Nyngan Solar Plant
Aboriginal Cultural Heritage Assessment Report

A report to nghenvironmental
on behalf of AGL Energy Limited

September 2012

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SUMMARY

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

New South Wales Archaeology Pty Ltd was commissioned in June 2012 by nghenvironmental, on behalf of AGL Energy Limited (AGL), to undertake an Aboriginal cultural heritage assessment in relation to the proposed Nyngan Solar Plant.

This report documents the proposed impact area, the assessment process, findings, interpretation of results and recommendations.

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

A process of Aboriginal community consultation has been undertaken 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 any Aboriginal cultural areas, objects or places, to assess the archaeological potential of the proposal areas, and to formulate management recommendations based on the results of the community consultation, background research, field survey and a significance assessment.

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

Three Aboriginal object locales were recorded during the field survey, each comprised of a single stone artefact. Given that the Effective Survey Coverage for the surveyed area is calculated to have been moderate to high, the small number of artefacts recorded is assessed to be a reliable indicator of the low archaeological status and potential of the area.

As noted above, the Aboriginal object locales recorded in the proposal area are three single stone artefacts and these are assessed to be of low cultural and archaeological significance. Undetected or subsurface stone artefacts are predicted to be present in extremely low density.

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

Given that the three recorded Aboriginal objects and the predicted undetected and subsurface artefacts are assessed to be of low significance, the proposed impacts can be viewed as being of correspondingly low significance. This assessment forms the basis for the formulation of recommendations relating to the proposal.

The Aboriginal object locales recorded in the proposal area (and any undetected and subsurface artefacts) do not surpass archaeological and cultural significance thresholds which would act to preclude the construction of the proposed solar plant.

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

Given the nature and density of the artefact locales recorded in the proposal area and the low cultural and scientific significance rating they have been accorded, unmitigated impacts is considered appropriate; a strategy of impact avoidance is not warranted.

No European heritage items were located in the proposal area during the field survey.

The following recommendations are provided in summary form:

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

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

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

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

Acknowledgments

Julie Dibden, NSW Archaeology Pty Ltd, acknowledges the assistance in this project provided by:

Leslie Ryan, Bogan Aboriginal Corporation

Sheila Couley, Nyngan Local Aboriginal Land Council

Brooke Marshall and Dave Maynard: nghenvironmental

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

1. INTRODUCTION

1.1 Introduction

NSW Archaeology Pty Ltd has been commissioned by nghenvironmental, on behalf of AGL Energy Limited (AGL), to conduct an Indigenous heritage (archaeological and cultural) assessment in relation to a proposed solar plant at Nyngan (the proposed activity area). The area in which impacts are proposed is shown on Figure 1.

The project would be assessed under Part 4 of the EP&A Act. It would be classed as State Significant Development (SSD) under State Environmental Planning Policy (State and Regional Development) 2011.

AGL has been selected by the Australian Government as the successful applicant in the solar photovoltaic (PV) category of the Solar Flagships Program independent reassessment process. The project would be one of two solar PV power stations proposed to be built by AGL under the Solar Flagships Program, with the second to be constructed at Broken Hill.

The project site is located in Central West NSW, approximately 10 kilometres west of the Nyngan township. The site is within the Bogan Shire local government area and comprises rural land.

Along with the solar plant, the proposed development would also include the installation and operation of a 132kV transmission line, approximately three kilometres in length.

The project would comprise the installation of a solar plant with a capacity of up to approximately 106 MW and would include the following elements:

- PV modules using cadmium telluride (CdTe) thin film technology.
- A system of inverters and step up transformers throughout the arrays.
- Underground cabling to connect the arrays to the inverters and transformers.
- Switchgear to collect the power from the multiple arrays.
- 33kV/132kV transformer substation and switchgear.
- 132kV transmission line to connect into existing electrical network.
- A site office and maintenance building.
- Internal access tracks to allow for site maintenance.
- Perimeter security fencing and landscaping.

This cultural heritage assessment has been conducted by Julie Dibden, NSW Archaeology Pty Ltd (BA with Honours, PhD - Australian National University). The field work component has been conducted by Julie Dibden and Jo Dibden, NSW Archaeology Pty Ltd, Leslie Ryan, Bogan Aboriginal Corporation and Sheila Couley of the Nyngan Local Aboriginal Land Council.

2. DESCRIPTION OF THE AREA

In this section of the report the subject area is defined and described.

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

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

Additionally, geomorphological and humanly activated processes need to be defined as these will influence the degree to which archaeological sites may be visible and/or conserved. Land which is heavily grassed will prevent the detection of archaeological material, while land which has 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 section provides information in regard to the landscape context of the study area.

2.1 Location

The Solar Plant site is located on one land parcel, north of the Barrier Highway, Nyngan: Lot 34, DP751328. Four land parcels would be traversed by the 132kV line: two private rural land holdings (Lot 24, DP751328 and Lot 8, DP724628); Crown Land parcel (Lot 7300, DP1156652); and the Barrier Highway Road Reserve. The solar plant will occupy approximately 300 hectares across a property approximately 460 hectares in size.

The proposed works are located on flat land situated approximately 10 kilometres west of Nyngan. The area is located in the Parish of Nyngan, County of Oxley, in the Bogan Shire.

The area is on the Nyngan 1:25,000 topographic map. For mapping purposes, it is located in Zone 55.

The majority of the site appears to be situated on heavy cracking clay soils associated with the Boggy Cowal Channels and Floodplains Mitchell Landscape. The project site has

an elevation of approximately 177 metres Australian Height Datum (AHD) and is on cleared, flat land. The surroundings of the site comprise predominantly rural activities on large land holdings.

The site is 7.5 kilometres west of the Bogan River. The Bogan rises in the Harvey Ranges between Parkes and Peak Hill and flows north-west across a broad, flat landscape, through Nyngan, to join the Darling River near Bourke. The project area falls into the Darling Riverine Plains Bioregion and the Bogan-Macquarie IBRA subregion. The characteristic landforms of this subregion include floodplains and channels of the Bogan and Macquarie Rivers. Soils are dominated by clays, and vegetation by riparian communities, swamps and woodlands.

The proposal site is largely cleared with some small remnant patches of degraded vegetation and scattered trees (Plate 1). It has been highly modified by past agricultural activities (Plate 2). The solar plant site occupies four large paddocks which have been cultivated and sown to crops. Trees are scattered and sparse across the site. The proposed transmission corridor traverses regrowth native vegetation south of the Barrier Highway (Plate 3). The southern portion of the transmission corridor passes through an area that is currently utilised for cultivation (Plate 4).

Plate 1 Stand of trees in the area of the proposed solar plant.

Plate 2 Recently cultivated paddock in which the solar plant would be sited.

Plate 3 A section of the proposed transmission line, south of the Barrier Highway, looking south.

Plate 4 The southern end of the proposed transmission line; looking south.

Native vegetation within and surrounding the study area consists of, or is derived from, a single vegetation type: Poplar Box - Gum-barked Coolabah - White Cypress Pine shrubby woodland (nghenvironmental 2012). The vegetation at the site is characteristically dominated by Poplar Box (*Eucalyptus populnea subsp. Bimbil*) and co-dominated by White Cypress Pine (*Callitris glaucophylla*) with scattered individuals of Gum-barked Coolibah (Inland Red Box, *E. intertexta*). Ironwood (*Acacia excelsa*) forms a strong component in the vegetation south of the highway. The small tree layer is dominated by Wilga (*Geijera parvifolia*) and Budda (*Eremophila mitchellii*). A diverse ground cover consisting of various small shrubs, forbs and grasses occurs, particularly south of the highway with Galvanised Burr (*Sclerolaena birchii*) and Grey Copper Burr (*S. diacantha*) tending to dominate the more disturbed areas (nghenvironmental 2012).

Summary

The proposal area is located at some considerable distance from the Bogan River. It contains no surface evidence of large relic drainage areas and tributaries. In an Aboriginal landuse context the area is likely to have been utilised by Aboriginal people for an extremely limited range of activities which may have included hunting and gathering, resource gathering and travel through country. Such activities are likely to have resulted in very low levels of artefact discard. The nature of stone artefacts discarded can be expected to have been correspondingly limited in terms of artefact diversity and complexity.

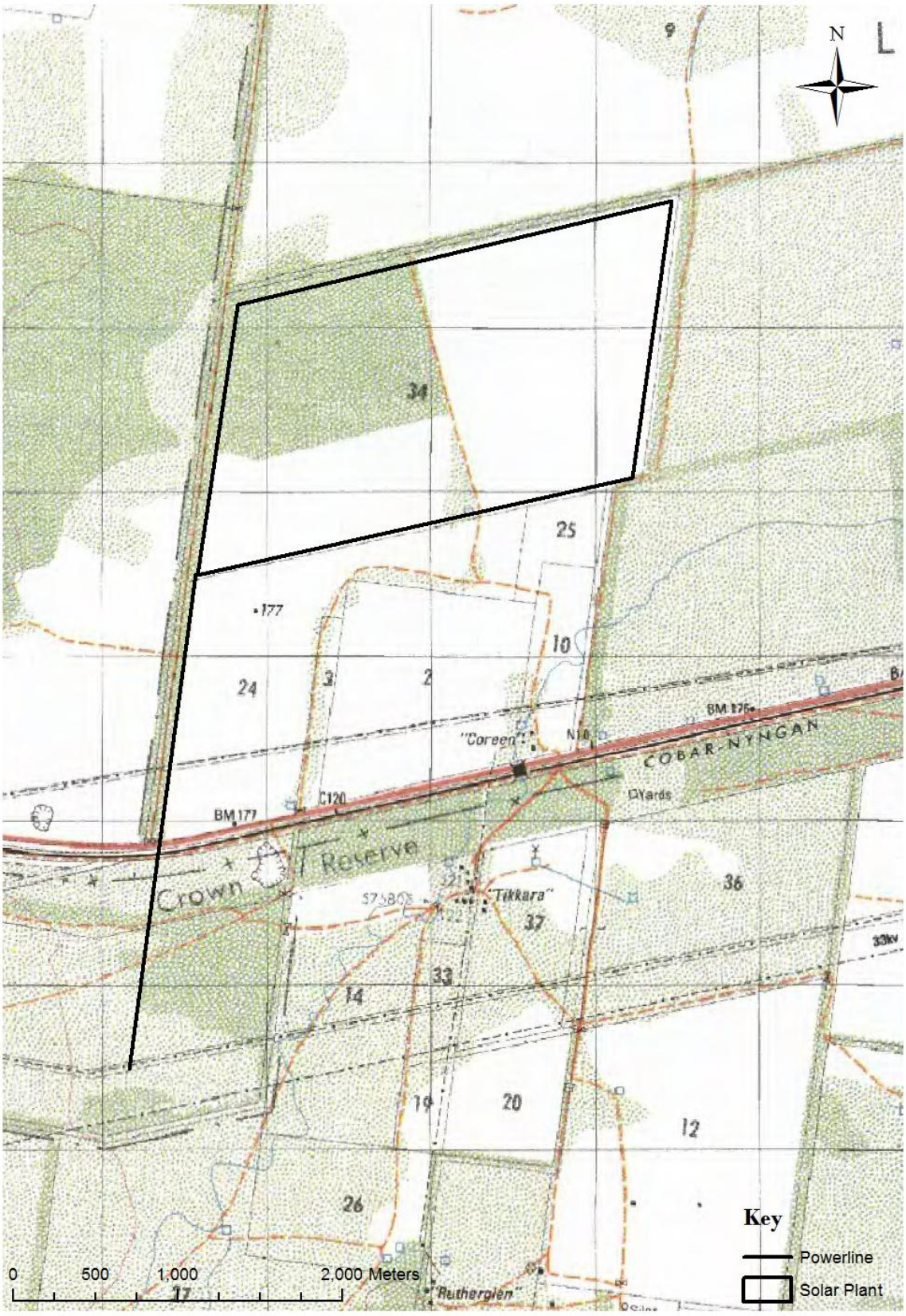

Figure 1 Location of the proposed solar plant and powerline.

2.2 History of Peoples Living on the Land

On the basis of archaeological research it is known that Aboriginal people have occupied Australia for at least 40,000 years and possibly as long as 60,000 years (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 (a period called the Last Glacial Maximum), dry and either intensely hot or cold temperatures prevailed over the continent (Mulvaney and Kamminga 1999: 114). At this time the mean monthly temperatures on land were 6 - 10ºC lower; in southern Australia coldness, drought and winds acted to change the vegetation structure from forests to grass and shrublands (Mulvaney and Kamminga 1999: 115-116).

During the Last Glacial Maximum at about 24 - 22,000 years ago, sea levels fell to about 130 metres below present levels 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 located within the Murray Darling Basin, one of Australia's largest drainage divisions. The basin includes the three largest rivers in Australia; the Murray River, the Darling River and the Murrumbidgee River. Aboriginal people have occupied the region for over 40,000 years, with early occupation focussed on the resources of freshwater lakes and rivers and their floodplains. This occupation also occurred along various river channels that pre-date the present Murray-Darling river system (Murray-Darling Basin Ministerial Council 1987: 353). Archaeological evidence indicates that with the drying up of the lakes around 26,000 years BP in response to changes in climatic conditions, Aboriginal people remained near major rivers. However, by 4000 years BP there is evidence of a major increase in site numbers and more intensive occupation to what are today more marginal environments (MDBMC 1987:354).

According to Tindale (1974) the study area is situated within the Wongaibon territory which included the headwaters of the Bogan River encompassing present day Nyngan. The area is located within the Nyngan Local Aboriginal Land Council boundaries. It is

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

also within the area subject to a Native Title Claim (NNTT number: NC12/1) by the Ngemba/Ngiyampaa People.

2.3 Material Evidence

A search of the NSW OEH Aboriginal Heritage Management Information System (AHIMS) was conducted for this project on the 14th June 2012 (Client Service ID: 72500). The search area measured 56 km² and encompassed eastings 504000 – 511000, and northings 6503000 –6512000.

No Aboriginal objects are recorded on AHIMS as being present within the site search area (see Appendix 1). However, the AHIMS register only includes sites which have been reported to NSW OEH. Generally, sites are only recorded during targeted surveys undertaken in either development or research contexts. Accordingly, this search cannot be considered to be an actual or exhaustive inventory of Aboriginal objects situated within the local area or indeed within the study area itself.

The most common Aboriginal object recordings in the region are distributions of stone artefacts and scarred trees. In and around Nyngan, scarred tree recordings are the most common site type, although whether or not their attributed artefactual status is correct is equivocal. Rare site types include rock shelters, quarry and procurement sites, burials, stone arrangements, carved trees and traditional story or other ceremonial places. The distribution of each site type is related at least in part to variance in topography, ground surface geology and water.

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

2.3.1 Previous Archaeological Work

Numerous studies have been undertaken, both in an academic and consultancy context, in the region. Consideration of a predictive model of site type and site location within an environmental context relevant to the study area can be made through recourse to these previous studies. From this a contextual and relevant assessment of the archaeological potential of the study area can be formed.

Although no academic investigations have been conducted that specifically examine the district, some academic studies have been undertaken within the broader 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 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.

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 which included 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; and
- 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.

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 orders 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; and
- 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 water.
- *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.

A desktop study Aboriginal site distribution in the Lachlan CMA (NSW DECC 2007) has relevance to the local Nyngan area (Phil Purcell NSW DECCW: pers. comm. 2010). This review indicates that the single most determining factor influencing the distribution of sites across the landscape is water. Sites and higher artefact density is strongly tethered to water sources with average of sites distance from water being 294 metres (NSW DECC 2007). On the Lachlan Plains the average distance of sites from water was found to be 117 metres.

Leslie and Tommy Ryan of The Bogan Aboriginal Corporation and Nyngan Local Aboriginal Land Council respectively, have informed us that the proposal area is of extremely low archaeological potential and that locally, sites would most likely be situated in closer proximity to the Bogan River. In respect of a previous solar project proposal in the Nyngan area (Dibden 2010, and see below), Mr John Shipp, a registered stakeholder who has conducted extensive surveys in the Nyngan area resulting in the recording of many scared trees, artefacts and hearths, advised that these site types have the potential to be present, except for the areas that have been cultivated. Given that the current proposal site is cultivated, the implication is that this area too is of low archaeological potential.

Phil Purcell (NSW DECCW: 2010) conducted a desktop assessment of two alternative locations for solar farms at Nyngan. The Bogan riverine landscape was identified as containing a number of landform categories frequently associated with Aboriginal occupation. These features include relic drainage lines and tributaries which occur on the floodplain away from the main river channel.

NSW Archaeology Pty Ltd conducted an assessment of a solar project situated immediately east of Nyngan (Dibden 2010). The study area measured c. 208 hectares in size. It was estimated that approximately 83 hectares of that area was subject to survey inspection. Ground exposures inspected were estimated to have been 4.92 hectares in area. Of that ground exposure area archaeological visibility (the potential artefact bearing soil profile) was estimated to have been 2.25 hectares. Effective Survey Coverage was calculated to have been 1.08% of the proposal area.

Two Aboriginal object locales were recorded, each comprised of a single stone artefact. While the Effective Survey Coverage for the surveyed area was relatively low, many extensive areas of good ground exposure possessing reasonable archaeological visibility were distributed throughout the study area. These exposures enabled a reasonable characterisation of artefact distribution within the proposal area and the survey results were assessed to be a relatively accurate reflection of the artefact density in the proposal area; artefact density was assessed to be very low.

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

2.3.2 Predictive Model of Aboriginal Site Distribution

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

Stone Artefacts

Stone artefacts can be found either on the ground surface and/or in subsurface contexts. Stone artefacts will be widely distributed across the landscape in a virtual continuum, with significant variations in density in relation to different environmental factors. Artefact density and site complexity is expected to be greater near reliable water and the confluence of a number of different resource zones. The detection of artefacts during a surface survey depends on whether or not the potential archaeological bearing soil profile is visible.

Given the considerable distance from the river and lack of old drainage channels, stone artefacts are predicted to be present in the proposal area in negligible or very low density only.

Hearths

Hearths are the remains of cooking fires. In western NSW they are often made from stone or termite mound material. There is low potential for this site type to be present in the proposal area given its distance from the river.

Grinding Grooves

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

Burials sites

The potential for burials to be present in the proposal area is considered to be low given the high levels of previous disturbance related to agriculture.

Rock Shelter Sites

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

Scarred and Carved Trees

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

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

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

Scarred trees are a common site type in the local area. There is, accordingly, some potential for this site type to be present if trees of adequate age are present.

Stone Quarry and Procurement Sites

A lithic quarry is the location of an exploited stone source (Hiscock & Mitchell 1993: 32). Sites will only be located where exposures of a stone type suitable for use in artefact manufacture occur. Quarries are rare site types in the region. A stone quarry is unlikely to be recorded during the current study given that it is an alluvial floodplain.

Ceremonial Grounds

In south-eastern Australia, ceremonial grounds were used in maturity rites associated with the initiation of youths. Bora grounds generally consisted of one or more circular rings defined by mounded earth, sand and/or rocks. This is a rare site type given the nature of the materials used in there construction. Agricultural practices and land

clearing is likely to remove surface evidence of these places. The identification of ceremonial grounds is often dependent on Aboriginal oral tradition and historical records. This site type is unlikely to be present in the proposal area.

2.3.3 Field Inspection – Methodology

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

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

The study area has been divided into two Survey Units. The landform is uniform across the entire study area, and the division into two survey units is heuristic only, and based on the two different proposed impacts: SU1 – solar plant; and SU2 – transmission line.

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

Survey Coverage Variables

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

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

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

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

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

2.3.4 Field Inspection – Results

The survey results are described below; survey unit areas and Aboriginal object site recordings are shown on Figure 2.

Survey Coverage

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

The trees in the proposal area and its surrounds are predominately regrowth, estimated to be around 50 years old (or less), however, while there are some older trees which may be in the order of 100 - 150 years plus. All trees located within areas of direct impact were inspected during the survey and no evidence of Aboriginal scarring is evident. Three trees with notable scars were found, assessed (see their location in Appendix 2) and determined to be unlikely to be Aboriginal in origin.

At the time of field survey, two paddocks were under cultivation while two others were fallow (old Lucerne paddocks). A comprehensive and systematic pedestrian survey was undertaken in the two cultivated paddocks, while a vehicle traverse was conducted across the fallow paddocks. The entire length of the proposed transmission line was walked.

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

The study area measures c. 437 hectares in size (Table 1). It is estimated that approximately 203 hectares of that area was subject to physical survey inspection. Ground exposures included bare earth, erosion scalds, animal tracks and roads. Of that ground exposure area archaeological visibility (the potential artefact bearing soil profile) is estimated to have been 182.4 hectares. Effective Survey Coverage is therefore calculated to have been 33.1% of the proposal area.

Table 1 Survey coverage variables.

Survey Unit	Proposed impact	Area (ha)	Area visually inspected (ha)	Exposure	Visibility	Effective Survey Coverage
SU1	Solar Plant	424.368	c. 200	90% (180 ha)	80% (144 ha)	33.9 %
SU2	Transmission Line	13.5	c. 3	80% (2.4 ha)	40% (0.96 ha)	7.1%
		437.868	c. 203	182.4	144.96	33.1%

Aboriginal Object Recordings

The following Aboriginal object locales were recorded during the survey; their location is shown in Figure 2:

Survey Unit 1/Locale 1 507589e 6508499n Hand GPS (GDA)

One stone artefact was recorded in an area of exposure (erosion scald) adjacent to a fence line (Plate 5). The broad area of erosion measures 24 x 2 m, of which 90% was ground exposure, possessing 70% archaeological visibility. The Effective Survey Coverage is relatively high, and given that one artefact only was recorded, artefact density is assessed to be very low.

The recorded artefact is a fine grained, brown silcrete amorphous core measuring 40 x 36 x 29 mm.

The locale may contain additional artefacts in a subsurface context, but these would be present in very low density.

Plate 5 Location of SU1/L1 looking east; artefact at tape measure.

Survey Unit 1/Locale 2 508735e 6509200n (GDA)

One stone artefact was recorded in an area of bare earth in a cultivated paddock (Plate 6). The ground exposure in the area of the artefact was 60%, with 30% archaeological visibility.

The recorded artefact is a high quality milky quartz amorphous core measuring 25 x 20 x 12mm. It has one rotation and three negative flake scars.

The locale may contain additional artefacts in a subsurface context, but these would be distributed in very low density.

Plate 6 Location of SU1/L2 looking south.

Survey Unit 2/Locale 1 506514e 6506358n (GDA)

One stone artefact was recorded in an area of exposure (bare earth/vehicle track) adjacent to a fence line (Plate 7). The broad area measures >50 x 5 m, of which 90% was ground exposure, possessing 70% archaeological visibility. The Effective Survey Coverage is relatively high, and given that one artefact only was recorded, artefact density is assessed to be very low.

The recorded artefact is a good quality milky quartz flake fragment measuring 34 x 30 x 10 mm. Retouch/edge damage extends along 30mm of one edge.

The locale may contain additional artefacts in a subsurface context, but these would be in very low density.

Plate 7 Location of SU2/L1 looking south.

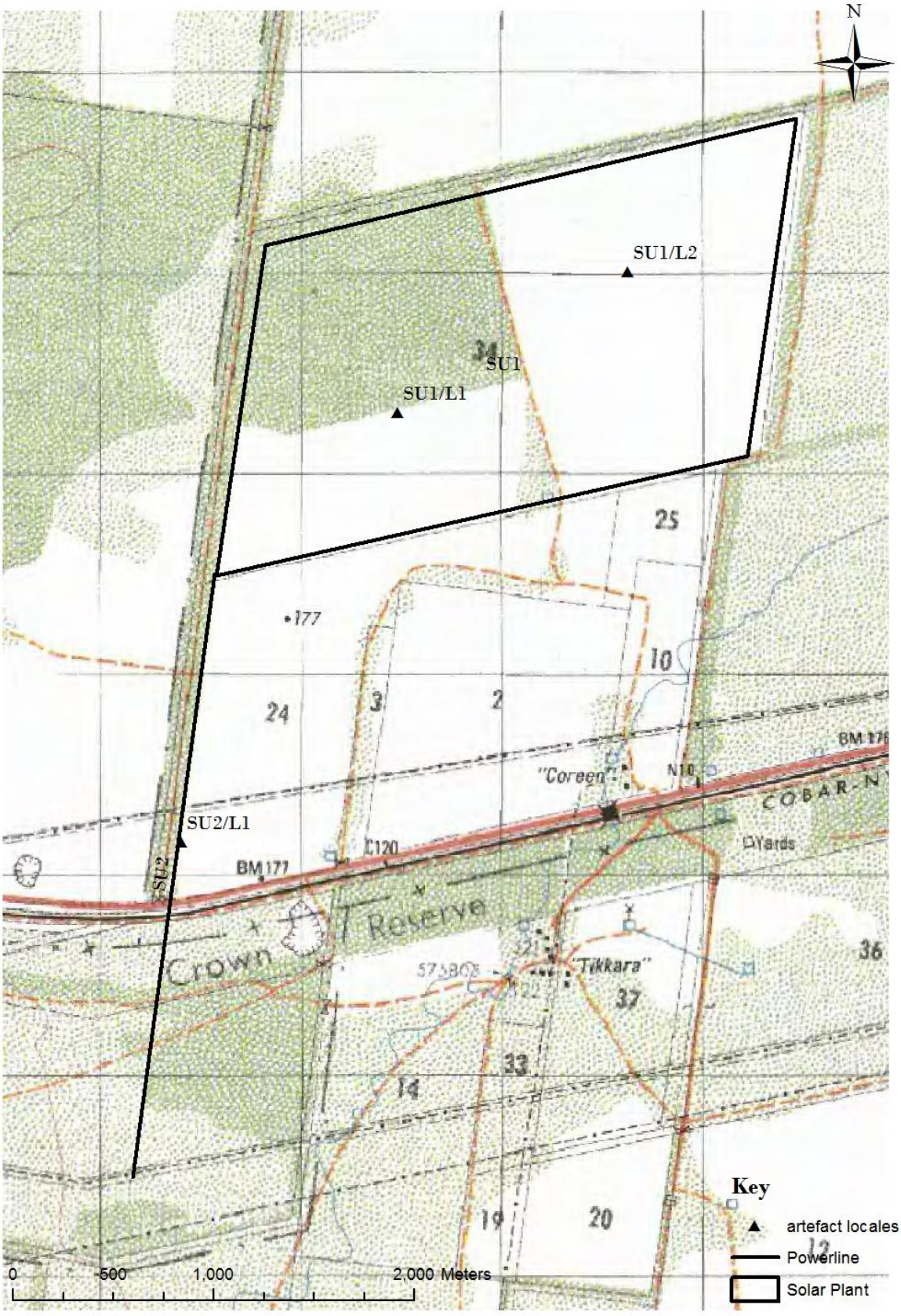

Figure 2 Location of Survey Units and Aboriginal object locales recorded in the proposal area.

3. CONSULTATION PROCESS

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

It is noted in particular that there were no late registrations of interest, but had there been, they would have been accommodated within the process of consultation. The relevant Local Aboriginal Land Council (Nyngan LALC) was consulted and a representative participated in the field survey.

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:

Correspondence dated 12th June 2012 was sent to:

- OEH Dubbo office
- Nyngan 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)
- Bogan Shire Council
- the Central West Catchment Management Authority, requesting contact details for any established Aboriginal reference group

(Copies of all documentation relating to this process have been submitted to OEH [Dubbo] in separate correspondence dated 1st August 2012).

In addition an advertisement was placed in the 20 June 2010 edition of the Nyngan Observer newspaper. The closing date for registration of interest was noted as 4th July 2012.

Following advice received from NSW OEH and the National Native Title Tribunal, further correspondence dated 19th June 2012 and 20th June 2012, respectively, was sent to:

- John Shipp
- Bogan Aboriginal Corporation
- Native Title Claimants (Native Title Claim NC12/01)

The registered Aboriginal parties for this project are:

- The Nyngan Local Aboriginal Land Council
- Bogan Aboriginal Corporation
- Mr John Shipp

An outline of the scope of the project, the proposed cultural heritage assessment process and the heritage assessment methodology was forwarded to the registered parties on varying dates, immediately following receipt of their registration of interest. No responses were received from registered parties in regard to the consultation process and methodology. No cultural information relating to the proposal area was received. However, Tommy and Leslie Ryan provided valuable information in regard to the archaeological sensitivity and potential of the study area.

For review and comment, a copy of this report has been forwarded to the registered parties. No comments were received within the specified 28 day review period.

4. SUMMARY AND ANALYSIS OF BACKGROUND INFORMATION

In the previous section of this report, 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.

Firstly, 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). Secondly, no previously recorded Aboriginal places, areas or objects are known to be present in the area, however, three object locales were recorded during fieldwork.

Given that the Effective Survey Coverage for the surveyed area is calculated to have been moderate to high, the small number of artefacts recorded is assessed to be a reliable indicator of the low archaeological status and potential of the area.

As noted above, the Aboriginal object locales recorded in the proposal area are three single and isolated stone artefacts; these are assessed to be of low cultural and archaeological significance. Undetected or subsurface stone artefacts are predicted to be present in extremely low density.

The Effective Survey Coverage achieved during the survey is considered to have been 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, the proposal area is assessed to be low cultural and archaeological potential and significance.

There are no information gaps which are of a significant magnitude to warrant any further consideration at this time.

5. CULTURAL HERITAGE VALUES AND STATEMENT OF SIGNIFICANCE

The following significance assessment criteria are 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; and
- Aesthetic value.

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

Archaeological value
The assessment of archaeological value involves determining the potential of a place to provide information which is of value in scientific analysis and the resolution of potential archaeological research questions. Relevant research topics may be defined and addressed within the 'academy', the context of cultural heritage management or Aboriginal communities. Increasingly, research issues are being constructed with reference to the broader landscape rather than focusing specifically on individual site locales. In order to assess scientific value, sites are evaluated in terms of nature of the evidence and 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.

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

5.1 Statement of Significance

The three Aboriginal objects identified in the subject area are assessed to be representative of extremely low density artefact distribution. Their cultural and archaeological heritage value is low.

6. THE PROPOSED ACTIVITY

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

A full description of the proposal and its potential impact on the landscape and heritage resource is described. This includes a summary of the impact history of the study area. These prior and existing land uses have caused significant changes to geomorphological processes in the area with an associated effect on the archaeological resource.

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

6.1 Impact History

The proposal site is largely cleared with some small remnant patches of vegetation and scattered trees. The site has been highly modified by past agricultural activities and has a long history of agricultural disturbance, having being regularly cultivated for crops. The majority of the proposal area is still under cultivation or lying fallow after a recent harvest.

The site has localised areas of disturbance in the form of fencing, roads and unformed vehicle tracks.

6.2 Proposed Impacts

AGL has been selected by the Australian Government as the successful applicant in the solar PV category of the Solar Flagships Program independent reassessment process. The project would be one of two solar PV power stations proposed to be built by AGL under the Solar Flagships Program, with the second project to be constructed at Broken Hill.

In addition to the solar plant, the proposed development would also include the installation and operation of a 132kV transmission line measuring approximately 3 kilometres in length. The solar plant itself would occupy approximately 300 hectares of a property that is approximately 460 hectares in size.

The project would comprise the installation of a solar plant with a capacity of up to approximately 106 MW. The project would include the following elements:

- PV modules using cadmium telluride (CdTe) thin film technology.
- A system of inverters and step up transformers throughout the arrays.
- Underground cabling to connect the arrays to the inverters and transformers.
- Switchgear to collect the power from the multiple arrays.
- 33kV/132kV transformer substation and switchgear.
- 132kV transmission line to connect into existing electrical network.

- A site office and maintenance building.
- Internal access tracks to allow for site maintenance.
- Perimeter security fencing and landscaping.

6.3 Type of Harm

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

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

However, irrespective of prior impacts the proposed works entail ground disturbance and accordingly the project has the potential to cause additional impacts to any Aboriginal objects which may be present within the individual components of the proposal.

7. AVOIDING AND/OR MINIMISING HARM

The principles of ecological sustainable development and the matter of cumulative harm have been considered for this project. Given the low levels of prior, existing and potential future impacts in the local and regional context in which the proposed activity area is situated (the area is in a vast rural region and hence existing and future impacts are negligible), the majority of cultural values, including archaeological, which attach to the landform and the broader landscape remain intact across the region.

Avoidance or the mitigation of harm has not been considered as an option in relation to the proposed activities. The cultural and archaeological heritage significance of the proposal area has not been assessed to be of sufficient significance to warrant the implementation of avoidance or impact mitigation strategies. However, a number of management strategies are possible and these are each given consideration 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. Based on a consideration of the predictive model of site type applicable to the environmental context in which impacts are proposed, the archaeological potential of the proposed impact areas is assessed not to warrant further investigation.

The environmental context in which impacts are proposed contain highly disturbed soils as a result of cultivation and, also, are not predicted to contain artefact density sufficient to warrant test excavation. Accordingly a program of subsurface testing undertaken within the impact assessment and planning phase of the project is not considered to be necessary or warranted.

Conservation

Conservation is a suitable management option in any situation, however it is not always feasible to achieve. Such a strategy is generally adopted in relation to sites which are

assessed to be of high cultural and scientific significance, but can be adopted in relation to any site type.

In the case at hand, avoidance of impacts (or minimisation of impacts) in regard to the recorded artefacts locales is not considered to be warranted.

Mitigated Impacts

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

It is assessed that the archaeological resource in the proposal area does not surpass significance thresholds which warrant any form of impact mitigation.

Unmitigated Impacts

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

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

8. STATUTORY INFORMATION

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

An 'Aboriginal object' is defined as

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

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

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

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

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

9. RECOMMENDATIONS

The following recommendations are made on the basis of:

- A consideration of the relevant section of the Environmental Planning and Assessment Act (see Section 8 Statutory Information).
- The results of the investigation as documented in this report.
- Consideration of the type of development proposed and the nature of proposed impacts.
- Advice provided from Nyngan Local Aboriginal Land Council and the Bogan Aboriginal Corporation.

The following recommendations are provided:

- The proposal area does not warrant further archaeological investigation such as subsurface test excavation. The Effective Survey Coverage achieved during the field survey is considered to have been adequate for the purposes of determining the archaeological status of the proposal area.
- The three recorded Aboriginal object locales and the predicted very low density subsurface artefact distribution in the proposal area does not surpass archaeological significance thresholds which would act to preclude the proposed impacts.
- The three recorded Aboriginal object locales are assessed to be representative of a very low density distribution of stone artefacts. The cultural and archaeological heritage significance of these locales is assessed to be low. Accordingly unmitigated impact is considered to be appropriate.
- There are no identified Aboriginal archaeological and heritage constraints relating to the proposal.

10. REFERENCES

Dibden, J. 2010 Proposed Nyngan Photovoltaic Solar Farm Indigenous Archaeological and Cultural Heritage Assessment. A report to nghenvironmental.

Dunnell, R. 1993 The Notion Site in J. Rossignol and L. Wandsnider eds *Space, Time and Archaeological Landscapes*. New York: Plenum, pgs 21-41.

Haglund, L. 1985 Assessment of the Prehistoric Heritage in the Mudgee Shire.

Hiscock, P. & Mitchell, S. 1993 *Stone Artefact Quarries and Reduction Sites in Australia: Towards a Type Profile*. AGPS: Canberra.

Koettig, M. 1985 Assessment of Aboriginal Sites in the Dubbo City area. Report to Dubbo City Council.

McDonald, R. Isbell, R, Speight, J. Walker, J. and M. Hopkins 1998 *Australian Soil and Land Survey Field Handbook*. CSIRO Australia.

Mulvaney, J. and J. Kamminga 1999 *Prehistory of Australia*. Allen and Unwin: St Leonards.

Murray-Darling Basin Ministerial Council 1987 (MDBMC) Murray-Darling Basin environmental resources study. Murray-Darling Basin Commission, Canberra.

NSW Department of Environment and Conservation 2005 *Guidelines for Aboriginal Cultural Heritage Impact Assessment and Community Consultation*.

NSW Department of Environment and Climate Change (DECC) (2008a) Bioregions of NSW, accessed online at http://www.environment.nsw.gov.au/bioregions/Bioregions.htm

NSW Department of Environment, Climate Change and Water 2007 Data Audit and overview of the Aboriginal Cultural Heritage in the Lachlan Catchment. Report to the Lachlan CMA Regional Aboriginal Reference Group.

New South Wales Department of Environment, Climate Change and Water 2010a *Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales 2010*.

New South Wales Department of Environment, Climate Change and Water 2010b *Aboriginal cultural heritage consultation requirements for proponents 2010*.

New South Wales Office of Environment and Heritage 2011 *Guide to investigating, assessing and reporting on Aboriginal cultural heritage in NSW*.

nghenvironmental 2012 Biodiversity Assessment. Nyngan Solar Plant. Report to AGL.

Pearson, M. 1981 Seen Through Different Eyes: Changing Land Use and Settlement Patterns in the Upper Macquarie River Region of NSW from Prehistoric Times to 1860. Ph.D. Thesis, Department of Prehistory and Anthropology, Australian National University, Canberra.

Purcell, P. 2010 Aboriginal Cultural Heritage Assessment Rapid Response Desktop Assessment.

Shott, M. 1995 Reliability of Archaeological Records on Cultivated Surfaces: A Michigan Case Study. *Journal of Archaeological Field Archaeology*. Vol 22; pp. 475 – 490.

Tindale, N. 1974 *Aboriginal Tribes of Australia*. ANU Press, Canberra.

Wandsnider, L and E. Camilli 1992 The Character of Surface Archaeological Deposits and Its Influence on Survey Accuracy. *Journal of Field Archaeology*. Vol. 19 pgs 169 - 188.

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.

APPENDIX 1 OEH AHIMS RESULTS

Office of Environment & Heritage

AHIMS Web Services (AWS)
Search Result

Your Ref Number : AGL Nyngan Solar Plant
Client Service ID : 72500

NSW Archaeology Pty Ltd
PO Box 2135
Central Tilba New South Wales 2546

Date: 14 June 2012

Attention: Julie Dibden

Email: julie@nswarchaeology.com.au

Dear Sir or Madam:

AHIMS Web Service search for the following area at Datum :GDA, Zone : 55, Eastings : 504000 - 511000, Northings : 6503000 - 6512000 with a Buffer of 50 meters, conducted by Julie Dibden on 14 June 2012

A search of the Office of the Environment and Heritage AHIMS Web Services (Aboriginal Heritage Information Management System) has shown that:

0	Aboriginal sites are recorded in or near the above location.
0	Aboriginal places have been declared in or near the above location. *

If your search shows Aboriginal sites or places what should you do?

- You must do an extensive search if AHIMS has shown that there are Aboriginal sites or places recorded in the search area.
- If you are checking AHIMS as a part of your due diligence, refer to the next steps of the Due Diligence Code of practice.
- You can get further information about Aboriginal places by looking at the gazettal notice that declared it. Aboriginal places gazetted after 2001 are available on the NSW Government Gazette (http://www.nsw.gov.au/gazette) website. Gazettal notices published prior to 2001 can be obtained from Office of Environment and Heritage's Aboriginal Heritage Information Unit upon request

Important information about your AHIMS search

- The information derived from the AHIMS search is only to be used for the purpose for which it was requested. It is not be made available to the public.
- AHIMS records information about Aboriginal sites that have been provided to Office of Environment and Heritage and Aboriginal places that have been declared by the Minister;
- Information recorded on AHIMS may vary in its accuracy and may not be up to date .Location details are recorded as grid references and it is important to note that there may be errors or omissions in these recordings,
- Some parts of New South Wales have not been investigated in detail and there may be fewer records of Aboriginal sites in those areas. These areas may contain Aboriginal sites which are not recorded on AHIMS.
- Aboriginal objects are protected under the National Parks and Wildlife Act 1974 even if they are not recorded as a site on AHIMS.
- This search can form part of your due diligence and remains valid for 12 months.

PO BOX 1967 Hurstville NSW 2220
43 BridgeStreet HURSTVILLE NSW 2220
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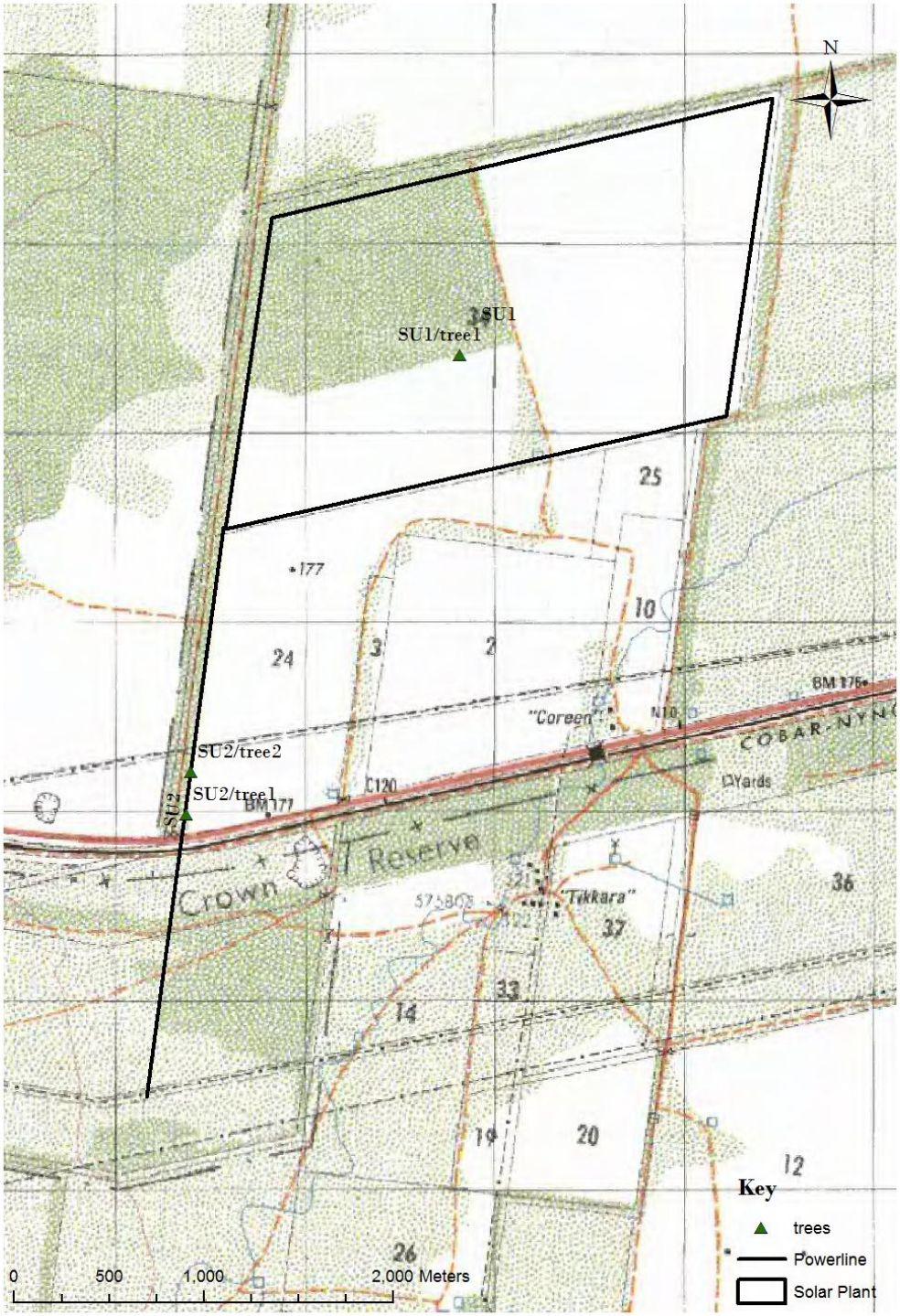
Web: www.environment.nsw.gov.au

APPENDIX 2 LOCATION OF TREES WITH NON-CULTURAL SCARS



tree	Easting	northing
SU1/tree1	507924	6508607
SU2/tree1	506479	6506180
SU2/tree2	506507	6506405