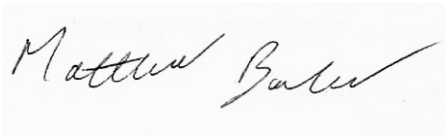


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Aboriginal Cultural Heritage Assessment

WHITE ROCK SOLAR FARM



MARCH 2016



Document Verification



Project Title:

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Project File Name: White Rock Solar Farm ACHA Report

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EXECUTIVE SUMMARY

NGH Environmental has been contracted by White Rock Solar Farm Pty Ltd (WRSFPL) to prepare an Aboriginal Cultural Heritage Assessment Report (ACHAR) for the proposed White Rock Solar Farm (WRSF). The WRSF (the Project) would be located in the New England Tablelands approximately 20 km south-west of Glen Innes, about 500 km north of Sydney and 400 km south-west of Brisbane, NSW (Figure 1). The Project Area is located at the western extent of the Glen Innes Severn LGA in the Matheson locality, within private property in parts of Lots 27, 29, 30, 31 DP753319 of Glen Innes Severn Shire and part of Lot 78 DP 753260 Inverell Shire (Figure 2). The project area is located partly within the project boundary of the White Rock Wind Farm and would be connected to its electricity transmission and substation infrastructure.

The solar farm project would involve ground disturbance that has the potential to impact on Aboriginal heritage sites and objects which are protected under the NSW *National Parks and Wildlife Act 1974*. The purpose of the ACHAR is therefore to investigate the presence of any Aboriginal sites and to assess the impacts and management strategies that may mitigate any impact.

Consultation with the Aboriginal community has been undertaken in accordance with the Consultation Guidelines for Proponents NSW (OEH 2010) and field survey was completed in February 2016 in accordance with the Code of Practice for Archaeological Investigation of Aboriginal Objects in NSW (OEH 2010).

No Aboriginal heritage sites or areas of Potential Archaeological Deposit (PAD) were identified within the project area. Not all mature trees within the project area were visually inspected, and management strategies should be implemented to assess any mature trees prior to removal.

As a result of the field survey and consultation with the local Aboriginal community, it recommended for the project, that prior to any impacts occurring, that:

- The development proposal should be able to proceed with no additional archaeological investigations. No areas of potential archaeological deposits or scarred trees have been identified within the development area and the potential for Aboriginal heritage objects within the development area has been assessed as low.
- All efforts should be made in the design stage to avoid removal of any mature trees in the wider project area surrounding the development site. If removal of trees is required, then the trees should be checked for scars prior to removal, and if present the scar should then be examined by a qualified heritage practitioner and RAPs to assess if the scar is cultural. This does not apply to the development area which has been subject to intensive survey.
- If any culturally scarred trees are identified by the above process, avoidance by redesign of the alignment should be undertaken.
- WRSFPL should prepare a Cultural Heritage Management Plan (CHMP) to address the potential for finding Aboriginal artefacts during the construction of the Solar Farm. The CHMP will outline an unexpected finds protocol to deal with construction activity. Preparation of the CHMP should be undertaken in consultation with the RAPs.
- All Aboriginal objects are protected under the NSW National Parks and Wildlife Act 1974. It is an offence to disturb an Aboriginal site without a consent permit issued by the Office of Environment and Heritage. Should any Aboriginal objects be encountered during works then works must cease and the find should not be moved until assessed by a qualified archaeologist. Adherence to the unexpected finds protocol in the CHMP is required.
- In the unlikely event that human remains are discovered during the construction, all work must cease. OEH, the local police and the appropriate LALC should be notified. Further

assessment would be undertaken to determine if the remains are Aboriginal or non-Aboriginal.

- Further archaeological assessment would be required if the proposal activity extends beyond the area of the current investigation. This would include consultation with the RAPs for the project and may include further field survey.
- Continued consultation with the RAPs for the project should be undertaken. RAPs should be informed of any major changes in project design or scope, further investigations or finds.

1 INTRODUCTION

NGH Environmental has been contracted by Goldwind Australia Pty Ltd (Goldwind), on behalf of White Rock Solar Farm Pty Ltd (WRSFPL), to prepare an Aboriginal Cultural Heritage Assessment Report (ACHAR) for the proposed White Rock Solar Farm (WRSF). The WRSF (the Project) would be located in the New England Tablelands approximately 20 km south-west of Glen Innes, about 500 km north of Sydney and 400 km south-west of Brisbane, NSW (Figure 1). The Project Area is located at the western extent of the Glen Innes Severn LGA in the Matheson locality, within private property in parts of Lots 27, 29, 30, 31 DP753319 of Glen Innes Severn Shire and part of Lot 78 DP 753260 Inverell Shire (Figure 2). The project area is located partly within the project envelope of the White Rock Wind Farm and would be connected to its electricity transmission and substation infrastructure.

The solar farm project would involve ground disturbance that has the potential to impact on Aboriginal heritage sites and objects which are protected under the NSW *National Parks and Wildlife Act 1974*. The purpose of the ACHAR is therefore to investigate the presence of any Aboriginal sites and to assess the impacts and management strategies that may mitigate any impact.

1.1 DEVELOPMENT CONTEXT

The development of renewable energy projects is considered to be one of the most effective ways to achieve the commitments of Australia and a large number of other nations under the Kyoto Protocol to reduce greenhouse gas emissions. The White Rock Solar Farm would provide the following benefits:

- Utilise existing energy infrastructure to supply additional renewable electricity through a hybrid wind/solar facility.
- Generate additional renewable energy at the WRWF location.
- Provide for further reduction in greenhouse gas (GHG) emissions intensity for generation in the National Electricity Market (NEM).
- Provide further investment in a local community which has previously shown support for renewable energy.

The establishment of a Solar Farm would therefore have both local, National and International benefits.

As part of the development impact assessment process, the proposed development application will be assessed under part 4 of the *Environmental Planning and Assessment Act 1979*. The solar farm project at White Rock has a capital investment estimated to be \$45million, therefore the project is classified as “state significant development” (SSD) under Part 4 of the *Environmental Planning and Assessment Act 1979*. SSDs are major projects which require approval from the Minister for Planning and Environment. This ACHAR has been prepared in accordance with the requirements of the Secretary of the Department of Planning and Environment (DPE).

The Secretary’s (of the DPE) Environmental Assessment Requirements (SEARs) relating to Aboriginal heritage are as follows:

- Heritage: Including an assessment of the likely Aboriginal and historic heritage (cultural and archaeological) impacts of the development, including adequate consultation with the local Aboriginal community. (SEARS for White Rock Solar Farm (SSD 16_7487) 03/02/16).

The project area is within the Glen Innes Severn and Inverell Council Local Government areas.

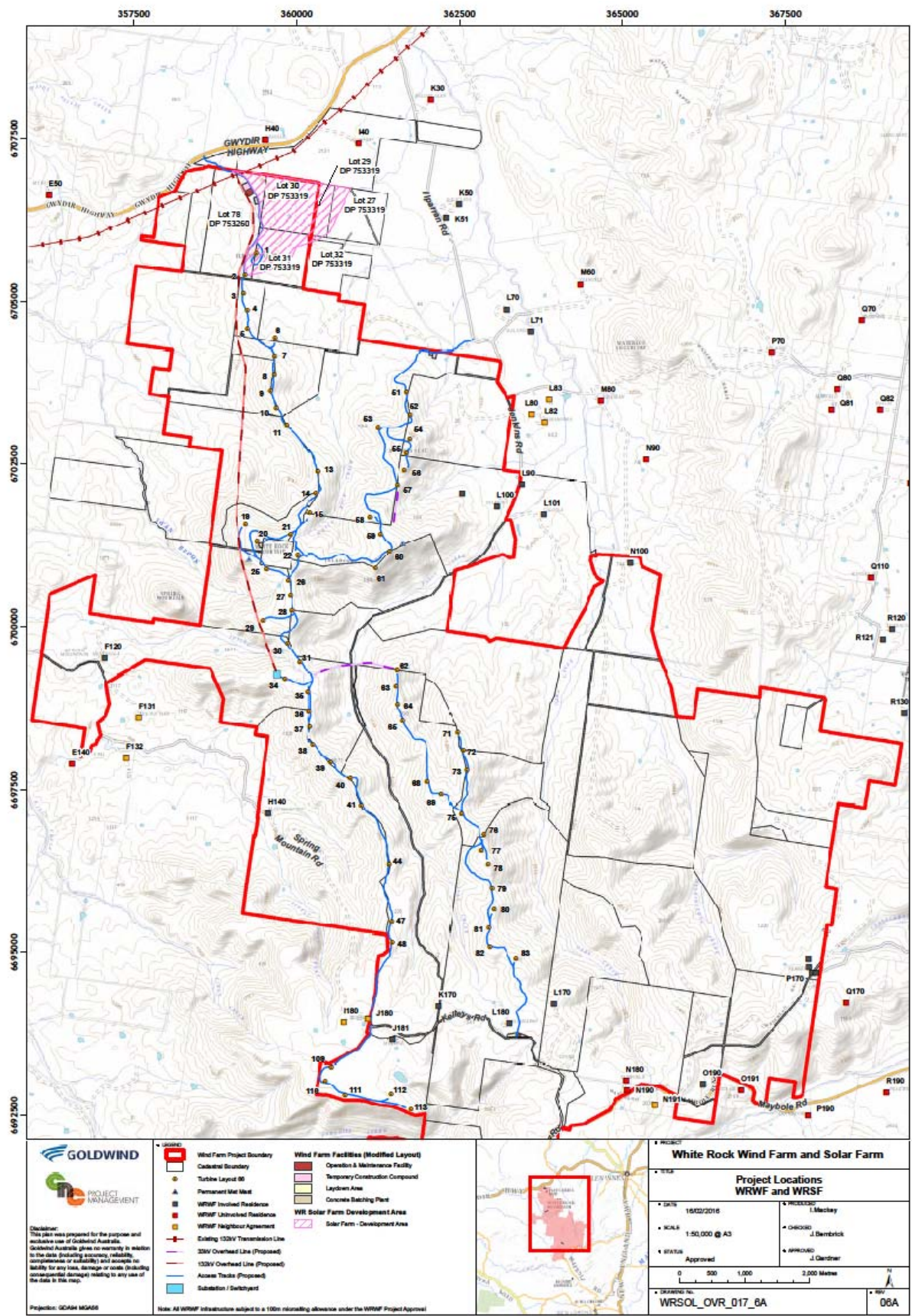


Figure 1 WRSF Project Location.

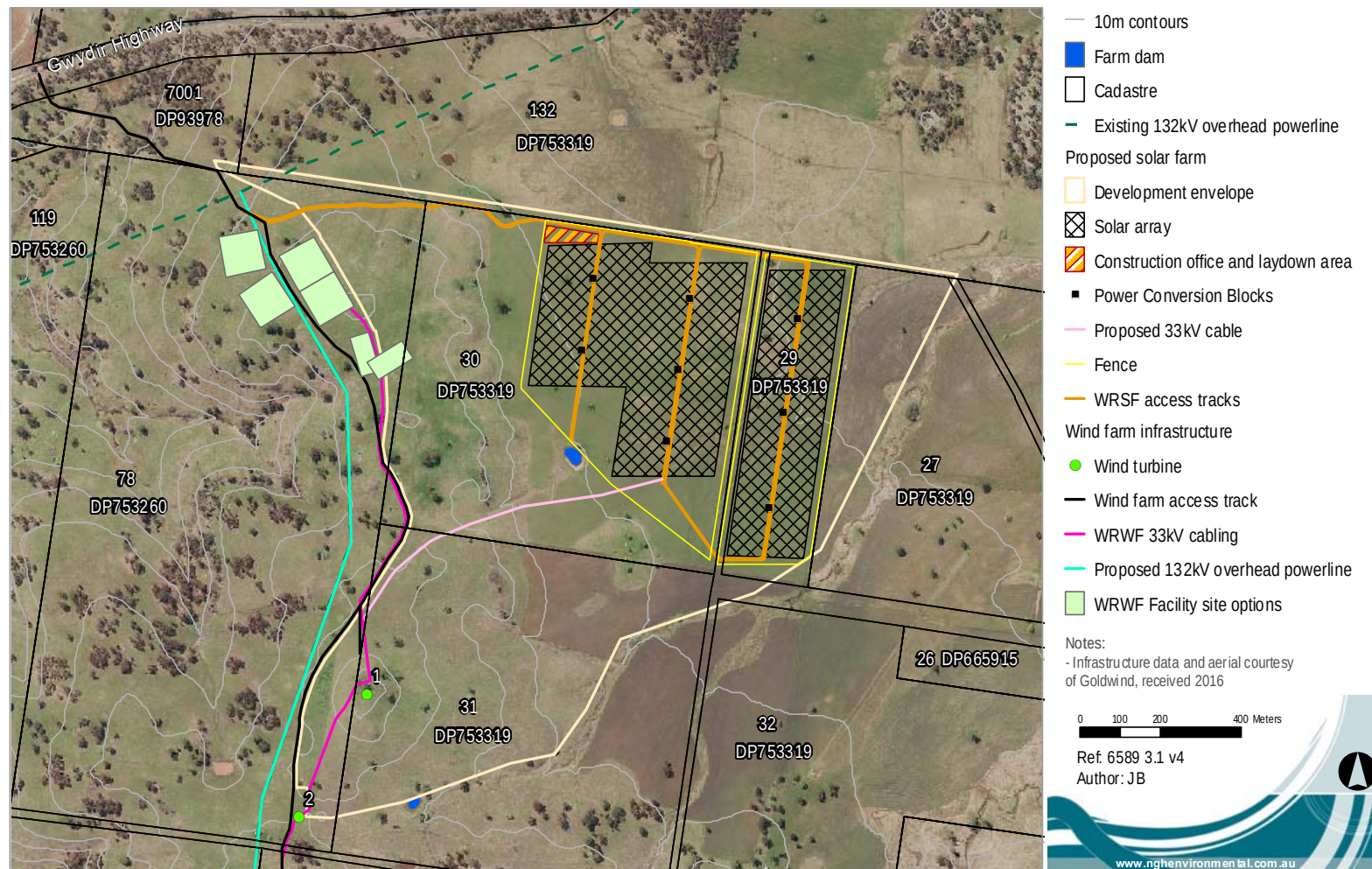


Figure 2 Project Area.

1.2 PROJECT PROPOSAL

The White Rock Solar Farm (WRSF) project involves construction of a solar farm of approximately 20 MW (AC) capacity that would export the electricity produced through the same grid connection facilities that are proposed for the adjacent White Rock Wind Farm (WRWF) project. The White Rock Wind Farm was given approval in 2012 (Project Approval MP10_160) and has been subject to heritage assessment from 2010 as part of the Project Application (RPS 2010). A Cultural Heritage Management plan has also been developed for the WRWF, which also involved consultation with the local Aboriginal community (ERM 2015).

The project site would comprise the installation of a solar plant with a capacity of up to 20 Megawatts. The Project would be a PV solar farm facility generating approximately 20MW(AC) from solar panels collectively rated at up to approximately 25MW(DC). The main operation infrastructure (solar panels and power conversion blocks) would cover an area of approximately 50(ha). The project would generally comprise the following components:

- Solar panel arrays:
 - Approximately 75,000 polycrystalline panels
- Mounting framework:
 - The solar panels would be secured on a galvanised steel structure that consists of a frame secured to posts that have been piled into the ground
 - In the unlikely event that the posts cannot be piled into the ground, a ballasted solution may be investigated
- A fixed panel arrangement to enable panels at a tilt of between 15 and 30 degrees to the horizontal to optimise solar incidence and achieve optimum efficiency.
- Internal DC wiring between panels and inverter systems within groups of panels.
- Connection of groups of panels to Power Conversion Blocks (PCBs) within the area of the solar arrays.
- Eight PCBs with a total output 20MW (AC) including:
 - Inverter modules (container based modules) of the order of 1.43 to 2.5MW.
 - Eight to 14 step-up transformers to 33kV (one transformer per PCB).
 - 33kV Switchgear at each PCB.
- 33kV cabling to link the solar farm output to the WRWF collections circuits.
- Access tracks for access to the site during construction and to the PCBs during operation.
- Fencing around the solar farm for security and safety.
- Monitoring equipment.
- Small Site building
- Co-use of the WRWF Operations and Maintenance Building for the operational phase.
- Potential WRSF site screening at WRSF site, dependent on final design and need for screening.
- Temporary construction facilities and laydown area.

Access to the project area would be from the Gwydir Highway and via the WRWF northern entry and access tracks approved for the WRWF.

The WRSF would be connected to the WRWF 33 kV collections system and export the power produced through the WRWF substation. The infrastructure for the WRWF has already been assessed for heritage values. Only those components of the Solar Farm that have not previously been assessed have been examined for the current assessment.

1.3 PROJECT PERSONNEL

The assessment, including research and Aboriginal community consultation was undertaken by archaeologists Lyn O'Brien and Matthew Barber of NGH Environmental while the field survey and report preparation was undertaken by Lyn O'Brien with Matthew Barber providing peer review

Consultation with the Aboriginal community was undertaken following the process outlined in OEH's *Aboriginal cultural heritage consultation requirements for proponents 2010*. The consultation followed previous consultation for WRWF in 2015. Four Aboriginal groups registered their interest in the WRSF proposal. These groups were:

- Glen Innes Local Aboriginal Land Council.
- Anaiwan Local Aboriginal Land Council.
- Anaiwan Traditional Owners Aboriginal Corporation.
- Jakambal.

Of these groups the two Local Aboriginal Land Councils provided representatives who participated in the fieldwork.

Further detail and an outline of the consultation process is provided in Section 2.

Supporting project information to assist the Aboriginal heritage assessment was also provided by the Goldwind representative Jeff Bembrick and Jane Mills from NGH Environmental.

1.4 REPORT FORMAT

This Aboriginal Cultural Heritage Assessment Report (ACHAR) was prepared in line with the following:

- *Guide to Investigating, Assessing and Reporting on Aboriginal Cultural Heritage in NSW* (OEH 2011);
- *Code of Practice for the Archaeological Investigation of Aboriginal Objects in New South Wales* (OEH 2010a), and
- *Aboriginal cultural heritage consultation requirements for proponents 2010* (OEH 2010b) produced by the NSW Office of Environment and Heritage (OEH).

The purpose of this ACHAR is therefore to provide an assessment of the Aboriginal cultural values associated with the project area and to assess the cultural and scientific significance of any Aboriginal heritage sites. This conforms to the intention of the SEARs.

The objectives of the assessment were to:

- Conduct Aboriginal consultation as specified in clause 80c of the National Parks and Wildlife *Regulation*, using the consultation process outlined in the *Aboriginal cultural heritage consultation requirements for proponents 2010*;
- Undertake an assessment of the archaeological and cultural values of the project area and any Aboriginal sites therein;
- Assess the cultural and scientific significance of any archaeological material, and
- Provide management recommendations for any objects found.

2 ABORIGINAL CONSULTATION PROCESS

The consultation with Aboriginal stakeholders was undertaken in accordance with clause 80C of the *National Parks and Wildlife Amendment (Aboriginal Objects and Aboriginal Places) Regulation 2010* following the consultation steps outlined in the *Aboriginal Cultural Heritage Consultation Requirements for Proponents 2010* (ACHCRP) guide provided by OEH. The guide outlines a four stage process of consultation as follows:

- Stage 1 – Notification of project proposal and registration of interest.
- Stage 2 – Presentation of information about the proposed project.
- Stage 3 – Gathering information about cultural significance.
- Stage 4 – Review of draft cultural heritage assessment report.

The full list of consultation steps, including those groups and individuals that were contacted and a consultation log is provided in Appendix A. A summary of actions carried out in following these stages are as follows.

Stage 1. Letters outlining the development proposal and the need to carry out an ACHA were sent to the Anaiwan and Glen Innes Local Aboriginal Land Council (LALC), and various statutory authorities including OEH, as identified under the ACHCRP. An advertisement was placed in three local newspapers, the *Northern Daily Leader* on 4 January 2016, the *Glen Innes Examiner* on 7 January 2016 and the *Inverell Times* on 8 January 2016, seeking registrations of interest from Aboriginal people and organisations. A further series of letters was sent to other organisations identified by OEH in correspondence to NGH Environmental. In each instance, the closing date for submission was 14 days from receipt of the letter.

As a result of this process, four groups contacted the consultant to register their interest in the proposal. The Registered Aboriginal Groups (RAPs) who registered interest were:

- Anaiwan Local Aboriginal Land Council.
- Glen Innes Local Aboriginal Land Council.
- Anaiwan Traditional Owners.
- Jukambal.

No other party registered their interest, including the entities and individuals recommended by OEH or who were part of the WRWF project.

Stage 2. An *Assessment Methodology* document for the White Rock Solar Farm was sent to the RAPs and other Aboriginal stakeholders named by OEH. This document provided details of the background to the proposal, a summary of previous archaeological surveys and the proposed heritage assessment methodology for the proposal. The document invited comments regarding the proposed methodology and also sought any information regarding known Aboriginal cultural significance values associated with the subject area and/or any Aboriginal objects contained therein. No written responses were received but Greg Livermore (CEO Anaiwan LALC), Ron Connors and Trevor Potter (Glen Innes LALC) indicated by phone that they were satisfied with the methodology and were happy to proceed to conducting fieldwork.

Stage 3. The *Assessment Methodology* outlined in Stage 2 included a written request to provide any information that may be relevant to the cultural heritage assessment of the study area. It was noted that sensitive information would be treated as confidential. No response regarding cultural information was received.

At this stage, the fieldwork was organised and the Anaiwan and Glen Innes LALCs were asked to participate in the fieldwork as the project area crossed both Land Council boundaries. Greg Livermore and Trevor

Potter both experienced senior sites officers attended the survey with the archaeologist and assisted in conducting the survey, providing input into transect placement and cultural significance.

Stage 4 In February 2016 a draft version of this *Aboriginal Cultural Heritage Assessment Report* for the project (this document) was forwarded to the RAPs and a timeframe of 28 days has been provided to allow for responses to the document.

2.1 ABORIGINAL COMMUNITY FEEDBACK

Aboriginal community feedback has been sought during the design of methodology and field work stages. No information in respect of the project area holding specific cultural values or known heritage sites being located within the project boundaries has been provided.

Representatives of the Aboriginal community were present during the fieldwork and provided feedback on the project with no objections being recorded.

A draft of this report was forwarded on its completion to the RAPs and responses received will be included at Appendix A. No objections to the project have been recorded to date.

3 BACKGROUND INFORMATION

3.1 REVIEW OF LANDSCAPE CONTEXT

3.1.1 *Geology and Topography*

The topography of the project area is best characterised by gently sloping to more undulating hilly country to the west, with extensive, agriculturally rich, gently undulating to flat black soil plains and creek flats in the eastern section. There is only minor topographic variation within the land for the proposed Solar Farm (site area) which is proposed to be located in the eastern section of the project site. The ground is situated along almost level or gently sloping areas of creek flats/plains. The lower and middle slopes then rise gradually westwards to the north-south running ridgeline which exhibits more variation in elevation.

Soils in the study area are generally formed from the deposition of weathered sediment material. Within the proposal area, the soils are typically black volcanic soils with some silt content and very little natural gravels. The soil profile would be expected to be moderately deep which has made it suitable for ploughing and crop cultivation. On the higher elevations the soils are thinner and reddish volcanic soils predominate. Granite outcrops predominate in this region and grazing is the main use for the area.

3.1.2 *Flora and Fauna*

The natural vegetation across the proposal area has been almost totally cleared and is now considered as a modified environment. Grass coverage appears to have been subject to pasture improvement and over much of the area a heavy coverage of weeds are present. Some native trees were present along the ridgeline areas and widely scattered on the flatter area. The natural vegetation of the area would most likely have consisted of Tableland grassy woodland prior to clearing with native grasses under an understory of Eucalypts.

The grassy woodland environment supported a wide range of edible plant and fauna species. Fauna present would range from small marsupials (i.e. possums), to avian species and macropods. A range of lizards also inhabit this environment that would have been utilised by Aboriginal groups. The NSW OEH lists over 200 flora and fauna species as present within these woodlands, the majority of which had some utilisation in traditional Aboriginal lifeways.

3.1.3 *Historic Landuse*

Pastoral settlement commenced in the Glen Innes region in the 1830's. Large pastoral runs were the norm with the closer settlement into smaller farms commencing following the Robertson Land Acts (1861). The black alluvial volcanic soils present between Glen Innes and Inverell were highly productive for cereal production and the area was intensively cultivated, and economic prosperity followed.

The proposed location for the White Rock Solar Farm has been subject to considerable impacts from farming for many decades. The landowner informed us that the paddocks chosen for the solar array placement (site area) had been subject to long periods of intensive cultivation with ploughing, planting and harvesting of crops consisting of grains or fodder. This accounted for the levelling of minor landscape features across the paddock, with minor drainage depressions crossing the eastern sections. Overall, the site area would be categorised as highly disturbed through consistent farming and ploughing practices for many decades.

3.1.4 Landscape Context

Most archaeological surveys are conducted in a situation where there is topographic variation and this can lead to differences in the assessment of archaeological potential and site modelling for the location of Aboriginal archaeological sites. The project area ranges over creek flats/floodplains to ridgeline crests across the survey area.

The landforms for the survey were therefore determined to be stable landforms, with an aggrading landscape on the creek flats and floodplains. Soils appear heavily disturbed in areas subject to continuous ploughing and planting, with areas on the crests and upper slopes retaining their original aspect due to rock outcropping. These areas appear to carry high weed levels. In the ploughed areas soils are heavily disturbed and there is unlikely to be any remnant intact profile within at least the upper 20-50cm.

There are no natural water courses or drainage lines across the site area, with minor tributaries located to the east. The waterways further to the east may have been a focus for Aboriginal people prior to European land modifications, as they may have provided resources, water and food for Aboriginal people.

The landscape would indicate that it would have been traversed and utilised by Aboriginal people but the lack of water resources or large scale resources would render it less suitable for large scale gatherings or long term camping sites.

3.2 REVIEW OF ABORIGINAL ARCHAEOLOGICAL CONTEXT

3.2.1 Ethnohistoric Setting

Cultural areas are difficult to define and “must encompass an area in which the inhabitants have cultural ties, that is, closely related ways of life as reflected in shared meanings, social practices and interactions”(Egloff *et al.* 2005:8). Depending on the culture defining criteria chosen - i.e. which cultural traits and the temporal context (historical or contemporary) - the definition of the spatial boundary may vary. In Australia, Aboriginal “marriage networks, ceremonial interaction and language have been central to the constitution of regional cultural groupings” with the distribution of language speakers being the main determinate of groupings larger than a foraging band (Egloff *et al.* 2005:8 & 16).

The Glen Innes area is within a region identified as part of the Nganyaywana language group. This is an assemblage of many small clans and bands speaking a number of similar dialects (Howitt 1996, Tindale 1974, Horton 1994). The borders were however, not static, they were most likely fluid, expanding and contracting over time to the movements of smaller family or clan groups. Boundaries ebbed and flowed through contact with neighbours, the seasons and periods of drought and abundance.

It was the small family group that was at the core of Aboriginal society, the basis for their hunting and gathering life. The immediate family camped, sourced food, made shelter and performed daily rituals together. The archaeological manifestations of these activities are likely to be small campsites, characterised by small artefact scatters across the landscape. Places that were visited more frequently would develop into larger site complexes with higher numbers of artefacts and possibly more diverse archaeological evidence.

The small family units were part of a larger band which comprised a number of families. They moved within an area defined by their particular religious sites (MacDonald 1983). Such groups might come together on special occasions such as pre-ordained times for ceremonies, rituals or simply if their paths happened to cross. They may also have joined together at particular times of the year and at certain places where

resources were known to be abundant. The archaeological legacy of these gatherings would be larger sites than small family camps.

At the time of European settlement in the region, the western portion of the study area in the vicinity of Inverell was believed to have been inhabited by Anaiwan (Nganyaywana) speaking Aboriginal people (Tindale 1974). Closer to Glen Innes were probably a related group known as the Ngarrabal (Ngarabal, Ngarrbul) (Tindale 1974).

The Anaiwan and Ngarrabal people are thought to have utilised the majority of the area north of the Macintyre River, making use of a broad range of natural resources. Although occupation seems to have been focused on the riverine margins, it is believed that their occupation was not restricted to these areas but traversed a variety of landform units away from the major water sources for the gathering of resources and hunting. (McIntyre 1998).

The Ngarrabal continue an oral history which describes traditional seasonal movement patterns between the tablelands in the east during the summer and autumn and the western river systems in the west during the cooler winter months (DECC, 2008).

Byrne (cited in Paton 1998:33) believed that the people of the Glen Innes – Inverell locality were constrained by the limited plant and animal resources when compared to the people of the coast and as a result, the inland people led a far more mobile lifestyle. However, this would seem to underestimate the resources present in the area.

Prior to European settlement, the tablelands and adjacent slopes between Glen Innes and Inverell supported dense woodlands, which provided habitat for a broad range of plant and animal species that formed the core of Aboriginal dietary items prior to contact with early European explorers and settlers. Groups are documented as having exploited a broad range of plant species as both food and material resources, including bracken fern, orchids, tubers and lilies, kurrajong trees and the daisy yam, to mention just a few (Morris, 1999:4-6). Major water courses such as the Macintyre River to the south and perennial creeks were also a valuable source of plant and animal food and material resources.

Aboriginal traditional lifestyles were disrupted by the spread of European settlement by the 1840s. European disease and violence by early settlers lead to a decline in the local population, with some remaining families finding employment on the large pastoral stations that had become established in the region (DECC. 2008). Aboriginal men also found employment within the shearing or timber industries.

No Aboriginal reserves were established in the Inverell or Glen Innes areas, however they were established at Armidale, Guyra, Ashford, Ingelba and Tingha. Many families congregated at these centres and ceased traditional lifeways.

3.2.2 AHIMS Search

The Aboriginal Heritage Information Management System (AHIMS) is maintained by OEH and provides a database of previously recorded Aboriginal heritage sites. Searches of the AHIMS database can be made providing information about any sites previously identified within a designated search area. The results of the search are able to be relied upon for 12 months.

An extensive search of the AHIMS database was undertaken on 4 January 2016. An extensive AHIMS search has found that there are no recorded sites within the proposed WRSF site area. There are however, 16 sites recorded in the 24 km (north-south) by 20 km (east-west) area surrounding the development areas, comprising four modified (scarred) trees, five artefact scatters, six locations of potential archaeological deposit (PAD) and one art (engraving) site.

The AHIMS Client Service Number was: 205497.

The AHIMS register search revealed that there were 16 Aboriginal heritage sites within the wider search area and a breakdown of the site types is shown in Table 1 and on Figure 3.

Table 1. Site types within AHIMS search

Site Type	Number
Isolated Find/artefact scatter	5
Modified tree	4
PADs	6
Art	1

It is clear from these results that the dominant site type in the region are occurrences of stone artefacts, either as isolated finds or in clusters as artefact scatters. None of the sites are within or adjacent to the solar farm site area. The nearest registered site is located approximately 1.5km to the east of the WRSF site.

3.2.3 Archaeological Setting

Aboriginal people have occupied what we now know as the Australian continent for at least 40,000 years and perhaps 60,000 years and beyond. There have been no dated excavations in the Glen Innes area and no regional synthesis of the archaeology has been completed, with most assessments having been undertaken to assess developments. In the recent period these developments have focused on the potential for wind farms in the region, covering a landscape similar to the current project area. The following are summaries of those archaeological survey reports that have been completed in the area that are relevant for the current project.

Appleton in 1992a completed an assessment for a proposed optic fibre cable from Gilgai to Tingha to Wandsworth telephone exchanges. The survey covered 66 km, mainly located in strips of native bushland and stock routes amongst a highly disturbed environment. Five Aboriginal sites consisting of artefact scatters were located with one containing 87 artefacts and deemed to hold high significance. The route was redesigned to avoid impact to three of the five sites.

Another survey was undertaken by Appleton in the same year (1992b) for a fibre optic cable from the Martin's Lookout to Red Range telephone exchanges. The survey covered 14.5 km. No sites were located but one site close to the Yarrow River was reported subsequently.

An assessment was undertaken for the proposed wind farm at Black Springs by Harper et al in 2006. The area was subject to field survey but no sites were identified. Visibility was low across the area due to dense grass coverage, but the area was considered to hold low potential due to past land use.

McCardle Cultural Heritage in 2007 completed an assessment for the Glen Innes Wind Farm, located 12 km west of Glen Innes and covering approximately 8.5 km of the Waterloo Range. Visibility was considered low due to grass coverage and the area was considered highly disturbed due to past agricultural usage. The area was not considered to contain high potential for heritage sites and only one isolated find was recorded.

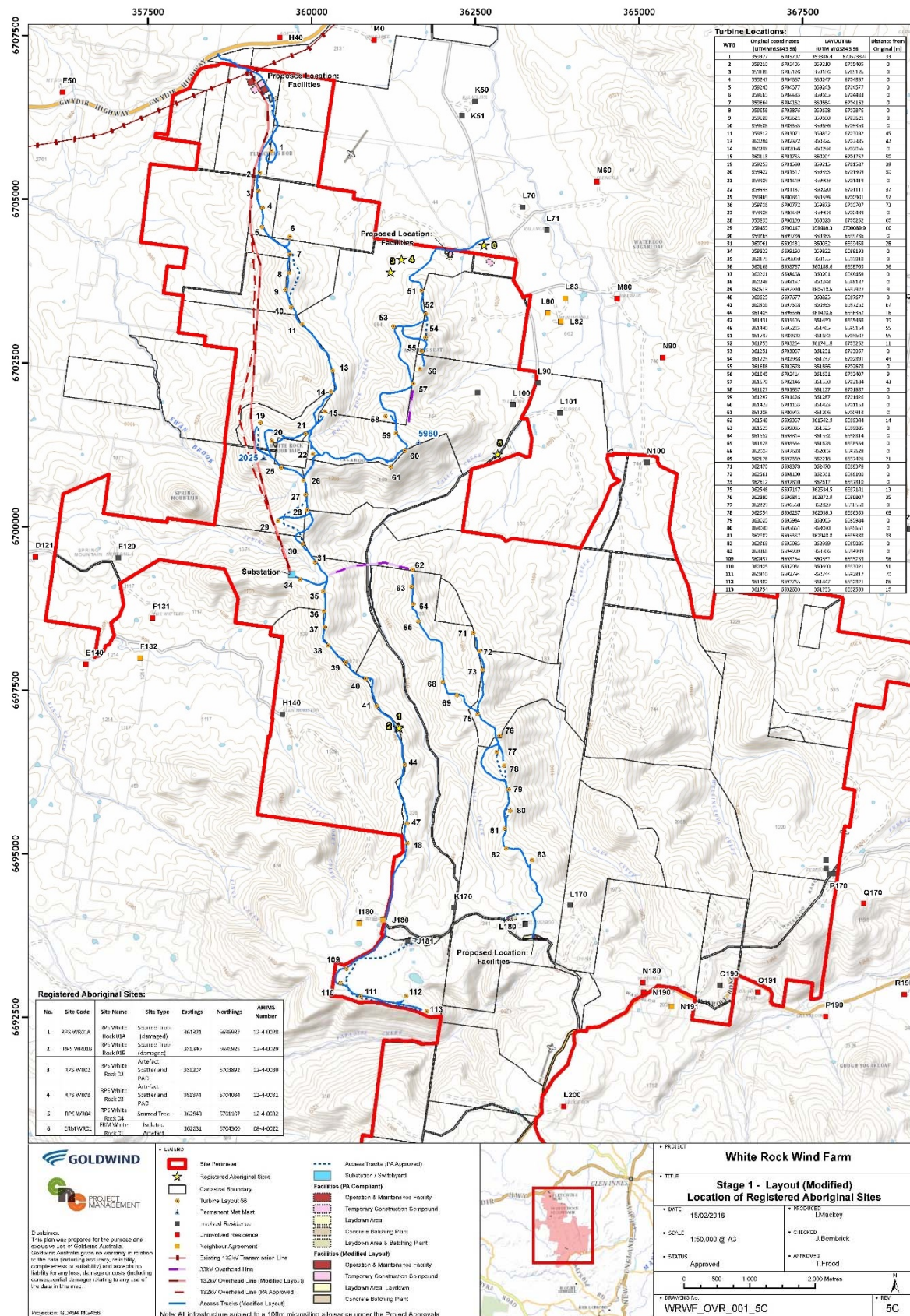


Figure 3 AHIMS Search results

Central West Archaeological and Heritage Services undertook an assessment in 2008 for a 12.5 km section of overhead transmission line. The alignment was located on the western outskirts of Glen Innes with the area found to be highly disturbed due to farming practices. Despite the finding that 90% of the route was covered by dense grass coverage six Aboriginal sites were identified, one being a chert quarry located along a flat ridge crest.

In 2008 an assessment was undertaken for the Ben Lomond Wind Farm by RPS. The survey area covered 9.7 ha, located 1 km north of the village of Ben Lomond. No Aboriginal sites were identified, but ground surface visibility was low due to the dense grass coverage. Modelling indicated the area to hold low potential with sites predicted to be close to water resources.

In 2009, NSW Archaeology conducted an assessment for the proposed Sapphire Wind Farm (Appendix 12 of the Sapphire Wind Farm Environmental Assessment, 2011). A total of three Aboriginal object locals SU14/L1, SU19/L1 and SU21/L1 were recorded within the assessed Survey Units as listed in Sapphire EA Appendix 12, 2011. The locales were reported to have very low density stone artefact distribution, resulting in low archaeological potential/sensitivity and therefore low archaeological significance. In addition to the Indigenous object locales, five trees were considered by the Aboriginal field assistants to be possible scarred trees. All survey units were assessed to be of low archaeological significance.

The most relevant previous study relative to the WRSF project area assessments for the White Rock Wind farm project adjacent to the WRSF project area undertaken by RPS in 2010 and ERM in 2015.

In respect of the RPS assessment in 2010, their background research identified that previous Aboriginal heritage studies in the region had located artefact scatters, often in association with potential archaeological deposits (PADs) and that they were often located near third order drainage lines. They therefore predicted that these were the most likely site types to occur within the Wind Farm survey area.

RPS undertook a pedestrian survey of the wind farm infrastructure areas. Their survey strategy was to divide the area into survey units, which appear to be based on associated infrastructure areas for the project but included a range of topographies including crest, upper, mid and lower slopes of the main ridgelines (location of proposed turbines and infrastructure) and creek terraces. Two of their survey units, cover parts of the current White Rock Solar Farm project area. SU1 was the northern most unit consisting of ridge slopes and crest of a north-south ridgeline and it partly covers the Solar Farm site. SU4, was a large unit that extended along a main ridge line and covers part of option 2 for the Solar Farm site. It is not clear from their report as to exactly what areas were physically inspected by the survey; it is therefore not possible to say if each of these survey units that overlap the current assessment areas have been inspected by RPS.

RPS recorded three modified trees and two artefact scatters during their surveys (RPS 2010). All are outside of the current project area. Two of the modified trees were on upper slopes of a knoll, in close proximity to each other (RPS White Rock 01A – AHIMS# 12-4-0028, White Rock 01B – AHIMS# 12-4-0029). The third modified tree was situated on a creek terrace (RPS White Rock 04 – AHIMS#12-4-0032). One artefact scatter (RPS White Rock 02 – AHIMS#12-4-0030) was situated on a creek terrace and comprised three artefacts in a small exposure. The second artefact scatter (RPS White Rock 03 – AHIMS#12-4-0031) was also found on a creek terrace and also comprised three artefacts in a small exposure. At each of these locations, RPS identified that PAD extended east and west along the terrace either side of the exposure. The artefacts recorded were made from quartz, silcrete and basalt.

RPS concluded that the predictive model for site location was supported with a modification that creek terraces beyond the foot slopes were preferred camp sites, most likely due to the foot slopes retaining a waterlogged soil after rains. They further suggested that Aboriginal camping activity was undertaken at

the lower elevations, not on the ridge crests, which could be as much as 300 m above the drainage lines and that the ridgelines were used for resource gathering (floral and faunal), as indicated by the scarred trees (RPS 2010:38).

ERM also provided further survey of the White Rock Wind Farm Project Area in 2015 as part of pre-construction planning. This included a review of potential modifications to the Stage 1 WRWF project layout. The assessment identified an additional Aboriginal site as follows: AHIMS 08-4-0022 (ERM WR01) consisting of an isolated artefacts located at Easting 362631, Northing 6704 300 (MGA Zone 56).

3.2.4 *Summary of Aboriginal land use*

The results of previous archaeological surveys in the Glen Innes region serve to show that there are sites present in a range of landforms. There does appear however to be a pattern of site location that relates to the presence of potential resources for Aboriginal use. The small artefact scatters tend to be present due to the occurrence of small drainage or creek lines per resources, an essential factor for Aboriginal people.

Scarred trees tend to be located along ridge crests and are recorded in the vicinity of White Rock Mountain. Information from Aboriginal representatives indicated that White Rock Mountain was a significant area and should be avoided whenever possible.

The Aboriginal land use of the region is in reality little understood as few in-depth studies have been completed. It is possible, however, to ascertain that proximity to resources was a key factor in the location of Aboriginal sites. It is also reasonable to expect that Aboriginal people ventured away from these resources to utilise the broader landscape but the current archaeological record of that activity is currently limited.

3.2.5 *Archaeological Site Location Model*

RPS proposed a model of site location for their study area for the WRWF (2010) which can be used for the current Solar Farm site area. This included that there were unlikely to be scarred trees present due to European land clearing, there was some potential for the presence of artefact scatters, scarred trees along ridgelines (where trees had not been cleared) and isolated artefacts have the potential to occur anywhere but are most likely in association with permanent water.

Based on the results of these previous archaeological investigations in the local area, it is possible to provide the following model of site location in relation to the proposed White Rock Solar Farm site area.

Stone artefact scatters – representing camp sites these sites can occur across the landscape, usually in association with some form of resource or landscape unit. Creek lines and small water holding bodies can also be a focus of Aboriginal occupation. Boundaries between changes in vegetation can also be a focus for occupation. Within the Solar Farm site area of interest, no such features exist and therefore large campsites are unlikely to occur.

Burials – are generally found in sandy contexts or in association with rivers and major creeks. No such features exist with the Solar Farm and therefore such sites are unlikely to occur.

Scarred Trees – these require the presence of mature trees and are likely to be concentrated along major waterways and around swamps areas. There are no trees remaining on the Solar Farm site area, but they are present in the wider area which may be affected by peripheral infrastructure. The presence of scarred trees is considered to be unlikely to occur.

Stone resources – are areas where people used natural stone resources as a source material for flaking. This requires geologically suitable material outcropping so as to be accessible. The WRSF area contains some natural outcropping stone such as basalt. There is therefore potential for this site type to occur.

Isolated Artefacts – are present across the entire landscape, in varying densities. As Aboriginal people traversed the entire landscape for thousands of years, such finds can occur anywhere and indicate the presence of isolated activity, dropped or discarded artefacts from hunting or gathering expeditions or the ephemeral presence of short term camps.

In summary, the lack of topographic, environmental or landscape features within the proposal area means that there are few loci that could potentially be attractive to Aboriginal people to concentrate activity and therefore have a better chance of leaving archaeological traces. Nonetheless, given that Aboriginal people have lived in the region for tens of thousands of years, there is some potential for archaeological evidence to occur. This is most likely to be in the form of isolated stone artefacts.

3.2.6 *Comment on Existing Information*

The AHIMS database is a record of those places that have been identified and had site cards submitted to OEH. It is not a comprehensive list of all places in NSW as site identification relies on an area being surveyed and on the submission of site forms to AHIMS. There are likely to be many areas within NSW that have yet to be surveyed and therefore have no sites recorded. However, this does not mean that sites are not present.

Within the Glen Innes district there have only been a few archaeological investigations, however the relatively recent investigations of renewable energy sites (4 wind farms and a solar farm) is providing an improved database. Nevertheless, the information relating to site patterns, their age and geomorphic context is still little understood, particularly on the higher areas and ridgelines.

The robustness of the AHIMS survey results are therefore considered to be only moderate for the present investigation. There are likely to be many sites that exist that have yet to be identified. Although the terrain is generally a stable landscape, the scale of farming activities, in particular clearing and extensive ploughing over a long period of time has disturbed the site area.

With regard to the limitations of the information available, archaeologists rely on Aboriginal parties to divulge information about places with cultural or spiritual significance in situations where non-archaeological sites may be threatened by development. To date, no such places have been identified within the archaeological reports carried out within the adjacent area. Additionally, no information about any such places within the WRSF project area has been provided during consultations. There is always the potential for such places to exist but insofar as the current project is concerned, no such places or values have been identified.

4 ARCHAEOLOGICAL INVESTIGATION RESULTS

4.1 SURVEY STRATEGY

Field survey was undertaken over two days on 10 and 11 February 2016.

As already noted, the Solar Farm project involves a number of separate components, mainly the defined development site where the solar arrays would be located and the surrounding landscape which may be impacted by the installation of peripheral infrastructure (access roads, transmission lines etc), termed the project area. The location of the solar array is shown in Figure 2. The survey strategy followed the standard practice of delineating different survey units based on topography, soils or other landscape features. This methodology was applied across the project area dividing the landscape into survey units based on their topography.

The survey area was further divided into the development site footprint, which was the focus of intensive survey to ensure that no Aboriginal sites were present and to characterise potential and the wider project area which was subject to enough coverage to assess and characterise the potential for heritage sites.

The survey method was therefore to carry out a series pedestrian survey transects across the project area, ensuring enough coverage to be able to assess and characterise the archaeology. Team members walked in parallel lines across each paddock looking for the evidence of Aboriginal occupation. At points where vegetation or weeds precluded further survey, the teams backtracked their pathway to a clearer area where survey recommenced.

4.2 SURVEY COVERAGE

Survey transects were undertaken on foot and traversed the main part of the Solar Farm project area. The field survey was severely impeded by very poor visibility. The project area was heavily grassed with ground surface obscured by grass length generally at knee to mid-thigh height. In addition, the site area where the solar arrays are proposed to be located was heavily covered in thistles, reducing access to some areas and providing nil visibility or areas of exposure. All of the areas of proposed solar array panel placement had been subject to continuous ploughing for a number of years for commercial cropping.

To the south of the site area a paddock had been prepared for ploughing by poisoning the existing vegetation cover. This afforded a large area of excellent visibility (80%) across this area of floodplains, which included a terrace. Due to the high difference in visibility and resultant survey coverage in this area, it was defined as a separate survey unit (3a).

Areas of exposure generally consisted of access roads, small stock impact trails and areas of exposure along dam banks. Survey Units were delineated based on landform context. Details of ground surface visibility (GSV), rate of exposures, exposure types and soils where possible were recorded for each survey unit. Details of transects across each survey unit are provided in Appendix B. The description of survey units, and degree of survey coverage over each of the survey areas is discussed in the following sections organised by each survey area.

The survey area consisted of one level area of solar array placement in the north eastern corner, with a wider project area covering rolling undulating hillslopes and a north-south running ridgeline heading towards White Rock Mountain.

Following the methodology outlined previously, the project area was divided into three survey units based on landform. These survey units are shown on Figure 4. The descriptions of each survey unit is provided below.

Survey Unit 1 - This unit comprised the north western portion of the project area and was accessed from the main Gwydir Highway entranceway. This survey unit comprised the crest, upper, and mid slopes associated with the north-south ridge which incorporates White Rock Mountain. The area has been extensively cleared, introduced grass species are the dominant vegetation type which thickly covers much of the ground surface, thus resulting in low ground surface exposure and visibility (Plate 1). There were limited occurrences of ground surface exposure associated with the main farm access track and gateways (Plate 2). Basalt boulders were observed outcropping in this survey unit at the top of hills and were generally covered in weeds such as thistles or blackberries (Plate 3). GSV is considered to be less than 5% overall with exposures occurring only on the farm access track covering a minority of the area. No Aboriginal sites or non-Indigenous heritage items were identified in this survey unit.

Survey Unit 2 – This unit comprises the steep middle slopes that descend from SU 1 to SU3. This area has not been subject to intensive cultivation though pasture improvement and tree removal have occurred, as in SU1. No areas of exposure were present in this area. The steepness of the slopes would indicate the lack of potential for camping sites or travel ways as passage would be easier through the landscape either on the valley flats or by following the ridgelines. Grass length was mid-thigh in this section with areas of thistles and blackberry, overall GSV was extremely low with no areas of clear exposure (Plate 4). Most remnant mature trees are located in this section. Where possible these were inspected but not all were along transects or possible to approach due to thistles to inspect the trunks. Due to the lack of visibility in this landform pedestrian survey was abandoned.

Survey Unit 3 – This unit comprises the eastern portion of the project area and covers the area subject to intensive cultivation and ploughing for cropping. This unit covers the area of the solar farm site. This survey unit comprised the lower slopes and valley flats with two areas of small drainage channels running to the northeast. The first order drainage channels were minor and do not hold water at any time. This area has been extensively ploughed over a number of years and as a result, minor landform features have been levelled. GSV was low across the entire area, lessened further by the presence of thistles in the north eastern section (Plate 5). The occasional stock track was present providing visibility in this survey unit and farm access tracks ran across the SU and along the boundary fences providing linear exposures (Plate 6). A creek line is present on the south of the SU which had exposure along its length and a small crest is present in the centre. On this crest are water troughs and tanks used by stock which created large areas of exposure (Plate 7).

The paddock to the south of the crest area has been recently poisoned prior to ploughing resulting in the entire paddock having a visibility of 80% (Plate 8). This area has been called SU3a. These lower slopes and creek flat areas abutted the creek line running west to east which joins the tributary on the eastern boundary. These areas along the creek lines fit the predictive modelling for campsite or PAD locations, but the high visibility allowed for detailed inspection resulting in nil surface artefacts. The high degree of disturbance due to past ploughing precluded the designation of PAD as any sub surface deposits would have been impacted and material brought to the surface. The absence of any cultural material in an area with such high visibility is considered sufficient to discount the area having any PAD.



Figure 4 Location of Survey Units



Plate 1. SU1 vegetation coverage



Plate 2. Typical visibility along access tracks SU1



Plate 3. Weed growth around basalt outcrops SU1



Plate 4. SU2 vegetation coverage



Plate 5. SU3 vegetation coverage



Plate 6. Visibility along access tracks SU3



Plate 7. Water tanks/troughs SU3



Plate 8. Poisoned area 3a vegetation coverage

Table 2 below shows the calculations of effective survey coverage. The survey data accounts for two people with an estimated survey transect width of 5 m each. For part of the survey area (SU1) three participants were present, with the figures having been adjusted for this increased coverage.

Table 2 Survey coverage

Survey Section	Survey transect numbers	Landform	Exposure type	Surveyed area (length m x width m)	Survey Area m ²	Visibility	Effective coverage (area x visibility) m ²
SU1	1-2	Crests, and upper slopes	Vehicle tracks, gateway entrances, small erosion areas	3649.76x 15	34,746.2 on tracks 20,000 other areas = 14% of SU	80% 2%	28180.6 = 7.1% of SU
SU2	1-2	Middle slopes	Bare ground	1352.49 x 10	13,524.90 = 4% of SU	1%	135 = 0.04% of SU
SU3	1-8	Level plain	Farm access track/gateways	5820.36x 10	58203.60 = 8% of SU	5%	2910.38 = 0.39% of SU
SU3a	9-14	Creek flats/lower slopes	Cleared paddock, erosion along creek bank and stock tracks.	1992.23 x 10	19922.30 = 15% of SU	80%	15,937 = 11.94% of SU

Summary

Between the survey participants, just under 5.8 km of transects were walked across the main solar array site area. Allowing for an effective view width of 5 m each person, this equates to a surface area of 58,203m², representing 8% of the 74 hectares. However, allowing for the poor visibility, the effective coverage is reduced to 2910m², which is only 0.39% of the area.

Overall, it is considered that the surface survey of the project area had low effective survey coverage due to the dense grass coverage over all areas. However, the main infrastructure site area was subject to intensive survey with numerous pedestrian transects crossing the area. An analysis of the landforms and the degree of disturbance across the project area was observed during the field survey, leading to some ability to characterise the potential impacts of the proposed development.

Survey coverage was sparser on the ridgeline and middle slopes units, located away from the main site area. These are the areas where the remnant mature trees remain. Due to the location of transects and time constraints it was not possible to visually inspect all mature trees. As a result, low potential for unrecorded scarred trees to remain in these landforms exists. However, these areas would not be subject to intense development from the project.

4.3 DISCUSSION

The predictions based on limited modelling for the proposal area were that isolated artefacts were the most likely manifestation of Aboriginal occupation of the area. Scarred trees may also be present on ridgeline locations. The survey, however, located no heritage sites which may be a result of the limitations provided by the lack of visibility. Given no sites were located within areas of exposure and no scarred trees were identified within the clusters of trees or individual trees inspected, there are implications for the potential impacts of the proposal on Aboriginal heritage.

Due to the level of European land use activities including modifications of the drainage patterns and the continual ploughed cultivation within the area of the solar farm site, it is considered unlikely that any archaeological sites would remain within this area. The area of the proposed solar array is level, not close to water, and would not have been a focus of activity. In addition they have been highly cultivated over a long period of time. The potential for the site area to contain unidentified Aboriginal sites is considered to be extremely low.

Consideration must also be made of the level of disturbance of any such sites or artefacts. Based on the land use history of the project area and an appraisal of the area from the field survey, there is negligible potential for the presence of intact subsurface deposits. Whilst the poor visibility potentially hampered the discovery of surface sites, it is considered that there is no value in undertaking further investigations such as subsurface testing in the area of terrace located in SU3a.

The models of site location for the Glen Innes area show increased potential for Aboriginal heritage sites to occur on ridgelines or areas of creek terraces with access to water, mainly in the form of creek lines. As discussed in the preceding sections, the solar farm's wider project area consists of these landforms and so holds higher potential for unrecorded Aboriginal sites than the solar farm infrastructure site area. The surrounding project areas were not subject to as an intensive survey strategy as the development footprint, thereby relying on landscape modelling of site location. However, with due consideration of all these factors the project area is still considered to hold overall low potential for unrecorded sites. Management recommendations are provided in section 9 to mitigate any risks to cultural heritage.

5 CULTURAL HERITAGE VALUES AND STATEMENT OF SIGNIFICANCE

The assessment of the significance of Aboriginal archaeological sites is currently undertaken largely with reference to criteria outlined in the ICOMOS Burra Charter (Marquis-Kyle & Walker 1994). Criteria used for assessment are:

- *Social or Cultural Value*: In the context of an Aboriginal heritage assessment, this value refers to the significance placed on a site or place by the local Aboriginal community – either in a contemporary or traditional setting.
- *Scientific Value*: Scientific value is the term employed to describe the potential of a site or place to answer research questions. In making an assessment of Scientific Value issues such as representativeness, rarity and integrity are addressed. All archaeological places possess a degree of scientific value in that they contribute to understanding the distribution of evidence of past activities of people in the landscape. In the case of flaked stone artefact scatters, larger sites or those with more complex assemblages are more likely to be able to address questions about past economy and technology, giving them greater significance than smaller, less complex sites. Sites with stratified and potentially *in situ* sub-surface deposits, such as those found within rock shelters or depositional open environments, could address questions about the sequence and timing of past Aboriginal activity, and will be more significant than disturbed or deflated sites. Groups or complexes of sites that can be related to each other spatially or through time are generally of higher value than single sites.
- *Aesthetic Value*: Aesthetic values include those related to sensory perception, and are not commonly identified as a principal value contributing to management priorities for Aboriginal archaeological sites, except for art sites.
- *Historic Value*: Historic value refers to a site or place's ability to contribute information on an important historic event, phase or person.
- *Other Values*: The Burra Charter makes allowance for the incorporation of other values into an assessment where such values are not covered by those listed above. Such values might include Educational Value.

All sites or places have some degree of value, but of course, some have more than others. In addition, where a site is deemed to be significant, it may be so on different levels or contexts ranging from local to regional to national, or in very rare cases, international. Further, sites may either be assessed individually, or where they occur in association with other sites the value of the complex as a whole should be considered.

Social or cultural value

While the true cultural and social value of Aboriginal sites can only be determined by local Aboriginal people, as a general concept, all sites hold cultural value to the local Aboriginal community. An opportunity to identify cultural and social value was provided to the RAPs for this proposal through the fieldwork and draft reporting process.

No social or cultural values of the project areas were identified during the project.

Scientific (archaeological) value.

The research potential of the project area is considered to be generally low. With no recorded sites the scientific value for further research is limited. The disturbed nature of the landscape from the heavy agricultural use of the area and the disturbed nature of any subsurface deposits within the development footprint of the solar farm prevents further assessment through excavation or analysis of spatial patterning.

Other Values

There are no other known heritage values associated with the project area.

6 PROPOSED ACTIVITY

6.1 HISTORY AND LANDUSE

It has been noted above that historically the Solar Farm proposal area has been heavily impacted through landuse practices, in particular removal of tree cover and intensive ploughing. These ground disturbance activities have resulted in a landscape with little evidence of the pre-European natural landscape.

The implications for this activity is that the archaeological record has been compromised in terms of its context, with little likelihood of subsurface deposits remaining.

The balance of the project area have not been as radically disturbed, although the paddocks have been cropped in some areas and therefore ploughed over a number of decades. Other areas have been subject to pasture improvement and used as access roads. However these areas are less disturbed than the site area proposed for the Solar Farm panels.

6.2 PROPOSED DEVELOPMENT ACTIVITY

As noted above in section 1.2, the proposal involves the construction of a Solar Farm and includes access roads, connection to the nearby substation with an overhead powerline. The majority of impacts will be confined to the site footprint area of the solar arrays, located on level areas with low archaeological potential and no identified surface sites.

Disturbances will largely be in the removal of surface vegetation, which is all mixed pasture, crop stubble or weeds, for preparation of the ground. Poles would be driven or screwed into the ground in order to support the solar array's mounting system and solar panels, with racking systems to allow the installation of solar panels.

The proposal would include the following elements:

- Solar panel arrays:
 - Approximately 75,000 polycrystalline panels
- Mounting framework:
 - The solar panels would be secured on a galvanised steel structure that consists of a frame secured to posts that have been piled into the ground
 - In the unlikely event that the posts cannot be piled into the ground, a ballasted solution may be investigated
- A fixed panel arrangement to enable panels at a tilt of between 15 and 30 degrees to the horizontal to optimise solar incidence and achieve optimum efficiency.
- Internal DC wiring between panels and inverter systems within groups of panels.
- Connection of groups of panels to Power Conversion Blocks (PCBs) within the area of the solar arrays.
- Eight PCBs with a total output 20MW (AC) including:
 - Inverter modules (container based modules) of the order of 1.43 to 2.5MW.
 - Eight to 14 step-up transformers to 33kV (one transformer per PCB).
 - 33kV Switchgear at each PCB.
- 33kV cabling to link the solar farm output to the WRWF collections circuits.
- Access tracks for access to the site during construction and to the PCBs during operation.
- Fencing around the solar farm for security and safety.

- Monitoring equipment.
- Small Site building
- Co-use of the WRWF Operations and Maintenance Building for the operational phase.
- Potential WRSF site screening at WRSF site, dependent on final design and need for screening.
- Temporary construction facilities and laydown area.

Cabling works for the Project include the installation of a 33kV underground cable that would connect the solar farm to the WRWF collection circuits. Cabling would require trenching works, approximately 1 m deep and 0.75 m wide.

The proposed construction timetable is six months duration and the operational life of the Farm is estimated to be 25 years. After this time, components may be either decommissioned and removed from the site or upgraded for continued operation. The development is highly reversible. After operation, the land could be returned to its former agricultural landuse or an alternative land use with negligible impact on production capacity.

The development activity will therefore involve disturbance of the ground during the construction of the Solar Farm. Once established however, there would be minimal ongoing disturbance of the ground surface.

The final details and timing of the proposed construction activity have yet to be finalised but it is anticipated that construction will commence towards the end of the first quarter in 2017 and to be commissioned and operational during the latter half of 2017. Civil works for WRWF access tracks, the substation, 33kV cabling and turbine sites at WRWF are expected to be mostly completed during 2016.

6.3 ASSESSMENT OF HARM

There are no recorded Aboriginal archaeological sites present within the proposal area and the assessment is that there are unlikely to be other unrecorded sites or sub-surface deposits within the project area. If any of these deposits was to be present within the development footprint, due to past ploughing activity, these sites would be severely compromised.

Any impacts from the Solar Farm would be unlikely to impact on Aboriginal heritage if the recommendations in section 7 are applied for the project.

7 AVOIDING OR MITIGATING HARM

7.1 CONSIDERATION OF ESD PRINCIPLES

Consideration of the principles of Ecologically Sustainable Development (ESD) and the use of the precautionary principle was undertaken when assessing the harm to the site and the potential for mitigating impacts to the artefacts recorded for the White Rock Solar Farm proposal. The main consideration was the cumulative effect of the proposed impact to the site and the wider archaeological record. The precautionary principle in relation to Aboriginal heritage implies that development proposals should be carefully evaluated to identify possible impacts and assess the risk of potential consequences.

There have been archaeological investigations for other projects in the region, but currently there is no clear regional synthesis of the nature, number, extent and content for archaeological sites within the region. In the landscape associated with the current project, site types predicted to occur consist of small artefact scatters or scarred trees along ridgeline areas.

The implications for ESD principles is that the area has low potential for Aboriginal heritage sites which reduces the potential impact of the development, especially considering the high degree of disturbance all of the project area has undergone previously.

The principle of inter-generational equity requires the present generation to ensure that the health and diversity of the archaeological record is maintained or enhanced for the benefit of future generations. Based on the results of the field survey, it is considered that the diversity of the archaeological record is not compromised by development of this particular project area, given that no recorded sites are present and that Aboriginal representatives on site thought it unlikely that the area would have been used other than as transient hunting grounds or transport routes.

7.2 CONSIDERATION OF HARM

Based on the assessment of the development area, it is not considered necessary to prevent development at the proposed location. The areas have been shown to be highly disturbed with little remaining potential for scientific value. Aboriginal cultural value is determined by the local Aboriginal community, but responses to date indicate that the areas are not considered high in cultural values.

The question remains however about possible occurrence of unrecorded artefacts or scarred tree within the balance of the wider Solar Farm project area. It is possible that unrecorded artefacts or scarred trees may be present. Without knowing the exact locations of the wider infrastructure that may be constructed, it is difficult to manage the impacts over such a large area of landscape. It is not considered that the risk of such disturbances means the development should be abandoned, as any unrecorded sites identified during the works can be managed by following the management measures outlined in Section 9 and in particular, the Unexpected Finds Protocols.

Mitigation of harm to cultural heritage sites generally involves some level of detailed recording to preserve the information contained within the site. Mitigation can be in the form of minimising harm through slight changes in the development plan or through direct management measures of the artefacts. Salvage collection is the preferred mechanism for artefacts whilst avoidance by redesign of alignment is recommended for scarred trees.

8 LEGISLATIVE CONTEXT

Aboriginal heritage is primarily protected under the NSW *National Parks and Wildlife Act 1974* (NPW Act) and as subsequently amended in 2010 with the introduction of the *National Parks and Wildlife Amendment (Aboriginal Objects and Places) Regulation 2010*. The aim of the NPW Act includes:

The conservation of objects, places or features (including biological diversity) of cultural value within the landscape, including but not limited to: places, objects and features of significance to Aboriginal people.

An Aboriginal object is defined as:

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

Part 6 of the NPW Act concerns Aboriginal objects and places and various sections describe the offences, defences and requirements to harm an Aboriginal object or place. The main offences under section 86 of the NPW Act are:

- A person must not harm or desecrate an object that the person knows is an Aboriginal object.
- A person must not harm an Aboriginal object.
- For the purposes of this section, "circumstances of aggravation" are:
 - that the offence was committed in the course of carrying out a commercial activity, or
 - that the offence was the second or subsequent occasion on which the offender was convicted of an offence under this section.
- A person must not harm or desecrate an Aboriginal place.

Under section 87 of the NPW Act, there are specified defences to prosecution including authorisation through an Aboriginal Heritage Impact Permit (AHIP) or through exercising due diligence or compliance through the regulation.

Section 89A of the Act also requires that a person who is aware of an Aboriginal object, must notify the Director-General in a prescribed manner. In effect this section requires the completion of OEH AHIMS site cards for all sites located during heritage surveys.

Section 90 of the NPW Act deal with the issuing of an AHIP, including that the permit may be subject to certain conditions.

The *Environmental Planning and Assessment Act 1979* (EP&A Act) is legislation for the management of development in NSW. It sets up a planning structure that requires developers (individuals or companies) to consider the environmental impacts of new projects. Under this Act, cultural heritage is considered to be a part of the environment. This Act requires that Aboriginal cultural heritage and the possible impacts to Aboriginal heritage that development may have are formally considered in land-use planning and development approval processes.

Proposals classified as State Significant Development or State Significant Infrastructure under the EP&A Act, have a different assessment regime. As part of this process, Section 90 harm provisions under the NPW Act are not required, that is, an AHIP is not required to impact Aboriginal objects. However, the Department of Planning and Environment is required to ensure that Aboriginal heritage is considered in

the environmental impact assessment. The Department of Planning and Environment will consult with other departments, including OEH prior to development consent being approved.

The White Rock Solar Farm is a State Significant Development and will therefore be assessed via this pathway, which does not negate the need to carry out an appropriate level of Aboriginal heritage assessment or the need to conduct Aboriginal consultation in line with the requirements outlined by the OEH *Aboriginal cultural heritage consultation requirements for proponents 2010* (OEH 2010b).

9 RECOMMENDATIONS

The recommendations are based on the following information and considerations:

- Results of the archaeological survey;
- Consideration of results from other local archaeological studies;
- Results of consultation with the registered Aboriginal parties;
- Appraisal of the proposed development, and
- Legislative context for the development proposal.

As a result of the field survey and consultation with the local Aboriginal community, it is recommended for the project, that prior to any impacts occurring, that:

1. The development proposal should be able to proceed with no additional archaeological investigations. No areas of potential archaeological deposits or scarred trees have been identified within the development area and the potential for Aboriginal heritage objects within the development area has been assessed as low.
2. All efforts should be made in the design stage to avoid removal of any mature trees in the wider project area surrounding the development site. If removal of trees is required, then the trees should be checked for scars prior to removal, and if present the scar should then be examined by a qualified heritage practitioner and RAPs to assess if the scar is cultural. This does not apply to the development area which has been subject to intensive survey.
3. If any culturally scarred trees are identified by the above process, avoidance by redesign of the alignment should be undertaken.
4. WRSFPL should prepare a Cultural Heritage Management Plan (CHMP) to address the potential for finding Aboriginal artefacts during the construction of the Solar Farm. The CHMP will outline an unexpected finds protocol to deal with construction activity. Preparation of the CHMP should be undertaken in consultation with the RAPs.
5. All Aboriginal objects are protected under the NSW *National Parks and Wildlife Act 1974*. It is an offence to disturb an Aboriginal site without a consent permit issued by the Office of Environment and Heritage. Should any Aboriginal objects be encountered during works then works must cease and the find should not be moved until assessed by a qualified archaeologist. Adherence to the unexpected finds protocol in the CHMP is required.
6. In the unlikely event that human remains are discovered during the construction, all work must cease. OEH, the local police and the appropriate LALC should be notified. Further assessment would be undertaken to determine if the remains are Aboriginal or non-Aboriginal.
7. Further archaeological assessment would be required if the proposal activity extends beyond the area of the current investigation. This would include consultation with the RAPs for the project and may include further field survey.
8. Continued consultation with the RAPs for the project should be undertaken. RAPs should be informed of any major changes in project design or scope, further investigations or finds.

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APPENDIX A ABORIGINAL COMMUNITY CONSULTATION

Organisation	Contact	Action	Date Sent	Reply Date	Replied by	Response
OEH		Letter to OEH Dubbo	6/01/2016	22/01/2016	letter	provided list of 10 individuals and organisations- 4 of which written to previously
NTScorp		Letter to NTScorp	6/01/2016			
National Native Title Tribunal		Letter to NNTT	6/01/2016			
Office of Registrar <i>Aboriginal Land Rights Act</i>		Letter to Office of the Registrar	6/01/2016	14/01/2016		No Aboriginal owners
Glen Innes LALC		Letter to Glen Innes LALC	6/01/2016			Incorrect email address
Glen Innes LALC		Emailed letter and methodology	19/01/2016			sent to email address provided by Council
Glen Innes Severn Council		letter to council	6/01/2016	18/01/2016	Email	Advised to contact Glen Innes LALC 181 Lang street Glen Innes 2370 P O Box 157 Glen Innes 2370 Phone: 02 6732 1150 FAX: 02 6732 6413 Email: bids3236@bigpond.net.au
Northern Tablelands Local Land Services		Letter to LLS	6/01/2016			
Inverell Shire Council		Letter to Inverell Council	6/01/2016	12/01/2016	Email	Advised has sent information to Greg Livermore Anaiwan LALC (02) 233022
Local Newspaper		Newspaper advertisement, Northern Daily Leader	4/01/2016			
		Glen Innes Examiner	7/01/2016			
		Inverell Times	8/01/2016			
OEH list of potential stakeholders						
Anaiwan Traditional Owners Aboriginal Corporation	David Ahoy 5 Killara Drive Cardiff South NSW 2285	sent letter and methodology	27/01/2016			
Glen Innes LALC		sent letter previously				

Organisation	Contact	Action	Date Sent	Reply Date	Replied by	Response
Kwiemba Elders Indigenous group	Chair: 21A Dudley St Ashford	sent letter previously				
Liza Duncan	2 David Street Ashford NSW	sent letter previously				
Wiradjuri Interim Working Party	PO Box 651 Peak Hill NSW 2869	sent letter and methodology	27/01/2016	5/02/2016		RTS unopened
Anaiwan LALC		sent letter previously				
AT Gamilaroi Cultural Consultancy	Aaron Talbot 6 Bando Street Gunnedah NSW 2380	sent letter and methodology	27/01/2016			
Border Rivers-Gwydir Catchment Management Authority	Aboriginal reference group PO Box 411 Inverell NSW 2360	sent letter about project	27/01/2016			
Kevin Sampson	1 Martyn Street Breeza, NSW 2381	sent letter and methodology	27/01/2016			
Scott Smith	Unit 4 122 Upper Street Tamworth NSW 2340	sent letter and methodology	27/01/2016			
Respondents						
Jukambal	Ron Connors	phoned M Barber 6/1/16				Registered interest, please send information to: Unit 1, 26 Greaves St Inverell 2360. Phone 0434 701 430
Jukambal	Ron Connors	sent letter and methodology	18/01/2016			

Organisation	Contact	Action	Date Sent	Reply Date	Replied by	Response
Jukambal	Ron Connors	MB rang RC back	21/01/2016			MB returned phone call. Ron acknowledged receipt of the methodology. Told me his group is called Jukambal. Ron also asked about meetings to discuss the project (like with other developers such as Santos, Transgrid) with Aboriginal groups. MB indicated wasn't sure if that would happen here but would be in touch again to discuss fieldwork.
Anaiwan LALC	Greg Livermore	replied to register interest		12/01/2016	email	Contact Greg at LALC office and send information re proposal - will be passed onto other stakeholders. Phone: 02 6723 3022 Email: anaiwanlalc@tingha.net
Anaiwan LALC	Greg Livermore	sent letter and methodology via email	18/01/2016			
Faron Connors		posted letter and methodology	18/01/2016			
Hilda Connors		posted letter and methodology	18/01/2016			
Kwiembal Elders Indigenous Corporation	Cedric Talbot	posted letter and methodology	18/01/2016	RTS		Deceased
Edgerton-Kwiembal Aboriginal Corporation	Liza Duncan	posted letter and methodology	18/01/2016			
		emailed letter and methodology	18/01/2016			
Glen Innes LALC		rang to follow up	29/01/2016			Left message on answering machine
Anaiwan LALC		rang to follow up	29/01/2016			Left message on answering machine
Glen Innes LALC		rang to follow up	2//2/16			Left message on answering machine
Anaiwan LALC				2/02/2016	email	confirmed registration
Anaiwan LALC		MB emailed seeking any information or comment on the project and identified next week for fieldwork. Also sought any advice on GI LALC	2/02/2016			

Organisation	Contact	Action	Date Sent	Reply Date	Replied by	Response
Glen Innes LALC		sent contact request via website	3/02/2016			
Jukambal	Ron Connors	rang to dicuss fieldwork	3/02/2016			left message to call MB
Anaiwan LALC	Greg Livermore	emailed NGH	3/02/2016			Thinks GI LALC are operating. Wanted to know start dates for fieldwork before sending through costs.
Anaiwan LALC	Greg Livermore	MB emailed with proposed dates of fieldwork (10, 11 Feb) & seeking rates	4/02/2016			
Jukambal	Ron Connors	MB rang	4/02/2016			Discussed number of issues including: no AFG, Fieldwork for next week- RC indicated had no insurance, other companies have covered him previously. Won't know rates until checks with other members. Is a member of Anaiwan LALC.
Glen Innes LALC	Trevor Potter	GI LALC email		5/02/2016		emailed to confirm registration of interest
Glen Innes LALC	Trevor Potter	MB Sent email requesting rates and insurances and indicating fieldwork Wed/Thu next week	5/02/2016			
Anaiwan Traditional Owners Aboriginal Corporation	David Ahoy			5/02/2016	email letter	ATOAC wishes to register their interest in the project.
Glen Innes LALC	Trevor Potter	sent NGH rates and WC Insurance	5/02/2016			
Anaiwan LALC	Greg Livermore	rang MB	5/02/2016			Discussed rates, the size of the area for the survey. Agreed that a couple of hours on site to do their LALC area.
NGH Environmental	David Ahoy	email reply MB to ATOAC	5/02/2016		email	Replied indicating they were added to list of parties and fieldwork was next week. Advised would send draft report for comment.
Jukambal	Ron Connors	MB phoned RC	8/02/2016			Informed Ron he wouldn't be involved in fieldwork but would continue to be consulted regarding the draft report

Organisation	Contact	Action	Date Sent	Reply Date	Replied by	Response
Anaiwan LALC	Greg Livermore	Email and phone calls	8/02/2016			Fieldwork confirmation
Glen Innes LALC	Trevor Potter	Email and phone call	8/02/2016			Fieldwork confirmation
Anaiwan Traditional Owners Aboriginal Corporation	David Ahoy	email from ATOAC	11/02/2016		email	Requested information about who registered and if ATOAC was part of survey
NGH Environmental	David Ahoy	MB to ATOAC	11/02/2016		email	Replied indicating the two LALC's had reps doing fieldwork Registered parties were LALCs, ATOAC and an individual
Anaiwan Traditional Owners Aboriginal Corporation	David Ahoy	ATOAC to MB	11/02/2016		email	Asked why 2 LALC involved but not traditional owners, suggested 1 per organisation is standard practice.
NGH Environmental		MB to ATOAC	12/02/2016		email	Explained the area covered by 2 LALCs, explained survey with all parties not always possible. Indicated ATOAC people represented through continued consultation and review process of draft report.
Anaiwan Traditional Owners Aboriginal Corporation		ATOAC to MB	12/02/2016		email	Wrote advising should be engaging all RAPs in the fieldwork, no sufficient reason for all not included. Not satisfied with reviewing the report. Feel haven't been provided with enough notice, will talk to OEH about the project and investigate further.

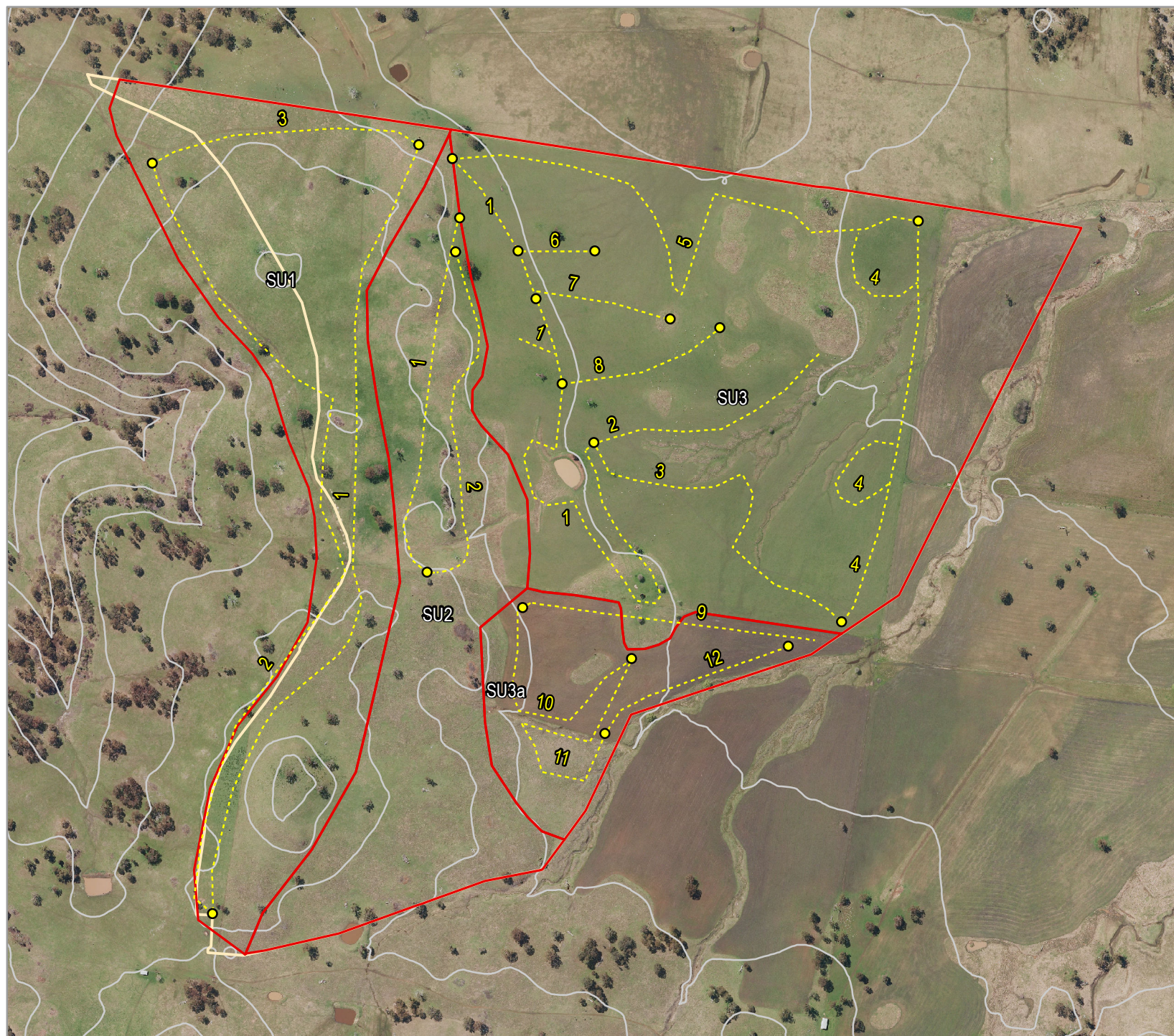
APPENDIX B TRANSECT DETAILS.

SU	Transect	Start easting	start northing	End easting	End northing
1	1	359614	6706891	359235	6705473
1	2	359235	6705473	359122	6706857
1	3	359122	6706857	359614	6706891
2	1	359688	6706764	359643	6706106
2	2	359643	6706106	359683	6706694
3	1	359921	6706327	359674	6706863
3	2	359921	6706327	360356	6706511
3	3	359942	6706346	366396	6706004
3	4	366396	6706004	360529	6706744
3	5	359674	6706863	360529	6706744
3	6	359793	6706692	359932	6706689
3	7	359824	6706622	360078	6706570
3	8	359878	6706451	360169	6706554
3a	9	360340	6705977	359804	6706041
3a	10	359804	6706041	359994	6705931
3a	11	359994	6705931	359955	6705808
3a	12	359955	3705808	360296	6705965

Figure B – Transects across Survey Units

SURVEY UNITS AND TRANSECTS

White Rock Solar Farm



-  Development envelope
-  10m contours
-  Survey unit
-  Transects

Notes:

- Survey units and transects by Past Traces (2016)
- Base map courtesy of Client, received 2016

0 100 200 400 Meters

A4 @ 1:10000
Ref: 659 Arch 2
Author: JB

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