APPENDIX F ABORIGINAL CULTURAL HERITAGE ASSESSMENT REPORT

Report Title	Aboriginal Cultural Heritage Assessment Wellington North Solar Plant - Draft
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Address of Subject Area	No: 6444 Street: Goolma Road Suburb: Bodangora State: NSW Postcode: 2820 Title Reference: **Solar farm plant:** • Lots 75, 76, 77, 78, 79, 80, 81, 82, 83,84, 88 and 119, 120, 121/DP 2987 • Lots 1 and 2 /DP 1104720 • Lot 3/DP 976701 • Lots 1, 2, 3 /DP 808748 • Lot 100 /DP 750760 • Lot 1/DP 664645 • Lot 1/DP 1206579 • Lot 1/DP 664645 **Western Transmission line to TransGrid Substation:** • Lots 69, 70, 71, 72, 73/DP 2987 • Lot 1/DP 807187 • Lot 2/DP 588075 • Lot 1/DP 100778 • Lot 12/DP 572344 • Lot 2/DP 1226751; • Will connect to the national electricity network via the existing TransGrid substation located on Goolma Road within Lot 1/DP1226751 Local Government Area: Dubbo Regional Other:

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Aboriginal Cultural Heritage Assessment

WELLINGTON NORTH SOLAR PLANT

JUNE 2018

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INTRODUCTION

NGH Environmental has been contracted by Wellington North Solar Farm Pty Limited, a subsidiary of AGL Energy Limited, to prepare an Aboriginal Cultural Heritage Assessment Report (ACHAR) for the proposed Wellington North Solar Plant, located approximately 7 km north east of the town of Wellington in NSW.

The solar plant proposal would involve ground disturbance that has the potential to impact on Aboriginal heritage sites and objects which are protected under the NSW *National Parks and Wildlife Act 1974* (NPW Act). The purpose of the Aboriginal Cultural Heritage Assessment (ACHA) is therefore to investigate the presence of any Aboriginal sites and to assess the impacts and management strategies that may mitigate any impact.

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

> Including an assessment of the likely Aboriginal and historic heritage (cultural and archaeological) impacts of the development, including adequate consultation with the local Aboriginal community (SEARs for Wellington North Solar Plant 18/12/17).

This ACHA Report was prepared in line with the following:

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

The proposal site is within the Dubbo Regional Council Local Government Area.

PROJECT PROPOSAL

The Wellington North Solar Plant proposal would comprise of the installation of a solar plant with an upper capacity up to 300 MW (AC). The power generated will be fed into the National Electricity Market (NEM) at the transmission level from existing Wellington substation located approximately 3 km from the proposal site on Goolma Road. Wellington North Solar Farm Pty Limited proposes to develop approximately 837 ha, which includes up to 31 ha for offsite transmission line options.

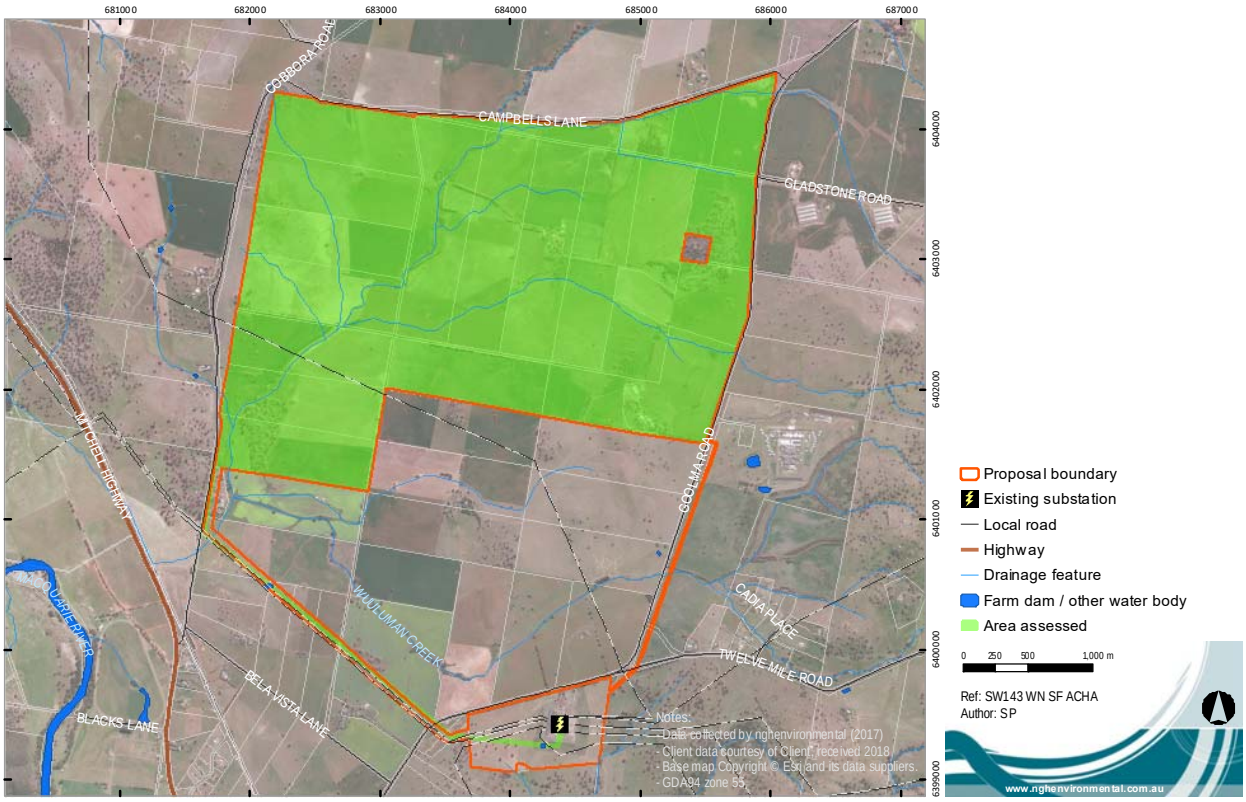
The key infrastructure for the proposal would include:

- PV modules mounted on a horizontal tracking structure;
- Power conversion stations (PCS) to allow conversion of DC module output to AC electricity;
- An onsite substation containing transformers and associated switchgear;
- Underground electrical conduits and cabling to connect the arrays on the array site;
- Internal access tracks and upgrades to existing access roads, where required;
- Internal access tracks to allow for site maintenance;
- Area for future battery storage facility;
- Site office and maintenance building with associated car park;

- Perimeter security fencing and CCTV;
- Native vegetation planting to provide visual screening from specific viewpoints, as required; and
- Approximately 7 km of high voltage powerline (combination of overhead and underground 132 kV or 330 kV being considered).

During the construction period some additional temporary facilities would also be located within the proposal site.

The proposed eastern transmission line was unable to be surveyed and assessed in this report due to access issues. Following the completion of the field survey the proposed western transmission route has had some minor adjustments to the alignment, particularly the section from Goolma Road to the existing substation, which were not assessed during the field survey. The areas assessed in this ACHA report are shown in the figure below.



ABORIGINAL CONSULTATION

The consultation with Aboriginal stakeholders was undertaken in accordance with clause *80C of the National Parks and Wildlife Amendment (Aboriginal Objects and Aboriginal Places) Regulation 2010* following the consultation steps outlined in the (ACHCRP) guide provided by OEH.

The full list of consultation steps, including those groups and individuals that were contacted and a consultation log is provided in Appendix A.

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

- Wellington Local Aboriginal Land Council;
- Wellington Valley Wiradjuri Aboriginal Corporation;

- Gallangabang Aboriginal Corporation; and
- Binjang Wellington Wiradjuri Heritage Survey.

No other party registered their interest, including the entities and individuals recommended by OEH.

The fieldwork was organised, and all registered parties were asked to participate in the fieldwork. The fieldwork was carried out in February 2018.

A copy of the draft report was provided to all the registered parties for comment.

ARCHAEOLOGICAL CONTEXT

The assessment included a review of relevant information relating to the existing landscape of the proposal site. Included in this was a search of the OEH AHIMS database. No Aboriginal sites had previously been recorded within the proposal site. A single isolated find site, Wellington Solar Farm IF 1 (#36-4-0142) is located adjacent to the south-western proposal boundary.

Assessment of Aboriginal site models for the region suggests that there appears to be a pattern of site location that relates to the presence of potential resources for Aboriginal use. The most archaeologically sensitive areas are noted to occur within close proximity of water. Nonetheless, given that Aboriginal people have lived in the region for tens of thousands of years, there is some potential for archaeological evidence to occur across the proposal site. This would most likely be in the form of stone artefacts and scarred trees.

SURVEY RESULTS

The survey strategy was to cover as much of the ground surface as possible within the proposal site. Although the actual ground impact from the construction method for the proposed solar plant was likely to be low, the placement of solar arrays across the landscape has the potential to cover any cultural heritage sites. Survey transects were undertaken on foot across the proposal site to achieve maximum coverage. All mature native trees within the proposal site were also inspected for evidence of Aboriginal scarring.

Visibility within the proposal site was variable however as a whole the proposal site generally had good visibility averaging 35% overall. The effective visibility in the paddocks ranged from 90% in exposures to less than 5% in areas of dense grass. Between the survey participants, over the course of the field survey, approximately 800 km of transects were walked across the proposal site. Allowing for an effective view width of 5 m for each person and given the variability in the ground visibility across the proposal site, overall the survey effectively examined 13.1% of the proposal site. It is considered that the survey of Wellington North Solar Plant proposal site had sufficient and effective survey coverage.

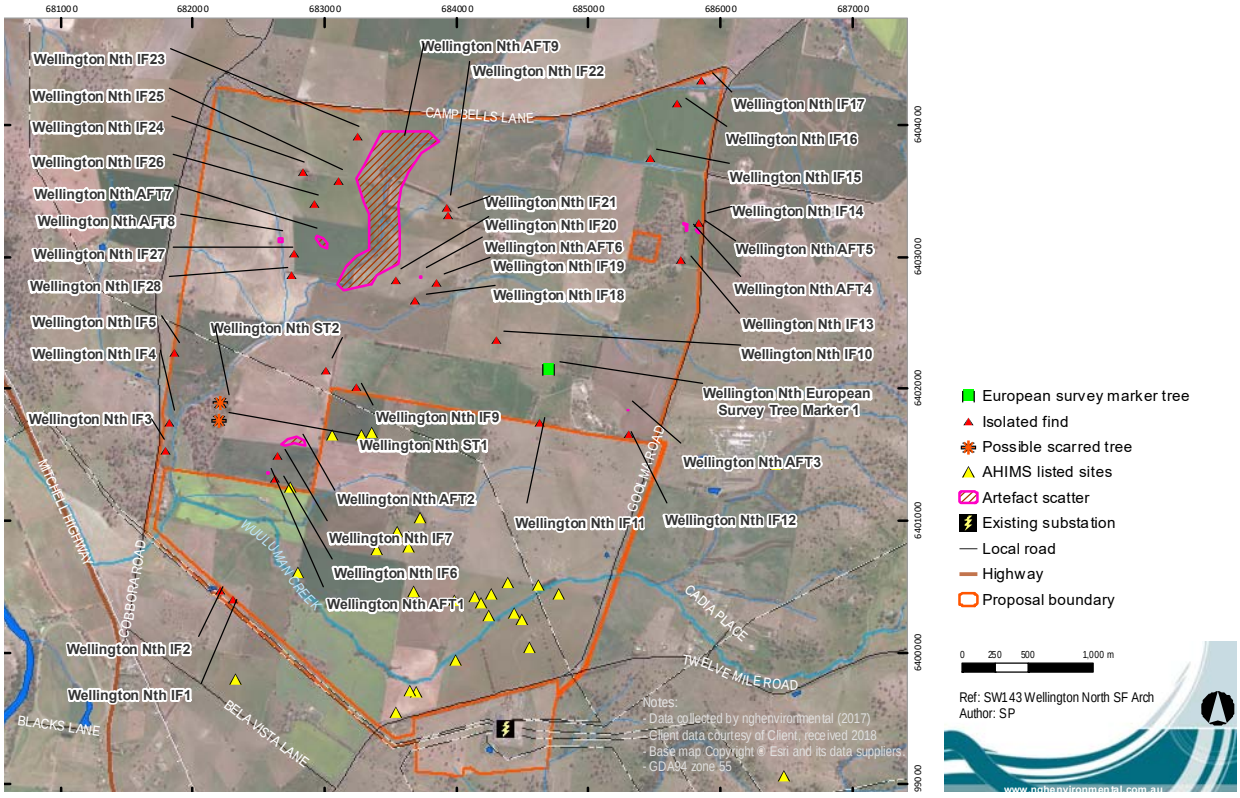
Despite the variable visibility encountered during the survey, there were 99 stone artefacts found across the proposal site that were recorded as 37 site occurrences (as shown in the map below). These archaeological features have been recorded as nine artefact scatters and 28 isolated finds. Two possible scarred trees and a European survey marker tree were also recorded.

In terms of the current proposal therefore, extrapolating from the results of this survey, it is possible that additional stone artefacts could occur within the proposed development footprint. Based on the land use history, an appraisal of the landscape, soil, level of disturbance and the results from the field survey it was concluded that there was negligible potential for the presence of intact subsurface deposits with high densities of objects or cultural material within the proposal site.

The results of previous archaeological surveys in the Wellington region show that there are sites and artefacts present across the landscape. The predictions based on the modelling for the proposal site were that stone

artefacts and scarred trees were the most likely manifestation of Aboriginal occupation of the area. It was noted that while Aboriginal sites may be expected throughout all landscapes the most archaeologically sensitive areas occur in proximity to water. The survey results have confirmed this prediction with stone artefacts recorded as isolated finds and artefact scatters across the proposal site, even in areas highly disturbed by farming activities. The sites were identified across a range of landforms including slopes, flats, spurs, low hill crests and along creeks/drainage lines and their associated flats. Over half of the artefacts recorded during the survey were located along creeks/drainage lines and their associated flats.

The cultural significance of the sites recorded during this assessment is only determined by the local Aboriginal community.



POTENTIAL IMPACTS

The proposal involves the construction of a solar plant and includes connection to the nearby substation with an above ground powerline that will extend to the existing Wellington substation on Lot 1/DP1226751. The development will result in disturbance of approximately 806 ha of the 970 ha property, plus 31 ha for the 'worst case' (largest impact area) transmission line option; resulting in a total disturbance of up to 837 ha. The impact is likely to be most extensive where earthworks occur and would involve the removal, breakage or displacement of artefacts. This is considered a direct impact on the Aboriginal objects by the development in its present form.

The impact to the scientific values/ significance if the nine artefact scatters (Wellington Nth AFT1- Wellington Nth AFT9) and 25 of the 28 recorded isolated finds (Wellington Nth IF1 to Wellington Nth IF10, Wellington Nth IF12 Wellington Nth IF14 to Wellington Nth IF16, Wellington Nth IF18 to Wellington Nth IF28) were to be impacted by the current proposal is considered low. It should be noted that the site Wellington Nth AFT9 will only be partially impacted. The two possible scarred tree sites will not be impacted by the proposal as per the proposed development footprint.

The stone artefacts have little research value apart from what has already been gained from the information obtained during the present assessment. This information relates more to the presence of the artefacts and in the development of Aboriginal site modelling, which has largely now been realised by the recording. The impact to the edge-ground axes (Wellington Nth AFT 2, Wellington Nth AFT 5 and Wellington Nth AFT 9) are considered to have low to moderate loss of scientific value.

The Wellington North Solar Plant proposal is classified as State Significant Development under the EP&A Act which have a different assessment regime. As part of this process, Section 90 harm provisions under the NPW Act are not required, that is, an AHIP is not required to impact Aboriginal objects as the Department of Planning and Environment provides development approval.

The table below details the impacts to the nine artefact scatters, 28 isolated finds and two possible scarred trees within the Wellington North Solar Plant proposal boundary. Of the 37 sites recorded with stone artefacts three isolated find sites (Wellington Nth IF11, Wellington Nth IF13 and Wellington Nth IF17) and a portion of the artefact scatter Wellington Nth AFT9 will be not impacted by the proposed development footprint. The two possible scarred tree sites will also not be impacted by the proposed development footprint.

Site name	Scientific significance	Type of harm	Degree of harm	Consequence of harm	Recommendation
Wellington Nth AFT1	Low	Direct	Total	Total loss of value	Salvage objects prior to development of proposal site.
Wellington Nth AFT2	Low to moderate	Direct	Total	Total loss of value	Salvage objects prior to development of proposal site.
Wellington Nth AFT3	Low	Direct	Total	Total loss of value	Salvage objects prior to development of proposal site.
Wellington Nth AFT4	Low	Direct	Total	Total loss of value	Salvage objects prior to development of proposal site.
Wellington Nth AFT5	Low to moderate	Direct	Total	Total loss of value	Salvage objects prior to development of proposal site.
Wellington Nth AFT6	Low	Direct	Total	Total loss of value	Salvage objects prior to development of proposal site.
Wellington Nth AFT7	Low	Direct	Total	Total loss of value	Salvage objects prior to development of proposal site.
Wellington Nth AFT8	Low	Direct	Total	Total loss of value	Salvage objects prior to development of proposal site.
Wellington Nth AFT9	Moderate	Direct	Partial	Partial loss of value	Salvage objects within development footprint prior to development of proposal site.
Wellington Nth IF1	Low	Direct	Total	Total loss of value	Salvage object prior to development of proposal site.
Wellington Nth IF2	Low	Direct	Total	Total loss of value	Salvage object prior to development of proposal site.
Wellington Nth IF3	Low	Direct	Total	Total loss of value	Salvage object prior to development of proposal site.
Wellington Nth IF4	Low	Direct	Total	Total loss of value	Salvage object prior to development of proposal site.

Site name	Scientific significance	Type of harm	Degree of harm	Consequence of harm	Recommendation
Wellington Nth IF5	Low	Direct	Total	Total loss of value	Salvage object prior to development of proposal site.
Wellington Nth IF6	Low	Direct	Total	Total loss of value	Salvage object prior to development of proposal site.
Wellington Nth IF7	Low	Direct	Total	Total loss of value	Salvage object prior to development of proposal site.
Wellington Nth IF8	Low	Direct	Total	Total loss of value	Salvage object prior to development of proposal site.
Wellington Nth IF9	Low	Direct	Total	Total loss of value	Salvage object prior to development of proposal site.
Wellington Nth IF10	Low	Direct	Total	Total loss of value	Salvage object prior to development of proposal site.
Wellington Nth IF11	Low	Will not be harmed - outside development footprint	None - outside development footprint	No loss of value - outside development footprint	Outside of development footprint. Ensure minimum 5m buffer to avoid inadvertent disturbance or impacts to site.
Wellington Nth IF12	Low	Direct	Total	Total loss of value	Salvage object prior to development of proposal site.
Wellington Nth IF13	Low	Will not be harmed - outside development footprint	None - outside development footprint	No loss of value - outside development footprint	Outside of development footprint. Ensure minimum 5m buffer to avoid inadvertent disturbance or impacts to site.
Wellington Nth IF14	Low	Direct	Total	Total loss of value	Salvage object prior to development of proposal site.
Wellington Nth IF15	Low	Direct	Total	Total loss of value	Salvage object prior to development of proposal site.
Wellington Nth IF16	Low	Direct	Total	Total loss of value	Salvage object prior to development of proposal site.
Wellington Nth IF17	Low to moderate	Will not be harmed - outside development footprint	None- outside development footprint	No loss of value- outside development footprint	Outside of development footprint. Ensure minimum 5m buffer to avoid inadvertent disturbance or impacts to site.
Wellington Nth IF18	Low	Direct	Total	Total loss of value	Salvage object prior to development of proposal site.
Wellington Nth IF19	Low	Direct	Total	Total loss of value	Salvage object prior to development of proposal site.
Wellington Nth IF20	Low	Direct	Total	Total loss of value	Salvage object prior to development of proposal site.
Wellington Nth IF21	Low	Direct	Total	Total loss of value	Salvage object prior to development of proposal site.
Wellington Nth IF22	Low	Direct	Total	Total loss of value	Salvage object prior to development of proposal site.

Site name	Scientific significance	Type of harm	Degree of harm	Consequence of harm	Recommendation
Wellington Nth IF23	Low	Direct	Total	Total loss of value	Salvage object prior to development of proposal site.
Wellington Nth IF24	Low	Direct	Total	Total loss of value	Salvage object prior to development of proposal site.
Wellington Nth IF25	Low	Direct	Total	Total loss of value	Salvage object prior to development of proposal site.
Wellington Nth IF26	Low	Direct	Total	Total loss of value	Salvage object prior to development of proposal site.
Wellington Nth IF27	Low	Direct	Total	Total loss of value	Salvage object prior to development of proposal site.
Wellington Nth IF28	Low	Direct	Total	Total loss of value	Salvage object prior to development of proposal site.
Wellington Nth ST1	Low	Will not be harmed - outside development footprint	None - outside development footprint	No loss of value - outside development footprint	Outside of development footprint. Ensure avoided with a minimum 10 m buffer placed around site.
Wellington Nth ST2	Low	Will not be harmed - outside development footprint	None- outside development footprint	No loss of value- outside development footprint	Outside of development footprint. Ensure avoided with a minimum 10 m a buffer placed around site.

RECOMMENDATIONS

It is recommended that:

1. The development must avoid the two possible Scarred Tree (Wellington Nth ST1 and Wellington Nth ST2) as per the proposed development footprint in this report. A minimum 10m buffer around the trees should be in place to protect the tree canopy and root system.
2. If complete avoidance of the nine artefacts scatters and 28 isolated find sites recorded within the proposal site is not possible, the artefacts within the development footprint must be salvaged prior to the proposed work commencing and moved to a safe area within the property that will not be subject to any ground disturbance.
3. The collection and relocation of the artefacts should be undertaken by an archaeologist with representatives of the registered Aboriginal parties and be consistent with Requirement 26 of the *Code of practice for Archaeological Investigation of Aboriginal Objects in New South Wales.* A new site card/s will need to be completed once the artefacts are moved to record their new location on the AHIMS database. The Aboriginal community requests that a Cultural Smoking Ceremony take place to cleanse any artefacts salvaged and the reburial location.
4. A minimum 5m buffer should be observed around all artefact scatters and isolated find sites, including those outside the development footprint.
5. Wellington North Solar Farm Pty Limited should prepare a Cultural Heritage Management Plan (CHMP) to address the potential for finding additional Aboriginal artefacts during the construction of the Solar Plant and management of known sites and artefacts. The Plan should include the unexpected finds procedure to deal with construction activity. Preparation of the CHMP should be undertaken in consultation with the registered Aboriginal parties.

6. In the unlikely event that human remains are discovered during the construction, all work must cease in the immediate vicinity. OEH, the local police and the registered Aboriginal parties should be notified. Further assessment would be undertaken to determine if the remains were Aboriginal or non-Aboriginal.

7. Further archaeological assessment would be required if the proposal activity extends beyond the area of the current investigation as detailed in this report, including the entire proposed eastern transmission route and any portions of the western transmission route outside the surveyed alignment. This would include consultation with the registered Aboriginal parties and may include further field survey.

8. The one possible European survey marker tree identified in the proposal site should be avoided by the proposed works. If the development footprint is unable to be redesigned to be avoid the possible European survey marker tree further recording is recommended to establish if it has any historical significance.

1 INTRODUCTION

Wellington North Solar Farm Pty Limited (the proponent), a subsidiary of AGL Energy Limited proposes the development of a commercial scale solar plant approximately 7 km north east of the town of Wellington, NSW (Figure 1 and 2). The 970 hectare site will be identified as the Wellington North Solar Plant (Figure 3). The proposed Wellington North Solar Plant would generate up to 300 Mega Watt (AC). NGH Environmental has been contracted to prepare an Aboriginal Cultural Heritage Assessment (ACHA) to investigate and examine the presence, extent and nature of any Aboriginal heritage for the proposal site as part of an Environmental Impact Assessment (EIS).

The solar plant proposal would involve ground disturbance that has the potential to impact on Aboriginal heritage sites and objects which are protected under the NSW *National Parks and Wildlife Act 1974* (NPW Act). The purpose of the Aboriginal Cultural Heritage Assessment (ACHA) is therefore to investigate the presence of any Aboriginal sites and to assess the impacts and management strategies that may mitigate any impact.

1.1 DEVELOPMENT CONTEXT

The development of renewable energy projects is considered to be one of the most effective ways to achieve the commitments of Australia and a large number of other nations under the Paris Agreement to reduce greenhouse gas emissions. The Wellington North Solar Plant would provide the following benefits:

- Reduction in greenhouse gas emissions from energy generation (when compared with fossil fuel generating sources).
- Provision of embedded electricity generation to supply into the Australian grid close to a main consumption centre.
- Provision of social and economic benefits through the provision of direct employment opportunities.

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

As part of the development impact assessment process, the proposed development application will be assessed under Part 4 of the *Environmental Planning and Assessment Act 1979* (EP&A Act). Section 4.36 of the EP&A Act provides that a development will be State Significant Development (SSD) if it is declared to be SSD by a State Environmental Planning Policy (SEPP). The *State Environmental Planning Policy (State and Regional Development) 2011* (SRD SEPP) declares the Wellington North Solar Plant to be SSD. SSDs are major projects which require approval from the Minister for Planning and Environment. The EIS has been prepared in accordance with the requirements of the Secretary of the Department of Planning and Environment (DPE).

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

> Including an assessment of the likely Aboriginal and historic heritage (cultural and archaeological) impacts of the development, including adequate consultation with the local Aboriginal community (SEARS for Wellington North Solar Plant 18/12/17).

The assessment area is comprised of Lots 69, 70, 71,72, 73, 75, 76. 77, 78, 79, 80, 81, 82, 83,84, 88, and 119, 120, 121/DP 2987, Lots 1 and 2 /DP 1104720, Lot 3/DP 976701, Lots 1-3 /DP 808748, Lot 100 /DP 750760, Lot 1/DP 664645, Lot 1/ DP 1206579, Lot 1 DP 664645, Lot 1 DP 807187, Lot 2 DP 588075, Lot 1 DP 100778, Lot 12 DP 572344 and Lot 2 DP 1226751 and will connect to the national electricity network via the existing TransGrid substation located on Goolma Road within Lot 1/DP1226751 (see Figure 4). The proposed eastern transmission line within Lots 14 and 15/DP 1018104, Lots 1 and 2/DP 1141897, Lot 1/DP 1069446 and Lot 32/DP 622471 was unable to be surveyed and assessed in this report due to access issues.

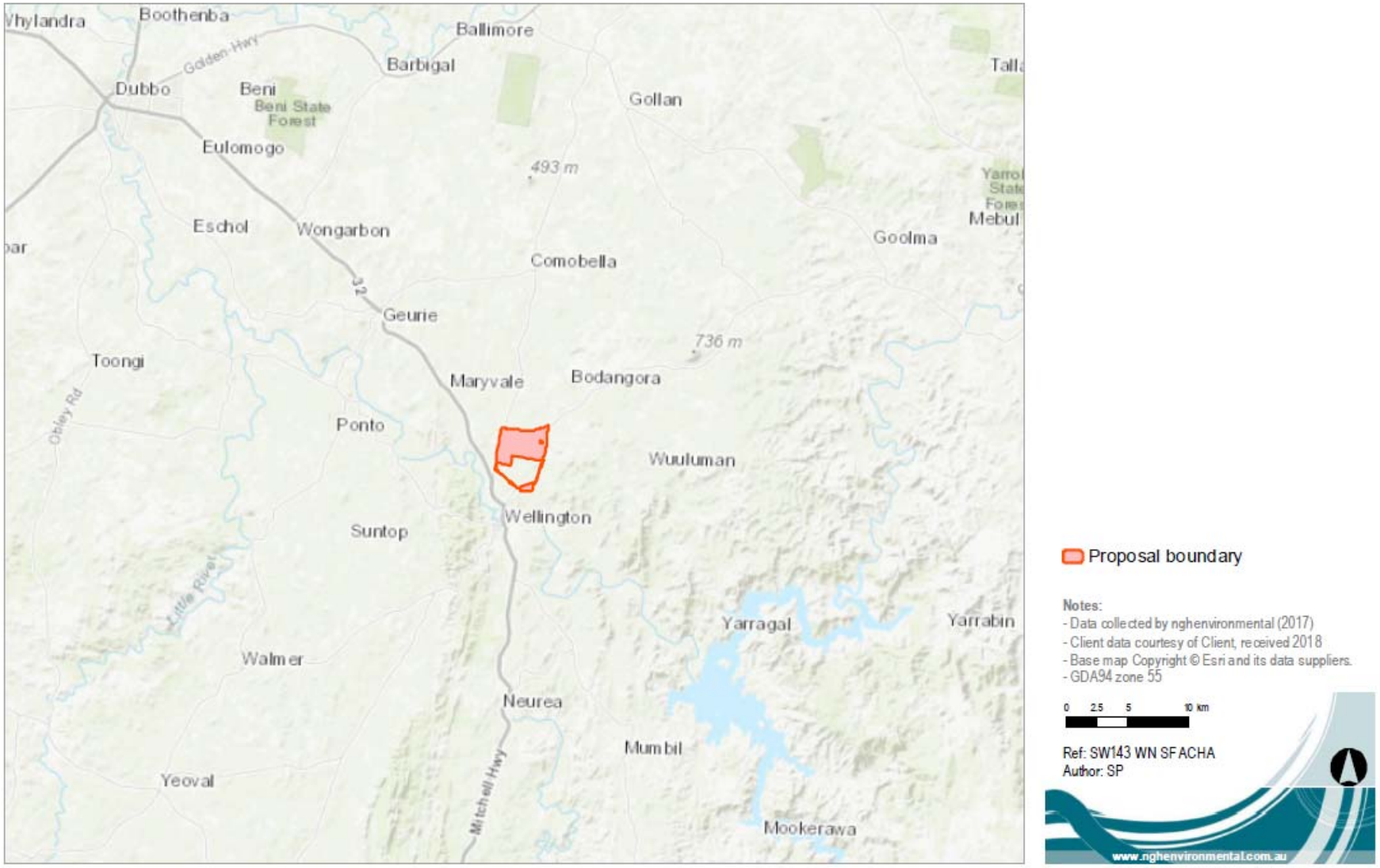


Figure 1. General project location of the proposed Wellington North Solar Plant

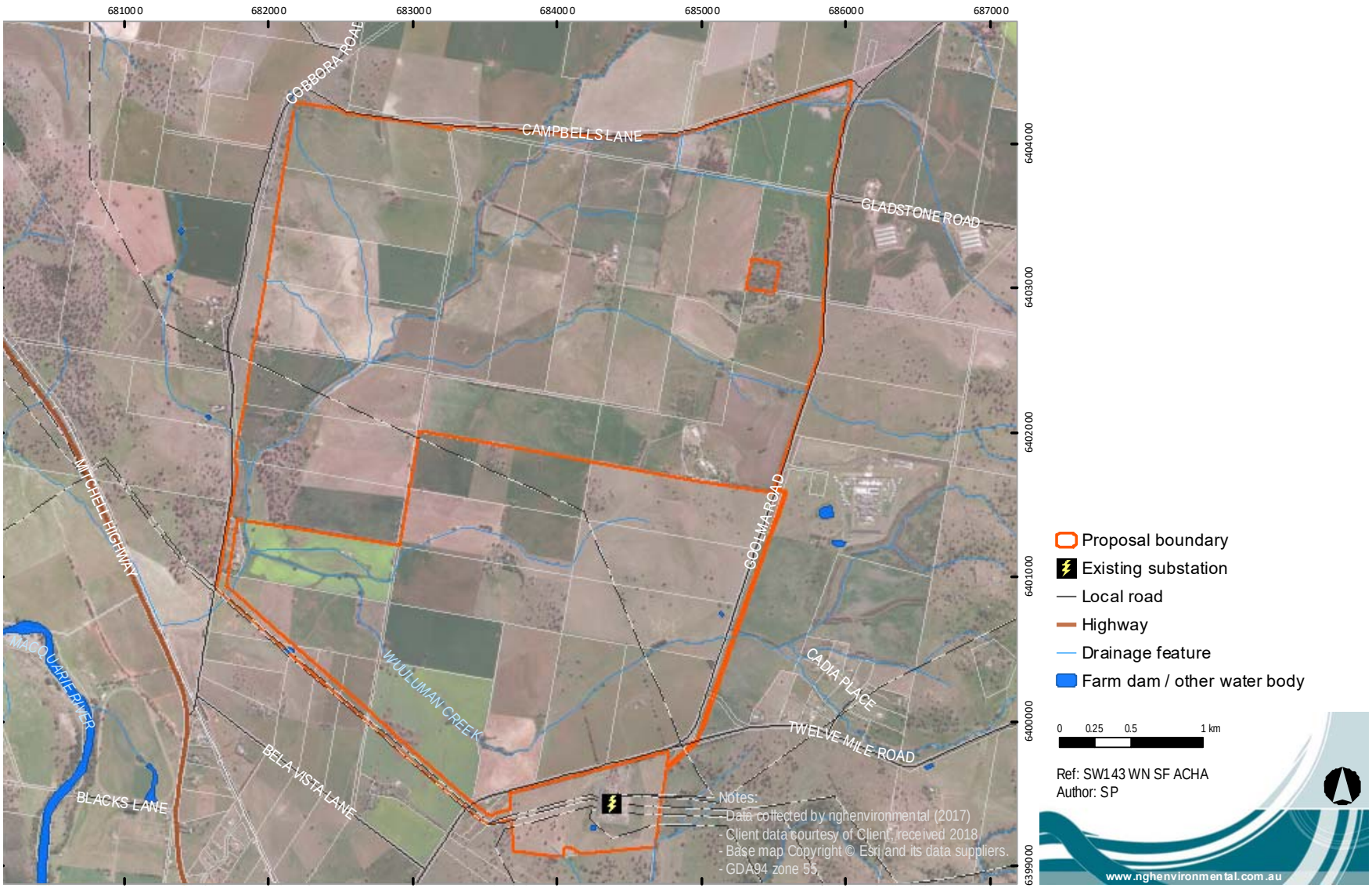


Figure 2. Project area of the proposed Wellington North Solar Plant

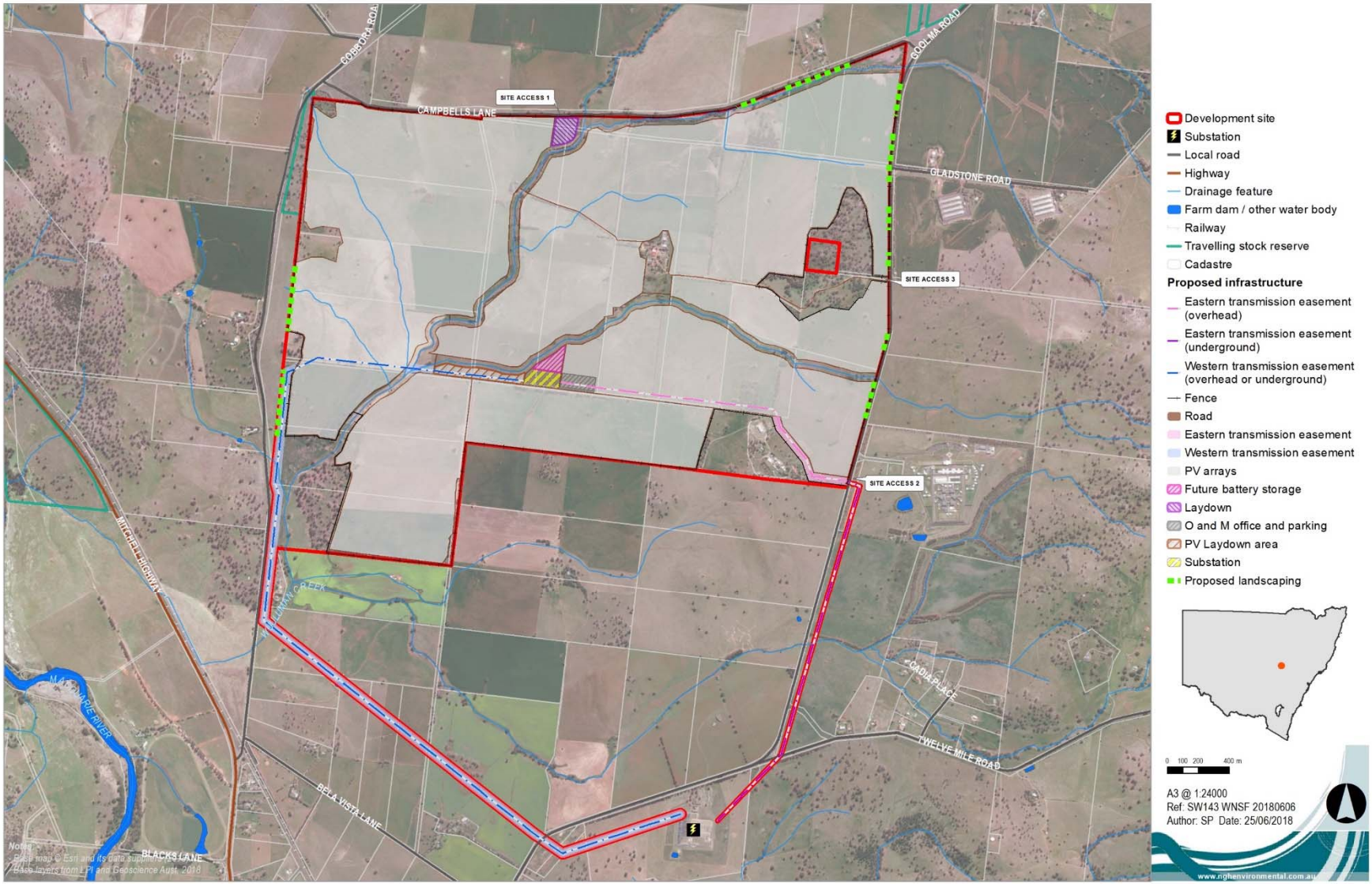


Figure 3. Proposal site with development design.

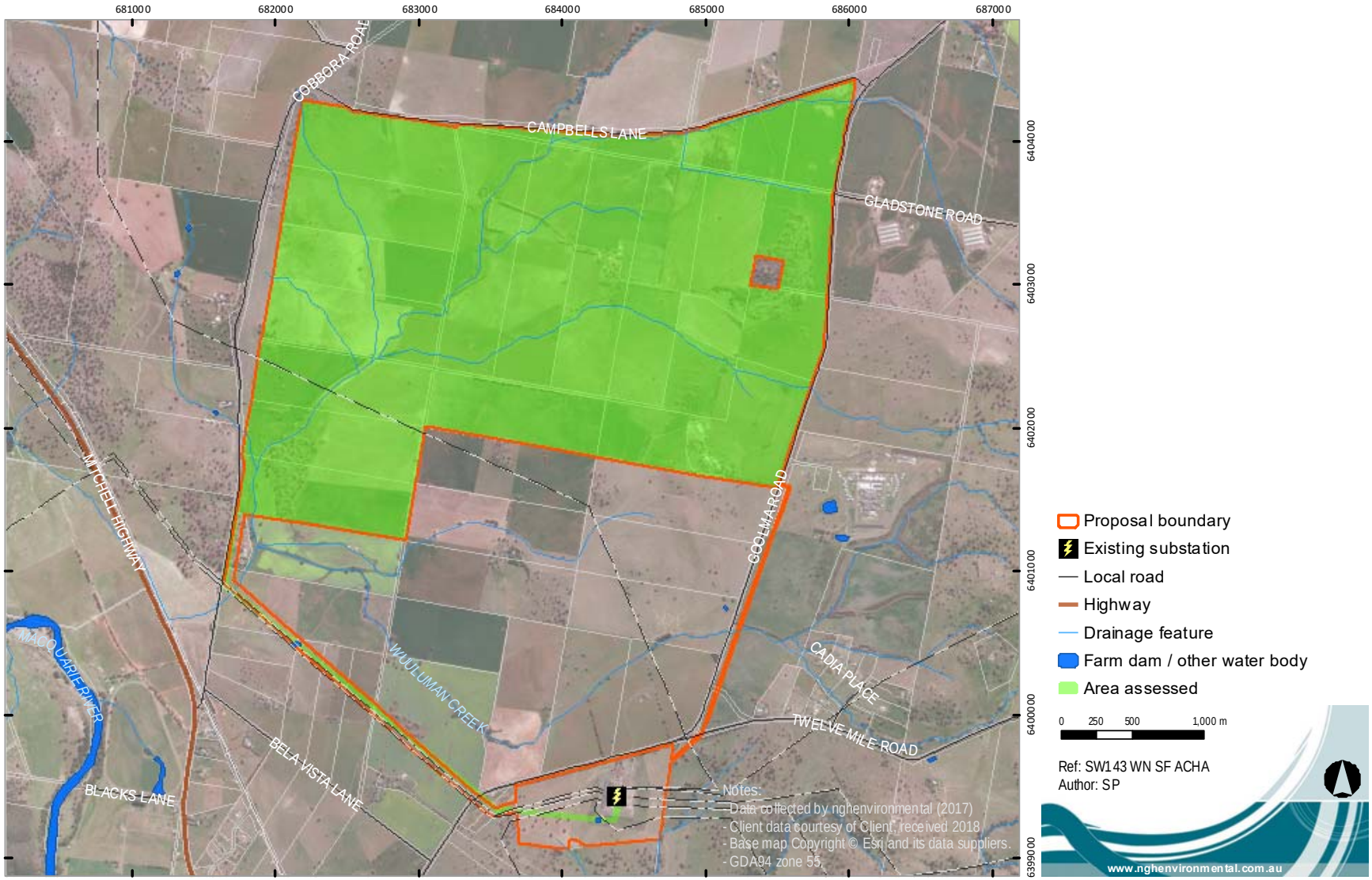


Figure 4. Area assessed within report.

Following the completion of the field survey the proposed western transmission route has had some minor adjustments to the alignment, particularly the section from Goolma Road to the existing substation, which were not assessed during the field survey. The areas along the western transmission line that now lie outside the surveyed corridor are therefore not assessed in this report.

1.2 PROJECT PROPOSAL

The Wellington North Solar Plant proposal is located approximately 7km to the north-east of Wellington, NSW (see Figure 1). The assessment area is comprised of Lots 69, 70, 71,72, 73, 75, 76. 77, 78, 79, 80, 81, 82, 83,84, 88, and 119, 120, 121/DP 2987, Lots 1 and 2 /DP 1104720, Lot 3/DP 976701, Lots 1-3 /DP 808748, Lot 100 /DP 750760, Lot 1/DP 664645, Lot 1/ DP 1206579, Lot 1 DP 664645, Lot 1 DP 807187, Lot 2 DP 588075, Lot 1 DP 100778, Lot 12 DP 572344 and Lot 2 DP 1226751 and will connect to the national electricity network via the existing TransGrid substation located on Goolma Road within Lot 1/DP1226751 (see Figure 4).

The proposed eastern transmission line within Lots 14 and 15/DP 1018104, Lots 1 and 2/DP 1141897, Lot 1/DP 1069446 and Lot 32/DP 622471 was unable to be surveyed and assessed in this report due to access issues. Following the completion of the field survey the proposed western transmission route has had some minor adjustments to the alignment, particularly the section from Goolma Road east to the existing substation. Further archaeological assessment would be required if the proponent wishes to use a transmission route alignment that extends beyond the area of the current investigation (as shown in Figure 4), including the entire proposed eastern transmission route and any portions of the western transmission route outside the surveyed alignment as detailed in this report.

The site is bounded by Campbells Lane to the north, Goolma Road to the east, private land and Cobbora Road to the west and private agricultural land to the south. Another solar farm, Wellington Solar Farm owned by First Solar, is proposed on private property immediately south of the site.

The proposal site would have three vehicular access points. The primary access point during construction for light and heavy vehicles would be off Campbells Lane, along the northern boundary of the site. Campbells Lane would be accessed via Cobbora Road and the Mitchell Highway. Two existing driveways would also be used as access points (one currently leads to the existing residence and the other to the SCS facility). These access points would be used mostly by light vehicles.

The Wellington North Solar Plant proposal involves the construction, operation and decommissioning of a ground-mounted photovoltaic solar array which will generate up to 300 MW (AC) into the national electricity grid. The proposal site is approximately 970 hectares in size and consists of several large paddocks primarily used for grazing and cropping.

One 132kV or 330kV transmission line would be constructed to connect the solar plant to the existing Wellington substation located approximately 3 km south of the proposal site. There are currently two transmission line options under consideration however only the western option (which may be either overhead or underground) was able to be surveyed and assessed in this report due to access restrictions along at the eastern transmission line option (which would be underground only, if selected).

It is anticipated that the proposed solar plant development would include the following elements:

- Approximately 1.2 million PV modules, spaced 4-8m and mounted on east-west horizontal tracking systems or north-orientated fixed-tilt structures (both fixed and tracking options are considered viable for the Proposal).
- Up to approximately 155 PV inverter stations to allow conversion of DC module output to AC electricity and transformation to medium voltage for site reticulation (typically 22kV or 33kV).

- Underground electrical conduits and cabling to connect the solar panels, combiner boxes and inverters.
- An onsite substation containing up to two transformers and associated switchgear.
- Up to approximately 7km of 132kV or 330kV, overhead or underground transmission line to the existing TransGrid 330kV substation (either an east and or west transmission line).
- Additional electrical transformation equipment to be positioned in close proximity to the existing TransGrid substation, if the 132kV transmission line option is progressed.
- Site access off Campbells Lane, with additional access for mostly light vehicles off Goolma Road.
- Internal access tracks and upgrades to existing access roads, where required.
- Site office and maintenance building with associated car park.
- Space for future energy storage facility. Energy storage is not currently proposed and therefore is not part of this assessment.
- Perimeter security fencing and CCTV.
- Vegetation planting to provide visual screening for specific viewers, as required.

The construction phase of the proposal would take approximately 18 – 24 months in total with a shorter peak construction period of approximately 9 months, during which time the main construction works would take place.

The Wellington North Solar Plant would be expected to operate for approximately 30 years. After this initial operating period, the solar plant would either be decommissioned, removing all above ground infrastructure and returning the site to its existing land capability, or repowered with new PV equipment to continue operations as a solar plant.

1.3 PROJECT PERSONNEL

The assessment was undertaken by archaeologists Kirsten Bradley and Emily Dillon of NGH Environmental, including research, Aboriginal community consultation, field survey and report preparation. Matthew Barber of NGH Environmental also reviewed the report. James Graham-Higgs, a third year University of New England student studying a Bachelor of Arts (majoring in Archaeology) also assisted with the field survey.

Consultation with the Aboriginal community was undertaken following the process outlined in OEH's *Aboriginal cultural heritage consultation requirements for proponents 2010.* Four Aboriginal groups registered their interest in the proposal.

These groups were:

- Wellington Local Aboriginal Land Council;
- Wellington Valley Wiradjuri Aboriginal Corporation;
- Gallangabang Aboriginal Corporation;
- Binjang Wellington Wiradjuri Heritage Survey; and

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

1.4 REPORT FORMAT

For the purposes of this assessment of the Wellington North Solar Plant, we have prepared the report in line with the following:

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

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

The objectives of the assessment were to:

- Conduct Aboriginal consultation as specified in clause 80C of the *National Parks and Wildlife Regulation 2009*, using the consultation process outlined in the ACHCRP*;*
- Undertake an assessment of the archaeological and cultural values of the study area and any Aboriginal sites therein;
- Assess the cultural and scientific significance of any archaeological material:
- Assess the impacts of the development proposal on cultural sites, and
- Provide management recommendations for any objects found.

2 ABORIGINAL CONSULTATION PROCESS

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

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

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

Stage 1. Letters outlining the development proposal and the need to carry out an ACHA were sent to the Wellington LALC and various statutory authorities including OEH, as identified under the ACHCRP. An advertisement was placed in the local newspaper, Dubbo Daily Liberal on the 27th of October 2017 seeking registrations of interest from Aboriginal people and organisations. A further series of letters was sent to other organisations identified by OEH in correspondence to NGH Environmental. In each instance, the closing date for submission was 14 days from receipt of the letter.

As a result of this process, four groups contacted the consultant to register their interest in the proposal. The groups who registered interest were Wellington Local Aboriginal Land Council, Wellington Valley Wiradjuri Aboriginal Corporation, Gallangabang Aboriginal Corporation and Binjang Wellington Wiradjuri Heritage Survey.

No other party registered their interest, including the entities and individuals recommended by OEH.

Stage 2. On the 8th of December 2017, an Assessment Methodology document for the Wellington North Solar Plant was sent to all registered parties. This document provided details of the background to the proposal, a summary of previous archaeological surveys and the proposed heritage assessment methodology for the proposal. The document invited comments regarding the proposed methodology and sought any information regarding known Aboriginal cultural significance values associated with the subject area and/or any Aboriginal objects contained therein. A minimum of 28 days was allowed for a response to the document.

Bradley Bliss responded for the Wellington Valley Wiradjuri Aboriginal Corporation and the Gallangabang Aboriginal Corporation. The main points raised in the comments received from the Bradley Bliss on the methodology were in relation to:

- Survey spacing; and
- Recording of sites and information provided by RAPs.

These comments were addressed by NGH in a reply letter sent to the Wellington Valley Wiradjuri Aboriginal Corporation on the 6th of February 2018. No further correspondence was received regarding the letter from NGH Environmental that addressed the comments on the methodology.

No other comments were provided from other registered parties.

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

The fieldwork was organised and all of the registered parties were asked to participate in fieldwork. A single representative from each of the four RAPs participated in the fieldwork. The fieldwork was carried out over 8 days in late February 2018.

The Aboriginal community representatives who participated in the field survey were:

- Jamie Gray - Binjang Wellington Wiradjuri Heritage Survey;
- Peter Packham - Wellington LALC;
- Tjanara Talbot, - a volunteer trainee heritage officer with the Wellington LALC
- Bradley Bliss - Wellington Valley Wiradjuri Aboriginal Corporation; and
- Brendan Doherty - Gallangabang Aboriginal Corporation.

During the fieldwork cultural information was provided to the archaeologists about the area from one of the RAPs. This information has been requested to be treated as confidential and is not included in this report. The information relates the project area to the larger Aboriginal cultural landscape and surrounding sites. The cultural information may be relevant to the individuals that hold the appropriate knowledge in determining the cultural significance of the sites. The cultural significance of sites can only be determined by the local Aboriginal community.

Stage 4. In May 2018 a draft version of this *Aboriginal Cultural Heritage Assessment Report* for the proposal (this document) was forwarded to each registered Aboriginal party inviting comment on the results, the significance assessment and the recommendations. A minimum of 28 days was allowed for responses to the document.

2.1 ABORIGINAL COMMUNITY FEEDBACK

Community consultation occurred throughout the project. The draft report was provided to each of the Registered Aboriginal Parties (RAPs) and feedback was sought on the recommendations, the assessment and any other issues that may have been important.

On the 23rd of May 2018 Bradley Bliss, representing the Wellington Valley Wiradjuri Aboriginal Corporation, informed NGH via email that four additional scarred tree sites had recently been recorded in the travelling stock route land adjacent to the north-western corner of the proposal site. The sites are now recorded on AHIMS as #36-1-0742/Cobbora Road TSR Scar Tree, #36-1-0743/Cobbora Road TSR Scar Tree 1, #36-1-0744/Cobbora Road TSR Scar Tree 2 and #36-1-0745/Cobbora Road TSR Scar Tree 3. Two of the sites (#36-1-0742 and #36-1-0744) are located in close proximity to the proposal site and the management of these two sites will now need to be considered in the Cultural Heritage Management Plan for the Wellington North Solar Plant. The proponent has since been informed by NGH about the proximity of these two recently recorded heritage sites to the proposal site. The proponent has been notified that they will need to ensure these sites are not impacted or harmed during development, particularly during fencing, fire break and vegetation screening works given that they are located close to the boundary of the Wellington North Solar Plant proposal site.

Draft report feedback is still to be received and included in the report.

3 BACKGROUND INFORMATION

3.1 REVIEW OF LANDSCAPE CONTEXT

3.1.1 Geology and Topography

The landscape context assessment is based on a number of classifications that have been made at national and regional level for Australia. The national IBRA system identifies the proposal site as located within the NSW South Western Slopes Bioregion and the Inland Slopes Subregion (DE&E 2016). The dominant IBRA subregion affected by the proposal is the Inland Slopes Subregion.

The NSW South Western Slopes Bioregion extends north of Cowra through southern NSW into western Victoria along the lower inland slopes of the Great Dividing Range. This region is characterised by foothills and isolated ranges, 93% of which occur in NSW. The NSW portion of the bioregion occupies about 10.1 percent of the state.

The bioregion lies within the eastern section of the Lachlan Fold Belt consisting of a series of north to north westerly trending folded bodies of Cambrian to Early Carboniferous sedimentary and volcanic rocks. Granites form a dominate part of this bioregion, generally occurring as central basins surrounded by steep hills. Hilly landscapes developed on sedimentary and volcanic rocks typically form lines of hills, following the strike of more resistant rocks such as quartzite. The valleys between these features are generally granite or softer rocks such as shale or slate.

To the west and north of the bioregion wide valleys filled with Quaternary alluvium and lakes become the dominant landform. On the western edge however, alluvial fans from the Riverine Plain have buried most of the bedrock. Gravel deposition in these fans form terraces in valleys and gravel outwash plains and are attributed to higher river discharges in the past.

Notably there are several areas of fossil bearing limestone outcropping with developed karst topography and a narrow belt of serpentinite with chemically distinctive soil that runs northwest from Tumut to Cootamundra.

There are three subregions identified within the NSW South Western Slopes, the Inland Slopes, Lower Slopes and the Capertee Valley. The proposal site is situated within the Inland Slopes Subregion.

The area is geologically dominated by Ordovician to Devonian folded and faulted sedimentary sequences with inter-bedded volcanics and intrusive granites. The soils tend to be shallow and stony forming on steep slopes. The soils grade from red subsoils on upper slopes to yellow on the lower slopes comprised of alluvial sands, loams and clays.

The Dubbo Geological map (1:250,000 SI/55-4) indicates that geology underlying the proposal site consists of the Quaternary, Ordovician and Silurian geological sequences as shown in Figure 5 and detailed below (Colquhoun et al. 1999). The majority of the proposal site is within the Oakdale Formation (Oco).

- **Oco** Basalt, basaltic andesite, latite lava and intrusions, volcaniclastic breccia, conglomerate, sandstone and siltstone, minor allochthonous limestone.
- **Qa** Alluvial silt, clay and sand, variable humic content, sporadic pebble- to cobble-sized unconsolidated conglomeratic lenses.
- **Qc** Colluvial polymictic gravel, sand, silt and clay, may include some eluvial in situ regolith deposits.

- **Smb** Poorly bedded to laminated, buff to brown to grey, quartzose shale and siltstone; minor rhyolitic tuff and tuffaceous sandstone; calcareous sandstone and siltstone.
- **Smd** Rhyolitic to felsitic tuff and tuffaceous sandstone; siltstone; mafic to felsic lava; limestone.
- **Smq** Massive to bedded highly fossiliferous limestone and siltstone
- **Smdw** Felsic crystal-lithic sandstone and fossiliferous limestone.
- **Dgc** Latitic, crystal lithic sandstones, breccia, siltstone, tuff, latite and lesser andesite, basalt, minor allochthonous limestone and quartzose sandstone.

The proposal site is encompassed by two Mitchell Landscapes, the Mullion Slopes and the Macquarie Alluvial Plains. The Mitchell Landscape descriptions are provided in Table 1 below and shown in Figure 6:

- Macquarie Alluvial Plains occurs surrounding the main Wuuluman Creek tributary from the south western to central northern portion of the proposal site.
- Mullion Slopes occurs on the rest of the proposal site, 200m north and south of the main Wuuluman Creek tributary.

Table 1 Description of the Mitchell Landscape relevant to the proposal (DECC 2002)

Mitchell Landscape
Mullion Slopes
Steep hills and strike ridges on tightly folded Ordovician andesite, conglomerate and tuff, Silurian rhyolite and shale, Devonian quartz sandstones, slate and minor limestone, general elevation 500 to 830 m, local relief 200 m. Stony uniform sand and loam in extensive rock outcrop along crests, stony red and brown texture-contrast soil on slopes, yellow harsh texture-contrast soil in valleys with some evidence of salinity. Gravel and sand in streambeds. Open forest to woodland of; white gum (*Eucalyptus rossii*), brittle gum (*Eucalyptus mannifera*), broad-leaved peppermint (*Eucalyptus dives*), red box (*Eucalyptus polyanthemos*), mountain grey gum (*Eucalyptus cypellocarpa*), white box (*Eucalyptus albens*) with yellow box (*Eucalyptus melliodora*) on lower slopes and river oak (*Casuarina cunninghamiana*) along the streams.
Macquarie Alluvial Plains
Holocene fluvial sediments of backplain facies of the Marra Creek Formation associated with the Macquarie River main alluvial fan and distributary stream system, relief 1 to 3 m. Dark yellow-brown silty clay with patches of sand and carbonate nodules deposited from suspended sediments in floodwater, often with gilgai. Slightly elevated areas with red-brown texture-contrast soils. Open grasslands with scattered coolibah (*Eucalyptus microtheca*), black box (*Eucalyptus largiflorens*), river cooba (*Acacia stenophylla*), bimble box (*Eucalyptus populnea*), belah (*Casuarina cristata*), lignum (*Muehlenbeckia cunninghamii*) and myall (*Acacia pendula*).

Six watercourses occur within the proposal site, all are tributaries of Wuuluman Creek. The main tributary flows from the north of the site to the south-western corner of the site. Another tributary flows east to west across the southern portion of the site (see Plates 1 and 2). These watercourses flow into the Macquarie River, approximately 2.5 km downstream. The four other waterways onsite are minor incised drainage lines, that would only have water after storm events. Four dams occur within the proposal site; three within the south-western portion of the proposal site and one in the south-eastern corner of the proposal site.

The topography of the proposal site is generally sloping from low hills down towards drainage lines and sits at an elevation of between 300 and 400 m above sea level (ASL). The site includes the following topographic features:

- Low hills with outcropping rocks.
- Several unnamed tributaries and drainage lines that join up with Wuuluman Creek

	
Plate 1 Tributary of Wuuluman Creek in the north of the Proposal site.	Plate 2 Unnamed drainage line that flows east to west across the southern portion of the Proposal site.

Soils within the proposal site are typically a reddish-brown loam. The 1:250,000 Dubbo Soils Landscape series sheet indicates that a single soil landscape, Bodangora Soil landscape with Euchrozems soils, occurs within the proposal site as detailed below in Table 2 (Murphy and Lawrie 1998).

Table 2 Soil descriptions of Euchrozem Soils within the Bodangora Soil Landscape

Bodangora Soil Landscape with Euchrozem Soils	
Description	
Topsoil	Dark reddish-brown clay loams to light clays, moderately well-structured with sub-angular or angular blocky peds. Field pH increases from 5.5 to 7.0 in the A horizon; to 35 cm depth.
Subsoil	Moderate to strongly structured reddish-brown light to medium clays with smooth-faced, sub-angular or polyhedral peds. Gravel increases with depth and soft nodules of calcium carbonate begin to appear at about 90 cm depth. Field pH 8.0 to 8.5.

The proposal site also contains a Soil Conservation Service (SCS) facility. The SCS is an environmental consulting and soil conservation business entity within the Department of Primary Industries (DPI). Accommodation facilities are also associated with the SCS. The SCS site is in the south eastern portion of the proposal site (Lot 2 and 3 / DP808748 and Lot 88 / DP2987).

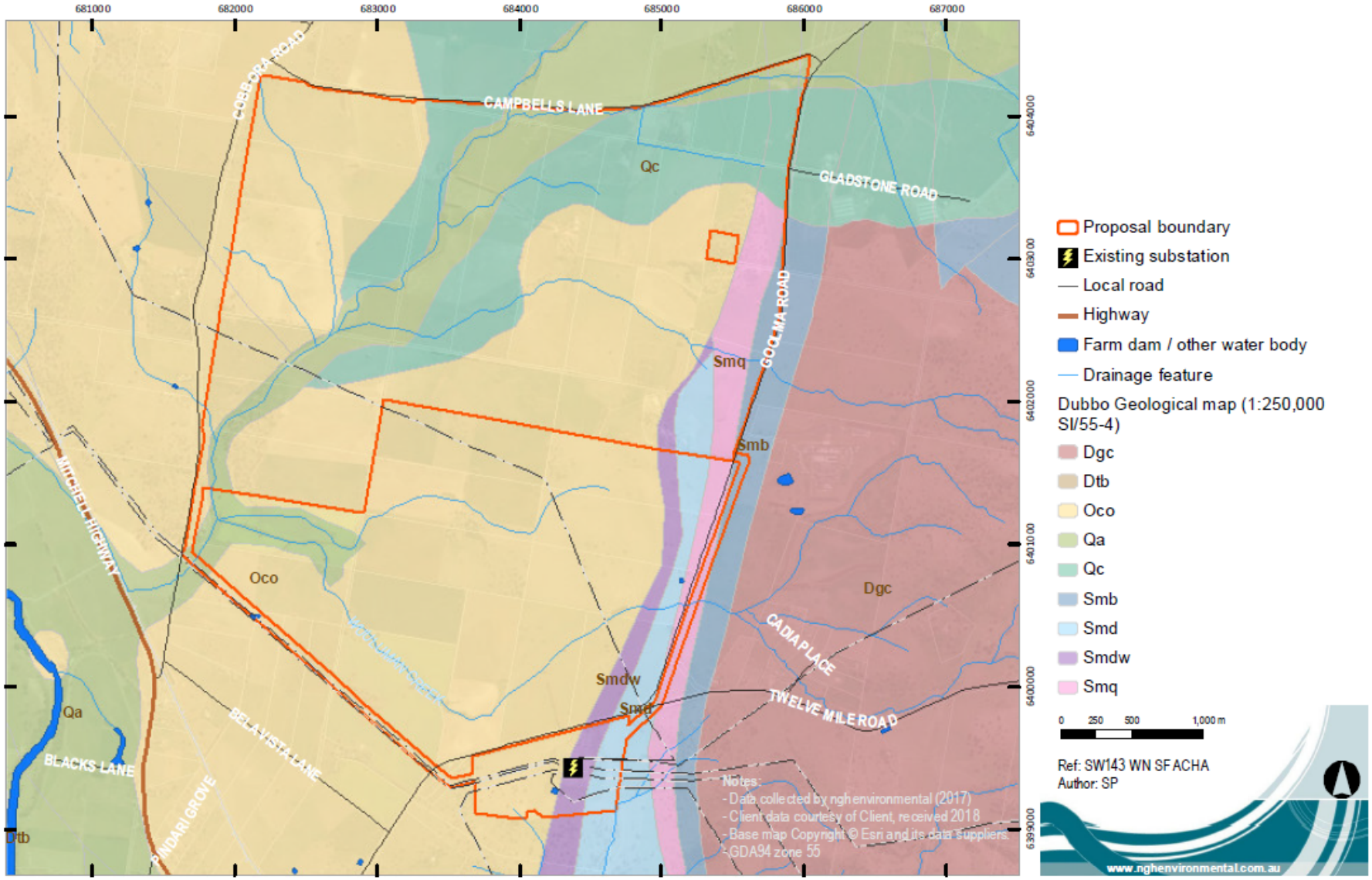


Figure 5. The Dubbo Geological map

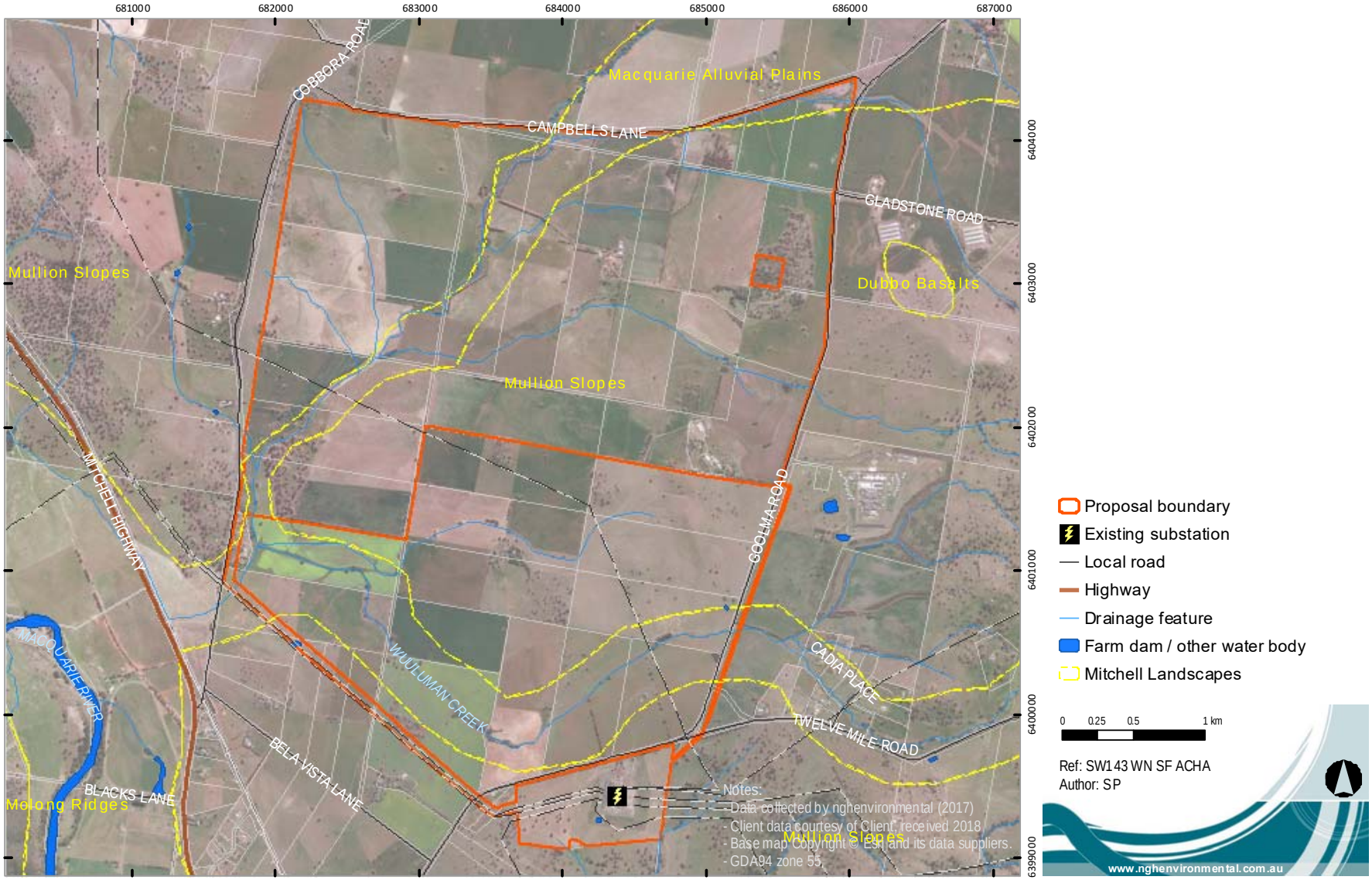


Figure 6. Location of Mitchell landscapes.

3.1.2 Flora and Fauna

The biodiversity assessment carried out by NGH Environmental identified two plant communities within the proposal site. These include:

1. White Box – White Cypress Pine Shrub grass hills woodland in the Brigalow Belt South Bioregion and Nandewar Bioregion. The remnant woodland within the development site is very degraded having been extensively cleared and heavily grazed. Scattered paddock trees remain in patches on the rocky hilltops and very little native understory species remain. The dominant native species on the hilltops are White Box. Some scattered White Cypress and Kurrajong also occur on the hill slopes. An occasional Grey Box (*Eucalyptus microcarpa*) occurred on the lower hillslopes. Understory species are mostly exotic pasture species however some native species occurred.

2. Yellow Box Grassy Tall Woodland on alluvium or parna loams and clays on flats in NSW South Western Slopes Bioregion. The remnant woodland within the development site is very degraded having been extensively cleared and heavily grazed. Scattered paddock trees remain along the river flats and watercourses. The dominant native species along the flats are Yellow Box with occasional Kurrajong (*Brachychiton populneus*). Understory species are mostly exotic pasture species however some native species occurred.

The remnant areas of vegetation have been highly disturbed and lack native understory due to grazing and pasture improvement practices. Plantings of native species have been used as wind breaks and for rehabilitation along onsite waterways. The vegetation communities provide numerous habitat types for fauna. Canopy trees provide foraging and nesting/resting habitat for birds and arboreal fauna. The mid-storey provides foraging and nesting habitat for smaller birds, as well as refuge for small-medium sized mammals and reptiles. Ground cover plants, logs and fallen leaves also provide shelter and foraging habitat for terrestrial fauna. Where hollow-bearing trees are present, they may provide daytime resting habitat for bats and mammals, and roosting habitat for birds.

3.1.3 Historic Land use

The proposal site has a history of intensive agricultural and pastoral use. The majority of the area has been utilised for grazing and crop production since European settlement in the mid 1800's. The location of the proposed Solar Plant is within pastoral and agricultural fields and therefore has been subject to considerable impacts from farming for many decades. The SCS facility and a residential house have also been constructed within the proposal site. Historic images of the area from the SCS located within the proposal boundary, show the high level of erosion in the area that was converted into the SCS area (Plates 3-5). The SCS area has been extensively modified since the historical images were taken pre- 1944 when the research facility was officially opened. Plate 6 shows and artist image of the SCS following its opening in 1944.

There are also several man-made dams and drainage lines within the proposal site. A number of contour banks have also been constructed across the project area which has modified the ground. The contour banks can clearly be seen in aerial photographs of the area. Overall, the project area would be categorised as highly disturbed through consistent farming practices and land clearing over many decades.

	
Plate 3 Historical image of erosion in area that is now the SCS area taken pre- 1944 (Image provided by SCS).	Plate 4 Historical image of erosion in area that is now the SCS area taken pre- 1944 (Image provided by SCS).
	
Plate 5 Historical image of erosion in area that is now the SCS area taken pre- 1944 (Image provided by SCS).	Plate 6 Artist image of the SCS following its opening in 1944 (Image provided by SCS).

3.1.4 Landscape Context

Most archaeological surveys are conducted in a situation where there is topographic variation, and this can lead to differences in the assessment of archaeological potential and site modelling for the location of Aboriginal archaeological sites. As already noted, the terrain generally has low hills that slope down to drainage lines including tributaries of Wuuluman Creek. The areas in close proximity to a water source on slightly raised flat areas are likely to have been a major focus for Aboriginal people. However, prior to European land modifications, this area as a whole may have provided resources, shelter, water and food for Aboriginal people.

The different geological landscapes noted on the Dubbo Geological map (1:250,000 SI/55-4) were not readily identifiable within the survey area and were not used as a means of landscape differentiation. The two Mitchell landscapes within the project area were readily identifiable however they were deemed to be slightly too broad to be used as a means of landscape differentiation. The landforms for the survey were instead determined to be seven units which include creek/drainage lines and associated raised flats, low hill crests, spurs, raised outcrops, swamp/depression, flats and slopes (see Figure 7). These landform divisions are based on landscape maps of the proposal site and visual inspection of the proposal site during field survey.

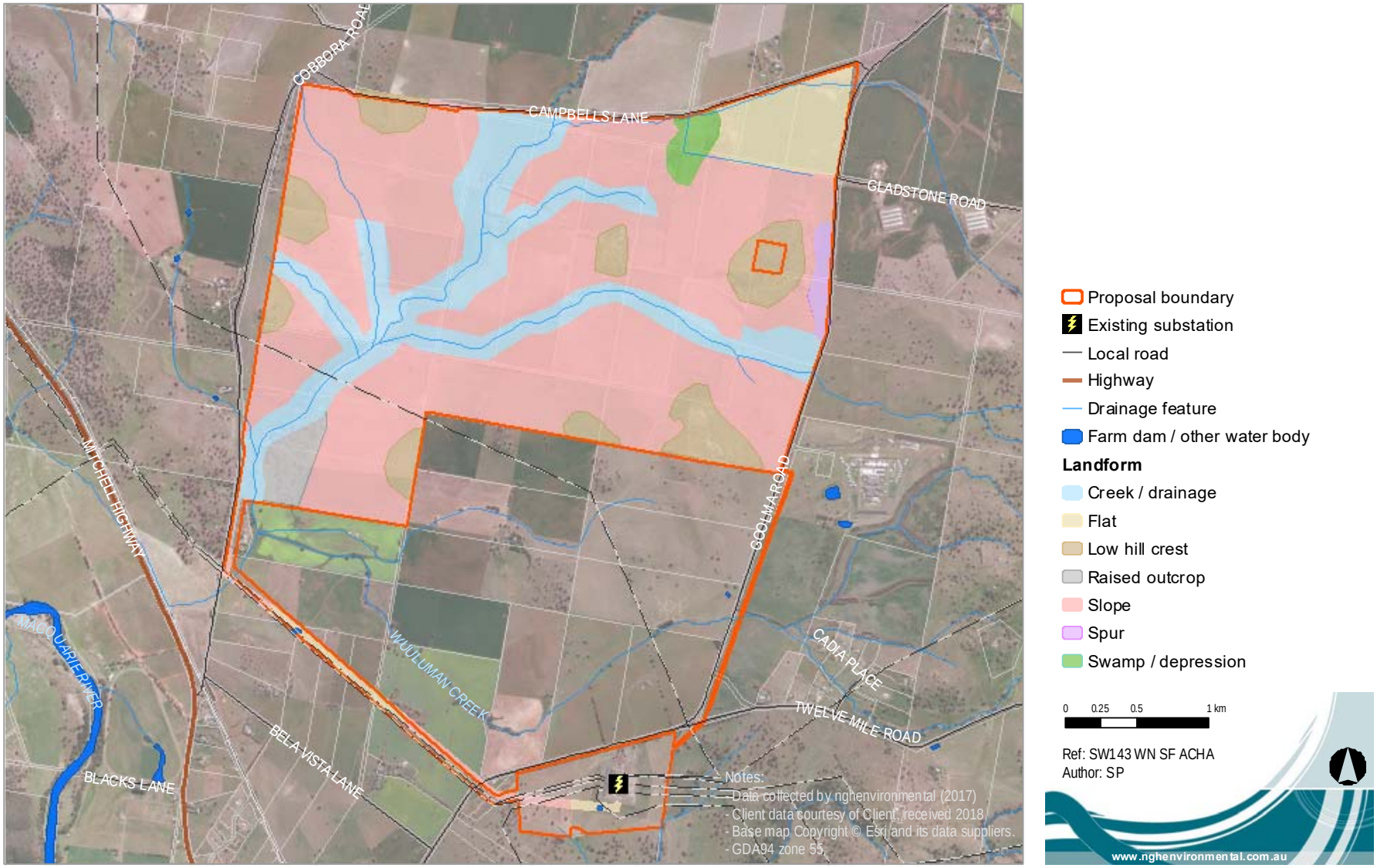


Figure 7. Location of landforms within Proposal site boundary

3.2 REVIEW OF ABORIGINAL ARCHAEOLOGICAL CONTEXT

3.2.1 Ethnohistoric Setting

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

Wellington is within an area identified as part of the Wiradjuri language group. This is an assemblage of many small clans and bands speaking a number of similar dialects (Tindale 1974, MacDonald 1983, Horton 1994).

The Wiradjuri language group was the largest in NSW prior to European settlement. The borders were however, not static, they were most likely fluid, expanding and contracting over time to the movements of smaller family or clan groups. Boundaries ebbed and flowed through contact with neighbours, the seasons and periods of drought and abundance.

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

These small family units were part of a larger band which comprised a number of families. They moved within an area defined by their particular religious sites (MacDonald 1983). Such groups might come together on special occasions such as pre-ordained times for ceremonies, rituals or simply if their paths happened to cross. They may also have joined together at particular times of the year and at certain places where resources were known to be abundant. The archaeological legacy of these gatherings would be larger sites rather than small family camps. They may include large hearth or oven complexes, contain a number of grinding implements and a larger range of stone tools and raw materials.

Identification and differentiation of such sites are difficult in the field. A family group and their antecedents and descendants occupying a particular campsite repeatedly over a long period of time may leave a similar pattern of archaeological signatures as a large group camped over a shorter period of time.

European settlers started arriving in the district in the 1820s. At this point the Aboriginal population was in decline, due to disease such as small pox and influenza as well as dispossession from traditional lands and acts of violence against the Aboriginal people meant there was great social upheaval and partial disintegration of the traditional way of life. This meant that access to traditional resource gathering and hunting areas, religious life and marriage links and access to sacred ceremonial sites were disrupted or destroyed.

However, despite these disruptions, Aboriginal people continued to maintain their connections to sites and the land in the early days of European settlement. Where Aboriginal people were moved to places like

missions, people could maintain at least some form of association with country and maintain traditional stories.

Early settlers and others who wrote about the Wiradjuri people and customs differentiated between the origin of some groups, referring to people as the Lachlan or Murrumbidgee tribes, or the Levels tribe for those between the two major rivers (Woolrych 1890). The extent of the Wiradjuri group means that there were many different environments that were exploited for natural resources and food. Like everywhere in Australia, Wiradjuri people were adept at identifying and utilising resources either on a seasonal basis or all year round.

Terrestrial animals such as the possum was noted by many early observers as a prime food source and the skins were made into fine cloaks that evidently were very warm (Evans 1815, Oxley 1820, Mitchell 1839). Kangaroos were also eaten and their skins made into cloaks as well. A range of reptiles and other mammals were food sources. Fish and mussels would have been prevalent from the rivers and creeks and insects were also a common food type, in particular grubs and ants and ant eggs (Fraser 1892, Pearson 1981). Birds including emus were common as a food source, often being caught in nets made from fibres of various plants such as flax, rushes and kurrajong trees. Bird hunts were also often undertaken as group activities, with emus, ducks and other birds targeted through groups of people flushing them out and driving them into pre-arranged nets (Ramson 1983).

On the 22nd of August 1817 John Oxley, the first European to explore the Wellington Valley observed an abundance of fish, emus, swans and ducks' as well as very large mussels growing among the reeds in many stretches of the river. He noted that in such country there was no fear of being in want of food (Oxley 1820, pp. 191–192).

Plant foods were equally as important and mostly consisted of roots and tubers, such as *Typha* or Cumbungi whose tubers were eaten in late summer and the shoots in early spring. Other edible plants from the Wiradjuri region include the Yam Daisy or *Murnong*, eaten in summer and autumn, the Kurrajong seeds and roots, Acacia seeds and other rushes (Gott 1982).

Some of the early settlers and pastoralists, surveyors, explorers, administrators and others observed traditional Aboriginal activities, including ceremonies, burial practices and general way of living, and recorded these in letters, journals and books. These early records of Aboriginal lifestyle and society within the region assist in understanding parts of the traditional Aboriginal way of life, albeit already heavily disrupted at the time of the observations and through the eyes of largely ignorant and uninformed observers.

The early observations also note that some weapons and tools were carried, some made from wood such as spears, spear throwers, clubs, shields, boomerangs, digging sticks, bark vessels and canoes. Other materials were observed in use such as stone axes, shell and stone scrapers and bone needles.

In an archaeological context, few of these items would survive, particularly in an open site context. Anything made from bark and timber and animal skins would decay quickly in an open environment. However, other items, in particular those made of stone would survive where they were made, placed or dropped. Shell material may also survive in an archaeological context. Sources of raw materials, such as the extraction of wood or bark would leave scars on the trees that are archaeologically visible, although few trees of sufficient age survive in the modern context. Outcropping stone sources also provide clues to their utilisation through flaking, although pebble beds may also provide sources of stone which leave no archaeological trace.

3.2.2 AHIMS Search

The Aboriginal Heritage Information Management System (AHIMS) is maintained by OEH and provides a database of previously recorded Aboriginal heritage sites. A search provides basic information about any sites previously identified within a search area. However, a register search is not conclusive evidence of the presence or absence of Aboriginal heritage sites, as it requires that an area has been inspected and details of any sites located have been provided to OEH to add to the register. As a starting point, the search will indicate whether any sites are known within or adjacent to the investigation area.

A search of the AHIMS database was undertaken on the 24th of November 2017 over an area approximately 35 km east-west by 35 km north-south centred on the proposal site. The search coordinates were from Lat, Long -32.6174, 148.778 to Lat, Long -32.3897, 149.1392 with a Buffer zone of 50 meters. The AHIMS Client Service Number was: 314473. There are 105 Aboriginal sites recorded in the search area. No declared Aboriginal Places are held for the search area in the database. Table 3 below shows the site types previously recorded in the region and Figure 8 and Figure 9 shows the location of AHIMS sites in relation to the Wellington North Solar Plant proposal site.

Table 3 Breakdown of previously recorded Aboriginal sites in the region.

Site Type	Number
Artefact	61
Modified Tree	22
Artefact and PAD	3
Artefact and Hearth	2
PAD	2
Artefact and Shell	2
Restricted Sites	2
Burial	1
Stone Quarry	1
Grinding Groove	1
Aboriginal Ceremony and Dreaming and Modified Tree	1
Aboriginal Ceremony and Dreaming and Stone Arrangement	1
Aboriginal Resource and Gathering	1
Ceremonial Ring and Artefact	1
Ceremonial Ring and Modified Tree	1
Habitation Structure	1
Stone Arrangement, Stone Quarry and Artefact	1
Stone Arrangement and Stone Quarry	1
TOTAL	**105**

The isolated find site, Wellington Solar Farm IF 1 (#36-4-0142) is located adjacent to the south-western proposal boundary. In total, there are 30 sites recorded with 1km of the proposal site and the transmission line options. The majority of the sites (n= 26) were recently recorded by NGH Environmental during survey for the First Solar Wellington Solar Farm adjacent to the current assessment area. The sites types recorded on AHIMS within 1 km of the current assessment area included 16 isolated finds, 10 artefact scatters, two modified trees and two areas of Potential Archaeological Deposit (PAD).

Additionally, it should be noted that NGH Environmental received email correspondence from David Gordon (Senior Heritage Information Officer, Heritage Information Management team, Heritage Division, The Office of Environment & Heritage) on the 30th of November 2017 that confirmed that the two restricted Aboriginal sites listed in AHIMS are located outside the proposal site and will not be impacted by the works for the proposed Wellington North Solar Plant. No further details regarding the two restricted sites was provided.

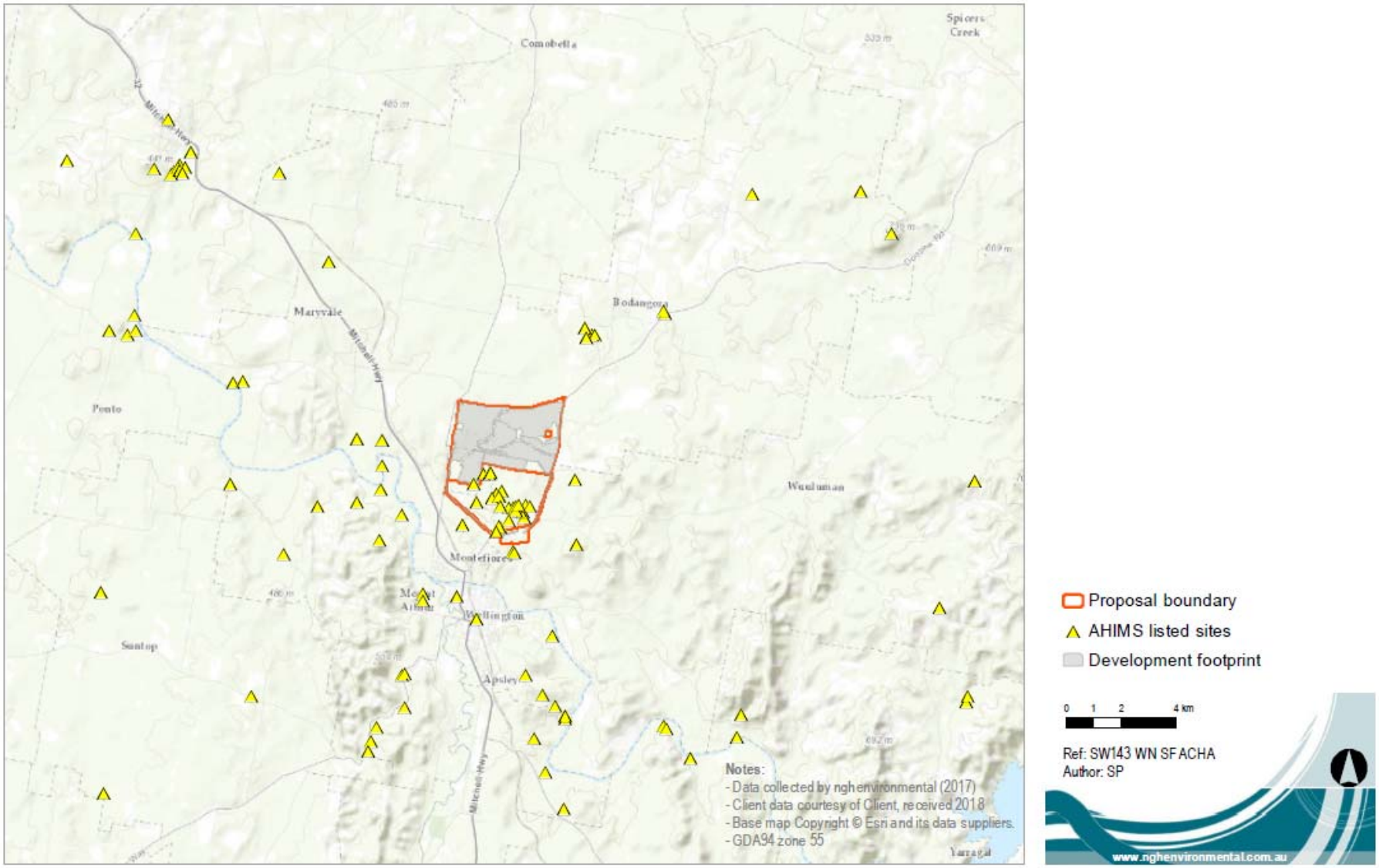


Figure 8. Location of known AHIMS sites

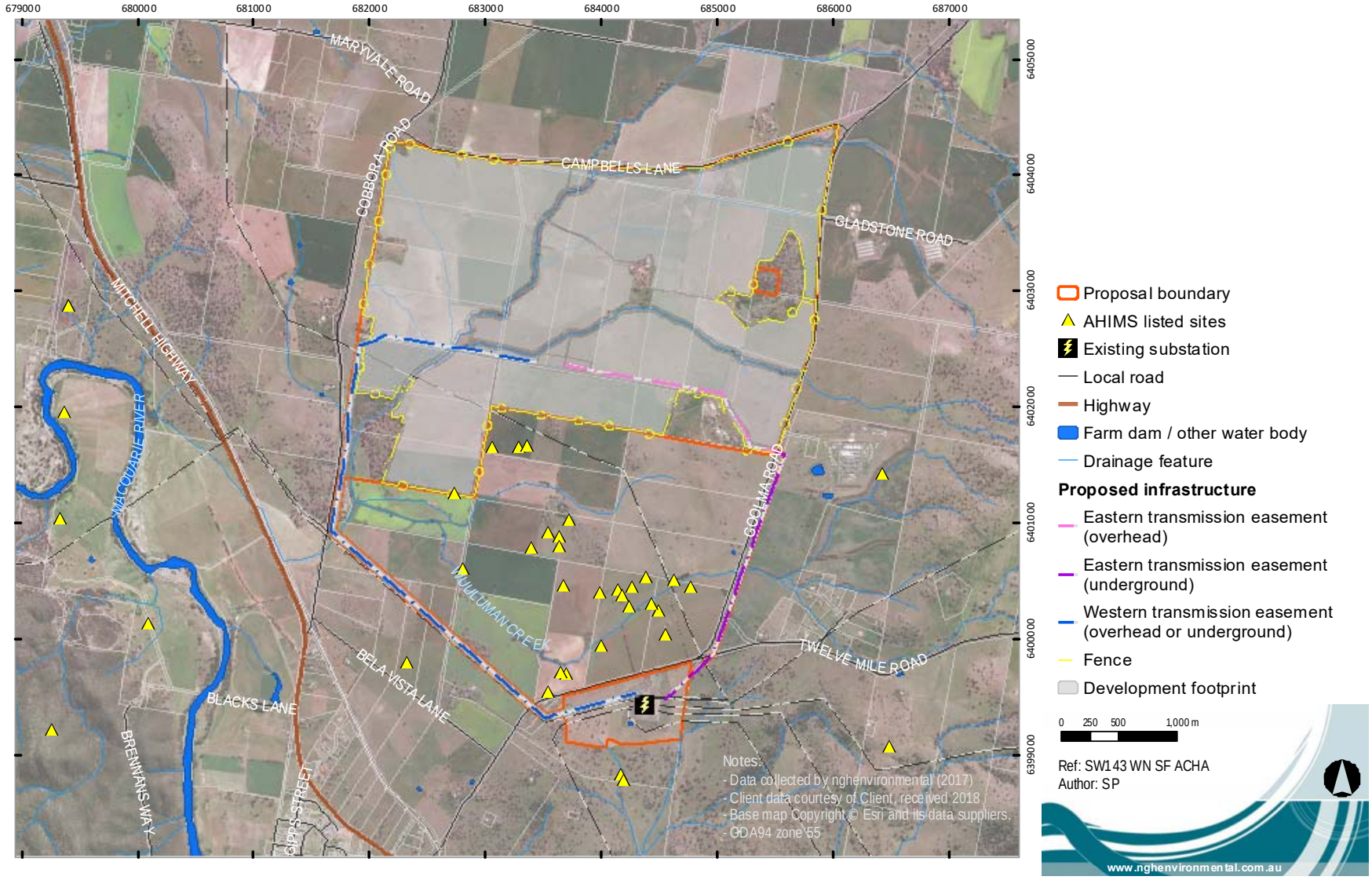


Figure 9. Location of known AHIMS sites near the proposal site.

3.2.3 Regional Archaeological Models

Aboriginal people have occupied what we now know as the Australian continent for at least 40,000 years and perhaps 60,000 years and beyond (Mulvaney and Kamminga 1999, Hiscock 2007). While no regional synthesis of the archaeology has been completed for the Wellington area, research studies have been undertaken in the Upper Macquarie River region by Pearson (1981) and Koettig (1985). The following is a summary of the finding from these studies.

Pearson (1981) analysed a series of sites which tended to be biased towards larger and more noticeable sites identified by local residents. During this study, he excavated three rockshelters (Botobolar 5, Granites 1 and Granites 2) which provided a record of regional Aboriginal occupation in the area to 5,000 years before present. Based on his finding, Pearson categorised these sites as either occupation sites or non-occupation sites (sites that are generally for a single purpose i.e. scarred trees, grinding grooves and burial sites) and built an archaeological model based on location. The model developed by Pearson is summarised below:

- Distance to water from sites varied from 10 to 500 m, with larger sites found closer to a water source.
- Good soil drainage and an outlook over a water source were important to location.
- Ceremonial and stone arrangement sites were located away from campsites.
- Quarry sites were located in areas with desirable stone source qualities and reasonably accessible.

Koettig (1985) continued to build on the archaeological understanding of this region by conducting a comprehensive and systematic study of the Dubbo region, which although over 70 km to the west, is relevant as one of only a few wide-ranging archaeological studies. Koettig investigated all topographic landform units and creek orders through sample survey to clarify locations and site types. The study arrived at the following conclusions:

- Aboriginal sites may be expected throughout all landscapes.
- Artefact scatters, scar trees and grinding grooves are the most frequently occurring site types.
- The location and size of sites were determined by various factors; predominantly environmental and social factors around the proximity to water, geological formations and the availability of food resources.

Koettig (1985) suggested that larger and constantly occupied sites are likely to occur along permanent watercourses, while more sporadic occupation would have occurred along ridge tops or temporary water courses.

Purcell (2002) conducted a broad regional cultural heritage study of the Brigalow Belt South Bioregion in NSW. This bioregion extends from Dubbo north to Moree. Over the course of the study Purcell recorded 110 oral history interviews, located 1,110 Aboriginal sites, documented 60 traditionally used plant species and mapped landforms that have Aboriginal cultural heritage values. Of the 1,110 Aboriginal sites recorded during this assessment 893 existed on the site register prior to the study.

The field survey portion of Purcell's study primarily targeted government owned land such as state forests and a landform mapping proposal was undertaken to assist with the development of a predictive model for Aboriginal site distribution across the bioregion. Water localities were noted to be the major contributing element influencing the distribution of sites among landforms with sites expected to be concentrated near water localities. The landform types were classified into four key groups as shown in Table 4 below. The

study indicated that Aboriginal sites have been recorded more frequently on high contour and alluvial landforms. The majority of the sites recorded were within 100-400 m of water.

Table 4 Breakdown of landforms mapped by Purcell in the Brigalow Belt South Bioregion.

Landforms	Description	Likelihood of Aboriginal sites
Alluvial	Low lying areas associated with a variety of water features including rivers, creeks, channels, billabongs, swamps and lakes. Landforms include alluvial fans, alluvial terrace, alluvium, channel, floodplain, flood channel, gilgai, wetland/swamp and palaeo channels.	Aboriginal sites occur frequently.
Deep stable sand	Landform types include yellow sand sheets and "sandy monkey" palaeochannels. Water is scare.	Aboriginal sites occur less frequently.
Terrace group	Landform types consist of terrace with scalds, terrace with overland flow, terrace and clay pans. Each variety of terrace adjoins a landform associated with an alluvium landform.	Areas where terrace and floodplains overlap will have a high potential for sites.
Higher contour	Landforms that are elevated and consist of rocky ground, rocky ravines, colluvial slope, soil mantled slope, bench and talus.	High frequency of sites when associated with alluvial landforms or creek lines.

OzArk (2007) conducted a cultural heritage review of the Dubbo LGA that overlaid all recorded sites within the LGA on a mapped geomorphological GIS layer of landforms. The study confirmed that most Aboriginal sites are recorded within 100 m of water accompanied by a general trend of there being fewer sites recorded further away from water. Additionally, the majority of the recorded sites were identified to be located on Quaternary alluvium soils that once supported the more complex ecological communities in the region. This geological unit in the region occurs near major waterways and consequently, the likelihood of associated Aboriginal objects and sites in such landforms increases.

3.2.4 Previous archaeological studies

The following are summaries of those archaeological survey reports that have been completed in the Wellington area and in relative proximity to the current assessment area. The closest survey to the current assessment area is the 2017 NGH Environmental survey for the adjacent Wellington Solar Farm for First Solar Pty Ltd.

In 1982 Cubis surveyed the proposed electrical transmission line between Wellington and Lithgow. Cubis identified 55 Aboriginal sites consisting of stone and glass artefact scatters and quarry sites. Most sites were located in close proximity to drainage lines and/or located on ridges close to gullies, streams or swamps. Cubis assessed the Central Western Region as being of archaeological significance due to the presence of both prehistoric and contact archaeological sites (AMBS 2008, pp. 24–25).

A subsequent appraisal by Bowdler (1982) of five sites in the transmission corridor originally identified by Cubis (1982) was undertaken. Bowdler (1982) established that none of the five sites were of significant future research potential and the quarries identified by Cubis (1982) were not in fact quarries. It was suggested that no further archaeological work was required for the proposal (AMBS, 2008, p. :25).

In 1985 McIntyre surveyed the proposed reconstructed route of two proposed Electricity Commission transmission lines between Wellington and Dubbo. The survey of these proposed transmission lines began at the Wellington substation and followed the line of the Mitchell Highway approximately 54 km northwest to Dubbo. A total of 27 sites were recorded generally situated within close proximity to water. McIntyre noted that the areas of high archaeological sensitivity were areas adjacent to reliable seasonal water sources and stands of mature native vegetation. (AMBS 2008, p. 25).

Lance (1985) surveyed a proposed transmission line between Wellington and Forbes. It is assumed that the transmission line began at the Wellington Substation however this is not clearly stated in the report. During the survey 16 open camp sites, 14 isolated finds and two scarred trees were identified. Lance noted that that there was a direct correlation between the location of archaeological sites and water sources in the area. Lance further concluded that in the Wellington area, quartz was the predominant raw material, while further to the south, meta-sedimentary and meta-volcanic and other volcanic materials became dominant.

In 1995 Barber undertook a survey of a proposed communications GSM Tower approximately 6 km south east of the proposal site. A single White Box scarred tree was identified in the survey area. Barber (1995) suggested that the relative lack of archaeological material at this site was a true reflection as most camp sites would be located on the flats, closer to rivers and creeks rather than on the crest of a hill. The presence however, of the scarred tree demonstrates that 'Aboriginal people utilised all of the resources available to them and covered most of the country in which they lived' (Barber 1995:6).

Kelton (1999) undertook a survey of a proposed sewage treatment plant approximately 4 km south west of the current proposal site. No archaeological sites were identified within the study area although a scarred tree was identified on a creek flat adjacent to the site. Kelton (1999) suggests that the presence of the scarred tree indicates that prior to European land clearing of old growth trees there would have been potential for such sites to have occurred within the study area.

AMBS (2008) recorded four Aboriginal heritage sites within the 100 km corridor of the proposed Wellington gas pipeline, power station and compressor station. The proposed location of the power station was directly adjacent to the southern boundary of the Wellington 330kV substation which will connect via overhead or underground powerlines to the current assessment area. Three artefact scatters consisting of chert, silcrete and quartz and a single scarred tree were recorded. All sites were identified on low slopes and flats within proximity of a creek line or water source. None of the sites recorded were in close proximity to the current assessment area. Furthermore, it was noted that the local Aboriginal community considered the scarred tree to be highly culturally significant.

OzArk (2009) surveyed 9 km for the proposed upgrade of the existing 11kV electricity transmission line, proposed extensions and associated access tracks south-west of Wellington. This survey was approximately 4.5 km south of the current proposal site. Four Aboriginal sites were identified consisting of three open sites with potential archaeological deposits (PAD) and one isolated find. The open sites consisted of a range of raw material types including silcrete, chert, greywacke, hornfels and quartz. These sites were all located on elevated creek confluences or spur crests overlooking water.

Pardoe (2010) carried out the Aboriginal cultural heritage assessment for the proposed Young to Wellington Gas Pipeline Project. Eighteen (18) sites were identified consisting of 13 scarred trees and 5 open artefact scatters. The artefact scatters tended to be on slightly raised ground associated with source of permanent water, just above or within a few hundred meters of swampy ground and manufactured from locally sourced quartz and volcanic stone. Most scars were on Yellow Box trees and the location of the scarred trees is suggested to 'largely reflect retention of trees on or near watercourses, or on sections of land that were too rough to warrant clearing' (Pardoe 2010:109).

The Bodangora Wind Farm, approximately 10 km north east of the proposal site was surveyed by Dibden in 2011. Two Aboriginal sites were recorded on crests, comprised of an artefact scatter and a possible quartz procurement site (2011). Dibden noted that all the artefacts were recorded on crests with no artefacts recorded on the simple slopes.

In 2017 NGH Environmental (NGH) surveyed approximately 500 ha for the proposed Wellington Solar Farm for First Solar Pty Ltd. The southern boundary of the current assessment area is shared with the northern boundary of the First Solar project. Despite variable visibility, 61 stone artefacts were found across the proposal site that were recorded as 25 site occurrences. These archaeological features were recorded as ten artefact scatters and 15 isolated finds. A single scarred tree was also recorded. Additionally, two areas of Potential Archaeological Deposit (PAD) were identified. The artefacts recorded were manufactured primarily from quartz and volcanic material with a lesser number of silcrete, sandstone, fine-grained siliceous and quartzite artefacts recorded. The presence of cores, hammer stones and flakes indicated that tool manufacture likely occurred onsite, although the presence of an edge ground axe implies some completed tools were also brought to the site. The sites were all identified on low slopes and flats within proximity of a creek line or water source, even in areas highly disturbed by farming activities. The results of the survey increased the number of sites recorded in the local area by 21.6% from 98 to 125. It was noted that there are likely to be many hundreds of such sites in the local area, and that the low number of sites recorded in AHIMS was merely an indication that few surveys had been undertaken in the area and therefore the sites are yet to be found.

3.2.5 Summary of Aboriginal land use

The results of previous archaeological surveys in the Wellington region show that there are sites and artefacts present throughout the landscape. There is a dominance of artefacts either as isolated finds or in clusters as artefact scatters. Scarred trees are also prevalent in the region.

There appears to be a pattern of site location that relates to the presence of potential resources for Aboriginal use. The Aboriginal site modelling for the region to date suggests that while Aboriginal sites may be expected throughout all landscapes the most archaeologically sensitive areas occur in close proximity to water. The most likely site type to be encountered within the Wellington North Solar Plant proposal site would be stone artefacts and scarred trees where old growth native trees remain.

A detailed understanding of the Aboriginal land use of the region is lacking, as few in depth studies have been completed and no sites have been dated. It is possible however, to ascertain that proximity to water sources and raw materials was a key factor in the location of Aboriginal sites. It is also reasonable to expect that Aboriginal people ventured away from these resources to utilise the broader landscape but the current archaeological record of that activity is currently limited.

3.2.6 Archaeological Site Location Model

Based on the results of the previous archaeological investigations in the local Wellington area, and through extrapolation of Wiradjuri sites from the region it is possible to provide the following model of site location in relation to the proposed Wellington North Solar Plant area.

Stone artefact scatters – representing camp sites can occur across the landscape, usually in association with some form of resource or landscape unit such as spur and ridge crests. Within the proposal site there are several tributaries of Wuuluman Creek that are an obvious resource. Artefact scatters are therefore likely to occur within the proposal site.

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

Scarred Trees – these require the presence of mature trees and are likely to be concentrated along major waterways and around swamps areas. There are patches of remnant vegetation across the proposal site, therefore, it is possible that this feature could occur.

Hearths/Ovens – are identified by burnt clay and stone used for heat retainers. None are recorded in the district but they could occur either independently or in association with other Aboriginal cultural features such as campsites, often in association with resource locations. Such places are not obvious within the proposal site and this feature is therefore unlikely to occur.

Stone resources – are areas where people used natural stone outcrops as a source material for flaking. This requires geologically suitable material outcropping so as to be accessible. The proposal site contains natural outcropping therefore such sites could occur.

Shell Middens – are the agglomeration of shell material disposed of after consumption. Such places are found along the edges of significant waterways, swamps and billabongs. The proposal site contains no significant waterways, swamps and billabongs and this feature is therefore unlikely to occur.

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

In summary, the topography and landscape features within the proposed Wellington North Solar Plant proposal site indicate that this area would likely have been part of the Wiradjuri landscape, particularly with several tributaries of Wuuluman Creek within the proposal site. Therefore, the proposal site could potentially be attractive to Aboriginal people to concentrate activity and therefore has a higher possibility of providing an archaeological signature. Subsequently, given that Aboriginal people have lived in the region for tens of thousands of years, there is potential for archaeological evidence to occur throughout the area, this is most likely to be in the form of stone artefacts or as scarred trees.

3.2.7 Comment on existing information

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

Within the Wellington area there have been few archaeological investigations. The information relating to site patterns, their age and geomorphic context is little understood. The robustness of the AHIMS survey results are therefore considered to be only moderate for the present investigation. There are likely to be many sites that exist that have yet to be identified although the scale of farming and development has altered the natural landscape in some places. This activity has also greatly disturbed the archaeological record and there are unlikely to be many places that retain *in situ* archaeological material due to the scale of agricultural and pastoral activities and development.

Regarding the limitations of the information available, archaeologists rely on Aboriginal parties to divulge information about places with cultural or spiritual significance in situations where non-archaeological sites may be threatened by development. To date the project archaeologists have not been told of any such places

within the proposal site. There is always the potential for such places to exist but insofar as the current proposal is concerned, no such places or values have been identified.

4 ARCHAEOLOGICAL INVESTIGATION RESULTS

4.1 SURVEY STRATEGY

The survey strategy was to cover as much of the ground surface as possible within the proposal site. Although the actual ground impact from the construction method for the proposed solar plant was likely to be low, the placement of solar arrays across the landscape has the potential to cover any cultural heritage sites.

The strategy therefore was to walk a series of transects across the landscape to achieve maximum coverage. Because the proposal site was generally cleared paddocks used for grazing livestock or recently ploughed fields, transects were spaced evenly with the survey team spread apart at 25 m intervals, walking in parallel lines. The cleared nature of the paddocks made this an ideal survey strategy. The team were able to walk in parallel lines, at a similar pace, allowing for maximum survey coverage and maximum opportunity to identify any heritage features. The survey team consisted of a minimum of 6 people and a maximum of 8 people which allowed a 150 m to 200 m wide tract of the proposal site to be surveyed with each transect pending on the number of people present. At the end of each transect, the team would reposition along a new transect line at the same spacing and walk back on the same compass bearing.

While the proponent plans to retain existing viable native vegetation remnants where possible, the areas of remnant vegetation were deemed to have high archaeological potential for mature trees within the proposal site and were inspected for any evidence of Aboriginal scarring (Long 2005). Native paddock trees were also inspected for any evidence of Aboriginal scarring (Long 2005).

NGH believes that the survey strategy was comprehensive and the most effective way to identify the presence of Aboriginal heritage sites. Discussions were held in the field during each day between the archaeologists and Aboriginal community representatives to ensure all were satisfied and agreed with the spacing and methodology.

The proposal site was divided into seven landform divisions based on landscape maps of the proposal site and visual inspection during field survey as listed below and shown in Figure 7.

- Creek/drainage lines and associated raised flats;
- Low hill crests;
- Spurs;
- Raised outcrops;
- Swamp/depression;
- Flats; and
- Slopes.

The survey was undertaken by the team over eight days from the 19th to the 26th of February 2018. Notes were made about visibility, photos taken and any possible Aboriginal features identified were inspected, assessed and recorded if deemed to be Aboriginal in origin.

4.2 SURVEY COVERAGE

Given that the topographic maps in the Wellington area are mapped at 20 m contours the visual inspection of the project area during field survey was also used to establish the landforms within the proposal site.

The solar plant area comprised primarily of cleared paddocks with low hills sloping down to creeks and drainage lines. The hills generally had low quality outcropping rocks and shallow soil deposits on the crests and associated slopes. The slopes within the proposal site were generally low gradient and some had been subject to contour banking. The entire proposal site had been subject to clearing and ploughing activities with a number of rocks placed in piles across the project area. These piles were inspected for Aboriginal objects during the survey.

Survey transects were undertaken on foot and traversed all the proposal site including the proposed western powerline easement to the substation. The proposed eastern powerline easement was unable to be surveyed during the fieldwork due to access issues.

Visibility within the proposal site was variable however as a whole the proposal site generally had good visibility averaging 35% overall. The effective visibility in the paddocks ranged from 90% in exposures to less than 5% in areas of dense grass. Between the survey participants, over the course of the field survey, approximately, 800 km of transects were walked across the proposal site.

Table 5 below shows the calculations of effective survey coverage. Figure 10 shows the division of landforms within the proposal site and the location of Plates 7- 20, that show examples of the transects and landforms within the proposal site.

Allowing for an effective view width of 5m for each person and given the variability in the ground visibility across the proposal site overall the survey effectively examined 13.1% of the proposal site. It is considered that the survey of Wellington North Solar Plant proposal site had sufficient and effective survey coverage.

The discovery of a number of Aboriginal sites indicates that the survey technique was effective enough to identify the presence of Aboriginal occupation in the area. Therefore, the results identified are considered a true reflection of the nature of the Aboriginal archaeological record present within the proposal site.

	
Plate 7 View west across the spur towards crest with outcropping.	Plate 8 View south from flat up slope towards spur with crest with outcropping on the right of photo, note good visibility in foreground.

	
Plate 9 View south from contour bank on flats up slope towards crest with outcropping.	Plate 10 View south along tributary of Wuuluman Creek and associated flats.
	
Plate 11 View west across the low slope, note good visibility and pile of rocks at tree in background.	Plate 12 View south along slope.
	
Plate 13 View east across crest looking down towards tributary of Wuuluman Creek at tree line in the background.	Plate 14 View west from drainage line towards low hill crest.

	
Plate 15 View north from the southern extent of Wuuluman Creek tributary and it associated flats, note crest in the background.	Plate 16 View west from edge of crest looking down slope towards tributary of Wuuluman Creek.
	
Plate 17 View south across slope and drainage line with the low hills in the background.	Plate 18 View from house on crest.
	
Plate 19 View east up slope to low hill crest.	Plate 20 View north along tributary of Wuuluman Creek and it associated flats.

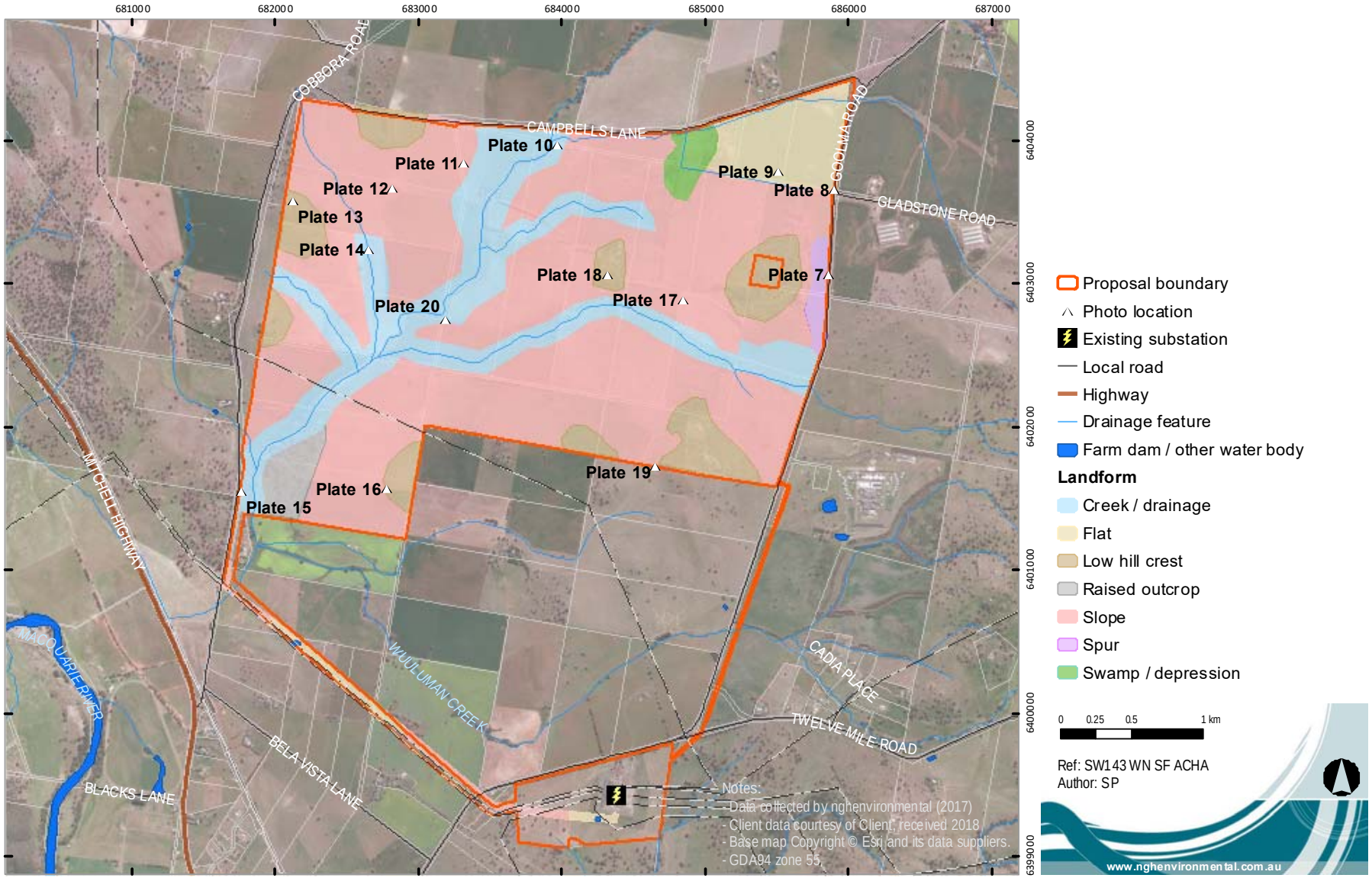


Figure 10. Landforms and survey photographs.

Table 5. Transect information.

Landform	Number of Survey Transects	Exposure type	Project area (ha)	Surveyed area (length m x width m)	Survey area (m2)	Visibility %	Effective coverage (area x visibility) m2	Project area surveyed (ha)	Percentage of Project area effectively surveyed	Archaeological result
Slopes	70	Bare ground, gate entrances, fence lines, vehicle tracks	601	6,980 x 35 1,300 x 15 6,000 x 30 41,400 x 40	244, 300 19,500 180,000 1,656,000	35	734,930	73.49	12.22	16 Isolated finds 3 Artefact scatters 1 European survey marker tree
Creek/drainage lines and associated raised flats	30	Bare ground, gate entrances, fence lines, creek banks, vehicle tracks	185	1,200 x 35 1,200x 15 22,150 x 40	42,000 18, 000 886,000	40	378, 400	37.84	20.45	5 Isolated finds 2 Artefact scatters
Low hill crests	17	Bare ground, gate entrances, fence lines, vehicle tracks	92	1,200x 35 7, 650 x 40	42,000 306,000	30	104,400	10.44	11.34	1 Isolated find 1 Artefact scatter
Flats	5	Bare ground, gate entrances, fence lines, vehicle tracks	56	3,300 x 40	132,000	35	46,200	4.62	8.25	5 Isolated finds
Raised outcrops	2	Bare ground, fence lines	18	1,300 X 40 300 X 15	52,000 4,500	10	5,650	0.56	3.11	2 possible scarred trees

Landform	Number of Survey Transects	Exposure type	Project area (ha)	Surveyed area (length m x width m)	Survey area (m2)	Visibility %	Effective coverage (area x visibility) m2	Project area surveyed (ha)	Percentage of Project area effectively surveyed	Archaeological result
Spurs	2	Bare ground, fence lines, vehicle tracks	14	800x 35	32,000	35	9,800	0.98	7	1 Isolated finds 2 Artefact scatters
Swamp/ depression	3	Bare ground	14	1,200 x 40	48,000	5	2,400	0.24	1.7	Nil

4.3 SURVEY RESULTS

Despite the variable visibility encountered during the survey, there were 99 stone artefacts found across the proposal site that were recorded as 37 site occurrences. These archaeological features have been recorded as nine artefact scatters and 28 isolated finds. Two possible scarred trees and a European survey marker tree were also recorded. The details of the sites are outlined below and artefact records are shown in Table 6. Their locations are shown in Figure 11.

Wellington Nth IF1

This site consisted of a single artefact on an alluvial flat plain near an existing transmission line in a cleared paddock. The artefact was a single platform volcanic core that had a single negative flake scare and 40% riverine cortex. The deposits consisted of a reddish brown loam and visibility within the area was 50%. The area has been subject to disturbance from ploughing in the past and the artefact had some recent trampling damage from livestock.

Plate 21. View west with adjacent powerline corridor.

Plate 22. Close up of Wellington Nth IF 1.

Wellington Nth IF2

This site consisted of a single artefact on an alluvial flat plain near an existing transmission line in a cleared paddock. The artefact was a volcanic flake. The deposits consisted of a reddish brown loam and visibility within the area was 70%. The area has been subject to disturbance from ploughing in the past and the construction of a dam which was in close proximity.

Plate 23. View west with adjacent powerline corridor.

Plate 24. Close up of Wellington Nth IF 2.

Wellington Nth IF3

This site consisted of a single artefact on the flats associated with an unnamed creek in a cleared paddock. The artefact was a single platform core manufactured from a volcanic material that had 50% riverine cortex. The deposits consisted of a reddish brown loam and visibility within the general area was approximately 60%. The area has been subject to disturbance from ploughing in the past.

	
Plate 25. View east towards site and unnamed creek.	Plate 26. Close up of Wellington Nth IF 3.

Wellington Nth IF4

This site consisted of a single artefact on the flats associated with an unnamed creek in a cleared paddock. The artefact was a quartz flake on a sheep track. The deposits consisted of a reddish brown loam and visibility within the general area was approximately 50%. The area has been subject to disturbance from ploughing in the past.

	
Plate 27. View south, scale pole shows artefact location.	Plate 28. Close up of Wellington Nth IF 4.

Wellington Nth IF5

This site consisted of a single artefact on a low slope in a cleared paddock approximately 10 m east of a fence line. The artefact was a single platform quartz core with three negative flake scares with 25% pebble cortex. The deposits consisted of a reddish brown loam and visibility within the general area was approximately 35%. The area has been subject to disturbance from ploughing in the past.

	
Plate 29. View north, scale pole shows artefact location.	Plate 30. Close up of Wellington Nth IF 5.

Wellington Nth IF6

This site consisted of a single artefact on a low slope in a cleared paddock. The artefact was a quartz flaked piece. The deposits consisted of a reddish brown loam with visibility within the general area approximately 60%. The area has been subject to disturbance from ploughing in the past.

	
Plate 31. View west, scale pole shows artefact location.	Plate 32. Close up of Wellington Nth IF 6.

Wellington Nth IF7

This site consisted of a single artefact on a low slope in a cleared paddock. The artefact was a quartz flake. The deposits consisted of a reddish brown loam and visibility within the general area was approximately 50%. The area has been subject to disturbance from ploughing in the past.

	
Plate 33. View west, scale pole shows artefact location.	Plate 34. Close up of Wellington Nth IF 7.

Wellington Nth IF8

This site consisted of a single artefact on a slope adjacent to an animal track in a cleared paddock. The artefact was a volcanic flake located approximately 40 m west of a fence line. The deposits consisted of a reddish brown loam and visibility within the general area was approximately 50%. The area has been subject to disturbance from ploughing in the past.

	
Plate 35. View east, scale pole shows artefact location.	Plate 36. Close up of Wellington Nth IF 8.

Wellington Nth IF9

This site consisted of a single artefact on a low slope in a cleared paddock approximately 20 m north of a fence line. The artefact was a fine-grained siliceous multiple platform core with some plough damage. The deposits consisted of a reddish brown loam and visibility within the area was approximately 30%. The area has been subject to disturbance from ploughing in the past with a number of rocks in the area exhibiting heat and plough damage.

	
Plate 37. View west, scale pole shows artefact location.	Plate 38. Close up of Wellington Nth IF 9.

Wellington Nth IF10

This site consisted of a single artefact on a low slope in a cleared paddock approximately 5 m east of a fence line. The artefact was a flake of basalt with 20% riverine cortex and some evidence of stock damage/trampling. The deposits consisted of a reddish brown loam and visibility within the general area was approximately 70%. The area has been subject to disturbance from ploughing in the past.

	
Plate 39. View north, scale pole shows artefact location.	Plate 40. Close up of Wellington Nth IF 10.

Wellington Nth IF11

This site consisted of a single artefact on a low slope approximately 2 m north of a fence line in a cleared paddock. The artefact was a quartz flake. The deposits consisted of a reddish brown loam with visibility within the general area approximately 40%. The area has been subject to disturbance from ploughing in the past.

	
Plate 41. View east, scale shows artefact location.	Plate 42. Close up of Wellington Nth IF 11.

Wellington Nth IF12

This site consisted of a single artefact on a flat low hill crest in a cleared paddock approximately 5 m north of a fence line. The artefact was a volcanic flake. The deposits consisted of a reddish brown loam and visibility within the general area was approximately 80%. The area has been subject to disturbance from ploughing in the past.

	
Plate 43. View north, scale pole shows artefact location.	Plate 44. Close up of Wellington Nth IF 12.

Wellington Nth IF13

This site consisted of a single artefact on a low slope between a low hill crest with rocky outcropping and a raised flat spur. The artefact was a volcanic flake with riverine cortex. The deposits consisted of a reddish brown loam with and large volcanic rocks and limestone outcropping scattered across the slope and low hill. Visibility within the general area was approximately 20%. This area does not appear to have been subject to any ploughing activities in the past give the presence of bedrock outcropping in the immediate area.

	
Plate 45. View east, scale pole shows artefact location.	Plate 46. Close up of Wellington Nth IF 13.

Wellington Nth IF14

This site consisted of a single artefact on raised flat spur in a cleared paddock. The artefact was a single platform volcanic core that had 2 negative flake scars and had 25% riverine cortex. The deposits consisted of a reddish brown loam and visibility within the general area was approximately 20%. The area has been subject to disturbance from ploughing in the past.

	
Plate 47. View north, scale pole shows artefact location.	Plate 48. Close up of Wellington Nth IF 14.

Wellington Nth IF15

This site consisted of a single artefact in an exposure on a contour bank on an otherwise flat and cleared paddock. The artefact was a quartzite flake with 30% riverine cortex. The deposits consisted of a reddish brown loam and visibility within the general area outside the exposure was approximately 10%. The area has been subject to disturbance from ploughing in the past and landscape modification with contour banks.

	
Plate 49. View north, scale pole shows artefact location on contour bank.	Plate 50. Close up of Wellington Nth IF 15.

Wellington Nth IF16

This site consisted of a single artefact in a flat and cleared paddock. The artefact was a quartzite flake with 20% riverine cortex. The deposits consisted of a reddish brown loam and visibility within the general area was approximately 20%. The area has been subject to disturbance from ploughing in the past.

	
Plate 51. View south, scale pole shows artefact location.	Plate 52. Close up of Wellington Nth IF 16.

Wellington Nth IF17

This site consisted of a single artefact in a flat and cleared paddock. The artefact was a reutilised piece of clear glass. The reutilised piece was the bottom of a glass bottle with retouch along the top margin. The deposits consisted of a reddish brown loam and visibility within the general area was approximately 10%. The area also had other pieces of scatter glass and ceramics in the area that were inspected but no other pieces appeared to be retouched or reutilised.

	
Plate 53. View south, scale pole shows artefact location.	Plate 54. Close up of Wellington Nth IF 17.

Wellington Nth IF18

This site consisted of a single artefact on a low slope in a cleared paddock approximately 30 m north of a small drainage line. The artefact was a single platform volcanic core with three complete negative flake scares and some core preparation noted. The core has 80% riverine cortex. The deposits consisted of a reddish brown loam and visibility within the general area was approximately 20%. The area has been subject to disturbance from ploughing in the past.

	
Plate 55. View south, scale pole shows artefact location.	Plate 56. Close up of Wellington Nth IF 18.

Wellington Nth IF19

This site consisted of a single artefact on a low slope in a cleared paddock approximately 5 m off the adjacent fence line. The artefact was a proximal fragment of quartz. The deposits consisted of a reddish brown loam and visibility within the general area was approximately 40%. The area has been subject to disturbance from ploughing in the past.

	
Plate 57. View north, scale pole shows artefact location.	Plate 58. Close up of Wellington Nth IF 19.

Wellington Nth IF20

This site consisted of a single artefact on a low slope in a cleared paddock. The artefact was a distal fragment of chert. The deposits consisted of a reddish brown loam and visibility within the general area was approximately 40%. The area has been subject to disturbance from ploughing in the past.

	
Plate 59. View west, scale pole shows artefact location.	Plate 60. Close up of Wellington Nth IF 20.

Wellington Nth IF21

This site consisted of a single artefact on a low slope in a cleared paddock. The artefact was a fine grained siliceous retouched flake with retouch along the distal margin for 63 mm. The deposits consisted of a reddish brown loam and visibility within the general area was approximately 35%. The area has been subject to disturbance from ploughing in the past and the artefact had some stock and plough damage.

	
Plate 61. View east, scale pole shows artefact location.	Plate 62. Close up of Wellington Nth IF 21.

Wellington Nth IF22

This site consisted of a single artefact on a low slope in a cleared paddock. The artefact was a chert flake core. The deposits consisted of a reddish brown loam and visibility within the general area was approximately 20%. The area has been subject to disturbance from ploughing in the past.

	
Plate 63. View south-east , scale pole shows artefact location.	Plate 64. Close up of Wellington Nth IF 22.

Wellington Nth IF23

This site consisted of a single artefact on a low slope in a cleared paddock. The artefact was a volcanic flake with 20% riverine cortex. The deposits consisted of a reddish brown loam and visibility within the general area was approximately 40%. The area has been subject to disturbance from ploughing in the past.

	
Plate 65. View south, scale pole shows artefact location.	Plate 66. Close up of Wellington Nth IF 23.

Wellington Nth IF24

This site consisted of a single artefact on a low slope in a cleared paddock. The artefact was a fine grained siliceous single platform core in an exposure. The deposits consisted of a reddish brown loam and visibility within the general area was approximately 35%. The area has been subject to disturbance from ploughing in the past and the artefact had some stock damage.

	
Plate 67. View west, scale pole shows artefact location.	Plate 68. Close up of Wellington Nth IF 24.

Wellington Nth IF25

This site consisted of a single artefact on a low slope in a cleared paddock. The artefact was a quartz flake. The deposits consisted of a reddish brown loam and visibility within the general area was approximately 15%. The area has been subject to disturbance from ploughing in the past.

	
Plate 69. View east, scale pole shows artefact location.	Plate 70. Close up of Wellington Nth IF 25.

Wellington Nth IF26

This site consisted of a single artefact on a low slope in a cleared paddock. The artefact was a fine grained siliceous multiple platform core. The deposits consisted of a reddish brown loam and visibility within the general area was approximately 25%. The area has been subject to disturbance from ploughing in the past.

	
Plate 71. View north, scale pole shows artefact location.	Plate 72. Close up of Wellington Nth IF 26.

Wellington Nth IF27

This site consisted of a single artefact on the flats associated with a drainage line in a cleared paddock. The artefact was a flaked piece of quartz. The deposits consisted of a reddish brown loam and visibility within the general area was approximately 40%. The area has been subject to disturbance from ploughing in the past.

	
Plate 73. View west, scale pole shows artefact location.	Plate 74. Close up of Wellington Nth IF 27.

Wellington Nth IF28

This site consisted of a single artefact on the flats associated with a drainage line in a cleared paddock. The artefact was a single platform quartz core with a single negative flake scar and 50% riverine cobble cortex. The deposits consisted of a reddish brown loam and visibility within the general area was approximately 20%. The area has been subject to disturbance from ploughing in the past.

	
Plate 75. View north, scale pole shows artefact location.	Plate 76. Close up of Wellington Nth IF 28.

Wellington Nth AFT1

This site consisted of two artefacts approximately 2 m apart from each other on a gentle slope in a cleared paddock. The artefacts were two complete chert flakes. Macroscopic observations of grain, colour and material suggest that the two artefacts are derive from the same source. As such, the site is likely to be the result of a single discrete reduction event. The complete flakes were both identified as products of the tertiary stage of reduction. The artefacts were located on a reddish brown loam deposits and visibility within the area was 60%. The area has been subject to disturbance from ploughing in the past.

	
Plate 77. View west, scale pole shows artefact location.	Plate 78. Close up of flake from Wellington Nth AFT1.

Wellington Nth AFT2

The site is a low density artefact scatter measuring 40 m (north/south) by 160 m (east/west). Six artefacts were recorded scattered across a low hill crest and extending down the slope. The artefact lithologies are volcanic (n=4; 33.3%), basalt (n=2; 33.3%) and quartz (n=2; 33.3%). The typologies recorded included complete flakes (n=14; 66.6%), a flaked piece (n=1; 16.7%) and an edge grounded axe (n=1; 16.7%). Field observations suggest that artefacts were from tertiary and secondary stages of reduction with one artefact noted to have riverine cortex. A basalt flake was recorded to have been retouched along the distal margin. The axe was broken; it is unclear if this damage was the result of ploughing activities. The axe was noted by the Aboriginal representatives onsite to be relativity close to the ground edge axe in the site Wellington Solar Farm AS1 recorded in the adjacent Frist Solar project area. The artefacts were located on a reddish brown loam deposit and visibility within the area was 35%. A number of white calcified stone material that can be crushed down to form a white ochre like substance was noted across the site and general area. The Aboriginal representatives onsite requested to have the opportunity to salvage this material for cultural use prior to development.

	
Plate 79. Close up of edge grounded axe from Wellington Nth AFT2.	Plate 80. Close up of edge grounded axe from Wellington Nth AFT2.

	
Plate 81. Close up of basalt flake from Wellington Nth AFT2.	Plate 82. Close up of quartz flake from Wellington Nth AFT2.
	
Plate 83. View east, scale shows axe location.	Plate 84. View west to tributary of Wuuluman Creek.

Wellington Nth AFT3

This site consisted of two artefacts approximately 1 m apart from each other on a gentle slope in a cleared paddock. The artefacts were two complete volcanic flakes. Macroscopic observations of grain, colour and material suggest that the two artefacts are derive from different sources. One of the flakes was noted to have 5% riverine cortex. The artefacts were located on a reddish brown loam deposits and visibility within the area was 25%. The area has been subject to disturbance from ploughing in the past.

	
Plate 85. View north-west, scale pole shows artefact location.	Plate 86. Close up of flake from Wellington Nth AFT3.

Wellington Nth AFT4

The site is a low density artefact scatter measuring 40 m (north/south) by 25 m (east/west). Seven artefacts were recorded scattered across a raised flat spur adjacent to a low hill with outcropping. The artefacts were three distal fragments (n=3; 42.8%) and four complete flakes (n=4; 57.2%). The lithologies recorded included volcanic (n=4; 57.2%), chert (n=2; 28.6%) and quartz (n=1; 14.2%). The artefacts were located along a track on a reddish brown loam deposit and visibility within the area was 30%. The area has been subject to disturbance from ploughing in the past.

	
Plate 87. View north along track.	Plate 88. Close up of distal fragment from Wellington Nth AFT4.

Wellington Nth AFT5

The site is a low density artefact scatter with two artefacts located 20 m from each other on a raised flat spur in a cleared paddock. The artefacts were a volcanic single platform core and an edge grounded axe. Macroscopic observations of grain, colour and material suggest that the two artefacts are derive from different parent sources. The core was noted to have 6 negative flake scars and the axe was noted to have some flaking and edge damage. The artefacts were located on a reddish brown loam deposits and visibility within the area was 60%. The area has been subject to disturbance from ploughing in the past.

	
Plate 89. View west, scale pole shows axe location.	Plate 90. Close up of edge grounded axe from Wellington Nth AFT5.

Wellington Nth AFT6

The site is a low density artefact scatter with three artefacts located 2 m from each other on a low slope in a cleared paddock. The artefacts were a two chert flakes and quartz flake. Macroscopic observations of grain, colour and material suggest that the two chert artefacts are derive from different parent sources. The artefacts were located on a reddish brown loam deposits and visibility within the area was 60%. The area has been subject to disturbance from ploughing in the past.

	
Plate 91. View west down slope.	Plate 92. Close up of flake Wellington Nth AFT6.

Wellington Nth AFT7

The site is a small low density artefact scatter measuring 50 m (north/south) by 50 m (east/west) with three artefacts on a low slope in a cleared paddock. The artefacts were a quartz core, a basalt flake and a volcanic core. The artefacts were located on a reddish brown loam deposits and visibility within the area was 60%. The area has been subject to disturbance from ploughing in the past.

	
Plate 93. View west with pole at flake artefact.	Plate 94. Close up of flake Wellington Nth AFT7.

Wellington Nth AFT8

The site is a small low density artefact scatter with two artefacts approximately 15 m from each other along a drainage line in a cleared paddock. The artefacts were a quartz and a volcanic flake. The artefacts were located on a reddish brown loam deposits and visibility within the area was 15%. The area has been subject to disturbances from ploughing in the past.

	
Plate 95. View south along drainage line.	Plate 96. Close up of flake Wellington Nth AFT8.

Wellington Nth AFT9

The site is a large low density artefact scatter measuring approximately 1,000 m (north/south) by 300 m (east/west) conforming to the upper section of an unnamed creek and its associated flats. A total of 44 artefacts were recorded, their lithologies are predominately volcanic (n=30; 68.2%) with lesser numbers of fine-grained siliceous, quartzite, quartz, basalt and chert artefacts recorded. The typologies recorded included complete flakes (n=16; 36.4%), cores (n=15; 34.1%), flaked pieces (n=5; 11.4%), hammerstones (n=3; 6.8 %), axes (n=3; 6.8%) a distal fragment (n=1; 2.3%) and a proximal fragment (n=1; 2.3%). Field observations suggest that artefacts were from tertiary and secondary stages of reduction with a number of artefacts (n=14; 31.8%) noted to have riverine cortex. Given that a third of the artefacts had riverine cortex it is likely that these materials were sourced from the nearby creek. The two axes were also noted to be ground edge axes while the third was an axe blank.

In summary, the size of the site and number of artefacts indicate that the site was likely occupied on more than one occasion at low-moderate intensity. The main activities evident by the assemblage are the manufacture of artefacts. The artefacts were located on a reddish brown loam deposit on the raised flats in close proximity to the unnamed creek and visibility within the area ranged from 100% to 15%. The area has been subject to disturbances from ploughing and farming activities in the past. A well-used access track also runs along the western bank of the creek.

	
Plate 97. Close up of edge grounded axe from Wellington Nth AFT9.	Plate 98. Close up of edge grounded axe from Wellington Nth AFT9.
	
Plate 99. Close up of chert core from Wellington Nth AFT9.	Plate 100. Close up volcanic flake from Wellington Nth AFT9.
	
Plate 101. Close up of volcanic core from Wellington Nth AFT9.	Plate 102. Close up quartz flake from Wellington Nth AFT9.

	
Plate 103. View north along unnamed creek.	Plate 104. View south-west along flats associated with unnamed creek.
	
Plate 105. View east from raised flats associated with the creek.	Plate 106. View west from raised flats associated with the creek.

Wellington Nth ST1 (possible modified tree)

This site consists of a single scarred tree considered possible to be Aboriginal in origin within a stand of trees on the edge of a raised rocky outcropping adjacent to an unnamed creek. The Black Box tree is alive, standing and in good condition that has a single small scar assessed as possible to be Aboriginal in origin. The large scar on the tree is noted to be natural and does not conform to the standard scarring morphology accepted for Aboriginal modification (cf. Long, 2005). However, the smaller scar on the base of the trunk is considered possible to be Aboriginal in origin. The scar is tear drop in shape and has had significant regrowth with the original shape of the scar unable to be determined. The scar is north facing and the base of the scar is approximately 80 cm above the ground. The scar measures 56 cm in length by 39 cm in width and has a depth of 15 cm. The circumference of the trunk is 3.4m. As the scar was determined to possibly be Aboriginal in nature, the Aboriginal representatives requested that the tree be avoided by the development.

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Plate 107. Close up of possible scar at Wellington Nth ST1.	Plate 108. View south of Wellington Nth ST1.

Wellington Nth ST2 (possible modified tree)

This site consists of a single scarred tree considered possible to be Aboriginal in origin within a stand of trees on the edge of a raised rocky outcropping adjacent to an unnamed creek. The Yellow Box tree is alive, standing and in good condition with that has a single scar on the base of the trunk. It is considered as assessed as possible to be Aboriginal in origin. The scar on the base of the trunk is considered possibly to be Aboriginal in origin. The scar is oval like in shape and has had significant regrowth. The possible scar is west facing and the base of the scar is approximately 64 cm above the ground. The scar measures 86 cm in length by 30 cm in width and has a depth of 18 cm. The circumference of the trunk is 3.4 m. As the scar was determined to possibly be Aboriginal in nature, the Aboriginal representatives requested that the tree be avoided by the development.

	
Plate 109. Close up of possible scar at Wellington Nth ST2.	Plate 110. View east of Wellington Nth ST2.

Wellington Nth European Survey Marker Tree 1

This site consists of a single European survey marker tree considered not to be Aboriginal in origin. The tree is a mature living Black Box tree approximately 15 m in height in good condition that has a single oval shaped scar facing north. The scar has had significant regrowth with evidence of the regrowth being cut away left at the base of the tree. The letter and/or number I can be noted as engraved however any other engraved writings are covered by regrowth and unable to be seen. A metal nail and metal axe marks were also noted.

	
Plate 111. View south of Wellington Nth European Survey Marker Tree 1.	Plate 112. Close-up of Wellington Nth European Survey Marker Tree 1.

4.3.1 Consideration of potential for subsurface material

Discussions were held in the field with the representatives present to assess the potential for subsurface deposits across the proposal site. Based on the land use history, an appraisal of the landscape, soil, level of disturbance and the results from the field survey, it was concluded that there was negligible potential for the presence of intact subsurface deposits with high densities of objects or cultural material within the proposal site.

While the site Wellington Nth AFT9 was noted to have higher archaeological sensitivity given that it had a number of artefacts scattered across the eastern and western bank of an unnamed creek and its associated flats, the scatter is considered to be low density with an average of 1.2 surface artefacts per hectare. Additionally, the banks were inspected for any evidence of cultural layers or Aboriginal objects eroding from the deposit. No evidence for high density intact subsurface deposits was identified during the field inspection of the banks along the creek. It was therefore determined that while Wellington Nth AFT9 has higher archaeological sensitivity compared to the remainder of the proposal site there was negligible potential for intact subsurface deposits with high densities of objects. Subsurface testing was therefore not warranted.

Table 6. Artefacts and possible scarred tree characteristics

Artefact #	Site Name	Artefact Type	Raw Material	Dimensions (mm)			Comments
				Length	Width	Thickness	
1	Wellington Nth AFT1	Flake	Chert	48	29	8	1 negative scar, tertiary reduction, flake scar platform, broad platform and feather termination
2	Wellington Nth AFT1	Flake	Chert	30	15	7	flake scar platform, focal platform, feather termination tertiary reduction
3	Wellington Nth AFT2	Axe	Volcanic	55	66	25	ground edge axe 1 negative flake scar on one side, ground surface both sides extending for 61 x 29mm on intact surface
4	Wellington Nth AFT2	Flake	Basalt	78	62	20	retouched along distal margin for 58mm, riverine cortex 30%, flake scar platform, broad platform, feather termination secondary reduction
5	Wellington Nth AFT2	Flake	Volcanic	43	40	10	flake scar platform, focal platform, feather termination
6	Wellington Nth AFT2	Flake	Quartz	40	25	7	flake scar platform, broad platform, feather termination
7	Wellington Nth AFT2	Flaked piece	Basalt	63	35	14	
8	Wellington Nth AFT2	Flake	Quartz	39	24	14	flake scar platform, focal platform, feather termination, tertiary reduction
9	Wellington Nth AFT3	Flake	Volcanic	25	33	13	flake scar platform, broad platform, feather termination
10	Wellington Nth AFT3	Flake	Volcanic	38	43	8	flake scar platform, broad platform, feather termination
11	Wellington Nth AFT4	Distal fragment	Chert	10	10	3	feather termination
12	Wellington Nth AFT4	Flake	Quartz	18	10	4	flake scar platform, focal platform, feather termination
13	Wellington Nth AFT4	Distal fragment	Volcanic	34	18	6	

Artefact #	Site Name	Artefact Type	Raw Material	Dimensions (mm)			Comments
				Length	Width	Thickness	
14	Wellington Nth AFT4	Flake	Volcanic	22	28	3	
15	Wellington Nth AFT4	Distal fragment	Volcanic	25	26	8	
16	Wellington Nth AFT4	Flake	Chert	20	16	6	flake scar platform, focal platform, feather termination, tertiary reduction
17	Wellington Nth AFT4	Flake	Volcanic	36	46	12	indeterminate platform, indeterminate platform, feather termination
18	Wellington Nth AFT5	Core	Volcanic	41	70	47	single platform 6 negative scars
19	Wellington Nth AFT5	Axe	Volcanic	104	56	32	grinding 58 by 28 grounded edge with flaking damage
20	Wellington Nth AFT6	Flake	Chert	30	24	8	2 negative flake scars, flake scar platform, broad platform, feather termination
21	Wellington Nth AFT6	Flake	Chert	24	33	12	40% riverine, flake scar platform, broad platform, feather termination
22	Wellington Nth AFT6	Flake	Quartz	15	10	8	flake scar platform, broad platform, feather termination
23	Wellington Nth AFT7	Core	Quartz	40	45	40	milky quartz core 2 negative flake scars some stock damage
24	Wellington Nth AFT7	Core	Volcanic	55	50	15	
25	Wellington Nth AFT7	Flake	Basalt	55	75	15	riverine cortex, flake scar platform, broad platform, hinge termination, tertiary reduction
26	Wellington Nth AFT8	Flake	Volcanic	20	36	9	flake scar platform, broad platform, feather termination
27	Wellington Nth AFT8	Core	Volcanic	43	48	40	
28	Wellington Nth AFT9	Flake	Volcanic	38	28	12	1 neg same material as core. flake scar platform, broad platform, feather termination

Artefact #	Site Name	Artefact Type	Raw Material	Dimensions (mm)			Comments
				Length	Width	Thickness	
29	Wellington Nth AFT9	Axe	Volcanic	109	56	38	ground surface 51x 15mm negative flaking on dorsal surface
30	Wellington Nth AFT9	Core	Volcanic	92	52	38	multiple platform 7 negative flake scars 4 platforms 40% riverine cortex
31	Wellington Nth AFT9	Hammerstone	Volcanic	89	65	32	possible plough damage, river cobble
32	Wellington Nth AFT9	Flake	Fine-grained siliceous	47	46	12	1 negative flake scar, flake scar platform, broad platform, feather termination
33	Wellington Nth AFT9	Flake	Volcanic	31	45	7	20% riverine cortex, flake scar platform, broad platform, feather termination
34	Wellington Nth AFT9	Flaked Piece	Quartzite	-	-	-	less than 40 mm in size
35	Wellington Nth AFT9	Hammerstone	Volcanic	157	62	38	1 neg flake scar on edge 20x49mm. pitting and minor flaking on 26x20mm
36	Wellington Nth AFT9	Flake	Quartzite	28	42	6	flake scar platform, broad platform, step termination
37	Wellington Nth AFT9	Flake	Volcanic	35	43	13	flake scar platform, broad platform, feather termination
38	Wellington Nth AFT9	Flake	Quartzite	26	18	4	flake scar platform, focal platform, feather termination
39	Wellington Nth AFT9	Core	Volcanic	58	53	30	natural breakage along cleavage line 1 platform and 1 scar
40	Wellington Nth AFT9	Axe	Volcanic	49	55	29	axe blank, flaking along one side and stepping along the other margin, largest flake 16x 7mm working extends 26mm
41	Wellington Nth AFT9	Flake	Quartz	26	41	10	flake scar platform, broad platform, feather termination
42	Wellington Nth AFT9	Core	Volcanic	39	44	34	5 negative scars 2 platform

Artefact #	Site Name	Artefact Type	Raw Material	Dimensions (mm)			Comments
				Length	Width	Thickness	
43	Wellington Nth AFT9	Distal Fragment	Volcanic	-	-	-	feather termination, less than 40 mm in size
44	Wellington Nth AFT9	Flaked Piece	Quartz	-	-	-	less than 30 mm in size
45	Wellington Nth AFT9	Flake	Volcanic	40	34	9	some damage along distal margin. flake scar platform, focal platform, feather termination
46	Wellington Nth AFT9	Hammerstone	Volcanic	-	-	-	Less than 80 mm in size
47	Wellington Nth AFT9	Core	Volcanic	80	50	24	single platform 3 negative flake scars, over hang removal for 82mm, 30% riverine cortex
48	Wellington Nth AFT9	Core	Volcanic	86	80	21	20% riverine cortex 55mm of OHR, 3 platforms 3 negative scars
49	Wellington Nth AFT9	Flake	Volcanic	41	48	13	stock damage, flake scar platform, broad platform, feather termination
50	Wellington Nth AFT9	Core	Chert	65	30	55	terrestrial cortex 10-20% 1 complete s scar some heat damage 20%
51	Wellington Nth AFT9	Axe	Volcanic	124	71	28	some working on distal edge grounded width 12mm by 40mm long and 13mm from top edge
52	Wellington Nth AFT9	Flake	Volcanic	51	56	16	plough damage, cortex platform, broad platform, feather termination
53	Wellington Nth AFT9	Flake	Chert	27	24	6	5% riverine cortex, flake scar platform, broad platform, feather termination
54	Wellington Nth AFT9	Core	Fine-grained siliceous	25	45	43	1 platform, 4 negative scars, 20% heat pop, flake core
55	Wellington Nth AFT9	Core	Volcanic	35	82	61	1 platform, 4 scars, 40% riverine cortex, flake core
56	Wellington Nth AFT9	Flake	Chert	26	30	10	1 negative flake scar, flake scar platform, broad platform, feather termination

Artefact #	Site Name	Artefact Type	Raw Material	Dimensions (mm)			Comments
				Length	Width	Thickness	
57	Wellington Nth AFT9	Flaked Piece	Quartzite	26	30	9	
58	Wellington Nth AFT9	Flaked Piece	Volcanic	14	35	25	
59	Wellington Nth AFT9	Proximal Fragment	Volcanic	24	26	9	20% riverine cortex, flake scar platform, broad platform
60	Wellington Nth AFT9	Flaked Piece	Volcanic	20	32	6	10% riverine cortex
61	Wellington Nth AFT9	Flake	Volcanic	28	36	7	flake scar platform, broad platform, feather termination
62	Wellington Nth AFT9	Core	Volcanic	50	97	51	1 platform, 5 negative scars, 40% riverine cortex
63	Wellington Nth AFT9	Core	Volcanic	69	168	36	1 platform 1 complete scar 50%pebble cortex
64	Wellington Nth AFT9	Flake	Volcanic	44	64	10	flake scar platform, broad platform, feather termination, tertiary reduction
65	Wellington Nth AFT9	Core	Basalt	32	40	30	multiple platform core 3 platforms
66	Wellington Nth AFT9	Flake	Basalt	44	34	13	flake scar platform, broad platform, feather termination, tertiary reduction
67	Wellington Nth AFT9	Core	Volcanic	30	50	50	single platform core some stock damage
68	Wellington Nth AFT9	Flake	Quartz	22	20	8	flake scar platform, broad platform, feather termination, tertiary reduction
69	Wellington Nth AFT9	Flake	Quartz	11	13	4	flake scar platform, indeterminate platform, feather termination
70	Wellington Nth AFT9	Core	Volcanic	70	84	38	multiple platform core some plough and stock damage 10 percent riverine cortex

Artefact #	Site Name	Artefact Type	Raw Material	Dimensions (mm)			Comments
				Length	Width	Thickness	
71	Wellington Nth AFT9	Core	Volcanic	23	64	57	single platform core
72	Wellington Nth IF1	Core	Volcanic	85	72	25	40% riverine cortex 1 negative flake scar from one platform.
73	Wellington Nth IF2	Flake	Volcanic	43	43	13	flake scar platform, broad platform, feather termination
74	Wellington Nth IF3	Core	Volcanic	66	87	38	riverine cortex 50 percent, single platform core
75	Wellington Nth IF4	Flake	Quartz	22	20	6	
76	Wellington Nth IF5	Core	Quartz	26	37	40	single platform core, 3 negative flake scars, 25% pebble cortex
77	Wellington Nth IF6	Flaked Piece	Quartz	-	-	-	Less than 30mm in size
78	Wellington Nth IF7	Flake	Quartz	25	18	7	flake scar platform, broad platform, feather termination
79	Wellington Nth IF8	Flake	Volcanic	31	20	4	flake scar platform, broad platform, feather termination, tertiary reduction
80	Wellington Nth IF9	Core	Fine-grained siliceous	45	46	52	multiple platform core
81	Wellington Nth IF10	Flake	Basalt	35	50	14	some stock damage 20 percent riverine cortex, flake scar platform, broad platform, feather termination, tertiary reduction
82	Wellington Nth IF11	Flake	Quartz	21	25	9	flake scar platform, broad platform, feather termination, tertiary reduction
83	Wellington Nth IF12	Flake	Volcanic	30	43	12	flake scar platform, broad platform, feather termination
84	Wellington Nth IF13	Flake	Volcanic	46	32	8	riverine cortex flake scar platform, broad platform, feather termination, primary reduction

Artefact #	Site Name	Artefact Type	Raw Material	Dimensions (mm)			Comments
				Length	Width	Thickness	
85	Wellington Nth IF14	Core	Volcanic	52	26	19	single platform 2 scars, 25 percent riverine cortex, river pebble
86	Wellington Nth IF15	Flake	Quartzite	52	52	15	flake scar platform, broad platform, feather termination, secondary termination
87	Wellington Nth IF16	Flake	Quartzite	35	35	8	20 percent riverine cortex flake scar platform, broad platform, feather termination, secondary reduction
88	Wellington Nth IF17	RUP	Glass	35	25	13	glass bottle bottom with retouch along top margin multi direction.
89	Wellington Nth IF18	Core	Volcanic	110	63	38	80% riverine cortex, single platform with 3 complete negative scars, core preparation
90	Wellington Nth IF19	Proximal Fragment	Quartz	26	34	10	flake scar platform, broad platform
91	Wellington Nth IF20	Distal Fragment	Chert	26	13	5	50% terrestrial cortex
92	Wellington Nth IF21	Retouched flake	Fine-grained siliceous	46	43	26	ohr retouch for 63mm, some fresh breakage, flake scar platform, broad platform
93	Wellington Nth IF22	Flake core	Chert	43	50	55	flake core
94	Wellington Nth IF23	Flake	Volcanic	26	24	5	20 percent riverine cortex, flake scar platform, broad platform, feather termination, secondary reduction
95	Wellington Nth IF24	Core	Fine-grained siliceous	10	50	30	single platform core some stock damage
96	Wellington Nth IF25	Flake	Quartz	32	18	5	flake scar platform, focal platform, feather termination, tertiary reduction

Artefact #	Site Name	Artefact Type	Raw Material	Dimensions (mm)			Comments
				Length	Width	Thickness	
97	Wellington Nth IF26	Core	Fine-grained siliceous	43	45	25	multiple platform 5 negative scars
98	Wellington Nth IF27	Flaked piece	Quartz	12	14	4	
99	Wellington Nth IF28	Core	Quartz	48	49	40	1 negative flake scar 1 platform cortex 50% river cobble
100	Wellington Nth ST1	Possible Scarred tree	Eucalyptus	56	39	15	circumference of trunk 3.4 m, regrowth for 15 cm into scar, natural scar above with nail in tree, north facing scar, approx. 80 cm above ground surface, tree height 15 m, scar is tear drop in shape and has had significant regrowth with the original shape of the scar unable to be determined.
101	Wellington Nth ST2	Possible Scarred tree	Eucalyptus	89	30	18	Circumference of truck 3.4 m, in stand of trees yellow box, 50 m from creek, tree height 15 m, natural growths above scar, scar is oval like in shape and has had significant regrowth, west facing, base of the scar is approximately 64 cm above the ground.
102	Wellington Nth European Survey Marker Tree 1	European Survey marker tree	Eucalyptus	55	25	15	43 cm by 76 cm portion cut on ground is regrowth cut off to expose scar, grey box tree, significant regrowth over scar and possible lettering, surveying tree with letter 1 engraved, unable to read/ see other writings but likely covered by regrowth, new branches beginning to grow out of scar. Not Aboriginal in origin, metal axe marks also noted.

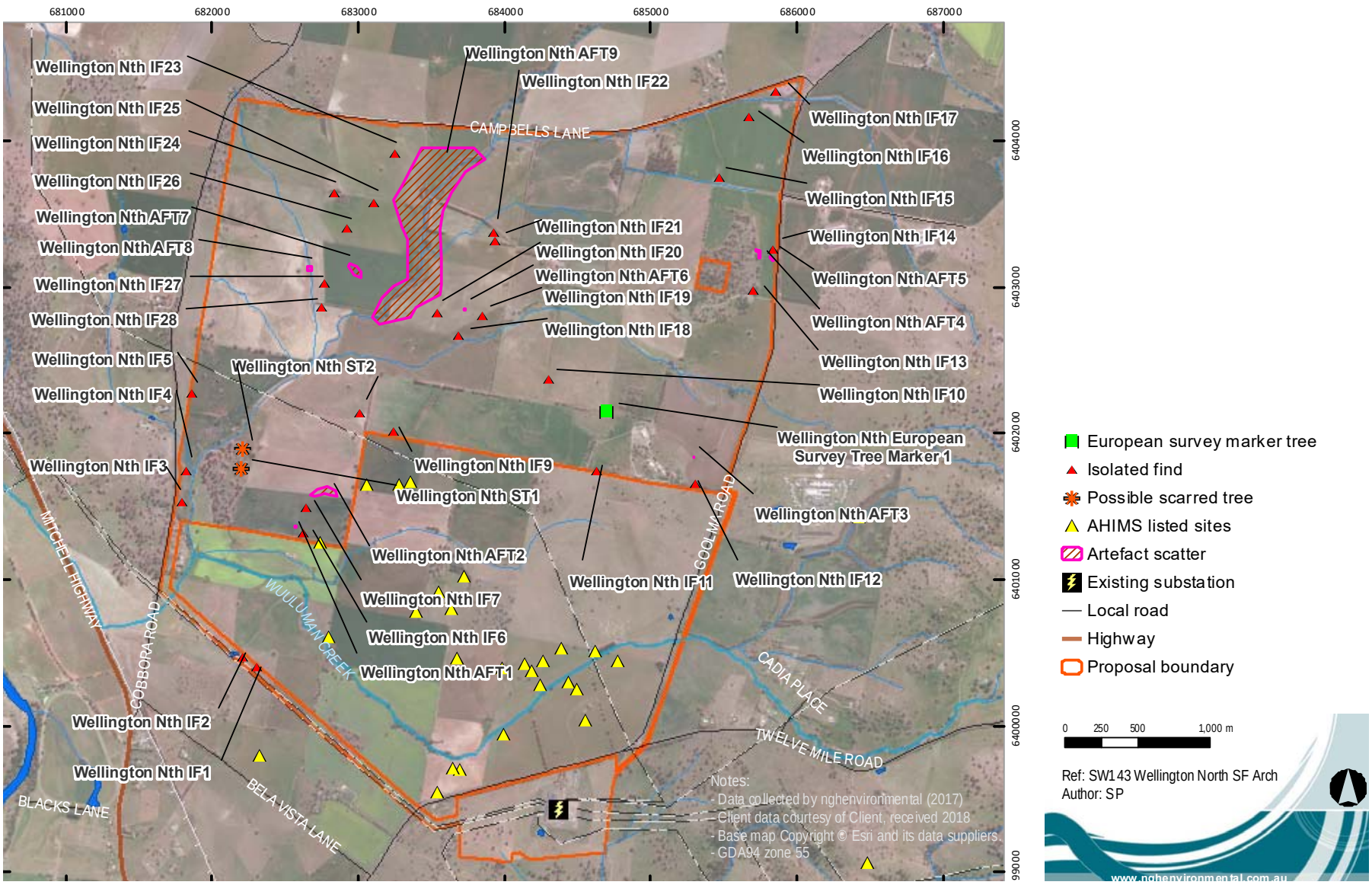

Figure 11. Overview of recorded sites.

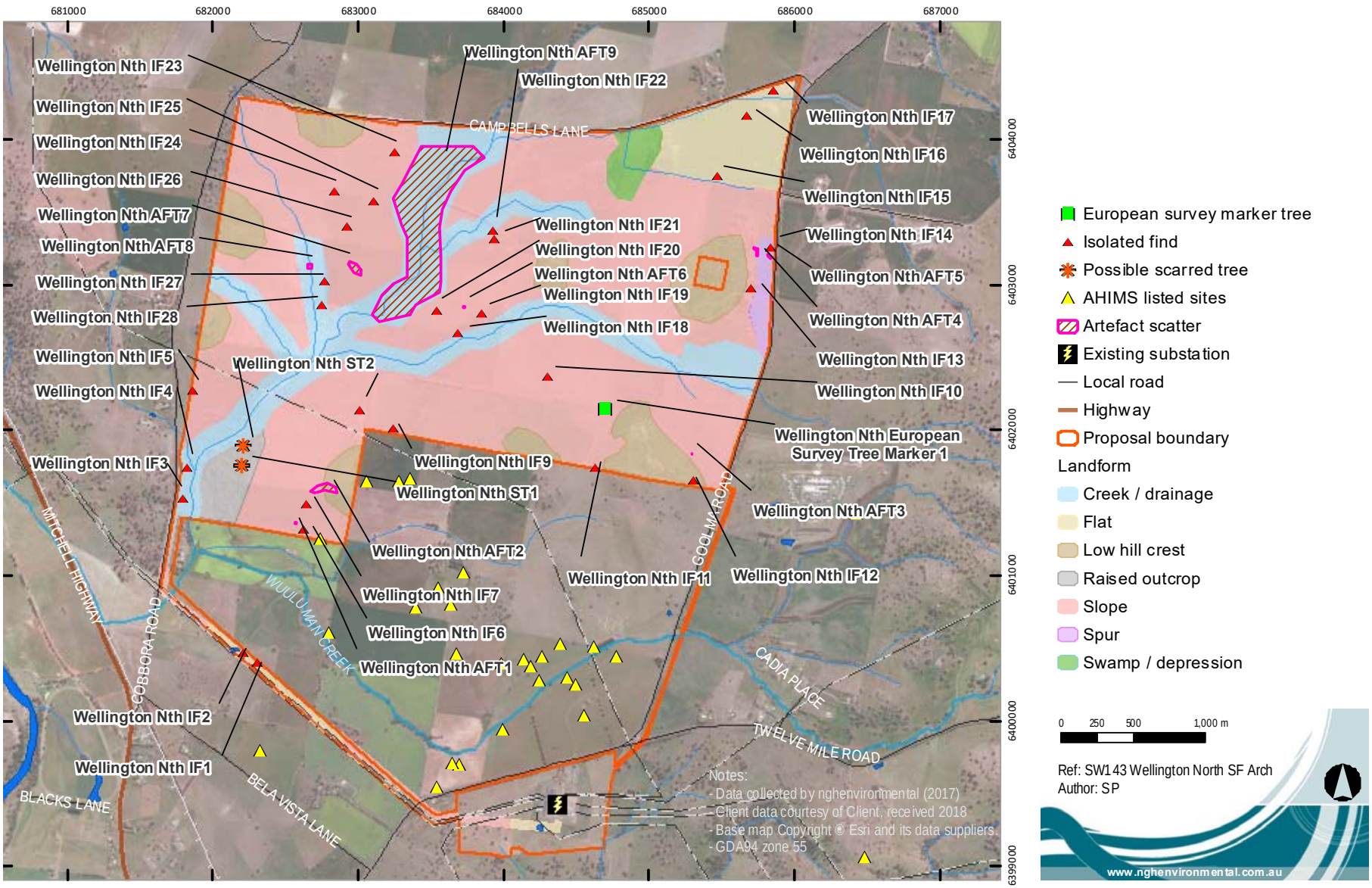

Figure 12. Overview of recorded sites and landforms.

4.4 DISCUSSION

The results of previous archaeological surveys in the Wellington region show that there are sites and artefacts present across the landscape. The predictions based on the modelling for the proposal site were that stone artefacts and scarred trees were the most likely manifestation of Aboriginal occupation of the area. It was noted that while Aboriginal sites may be expected throughout all landscapes the most archaeologically sensitive areas occur in proximity to water. The survey results have confirmed this prediction with stone artefacts recorded as isolated finds and artefact scatters across the proposal site, even in areas highly disturbed by farming activities. The sites were identified across a range of landforms including slopes, flats, spurs, low hill crests and along creeks/drainage lines and their associated flats.

Given the level of clearing within the proposal site the presence of only two possible scarred trees is not surprising with few mature native trees remaining within the assessment area. Scarred trees provide a tangible link to the past and provide evidence of Aboriginal subsistence activities through the deliberate removal of bark or wood. It is likely that the high number of scarred trees as a site type in the area (n=22; 20.9%) is related to their more obtrusive nature.

Over half of the artefacts recorded (n=51; 51.5%) during the survey were located along creeks/drainage lines and their associated flats within 46 artefacts recorded in close proximity to a creek. The concentration of artefacts (n=44) in northern portion of the tributary of Wuuluman Creek and its associated flats within site Wellington Nth AFT 9 indicate that the area was likely occupied on more than one occasion at low intensity. Three of the five axes recorded within the proposal site were located within this site including two ground edge axes and an axe blank. The three hammerstones recorded within the proposal site are also all located within this site which is located on the raised flats either side of a creek. The area for Wellington Nth AFT 9 was noted to be on more elevated flat ground which surrounded the unnamed creek compared to the lower flats surrounding the creek line to the south.

The presence of stone artefacts in low densities across the remainder of the proposal site is likely to represent the opportunistic use and movement of people through the landscape. The area was likely used intermittently over a period of time for camping, hunting and gathering resources. Based on this assumption, there is every chance that there are similar stone artefacts across similar landscapes in the Wellington area.

The two axes recorded away from the creek were located on a raised flat spur and a low hill crest. It should be noted that the ground edge axe in Wellington Nth AFT2 is approximately 300 m west of the site Wellington Solar Farm AS1 recoded during survey for the adjacent First Solar Wellington Solar Farm project.

The artefacts recorded were manufactured primarily from volcanic material (n=51; 51.5%) and quartz (n=18; 18.1%) that is common for the area. A lesser number of chert (n=11; 11.1%), basalt (n=6; 6.1%), fine-grained siliceous (n=6; 6.1%), quartzite (n=6; 6.1%) and glass (n=1; 1.0%) artefacts were also recorded suggesting these materials may have been brought into the area. The presence of flakes, cores, hammerstones and an axe blank indicates that tool manufacture likely occurred onsite, although the presence of four edge ground axes may imply some completed tools were also brought to the site. The high number of cores (n=28; 28.2%) may be representative of the high discard rate of raw material in the area. A number of the cores were noted to be pebbles which suggests the opportune selection of materials that were possibly sourced from a local creeks given that pebbles were noted on the creek bed and eroding from sections of the creek bank within the proposal site.

It was noted by the Aboriginal representatives that the onsite outcropping material was of poor quality and that it would not have been suitable for artefact manufacture. No evidence of quarrying from the outcrops was identified.

The use of a volcanic material for the manufacture of the edge-grounded axes is common for the region however it should be noted that two grinding grooves have been recorded to date within the AHIMS search area. The recorded grinding groove sites are respectively recorded 13 km south-west and 17 km south-east of the proposal site. This suggests that edge-grounded axes in the Wellington area may have been shaped and sharpened within the general area and used locally.

It should also be noted that the results of this investigation have increased the number of sites recorded in the local area by 25.9% from 106 to 143. The dominance of artefacts as a common site type within the area is further supported by the results of this survey. The implications for this relate to significance assessments and the related appraisal of site representativeness. We would argue that there are likely to be many hundreds of such sites in the local area, and that the relatively low number of sites recorded in AHIMS is merely an indication that few surveys have been undertaken in the area and therefore they are yet to be found.

In terms of the current proposal therefore, extrapolating from the results of this survey, it is possible that additional stone artefacts could occur within the proposed development footprint. However, consideration must also be given to the level of disturbance of any such sites. Based on the land use history of the proposal site, and an appraisal of the results from the field survey, there is negligible potential for the presence of intact subsurface deposits with high densities of objects or cultural material within Wellington North Solar Plant proposal site.

5 CULTURAL HERITAGE VALUES AND STATEMENT OF SIGNIFICANCE

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

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

- *Historic Value*: Historic value refers to a site or place's ability to contribute information on an important historic event, phase or person.
- *Other Values*: The Burra Charter makes allowance for the incorporation of other values into an assessment where such values are not covered by those listed above. Such values might include Educational Value.

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

Social or cultural value

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

Feedback about the cultural value of the sites from the Aboriginal representatives during the field survey indicated that all sites hold cultural value to the local Aboriginal community. It was clear from the conversations held in the field that the community view the stone artefacts as important and would like to see them collected before any damage or development occurs. It was noted during the conversations that there was importance placed on collecting the artefacts and placing them in a safe location to avoid future disturbance.

The cultural significance of the sites is only determined by the local Aboriginal community.

Scientific (archaeological) value

The research potential of the sites located during this assessment is considered to be low to moderate. While the presence of the sites can be used to assist in the development of site modelling for the local landscape, their scientific value for further research is limited.

While the artefacts identified themselves are intrinsically interesting in terms of their base technical information their current lack of temporal context and the absence of information about local resources makes further conclusions about land use difficult. Their scientific value for further research is also limited due to the sparse distribution of the artefacts, disturbed nature of the landscape and the subsequent movement of objects by clearing and ploughing activities. The stone axes are considered of higher value due their relative rarity compared to common flaking material of cores and flakes. Axes are an indicator of a different tool use and activity, being mostly for the removal of wood from trees that could have been used for a variety of purposes such as carrying dishes, shields, spears and shelter as well as extraction of food such as possums and honey from tree hollows. The presence of five axes, including edge-ground axes, within the proposal site would indicate that woodworking activities occurred in the area. Glass artefacts are also considered of higher value due to their rarity in the region. The presence of a single glass artefact is likely to be representative of the European contact period of occupation, an important aspect of the Aboriginal history of the area.

The two possible scarred trees most likely represent the opportunistic use of the landscape but any further observations are restricted especially given that the scars on the two trees were unable to be unequivocally determined to be Aboriginal in origin. The fact that the surrounding landscape has been cleared and modified means that as a representative example of this site type they have high value. While scarred trees

are a common site type in the district they are relativity rare within a 5 km buffer of the proposal site. The fact that survival of scarred trees is subject to natural factors such as death and decay and bushfires, as well as man-made threats such as land clearing, their long-term survival prospects are diminished. This leads to the conclusion that the remaining possible scarred trees in the landscape have high value as examples of an ever-reducing Aboriginal cultural feature. The trees therefore are assessed overall as having high conservation value even though they were unable to be unequivocally determined to be Aboriginal in origin.

The only other potential area of research would be to analyse the edge-ground axes identified within the proposed area to see if there are any residues present that could indicate what materials were ground or cut. However, this is likely to be difficult as the items would have been moved around by pastoral and agricultural activity and may have been compromised through contact with cereal crops and livestock.

Aesthetic value

There are no aesthetic values associated with the archaeological sites *per se*, apart from the presence of Aboriginal artefacts and a modified tree in the landscape. The modified and heavily disturbed landscape within the solar plant development footprint however detracts from this aesthetic setting.

Other values

There are no other known heritage values associated with the proposal site. The area may have some educational value (not related to archaeological research) through educational material provided to the public about the Aboriginal occupation and use of the area, although the archaeological material is within private property and there is little for the public to see.

6 PROPOSED ACTIVITY

6.1 HISTORY AND LANDUSE

It has been noted above in Section 3.1.3 that historically the solar plant proposal site has been impacted through land use practices specifically clearing, ploughing and grazing. It has also been impacted through the construction of the Soil Conservation Service Centre and a residential house. The implications for these activities is that the archaeological record has been compromised in terms of the potential for scarred trees to remain. The implication for stone artefacts is that they may have been damaged or moved but they are likely to be present and remain in the general area where they were discarded by Aboriginal people.

Despite these impacts, 99 Aboriginal artefacts and two possible scarred trees remain in the area, indicating the presence of past Aboriginal people and providing indications of their use of this landscape.

6.2 PROPOSED DEVELOPMENT ACTIVITY

As noted above in section 1.2, the proposal involves the construction of a solar plant and includes connection to the nearby substation via an overhead or underground electricity transmission lines. The development will result in the disturbance of up to 837 ha.

Disturbances will largely be in the preparation of the ground for the solar plant. Piles would be driven or screwed into the ground to support the solar array's mounting system, which limits the potential overall level of ground disturbance.

PV modules would be installed on single axis tracking or fixed mounting structures across the site. Some ancillary facilities would also be required including parking facilities, staff amenities and offices. Trenches would be dug for the installation of a series of underground cables linking the arrays across the proposal site. Some internal access tracks would also be required. A perimeter fence and a vegetation buffer would also be constructed around the solar plant. An overhead or underground power line would be installed to connect the solar plant to the existing substation. During the construction period some additional temporary facilities may be constructed and a laydown area used.

The construction phase of the proposal would take approximately 18 – 24 months in total with a shorter peak construction period of approximately 9 months, during which time the main construction works would take place.

The Wellington North Solar Plant would be expected to operate for approximately 30 years. After this initial operating period, the solar plant would either be decommissioned, removing all above ground infrastructure and returning the site to its existing land capability, or repowered with new PV equipment to continue operations as a solar plant.

The development activity will therefore involve disturbance of the ground during the construction of the solar plant and transmission line to the existing substation. Once established however, there would be minimal ongoing disturbance of the ground surface. The final details and timing of the proposed construction activity have yet to be finalised but it is anticipated that construction could commence in 2019.

6.3 ASSESSMENT OF HARM

As described in this report, 37 archaeological sites, two possible scarred trees and a European survey marker tree were located within the proposal site. The following table provides a summary of the degree of harm and the consequence of that harm upon the heritage value of each site resulting from the proposed works for the solar plant and the western transmission line to the substation. Figure 13 also shows the location of the sites and the proposed development footprint.

There is Aboriginal archaeological material present within the solar plant area and the assessment is that there are likely to be other artefacts and cultural material present as well, although in similar low densities across the majority of the proposal site. The proposed level of disturbance for the construction of the solar plant could impact the stone artefacts recorded during the field survey and others that may be present within other areas of the development site.

The impact is likely to be most extensive where earthworks occur such as the installation of cabling and the transmission line poles, which may involve the removal, breakage or displacement of artefacts and cultural material. This is considered a direct impact on the sites and the Aboriginal objects by the development in its present form.

The proposed construction methodology for the proposal will however result in only small areas of disturbance. The construction of access and maintenance tracks may involve some grading but given a number of these tracks already exist these works are likely to be minimal. The installation of the solar arrays involves drilling or screwing the piles into the ground and no widespread ground disturbance work such as grading or excavation is required to accomplish this. The assessment of harm overall for the proposal is therefore assessed as low.

Table 7 Identified risk to known sites

AHIMS	Site name	Site integrity	Scientific significance	Type of harm	Degree of harm	Consequence of harm	Recommendation
36-4-0173	Wellington Nth AFT1	Poor – 100+ year history of agricultural and pastoral use	Low	Direct	Total	Total loss of value	Salvage objects prior to development of proposal site.
36-4-0174	Wellington Nth AFT2	Poor – 100+ year history of agricultural and pastoral use	Low to moderate	Direct	Total	Total loss of value	Salvage objects prior to development of proposal site
36-4-0175	Wellington Nth AFT3	Poor – 100+ year history of agricultural and pastoral use	Low	Direct	Total	Total loss of value	Salvage objects prior to development of proposal site.
36-1-0735	Wellington Nth AFT4	Poor – 100+ year history of agricultural and pastoral use	Low	Direct	Total	Total loss of value	Salvage objects prior to development of proposal site.
36-1-0736	Wellington Nth AFT5	Poor – 100+ year history of agricultural and pastoral use	Low to moderate	Direct	Total	Total loss of value	Salvage objects prior to development of proposal site.
36-1-0737	Wellington Nth AFT6	Poor – 100+ year history of agricultural and pastoral use	Low	Direct	Total	Total loss of value	Salvage objects prior to development of proposal site.
36-1-0738	Wellington Nth AFT7	Poor – 100+ year history of agricultural and pastoral use	Low	Direct	Total	Total loss of value	Salvage objects prior to development of proposal site.
36-1-0739	Wellington Nth AFT8	Poor – 100+ year history of agricultural and pastoral use	Low	Direct	Total	Total loss of value	Salvage objects prior to development of proposal site.
36-1-0740	Wellington Nth AFT9	Poor – 100+ year history of agricultural and pastoral use	Moderate	Direct	Partial	Partial loss of value	Salvage objects within development footprint prior to development of proposal site.

AHIMS	Site name	Site integrity	Scientific significance	Type of harm	Degree of harm	Consequence of harm	Recommendation
36-4-0176	Wellington Nth IF1	Poor – 100+ year history of agricultural and pastoral use	Low	Direct	Total	Total loss of value	Salvage object prior to development of proposal site.
36-4-0177	Wellington Nth IF2	Poor – 100+ year history of agricultural and pastoral use	Low	Direct	Total	Total loss of value	Salvage object prior to development of proposal site.
36-4-0178	Wellington Nth IF3	Poor – 100+ year history of agricultural and pastoral use	Low	Direct	Total	Total loss of value	Salvage object prior to development of proposal site.
36-4-0179	Wellington Nth IF4	Poor – 100+ year history of agricultural and pastoral use	Low	Direct	Total	Total loss of value	Salvage object prior to development of proposal site.
36-4-0180	Wellington Nth IF5	Poor – 100+ year history of agricultural and pastoral use	Low	Direct	Total	Total loss of value	Salvage object prior to development of proposal site.
36-4-0171	Wellington Nth IF6	Poor – 100+ year history of agricultural and pastoral use	Low	Direct	Total	Total loss of value	Salvage object prior to development of proposal site.
36-4-0172	Wellington Nth IF7	Poor – 100+ year history of agricultural and pastoral use	Low	Direct	Total	Total loss of value	Salvage object prior to development of proposal site.
36-4-0170	Wellington Nth IF8	Poor – 100+ year history of agricultural and pastoral use	Low	Direct	Total	Total loss of value	Salvage object prior to development of proposal site.
36-4-0169	Wellington Nth IF9	Poor – 100+ year history of agricultural and pastoral use	Low	Direct	Total	Total loss of value	Salvage object prior to development of proposal site.
36-4-0168	Wellington Nth IF10	Poor – 100+ year history of agricultural and pastoral use	Low	Direct	Total	Total loss of value	Salvage object prior to development of proposal site.

AHIMS	Site name	Site integrity	Scientific significance	Type of harm	Degree of harm	Consequence of harm	Recommendation
36-4-0167	Wellington Nth IF11	Poor – 100+ year history of agricultural and pastoral use	Low	Will not be harmed - outside development footprint	None- outside development footprint	No loss of value- outside development footprint	Outside of development footprint. Ensure minimum 5 m buffer to avoid inadvertent disturbance or impacts to site.
36-4-0166	Wellington Nth IF12	Poor – 100+ year history of agricultural and pastoral use	Low	Direct	Total	Total loss of value	Salvage object prior to development of proposal site.
36-1-0733	Wellington Nth IF13	Poor – 100+ year history of agricultural and pastoral use	Low	Will not be harmed - outside development footprint	None- outside development footprint	No loss of value- outside development footprint	Outside of development footprint. Ensure minimum 5 m buffer to avoid inadvertent disturbance or impacts to site.
36-1-734	Wellington Nth IF14	Poor – 100+ year history of agricultural and pastoral use	Low	Direct	Total	Total loss of value	Salvage object prior to development of proposal site.
36-1-0732	Wellington Nth IF15	Poor – 100+ year history of agricultural and pastoral use	Low	Direct	Total	Total loss of value	Salvage object prior to development of proposal site.
36-1-0731	Wellington Nth IF16	Poor – 100+ year history of agricultural and pastoral use	Low	Direct	Total	Total loss of value	Salvage object prior to development of proposal site.
36-1-0730	Wellington Nth IF17	Poor – 100+ year history of agricultural and pastoral use	Low to moderate	Will not be harmed - outside development footprint	None- outside development footprint	No loss of value- outside development footprint	Outside of development footprint. Ensure minimum 5 m buffer to avoid inadvertent disturbance or impacts to site.
36-1-0729	Wellington Nth IF18	Poor – 100+ year history of agricultural and pastoral use	Low	Direct	Total	Total loss of value	Salvage object prior to development of proposal site.

AHIMS	Site name	Site integrity	Scientific significance	Type of harm	Degree of harm	Consequence of harm	Recommendation
		agricultural and pastoral use					
36-1-0728	Wellington Nth IF19	Poor – 100+ year history of agricultural and pastoral use	Low	Direct	Total	Total loss of value	Salvage object prior to development of proposal site.
36-1-0727	Wellington Nth IF20	Poor – 100+ year history of agricultural and pastoral use	Low	Direct	Total	Total loss of value	Salvage object prior to development of proposal site.
36-1-0726	Wellington Nth IF21	Poor – 100+ year history of agricultural and pastoral use	Low	Direct	Total	Total loss of value	Salvage object prior to development of proposal site.
36-1-0725	Wellington Nth IF22	Poor – 100+ year history of agricultural and pastoral use	Low	Direct	Total	Total loss of value	Salvage object prior to development of proposal site.
36-1-0724	Wellington Nth IF23	Poor – 100+ year history of agricultural and pastoral use	Low	Direct	Total	Total loss of value	Salvage object prior to development of proposal site.
36-1-0723	Wellington Nth IF24	Poor – 100+ year history of agricultural and pastoral use	Low	Direct	Total	Total loss of value	Salvage object prior to development of proposal site.
36-1-0722	Wellington Nth IF25	Poor – 100+ year history of agricultural and pastoral use	Low	Direct	Total	Total loss of value	Salvage object prior to development of proposal site.
36-1-721	Wellington Nth IF26	Poor – 100+ year history of agricultural and pastoral use	Low	Direct	Total	Total loss of value	Salvage object prior to development of proposal site.
36-1-720	Wellington Nth IF27	Poor – 100+ year history of agricultural and pastoral use	Low	Direct	Total	Total loss of value	Salvage object prior to development of proposal site.

AHIMS	Site name	Site integrity	Scientific significance	Type of harm	Degree of harm	Consequence of harm	Recommendation
36-1-0719	Wellington Nth IF28	Poor – 100+ year history of agricultural and pastoral use	Low	Direct	Total	Total loss of value	Salvage object prior to development of proposal site.
Not submitted to AHIMS as possible scarred tree. Approach discussed with RAPs onsite.	Wellington Nth ST1	Good - in situ living tree	Low	Will not be harmed - outside development footprint	None- outside development footprint	No loss of value- outside development footprint	Outside of development footprint. Ensure avoided with a minimum 10 m buffer placed around site.
Not submitted to AHIMS as possible scarred tree. Approach discussed with RAPs onsite.	Wellington Nth ST2	Good - in situ living tree	Low	Will not be harmed - outside development footprint	None- outside development footprint	No loss of value- outside development footprint	Outside of development footprint. Ensure avoided with a minimum 10 m a buffer placed around site.

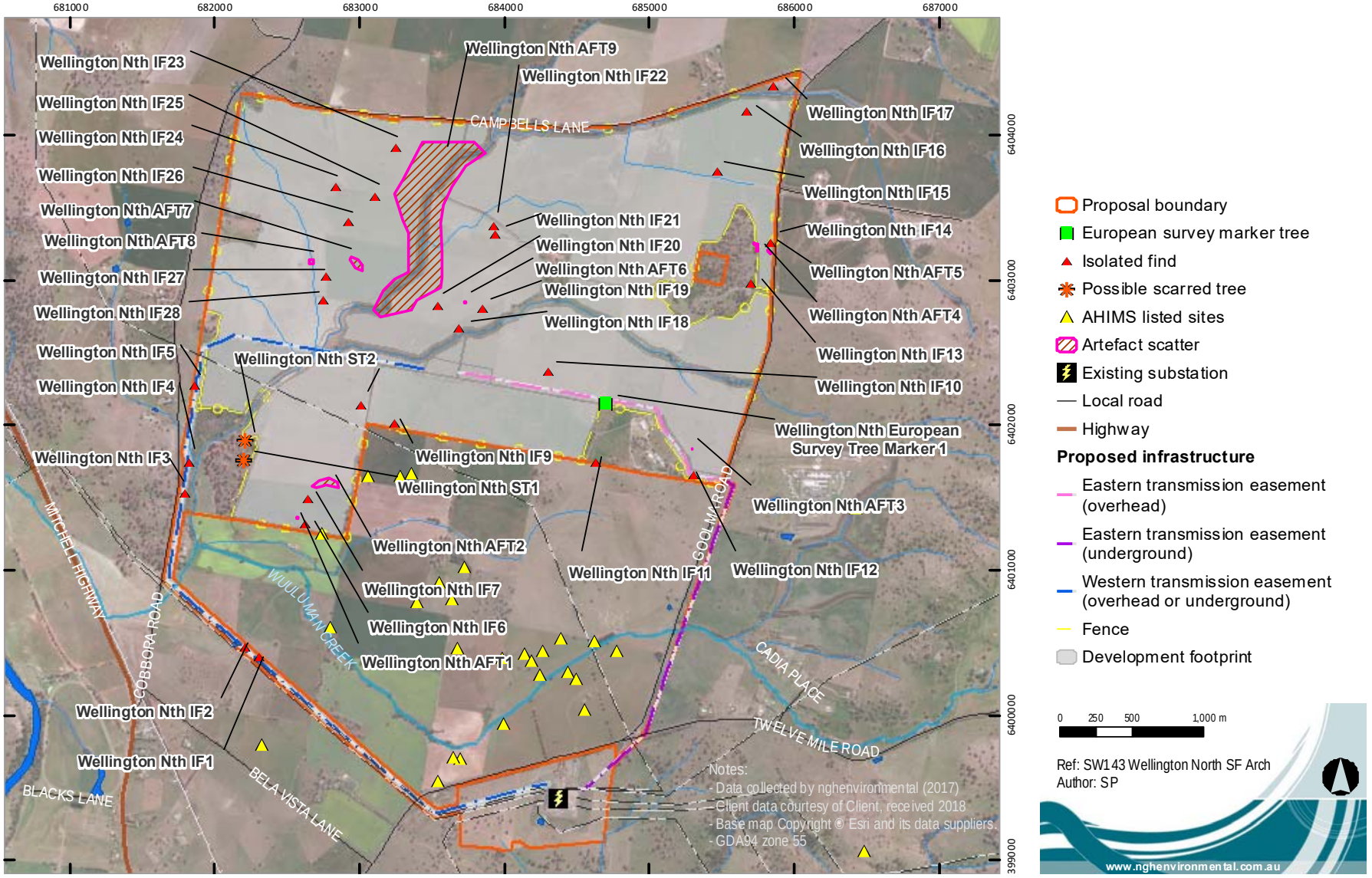

Figure 13. Overview of recorded sites and development footprint.

6.4 IMPACTS TO VALUES

The values potentially impacted by the development are any social and cultural values attributed to the artefacts and the sites by the local Aboriginal community. The extent to which the loss of the sites or parts of the sites would impact on the community is only something the Aboriginal community can articulate.

The impact to scientific values for this development are summarised in Section 5 and Table 7 above with most sites rated as having low loss of scientific value.

The impact to the scientific values if the nine artefact scatters (Wellington Nth AFT1- Wellington Nth AFT9) and 25 of the 28 recorded isolated finds (Wellington Nth IF1 to Wellington Nth IF 10, Wellington Nth IF 12 Wellington Nth IF14 to Wellington Nth IF 16, Wellington Nth IF8 to Wellington Nth IF 28) were to be impacted by the current proposal is considered low. It should be noted that the site Wellington Nth AFT9 will only be partially impacted.

The stone artefacts have little research value apart from what has already been gained from the information obtained during the present assessment. This information relates more to the presence of the artefacts and in the development of Aboriginal site modelling, which has largely now been realised by the recording.

The impact to the edge-ground axes (Wellington Nth AFT 2, Wellington Nth AFT 5 and Wellington Nth AFT 9) are considered to have low to moderate loss of scientific value.

The intrinsic values of the artefacts themselves may be affected by the development of the proposal site. Any removal of the artefacts, or their breakage would reduce the low to moderate scientific value they retain.

The two possible scarred tree sites will not be impacted by the proposal as per the proposed design in this report as shown in Figure 13.

No other values have been identified that would be affected by the development proposal.

7 AVOIDING OR MITIGATING HARM

7.1 CONSIDERATION OF ECOLOGICALLY SUSTAINABLE DEVELOPMENT (ESD) PRINCIPLES

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

In broad terms, the archaeological material located during this investigation is similar to what has been found previously within the Wellington region. Currently there is no clear regional synthesis of the nature, number, extent and content for archaeological sites within the Dubbo Regional Council LGA. Nevertheless, given the size of the geographical area, it is certain that there would be similar artefacts present within the region.

The result of this Aboriginal heritage assessment has confirmed the proposed model of site location and site distribution, whereby sites could be expected to occur across the landscape and in particular in proximity to a water source, even in ploughed areas. The results of this Aboriginal heritage assessment suggest that more sites could be expected to occur in the area than was previously envisaged.

The implications for ESD principles is that in fact more sites are likely to be present in the region than previously thought, which reduces the individual value of the particular sites within the proposal site, as they are likely to be represented elsewhere. It must be recognised that large parts of the region have been heavily cleared, farmed and developed through the construction and maintenance of roads and residential structures and therefore other sites are also likely to have been disturbed. The conclusion that similar sites exist reduces the representative values of the sites within the proposal site. It should also be noted that not all sites recorded during this survey fall within the proposed development footprint and that the sites outside the development footprint will not be impacted by the proposed solar plant development.

As noted above, the archaeological values of the sites, considering the scientific, representative and rarity values was deemed to be low. It is believed therefore that the proposed impacts to the sites through the development would not adversely affect the broader archaeological record for the local area or the region.

The principle of inter-generational equity requires the present generation to ensure that the sites and diversity of the archaeological record is maintained or enhanced for the benefit of future generations. We believe that the diversity of the archaeological record is not compromised by development of this particular solar plant proposal.

We estimate, that while the current development proposal will impact the majority of the identified sites, the overall cumulative impact on the archaeological record for the region is likely to be minimal, assuming a similar density of sites remain across the wider region. Therefore, it is argued that the cumulative impacts of the proposal are not enough to reject outright the development proposal.

7.2 CONSIDERATION OF HARM

Avoiding harm to all the sites is technically possible through avoidance. However, their position scattered across the landscape and the extent of Wellington Nth AFT9 would pose serious design and operational constraints on the solar plant proposal.

Based on the assessment of the sites, and in consideration of discussions with the Aboriginal representatives during the field survey, it is not considered necessary to prevent all development at this location. The sites with stone artefacts have been shown to be highly disturbed with little remaining scientific value. Aboriginal cultural value has been determined by the local Aboriginal community to be generally low enough to not prevent the development proposal proceeding.

All nine of the artefact scatter sites and 25 of the 28 isolated finds are situated within the development footprint area of the proposed transmission line, solar arrays, tracks, cables, office parking and temporary facilities. The most likely cause of harm to the artefacts will be through ground preparation activities such as vegetation clearance, installation of the posts and solar arrays, tracks and underground cabling.

The question remains about possible occurrence of artefacts and cultural material within the balance of the solar plant site. It is possible, and considered likely that additional artefacts will be present, most likely in the form of isolated artefacts or very small, low density scatters. Without knowing their exact locations, it is difficult to manage the impacts. We do not consider that the risk of such disturbances means the development should be abandoned. The archaeological material identified in the survey, and potentially present in the balance of the development site is not of sufficient value to reject the development proposal.

Mitigation of harm to cultural heritage sites generally involves some level of detailed recording to preserve the information contained within the site. Mitigation can be in the form of minimising harm, through slight changes in the development plan or through direct management measures of the sites and Aboriginal objects.

It is argued here that mitigation in the form of alteration is not feasible or warranted within the solar plant development footprint for the sites in this situation. However, all these sites are conducive to salvage as a mitigation strategy as requested by the Aboriginal community representatives onsite during the field survey.

As identified above, it is recommended that the sites recorded within the proposed Wellington North Solar Plant development footprint are salvaged by an archaeologist with representatives of the registered Aboriginal parties prior to the proposed development commencing. The artefacts should be collected and moved to a safe area within the property that will not be subject to any ground disturbance.

The Aboriginal community representatives onsite during the field survey noted their preference for the surface artefacts to be relocated and buried outside the development footprint prior to development commencing. The Aboriginal community representatives onsite during the field survey also requested that a Cultural Smoking Ceremony take place to cleanse any artefacts salvaged and the reburial location.

8 LEGISLATIVE CONTEXT

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

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

An Aboriginal object is defined as:

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

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

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

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

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

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

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

Proposals classified as State Significant Development or State Significant Infrastructure under the EP&A Act have a different assessment regime. As part of this process, Section 90 harm provisions under the NPW Act are not required, that is, an AHIP is not required to impact Aboriginal objects. However, the Department of Planning and Environment (DP&E) is required to ensure that Aboriginal heritage is considered in the environmental impact assessment process. The Department of Planning and Environment DP&E will consult with other departments, including OEH prior to development consent being approved.

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

9 RECOMMENDATIONS

The recommendations are based on the following information and considerations:

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

It is recommended that:

1. The development must avoid the two possible Scarred Tree (Wellington Nth ST1 and Wellington Nth ST2) as per the proposed development footprint in this report. A minimum 10m buffer around the trees should be in place to protect the tree canopy and root system.
2. If complete avoidance of the nine artefacts scatters and 28 isolated find sites recorded within the proposal site is not possible, the artefacts within the development footprint must be salvaged prior to the proposed work commencing and moved to a safe area within the property that will not be subject to any ground disturbance.
3. The collection and relocation of the artefacts should be undertaken by an archaeologist with representatives of the registered Aboriginal parties and be consistent with Requirement 26 of the *Code of practice for Archaeological Investigation of Aboriginal Objects in New South Wales.* A new site card/s will need to be completed once the artefacts are moved to record their new location on the AHIMS database. The Aboriginal community requests that a Cultural Smoking Ceremony take place to cleanse any artefacts salvaged and the reburial location.
4. A minimum 5m buffer should be observed around all artefact scatters and isolated find sites, including those outside the development footprint.
5. Wellington North Solar Farm Pty Limited should prepare a Cultural Heritage Management Plan (CHMP) to address the potential for finding additional Aboriginal artefacts during the construction of the Solar Plant and management of known sites and artefacts. The Plan should include the unexpected finds procedure to deal with construction activity. Preparation of the CHMP should be undertaken in consultation with the registered Aboriginal parties.
6. In the unlikely event that human remains are discovered during the construction, all work must cease in the immediate vicinity. OEH, the local police and the registered Aboriginal parties should be notified. Further assessment would be undertaken to determine if the remains were Aboriginal or non-Aboriginal.
7. Further archaeological assessment would be required if the proposal activity extends beyond the area of the current investigation as detailed in this report, including the entire proposed eastern transmission route and any portions of the western transmission route outside the surveyed alignment. This would include consultation with the registered Aboriginal parties and may include further field survey.
8. The one possible European survey marker tree identified in the proposal site should be avoided by the proposed works. If the development footprint is unable to be redesigned to be avoid the possible European survey marker tree further recording is recommended to establish if it has any historical significance.

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APPENDIX A ABORIGINAL COMMUNITY CONSULTATION

Consultation Log of the Proposed Wellington North Solar Plant

Organisation	Contact	Action	Date Sent	Reply Date	Replied by	Response
OEH	Phil Purcell	letter via email	31/10/17			
	Phil Purcell	follow up email as no reply to date	16/11/2017	20/11/2017	letter via email from Paul Houston	Supplied list of additional stakeholders to contact, letter dated 9th of November 2017 but not received by NGH until 20 November 2017 via email.
NTScorp		letter via email	31/10/17			
National Native Title Tribunal		online search of database	19/10/2017			No results for determinations of native title in project area, registered claim NC2017/001 - Warrabinga-Wiradjuri #7 outside project area. Noted that this claim only entered on register 1/09/2017
Office of Registrar *Aboriginal Land Rights Act*		letter via email	31/10/17	1/11/2017	letter via email	Letter noted they searched the Register of Aboriginal Owners and the project area described does not have Registered Aboriginal Owners pursuant to Division 3 of the Aboriginal Land Rights Act 1983 (ALRA). Suggested contact the Wellington Local Aboriginal Land Council
Wellington LALC		letter via email	31/10/17	3/11/2017	via email	register an interest in the proposed project area would like to find out more information regarding project
Wellington LALC				6/11/2017	phone call KB to Leanne	KB called Leanne re request for more info and clarified project location and confirmed that survey will take place within project area. LALC noted that know sites in the area Aboriginal RAPs required for field work. KB confirmed RAPs will be involved in fieldwork however early stages of consultation at moment and if they have any additional info to provide re area when methodology sent out it would be appreciated.
Central west Local land services		letter via email	31/10/17			
Dubbo Regional Council		letter via email	31/10/17	21/11/2017	phone call from Lionel Wood (Council) to KB	Council noted contacting Wellington LALC who KB confirmed had been contacted and registered for project. KB noted that OEH also recently provided list of potential stakeholders for project that NGH has sent letters to. Council happy with approach and didn't have anyone additional to add given that the Wellington LALC had been contacted.

Organisation	Contact	Action	Date Sent	Reply Date	Replied by	Response
Local Newspaper						
Dubbo Daily Liberal			27/10/17			
OEH list of potential stakeholders						
Binjang Wellington Wiradjuri heritage Survey			20/11/2017	20/11/2017	via email	registered interest in project and provided rates and insurances. Would like the methodology report email sent to Jamie for comment.
Binjang Wellington Wiradjuri heritage Survey	Jamie Gray	KB sent email acknowledgment of interest in project	20/11/2017			
Brian Draper		letter via post	20/11/2017			
Central West Catchment Management Authority		letter via post	20/11/2017			
Dubbo Aboriginal Community Working Party	Grace Toomey	letter via post	20/11/2017			
Dubbo Aboriginal Community Working Party	Paul Carr	letter via post	20/11/2017			
DUBBO LALC	Chairperson	letter via post	20/11/2017			
Katrina Mckinnon		letter via post	20/11/2017			
Mooka	Neville Williams	letter via post	20/11/2017			
Natasha Rodgers		letter via post	20/11/2017			
Paul Brydon		letter via post	20/11/2017			
Peter Peckham		letter via post	20/11/2017			
Trevor Robinson		letter via post	20/11/2017			letter returned to sender
Wamarr Cutural Consultants	Craig Riley	letter via post	20/11/2017			
Wellington LALC	Leanne Stanley	Already contacted and registered	N/A			
Wellington Valley Wiradjuri Aboriginal Corporation	Chairperson	letter via email to Brad Bliss	20/11/2017	20/11/2017	via email	requested map of project area, KB replied on 23/11/2017 that waiting on permission to release map however suggested use of six maps for lot search.

Organisation	Contact	Action	Date Sent	Reply Date	Replied by	Response
Wellington Valley Wiradjuri Aboriginal Corporation		phone message to KB	23/11/2017	23/11/2017	via email- KB acknowledged registration and provided map of project location that is available from AGL website.	registered interest in project for WVWAC and Gallangabang Aboriginal Corporation
Wellington Valley Wiradjuri Aboriginal Corporation		Brad called KB	24/11/2017	25/11/2017	via email	Brad and KB spoke, KB mentioned sent map and noted registration. Brad sent follow up email re previous reply.
Wiradjuri Council of Elders	Robert Clegg	letter via post	20/11/2017			
Wiradjuri Interim Working Party		letter via post	20/11/2017			returned to sender received 8/1/2018
Wirrimbah Direct Descendants	Coral Peckham	letter via post	20/11/2017			
Restricted site information request						
AHIMS		email request re 2 restricted sites in AHIMS search, requesting confirmation if within or adjacent to project area, Maps provided of project area.	24/11/2017	30/11/2017	via email from David Gordon (OEH-Senior Heritage Information Officer)	"I can confirm that Restricted Aboriginal Sites Sit outside your Area of Works as outlined in the previous email and will not be impacted. If these plans change and more clarification is needed please don't hesitate to contact me directly".
Methodology						**Comments due 19 Jan 2018**
Binjang Wellington Wiradjuri heritage Survey	Jamie	via email	8/12/2017			
Wellington LALC	Leanne	via email	8/12/2017			
Wellington Valley Wiradjuri Aboriginal Corporation	Brad	via email	8/12/2017	4/01/2018	via email	combined letter from WVWAC and GAC noted spacing no greater the 30m with 20m being optimal, recording all objects and information given by raps with pads and site information taken into account and the involved in all other investigations for project such as Envrio etc , provided insurances.

Organisation	Contact	Action	Date Sent	Reply Date	Replied by	Response
Gallangabang Aboriginal Corporation	Paul Campion and cc in Brad for WVWAC	via email	8/12/2017	4/01/2018	via email	Insurances provided
Reminder email sent re methodology comments due 19 Jan 2018						
Binjang Wellington Wiradjuri heritage Survey	Jamie	via email	8/01/2018	8/01/2018	via email	provided rates and insurance details, no other comments provided
Wellington LALC	Leanne	via email	8/01/2018			
OEH informed of RAPs						
OEH	Paul Houston and Phil PURCELL	via email	8/01/2018			Please note for your reference that there are four RAPs for the proposed Wellington North Solar Plant project. The RAPs for the project are listed below: • Binjang Wellington Wiradjuri heritage Survey • Wellington LALC • Wellington Valley Wiradjuri Aboriginal Corporation • Gallangabang Aboriginal Corporation Additionally, please note that letters sent to Trevor Robinson and the Wiradjuri Interim Working Party were returned to sender should you wish to update your register
Follow up phone calls re methodology comments and insurances						
Wellington LALC		left voice mail as no answer	19/01/2018			

Organisation	Contact	Action	Date Sent	Reply Date	Replied by	Response
Wellington LALC		KB spoke with Leanne, asked for comments by end of week if possible	22/01/2018			
Wellington LALC		follow up email requesting comments rates etc	29/01/2018			
Wellington LALC		follow up phone call left message	30/01/2018			
Gallangabang Aboriginal Corporation	Paul Campion	email request for updated insurances	31/01/2018			
Wellington LALC		follow up phone, spoke with reception Leanne to call KB back today	2/02/2018			
Wellington LALC	Leanne	KB spoke with Leanna confirmed rates, had no additional comments on methodology, wish to participate in fieldwork	5/02/2018			
Wellington Valley Wiradjuri Aboriginal Corporation	Brad	NGH responded to methodology comments	6/02/2017			
Wellington Valley Wiradjuri Aboriginal Corporation	Brad	via email	23/05/2018			NGH informed that 4 sites recently recorded adjacent to North-western corner of project area. KB has plotted sites and informed the proponent. Information included in community consultation

Public Notice placed in The Dubbo Daily Liberal on 27 October 2017.

14 DAILY LIBERAL Friday, October 27, 2017 dailyliberal.com.au

Liberal

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Public Notices

Notification for registration of interest for Aboriginal stakeholders

NGH Environmental has been contracted by Wellington North Solar Farm Pty Limited (the proponent), a subsidiary of AGL Energy Limited, to undertake an Aboriginal Cultural Heritage Assessment (ACHA) for a proposed solar farm that will be identified as Wellington North Solar Farm located approximately 4 km north of Wellington, NSW.

The assessment area for the proposed Wellington North Solar Farm comprises of Lot 1 DP 1206579, Lot 1 DP 664645, Lot 3 DP 976701, Lots 1 and 2 DP 1104720, Lot 100 DP 750760, Lots 68, 70, 71, 72, 73, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 119, 120 and 121 DP 29870, Lot 1, 2 and 3 DP 808746, Lot 1 DP 607187, Lot 2 DP 588075, Lot 1 DP 100778, Lot 12 DP 572344, Lots 1 and 2 DP 1228751, Lots 14 and 15 DP 1018104, Lots 1 and 2 DP 1141897, Lot 1 DP 1068446, Lot 32 DP 602471 in the Dubbo Regional Local Government Area.

The proponent (Wellington North Solar Farm Pty Limited, Level 24, 200 George St, Sydney NSW 2000) is proposing to construct a utility scale solar farm including panels, electrical conduits, transformers, internal access tracks, a site office and perimeter fencing.

The purpose of this consultation, particularly with Aboriginal people, is to assist the proponent in the preparation of an ACHA for the proposal site and to be involved in consultation as part of the lodgement of a State Significant Development application.

In order to fulfil the requirements set out in the OEH *Aboriginal Cultural Heritage Consultation Requirements for Proponents 2010*, NGH Environmental is seeking interested Aboriginal parties who hold cultural knowledge of the assessment areas to register their interest in the consultation process for the projects and to assist in the determination of cultural significance of any Aboriginal objects or places located within the proposed Wellington North Solar Farm area.

Registrations should be provided in writing to:

NGH Environmental Pty Ltd
PO Box 62
FYSHWICK ACT 2609
Or Via Email to: ngh@nghenvironmental.com.au

All correspondence must be received **by COB 10 November 2017.**

Those registering an interest will be contacted to discuss the project further. Those who do register are advised that their details will be provided to OEH and the Local Aboriginal Land Council, unless they specifically advise in writing that their details are not to be forwarded.

NGH response to Wellington Valley Wiradjuri Aboriginal Corporation methodology comments sent on the 6th February 2018

ngh environmental

canberra
unit 8, 27 yallourn st
(po box 62)
fyshwick act 2609
t 61 2 6280 5053
f 61 2 6280 9387

bathurst
35 morrisset st
po box 434
bathurst nsw 2795
t 0448 820 748

bega
suite 1, 216 carp st
(po box 470)
bega nsw 2550
t 61 2 6492 8333

newcastle
153 tudor st
hamilton nsw 2303
t 61 2 4969 4910

sydney
unit 18, level 3
21 mary st
surry hills nsw 2010
t 61 2 8202 8333

wagga wagga
suite 1, 39 fitzmaurice st
(po box 5464)
wagga wagga nsw 2650
t 61 2 6971 9696
f 61 2 6971 9693

ngh@nghenvironmental.com.au
www.nghenvironmental.com.au

6 February 2018

Brad Bliss
Director
Wellington Valley Wiradjuri Aboriginal Corporation
Unit 15/ 194 Byng Street
Orange NSW 2800

via email: WVWAC@hotmail.com

Dear Brad,

RE – AGL Wellington North Solar Plant Methodology

I refer to your response dated 4th of January 2018 for the proposed methodology for the cultural heritage assessment of the proposed Wellington North Solar Plant. Thank you for your response and noting the WVWAC agree in principle to the Methodology as previously supplied.

You raise some technical points in your letter relating to the conduct of the survey which this letter aims to address.

We believe that your request for a maximum spacing of 30m between survey participants is appropriate. While we note your suggestion that 20m spacing is optimal we propose a compromise of 25m spacing which is consistent with the survey of the adjacent First Solar Wellington Solar Farm. The spacing for survey transects is not mandated by OEH but is generally determined in the field by the survey team, based on nature of the likely finds, the terrain, visibility and other factors such as level of previous disturbance. The spacing will continue to be evaluated in the field and discussed with the RAP participants as the survey progresses. It may be adjusted as determined in the field by the survey team however it is unlikely that spacing would exceed 30m.

We would record all sites according to standard archaeological practice and the requirements of the OEH Code of Practice. We are happy to consider any additional information the RAPs are able to provide in relation to sites and possible PADs within the project area.

Some environmental studies, such as flora and fauna have already been completed. AGL is happy to provide you with copies of those reports for your information. If you have any advice or information that may be relevant to these studies, we would be happy to receive that information.

NGH Environmental and AGL acknowledge your rates, insurances and conditions of engagement in terms of prior notice. Once again thank you for your interest in the project and we will be in touch to clarify potential fieldwork dates.

If you have any questions, please do not hesitate to contact me on 6153 6324.

Yours Sincerely,

Kirsten Bradley
Heritage Consultant
NGH Environmental

APPENDIX B AHIMS SEARCH

Information withheld from public display due to cultural sensitivities.

APPENDIX C SITE CARDS

Information withheld from public display due to cultural sensitivities.