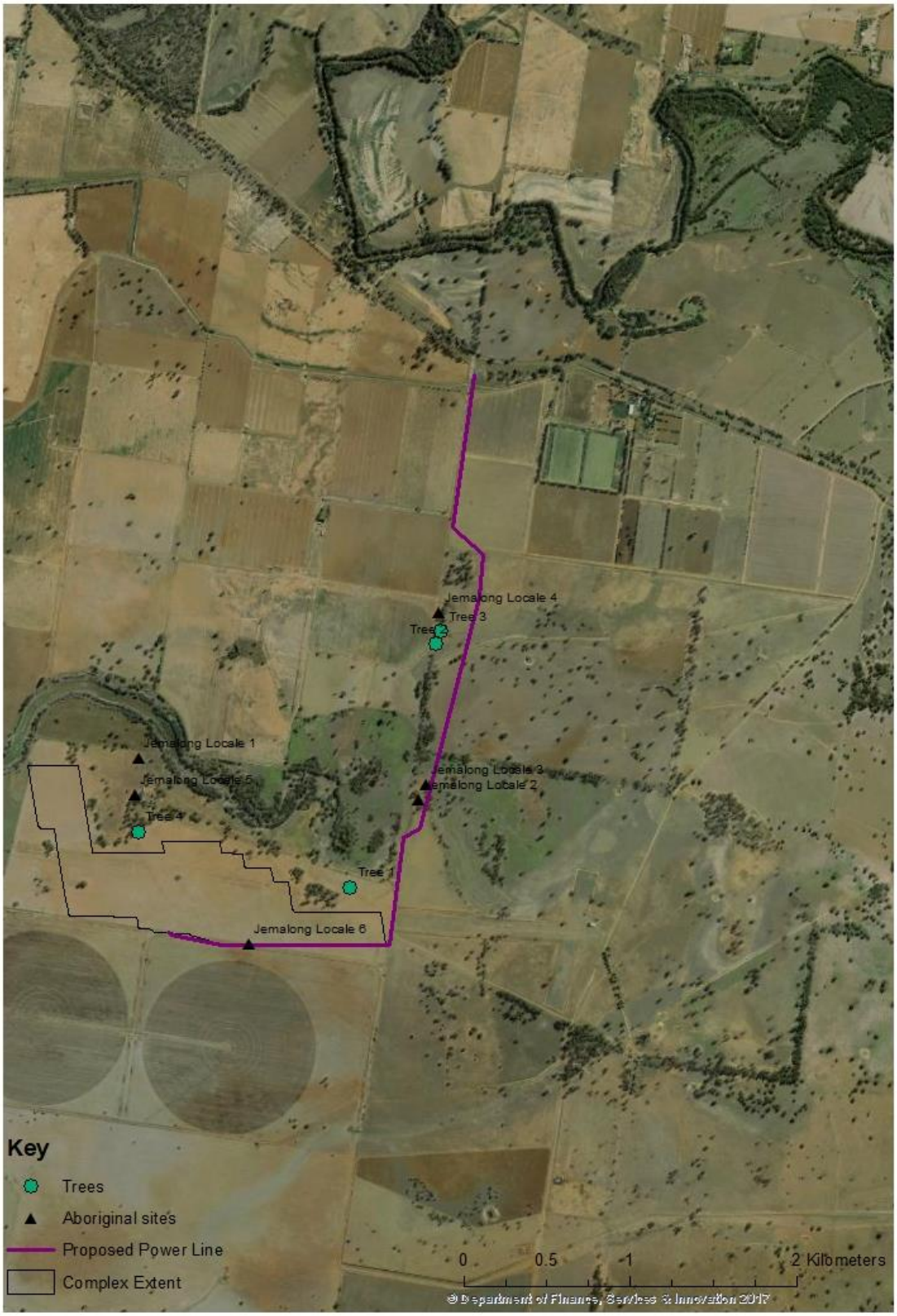

Figure 4 Location of Aboriginal object locales recorded during field work.

Jemalong Locale 1

One milky quartz flake fragment was located at this site at a corner of the cultivation paddock (Figure 5; Plate 2). The area is a large exposure of bare earth under and around a tree, denuded and scuffed by cattle trampling. A bulldozed low earth bank also provides archaeological visibility. The locale is situated c. 200 metres west of the lagoon on the flood plain. A small cobble was found near to the artefact and is possibly a manuport; it does not possess any humanly formed features.

The artefact is a proximal flake fragment measuring 26 x 20 x 8mm (Plate 3).

Given the large area of exposure and archaeological visibility, it is concluded that any additional artefacts in the locale (surface or subsurface), if present, occur in very low density. The site is outside any proposed impacts.

Plate 2 Jemalong Locale 1; looking south.

Plate 3 Artefact and 'manuport' in Jemalong Locale 1.

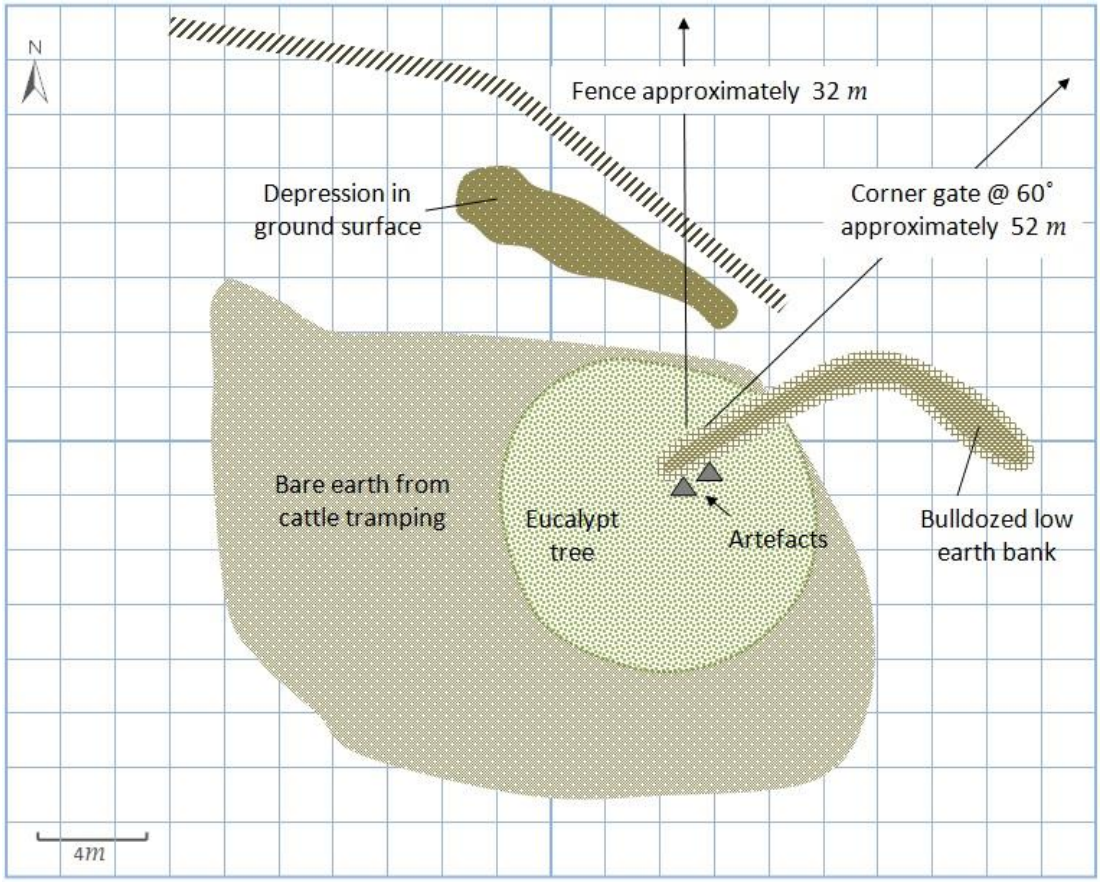

Figure 5 Sketch map of Jemalong Locale 1.

Jemalong Locale 2

One milky quartz flake fragment was located at this site near to the route of the proposed transmission line (Figure 6; Plate 4). The area is located approximately 60m east of the lagoon in an area of uncultivated paddock with scattered trees. The landform is slightly raised. Bare earth patches provides ground exposure and some limited archaeological visibility. A granite pebble fragment was found near to the artefact and is possibly a manuport; it does not possess any humanly formed features.

The artefact is a flake fragment measuring 12 x 9 x 3mm.

The level of archaeological visibility at the site was uncertain but may well be very low given that the area appears to be relatively undisturbed. A broader area measuring c. 200 (north/south) x <200 m area is assessed to potentially have archaeological deposit, the depth, density and nature of which is not known. It is possible for hearths to be present and artefact density to be moderate. The site area is outside the alignment of the proposed transmission line.

Plate 4 Jemalong Locale 2; looking west.

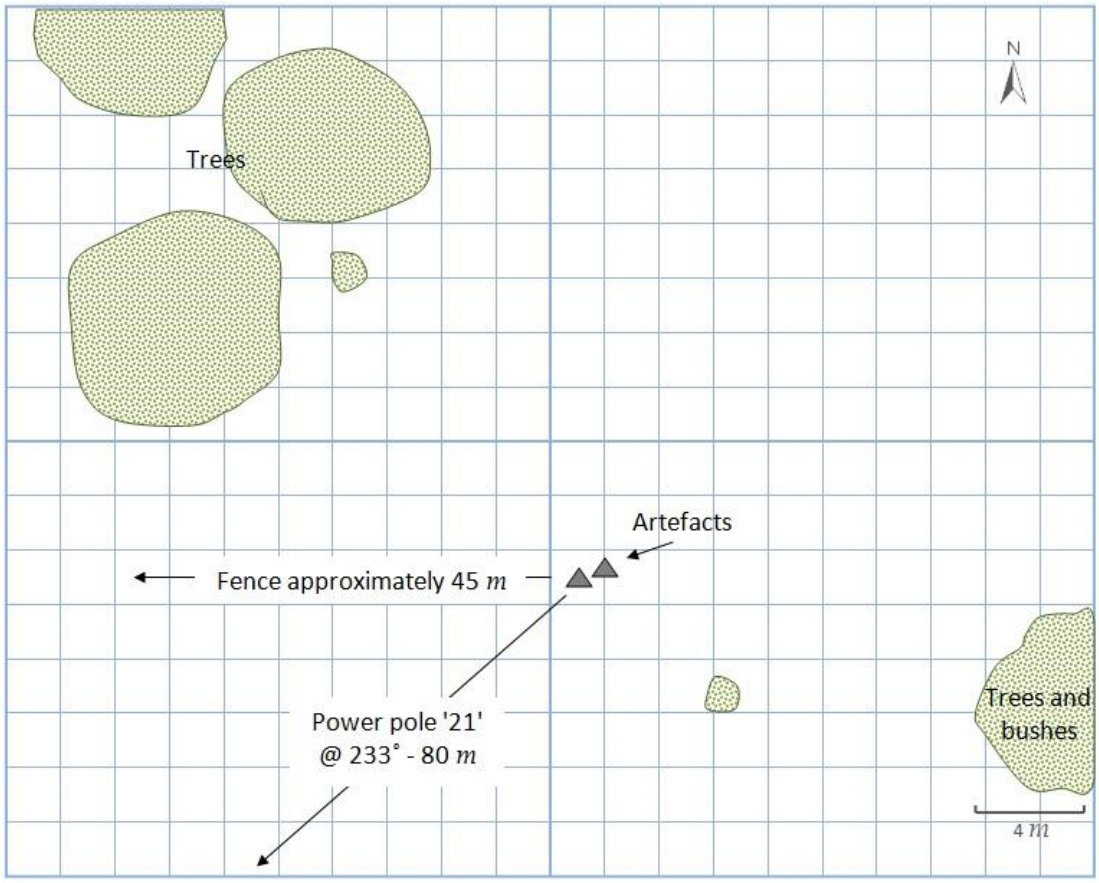

Figure 6 Sketch map of Jemalong Locale 2.

Jemalong Locale 3

Five stone artefacts were located at this site near to the route of the proposed transmission line (Figure 7; Plate 5). The area is located approximate 60m east of the lagoon in a drainage depression (?overflow channel from the river) which has undergone extensive modification. The width of landform modification works measures c. 80 metres. Graded bare earth patches provides ground exposure and some archaeological visibility. Areas in the drainage depression situated away from landform modification appear to be Gilgai (puffs and crab holes). The area has sparse scattered small nodules of heated clay which may be dispersed hearth material.

The artefacts are:

- Milky quartz fragment measuring 20 x 21 x 12mm.
- Milky quartz flake fragment measuring 14 x 9 x 3mm.
- Tuff scraper measuring 27 x 28 x 14mm, with steep edge usewear from ventral on distal end (Plate 6).
- Tuff flake fragment (distal) measuring 17 x 24 x 4mm.
- Milky quartz flake piece measuring 15 x 10 x 12mm.

The level of archaeological visibility at the site is moderate. The area is assessed to have been reasonably archaeologically sensitive originally but now highly disturbed. The comprehensive nature of landform modification works would have virtually destroyed any archaeological integrity the locale may have once had. However, given the locale is in a drainage line (albeit ephemeral), artefact density may only be low or low/moderate at best. The site area is outside the alignment of the proposed transmission line.

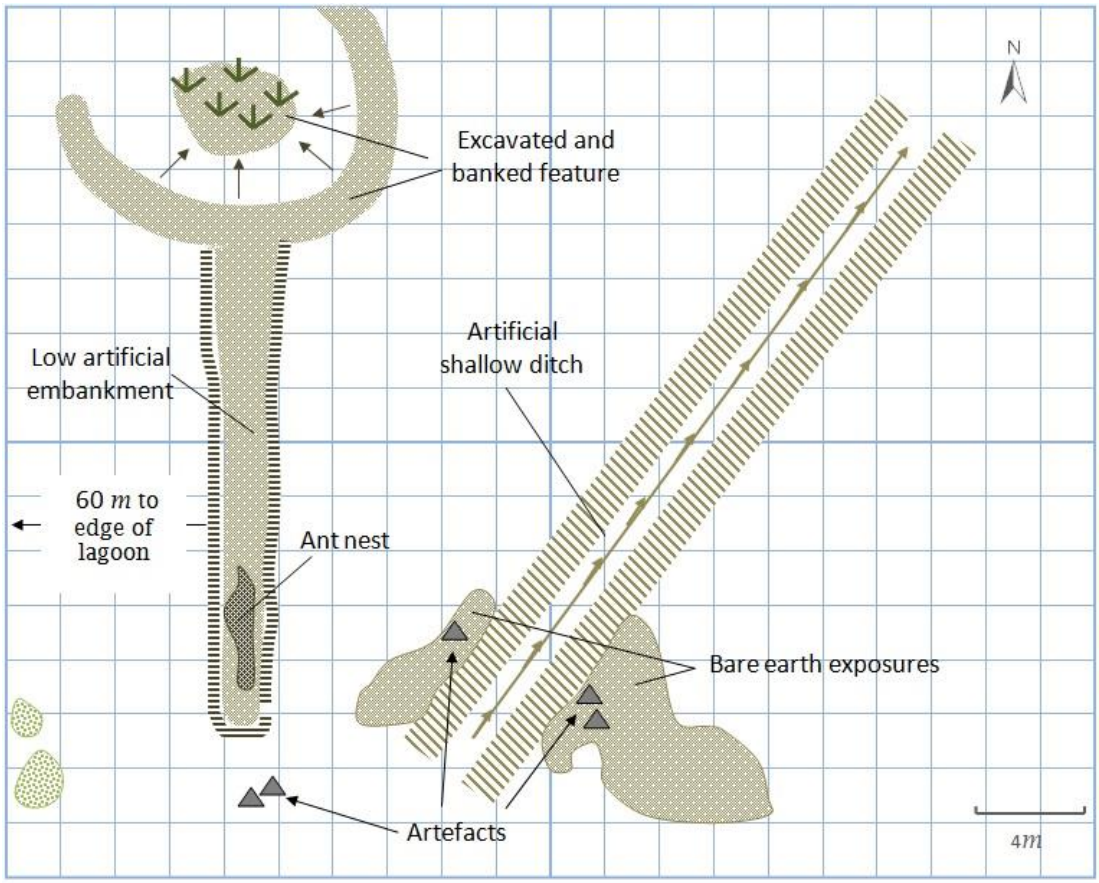

Figure 7 Sketch map of Jemalong Locale 3.

Plate 5 Jemalong Locale 3; looking north.

Plate 6 Tuff scraper and quartz flake fragment.

Jemalong Locale 4

One tuff flake was located at this site near to the route of the proposed transmission line (Figure 8; Plate 7). The area is located adjacent to a fence line in an area of uncultivated paddock with scattered trees. The site is highly disturbed by excavation of a ditch immediately adjacent to the artefact. Bare earth patches provides ground exposure and some limited archaeological visibility.

The artefact is a flake measuring 23 x 32 x 9mm.

Given the large area of exposure and archaeological visibility, and location away from the lagoon, it is concluded that any additional artefacts in the locale, if present, would occur in very low density. The site is near to but away from the alignment of the proposed transmission line.

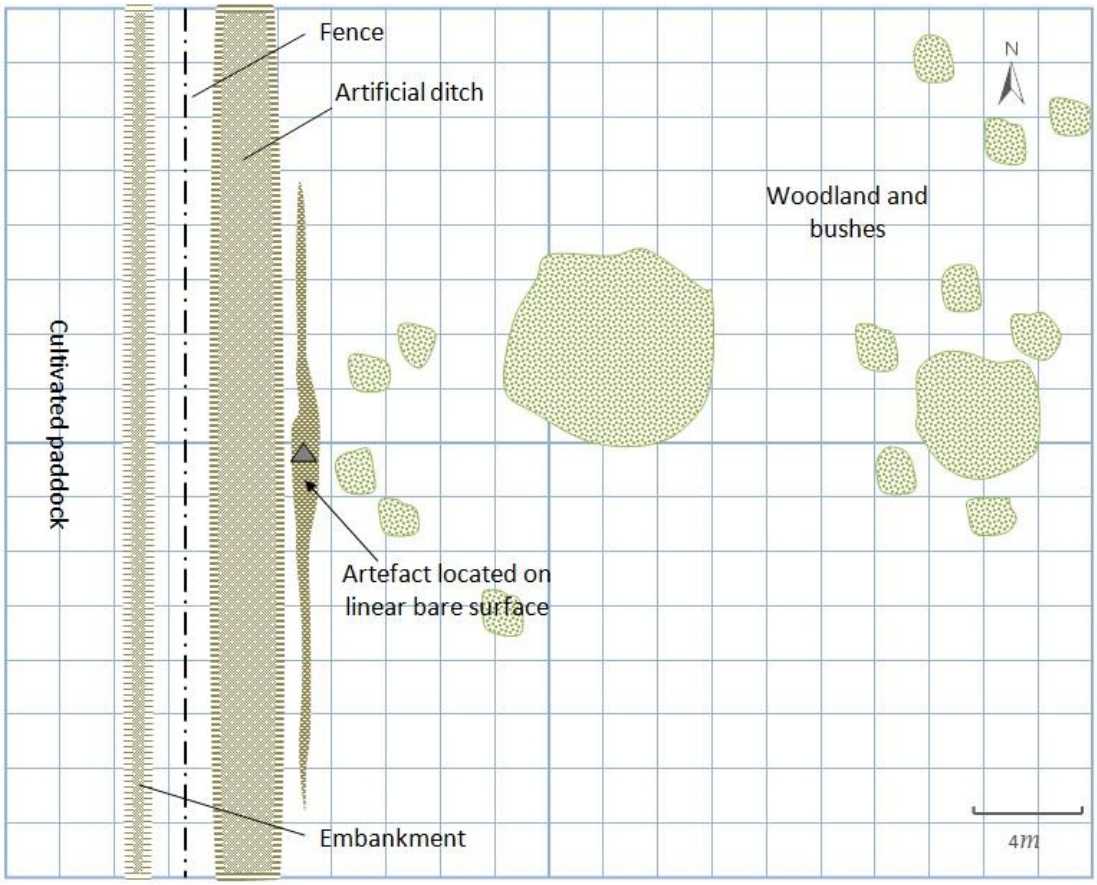

Figure 8 Sketch map of Jemalong Locale 4.

Plate 7 Jemalong Locale 4; looking south .

Jemalong Locale 5

One flake (material uncertain) was located at this site in a cultivation paddock near to the Halliday's House (Figure 9; Plate 8). The area is located in a large area of bare earth

near to a cattle watering trough. The site is highly disturbed. Bare earth patches provides ground exposure and some limited archaeological visibility.

The artefact is a flake measuring 18 x 16 x 8 mm.

Given the large area of exposure and archaeological visibility, and location away from the lagoon, it is concluded that any additional artefacts in the locale, if present, would occur in very low density. The site is located away from proposed impacts.

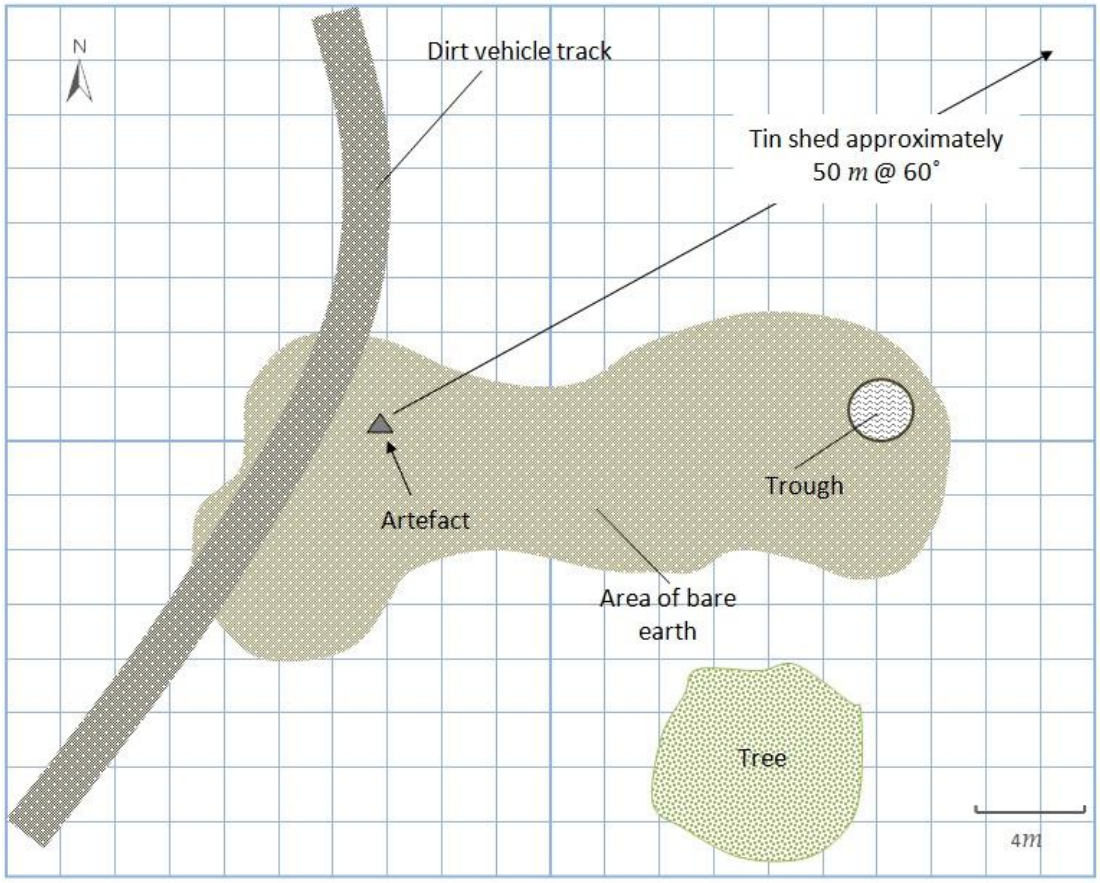

Figure 9 Sketch map of Jemalong Locale 5.

Plate 8 Jemalong Locale 5; looking south.

Jemalong Locale 6

One muller - grinding topstone (Plate 9) was located at this locale at the edge of a cultivation paddock (Figure 10; Plate 10). The site is highly disturbed by cultivation and fencing. Bare earth patches provides ground exposure and some limited archaeological visibility.

The artefact is a highly weathered stone measuring 80 x 75 x 38 mm with both faces possessing smooth surfaces consistent with grinding.

Given the large area of exposure and archaeological visibility, and location away from the lagoon, it is concluded that any additional artefacts in the locale, if present, would occur in very low density. The site is located on the fence line adjacent to proposed impacts.

Plate 9 Muller – grinding topstone - at Jemalong Locale 6.

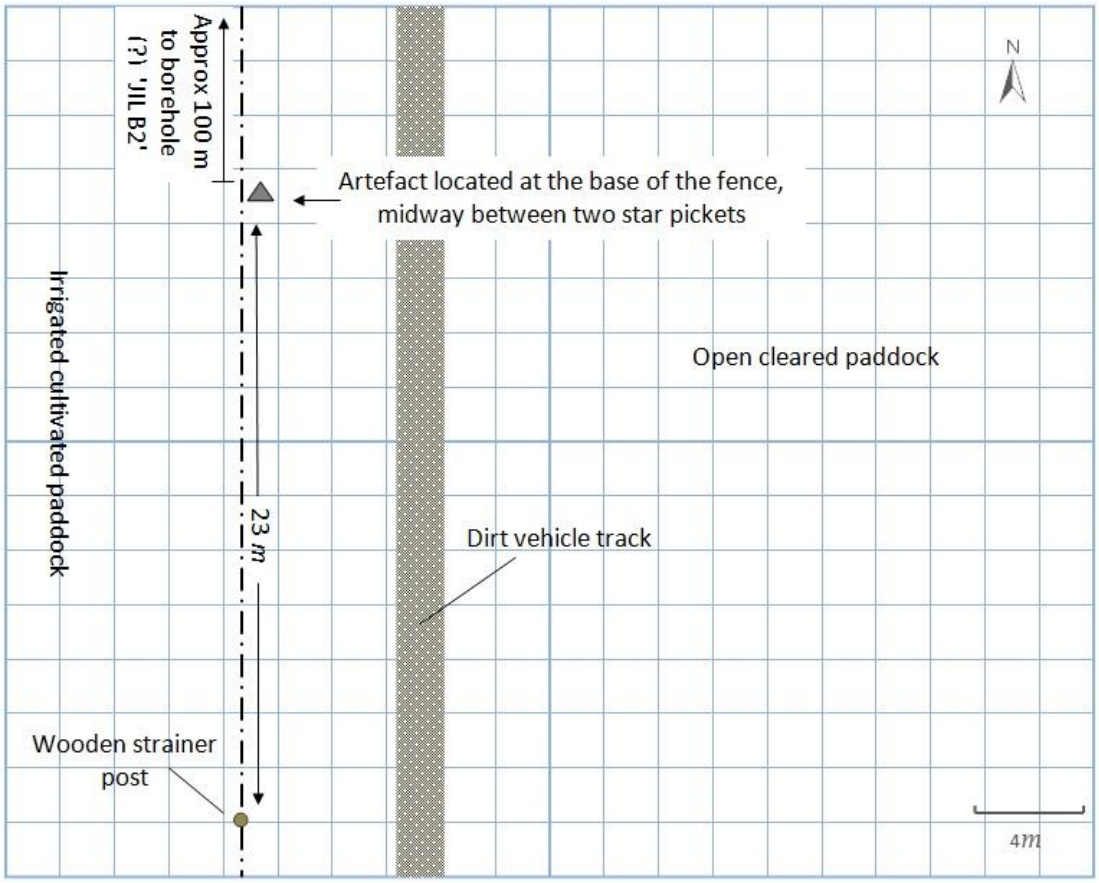

Figure 10 Sketch map of Jemalong Locale 6.

Plate 10 Jemalong Locale 6; looking east.

Summary

A total of c. 144.8 hectares was visually inspected during the field work (Table 3). Ground exposures inspected were comprised of bare earth, excavations, erosion and tracks, and measured approximately 32.12 hectares in area. Of that ground exposure area, archaeological visibility inspected (the potential artefact bearing soil profile) is estimated to have been 9.636 (NEE). Effective Survey Coverage (ESC) is calculated to have been 5.3% of the proposal area.

The ESC encountered during the field survey is considered to be relatively low for the purposes of determining the archaeological status and potential of the subject area. Accordingly, recourse to the predictive model is necessary in order to make conclusions about the archaeological nature and sensitivity of the site. It is concluded that based on a consideration of the environmental context, land situated within close proximity to the lagoon is likely to be sensitive, while land beyond 100 – 200 metres from the lagoon is likely to be of very low or generally negligible potential.

It is noted that the existing access road, Wilbertroy Lane and Naroo Lane have been subject to a vehicle inspection and assessment. Some road paving may occur. The roads traverse land assessed to be of negligible archaeological sensitivity.

Table 3 Effective survey coverage.

Name	Area (ha)	Area visually inspected	GE (%)	GE (sq m)	AV (%)	NEE (ha)	ESC (%)	Predicted archaeological sensitivity
SU1 (Solar Plant)	165	c. 80% 132 ha	20	27 ha	30	8.1	4.9	Very low
SU2 (Transmission line)	16 (3.2km)	c. 80% 12.8 ha	40	5.12	30	1.536	9.6	Very low except for areas adjacent to the lagoon which may contain moderate density artefacts
Total	181 ha	144.8 ha	10	32.12		9.636	5.3	

Four trees with scars were recorded, none of which would be of Aboriginal origin. These are listed in Table 4 below (Figure 4). These trees are listed here in order to avoid any uncertainty or confusion later on. Furthermore, it is noted that they are all outside proposed impact areas. They are likely to be natural and/or of relatively recent origin and do not possess any heritage status.

Table 4 List of trees with scars (non Aboriginal).

tree	easting	northing
Tree 1	560855	6303400
Tree 2	561373	6304862
Tree 3	561404	6304940
Tree 4	559583	6303735

3. CONSULTATION PROCESS

A process of Aboriginal community consultation has been undertaken in accordance with the guidelines as set out in the OEH's *Aboriginal cultural heritage consultation requirements for proponents 2010* (NSW DECCW 2010b).

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 (Appendix 3).

Correspondence dated 7 October 2014 was sent to:

- NSW OEH Dubbo office
- Condobolin 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)
- Forbes Shire Council

In addition an advertisement was placed in the local newspaper (Forbes Advocate) on 11 October 2014.

Responses were received from the Office of the Registrar Aboriginal Land Rights Act 1983 indicating that there does not appear to be Registered Aboriginal owners for the project area (13/10/14). The Native Title Services Corporation responded (13/10/14), indicating that due to their privacy guidelines they would forward our correspondence to any parties who may have an interest in the area in question. The National Native Title Tribunal responded via email of the 7 October 2014 indicating that because the area in question was freehold land, they were unable to action the request. Additionally, correspondence was received from the Office of Environment and Heritage (7/10/14) furnishing a list of six Aboriginal parties who may have an interest in the area. Correspondence dated 13 October 2014 was sent to these groups. A response was received from Forbes Shire Council with a list of four Aboriginal parties who may have an interest in the area. Correspondence dated 27 October 2014 was sent to those parties.

There are two Registered Aboriginal Parties (RAPs) in the formal process of consultation:

- Joy Russell
- Aileen Allen.

In accordance with Section 4.2 and 4.3 of the *Aboriginal cultural heritage consultation requirements for proponents 2010* (NSW DECCW 2010b) guidelines, information with regard to the project, proposed consultation process and assessment methodology was furnished to the RAP's for comment and were requested to provide feedback within 28 days. No response was received. Both RAPs were invited to participate in fieldwork but unfortunately were unable to do so.

A draft copy of the original report was provided to the RAPs and Condobolin LALC for review and comment and none has been received. A draft of this revised report will be forwarded to RAPS for their perusal.

4. SUMMARY AND ANALYSIS OF BACKGROUND INFORMATION

In the previous section the results of the background research and information have been outlined. The purpose of this section of the Aboriginal Cultural Heritage Assessment Report is to explain the results.

It is noted that no information about Aboriginal places, areas or objects has been identified as a result of the process of Aboriginal consultation which has been undertaken (as specified in clause 80C of the NPW Regulation).

No previously recorded Aboriginal object sites are known to be present in the subject area.

Six Aboriginal object locales were recorded during the field survey, most of which are single stone artefacts. None of these would be impacted by the revised proposal.

While the Effective Survey Coverage for the surveyed area is calculated to have been relatively low at the time of survey, many extensive areas of good ground exposure possessing reasonable archaeological visibility were distributed throughout the subject area. These exposures enabled a reasonable characterisation of artefact distribution within the proposal area.

As noted above, the Aboriginal object locales recorded in the proposal area are mostly isolated stone artefacts; these are assessed to be of low archaeological significance. Undetected or subsurface stone artefacts are assessed to be present in very low density in the vicinity of those sites. The exception is Jemalong Locale 2 located in an apparently undisturbed (or relatively so) context within the proposed transmission line alignment. This site is assessed to be of potentially greater archaeological significance.

The Effective Survey Coverage achieved during the survey is considered to have been low but generally sufficient to characterise the nature of artefact distribution in the study area. The survey results are therefore assessed to be a relatively accurate reflection of the artefact density in the proposal area. Accordingly, based on the relevant predictive model of site distribution for the area, and the results of the field survey, artefact density in the study area is assessed to be very low. The exception is any area located within 100-200 metres of the lagoon.

Archaeological test excavation has not been undertaken in respect of the proposal as it could not be justified (*cf.* NSW DECCW 2010a: 24). While areas situated near to the lagoon are assessed to be of relatively higher archaeological sensitivity than the majority of the subject area, they are likely to be able to be avoided and, accordingly, will be subject to a conservation outcome.

While Effective Survey Coverage was generally very low during field survey, given the high levels of previous disturbance and predicted low density of stone artefact

distribution, subsurface test excavation is not warranted. The predictions in regard to the nature of any undetected (subsurface) archaeology is made with relatively high confidence.

It is concluded there are no information gaps which are of a significant magnitude to warrant further consideration.

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. It will almost certainly be the case that the value Aboriginal people feel for Aboriginal objects will differ to archaeological considerations.

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 by 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 scientific significance of the recorded Aboriginal artefact locales in the project area is set out in Table 5.

Table 5 Archaeological significance assessment of Aboriginal object sites.

Site	Significance	Criteria
Jemalong Locale 1	Low local scientific significance.	Common site type Low educational value Low aesthetic value Low research potential: disturbed; predicted very low density.
Jemalong Locale 2	Low/moderate local scientific significance.	Common site type Low educational value Low aesthetic value Low/moderate research potential: potentially intact archaeological deposit of moderate density in broader landform area.
Jemalong Locale 3	Low local scientific significance.	Common site type Low educational value Low aesthetic value Low research potential: highly disturbed; predicted low density.
Jemalong Locale 4	Low local scientific significance.	Common site type Low educational value Low aesthetic value Low research potential: disturbed; predicted very low density.
Jemalong Locale 5	Low local scientific significance.	Common site type Low educational value Low aesthetic value Low research potential: disturbed; predicted very low

Site	Significance	Criteria
		density.
Jemalong Locale 6	Low local scientific significance.	Common site type Low educational value Low aesthetic value Low research potential: disturbed; predicted very low 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.

6.1 Previous Impacts

The subject area has undergone very high levels of prior disturbance associated with original land clearance and cultivation. Accordingly, the archaeological context of Aboriginal objects/sites will be correspondingly disturbed and this will act to lessen their value and significance.

6.2 Proposed Impacts

The proposal involves the construction of a ground-mounted photovoltaic solar array which will generate 50 MW of renewable energy. The solar farm will install a 66kV transmission network which will connect into the existing western Jemalong Essential Energy substation.

The proposal will consist of the following infrastructure components:

- Approximately 170,000 solar panels mounted on either a fixed or single axis tracking system;
- A single access point to the site via Lachlan valley way to the north, Wilbertroy lane and Naroo lane;
- Internal access tracks;
- Operations and maintenance building with associated car parking;
- An electrical substation and switching yard;
- Overhead and underground electrical cable reticulation;
- Security fencing and CCTV;
- Native vegetation plantings to provide visual screening for specific receivers, if required;
- Subdivision for the project site and for the electrical substation (and switching yard) and transmission line;
- A 5 km (approx.) 66kV overhead power line;
- An unsealed all weather access track, within Jemalong Station, along the route of the existing farm gravel road access (Naroo Lane). This existing road was constructed and is maintained to carry large grain trucks during harvest, and would need only minimal upgrading.
- Ancillary facilities including:
    - Material laydown areas;
    - Temporary construction site offices;

- Temporary car and bus parking areas for construction workers transportation;
- Basic staff amenities.

The 66kv HV line has been moved eastward away from the lagoon so that the predicted sensitive area within 200m of the lagoon is avoided. Parts of this new alignment were not surveyed in 2014. Additional survey will need to be carried out during the design phase.

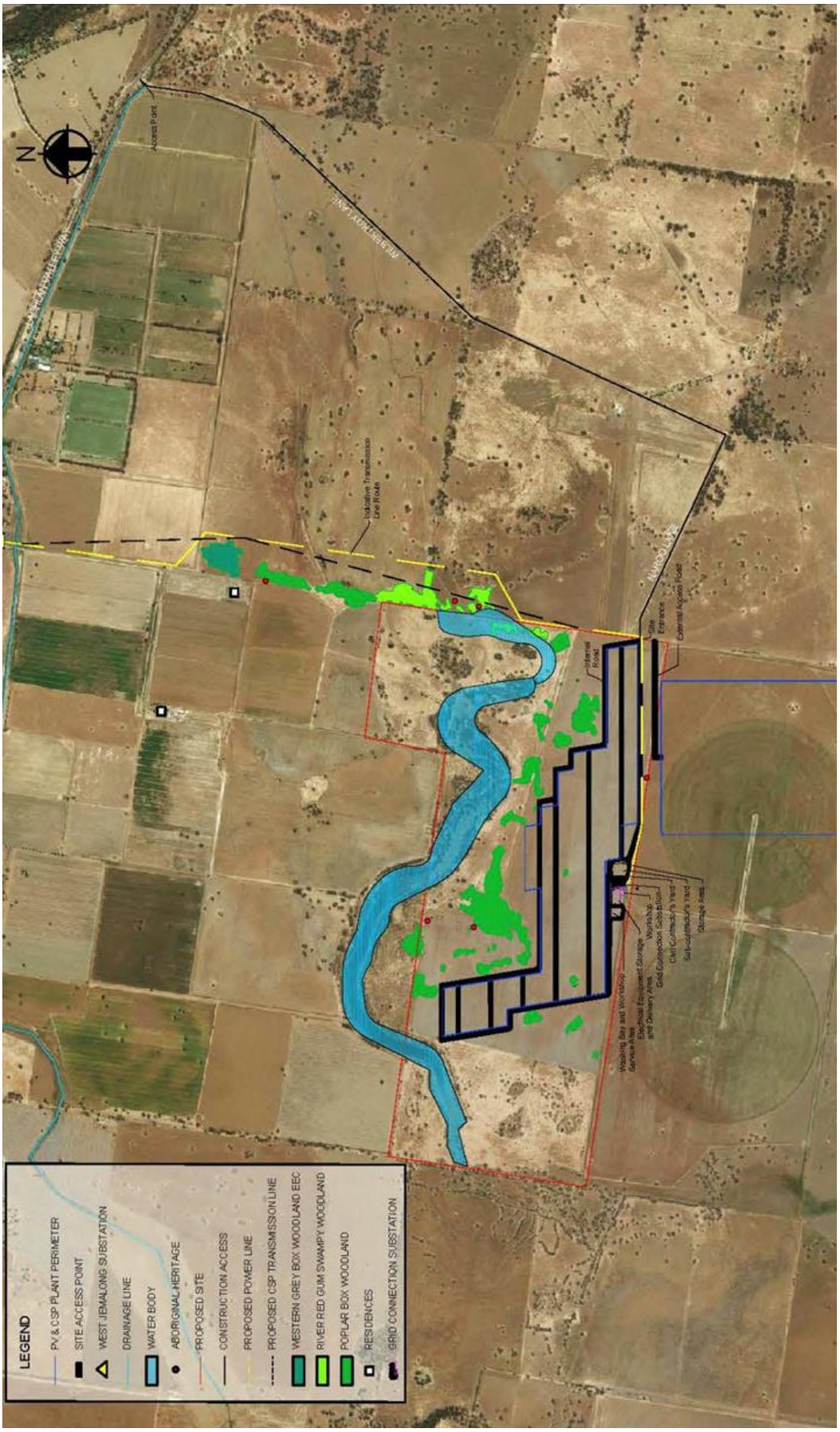

Figure 11 The project layout.

6.3 Type of Harm

An impact assessment is set out below in Table 6. The location of Aboriginal object sites in respect of the proposed impacts is shown in Figure 13.

Table 6 Impact assessment of Aboriginal object locales within the proposal area.

Aboriginal object site	Significance	Type of harm	Degree of harm	Consequence of harm
Jemalong Locale 1	Low local scientific significance.	nil	nil	nil
Jemalong Locale 2	Low/moderate local scientific significance.	nil	nil	nil
Jemalong Locale 3	Low local scientific significance.	nil	nil	nil
Jemalong Locale 4	Low local scientific significance.	nil	nil	nil
Jemalong Locale 5	Low local scientific significance.	nil	nil	nil
Jemalong Locale 6	Low local scientific significance.	nil	nil	nil

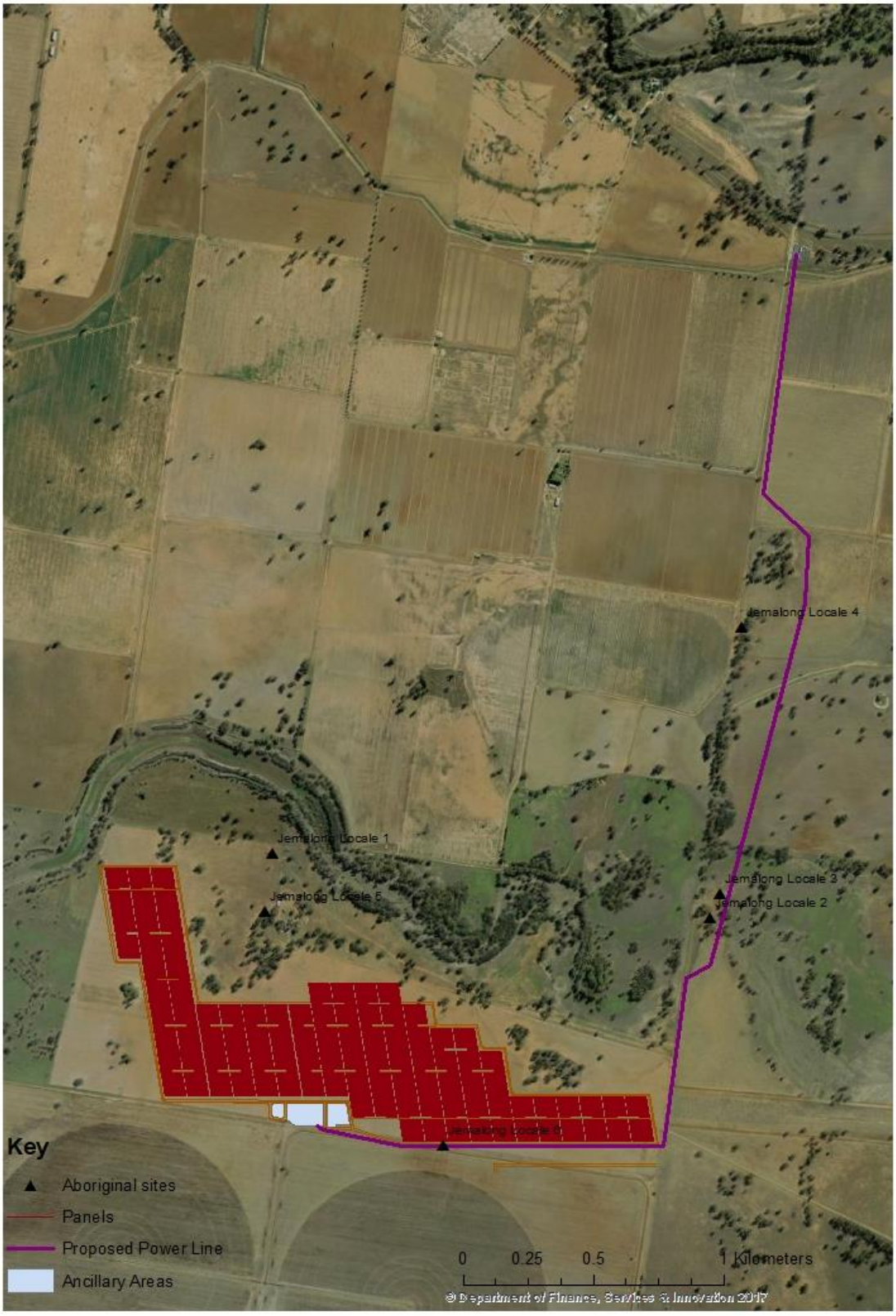

Figure 12 Location of Aboriginal objects in respect of proposed layout.

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 proposed impacts will take place within an area of road corridor that has sustained a high level of prior impacts. The works would therefore occur in areas which have already received a certain level of impact and harm. Accordingly, considerations of ecologically sustainable development and cumulative impacts can be considered largely irrelevant in the matter at hand.

Avoidance or the mitigation of harm has not been considered as an option in relation to the proposed activities. The cultural and archaeological significance of the proposal area has not been assessed to be of sufficient significance to warrant the implementation of avoidance or mitigation strategies. However, no Aboriginal sites would be impacted by the revised proposal.

Proposed management and mitigation strategies are discussed below.

7.1 Management and Mitigation Strategies

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.

No Aboriginal objects or survey units with potential conservation value have been identified to have a high probability of being present in the impacts 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.

The 66kv HV line has been moved eastward away from the lagoon so that the predicted sensitive area within 200m of the lagoon is avoided. Parts of this new alignment were not surveyed in 2014. Additional survey will need to be carried out during the design phase.

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, the development of a conservation strategy is not relevant in the majority of proposed impact areas.

Mitigated Impacts

Mitigated impact usually takes the form of partial impacts only (i.e. conservation of part of an Aboriginal site or landform) 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.

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 or limiting the extent of impacts is simply not feasible.

Monitoring

Monitoring during construction for the purposes of identifying cultural material that may be uncovered during earth disturbance can be implemented as a management strategy. However, monitoring is a reactive rather than proactive strategy, and as such, is not an ideal management tool in cultural heritage management. Monitoring for artefacts is not a widely accepted method of management because sites of significance can be destroyed as monitoring is taking place and because it can result in lengthy and costly delays to development works if significant cultural material is uncovered. In the case at hand, the development of a monitoring strategy is not considered necessary or appropriate.

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*.

Part 6 of the National Parks and Wildlife Act 1974 (NPW Act) provides specific protection for Aboriginal objects and declared Aboriginal places by establishing offences of harm. Harm is defined to mean destroying, defacing, damaging or moving an object from the land. There are a number of defences and exemptions to the offence of harming an Aboriginal object or place. One of the defences is that the harm is carried out under an Aboriginal Heritage Impact Permit (AHIP).

However, 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 recommendations are made on the basis of:

- A consideration of the relevant legislation (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 made:

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. It is recommended that additional archaeological assessment is conducted in any areas which are proposed for impacts that have not been surveyed during the current assessment. It is predicted that significant Aboriginal objects can occur anywhere in the landscape and, accordingly, they need to be identified and impact mitigation strategies implemented prior to impacts.

   The 66kv HV line has been moved eastward away from the lagoon so that the predicted sensitive area within 200m of the lagoon is avoided. Parts of this new alignment were not surveyed in 2014. Additional survey will need to be carried out during the design phase.

3. The proponent should develop a Cultural Heritage Management Plan 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 in consultation with the project archaeologist, the registered Aboriginal parties and the NSW Office of Environment and Heritage.

   The Cultural Heritage Management Plan would be prepared to guide the process for 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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APPENDIX 1 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 refers to the impact area (as proposed), the location of which is shown on Figure 2.

APPENDIX 2 AHIMS SITE SEARCH

Office of Environment & Heritage

AHIMS Web Services (AWS)

Extensive search - Site list report

Your Ref Number : Jemalong
Client Service ID : 149272

SiteID	SiteName	Datum	Zone	Easting	Northing	Context	Site Status	SiteFeatures	SiteTypes	Reports
43-2-0062	Restriction applied. Please contact ahims@environment.nsw.gov.au.					Open site	Valid			
	Contact Dareton Aboriginal Land Coun	**Recorders**	Archaeological Risk Assessment Services (ARAS),Mr.Giles Hamm					**Permits**		
43-2-0066	Forbes-Jemalong Scarred Tree 4	GDA	55	564219	6305337	Open site	Valid	Modified Tree (Carved or Scarred) : -		
	Contact	**Recorders**	OzArk Environmental and Heritage Management,Mr.Toivo Kim Tuovinen					**Permits**		
43-4-0017	MD 25	AGD	55	564850	6299800	Open site	Valid	Modified Tree (Carved or Scarred) : -	Scarred Tree	
	Contact	**Recorders**	Mr.Kelvin Officer					**Permits**		
43-2-0001	Warroo;	AGD	55	555925	6310110	Open site	Valid	Shell : -, Artefact : -	Midden	
	Contact	**Recorders**	Unknown Author					**Permits**		
43-2-0002	Bedgerebong;Allawa Skeleton;	AGD	55	560511	6308327	Open site	Valid	Burial : -	Burial/s	1216
	Contact	**Recorders**	ASRSYS					**Permits**		

Report generated by AHIMS Web Service on 29/09/2014 for Julie Dibden for the following area at Datum :GDA, Zone : 55, Eastings : 550000 - 570000, Northings : 6294000 - 6314000 with a Buffer of 50 meters. Additional Info : Archaeological assessment. Number of Aboriginal sites and Aboriginal objects found is 5

APPENDIX 3 CONSULTATION DOCUMENTS

Example of 1st Stage letters sent to agencies:

New South Wales Archaeology Pty Limited ABN 53106044366

PO Box 2135
Central Tilba NSW 2546
Ph 02 44737947
www.nswarchaeology.com.au

7 October 2014

Aboriginal Heritage
Regional Operations Group
Office of Environment and Heritage
NSW Department of Premier and Cabinet
PO Box 2111
DUBBO NSW 2830

Dear Sir/Madam

Re: Jemalong Solar Station - Aboriginal Cultural Heritage Assessment

Vast Solar Pty Limited proposes to develop a 30 MW concentrating solar thermal power proposal at Jemalong Station 36 kms west south west of Forbes. The solar station would connect, via a new substation, to an existing powerline 3 kms north of the site. An Aboriginal Heritage Assessment is being prepared. NSW Archaeology Pty Ltd is undertaking consultation with Aboriginal people on behalf of the proponent according to the requirements stipulated in the former NSW DECCW *Aboriginal cultural heritage consultation requirements for proponents, 2010*. The purpose of Aboriginal community consultation is to assist the proponent in understanding Aboriginal peoples views and concerns about the project, and to understand cultural values present in the area, and to assist the NSW Office of Environment and Heritage (OEH) in a determination of an AHIP application or development determination, if and as required.

We are seeking to identify Aboriginal persons who hold cultural knowledge relevant to this project area and who may wish to register an interest in the process of community consultation. Those who choose to register will have the opportunity to provide culturally appropriate information and to comment on the cultural heritage significance of Aboriginal objects and the area. If you are aware of Aboriginal people or groups who you believe may wish to register an interest in the process of Aboriginal consultation please provide contact details to NSW Archaeology Pty Ltd on behalf of the proponent before the 21 October 2014.

Yours faithfully

Dr Julie Dibden
New South Wales Archaeology Pty Limited

Copy of Advertisement:

VAST SOLAR PTY LIMITED proposes to develop a 30 MW concentrating solar thermal power plant on Lot 13 DP753118 at Jemalong Station 36 kms west south west of Forbes. The solar station would connect to an existing powerline 3 kms north of the site. An Aboriginal Heritage Assessment is being prepared. Aboriginal people with cultural knowledge relevant to determining the significance of Aboriginal objects and/or places in the area are invited to register an interest in the process of community consultation. The purpose of community consultation with Aboriginal people is to assist the proponent with the preparation of an Aboriginal Cultural Heritage Assessment. Please register on behalf of the proponent, to NSW Archaeology PL, PO Box 2135 Central Tilba NSW 2546, before 27 October 2014.

PUBLIC NOTICES AND BUSINESS OPPORTUNITIES : PUBLIC NOTICES
11/10/2014 Forbes Advocate

Example of 2nd batch of letters sent to potential Aboriginal stakeholders:

New South Wales Archaeology Pty Limited ABN 53106044366

PO Box 2135
Central Tilba NSW 2546
Ph 02 44737947
Mob. 0427074901
www.nswarchaeology.com.au

27 October 2014

Joy Russell
Address deleted

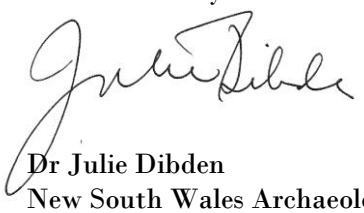
Dear Madam

Re: Jemalong Solar Station - Aboriginal Cultural Heritage Assessment

Vast Solar Pty Limited proposes to develop a 30 MW concentrating solar thermal power proposal at Jemalong Station 36 kms west south west of Forbes. The solar station would connect to an existing powerline 3 kms north of the site. NSW Archaeology Pty Ltd is undertaking consultation with Aboriginal people on behalf of the proponent according to the requirements stipulated in the former NSW DECCW Aboriginal cultural heritage consultation requirements for proponents, 2010. The purpose of Aboriginal community consultation is to assist the proponent in understanding Aboriginal peoples views and concerns about the project, and to understand cultural values present in the area, and to assist the NSW Office of Environment and Heritage (OEH) in a determination of an AHIP application, if required.

Aboriginal people with cultural knowledge relevant to determining the significance of Aboriginal objects and/or places in the area are invited to register an interest in the process of community consultation. Forbes Shire Council provided your details to us and indicated that you may have an interest in the area. If you wish to do so, p**lease register in writing to:** Julie Dibden, NSW Archaeology PL, PO Box 2135 Central Tilba NSW 2546: ph 0427074901, before 10 November 2014. Please note that if you do register an interest your details will be forwarded to the OEH and the Condobolin Local Aboriginal Land Council unless you specify that you do not want your details released.

Yours faithfully



Dr Julie Dibden
New South Wales Archaeology Pty Limited

Documents provided to RAPS regarding project, proposed consultation process and assessment methods:

PROJECT DESCRIPTION AND PROPOSED CULTURAL HERITAGE ASSESSMENT AND CONSULTATION PROCESS

THE PROPOSED ACTIVITY

Vast Solar Pty Limited (Vast Solar) proposes to develop a commercial scale concentrating solar thermal power (CSP) proposal at Jemalong Station in central New South Wales (see map below). The proposal is known as the Jemalong Solar Station and would have a capacity of up to 30 Megawatts (MW).

The proposal site is located approximately 36 kilometres west south west of Forbes, within the Forbes Shire Local Government Area (LGA). The site is accessed from the north via the Lachlan Valley Way, Wilbertroy Lane and Naroo Lane. The proposed solar farm would connect to an existing Essential Energy powerline located to the north of the site of the site.

The Jemalong Solar Station proposal site is approximately 165 hectares, the majority of which is cleared land used for cropping land with small pockets of Poplar Box woodland (ranging from 0.1 to 0.5 hectares).

Vast Solar proposes to develop approximately 50% of the site area for the CSP proposal. The western portion of the site will be utilised, and the project layout has been designed to avoid more sensitive natural and heritage features.

The proposal would comprise the installation of a 30MW CSP plant with thermal energy storage, made up of 89 modules, with each module consisting of a heliostat field and a 27 metre high receiving tower. The heliostats would be 3 metres high, located 30 to 100 metres from the receiving tower. A solar tracking system would drive the heliostats to beam solar energy to the receiving towers during daylight hours. The receiving towers would be lattice structures approximately 25 metres high with a receiving device mounted at the top. The receivers would reach temperatures of 540 degrees Celcius and a 3 to 4 metre envelope around the receiver would reach high temperatures.

NSW Archaeology Pty Ltd has been commissioned to conduct an Aboriginal cultural heritage assessment and a formal process of Aboriginal Consultation in relation to proposed works.

PROPOSED CULTURAL HERITAGE ASSESSMENT PROCESS

This document is being provided to Registered Aboriginal Parties (RAPs) for the purposes of agreeing on outcomes relating to the assessment process.

The cultural heritage assessment process for this project would be conducted in accordance with the *Aboriginal Cultural Heritage Consultation Requirements for Proponents 2010* (NSW DECCW). The NSW Office of Environment and Heritage - OEH (formally DECCW) manages Aboriginal cultural heritage in NSW in accordance with the National Parks and Wildlife Act 1974. Part 6 of the Act provides specific protection for Aboriginal objects and Aboriginal places by administering offences for harming them without authorisation. When an activity is likely to impact Aboriginal objects or

declared Aboriginal Places, approval of the OEH is required, issued in the form of an Aboriginal Heritage Impact Permit (AHIP).

NSW OEH requires effective consultation with Aboriginal people because it recognises that:

- Aboriginal people should have the right to maintain culture, language, knowledge and identity;
- Aboriginal people should have the right to directly participate in matters that may affect their heritage; and
- Aboriginal people are the primary determinants of the cultural significance of their heritage.

The purpose of the NSW OEH Aboriginal Cultural Heritage Consultation Requirements for Proponents document (NSW DECCW 2010) is to facilitate positive Aboriginal cultural heritage outcomes by:

- affording an opportunity for Aboriginal people who hold cultural knowledge relevant to determining the significance of Aboriginal object(s) and/or place(s) in the area of the proposed project to be involved in consultation so that information about cultural significance can be provided to NSW OEH to inform decisions regarding applications for an AHIP; and
- providing Aboriginal people who hold cultural knowledge relevant to determining the significance of Aboriginal object(s) and/or place(s) in the area of the proposed project with the opportunity to participate in decision-making regarding the management of their cultural heritage by providing proponents with information regarding cultural significance and inputting into management options (NSW DECCW 2010).

The ACHCRP requirements outline four main consultation stages to be implemented in the course of consultation undertaken with Aboriginal people (these are outlined below). In summary, the consultation process involves getting the views of, and information from, Aboriginal people and reporting these.

In order to fulfil the consultation requirements, NSW Archaeology Pty Ltd, on behalf of the proponent, proposes to implement the following procedure:

Stage 1 Notification of project proposal and registration of interest.
This stage is already underway, and the aim is to identify, notify and register Aboriginal people who hold cultural knowledge relevant to determining the cultural significance of Aboriginal objects and/or places in the proposal area.

- NSW Archaeology, on behalf of the proponent, has sought to identify the names of Aboriginal people who may hold cultural knowledge relevant to determining the significance of Aboriginal objects and/or places. An advertisement has been placed in the local paper and letters have been written to various agencies.

- As we receive registrations of interest, NSW Archaeology is making a record of the names of each Aboriginal person or group who has registered an interest. Unless it is specified by a registered Aboriginal party that they do not want their names released, the list of names will be provided to OEH and the Local Aboriginal Land Council.

- Where an Aboriginal organization representing Aboriginal people who hold cultural knowledge has registered an interest, a contact person for that organization must be nominated. Where Aboriginal cultural knowledge holders have appointed a representative to act on their behalf, this information must be provided in writing to NSW Archaeology.

Stage 2 Presentation of information about the proposed project
The aim of this stage is to provide registered Aboriginal parties with information about the scope of the proposed project and the proposed cultural heritage assessment process. This will entail:

- The proponent has engaged NSW Archaeology to conduct the consultation process. It is therefore the role of Julie Dibden, NSW Archaeology, to co-ordinate the assessment process. Aboriginal parties are invited to define their role, function and responsibility in this process.
- All registered Aboriginal parties are invited to identify, raise and discuss any cultural concerns, perspectives and assessment requirements (if any). In this regard registered Aboriginal parties should contact Julie Dibden, and this may be done in writing or by telephone.
- Provision of project information and the proposed cultural heritage process is provided to registered Aboriginal parties as per this document and the accompanying *Methodology* document.
- If further information is required in regard to the proposal this will be provided to Aboriginal parties upon request. If necessary, additional information about the project will be provided; this may entail a project site visit.
- A record will be made that the proposed project information has been submitted. A record of any agreed outcomes and any contentious issues that may require further discussion to establish mutual resolution (if applicable) will be kept and a record will be provided to registered Aboriginal parties.
- All comments and feedback in regard to the Consultation Process and Project Methodology should be provided to NSW Archaeology within 28 days.

Stage 3 Gathering information about cultural significance
The aim of stage 3 is to facilitate a process whereby Aboriginal parties can contribute to culturally appropriate information gathering and the project methodology, provide information that will enable the cultural significance of Aboriginal objects and/or place in the proposal area to be determined, and to have input into the development of cultural heritage management options.

- A proposed methodology for the cultural heritage assessment will be provided to registered Aboriginal parties for review. Any comments in regard to the methodology should be provided to Julie Dibden, NSW Archaeology, within 28 days. Any protocols that registered Aboriginal parties wish to be adopted into

the information gathering process and assessment methodology, and any other matters should be provided in writing or may be sought by the consultant.

- As a part of consultation, NSW Archaeology, on behalf of the proponent, seeks cultural information from registered Aboriginal parties to identify whether there are any Aboriginal objects or places of cultural value to Aboriginal people in the proposal area and if so, to uncover knowledge about their context in order to reveal their meaning and significance. Registered Aboriginal parties who wish to contribute to this process should make contact with Julie Dibden (within 28 days) so that appropriate arrangements regarding collecting cultural knowledge can be made.
- If any information obtained is sensitive, appropriate protocols will be developed and implemented for sourcing and holding sensitive information.
- Registered Aboriginal parties are invited to identify, raise and discuss any cultural concerns, perspectives and assessment requirements by telephone or in writing to Julie Dibden, NSW Archaeology, within 28 days.
- All feedback received from registered Aboriginal parties will be documented in the Aboriginal cultural heritage assessment report as appropriate.

Stage 4 Review of Draft Cultural Heritage Assessment Report
The aim of this stage is to prepare and finalise an Aboriginal cultural heritage assessment report with input from registered Aboriginal parties.

- A draft report will be compiled.
- The draft report will be provided to registered Aboriginal parties for review and comment.
- Any comments in regard to the report should be provided to Julie Dibden, NSW, within 28 days.
- After considering comments the report will be finalised and copies will be provided to registered Aboriginal parties. The final report will include copies of any submissions made and the proponents response to any submissions.

Note map deleted in this appendix.

PROPOSED METHODOLOGY FOR THE INDIGENOUS HERITAGE (CULTURAL AND ARCHAEOLOGICAL) ASSESSMENT

Vast Solar Pty Limited (Vast Solar) proposes to develop a commercial scale concentrating solar thermal power (CSP) proposal at Jemalong Station in central New South Wales (see map below). The proposal is known as the Jemalong Solar Station and would have a capacity of up to 30 Megawatts (MW).

NSW Archaeology Pty Ltd is undertaking consultation with Aboriginal people on behalf of the proponent according to the requirements stipulated in the former NSW DECCW Aboriginal cultural heritage consultation requirements for proponents, 2010.

NSW Archaeology Pty Ltd is a consultancy specialising in Indigenous cultural heritage management, and aims to prepare assessments of a high standard to satisfy all stakeholders including the local Aboriginal community and the NSW Office of Environment and Heritage – OEH.

The project will be conducted in accordance with the requirements of the OEH *Guide to investigating, assessing and reporting on Aboriginal cultural heritage in NSW* and the *DECCW 2010 Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales*. In addition the study is being undertaken following the requirements for *Aboriginal Cultural Heritage Consultation Requirements for Proponents 2010* (ACHCRP) (NSW DECCW 2010).

In accordance with the process as outlined in *Aboriginal Cultural Heritage Consultation Requirements for Proponents 2010* (ACHCRP) (NSW DECCW 2010), this methodology is being provided to all Aboriginal groups/individuals who have registered an interest in this process of consultation. The purpose of providing registered stakeholders with this methodology is for stakeholders to review and provide feedback to the consultant, including identification of issues/areas of cultural significance that might affect the methodology. Stakeholders are invited to make a written response to this proposed methodology within 28 days.

The methodology which is proposed to be implemented during this project is set out below.

It is proposed that the assessment of cultural heritage values of the project area will entail the following aspects as defined in the OEH *Guide to investigating, assessing and reporting on Aboriginal cultural heritage in NSW*:

Review of background information: Definition and mapping of the physical landscape; reviewing historic values via recourse to written and oral histories and existing heritage data bases; and define the material evidence of Aboriginal land use via review of previous research, development of predictive model and a field inspection and survey (the latter to be documented in a survey report). Any information received from registered Aboriginal parties will be used in this process. Registered Aboriginal parties are invited to inform

Julie Dibden in regard to areas, objects and places of cultural value in the proposed activity area.

Initiate ongoing consultation in accordance with the OEH's Aboriginal Cultural Heritage Consultation Requirements for Proponents 2010. Information is sought from registered Aboriginal parties on whether there are any Aboriginal areas, objects or places of cultural value to Aboriginal people in the proposed activity area.

Identify and assess the cultural heritage values: Upon receipt of information that would enable the cultural significance of Aboriginal areas, objects and/or places in the proposed activity area to be determined, the range of social, historical, scientific and aesthetic values present across the study area would be identified, mapped, and assessed as to why they are important.

Assess harm of the proposed activity: Identification of the nature of the proposed activity and any potential harm to Aboriginal areas, objects and/or places. This would take into consideration the principles of ecologically sustainable development (ESD).

Develop harm avoidance and/or minimisation strategies: Registered stakeholders would be invited to have input into the development of cultural heritage management options. The development of avoidance and/or minimisation strategies would commence in the field, and be developed further within an Aboriginal cultural heritage assessment report.

Documentation of Findings: An Aboriginal cultural heritage assessment report would be prepared. The report would be prepared in accordance with the report outline as set out in OEH's *Guide to investigating, assessing and reporting on Aboriginal cultural heritage in NSW*.

A draft copy of the report will be provided to all Aboriginal groups or individuals who register an interest in this project for review and comment.

Upon review of this proposed methodology, registered stakeholders are invited to make submissions relating to the information gathering and assessment methodology, and any matters such as issues/areas of cultural significance that might affect, inform or refine the assessment methodology, to Julie Dibden within 28 days. All feedback received will be documented in the cultural heritage assessment report, which will include copies of submissions received and the proponents response to issues raised.