

# SUNTOP SOLAR FARM

# **Aboriginal Heritage Assessment**

Prepared for Photon Energy

Dubbo Regional Council Local Government Area

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# Contents

| CONTENTS  | III |
|---|-----|
| TABLES  | IV  |
| 1 INTRODUCTION  | 1   |
| <ol> <li>PROJECT BACKGROUND</li> <li>SUMMARY OF FINDINGS</li> <li>INVESTIGATORS AND CONTRIBUTORS</li> </ol>   |     |
| 2 DESCRIPTION OF DEVELOPMENT PROPOSAL   |     |
| 3 ABORIGINAL COMMUNITY CONSULTATION AND PARTICIPATION   | 5   |
| 4 PREVIOUS ARCHAEOLOGICAL INVESTIGATION   | 6   |
| <ul> <li>4.1 DATABASE SEARCH (AHIMS) AND KNOWN INFORMATION SOURCES</li> <li>4.2 DISCUSSION OF AHIMS AND OTHER HERITAGE REGISTERS SEARCH RESULTS</li> <li>4.3 PREVIOUS ARCHAEOLOGICAL INVESTIGATIONS</li> <li>4.4 IMPLICATIONS FOR THE STUDY AREA</li> </ul> |     |
| 5 LANDSCAPE CONTEXT   |     |
| 6 REGIONAL CHARACTER  | 15  |
| 7 PREDICTIONS   | 15  |
| 8 METHODS AND SURVEY COVERAGE   | 16  |
| <ul> <li>8.1 SAMPLING STRATEGY</li> <li>8.2 FIELD METHODS</li> <li>8.3 SURVEY COVERAGE</li> </ul>   |     |
| 9 RESULTS   | 24  |
| 9.1 SUNTOP IF 1<br>9.2 SUNTOP IF 2  |     |
| 10 DISCUSSION   |     |
| 11 SCIENTIFIC VALUES AND SIGNIFICANCE ASSESSMENT  |     |
| 11.1    Assessment Criteria      11.2    Statement of significance  |     |
| 12 IMPACT ASSESSMENT  |     |
| 13 CONCLUSIONS AND RECOMMENDATIONS  |     |
| REFERENCES  |     |
| APPENDIX A WELLINGTON LOCAL ABORIGINAL LAND COUNCIL REPORT  |     |
| APPENDIX B AHIMS SEARCH RESULTS   | 41  |



# Figures

| Figure 1. Study area location   | 2  |
|---|----|
| Figure 2. Detail of study area  |    |
| Figure 3. AHIMS search results  | 7  |
| Figure 4. Geology and soil landscapes of the study area   | 13 |
| Figure 5. Landforms and survey units of the study area  | 17 |
| Figure 6. Aboriginal archaeological sites and culturally significant tree within the study area | 25 |
| Figure 7. Proposed development and identified Aboriginal heritage                               | 31 |

# Tables

| Table 1. Investigators and contributors   | 4 |
|---|---|
| Table 2. Frequency of site types from OEH AHIMS database search                     | 6 |
| Table 3. Survey coverage  |   |
| Table 4. Landform summary   |   |
| Table 5. Identified archaeological and cultural heritage features in the study area |   |
| Table 6. Artefact at Suntop IF 1  |   |
| Table 7. Artefact at Suntop IF 2  |   |

# Plates

| Plate 1. Survey Unit 1 - Hillslope with low spurline, visibility and exposures, facing south east                          | 18  |
|--|-----|
| Plate 2. Survey Unit 1 - Vehicle track west of the farm buildings and crops to the east, showing ground surface visibili   | ity |
| and erosion conditions, facing north   | 18  |
| Plate 3. Survey Unit 1, central part - rocky outcrop, facing north   | 18  |
| Plate 4. Survey Unit 1, western section - farm buildings, facing south west  | 18  |
| Plate 5. Survey Unit 1, northern section – transmission line, facing south   | 19  |
| Plate 6. Survey Unit 1, northern section – irrigation channels, facing north   | 19  |
| Plate 7. Survey Unit 2, eastern section - second order creek line, visibility within the creek bed, facing south east      | 19  |
| Plate 8. Survey Unit 2, eastern section - erosion visible within creek banks   | 19  |
| Plate 9. Survey Unit 2 - cluster of trees, northern bank of the creek and areas of erosion, facing north west              | 20  |
| Plate 10. Survey Unit 2 - water tanks and windmill in the south west of the study area, facing south                       | 20  |
| Plate 11. Survey Unit 2 – dam at the western extent of the study area, general visibility and conditions, facing east      | 20  |
| Plate 12. Survey Unit 2 – track west of dam, facing north towards the silos  | 20  |
| Plate 13. Survey Unit 3 – Facing north west towards the hill and silos, general ground conditions                          | 21  |
| Plate 14. Survey Unit 3 – lower slopes of the hillslope, facing north towards the cluster of trees in Survey Unit 2 across | SS  |
| the second order creek line, general ground surface visibility   | 21  |
| Plate 15. Survey Unit 4 – Facing south towards tree with cultural significance   | 21  |
| Plate 16. Survey Unit 4 – identified culturally significant tree on western boundary of study area                         | 21  |
| Plate 17. Survey Unit 5 – Facing south towards culvert beneath Renshaw McGirr Way  | 22  |
| Plate 18. Survey Unit 5 – surface exposure along edge of Renshaw McGirr Way  | 22  |
| Plate 19. Chert core identified at Suntop IF 1   | 26  |
| Plate 20. Suntop IF 1, exposure in foreground, facing south east   | 26  |
| Plate 21. Chert flake identified at Suntop IF 2  | 27  |



### 1 Introduction

#### 1.1 Project background

Photon Energy (Photon) proposes to construct and operate a solar farm at 909 Suntop Road, Suntop NSW. The proposal was deemed State Significant Development (SSD) and an Environmental Impact Statement (EIS) was required to support the project application, prepared in accordance with the Secretary's Environmental Assessment Requirements (SEARs) issued on 21 September 2017 (SSD 8696). The project SEARs required an assessment of the likely Aboriginal heritage (cultural and archaeological) impacts of the development and include adequate consultation with the local Aboriginal community.

The subject land, was located adjacent to Suntop Road and comprised Lot 1-2-3 DP506925, Lot 122 DP753238 and Lot 90 DP657805 It covered a total area of 517 hectares, bounded by Suntop Road to the north, unnamed road to the west and private properties to the south and east. The proposed works would also include an upgrade of the intersection of Renshaw McGirr Way and Suntop Road to improve safety. The subject land and proposed intersection upgrade, hereafter referred to as the study area, are located within the Dubbo Local Government Area (LGA), approximately 7 kilometres south west from the Wellington town centre (Figures 1 and 2).

To inform the EIS and fulfil the SEARs, Kelleher Nightingale Consulting Pty Ltd (KNC) was engaged to carry out an Aboriginal heritage assessment of the land. The assessment included background research and an archaeological field survey conducted in accordance with Office of Environment and Heritage (OEH) requirements including:

*Due Diligence Code of Practice for the Protection of Aboriginal Objects in New South Wales* (DECCW 2010a) *Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales* (DECCW 2010b).

The assessment was undertaken in consultation with Wellington Local Aboriginal Land Council, who also participated in the field surveys.

#### **1.2** Summary of findings

No impact to Aboriginal heritage will occur as a result of the proposed Suntop Solar Farm or proposed upgrade works at the intersection of Renshaw McGirr Way and Suntop Road.

Background research, desktop assessment and archaeological field survey identified three heritage sites within the study area, but the sites are not within the project footprint and are not impacted by the proposal:

- Aboriginal archaeological sites, Suntop IF 1 and Suntop IF 2, two isolated artefacts identified along a creek bank; and
- Culturally significant tree as identified by the Wellington Local Aboriginal Land Council.

All of the other areas within the study area exhibited low archaeological potential due to combinations of archaeologically unfavourable topography, agricultural activity, past road construction activities and contemporary disturbance of the land.

Proposed works associated with the solar farm development will not impact on identified areas of Aboriginal cultural heritage significance. The culturally significant tree will be retained along the western boundary of the study area and the two isolated finds will be retained within the riparian corridor.

It is recommended that the identified site locations (Suntop IF 1, Suntop IF 2 and culturally significant tree) should be included within the construction environment management plan.





Figure 1. Study area location



Figure 2. Detail of study area

#### 1.3 Investigators and contributors

A list of investigators and contributors to the study is included in Table 1 below.

#### Table 1. Investigators and contributors

| Investigator/Contributor Affiliation |       | Role                              |  |  |
|--------------------------------------|-------|-----------------------------------|--|--|
| Dr Matthew Kelleher                  | KNC   | Survey, advisor and review        |  |  |
| Alison Nightingale                   | KNC   | Advisor and review                |  |  |
| Ana Jakovljevic                      | KNC   | Reporting                         |  |  |
| Cristany Milicich                    | KNC   | Reporting                         |  |  |
| Ben Anderson                         | KNC   | GIS mapping, Reporting, Survey    |  |  |
| Mike Nolan                           | WLALC | Survey, Cultural Heritage Advisor |  |  |
| Tyarara Talbot                       | WLALC | Survey                            |  |  |

# 2 Description of Development Proposal

The Suntop Solar Project will include the installation of up to 550,000 photovoltaic (PV) panels which will be installed on a single axis tracker system across the study area. The single axis tracker system option would consist of groups of east-west facing PV modules tilted at  $+/-60^{\circ}$  angle (each approximately 2m x 1m in area) on mounting structures approximately 2m in height and in rows approximately 11m apart. The mounting structure would be piled steel posts that would extend between 1.6m to 4m below ground depending on geological conditions. The maximum height of panels during tracking movement is up to 4.03m.

The proposal would consist of the following elements:

- Solar Components including:
  - Up to 550,000 PV panels on mounting structures
  - Electrical connections and inverter stations (where the inverters are within containers at the end of solar PV rows)
  - Underground cabling / collection circuits.
- Electrical infrastructure including:
  - Transmission kiosk
  - A 132kV Substation
  - 33kV switchgear
- An access road
- Ancillary facilities and construction compounds
- Perimeter security fencing
- Two maintenance storage containers.

During the construction period, some additional temporary facilities would be located within the study area and may include:

- Material laydown areas.
- Construction site offices.
- Parking area.

The proposal would also include the upgrade of the intersection of Renshaw McGirr Way and Suntop Road to improve safety and may include:

- Removal of trees
- Installation of crash barriers on either side of Suntop Road at the intersection with Renshaw McGirr Way
- Rural Basic Right turn treatment to widen the shoulder of Renshaw McGirr Way

Power generated by the facility will be transmitted via existing 132kV transmission lines, in an easement owned by TransGrid that traverses the Site and extends through to the Wellington substation approximately 15 kilometres to the north.

A tee off connection will be used to connect directly into the existing grid located on Site. A tee connector is an electrical connector that joins three cables together.

The operational life of the solar farm is expected to be approximately 30 years at which point the panels are either replaced and operations continue or removed and the site is decommissioned and rehabilitated as required.



# 3 Aboriginal Community Consultation and Participation

The Aboriginal heritage assessment included consultation with the local Aboriginal community. The proponent sought to prepare the assessment in consultation with the relevant Local Aboriginal Land Council to identify any Aboriginal archaeological sites or areas of cultural significance and assess the potential impact of the proposal on Aboriginal heritage values.

The assessment was undertaken in consultation with Wellington Local Aboriginal Land Council (WLALC) whose boundaries covered the study area. WLALC was contacted at the commencement of the project to discuss the development proposal and invited to participate in site survey. Land Council representative Mike Nolan participated in a survey of 909 Suntop Road on Monday 26 February 2018.

WLALC identified a mature tree within the study area that has cultural significance to local Aboriginal people. The tree is located along the western boundary of the study area, outside of the proposed solar farm footprint.

The survey also identified two archaeological sites, isolated artefacts Suntop IF 1 and Suntop IF 2, situated within the central eastern part of the study area, along an unnamed creek line.

WLALC representative Tyarara Talbot participated in a survey of the intersection of Renshaw McGirr Way and Suntop Road on Monday 14 May 2018. The WLALC had no objections to the proposed intersection upgrade.

A written report was provided by WLALC summarising the outcomes of the site inspection and is included as Appendix A. The WLALC had no objections to the proposed solar farm development provided that impacts are avoided to the identified archaeological sites (Suntop IF 1 and Suntop IF 2) and the culturally significant tree.

The WLALC recommended that the location of the identified archaeological sites and the culturally significant tree be provided to the property owner to ensure that they are not impacted by other activities. The WLALC also recommended that if further culturally significant materials area identified during the construction of the solar farm, the WLALC and OEH be notified and that works cease.



# 4 Previous Archaeological Investigation

#### 4.1 Database search (AHIMS) and known information sources

#### 4.1.1 AHIMS web services

The Aboriginal Heritage Information Management System (AHIMS) is a database operated by OEH, regulated under section 90Q of the *National Parks and Wildlife Act 1974*. AHIMS contains information and records related to registered Aboriginal archaeological sites (Aboriginal objects, as defined under the Act) and declared Aboriginal places (as defined under the Act) in NSW.

A search of AHIMS was conducted on 5 March 2018 to identify registered (known) Aboriginal sites or declared Aboriginal places within or surrounding the study area (AHIMS Client Service ID: 331634). Search results are attached as Appendix B.

The AHIMS Web Service database search was conducted with the following coordinates (GDA, Zone 55):

- Eastings: 0660300 to 0682700
- Northings: 6381900 to 6405250

The AHIMS search results showed:

| 47 | Aboriginal sites are recorded in or near the above location        |
|----|--|
| 0  | Aboriginal places have been declared in or near the above location |

The distribution of recorded Aboriginal sites within these coordinates is shown on Figure 3. The frequencies of site types (site context/features) within the AHIMS database search area are listed in Table 2.

Table 2. Frequency of site types from OEH AHIMS database search

| Site Context | Site Features                                       | Number | %    |
|--------------|---|--------|------|
|              | Modified Tree (Carved or Scarred)                   | 17     | 36.2 |
|              | Artefact Scatter                                    | 9      | 19.2 |
|              | Restricted Site                                     | 8      | 17   |
|              | PAD; Artefact Scatter                               | 3      | 6.4  |
|              | Grinding Groove                                     | 2      | 4.3  |
| Open         | Burial  | 2      | 4.3  |
|              | Stone Quarry; Stone Arrangement                     | 1      | 2.1  |
|              | Stone Arrangement; Stone Quarry; Artefact Scatter   | 1      | 2.1  |
|              | Shell Midden; Artefact Scatter                      | 1      | 2.1  |
|              | Hearth; Artefact Scatter                            | 1      | 2.1  |
|              | Ceremonial Ring; Artefact Scatter                   | 1      | 2.1  |
|              | Aboriginal Ceremony and Dreaming; Stone Arrangement | 1      | 2.1  |
|              | Total   | 47     | 100  |

No previously recorded sites were situated within or adjacent to the study area. Six AHIMS registered Aboriginal sites were located within three kilometres of the study area, including modified (scarred) trees, a grinding groove site, three artefact scatters and one isolated artefact. These are discussed further in section 4.2.

AHIMS confirmed that the study area did not contain any of the Restricted Aboriginal Sites listed within the search area (email correspondence from David Gordon, Senior Heritage Information Officer (Aboriginal), Management Operations, Heritage Division, OEH dated 7 March 2018).

#### 4.1.2 Other heritage registers and databases

Other sources of information including heritage registers and lists were also searched for known Aboriginal heritage in the vicinity of the study area. These included:

- Wellington Local Environment Plan (WLEP) 2012
- State Heritage Register
- State Heritage Inventory
- Commonwealth Heritage List
- National Heritage List
- Australian Heritage Places Inventory and
- Historic Heritage Information Management System (HHIMS).

No items of Aboriginal heritage were listed on these databases within the study area.





Figure 3. AHIMS search results



#### 4.2 Discussion of AHIMS and other heritage registers search results

As well as determining if there are any registered (known) sites within a given area, an AHIMS search also helps to characterise local archaeology by illustrating the distribution of known sites within the local landscape. This can aid in the development of predictive models used at the desktop stage of archaeological investigation and is integrated with known regional trends to help identify where archaeology may be present within a given area.

Archaeological sites listed on the AHIMS database often represent a record of archaeological survey effort, rather than a comprehensive or complete depiction of an area's archaeology, but provide a useful starting point for further investigation. Search results for the current study area and its surroundings indicated the predominance of modified trees (n=17, 36.2%), followed by open sites with artefacts (n=9, 19.2%) and restricted sites (n=8, 17%). Areas of potential archaeological deposit (PAD) associated with artefact scatters were represented by 6.4% (n=3), followed by burials and grinding grooves (n=2, 4.3%). There was a variety of complex site types including ceremonial sites, stone arrangements, stone quarry sites and shell middens, represented by 2.1% (n=1) each. The location of the most common site type, modified or scarred trees was directly dependent on the preservation of native vegetation, as much of the area has been previously cleared and cultivated. A relatively high number of restricted sites recorded on AHIMS indicate the landscape contains many culturally significant sites. Artefact scatter sites were the second most common site type in the area. These were also often recorded in association with other site types, such as quarries, stone arrangements, hearths and ceremonial sites. Particular site types, such as grinding grooves, quarries and stone arrangements are identified within areas of sandstone outcrops and other suitable geological formations.

Six recorded Aboriginal sites were identified within three kilometres of the study area.

#### Suntop Road Scarred Trees (AHIMS 36-4-0089)

This site comprised two modified (scarred) trees located approximately 2.5 kilometres east of the study area. One tree was within the road easement on the northern side of Suntop Road and the other approximately 23 metres north east within a farm paddock, on a lower slope of the rolling hills landform. They were approximately 30 metres from a drainage line that flowed to Barneys Creek to the west. Each tree had a single scar, one oval in shape and considered to be for a large coolamon and one narrow and long, possibly for a shield.

#### Suntop (AHIMS 36-4-0003)

This site comprised axe grinding grooves documented from a local (Dubbo) informant in 1955 as being "10 miles W. of town". The AHIMS site record noted that the registered coordinates were approximate only, being "only guessed v. general location", placing it around 2.9 kilometres north west of the study area. The only other site detail provided was that the grooves covered an area "4' across" (approx. 1.2m).

#### WETL - IF 1 (AHIMS 36-4-0110)

This site was an isolated surface artefact which was located approximately 1.3 kilometres north east of the intersection of Renshaw McGirr Way and Suntop Road. The artefact was a situated on a mid slope landform and was made from greywacke.

#### WETL - OS1 with PAD (AHIMS 36-4-0113)

This site was a moderate density surface artefact scatter and associated area of potential archaeological deposit located approximately 3 kilometres north east of the intersection of Renshaw McGirr Way and Suntop Road. The site was situated on a toe slope and creek terrace landform overlooking the confluence of Curra Creek and an ephemeral stream. The artefact scatter comprised at least 27 stone artefacts which were identified within disturbed exposures which encompassed an area of 60 x 60 metres. The artefacts included flakes and flaked pieces made from chert, mudstone, greywacke and quartz. The site had visible disturbance due to the use of existing tracks in addition to fence and dam construction.

#### WETL - OS2 with PAD (AHIMS 36-4-0111)

This site was a moderate density surface artefact scatter and associated area of potential archaeological deposit located approximately 1.8 kilometres north east of the intersection of Renshaw McGirr Way and Suntop Road. The site was situated on a creek flat at the confluence of two ephemeral creeks. The artefact scatter comprised at least 10 artefacts including flakes and cores which were made from quartz, greywacke, chert, hornets and secrete. The site had visible disturbance from an existing power easement, grazing and a European camp.

#### WETL - OS3 (AHIMS 36-4-0112)

This site was a moderate density surface artefact scatter and associated area of potential archaeological deposit located approximately 1 kilometre east of the intersection of Renshaw McGirr Way and Suntop Road. The site was situated on an elevated flat plain and toe slope landform adjacent to an unnamed creek. The artefact scatter comprised 31 artefacts which were made from quartz, greywacke, chert, hornfels and silcrete. The site had visible disturbance from an existing power easement and access tracks.



These previously recorded Aboriginal sites within three kilometres of the study area were located across different landforms. Grinding grooves and scarred trees are site types that are directly dependent on environmental conditions: grinding grooves are within geologic formations where water is easily accessible and scarred trees in areas with remnant mature vegetation. The recorded artefact scatters were located on elevated landforms in close proximity to water sources while the isolated artefact was identified on a mid slope landform.

Background information also reveals that the wider Macquarie River and Wellington area comprise numerous sites of significance to local Aboriginal people. Carved trees, stone arrangements, burials, ceremonial ring/Bora ring and Aboriginal Ceremony and Dreaming sites have all been recorded within the wider area. Site Macquarie River 2 (AHIMS 36-4-0006) was located within the township of Wellington and consisted of a bora/ceremonial ground and 28 carved trees. It was originally recorded in the early 1900s by ethographer Etheridge and subsequently recorded by Bell in the 1980s.

In addition, one historic site of significance to local Aboriginal people is listed on the State Heritage Register (SHR) located at University Road, in Wellington, approximately 7 kilometres north east of the current study area. The item is listed as 'Blacks Camp' (SHR Listing No. 01865), situated on an alluvial terrace on the western bank of the Macquarie River and being of state significance due to the historical, social and cultural significance to local Aboriginal people. It is also listed on the Wellington LEP 2012 as Item no. 1144. 'Blacks Camp' is the earliest remembered Aboriginal camp in the Wellington area. It was one of the post-contact Aboriginal settlements where local Wiradjuri people were moved off their traditional lands to camps on vacant land and reserves on the fringes of the newly established township. The site is highly significant to the local Aboriginal community as it tells the story of the Wiradjuri People after the arrival of non-Aboriginal settlers in the Wellington Valley and loss of traditional lands. The former camp site is also significant as it contains a burial, a scarred tree and a shell midden site. There are no above ground structures present at the site, which has also been subject to flooding and a section of the site has been cropped.

While there were no previously recorded Aboriginal sites located within the study area, the presence of recorded sites in the general vicinity demonstrates that the local landscape was used by Aboriginal people in the past and that material traces of this landscape use have survived in the form of Aboriginal objects and culturally significant sites.

#### 4.3 Previous archaeological investigations

Several archaeological surveys and test excavations have been carried out across the region. This section summarises what is known from existing and available data. The majority of previous assessments were associated with infrastructure developments.

The presence of Aboriginal people in the Darling Basin has been dated to 40,000 years ago (Hope 1981 in Haglund 1985). Three major studies of the Upper Macquarie, Dubbo and northern-central rivers region have been carried out by Pearson (1981), Koettig (1985) and Balme (1986).

Pearson (1981) was the most comprehensive for the Wellington area, as it is focussed on the Upper Macquarie; however the study was biased towards the large and/or obtrusive sites often directed by information provided from local residents. Three rock shelters were excavated as part of Pearson's study that were dated to around 5,000 years ago. Pearson developed a site pattern model based on occupation and non-occupation sites. Non-occupation sites included grinding grooves, scarred or carved trees, ceremonial sites and burial sites. According to Pearson's model, the following can be expected regarding the location of Aboriginal sites within the landscape:

- site distance to water varied from 10 to 500 metres, but in general larger sites were found closer to water;
- good soil drainage and views over watercourses were important site location criteria;
- most sites were located in contexts which would originally have supported open woodland;
- burial sites and grinding grooves were situated as close to habitation areas as geological constraints would allow;
- scarred trees were variably located with no obvious patterning other than proximity to watercourses where camps were more frequently located;
- ceremonial sites such as earth rings ('bora grounds') were located away from campsites;
- stone arrangements were also located away from campsites in isolated places and tended to be associated with small hills or knolls or were on flat land;
- quarry sites were located where stone outcrops with desirable working qualities were recognised and were readily accessible; and
- based on ethnohistoric information, it was considered that Aboriginal campsites were seldom used for longer than three nights and that large archaeological sites probably represented an accumulation of material over a series of short visits.



Koettig (1985) completed a comprehensive study of the wider Dubbo area that included detailed recording of various site types across all topographic landform units and different stream order associations. The site prediction model developed as a result of her study was that:

- all site types can be found along watercourses;
- stone arrangements occur more frequently on knolls or prominent landscape features;
- larger campsites were more frequent along permanent watercourses, near springs and wetlands, although small campsites may be found anywhere. Because occupation was more intensive along major watercourses, more complex sites can be found there;
- modified trees can be found anywhere there are remnants of mature native vegetation;
- campsites would become smaller and more sporadic near the headwaters of creeks;
- grinding grooves were most frequent in association with appropriate sandstone outcrops;
- quarries may be found where there are reliable sources of suitable stone; and
- shell middens will only be found along the rivers or 4<sup>th</sup> order streams.

In general, environmental factors that determined site locations included:

- proximity to water: the largest campsites were located close to permanent water, although sites can be found everywhere across the landscape including hills and ridges away from watercourses;
- geological formations: certain sites required specific conditions, such as grinding grooves within sandstone outcrops, quarries where suitable stone resources were accessible and burials within sandy deposits; and
- availability of food resources: generally around permanent watercourses although some foods were seasonal and available further from waterways.

Aboriginal heritage assessment for the proposed gas pipeline from Alectown to Wellington (Australian Museum Business Services [AMBS] 2008) identified four Aboriginal archaeological sites. They consisted of three low density artefact scatters and one scarred tree. The sites were located in immediate proximity to creek line water sources and it was concluded that creek banks within the study area had moderate potential to contain Aboriginal stone artefacts although they would be in highly disturbed context. In addition, farmed areas had low archaeological potential to contain intact, undisturbed Aboriginal sites. The three artefact scatters were assessed as having low archaeological significance, being located within erosional areas in highly disturbed context. The scarred tree was assessed as having high archaeological and cultural significance. It was recommended that all impacts to the scarred tree were to be avoided, with a buffer zone of at least 10 metres. The survey covered a 200 metre wide corridor and part of the alignment ran across the north western corner of the current study area. No Aboriginal sites were identified in this area.

OzArk (2009) completed an Aboriginal heritage assessment for the proposed electricity transmission line south west of Wellington. The alignment followed the lower valley slopes of Mt Duke within Mt Arthur Reserve, finishing at Curra Creek approximately four kilometres south east of the current study area. The assessment included background review and a field survey. Four Aboriginal sites were identified during the survey. They consisted of three artefact scatters with PAD and one isolated find: WETL-OS1 with PAD, WETL-OS2 with PAD, WETL-OS3 with PAD and isolated artefact WETL-IF1. Extensive surface artefact scatters were identified on elevated creek bank landforms. The isolated artefact was located on an elevated mid hill slope. These locations confirm the site prediction model that sites are expected to occur on elevated creek confluences and spur crests overlooking water. Sites WETL-OS1 and WETL-OS3 consisted of large numbers of flakes and cores (27 and 31 respectively) and a range of raw materials including silcrete, quartz, greywacke, chert and hornfels. It was considered that further subsurface archaeological deposits were present that would indicate more permanent or repeated occupation. Scientific significance of these two sites was assessed as moderate to high. Sites WETL-OS2 and WETL-IF1 were assessed to have low scientific significance due to their disturbed nature (OzArk 2009:32-3). It was recommended that an AHIP should be issued if any impacts were proposed to the four identified Aboriginal archaeological sites. A number of additional areas were identified as having high and moderate archaeological sensitivity. Consultation with Gallanggabang Aboriginal Corporation revealed that all sites are culturally significant to local Aboriginal people as they show the physical evidence of Aboriginal occupation of the local area. It was recommended that all sites and areas of PAD be included in the general induction for all construction activities and relevant management plans be implemented.

CNC Project Management (2010) prepared an Aboriginal cultural heritage assessment for the proposed ERM Power Pty Ltd Young to Wellington gas pipeline, covering a total length of 218 kilometres. The alignment ran along the valleys and eastern side of the Catumbal Range, approximately 12 kilometres east of the current study area. Eighteen sites were recorded during the field survey, including 13 scarred trees and five artefact scatters: Within the Wellington area, relevant to this assessment, seven scarred trees and three artefact scatters were identified. Two of the scarred tree sites were located within the current AHIMS search area: Power Station CMT 1 (AHIMS 36-4-0117) and Power Station CMT 2 (AHIMS 36-4-0118), situated 55 metres apart. They were located approximately 1.5 kilometres north of the Wellington township and Macquarie River (Figure 3). No further recommendations were made considering these trees as they were located outside the footprint of the proposed development. Three artefacts scatter sites were located in association with Watson's and Baker's Swamp Creeks. All sites were assessed as having high cultural significance to the local Aboriginal community. Recommendations included site avoidance, collection of particular objects and monitoring of identified archaeologically sensitive areas.



The Wellington area is within what Tindale mapped as Wiradjuri territory (1974). Wiradjuri is the largest Aboriginal language group in NSW and means "people of the three rivers", referring to the Macquarie, Lachlan and Murrumbidgee rivers (NPWS 2003:121). Local movement of people was associated with several purposes: hunting and gathering, social activities and ceremonial gatherings. Resources were utilised seasonally when family groups would be drawn to the riverine environment and would have camped nearby. In times of less abundance, visits to an area would generally be short and associated with a particular activity. This implies that areas around permanent and reliable water sources, such as rivers and larger creeks were revisited periodically over time, while smaller ephemeral creeks were visited only seasonally but not necessarily returned to regularly. Ridgelines and crests were also visited as passing corridors with very short or transient occupation events.

#### 4.4 Implications for the study area

The previous archaeological investigations described above have been undertaken across the wider region and landscapes comparable to that of the study area. Not many previously recorded Aboriginal archaeological sites are located in the immediate vicinity of the study area due to the limited number of previous archaeological assessments. Site prediction models based on the wider area and Wellington Valley indicate that larger sites are likely to be concentrated in proximity to reliable and permanent watercourses. Sites identified close to the Macquarie and Little rivers appear to represent more frequent or long term occupation by Aboriginal people. Smaller creeks and ephemeral drainage lines would have been used less frequently and have a sparse archaeological record, such as background scatter from a specific activity or discarded material. Non-occupational Aboriginal sites within the region were numerous and their location determined by a number of environmental factors, including geological formation and levels of recent disturbance. Grinding grooves were located within sandstone country with an available water source for grinding purposes. Quarry sites would be in locations with suitable stone raw material used for flaking or sources of ochre. Stone arrangements were located away from occupation areas in isolated places on small hills or knolls. Scarred trees were located in areas not affected by recent land use modifications, primarily land clearing. Burials would be located within sandy, usually deep deposits and may be associated with midden deposits. Middens were located in proximity to the resources, such as river banks and estuaries. Aboriginal Ceremony and Dreaming sites were known to occur in the area, mainly associated with initiation ceremonies and/or activities of ancestral beings during the Dreamtime.

Archaeological potential in the local area has been affected by various factors, primarily the extent of historical disturbances. Extensive land clearing activities would have removed native mature vegetation and therefore directly impacted on the preservation of culturally modified trees. Agricultural activities would have also affected subsurface cultural material through disturbances to the upper soil horizons. Spatial and stratigraphic movements of cultural material could be expected, but these processes do not remove or destroy archaeological material. Some post-depositional movement of cultural material can also be expected due to erosion, especially on hillslope landforms and fluvial processes along stream channels. Construction of roads, farm buildings, artificial dams, irrigation channels and installation of fences has also caused ground disturbance and may have removed and/or displaced soils containing cultural material.



# 5 Landscape Context

The study area is located within South Western Slopes Bioregion (SWSB), an extensive area of foothills and isolated ranges comprising the lower inland slopes of the Great Dividing Range extending from north of Cowra through southern NSW into western Victoria. It is bounded by six bioregions: the Riverina and Cobar Peneplain Bioregions to the west, Darling Riverine Plains and Brigalow Belt South Bioregions to the north, Sydney Basin to the north east and the South Eastern Highlands Bioregion along much of the eastern boundary. Several major rivers flow through the SWSB including the Macquarie, Murray, Murrumbidgee and Lachlan Rivers.

Geologically SWSB lies within the eastern part of the Lachlan Fold Belt which consists of a complex series of north to north westerly trending folded bodies of Cambrian to Early Carboniferous sedimentary and volcanic rocks. Granites are common and occur either as central basins surrounded by steep hills formed on contact metamorphic rocks, or as high blocky plateau features with rick outcrops and tors. The valleys between ranges are either in granite or generally softer rocks such as shale, phyillite or slate. Limited areas of Tertiary basalt with underlying river gravels and sands occur, and as the terrain becomes lower to the west and north, wide valleys filled with Quaternary alluvium and occasional lakes become the more dominant landscape form.

The study area is within the Upper Slopes subregion, characterised by Ordovician to Devonian folded and faulted sedimentary sequences with inter-bedded volcanics rocks and large areas of intrusive granite. The predominant geology of the study area is Canowindra Volcanics (Scv), Silurian in age (443-419mya), bounded to the east by the Cudal Fault and extending from south of Cumnock through to Geurie. These volcanics are characterised by massive, rounded tors and form broad strike ridges. The dominant lithology is massive rhyolite porphyry. It is overlain in many areas by the Hanover Formation that occurs to the immediate west of the study area. This formation is mostly shale, sandstone and siltstone which indicate a deep marine depositional environment. There are also a number of isolated limestone outcrops.

The geology within the eastern portion of the study area comprises Garra Formation (Dgg) and Curra Creek Conglomerates (Dtcu). The Garra Formation is an Early Devonian Volcanic that outcrops on shallow valleys and low broad ridges and is comprised of fossiliferous limestone that formed under shallow marine conditions. The Curra Creek Conglomerates form part of the Late Devonian Catombal Group and overly Garra Formation geologies. The Curra Creek Conglomerates were formed from the high energy deposition of alluvial fans from the east.

Soils within the study area comprise the Arthurville soil landscape in the west and the Tillings Lane soil landscape in the east (Figure 4). The Arthurville soil landscape is formed from in situ, colluvial and alluvial parent rock and are characterised by Red-Brown Earths with some Yellow Podzolic-Solodic soils in depressions and on lower slopes. The soils are erosional particularly in tilled conditions or with poor cover. The Tillings Lane soil landscape is formed from in situ, colluvial and alluvial parent rock and are characterised by Red-Brown Earths. The soils are erosional due to long slopes particularly in tilled conditions or with poor cover. The characteristics of the Arthurville and Tillings Lane soil landscape indicate they would preserve archaeological material where natural process and modern disturbance is limited.

The study area is located in the Central West subregion within the Northern Inland Catchments bioregion. The main rivers are Macquarie, Castlereagh and Bogan rivers of the Murray-Darling Basin. The subregion extends from the plains around Dubbo across the low lying plains of the Macquarie and Castlereagh river systems north west to the Barwon River floodplain. The study area lies within the Macquarie River catchment system. Macquarie River is located approximately seven kilometres north and east of the study area. One second order drainage line flows east–west through the central part of the western portion of study area, which empties into Barneys Creek approximately two kilometres west of the study area. Barneys Creek is a tributary of Little River that empties into the Macquarie River, approximately 20 kilometres north west of the study area. The eastern portion of the study area encompasses a portion of an unnamed second order creek which joins Curra Creek approximately 100 metres north of the study area. Curra Creek flows north east for approximately 6 kilometres before joining Bell River and Macquarie River near Wellington.





Figure 4. Geology and soil landscapes of the study area

Existing native vegetation of the Little River catchment was surveyed in 2002 as part of the TARGET project (Tools to Achieve Landuse Redesign using Environmental/Economic Targets). According to the vegetation mapping, the study area was within *Grey Box – White Cypress-pine Woodland* vegetation community. Woodland plant communities were associated with flat terrain on better soils at lower elevations and had moderate structural diversity. It was dominated by Grey Box (*Eucalyptus microcarpa*) and White Cypress-pine (*Callitris glaucophylla*). Other species included Fuzzy Box (*E.conica*), Bull-oak (*Allocasuarina luehmannii*) and White Box (*E.albens*). Understorey was most commonly small White Cypress-pine, often in dense patches. It was estimated that due to the extensive clearing of land in the recent past less than 10% remains of the estimated pre-clearing distribution of *Grey Box – White Cypress-pine Woodland* (NSWP 2002:6).

In addition to these plant species within the study area, the surrounding area would have sustained a larger number and greater variety of floral and faunal resources that were utilised based on their seasonal availability. Riverine environments were fundamental for Wiradjuri subsistence needs. Macquarie and Little River as well as their tributaries contained an abundant variety of natural resources that were used seasonally. Waterways offered reliable sources of fish and shellfish along with fresh water supply even in drought events. They would have also attracted a variety of animals such as birds, kangaroos and emus that would have been hunted for food and materials. Seasonal fresh foods such as yam daisies, nuts, fruits, wattle seeds and orchid tubers could have been gathered around the rivers and their tributaries. Other resources such as medicinal plants, animal skins, tree bark and plant fibres were also highly utilised for a variety of purposes.

Sources of lithic raw materials suitable for artefact manufacture occurred in proximity to the study area, from river and creek beds as well as sedimentary and volcanic rocks from the hilly areas. Materials commonly used for making stone tools included quartzite, quartz, greywacke, chert and silcrete obtained from exposed sedimentary formations or as loose rock on the surface. Volcanic rock outcrops also occur in the vicinity of the study area and provided raw materials for ground stone tools such as stone axes.

Since European occupation of the Wellington area, fertile river flats were extensively used for pastoralism and agricultural activities. As the population in the region increased, the need for meat and wheat supply also increased, that led to further occupation and clearing of the land by early settlers as well as construction of dams, sinking wells and fences. Market gardens are still expansive and produce a variety of vegetables, irrigated fodder and cash crops including lucerne, maize and peas. Much of the land in the area is used for mixed farming of winter cereals, cattle and sheep and several dairies. The impact of both pastoralism and agriculture has been significant on the original natural Wiradjuri environment.

The study area comprises large fenced paddocks that contain irrigated crops and the road corridors of Renshaw McGirr Way and Suntop Road. Paddocks have been levelled and largely cleared for agricultural purposes (mainly cropping) and currently contain several built structures, including an agricultural shed and residential dwelling. There were some stands of mature native trees within the study area. There were seven dams within the study area as well as irrigation channels. An electricity transmission line ran through the northern section of the study area. These recent land use practices would have impacted on possible Aboriginal cultural material in the study area. Agricultural practices, including ploughing, grazing and land clearing in addition to the construction of roads and culverts may have displaced Aboriginal artefacts and removed modified or scarred trees. If artefacts were present within these areas, they would likely not be in their original context. The remnant stands of mature trees within the study area may retain Aboriginal modified or scarred trees.



# 6 Regional Character

Previous archaeological studies and field surveys in the region have provided data on variable use of local landforms as known sites indicate ephemeral, casual or limited use, while other sites indicate more intensive or repeated use. Artefact distribution and lithic raw material use aid in assessing the archaeological character of the region.

Investigations in the Wellington Valley have revealed a rich settlement history. Site frequency and density can be related to key landscape factors and assessing the combination of these present in a particular area, based on what is known for the region, allows for an assessment of the likely archaeology in a given area. For the Wellington Valley, the chief landscape factors include geological formation, distance to water, landform and proximity to environmental resources. Additionally, historical land use practices and disturbance must be taken into account.

Archaeological sites in the region generally occur as open camp sites or surface scatters and as isolated finds across the landscape. Landforms along the margins of creeks, especially those offering permanent water and associated environmental resources would have been favourable for occupation by Aboriginal people, as well as good soil drainage and views over the watercourses. This is reflected in the archaeological record by higher artefact densities and more complex sites recorded at these sites, especially along the major rivers and creek lines, wetlands and springs, potentially reflecting repeated or more intensive use of these locations. Headwaters of creeks and lower order creek lines tend to display a different archaeological signature, chiefly a sparser artefact distribution and less evidence for 'everyday' or utilitarian activities, suggesting that these areas were often used differently. Other types of nonoccupational sites would be directly dependent on the environmental conditions. Stone arrangements and ceremonial sites would have been often located further away from campsites. Grinding grooves and quarry sites occur within landforms with suitable geological formations. Burials occur within sandy conditions as close to the occupation areas as environmental constraints would allow.

Numerous raw material sources have been documented in the wider region, known to have been utilised by Aboriginal people in the past. The prevalence of silcrete, chert, quartz, quartzite and volcanics in regional artefact assemblages is related to the availability of these raw materials in regional geologies and their wide distribution across the Wellington Valley. The variety of trees and grasses previously abundant within the area was extensively used by Aboriginal people for food and raw material. Animal food resources used to be plentiful particularly in or near the Macquarie and Little rivers and its numerous tributaries and billabongs. Large game, such as kangaroos and wallabies would have been present within open plains and woodland surrounding the study area, mainly the Mt Arthur hills to the east. Aboriginal Ceremony and Dreaming sites can be found within prominent features across the landscape or associated with initiation ceremonies, meetings and other important social activities. Some areas form an important part of the cultural landscape for local Aboriginal people.

Regional archaeology has been variably impacted by historical and current land use practices as well as by natural processes. Preservation of archaeological sites in open contexts is difficult because of the adverse effects of erosion, flooding and disturbance from various recent land use activities. Conversely, ground surface visibility is often increased by these processes, leading to increased identification of artefacts in these areas, primarily on the banks of minor creeks. Some site types, such as artefact scatters, are poorly represented among site data from previous investigations in the region and may reflect limited survey coverage and not necessarily a paucity of these site types in the region.

### 7 Predictions

The information outlined in previous sections allows several predictions to be made about the nature of the archaeology that may be expected in the study area:

- Archaeological sites are likely to consist of open artefact scatters or isolated finds in proximity to waterways, scarred trees within areas of remnant mature vegetation and grinding grooves in areas with suitable geological formations.
- Silcrete, quartz, quartzite, chert and volcanics will be the most commonly encountered artefact raw material.
- Clearing of the majority of original vegetation lessens the likelihood of culturally modified trees, but some old growth trees may be present in the study area and have the potential to display scars of Aboriginal origin.
- Grinding grooves and rock shelters can be found in areas with appropriate geological formations.
- Stone arrangements and bora grounds can be expected on knolls or prominent landscape features.
- Archaeological sites are more likely to be identified in areas that have been subject to less intensive disturbance.
- The identification of archaeological sites is likely to be affected by differential visibility of the ground surface, but successful assessment of areas of potential archaeological deposit can be made based on landform and other environmental factors such as distance to water.



# 8 Methods and Survey Coverage

#### 8.1 Sampling strategy

The aim of the survey was to conduct an archaeological inspection of the study area and identify any Aboriginal sites or areas of potential archaeological deposit.

The majority of the study area was covered in thick grasses. Field assessment focused on areas of surface exposure, where there was a greater chance of identifying artefactual material due to increased visibility. The very poor visibility of the remainder of the study area led to a focus on landform and topography.

Based on the archaeological background and landform context, several areas were targeted for close inspection. In particular, lower slopes in proximity to watercourses and exposed areas around creek banks were closely inspected for artefacts. Areas of high surface visibility were also targeted for close inspection, including exposures such as vehicle tracks, driveways, stock tracks, sheet wash erosion scours and dam edges. While much of the study area had been cleared, close inspection was carried out in all areas that retained trees in order to identify any culturally modified trees in the study area, including the line of trees located along the western boundary of the study area, a small stand of trees north of the central creekline and the vegetated areas adjacent to the intersection of Renshaw McGirr Way and Suntop Road.

Assessment of archaeological potential was also carried out, focusing on a combination of factors such as landform and topography, aspect, distance to water and relation to identified Aboriginal sites. The level of soil disturbance was also assessed, as this has the potential to impact upon any subsurface archaeology that may be present.

#### 8.2 Field methods

Field survey of the western portion of the study area at 909 Suntop Road was completed on 26<sup>th</sup> February 2018 by KNC archaeologist Dr Matthew Kelleher and Wellington Local Aboriginal Land Council representative Mike Nolan. Field survey of the eastern portion of the study area at the intersection of Renshaw McGirr Way and Suntop Road was completed on 14<sup>th</sup> May 2018 by KNC archaeologist Ben Anderson and Wellington Local Aboriginal Land Council representative Tyarara Talbot

A desktop review of AHIMS registered Aboriginal sites found that site types in the vicinity of the study area were predominantly open artefact scatters, often identified in exposures along the margins of creeks; scarred trees located within areas of remnant native vegetation and grinding grooves within areas of sandstone outcrops in the vicinity of waterways. For this reason, areas of high surface visibility were targeted for close inspection, including exposures such as vehicle tracks, driveways, road edges, stock tracks, sheet wash erosion scours, dam edges and creek banks, particularly on those landforms mentioned above but also wherever they were present. Large mature or dead trees, including those apparently felled some time ago, were also inspected for the possibility of being a culturally modified tree. Particular attention was paid if any stone outcrops occur anywhere across the landscape within the study area.

The western portion of the study area was divided into four survey units, for ease of reference, based on landform while the eastern portion of the study area was surveyed as a single unit (Figure 5).

Survey Unit 1 included hillslopes on the northern side of the study area, comprising simple slopes and a low spurline extending east-west, located between a creek within the study area and the creek to the immediate north, two parallel streams emptying into Barneys Creek. The survey unit included farm structures along the western boundary of the study area, as well as an artificial dam to the south.

Survey Unit 2 comprised the central part of the study area around the second order creek, within the stream channel, its bed and banks. It also included first order drainage lines to the north of the creek.

Survey Unit 3 encompassed two hillslopes comprising of low spurline and valley flat to the west located between the second order drainage line to the north and the first order drainage line at the south of the study area and a hillslope at the southern end of the study area consisting of a low spurline running north west to south east.

Survey Unit 4 comprised a stream channel associated with the first order drainage line at the southern of the study area, its bed and banks.

Survey Unit 5 encompassed the portion of the study area at the intersection of Renshaw McGirr Way and Suntop Road. The survey unit comprised a stream channel associated with a second order tributary of Curra Creek and the adjacent slopes.



The study area was traversed by pedestrian survey in a series of transects. High resolution colour aerial photographs, topographic maps and geological maps were used for reference in the field. Site locations were plotted using handheld GPS units, mapped and photographed, including landform context and site contents. Site recording forms were completed for each site, listing details of artefacts observed, site extent and field sketches. Notes were taken during the survey of landform, exposures, nearest water, vegetation, current land use, aspect, previous ground disturbance and areas of potential for intact subsurface archaeological deposit.



Figure 5. Landforms and survey units of the study area

#### 8.3 Survey coverage

#### Survey Unit 1 - Hillslope

Field survey commenced at the north western part of the study area, within Lot 3 along the western boundary of the study area. Survey Unit 1 (Figure 5) revealed varied levels of ground surface visibility, from zero within cropped areas and 100% within roads and ploughed areas, averaging 40% across the entire unit. Exposure was generally limited to tracks and around trees, buildings and fences (Plates 1 and 2). The majority of Survey Unit 1 was covered with short grass or crops, with occasional ploughed areas. The entire survey unit was extensively cleared with only limited trees along lines running north-south marking the borders between lots. A prominent rocky outcrop was observed at the highest point on the landscape, within the central part of the survey unit (Plate 3). The area was carefully inspected for any features containing Aboriginal objects or areas of cultural significance to Aboriginal people, such as bora grounds, although none were identified at this location. Significant ground disturbance was observed within areas that contained the farm buildings, including the residential dwelling, outbuildings, shed and silos (Plate 4). Construction of these structures had involved removing or displacing the natural soils.



Plate 1. Survey Unit 1 - Hillslope with low spurline, visibility and exposures, facing south east



Plate 2. Survey Unit 1 - Vehicle track west of the farm buildings and crops to the east, showing ground surface visibility and erosion conditions, facing north



Plate 3. Survey Unit 1, central part - rocky outcrop, facing north



Plate 4. Survey Unit 1, western section - farm buildings, facing south west

Particular attention was paid to the northern part of Survey Unit 1 where the proposed substation will be situated. The area was covered with patchy very dry crops (Plate 5) and intersected with irrigation channels for agricultural purposes (Plate 6). Two small artificial dams were located immediately south of Suntop Road and associated with irrigation channels throughout the northern part of the study area. These land use practices have caused significant ground disturbance to the natural soil layers that would directly impact on the preservation of archaeological deposits in this area. An electricity transmission line ran across the north western part of the study area. Its installation would have impacted ground conditions within pole locations as well as clearing of vegetation within the easement.



All exposure across Survey Unit 1 was closely inspected for soil conditions and Aboriginal cultural material. Soils were noted to be clayey silty loams and erosional due to water runoff within informal vehicle tracks, irrigation channels, dams and around fences and trees. All exposed areas were carefully inspected for any exposed Aboriginal cultural material, but none was observed. Survey Unit 1 was assessed as having low potential for containing archaeological deposits.



Plate 5. Survey Unit 1, northern section – transmission line, facing south



Plate 6. Survey Unit 1, northern section – irrigation channels, facing north

#### Survey Unit 2 – Stream Channel (second order creek)

The survey team moved to Survey Unit 2, from west to east along the drainage line that was a second order creek running across the central part of the study area (Figure 5). The majority of the creek bed contained no water at the time of inspection, with only a limited amount of water present in some low lying parts. Ground surface visibility in the creek bed was nil, as the creek bed was overgrown with vegetation (Plate 7) with no areas of exposure. Creek banks offered better ground surface visibility of approximately 50%, with exposures of about 20% (Plate 8). Isolated artefacts were identified in two separate exposures over 115 metres apart along the southern bank of the creekline. They were recorded as isolated finds Suntop IF 1 and Suntop IF 2 (AHIMS ID pending). These are described further in section 9. No other Aboriginal cultural material was observed within this survey unit.





Plate 7. Survey Unit 2, eastern section - second order creek line, visibility within the creek bed, facing south east

Plate 8. Survey Unit 2, eastern section - erosion visible within creek banks

A small stand of trees was situated on the northern side of the creek (Plate 9). The trees were fenced off and consisted of mainly young, replanted Eucalyptus species. They were all inspected, but none contained evidence of modification or scarring and it was noted that there were no trees of suitable age. Significant erosion was also visible around the fence line due to water runoff and pedestrian traffic (Plate 9). Within the western part of the study area, significant land modifications were observed in association with irrigation for agricultural purposes. Two water tanks and a windmill were located in proximity to other farm buildings (Plate 10). Two artificial dams for agricultural purposes were constructed within the western extent of the study area, one within the second order creek line and the other within a very small drainage line (Plate 9). Ground surface visibility was good with some patches covered in dry grass,



averaging around 70%. Areas of exposure included around the dam walls and along dirt tracks (Plate 11 and 12). The areas of exposure were closely inspected but no Aboriginal cultural material was observed. Construction of the dams and modifications to the creek bed, including construction of the informal track above the waterway had involved significant ground works that would have removed or displaced the majority of the natural soils and therefore any possible Aboriginal cultural material in the area.





Plate 9. Survey Unit 2 - cluster of trees, northern bank of the creek and areas of erosion, facing north west

Plate 10. Survey Unit 2 - water tanks and windmill in the south west of the study area, facing south



Plate 11. Survey Unit 2 – dam at the western extent of the study area, general visibility and conditions, facing east



Plate 12. Survey Unit 2 – track west of dam, facing north towards the silos

#### Survey Unit 3 - Hillslope

Survey Unit 3 encompassed two hillslopes, a low spurline extending between a second order creek to the north and first order drainage to the south, sloping up towards the south eastern extent of the study area and then gently sloping down towards the north west between two first order drainage lines (Figure 5). The majority of the survey unit was covered with short dry grass with moderately good visibility of 50% across the entire unit (Plates 13 and 14). Limited areas of exposure of about 5% were observed around fence lines and the few trees. The area was used for agricultural and grazing purposes with disturbance most likely limited to upper soil layers. Erosion was visible within patches not covered in grass due to the water runoff. Within the southern part of this unit, irrigation channels were visible across the landscape. No Aboriginal cultural material or areas of archaeological potential was identified in Survey Unit 3.





Plate 13. Survey Unit 3 – Facing north west towards the hill and silos, general ground conditions



Plate 14. Survey Unit 3 – lower slopes of the hillslope, facing north towards the cluster of trees in Survey Unit 2 across the second order creek line, general ground surface visibility

#### Survey Unit 4 – Stream Channel (first order drainage lines)

Survey Unit 4 encompassed two stream lines (first order drainage lines) located within the southern portion of the study area (Figure 5). It consisted of creek beds and banks, with one small artificial dam constructed at the head of the southernmost drainage line. There was no water within the drainage lines at the time of inspection. Survey Unit 4 was extensively cleared of vegetation and used for agricultural and grazing purposes. Ground surface visibility was on average 40% with areas of exposure 10% limited to around trees and fence lines. Only a few trees were located across the entire unit, with the exception of the western border of the study area where some trees of mature age were observed. One tree was identified as having cultural significance to local Aboriginal people by Mike Nolan, Wellington LALC representative (Plate 15). The tree contained a scar although it could not be positively identified as being of cultural origin. It was recommended that the tree be conserved *in situ* and all proposed impacts avoid the location of the tree. No other Aboriginal cultural material was identified within Survey Unit 4.



Plate 15. Survey Unit 4 – Facing south towards tree with cultural significance



Plate 16. Survey Unit 4 – identified culturally significant tree on western boundary of study area



#### Survey Unit 5 – Intersection of Renshaw McGirr Way and Suntop Road

Survey Unit 4 encompassed the stream line of a second order north flowing tributary of Curra Creek and adjacent slopes (Figure 5). The survey unit consisted of the heavily modified road corridors of Renshaw McGirr Way and Suntop Road with embankments and a culvert beneath Renshaw McGirr Way (Plate 17), several piles of sediment and a deeply incised stream line. There was no water within the drainage line at the time of inspection. The survey unit was predominantly covered in new growth trees with some older trees present. No culturally modified trees were identified.

Ground surface exposures were relatively frequent within the survey area with visibly restrictions from plat detritus, gravels and blue metal. Areas of surface exposure included the creek banks and along the road edges (Plate 18). The areas of exposure were closely inspected; however, no Aboriginal cultural material was observed. Construction of the current roads and the previous alignment of Renshaw McGirr Way (located approximately 10 metres north of the survey area) had involved significant ground works that would have removed or displaced the majority of the natural soils and therefore Aboriginal cultural material in the area.



Plate 17. Survey Unit 5 – Facing south towards culvert beneath Renshaw McGirr Way

Plate 18. Survey Unit 5 – surface exposure along edge of Renshaw McGirr Way



Overall, surface exposures were relatively frequent in the study area, located within ploughed areas, erosion scours bordering drainage lines, stock and vehicle tracks, along the edges of sealed roads and in patches of bare earth where vegetation had died off. Exposures were generally in fair condition, although water runoff had impacted soil preservation as well as stock trampling, weed and grass growth. Surface visibility was likewise moderate with the majority of the study area covered in short, patchy and dry grass or plant detritus. The majority of the study area had been subject to cultivation for a considerable period of time, including extensive clearing, cropping and construction of farm buildings, dams and irrigation channels while the eastern portion of the study area had been subject to extensive disturbance from the original construction of Renshaw McGirr Way and its subsequent realignment. A summary of survey coverage by survey unit and landform is presented in Tables 3 and 4.

| Survey<br>Unit | Landform       | Survey Unit Area<br>(sq m) | Visibility<br>% | Exposure<br>% | Effective Coverage<br>Area | Effective Coverage<br>% |
|----------------|----------------|----------------------------|-----------------|---------------|----------------------------|-------------------------|
| 1              | Hillslope      | 1,973,880                  | 40              | 20            | 157,910                    | 8                       |
| 2              | Stream Chanel  | 1,405,346                  | 25              | 10            | 35,133                     | 2.5                     |
| 3              | Hillslope      | 1,194,148                  | 50              | 5             | 29,853                     | 2.5                     |
| 4              | Stream Channel | 696,486                    | 40              | 10            | 27,859                     | 4                       |
| 5              | Hillslope      | 9,551                      | 50              | 10            | 478                        | 5                       |
| 5              | Stream Channel | 639                        | 60              | 20            | 77                         | 12                      |

#### Table 3. Survey coverage

The survey coverage table above demonstrates some limitations imposed on the effectiveness of the survey by infrequent exposures but generally moderate to good visibility of the ground surface. Hillslopes exhibited fairly consistent levels of ground surface visibility with exposures varying between 5 and 20%. Hillslopes within the northern part of the study area exhibited higher level of exposure due to extensive agricultural activity including ploughing, cropping and construction of irrigation channels. In general, stream channels had better ground surface visibility within first order than second order streams. This was mainly due to the amount of moisture within them. First order creek lines revealed very dry conditions with low or nil vegetation cover; second order creeks had occasional puddles of water within the creek bed, but the majority was covered in thick, long grasses. Exposures in both first and second order creeks were limited to creek banks and around dams. This was not the case with the second order tributary of Curra Creek which was dry and had had good surface visibility. Overall, hillslope landform elements revealed slightly better survey coverage due to the intensive land use practices, land clearing and dry conditions during the field survey. A summary of effective coverage and results by landform is presented in Table 4.

#### Table 4. Landform summary

| Landform          | Landform Area<br>(sq m) | Area Effectively<br>Surveyed | % of landform effectively<br>surveyed | Number of<br>sites | Number of artefacts or<br>features |
|-------------------|-------------------------|------------------------------|---------------------------------------|--------------------|------------------------------------|
| Hillslope         | 3,177,579               | 188,241                      | 6                                     | nil                | nil                                |
| Stream<br>Channel | 1,102,471               | 63,069                       | 5.7                                   | 2                  | 2                                  |



# 9 Results

Field inspection identified two Aboriginal archaeological sites within the study area. These were two isolated artefacts (isolated finds) located on the bank of a second order creek, labelled Suntop IF 1 and Suntop IF 2. These are described further in sections 9.1 and 9.2 following.

One tree assessed as having cultural significance to local Aboriginal people was identified within the study area. It was located within the easement on the western boundary of the study area, adjacent to Lot 2 DP506925, with coordinates 670437E 6392967N, GDA 95 MGA 55. The tree holds cultural significance to local Aboriginal people and should be avoided by proposed activities.

Aboriginal archaeological and cultural sites identified in the study area are listed in Table 5 and locations shown on Figure 6.

| Site ID                            | Feature                     | Survey Unit | Landform       |
|------------------------------------|-----------------------------|-------------|----------------|
| Suntop IF 1                        | Isolated artefact           | 2           | Stream Channel |
| Suntop IF 2                        | Isolated artefact           | 2           | Stream Channel |
| Suntop Culturally Significant Tree | Culturally significant tree | 4           | Stream Channel |

#### Table 5. Identified archaeological and cultural heritage features in the study area





Figure 6. Aboriginal archaeological sites and culturally significant tree within the study area



#### 9.1 Suntop IF 1

Suntop IF 1 comprised a single chert core. It was located on the southern banks of the second order creek line, a tributary to Barneys Creek, within the southern part of Lot 90 DP657805. The artefact was observed in an exposure approximately 20 metres south of the unnamed creek (Plates 19 and 20). The ground gently inclined to the south to a low spurline extending south east to north west and intersected with irrigation channels. The site was located approximately 1.4 kilometres south of Suntop Road within an open paddock with no tree cover. A stand of young replanted trees was located approximately 350 metres to the north west, on the northern side of the creek.

Visibility across the surface of the exposure was moderate, with swamp tussocks within the creek bed and short dry grass cover bordering the exposure. Site condition was generally poor, with the area affected by stock movement and continued sheet erosion from fluvial movement along the drainage line. Sediment observed both in and along the margins of the exposure consisted of yellowish grey sandy loams soil, derived from the natural parent material. The artefact had been exposed by erosion processes and likely displaced by fluvial movement. The area was highly disturbed by natural processes and retained no potential for intact archaeological deposit. Suntop IF 1 is described in Table 6.

#### Table 6. Artefact at Suntop IF 1

| Artefact type | Raw<br>material | Length<br>(mm) | Width<br>(mm) | Thickness<br>(mm) | Notes   |
|---------------|-----------------|----------------|---------------|-------------------|---|
| Core          | Chert           | 45             | 40            | 20                | Yellowish grey chert unidirectional core, cortex 26-<br>51% |



Plate 19. Chert core identified at Suntop IF 1



Plate 20. Suntop IF 1, exposure in foreground, facing south east



#### 9.2 Suntop IF 2

Suntop IF 2 comprised a single chert flake. The site was also located on the southern banks of the second order creek line, a tributary to Barneys Creek, within the southern part of Lot 90 DP657805, approximately 115 metres south of Suntop IF 1. The artefact was observed in an exposure approximately 20 metres south of the unnamed creek. The ground gently inclined to the south to a low spurline extending south east to north west that was also intersected with irrigation channels. The site was located around 1.4 kilometres south of Suntop Road within an open area with no tree cover. A small stand of young replanted trees was located approximately 350 metres to the north west, on the northern side of the creek.

Visibility across the surface of the exposure was moderate, with swamp tussocks within the creek bed and short dry grass cover bordering the exposure area. Site condition was generally poor, with the area affected by stock movement and continued sheet erosion from fluvial movement along the drainage line. Sediment observed both in and along the margins of the exposure consisted of yellowish grey sandy loams soil, derived from the natural parent material. The artefact had been exposed by erosion processes and likely displaced by fluvial movement. The area was highly disturbed by natural processes and retained no potential for intact archaeological deposit. Suntop IF 2 is described in Table 7 and shown in Plate 21.

#### Table 7. Artefact at Suntop IF 2

| Artefact type | Raw<br>material | Length<br>(mm) | Width<br>(mm) | Thickness<br>(mm) | Notes            |  |
|---------------|-----------------|----------------|---------------|-------------------|------------------|--|
| Flake         | Chert           | 43             | 32            | 4                 | Pale brown flake |  |



Plate 21. Chert flake identified at Suntop IF 2



### 10 Discussion

Field survey of the study area identified two Aboriginal archaeological sites, both isolated chert artefacts in disturbed contexts. These findings were consistent with the known archaeology of the local and regional area, namely, isolated artefacts and low density artefact scatters can be found anywhere across the landscape in association with waterways, consisting of chert, silcrete and occasional quartz and volcanics artefacts. Density of artefact scatters are directly influenced by stream order, with density and complexity of sites increasing with higher order streams. The identified artefacts were located on a creek bank of a second order drainage line within the Macquarie River catchment area. Site locations within the drainage channel were affected by various erosional and depositional processes. The artefacts had been exposed by erosion processes and likely displaced by flood events or fluvial movement. The surrounding area was highly disturbed by natural processes and retained no potential for intact archaeological deposit.

Field inspection also located one culturally significant tree at the western extent of the study area. The tree had a scar which could not be positively identified as being culturally modified, however it was identified by Wellington LALC as being of high cultural significance to local Aboriginal people. It was recommended the tree be avoided by proposed activities.

No other Aboriginal archaeological sites, Aboriginal cultural heritage items or areas of archaeological potential were identified within the study area.

An assessment of archaeological potential within the study area was conducted during the archaeological survey. The characterisation of archaeological potential was based on several factors known to influence both the location and preservation of archaeological sites within the study area. These factors included landform context, gradient, erosion, distance to water, integrity of the ground surface and assessment of past land use disturbance.

Previous Aboriginal cultural and archaeological assessments within the wider region recorded very sparse evidence of past occupation within lower order waterways. According to the predictive model for the Wellington Valley, density and complexity of sites were directly related to landform, soils, distance to waterways, geological formations and levels of past land use disturbance. Overall, higher density and complex Aboriginal sites were recorded along permanent watercourses, as occupation was more intensive along major waterways. Smaller open sites were located along intermittent creeks, with isolated artefacts found along minor drainage lines, on slopes and ridge crests, representing less intensive occupation. Geological formations were determinants for particular site types. Grinding grooves and stone arrangements were located in areas with suitable stone outcrops. Raw material and ochre quarries were located in areas where natural sources of stone and ochre occur. Scarred trees were located in areas of remnant mature vegetation. The closest previously recorded Aboriginal sites to the study area included scarred trees, low density artefact scatters and grinding groove sites.

In assessing the preservation of archaeological deposits, depth of topsoil and its nature should be considered. Some soils are subject to erosion and not prone to preserving subsurface deposits. Previous land use practices can also influence preservation of archaeological material. Land clearance including removal of trees would have impacted on the topsoil and mixed deposits, therefore possibly exposing subsurface cultural material and causing a loss of archaeological context. This practice often resulted in removal of big native trees that had been possibly culturally modified. Land used for agricultural purposes has also gone through some level of previous disturbance where topsoil has been displaced and mixed and although any archaeological material present may not be removed, it would not be in its primary (archaeological) context. Where significant ground disturbance has occurred associated with construction of houses, infrastructure, dams and irrigation channels, it is likely that any archaeological deposits would have been removed or displaced.

The study area was located within undulating rises, hillslopes and second and first order creek lines. Drainage lines within the study area formed part of the Macquarie River catchment. Due to an abundance of resources within the surrounding landscapes including the riverine environments of Little River and Macquarie River, as well as the surrounding hills, Mt Duke and Mt Arthur, it is most likely that Aboriginal people had used the study area as a transient corridor. Soils present within the study area are red earths that are colluvial-alluvial derived from the parent rock. The erosional nature of these soils has the potential to expose archaeological material. Fluvial processes have also likely displaced Aboriginal cultural material. Previous land use practices including extensive land clearing would have removed mature native vegetation including any mature trees that could have contained Aboriginal cultural modifications.

The study area was assessed as having low archaeological sensitivity. Its past use by Aboriginal people was likely transient and occasional. Artefacts identified represent a background scatter, or cultural material that was lost or discarded. The study area had been highly disturbed by past land use practices and natural processes and retained no potential for intact archaeological deposit. Landforms surrounding the study area on the other hand were extensively used in the past by Aboriginal people and attest to the high cultural significance of the wider Macquarie River and Wellington area.



# 11 Scientific Values and Significance Assessment

#### 11.1 Assessment Criteria

One of the primary steps in the process of cultural heritage management is the assessment of significance. Not all sites are equally significant and not all are worthy of equal consideration and management (Sullivan and Bowdler 1984; Pearson and Sullivan 1995:7). The determination of significance can be a difficult process as the social and scientific context within which these decisions are made is subject to change (Sullivan and Bowdler 1984). This does not lessen the value of the heritage approach, but enriches both the process and the long term outcomes for future generations as the nature of what is conserved and why, also changes over time.

The assessment of significance is a key step in the process of impact assessment for a proposed activity as the significance or value of an object, site or place will be reflected in resultant recommendations for conservation, management or mitigation.

The Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales (DECCW 2010b) requires significance assessment according to criteria established in the Australia ICOMOS Burra Charter (Australia ICOMOS 2013). The Burra Charter and its accompanying practice notes are considered best practice standard for cultural heritage management, specifically conservation, in Australia. Guidelines to the Burra Charter set out four criteria for the assessment of cultural significance:

- Aesthetic value relates to the sense of the beauty of a place, object, site or item;
- Historic value relates to the association of a place, object, site or item with historical events, people, activities or periods;
- Scientific value scientific (or research) value relates to the importance of the data available for a place, object, site or item, based on its rarity, quality or representativeness, as well as on the degree to which the place (object, site or item) may contribute further substantial information; and
- Social value relates to the qualities for which a place, object, site or item has become a focus of spiritual, political, national or other cultural sentiment to a group of people. In accordance with the OEH *Guide to investigating, assessing and reporting on Aboriginal cultural heritage in NSW*, the social or cultural value of a place (object, site or item) may be related to spiritual, traditional, historical or contemporary associations. "Social or cultural value can only be identified though consultation with Aboriginal people" (OEH 2011:8).

The assessment of these values are brought together to form a comprehensive assessment of significance.

#### **11.2 Statement of significance**

Two Aboriginal archaeological sites, isolated finds Suntop IF 1 and Suntop IF 2, were identified in the study area during the field inspection. Artefacts consisted of one core and one flake, both of chert. The artefacts were situated approximately 115 metres apart on the second order creek bank, within erosional scours. Artefacts had been subject to post-depositional movement, including erosion and fluvial processes and were not *in situ*. The area was highly disturbed by natural processes and retained no potential for intact archaeological deposit. Due to their disturbed context, the sites displayed low archaeological significance. Very low density scatters and isolated artefacts associated with low order drainage lines were a common site type within the wider region. The finds were consistent with the predictive model for the study area.

A culturally significant tree was also identified at the western extent of the study area. The tree was a *Eucalyptus sp.* and contained one scar that could not be positively identified as being of cultural origin. The tree holds high cultural significance to local Aboriginal people. It was recommended that the tree be conserved *in situ* and all proposed impacts avoid the location of the tree.

The types of sites identified in the study area were consistent with known Aboriginal heritage across the Wellington Valley, specifically within the Little River area and with predictions made for the study area. All identified Aboriginal heritage features are consistent with the known archaeological record for the immediate locality. They are not considered to be rare or unique, however, they can be seen to be representative of the types of sites in the area.

The sites hold value to the local Aboriginal community. Wellington Local Aboriginal Land Council stated that all Aboriginal objects, archaeological sites and items of cultural significance contained within the study area hold very high cultural significance and should be avoided by the proposed works.



# 12 Impact Assessment

The impact footprint of the proposed solar panels, substation, maintenance compound and buildings, fencing and access roads will be situated within the Solar Farm Boundary in addition to the area of the proposed upgrades works at the intersection of Renshaw McGirr Way and Suntop Road are shown on Figure 7. The proposed solar farm will occupy approximately 91% of the western study area with the remaining land retained as existing agricultural land. Based on this proposal, an impact assessment can be made for the identified Aboriginal archaeological and cultural heritage features at 909 Suntop Road, Suntop.

Identified Aboriginal archaeological sites, isolated finds Suntop IF 1 and Suntop IF 2 were located within the riparian corridor associated with the second order creek line that ran east-west across the central part of the study area. This corridor, including the Aboriginal sites, is outside the Solar Farm Boundary proposed impact footprint. Sites Suntop IF 1 and Suntop IF 2 will not be impacted by the proposed solar farm development.

A tree that was identified as holding cultural significance to local Aboriginal people is located within the western extent of the study area that will not be impacted by the proposed solar farm development. The tree is located approximately 35 metres west of the proposed Solar Farm Boundary, within an easement adjacent to Lot 2 DP506925.

The remainder of the study area was assessed as exhibiting low archaeological potential due to combinations of archaeologically unfavourable topography, agricultural activity, previous road construction activities and contemporary disturbance of the land.

Based on desktop review, consultation with the local Aboriginal community, archaeological survey of the study area and proposed impact footprint, provided the identified Aboriginal archaeological sites and culturally significant tree are avoided, the proposed construction and operation of the Suntop Solar Farm and the upgrade works to the intersection of Renshaw McGirr Way and Suntop Road would not impact on Aboriginal heritage.

#### **Cumulative Impacts**

The proposed Suntop solar farm will avoid impact to Aboriginal heritage objects, in this regard, no cumulative impact will occur to Aboriginal heritage.





Figure 7. Proposed development and identified Aboriginal heritage

# **13** Conclusions and Recommendations

No impact to Aboriginal heritage will occur as a result of the proposed Suntop Solar Farm and upgrade works to the intersection of Renshaw McGirr Way and Suntop Road.

Background research, desktop assessment, consultation with the local Aboriginal community and archaeological field survey identified three heritage sites within the study area, but the sites are not within the project footprint and are not impacted by the proposal:

- Aboriginal archaeological sites, Suntop IF 1 and Suntop IF 2, two isolated artefacts identified along a creek bank and retained within the riparian corridor; and
- Culturally significant tree as identified by the Wellington Local Aboriginal Land Council, situated outside the proposed solar farm boundary in an adjacent easement.

All of the other areas within the study area exhibited low archaeological potential due to combinations of archaeologically unfavourable topography, agricultural activity, past road construction activities and contemporary disturbance of the land.

Proposed works associated with the solar farm development will not impact on identified areas of Aboriginal cultural heritage significance. The culturally significant tree will be retained in its current setting along the western boundary of the study area and the two isolated finds will be retained within the riparian corridor of the central drainage line.

Provided the identified Aboriginal archaeological sites and culturally significant tree are avoided, the proposed construction and operation of the Suntop Solar Farm and upgrade works to the intersection of Renshaw McGirr Way and Suntop Road would not impact on Aboriginal heritage. In accordance with the *Due Diligence Code of Practice for the Protection of Aboriginal Objects in New South Wales* the proposed activities can proceed with caution.

It is recommended that the identified site locations (Suntop IF 1, Suntop IF 2 and culturally significant tree) should be included within the construction environment management plan for the Suntop Solar Farm.



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# Appendix A Wellington Local Aboriginal Land Council Report





# Introduction.

I have been engaged by the Wellington LALC to participate in a cultural heritage assessment for a proposed development on a property to the west of Wellington at 909 Suntop Road, Suntop. The proposed activity is the construction of a Solar farm. The archaeological consultants carrying out the main assessments are Kelleher Nightingale Consulting Pty Ltd. The archaeologist accompanying myself was Dr Matthew Kelleher. The assessment was conducted on the 26<sup>th</sup> of February 2018.

Location of the survey:





# Considerations of the survey

Prior to carrying out the survey, a number of considerations were made. Given my local knowledge of the area and the landscape in which Suntop is located, particular attention was taken when identifying the following site types:

- Open camp sites
- Culturally significant modified trees
- Grinding grooves
- Quarry sites
- Stone arrangements
- Isolated artefacts

The site is located some distance from permanent creeks and the Wambool (Macquarie) River where there is a greater concentration of culturally significant materials and sites. It is also noted that there have been no recorded sites registered on the Aboriginal Heritage Information Management System (AHIMS) managed by the Office of Environment and Heritage within the survey area.

The survey area has been greatly modified. It appears that land clearing has been carried out along with farming/agricultural activities. This has included the constructions of buildings, fences, power lines, internal roads, dams, and activities such as grazing, cropping and rock picking (rocks have been collected and placed in piles). The southern end of the property also has a large construction of what seemed to be culverts.

# **Conducting the Survey**

The method in which the survey was to be conducted was discussed onsite. It was decided that the survey would be done both from the vehicle and on foot. Particular attention was given to the following:

- Water sources, creeks, channels, dams, springs
- High and low points (it is my practice to inspect both the highest and the lowest points on the property)
- Old growth trees, any trees with a decent girth and in particular Box trees
- Places showing significant erosion







# Findings

During the survey two isolated artefacts were found on the eastern side of the property and one culturally significant modified tree on the western boundary.





# Recommendations

### 1. Isolated artefacts

Both artefacts were found along a creek line on the eastern boundary. As this area will not be impacted by the proposed development, the Wellington LALC have no concerns in relation to the development impacting on this site. The LALC requests that the artefacts be recorded and that the property owner be informed.

# 2. Modified Tree

This tree is also outside the footprint of the proposed development. The LALC has no concerns for this tree in relation to the proposed development. The LALC requests that the site be recorded and that the property owner be informed to ensure that it is not impacted by other activities.

3. Other Material

If further culturally significant materials are identified during the construction of the solar farm, the LALC requests that OEH and the Wellington LALC itself be informed immediately and that works will cease.

# In Conclusion

The Wellington Local Aboriginal Lands Council have no objections to the proposed solar farm development as presented to the LALC provided that the cultural values identified are not impacted on.



Appendix B AHIMS Search Results



| NSW.                       | Office of<br>Environment<br>& Heritage          | AHIMS Web Ser<br>Extensive search - S | vices (AWS)<br>ite list report |                   |                       |                            |                             |                            |   | Your Re<br>Clie | ef/PO Number : 1711_05<br>nt Service ID : 331634 |
|----------------------------|---|---------------------------------------|--------------------------------|-------------------|-----------------------|----------------------------|-----------------------------|----------------------------|---|-----------------|--|
| <b>SitelD</b><br>36-4-0085 | <u>SteName</u><br>Raroo                         |                                       | <b>Datum</b><br>AGD            | <b>Zone</b><br>55 | Easting<br>664293     | <b>Northing</b><br>6385357 | <u>Context</u><br>Open site | <u>Ste Status</u><br>Valid | <b>SteFeatures</b><br>Modified Tree<br>(Carved or Scarred) :<br>1 | <u>SteTypes</u> | <u>Reports</u>                                   |
|                            | <u>Contact</u>                                  |                                       | Recorders                      | Miss              | s.Rebee ca Og         | den-Brun ell               |                             |                            | Permits   |                 |  |
| 86-4-0086                  | Raroo 2   |                                       | AGD                            | 55                | 664345                | 6385396                    | Open site                   | Valid                      | Modified Tree<br>(Carved or Scarred) :<br>1                       |                 |  |
|                            | <u>Contact</u>                                  |                                       | Recorders                      | Miss              | s.Rebee <i>c</i> a Og | den-Brunell                |                             |                            | <u>Permits</u>  |                 |  |
| 6-4-0087                   | Raroo 3   |                                       | AGD                            | 55                | 663923                | 6384944                    | Open site                   | Valid                      | Modified Tree<br>(Carved or S <i>c</i> arred) :<br>1              |                 |  |
|                            | <u>Contact</u>                                  |                                       | <u>Recorders</u>               | Miss              | s.Rebee ca Og         | den-Brunell                |                             |                            | <u>Permits</u>  |                 |  |
| 6-4-0088                   | Restriction applied. Ple<br>ahims@environment.n | e ase contact<br>isw.gov.au.          |                                |                   |                       |                            | Open site                   | Valid                      |   |                 |  |
|                            | <u>Contact</u>                                  |                                       | Recorders                      | Miss              | s.Rebee ca Og         | den-Brunell,Mı             | r.Bradley Bliss,W           | ellington Valley Wir:      | idjuri Aborigir <u>Permits</u>                                    |                 |  |
| 6-4-0089                   | Suntop Road Scarred T                           | rees                                  | AGD                            | 55                | 674612                | 6393510                    | Open site                   | Valid                      | Modified Tree<br>(Carved or Scarred) :<br>1                       |                 |  |
|                            | Contact   |                                       | Recorders                      | Miss              | .Rebee ca Og          | den-Brunell,Mı             |                             |                            |   |                 |  |
| 36-4-0091                  | PR-ST-05  |                                       | AGD                            | 55                | 660880                | 6384510                    | Open site                   | Valid                      | Modified Tree<br>(Carved or Scarred) :                            |                 |  |
|                            | Contact   |                                       | Recorders                      | LNo               | olan                  |                            |                             |                            | Permits   |                 |  |
| 6-4-0092                   | PR-ST-01 same as 36-1                           | -0126                                 | AGD                            | 55                | 680110                | 6394170                    | Open site                   | Valid                      | Modified Tree<br>(Carved or Scarred) :<br>-                       |                 |  |
|                            | Contact   |                                       | Recorders                      | LNo               | olan                  |                            |                             |                            | Permits   |                 |  |
| 86-4-0093                  | PR-ST-02  |                                       | AGD                            | 55                | 661570                | 6384920                    | Open site                   | Valid                      | Modified Tree<br>(Carved or Scarred) :                            |                 |  |
|                            | <u>Contact</u>                                  |                                       | Recorders                      | LNo               | lan                   |                            |                             |                            | <u>Permits</u>  |                 |  |
| 6-4-0094                   | PR-ST-04  |                                       | AGD                            | 55                | 660950                | 6384560                    | Open site                   | Valid                      | Modified Tree<br>(Carved or Scarred) :<br>-                       |                 |  |
|                            | <u>Contact</u>                                  |                                       | Recorders                      | LNo               | olan                  |                            |                             |                            | Permits [Variable]  |                 |  |
| 36-4-0095                  | PR-ST-03  |                                       | AGD                            | 55                | 661370                | 6384840                    | Open site                   | Valid                      | Modified Tree<br>(Carved or Scarred) :<br>-                       |                 |  |
|                            | <u>Contact</u>                                  |                                       | Recorders                      | LNo               | olan                  |                            |                             |                            | Permits   |                 |  |
| 36-4-0097                  | STP-1F-1  |                                       | AGD                            | 55                | 680780                | 6396810                    | Open site                   | Valid                      | Artefact : -  |                 | 102779   |

Report generated by AHIMS Web Service on 05/03/2018 for Benjamin Anderson for the following area at Datum :GDA, Zone : 55, Eastings : 660300 · 682700, Northings : 6381900 · 6405250 with a Buffer of 0 meters. Additional Info : Archaeological Assessment. Number of Aboriginal sites and Aboriginal objects found is 47

This information is not guaranteed to be free from error omission. Office of Environment and Heritage (NSW) and its employees disclaim liability for any act done or omission made on the information and consequences of such acts or omission.

Page 1 of 4

| NSW           | Office of<br>Environment<br>& Heritage        | AHIMS Web Serv<br>Extensive search - Site | ices (AWS)<br>e list report |                |                        |                                   |                                     |                                  |   | Your Ref/<br>Client    | PO Number : 1711_05<br>Service ID : 331634 |
|---------------|---|---|-----------------------------|----------------|------------------------|-----------------------------------|-------------------------------------|----------------------------------|---|------------------------|--|
| <u>SiteID</u> | <u>SteName</u><br><u>Contact</u>              |   | <u>Datum</u><br>Recorders   | Zone<br>Centra | Easting<br>al West Arc | <u>Northing</u><br>haeological an | <u>Context</u><br>d Heritage Servic | <u>Ste Status</u><br>ces Pty Ltd | <u>SteFeatures</u><br>Permits                               | <u>SteTypes</u>        | <u>Reports</u>                             |
| 36-3-0143     | Spring Ck.;                                   |   | AGD                         | 55             | 674190                 | 6404810                           | Open site                           | Valid                            | Artefact : -  | Open Camp Site         | 1333                                       |
|               | <u>Contact</u>                                |   | Recorders                   | Warre          | en Bluff               |                                   |                                     |                                  | Permits   |                        |  |
| 36-4-0081     | Restriction applied. Pl<br>ahims@environment. | le ase contact<br>nsw.gov.au.             | Decendence                  | Ilord          | Nolan Ma               | and our Plice W                   | Open site                           | Valid<br>Winadium Abominin al    | Composition Domnite   |                        | 102211,10277<br>9                          |
| 36-4-0025     | Wellington-WE1-Baal                           | hek                                       | AGD                         | 55             | 679980                 | 6399950                           | Onen site                           | Willaujuli Aboligilia<br>Valid   | Artefart  | Onen Camp Site         | 975 102779                                 |
| 00-1-0020     | Contrat                                       | . UC A,                                   | Bacandana                   | 55<br>M= 61    | an Lanas               | 0377730                           | open site                           | Valid                            | n teract  | open camp ane          | J/ 3,102// J                               |
| 36-4-0028     | Macquarie Park/WF4                            | Macquarie Park                            | AGD                         | 55             | 675690                 | 6398510                           | Onen site                           | Valid                            | Artefart -  | Onen Camp Site         | 975 102211                                 |
| 0010010       | Contrat                                       | , noquaro i a n                           | Deserders                   | May 611        | an Tanas               | 0070010                           | oponono                             |                                  | Dermite   | open damp one          | <i>yr byr o</i> ldrif                      |
| 36-1-0038     | Maryvale Creek                                |   | AGD                         | 55             | 678375                 | 6402718                           | Open site                           | Valid                            | Stone Arrangement :<br>-, Stone Quarry : -,<br>Artefact : - | Quarry                 | 102211                                     |
|               | <u>Contact</u>                                |   | Recorders                   | Micha          | el Pearson             |                                   |                                     |                                  | <u>Permits</u>  |                        |  |
| 36-1-0041     | Maryvale Creek 2                              |   | AGD                         | 55             | 679288                 | 6402684                           | Open site                           | Valid                            | Modified Tree<br>(Carved or Scarred) :<br>-                 | Scarred Tree           | 102211                                     |
|               | <u>Contact</u>                                |   | Recorders                   | Micha          | el Pearson             |                                   |                                     |                                  | Permits   |                        |  |
| 36-1-0042     | Maryvale Creek 1                              |   | AGD                         | 55             | 679288                 | 6402684                           | Open site                           | Valid                            | Modified Tree<br>(Carved or Scarred) :<br>1                 | Scarred Tree           | 102211                                     |
|               | <u>Contact</u>                                |   | Recorders                   | Micha          | el Pearson             |                                   |                                     |                                  | Permits   |                        |  |
| 36-4-0049     | Baalbek/WF 2;Wellin                           | gton;                                     | AGD                         | 55             | 678340                 | 6400400                           | Open site                           | Valid                            | Artefact : -  | Open Camp Site         | 975,102211                                 |
|               | <u>Contact</u>                                |   | <u>Recorders</u>            | Mr.All         | an Lance               |                                   |                                     |                                  | <u>Permits</u>  |                        |  |
| 36-4-0050     | Macquarie Park/WF3                            | ;Wellington;Macquarie Park;               | AGD                         | 55             | 676900                 | 6400280                           | Open site                           | Valid                            | Artefact : -  | Open Camp Site         | 975,102211                                 |
|               | <u>Contact</u>                                |   | Recorders                   | Mr.All         | an Lance               |                                   |                                     |                                  | Permits   |                        |  |
| 36-3-0142     | Spring Ck;                                    |   | AGD                         | 55             | 673840                 | 6404800                           | Close d site                        | Valid                            | Shell : -, Artefact : -                                     | Shelter with<br>Midden | 1333                                       |
|               | <u>Contact</u>                                |   | Recorders                   | Warre          | en Bluff               |                                   |                                     |                                  | Permits   |                        |  |
| 36-4-0009     | ahims@environment:                            | le ase contact<br>nsw.gov.au.             |                             |                |                        |                                   | Open site                           | Valid                            |   |                        | 65,102779                                  |
| 26 4 0014     | <u>Contact</u>                                |   | <u>Recorders</u>            | David          | Bell,Mr.Br.            | adley Bliss,Wel                   | lington Valley W:                   | iradjuri Aboriginal C            | orporation <u>Permits</u>                                   | 0                      | 2 C  |
| 30-4-0011     | rundnory koao;                                |   | Асл                         | 55             | 0/4034                 | 0304207                           | open site                           | уапо                             | (Carved or Scarred) :<br>-                                  | Larved Iree            | 00   |
|               | <u>Contact</u>                                |   | <u>Recor</u> ders           | David          | Bell                   |                                   |                                     |                                  | <u>Pe</u> rmits   |                        |  |
| 36-4-0013     | Arthurville;                                  |   | AGD                         | 55             | 660749                 | 6396064                           | Open site                           | Valid                            | Artefact : -  | Open Camp Site         |  |
|               | Contact                                       |   | Recorders                   | Mr.W           | arwick Pear            | rson                              |                                     |                                  | Permits   |                        |  |

Report generated by AHIMS Web Service on 05/03/2018 for Benjamin Anderson for the following area at Datum :GDA, Zone : 55, Eastings : 660300 - 682700, Northings : 6381900 - 6405250 with a Buffer of 0 meters. Additional Info : Archaeological Assessment. Number of Aboriginal sites and Aboriginal objects found is 47

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Page 2 of 4

| NSW                        | Office of<br>Environment<br>& Heritage      | AHIMS Web Services (<br>Extensive search - Site list re | (AWS)<br>eport      |                   |                          |                            |                             |                            |  | Your Ref/PC<br>Client S                               | Number : 1711_05<br>ervice ID : 331634 |
|----------------------------|---|---|---------------------|-------------------|--------------------------|----------------------------|-----------------------------|----------------------------|--|---|--|
| <b>SitelD</b><br>36-4-0014 | <b>SteName</b><br>Baalveck; Micketymulga Hi | lle   | <b>Datum</b><br>AGD | <b>Zone</b><br>55 | <b>Easting</b><br>679219 | <b>Northing</b><br>6400857 | <u>Context</u><br>Open site | <u>Ste Status</u><br>Valid | <b>SteFeatures</b><br>Ceremonial Ring<br>(Stone or Earth) : -,<br>Artefact : - | <b>SteTypes</b><br>Bora/Ceremonial,O<br>pen Camp Site | <b>Reports</b><br>102211               |
|                            | <u>Contact</u>                              |   | Recorders           | Mich              | iael Pearson             |                            |                             |                            | <u>Permits</u>   |   |  |
| 6-4-0003                   | Suntop;                                     |   | AGD                 | 55                | 669019                   | 6397125                    | Open site                   | Valid                      | Grinding Groove : -  | Axe Grinding<br>Groove                                |  |
| C 4 6667                   | Contact                                     |   | Recorders           | Bert              | Button                   |                            | o                           | TT 1' 1                    | Permits  |   | art.                                   |
| 6-4-0007                   | ahims@environment.nsw.                      | contact<br>gov.au.                                      |                     |                   |                          |                            | Open site                   | vand                       |  |   | 65                                     |
| C 4 6675                   | <u>Contact</u>                              |   | Recorders           | Davi              | d Bell, D.H Si           | mmons,Mr.Bra               | diey Bliss, Welli           | ngton Valley Wiradjur      | i Aboriginal C <u>Permits</u>  |   | 4000                                   |
| \$6-4-0075                 | ahims@environment.nsw.                      | contact<br>gov.au.                                      |                     |                   |                          |                            | Open site                   | vand                       |  |   | 1333                                   |
|                            | Contact                                     |   | Recorders           | War               | ren Bluff,Mr.            | Bradley Bliss,V            | Vellington Valle            | y Wiradjuri Aborigina      | I Corporation Permits  |   |  |
| 36-1-0123                  | Walmer;                                     |   | AGD                 | 55                | 661600                   | 6385000                    | Open site                   | Valid                      | Modified Tree<br>(Carved or Scarred) :<br>-                                    | Scarred Tree  | 1333                                   |
|                            | <u>Contact</u>                              |   | Recorders           | War               | ren Bluff                |                            |                             |                            | <u>Permits</u>   |   |  |
| 36-1-0126                  | Curra Creek;                                |   | AGD                 | 55                | 680110                   | 6394170                    | Open site                   | Valid                      | Modified Tree<br>(Carved or Scarred) :<br>-                                    | Scarred Tree  | 1333                                   |
|                            | Contact                                     |   | Recorders           | War               | ren Bluff                |                            |                             |                            | Permits  |   |  |
| 36-4-0016                  | Macquarie Park;                             |   | AGD                 | 55                | 673740                   | 6401063                    | Open site                   | Valid                      | Hearth : - , Artefact : -  | Open Camp Site  | 102211                                 |
|                            | Contact                                     |   | Recorders           | G.W.              | Althofer,Mie             | chael Pearson              |                             |                            | Permits  |   |  |
| 86-4-0017                  | Maryvale Creek;Micketym                     | ulga Hill;  | AGD                 | 55                | 679254                   | 6401770                    | Open site                   | Valid                      | Artefact : -   | Open Camp Site  | 102211                                 |
|                            | Contact                                     |   | Recorders           | Mr.V              | Varwick Pea              | rson                       |                             |                            | Permits  |   |  |
| 36-4-0018                  | Arthurville;Bushrangers H                   | ül;   | AGD                 | 55                | 661765                   | 6398769                    | Open site                   | Valid                      | Grinding Groove : -  | Axe Grinding<br>Groove                                |  |
|                            | <u>Contact</u>                              |   | Recorders           | Mr.V              | Varwick Pear             | rson                       |                             |                            | <u>Permits</u>   |   |  |
| 36-4-0020                  | Maryvale Creek;                             |   | AGD                 | 55                | 678375                   | 6402718                    | Open site                   | Valid                      | Stone Quarry : -,<br>Stone Arrangement :<br>-                                  | Stone Arrangement                                     | 102211                                 |
|                            | Contact                                     |   | Recorders           | G.W.              | Althofer,Mie             | chael Pearson              |                             |                            | Permits  |   |  |
| 36-4-0021                  | Baalveck;                                   |   | AGD                 | 55                | 679151                   | 6399030                    | Open site                   | Valid                      | Aboriginal Ceremony<br>and Dreaming : -,<br>Stone Arrangement :                | Stone Arrangement                                     | 102779                                 |
|                            | Contact                                     |   | Recorders           | GW                | Althofer Mi              | chael Pearson              |                             |                            | Permits  |   |  |
| 36-4-0023                  | Walmer; Wellington;                         |   | AGD                 | 55                | 661300                   | 6384700                    | Open site                   | Valid                      | Modified Tree<br>(Carved or Scarred) :   | Carved Tree   |  |

Report generated by AHIMS Web Service on 05/03/2018 for Benjamin Anderson for the following area at Datum :6DA, Zone : 55, Eastings : 660300 · 682700, Northings : 6381900 · 6405250 with a Buffer of 0 meters. Additional Info : Archaeological Assessment. Number of Aboriginal sites and Aboriginal objects found is 47

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Page 3 of 4



# AHIMS Web Services (AWS)

Extensive search - Site list report

Your Ref/PO Number : 1711\_05 Client Service ID : 331634

| SiteID    | SteName  | Datum     | Zone  | Easting       | Northing       | Context          | Site Status           | SteFeature                                  | es                         | SteTypes    | Reports      |
|-----------|--|-----------|-------|---------------|----------------|------------------|-----------------------|---|----------------------------|-------------|--------------|
|           | <u>Contact</u>   | Recorders | P Gr  | esser         |                |                  |                       |   | Permits                    |             |              |
| 36-4-0024 | Mountain View; Wellington;   | AGD       | 55    | 673400        | 6385300        | Open site        | Valid                 | Modified Tr<br>(Carved or S                 | ree<br>Scarred) :          | Carved Tree | 975          |
|           | Contact  | Recorders | Mich  | iael Pearson  |                |                  |                       |   | Permits                    |             |              |
| 36-4-0161 | Restriction applied. Please contact<br>ahims@environment.nsw.gov.au. |           |       |               |                | Open site        | Valid                 |   |                            |             |              |
|           | Contact  | Recorders | Mr.B  | Iradley Bliss | ,Wellington Va | ley Wiradjuri Ab | ooriginal Corporation |   | Permits                    |             |              |
| 36-4-0162 | Restriction applied. Please contact<br>ahims@environment.nsw.gov.au. |           |       |               |                | Open site        | Valid                 |   |                            |             |              |
| -         | Contact  | Recorders | Mr.B  | bradley Bliss | Wellington Va  | ley Wiradjuri Ab | ooriginal Corporation |   | Permits 1 1                |             |              |
| 36-4-0133 | Restriction applied. Please contact<br>ahims@environment.nsw.gov.au. |           |       |               |                | Open site        | Valid                 |   |                            |             |              |
|           | Contact  | Recorders | Mr.B  | radley Bliss  | Wellington Va  | ley Wiradjuri Ab | ooriginal Corporation |   | Permits                    |             |              |
| 36-4-0079 | Wellington   | AGD       | 55    | 682000        | 6397000        | Open site        | Valid                 | Burial : -                                  |                            | Burial/s    | 2641,102779  |
|           | Contact  | Recorders | Ms.A  | drienne Ho    | we-Piening     |                  |                       |   | Permits 199                |             |              |
| 36-4-0001 | Bell River;Triplet Cave;   | AGD       | 55    | 681966        | 6388772        | Open site        | Valid                 | Burial : -                                  |                            | Burial/s    | 102779       |
|           | <u>Contact</u>   | Recorders | Osbo  | ourne         |                |                  |                       |   | Permits                    |             |              |
| 36-4-0090 | W/STP-ST-1   | AGD       | 55    | 680750        | 6397060        | Open site        | Valid                 | Modified Tr<br>(Carved or S<br>1            | ree<br>Scarred) :          |             | 97979,102779 |
|           | Contact  | Recorders | lim H | Kelton        |                |                  |                       |   | Permits                    |             |              |
| 36-4-0110 | WETL-IF1   | GDA       | 55    | 678987        | 6391870        | Open site        | Valid                 | Artefact : 1                                |                            |             | 101691       |
|           | Contact  | Recorders | Doct  | or.Jodie Ber  | ton            |                  |                       |   | Permits                    |             |              |
| 36-4-0111 | WETL-OS2 with PAD  | GDA       | 55    | 679188        | 6392398        | Open site        | Valid                 | Artefact : 1,<br>Archaeologi<br>Deposit (PA | Potential<br>ical<br>.D):- |             | 101691       |
|           | Contact  | Recorders | Doct  | or.Jodie Ber  | iton           |                  |                       | 2010 - ANG 1000 - ANG                       | Permits                    |             |              |
| 36-4-0112 | WETL-053   | GDA       | 55    | 678876        | 6391510        | Open site        | Valid                 | Artefact : 1,<br>Archaeologi<br>Deposit (PA | Potential<br>ical<br>iD):- |             | 101691       |
|           | Contact  | Recorders | Doct  | or.Jodie Ber  | ton            |                  |                       |   | Permits                    |             |              |
| 36-4-0113 | WETL-OS1 with PAD  | GDA       | 55    | 680208        | 6393131        | Open site        | Valid                 | Artefact : 1,<br>Archaeologi<br>Deposit (PA | Potential<br>ical          |             | 101691       |
|           | Contact  | Recorders | Doct  | or.Jodie Ber  | iton           |                  |                       | Permits                                     |                            |             |              |

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Page 4 of 4