

APPENDIX F ABORIGINAL CULTURAL HERITAGE ASSESSMENT REPORT



NGH

ABORIGINAL CULTURAL HERITAGE ASSESSMENT REPORT CULCAIRN SOLAR FARM

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ACRONYMS AND ABBREVIATIONS

ACHA	Aboriginal Cultural Heritage Assessment
AFT	Artefact scatter
AHIMS	Aboriginal heritage information management system
AHIP	Aboriginal Heritage Impact Permit
Czss	Cenozoic Shepparton Formation
DECCW	Refer to OEH
DPIE	(NSW) Department of Planning, Infrastructure and Environment
EIS	Environmental impact statement
EP&A Act	<i>Environmental Planning and Assessment Act 1979 (NSW)</i>
ha	Hectares
Heritage Act	<i>Heritage Act 1977 (NSW)</i>
HGL	Hydrogeological landscapes
IBRA	Interim Biogeographic Regionalisation for Australia
IF	Isolated Find (stone artefact)
km	Kilometres
LALC	Local Aboriginal Land Council
LGA	Local Government Area
m	Metres
MW	Mega Watt
Neoen	Neoen Australia Pty Ltd
NGH	NGH Pty Ltd
NPW Act	<i>National Parks And Wildlife Act 1974 (NSW)</i>
NSW	New South Wales
OEH	(NSW) Office of Environment and Heritage, formerly Department of Environment, Climate Change and Water currently referred to as DPIE
PAD	Potential archaeological deposit
Qa	Quaternary alluvial deposits
RAPs	Registered Aboriginal Parties
SEARs	Secretary's Environmental Assessment Requirements
SDsv	Silurian-Devonian sedimentary and volcanic rocks
SHI	State Heritage Inventory
SSD	State Significant Development

EXECUTIVE SUMMARY

INTRODUCTION

Neoen Australia Pty Ltd (Neoen) proposes the development of a large-scale solar farm approximately 5 kilometres (km) south-west of the township of Culcairn in New South Wales (NSW). The proposed solar farm would be located on of Lot 1 DP171815; Lot 1 DP179854; Lot 1 DP575478; Lot 114 DP664997; Lots 9-11, 45-47, and 53-54 DP753735; Lots 70-73 and 86 DP753764; Lot 1 DP945904 and Lot B DP972054 in the Greater Hume Shire Local Government Area. The proposed site is approximately 1,351 hectares (ha) in size and would produce up to 350 Mega Watts (MW) of electricity. A 1.5 km portion of Weeamera Road will also be required to be upgraded for site access.

The proposal is a State Significant Development (SSD) and the Secretary's Environmental Assessment Requirements (SEARs) for the project identified Aboriginal heritage as a specific issue to be addressed by the Environmental Impact Statement (EIS). Consequently, NGH Pty Ltd (NGH) has been contracted by Neoen to prepare an Aboriginal Cultural Heritage Assessment (ACHA).

Throughout the project, the following codes and guides will be followed in relation to Aboriginal heritage assessment.

- *Guide to Investigating, Assessing and Reporting on Aboriginal Cultural Heritage in NSW*
- *Code of Practice for Archaeological Investigations of Objects in NSW*
- *Aboriginal Cultural Heritage Consultation Requirements for Proponents 2010*

PROJECT PROPOSAL

The Culcairn Solar Farm proposal area covers approximately 1,351 hectares of land within Lot 1 DP171815; Lot 1 DP179854; Lot 1 DP575478; Lot 114 DP664997; Lots 9-11, 45-47, and 53-54 DP753735; Lots 70-73 and 86 DP753764; Lot 1 DP945904 and Lot B DP972054 in the Greater Hume Shire LGA. The Culcairn Solar Farm proposal would comprise of the installation of a solar panels and its associated infrastructure. The proposed Culcairn Solar Farm would produce up to 350 MW of electricity that would be supplied to the national electricity grid. A 1.5 km portion of Weeamera Road will also be required to be upgraded for site access.

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 guidelines.

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, two Aboriginal groups and an individual registered their interest in the proposal. No other party registered their interest, including the entities and individuals recommended by statutory bodies and government heritage departments. The fieldwork components of this assessment included the participation of Aboriginal community representatives.

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 landscapes within the proposal area. Included in this was a search of the AHIMS database. No Aboriginal sites have previously been recorded within the Culcairn Solar Farm proposal area.

The results of previous archaeological surveys in the Culcairn region demonstrate that there is a strong, complex and varied pattern of human use and movement through the landscape. This behaviour is recorded as a range of artefact and site types distributed and concentrated in specific landforms across the region. There appears to be a strong association between the presence of potential resources for Aboriginal use and the presence of archaeological sites. Areas directly associated with water and or elevated ground appear to have the greatest potential for identification of Aboriginal cultural material.

Based on previous archaeological investigations in the region and knowledge of Wiradjuri cultural practices and traditional activities the proposal area has a possibility of containing archaeological sites, especially given that Aboriginal people have lived in the region for tens of thousands of years. This would most likely be in the form of quartz lithic scatters, isolated artefacts and scarred trees in remnant old growth vegetation areas bordering the proposal area and/or as isolated paddock trees.

SURVEY AND SUBSURFACE TESTING RESULTS

The proposed Culcairn Solar Farm area comprises primarily of cleared and cropped paddocks that have been subject to farming activities. Survey transects were undertaken on foot and traversed the entire proposal area. Visibility within the proposal area was variable however; as a whole it generally had excellent visibility averaging 60% overall. The effective visibility in the paddocks ranged from 60 to 95%. Between the survey participants, over the course of the field survey, approximately, 100 km of transects were walked across the proposal area.

During the survey, 26 isolated finds, 16 artefact scatters, five cultural tree sites, three modified trees and a single cultural stone site were recorded. Areas of potential archaeological deposit (PAD) were also identified along Back Creek, Billabong Creek and a paleochannel south of Billabong Creek that required subsurface testing if they were unable to be avoided by the proposed development footprint. The Aboriginal community representatives identified the cultural sites which were unable to be unequivocally determined to be Aboriginal in origin by the NGH archaeologist but deemed to have cultural value by the Aboriginal community representatives.

The areas of PAD along Billabong Creek and the northern portion of Back Creek have been able to be avoided by the proposed development footprint. Consequently, no subsurface testing has occurred in these PAD areas. The southern portion of the PAD along Back Creek and the PAD along the paleochannel south of Billabong Creek were unable to be avoided by the development footprint. Subsequently, a limited programme of subsurface test excavation was undertaken following the *Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales*. A total of 68 test pits were excavated across the PAD areas investigated. Of the 68 test pits excavated only 13 contained stone artefacts. A total of six artefacts were recovered from six of the 48 test pits excavated in the PAD area that encompassed a paleochannel south of Billabong Creek. A total of 11 artefacts were recovered from seven of the 20 test pits excavated within the southern portion of the PAD along Back Creek. All the subsurface artefacts recovered were manufactured from quartz which is a common lithology for the Culcairn area. The overall density of artefacts across the entire excavated area for all test pits was 1 artefact/m², which is likely representative of the upper most density for the artefact occurrences within the archaeologically sensitive landforms within the proposal area. The low number of artefacts recovered from the subsurface testing programme prevented any meaningful analysis of technology or density but does provide an indication of the relative distribution of subsurface archaeological material across the raised areas in close proximity to water within the Culcairn Solar Farm proposal area.

The subsurface artefacts recovered from the portion of the PAD tested along Back Creek were incorporated into the sites Culcairn Solar AFT2 and AFT3 which were recorded during the survey fieldwork. The subsurface

artefacts recovered from the PAD area that encompassed the paleochannel were assigned as three new artefacts scatter sites Culcairn Solar AFT15 to Culcairn Solar AFT17.

The results of the survey and subsurface testing programme indicated that low density and isolated Aboriginal objects can occur throughout the landscape, even in areas of highly disturbed farming activities. Modified trees were recorded as isolated paddock trees and in areas of remnant vegetation. No direct evidence of long term base camps were identified within the proposal area during the field survey and subsurface testing programme. The sites identified in the assessment were scattered across the proposal area and are representative of the opportunistic use and movement of small groups of Aboriginal people through the landscape occupying short term camps or traveling through the area. 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 low density artefact scatters and isolated artefacts across similar landforms in the Culcairn area and the Greater Hume Shire Local Government Area. It also suggests that Aboriginal stone objects are more prevalent in the Culcairn area than previously envisaged.

POTENTIAL IMPACTS

The proposal involves the construction of a solar farm. The table below provides a summary of site types that will be impacted and avoided by the proposed Culcairn Solar Farm development footprint.

Site Type	Type of Harm	Degree of Harm	Consequence of harm	No. of Sites	% of site type
Isolated Finds	Direct	Complete	Total loss of value	25	96.2
	Nil	Nil	Not Applicable	1	3.8
Artefact Scatters	Direct	Complete	Total loss of value	15	78.9
	Nil	Nil	Not Applicable	4	21.1
Modified Trees	Nil	Nil	Not Applicable	3	100
Cultural tree sites	Nil	Nil	Not Applicable	5	100
Cultural stone sites	Direct	Complete	Total loss of value	1	100
PADs	Nil	Nil	Not Applicable	2	100

A total of 40 sites with stone artefacts and a cultural stone site are situated within the area of the proposed Culcairn Solar Farm development footprint. The impact to the sites with stone artefacts is likely to be most extensive where earthworks occur, such as the installation of cabling, which may involve the removal, breakage or displacement of artefacts. This is considered a direct impact on the sites and the Aboriginal objects by the development in its present form. Five sites with stone artefacts, three modified trees, five cultural tree sites and the PAD areas adjacent to Billabong Creek and the northern portion of Back Creek will not be impacted by the proposed development footprint. The assessment of harm overall for the project is assessed to be low to moderate.

While the majority of the stone artefact sites are rated as having total loss of scientific value it is argued that there are likely to be a number of similar sites in the local area and therefore the impact to the overall local archaeological record is considered to be low. 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 recording the artefacts identified during the survey and subsurface testing programme of works. No other Aboriginal heritage values have been identified that would be affected by the development proposal.

RECOMMENDATIONS

It is recommended that:

1. The development avoids the three modified trees and five cultural tree sites. A minimum 10 m buffer should be in place around each modified tree and cultural tree site to prevent any inadvertent impacts to the canopy and root system.
2. If complete avoidance of any of the 26 isolated find sites, 16 artefact scatters and single cultural stone site recorded within the proposal area is not possible the surface stone artefacts and cultural stone site within the development footprint must be salvaged. The surface collection salvage of these stone artefacts and cultural stone object must occur prior to the proposed construction works commencing for the Culcairn Solar Farm. Until surface collection salvage has occurred a minimum 5 m buffer must be observed around all stone artefact sites and the cultural stone site.
3. The collection and relocation of the surface artefacts and cultural stone site 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*. The salvage of Aboriginal objects can only occur following development consent that is issued for State Significant Developments and must occur prior to any construction works commencing.
4. All artefacts recovered from the subsurface testing programme undertaken within the Culcairn Solar Farm proposal are currently in temporary care at the NGH Canberra office must be reburied in line with Requirement 26 of the *Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales* and in an appropriate location within the proposal area that will not be subject to any ground disturbance.
5. All objects salvaged, including those recovered from the subsurface testing program, must have their reburial location submitted to the AHIMS database. An Aboriginal Site Impact Recording Form must be completed and submitted to AHIMS following harm for each site collected or destroyed from salvage and/or construction works.
6. A minimum 5 m buffer should be observed around all stone artefact sites that are being avoided by the proposed development.
7. If the proposed development footprint is changed and the areas of PAD along Back Creek and Billabong Creek will be impacted, a limited subsurface testing program must be conducted at the PADs not subject to the subsurface testing program undertaken during the current assessment. Excavated material may need to be analysed off site and this is most likely to be undertaken in NGH offices, where the material will be analysed and then subsequently returned to site for reburial.
8. Neoen Australia Pty Ltd should prepare a Cultural Heritage Management Plan (CHMP) to address the potential for finding additional Aboriginal artefacts during the construction of the Culcairn Solar Farm and for the management of known sites and artefacts within the proposal area. 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.
9. In the unlikely event that human remains are discovered during the construction of the Culcairn Solar Farm, all work must cease in the immediate vicinity. The appropriate heritage team within DPIE and the local police should be notified. Further assessment would be undertaken to determine if the remains were Aboriginal or non-Aboriginal. If the remains are deemed to be Aboriginal in origin the Registered Aboriginal Parties should be advised of the find as directed by the appropriate heritage team within DPIE.
10. Further archaeological assessment would be required if the proposal activity extends beyond the area assessed in this report. This would include consultation with the registered Aboriginal parties and may include further field survey.

1. INTRODUCTION

Neoen Australia Pty Ltd (Neoen) proposes the development of a commercial scale solar farm approximately 5 kilometres (km) south-west of the township of Culcairn in New South Wales (NSW). The proposed solar farm would be located on of Lot 1 DP171815; Lot 1 DP179854; Lot 1 DP575478; Lot 114 DP664997; Lots 9-11, 45-47, and 53-54 DP753735; Lots 70-73 and 86 DP753764; Lot 1 DP945904 and Lot B DP972054 in the Greater Hume Shire Local Government Area (LGA). The proposed site is approximately 1,351 hectares (ha) in size and would produce up to 350 Mega Watts (MW) of electricity. A 1.5 km portion of Weeamera Road will also require upgrade for site access. The location of the proposed Culcairn Solar Farm proposal area is shown in Figure 1-1.

Given that the Culcairn Solar Farm 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), NGH Pty Ltd (NGH) has been contracted by Neoen to prepare an Aboriginal Cultural Heritage Assessment (ACHA). The purpose of this report is therefore to investigate the presence of any Aboriginal sites within the proposal area and to assess the impacts and provide management strategies that may mitigate any impacts. The proposed Culcairn Solar Farm is a State Significant Development (SSD) and the Secretary's Environmental Assessment Requirements (SEARs) for the project also identified Aboriginal heritage as a specific issue to be addressed in the Environmental Impact Statement (EIS).

Throughout the assessment, the following codes and guides were followed in relation to Aboriginal heritage assessment.

- *Guide to Investigating, Assessing and Reporting on Aboriginal Cultural Heritage in NSW*
<http://www.environment.nsw.gov.au/resources/cultureheritage/20110263ACHguide.pdf>
- *Code of Practice for Archaeological Investigations of Objects in NSW*
<http://www.environment.nsw.gov.au/resources/cultureheritage/10783FinalArchCoP.pdf>
- *Aboriginal Cultural Heritage Consultation Requirements for Proponents 2010*
<http://www.environment.nsw.gov.au/resources/cultureheritage/commconsultation/09781ACHconsultreq.pdf>

The above codes and guides are followed for most Aboriginal heritage assessments. The approach being undertaken by NGH will therefore be consistent with other heritage assessments undertaken in NSW.

The Culcairn Solar Farm is an SSD that represents an important contribution to renewable energy generation in NSW and is subject to approval by the NSW Minister for Planning. Under the NSW Planning legislation an Aboriginal Heritage Impact Permit (AHIP) would not be required for the project because under the SSD regime the NSW Minister for Planning provides the approval. However, it is a requirement that Aboriginal heritage is considered in the EIS as part of SSD application, including conducting consultation with the Aboriginal community.

1.1. DEVELOPMENT CONTEXT

The development of renewable energy projects is 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 Culcairn Solar Farm 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 the Culcairn Solar Farm would therefore have both local, National and International benefits.

As part of the development impact assessment process, the proposed development application will be assessed under part 4 of the *Environmental Planning and Assessment Act 1979* (EP&A Act). The proposed solar farm is classified as an SSD project under Part 4 of the EP&A Act. SSDs are major projects which require approval from the Minister for Planning. The EIS has been prepared in accordance with the requirements of the Secretary of the Department of Planning, Industry and Environment (DPIE). The SEARs relating to Aboriginal heritage were as follows:

Include an assessment of the likely Aboriginal and historic heritage (cultural and archaeological) impacts of the development, including adequate consultation with the local Aboriginal community in accordance with the *Aboriginal Cultural Heritage Consultation Requirements for Proponents* (SEARS for the Culcairn Solar Farm 03/05/19).

For the purposes of this assessment the entire proposal area as shown in Figure 1-1 was assessed.

1.2. PROJECT PROPOSAL

The Culcairn Solar Farm proposal area is approximately 1,351 ha. The assessment area is primarily agricultural and pastoral land. The proposed solar farm would be located on Lot 1 DP171815; Lot 1 DP179854; Lot 1 DP575478; Lot 114 DP664997; Lots 9-11, 45-47, and 53-54 DP753735; Lots 70-73 and 86 DP753764; Lot 1 DP945904 and Lot B DP972054 in the Greater Hume Shire LGA. A 1.5 km portion of the Weeamera Road would also require upgrades for site access. The Culcairn Solar Farm proposal would comprise of the installation of a solar panels which would produce up to 350 MW electricity that would supply electricity to the national electricity grid. It is anticipated that the proposed solar farm would include development of the following infrastructure:

- Single axis tracker PV solar panels mounted on steel frames over most of the site;
- Battery storage to store energy produced on site;
- Underground and overground electrical conduits and cabling to connect the arrays to the inverters and transformers;
- Systems of inverter units and voltage step-up throughout the arrays;
- On site substation, connecting to the existing 330 kV TransGrid transmission line;
- Site office and maintenance building, vehicle parking areas and internal access tracks;
- Road crossing and easement electrical crossing through underground and/or overhead lines;
- Construction laydown and parking areas;
- Upgrade and widening of a portion of Weeamera Road; and
- Vegetative screening and perimeter security fencing.

The proposal area would be accessed from Weeamera Road, via Benambra Road and the Olympic Highway which is an existing heavy vehicle route. Access to the northern section of the proposal area would be established across Cummings Road.

The Culcairn Solar Farm would be expected to operate for 30 years. The construction phase of the proposal is expected to take less than 18 months. After the initial 30 year operating period, the solar farm would either be decommissioned, removing all above ground infrastructure and underground infrastructure to the depth of 500 mm or removed as necessary to allow restoration of land capability to pre-existing agriculture subject to landowner and planning consents.

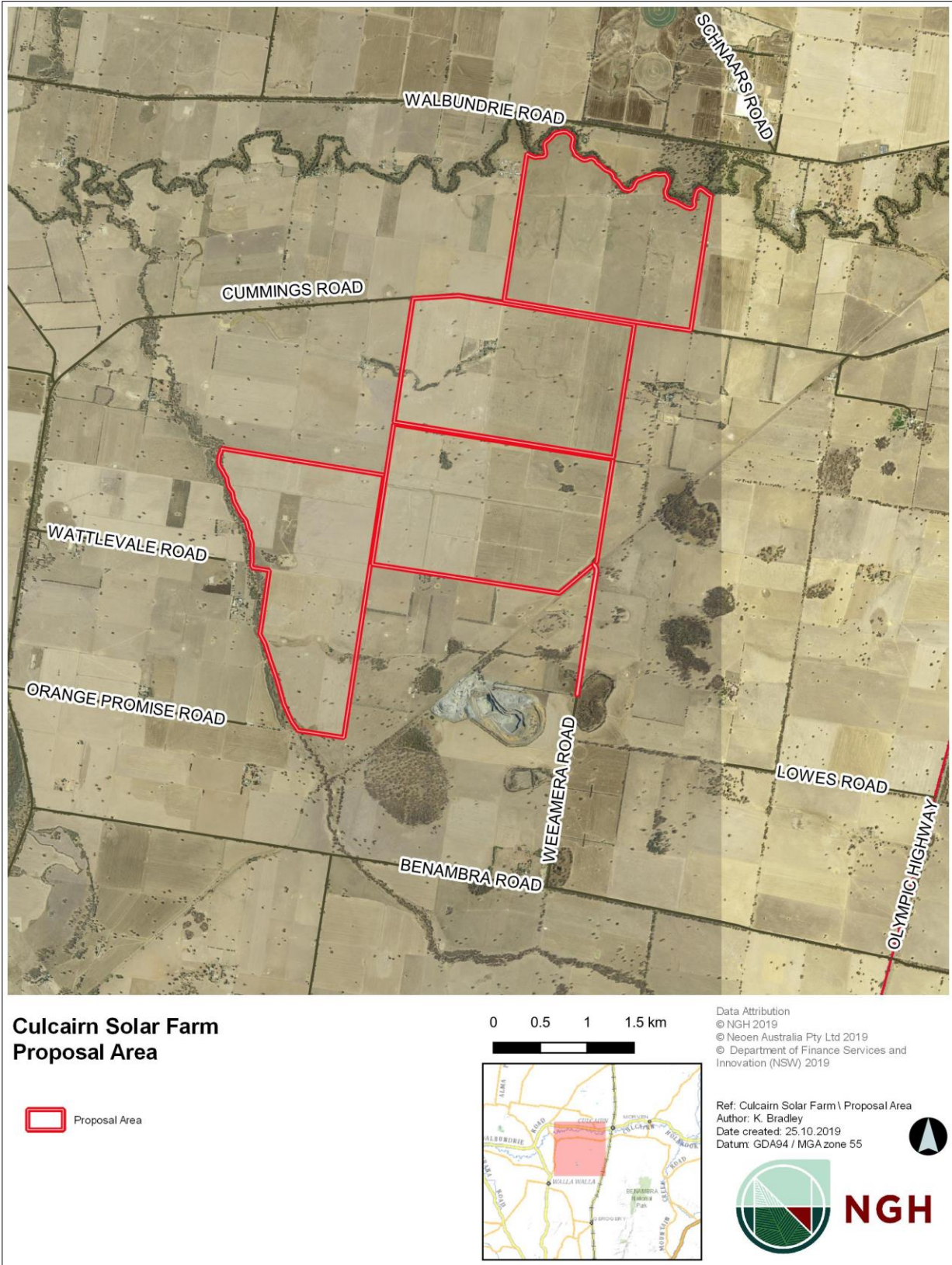


Figure 1-1 Proposal area.

1.1. PROJECT PERSONAL

This ACHA report was completed by archaeologist Kirsten Bradley and Chelsea Jones of NGH, including research, Aboriginal community consultation and report preparation. Archaeologist Kirsten Bradley, Chelsea Jones and Brett Chalmers also participated in the survey fieldwork over eight days from the 4th to the 11th of February 2019. Archaeologist Kirsten Bradley and Tom Knight also participated in the subsurface testing fieldwork over seven days from the 17th to the 25th of September 2019. Matthew Barber reviewed the report.

Consultation with the Aboriginal community was undertaken following the process outlined the *Aboriginal cultural heritage consultation requirements for proponents 2010*. Two Aboriginal groups and in individual registered their interest in the proposal.

The Aboriginal community individuals and groups who registered an interest in the project were:

- The Albury and District Local Aboriginal Land Council (Albury LALC);
- Bundyi Aboriginal Cultural Knowledge (BAC)- Mark Saddler; and
- Yalmambirra.

The Albury LALC and BAC were engaged by Neoen for fieldwork participation.

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

- Andom Rendell (representing the Albury LALC);
- Jimmy Davis (representing the Albury LALC);
- Paul Davis (representing the Albury LALC);
- Cecil Whyman (representing the Albury LALC);
- Kevin Edward (representing the Albury LALC); and
- Mark Saddler (representing BAC);

The Aboriginal community representatives who participated in the subsurface testing fieldwork were:

- Andom Rendell (representing the Albury LALC);
- Jimmy Davis (representing the Albury LALC);
- Paul Davis (representing the Albury LALC); and
- Mark Saddler (representing BAC).

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

1.2. REPORT FORMAT

This ACHA Report was prepared in line with the following guides:

- *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).

The purpose of this ACHA report is therefore to provide an assessment of the Aboriginal cultural values associated with the proposal area and to assess the cultural and scientific significance of any Aboriginal heritage sites identified. 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 a field survey of the proposal area to identify and record any Aboriginal heritage objects and/or areas of potential significant archaeological deposits ;
- Undertake subsurface testing of any areas with potential archaeological deposits to identify the nature of archaeological material;
- Undertake an assessment of the archaeological and cultural values of the proposal area and any Aboriginal sites therein;
- Assess the cultural and scientific significance of any archaeological material, and
- Provide management recommendations for any objects found.

2. ABORIGINAL CONSULTATION PROCESS

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

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

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

Stage 1. Letters outlining the development proposal and the need to carry out an ACHA were sent to the Albury LALC and various statutory authorities including the former Office of Environment and Heritage (now referred to as DPIE), as identified under the ACHCRP. An advertisement was placed in the local newspapers, the *Eastern Riverina Classifieds* on the 7th of November 2018 seeking registrations of interest from Aboriginal people and organisations. A further series of letters was sent to other organisations identified by the former Office of Environment and Heritage in correspondence to NGH. In each instance, the closing date for submission was 14 days from receipt of the letter.

As a result of this process, two Aboriginal groups and an individual registered their interest in the proposal.

These were:

- Albury and District Local Aboriginal Land Council (Albury LALC);
- Bundyi Aboriginal Cultural Knowledge (BAC)- Mark Saddler; and
- Yalmambirra.

No other party registered their interest.

Stage 2. On the 14th of December 2018, an Assessment Methodology document for the Culcairn Solar Farm was sent to the three registered Aboriginal parties as listed above. 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 proposal area and/or any Aboriginal objects contained therein. A minimum of 28 days was allowed for a response to the document. No comments were received on the methodology from the registered parties however all expressed an interest in participating in fieldwork.

The field survey of the Culcairn Solar Farm proposal area in February 2019 in conjunction with an assessment of contour data, archaeological modelling and consideration of the comments from the Registered Aboriginal Parties who participated in the fieldwork resulted in the identification of several areas considered to have potential for *in situ* subsurface deposits that required further assessment within the proposal area if they could not be avoided. While some areas considered to have potential for *in situ* subsurface deposits have been avoided others were unable to be avoided by the proposed development footprint. Subsequently, a Subsurface Testing Methodology document for the Culcairn Solar Farm was sent to the registered Aboriginal parties on the 17th of May 2019. This document provided details of the proposed subsurface testing methodology and invited comments regarding the proposed methodology. A minimum of 28 days was allowed for a response to the document. No comments were received on the methodology from the registered parties however all expressed an interest in participating in fieldwork. The final testing methodology was sent to the registered Aboriginal parties on the 8th of August 2019.

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 in response to the methodology.

The survey fieldwork was organised, and the two registered groups with appropriate insurances were asked to participate in the fieldwork. The survey fieldwork was carried out in early February 2019 by three archaeologists from NGH with local Aboriginal representatives.

The Aboriginal community representatives who participated in the February 2019 survey fieldwork were:

- Andom Rendell (representing the Albury LALC);
- Jimmy Davis (representing the Albury LALC);
- Paul Davis (representing the Albury LALC);
- Cecil Whyman (representing the Albury LALC);
- Kevin Edward (representing the Albury LALC); and
- Mark Saddler (representing BAC);

The subsurface testing fieldwork was organised for September 2019 and the two registered groups with appropriate insurances were asked to participate in the testing programme. The subsurface testing was carried out between 17th to the 25th of September 2019 by two archaeologists from NGH with local Aboriginal representatives.

The Aboriginal community representatives who participated in the subsurface testing fieldwork in September 2019 were:

- Andom Rendell (representing the Albury LALC);
- Jimmy Davis (representing the Albury LALC);
- Paul Davis (representing the Albury LALC); and
- Mark Saddler (representing BAC).

Stage 4 In November 2019 a draft version of this *Aboriginal Cultural Heritage Assessment Report* for the proposal (this document) was forwarded to the RAPs 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

2.1.1. Fieldwork feedback

Aboriginal community consultation occurred throughout the project. Following the completion of the survey fieldwork in February 2019 Mark Saddler provided a report on his participation in the survey which

included a list of the sites he recorded and submitted to AHIMS and additional comments on the proposed development of the Culcairn Solar Farm. The comments provided are summarised below and provided in full in Appendix A.

- The area is very important to the Wiradjuri people as it takes in the Billabong Creek area, this is a major walkway for Wiradjuri people.
- Any of the scar and ring trees that have been recorded are to stay and will need protection from damage.
- Requested that subsurface testing be undertaken along Back Creek in a location that had a concentration of surface artefacts.
- Noted that Aboriginal bush tucker, such as Old Man Weed is located behind the main homestead in the central portion of the proposal area.
- Noted that artefacts historically collected by the ancestors of the current property owners have been placed at the back of the homestead in the central portion of the proposal area under a Kurrajong Tree. These items were requested not to be moved or impacted by the development.
- All care must be taken to minimise any further damage to the recorded Aboriginal sites.
- Any Aboriginal items that have been recorded and that need to be moved should be done so in the presence of an Elder or community member
- Any Aboriginal items that cannot be moved (ie scar trees) should have exclusions zones placed around them.
- All workers should be given some cultural awareness training or education which should be conducted by local Elders or community members.
- Any items that must be moved will be returned and placed back into country by local Elders.
- That while the Culcairn Solar Farm is under construction local Aboriginal people should be employed to assist in the work and to also look out, care for and record any other items that may surface during the construction work.

A summary of how the comments have been addressed by NGH is provided below.

The specific area requested for subsurface testing was incorporated into a larger area of Potential Archaeological Deposit (PAD) along Back Creek. This section of the PAD has now been avoided by the development works and will not be impacted and therefore not subject to testing.

NGH has recommended in this report that adequate buffers are placed around all sites identified and that a salvage programme be conducted with representatives of the Aboriginal community for sites with surface Aboriginal stone objects that will be impacted by the proposed development. All cultural and modified trees recorded within the proposal area have been recommended to be avoided.

NGH has also recommend that a Cultural Heritage Management Plan (CHMP) be developed to address the potential for finding additional Aboriginal artefacts during the construction period and to manage those sites that will be avoided by the work. The CHMP would outline an unexpected finds protocol to deal with construction activity. Preparation of the CHMP would be undertaken in consultation with the registered Aboriginal parties however it would be at the discretion of the proponent and/or construction contractors who was engaged to provide cultural awareness training or education although it is noted to be best practice to engage with the local Aboriginal community for such cultural programs. The unexpected finds protocol to be developed as part of the CHMP would provide for the management of any unexpected finds and any additional Aboriginal monitoring during construction works is deemed to be unnecessary.

The employment issue raised is not related to this archaeological assessment and the issue would be dealt with separately by Neoen. NGH are unable to comment further on this particular matter.

Finally, the cultural importance of Billabong Creek which was a major walkway for Wiradjuri people has been included in the cultural values assessment component of this report. The presence of bush tucker located behind the main homestead within the proposal area is also noted in the cultural values

assessment component of this report. Therefore the comments provided are assessed by NGH to have been adequately addressed and incorporated into this assessment.

2.1.2. Draft Report 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.

Report feedback was provided in writing via email from Mark Saddler (Bundy Aboriginal Cultural Knowledge) on the 13th of December 2019 who did not raise any issues with the report or its recommendations. Mark Saddler noted that the report was “all good”. No further comments were provided. A copy of this response is provided in Appendix A.

Report feedback was provided in writing via email from the Albury LALC on the 19th of December 2019 who did not raise any issues with the report or its recommendations. No further comments were provided. A copy of this response is provided in Appendix A.

No feedback was received from Yalmambirra.

3. BACKGROUND INFORMATION

3.1. REVIEW OF LANDSCAPE CONTEXT

3.1.1. Geology, Topography and Climate

Located within the NSW portion of the Murray-Darling Basin Culcairn is dominated by a sub-humid climate, characterised by hot summers with no dry season (Gibbons, 2001).

The topography of the Culcairn region is comprised of the extensive flat alluvial plains with floodplains along Back Creek and Billabong Creek. Billabong Creek runs along the northern boundary of the proposal area and Back Creek runs along the western boundary. Local relief is low at <5 m and elevation varies from 200-250 m in height. Hurricane Hill is the most prominent of three hills in the local area which is situated 1.3 km south-west the proposal area.

The NSW 1:1,500,000 simplified surface geology (available via the seed online portal) divides the proposal area into three types of surface geology as shown in Figure 3-1 and listed below.

- Quaternary alluvial deposits (Qa)- Current and recent mud, silt, sand and gravel deposited by river (alluvial) systems.
- Cenozoic Shepparton Formation (Czss) -a poorly consolidated clay, silt, sand and gravel commonly found in the Riverina between the Lachlan and Murray Rivers.
- Silurian-Devonian sedimentary and volcanic rocks (SDsv)- mixed volcanic and sedimentary rocks. Includes rhyolitic lavas with banding formed as the lava flowed, quartz and feldspar crystals and spherulites. Also includes associated volcanic-derived sedimentary rocks.

The landscape context for the proposal area is based on a number of classifications that have been made at national and regional level for Australia. These include the national Interim Biogeographic Regionalisation for Australia (IBRA) system, Mitchell landscapes, NSW soil landscapes and 1:250,000 scale geological maps. The combination of these four differing resolutions of landform data provides a comprehensive and multi scaled understanding of the landscape within the proposal area and its immediate surroundings.

Interim Biogeographic Regionalisation for Australia

The national Interim Biogeographic Regionalisation for Australia (IBRA) system identifies the proposal area as being located in the South Western Slopes Complex (NSS) which is split into two subregions, the Upper Slopes (NSS01) and Lower Slopes (NSS02), outlined in Table 3-1 (DEE 2016). The proposal area is located entirely within the Lower Slopes subregion. The Upper Slopes subregion is located approximately 4.5 km south-east of the proposal area.

The NSW South Western Slopes Bioregion is an extensive area of foothills and isolated ranges comprising the lower inland slopes of the Great Dividing Range, extending from Albury in the south to Dunedoo in the north east, with an area of 8,657,462 hectares. Inland streams pass across the slopes in confined valleys with terraces and local areas of sedimentation. Soils and vegetation are complex and diverse but typified by texture contrast soils and a variety of eucalypt woodlands.

The NSW South Western Slopes Bioregion lies entirely within the eastern part of the Lachlan Fold Belt which consists of a complex series of north to north-westerly trending folded bodies of Cambrian to Early Carboniferous sedimentary and volcanic rocks.

Table 3-1 South Western Slopes complex subregions after Morgan and Terry (1992).

Bioregion – Subregion	Geology	Landforms	Soils
South Western Slopes Upper Slopes	Ordovician to Devonian folded and faulted sedimentary sequences with inter-bedded volcanic rocks and large areas of intrusive granites.	Steep, hilly and undulating ranges and granite basins. Occasional basalt caps, confined river valleys with terrace remnants.	Shallow stony soils on steep slopes, texture contrast soils grading from red subsoils on upper slopes to yellow subsoils on lower slopes. Alluvial sands, loams and clays.
South Western Slopes Lower Slopes	As for the Upper Slopes but with larger areas of Tertiary and Quaternary alluvium.	Undulating and hilly ranges and isolated peaks set in wide valleys at the apices of the Riverina alluvial fans.	Similar to the Upper Slopes but with more extensive red-brown earths on undulating plains and more extensive grey clays on alluvium.

Mitchell Landscapes

Further landscape mapping as part of the Mitchell landscapes system (2002) divides the proposal area into two differing landscape types (see Figure 3-2). These landscapes are the Brokong Plains (Bro) and the Burrumbuttock Hills and Footslopes (Bbk) (descriptions of the Mitchell Landscapes are provided in Table 3-2 below). The Mitchell landscapes provide more specific landform, soil and vegetation profiles for these two landscape areas.

Table 3-2 Description of the Mitchell Landscapes relevant to the proposal (DECC 2002).

Mitchell Landscape	Landforms	Soils	Vegetation
Brokong Plains Landscape Code: Bro Ecosystem NSS Lower Slopes	Quaternary alluvial plains with a general elevation of 170m, and a local relief of <10m.	Red-brown texture contrast soils (extensively cleared).	Vegetation has been extensively cleared and cropped, formerly grey box, yellow box, Blakely's red gum and white cypress pine woodland to open forest.
Burrumbuttock Hills and Footslopes Landscape Code: Bbk Ecosystem: NSS Lower Slopes Granites	Rounded isolated hills with moderate slopes on Silurian-Devonian massive granite and granodiorite, general elevation 300 to 490m, local relief 80 to 100m.).	Coarse sandy red-brown earths.	Vegetation has Dwyer's mallee gum, white box and currawang

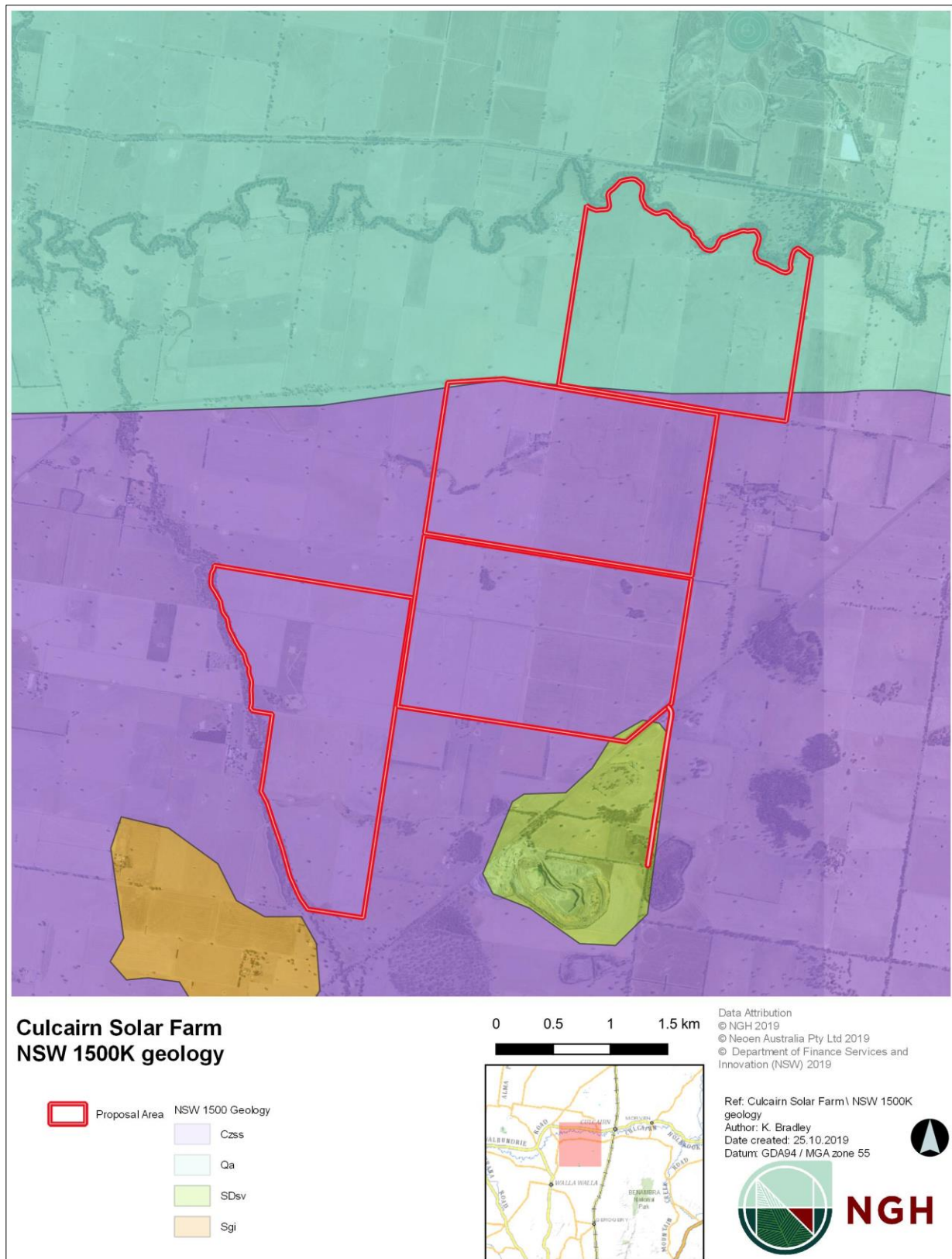


Figure 3-1. NSW 1:1,500,000 geology

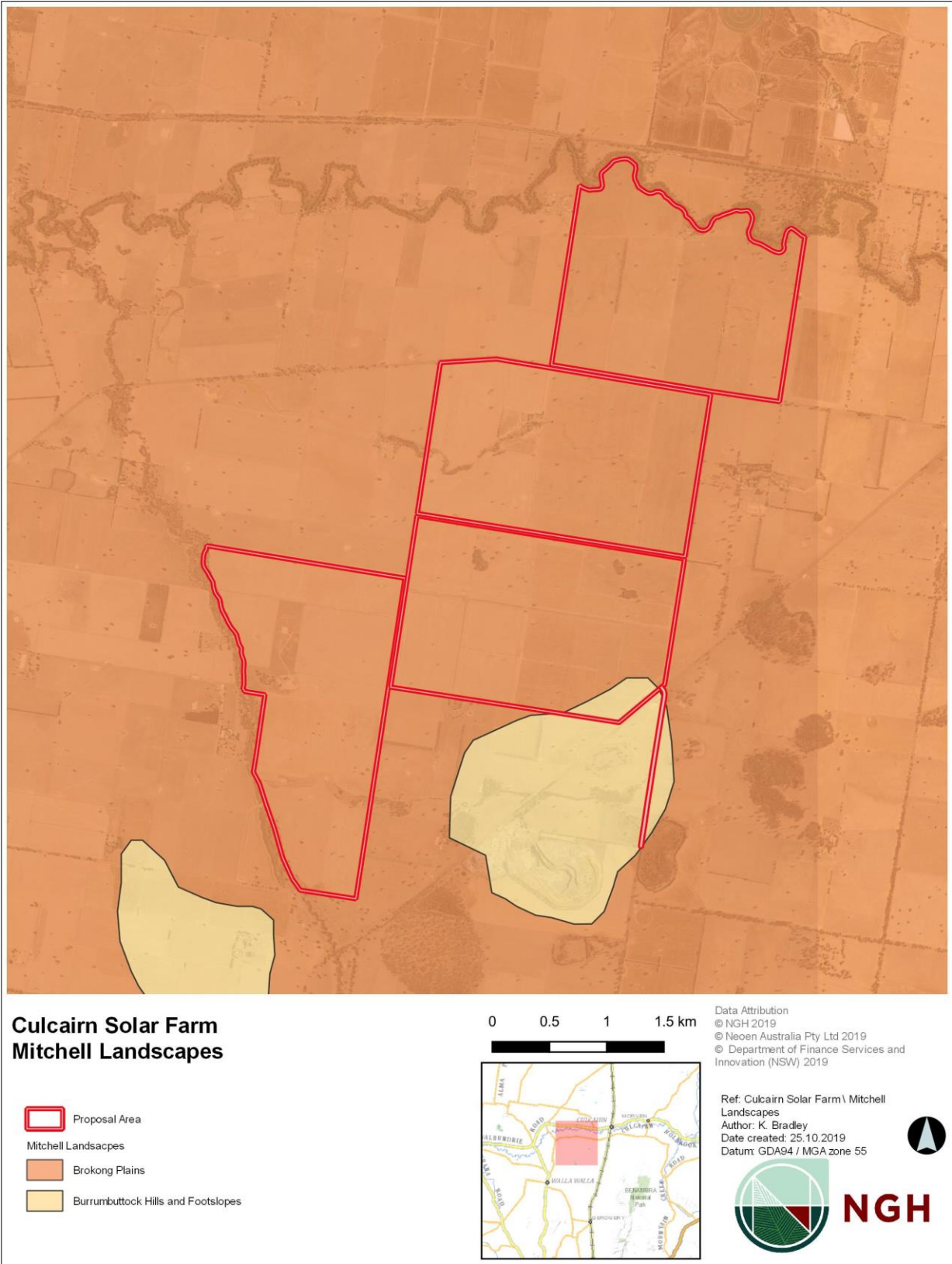


Figure 3-2. Mitchell Landscapes

Soil Landscapes

While soil landscape mapping currently does not extend to cover the proposal area mapping of the Culcairn Soil Landscape shows it extends over a large area near Culcairn along Billabong Creek. Therefore it is likely that if the mapping currently available was extended across the proposal area that the Culcairn Soil Landscape would also encompass the proposal area.

The Culcairn Soil Landscape is noted to extend across the broad alluvial plains of Billabong Creek near Culcairn and include narrow drainage lines. The soils comprise of clay, silt, sand and gravels. The topsoil is a brown to grey silty loam with no gravels, overlying a pale grey brown silty clay loam. Below this sits a yellow, grey or red sticky mottled clay (Doughty 2003). Local relief is <5 m and slopes 0–1%. The landscape is described as having extensively cleared yellow box woodland. The soils are described to be a very deep Red and Brown Chromosols and Kurosols (Red and Brown Podzolic Soils)–20%. Yellow and Grey Sodosols (Soloths) occur on the higher, older terraces–40%, with deep Grey and Brown Dermosols (Grey Podzolic Soils) occurring on lower younger terraces–20%. Deep Stratic Rudosols (Alluvial Soils) occur in the recent channels <20%. The geology is described as being unconsolidated riverine deposits of clay, silt, sand and gravel including floodplain, ancient channel deposits and alluvial terraces (Doughty 2003:67).

A soil profile recorded by Spiers (2000) and obtained from an area just outside of the proposal area describes the soil as having the following profile.

- A Horizon: Fine Sandy Loam,
- B1 Horizon: Clay Loam,
- B21 Horizon of light clay, and a
- B22 Horizon of light medium clay

None of the clay soils exhibited any cracking with small rounded gravels appearing within the A Horizon and within the B1 and B22 Horizons, which correlates well with waterlogging of soils being a common occurrence within the Billabong Creek alluvial plains (Doughty 2003:67).

3.1.2. Hydrology and Hydrogeological Landscapes

The Culcairn Solar Farm proposal area is bordered to the north by Billabong Creek and to the west by Back Creek, which also runs through the southern-most paddock within the proposal area. An unnamed ephemeral drainage line also runs east-west through the centre of the proposal area. Billabong Creek is a perennial river of the Murrumbidgee catchment within the Murray-Darling basin. Billabong Creek is noted to be a major east-west drainage corridor situated between the Murrumbidgee and Murray River. Back Creek is a small tributary flowing from Benambra National Park located south-east of the proposal area into Billabong Creek.

Two hydrogeological landscapes (HGL) occur within the proposal area: Walla Walla and Lower Billabong (DPIE 2016). These are described in Table 3-1 Table 3-3 below.

Table 3-3 Description of the hydrogeology (DPIE 2016).

Soil Landscape	Description
Walla Walla HGL	<p>The region covered by the Walla Walla HGL experiences between 500-700mm of annual rainfall across extensive and broad, gently sloping plains.</p> <p>Semi-confined or unconfined aquifers dominate the region, allowing groundwater to flow through alluvial sediments. Water quality is fresh to marginal, with soils overlying a shallow to intermediate water table, which pools above clay soils in wet conditions.</p>

Soil Landscape	Description
Lower Billabong HGL	<p>The Lower Billabong HGL extends along the Billabong Creek from Morven to the west of Walbundrie. The HGL covers an area of 163 km and has a mean annual rainfall of 500–600 mm. It is characterised by a deeply incised channel in the alluvial floodplain.</p> <p>Quaternary channel and flood plain sediments; typically sands, gravels and clays. Soils are typically very deep. Sodic soils in the lowest parts of this HGL combined with the shape of the landscape commonly lead to waterlogging problems.</p>

3.1.3. Flora and Fauna

Much of the proposal area has been cleared of native vegetation through long held agricultural practices. The majority of the proposal area consists of agricultural fields with crops of wheat, canola and oats being grown and harvested. Lucerne, chicory and clover was noted in the northern section of the proposal area which is currently being used for grazing livestock.

Native vegetation occurs as scattered single trees in open paddocks and isolated patches of remnant woodland. The understorey within these patches of woodland has been subjected to frequent disturbance by grazing livestock and agricultural practices. The understorey includes introduced exotic species such as Barley Grass (*Hordeum Leporinum*), Rye Grass (*Lolium perenne*), Paspalum (*Paspalum dilatatum*) and Bromes (*Bromes sp.*). The dominant trees within the proposal area are Yellow Box (*Eucalyptus melliodora*), Blakely's Red Gum (*Eucalyptus Blakelyi*) and White Box (*Eucalyptus albens*). The higher quality examples of these particular trees exist mostly along the corridors of Back Creek and Billabong Creek. These higher quality trees are associated with mostly native understoreys with native groundcovers, shrubs and overstorey canopy. Some fence-lines within the proposal area also contain linear planted native vegetation such as Acacia and Eucalypt species.

3.1.4. Land Disturbances

Land disturbances within the proposal area are largely those commonly associated with farming practices. There is a history of both low and high intensity farming practices across the landscape. High intensity farming practices include the heavy ploughing of field and initial creation of dams and paddocked areas, while lower intensity practices include pastoral. While mining activities have been recorded in the wider area, particularly Hurricane Hill, there is no indication of mining within the proposal area. The region is also prone to severe gully erosion in particular along Billabong Creek.

3.1.5. Historic Land Use

The first Europeans to the area were the explorers Hume and Hovell in 1824 as they explored from New South Wales to Port Phillip. The explorers noted the good grasslands in the area and its potential for grazing livestock. European settlement of the areas of Culcairn began to occur in 1834 following the favourable grasslands noted by the explorers in 1824. By 1845 four stations, including Round Hill and Walla Walla (the proposal area is located on the boundary between the two areas) had been gazetted.

In 1841 the Crown lease of the land at Walla Walla was taken up by Annie Huon, before being transferred to c. Huon in 1847. Hill and Sherwyn took over the lease in 1848, and it was sold again in 1850 to John Sherwyn. Round Hill was taken up as a Crown lease in 1847 by Creighton and Hill, before being transferred to Robert and James Creighton and John Sherwyn in 1857. In 1859 two brothers, James and Stephen, took up the Crown lenses of both Round Hill and Walla Walla, each of them about 90,000 acres,

and sent their sons to manage the properties – Thomas (James' youngest) to Round Hill, and Richmond (Stephen's eldest) to Walla Walla.

The land within both Walla Walla and Culcairn continued to change ownership, until it was eventually purchased by the government in the early twentieth century. During the early-mid 1800s the land within the area was predominately used for grazing cattle, but by 1863 it was determined that it would bring a greater profit to change over to sheep. In early 1900, farmers came across the Victorian border to look for land to cultivate. Gradually more and more of the land within Walla Walla and Culcairn was used to cultivate wheat. The proposal area is located in an area of fertile farmland which has predominately been used for grazing livestock and agricultural crop production.

3.1.6. Landscape Context

Most archaeological surveys are conducted in a situation where there is topographic variation, and this can lead to differences in the assessment of archaeological potential and site modelling for the location of Aboriginal archaeological sites. The areas in close proximity to a water source on slightly raised flat areas are likely to have been a major focus for Aboriginal people in the area. However, prior to European land modifications, this area as a whole may have provided resources, shelter, water and food for Aboriginal people.

The Mitchell landscapes noted above were not readily identifiable within the proposal area and were not used as a means of landscape differentiation. The landforms were instead determined based on the soil landscapes identified during the visual inspection of the proposal area during field survey and from the review of detailed contour mapping. Our observations in the field closely mirrored the soil landscapes identified in the 1:1,500,000 NSW Surface Geology map shown above in section 3.1.1 of this report (Figure 3-1. NSW 1:1,500,000 Figure 3-1). The northern section of the proposal area, north of Cummings Road, was characterised by deep quaternary alluvial deposits and all areas south of Cummings Road consisted of poorly consolidated silty loams and clays commonly found in the Riverina between the Lachlan and Murray Rivers. These soils in the paddocks south of Cummings Road are consistent with soils associated with the Cenozoic Shepparton Formation referenced in the NSW 1:1,500,000 surface geology map (Figure 3-1. NSW 1:1,500,000 Figure 3-1).

3.2. REVIEW OF ABORIGINAL ARCHAEOLOGICAL CONTEXT

3.2.1. Ethnohistoric Setting

There are several ethnographic recordings of Aboriginal life in the Riverina region from the 1800s that notably focus on the prevalence of Aboriginal people around waterways in the region. It is however important to consider that the Aboriginal people alive at the time of such observations were survivors of serious epidemics of infectious disease such as smallpox, brought by Europeans, that greatly affected the population sizes and distribution of people within the landscape. Consequently, European records may not necessarily reflect pre-contact population distributions and traditional ways of life (Dowling 1997, Littleton and Allen 2007).

The dispossession from traditional lands and acts of violence against the Aboriginal people caused great social upheaval meaning that access to traditional resource gathering and hunting areas, religious life, marriage links and sacred ceremonial sites were disrupted or destroyed. Despite this Aboriginal people continued to maintain their connections to sites and the landscape in a variety of ways. The Aboriginal people of the region continue to have a strong connection to their land.

Tribal Boundaries

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, Peterson & Wesson 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, Peterson & Wesson 2005, pp.8 & 16).

Early mapping of tribal boundaries by Tindale (1940; 1974) and subsequent mapping by Horton (1994) identified the Culcairn proposal area as within the Wiradjuri language group. It should be noted however that today not all Aboriginal groups agree with the mapped boundaries presented in Tindale and other publications. These borders were not static, they were most likely fluid, expanding and contracting over time to the movements of smaller family or clan groups. These boundaries ebbed and flowed through contact with neighbours, the seasons and periods of drought and abundance. The close proximity to each other also meant that people likely spoke multiple languages and dialects (Howitt 1904, Tindale 1974, MacDonald 1983, Horton 1994).

The Culcairn Solar Farm proposal area is situated within the Wiradjuri language group boundary. The Wiradjuri language group was the largest in NSW prior to European settlement extending from the east side of the Riverine plain to the Great Dividing Range and extended from the Murray River at Corowa/Albury north to Dubbo.

Social Structures

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.

Aboriginal population declined due to disease such as smallpox and influenza as well as dispossession from traditional lands and acts of violence against the Aboriginal people which meant that 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 taken to places like Warangesda, a mission established near Darlington Point in 1880, Brungle Reserve between Gundagai and Tumut, or Moonahcullah mission approximately 50 km west of Deniliquin that was established in

1916, people were able to maintain at least some form of association with country and maintain traditional stories. Wiradjuri dreaming stories still survive to this day, being told in the oral tradition by elders to the next generation of Wiradjuri children.

Material culture

Accounts of the material culture of Aboriginal people in the Murray Darling Basin have been detailed extensively by Oxley (1820), Bennet (1834) and later Beveridge (1883) and include descriptions of tools kits, weapons and clothing.

Shelters were generally small and appear to have been widely utilised by families while moving around the landscape (Kabaila 1999:120). Their frames were constructed of boughs and sapling branches pulled tightly together, tied with leaves, bark or grass and forming a semi-circular structure (Kabaila 1999). Small campfires would sometimes be placed at the entrance of these shelters for heating and cooking. Evidence of these hearths is often found on elevated flats in close proximity to water sources.

Bennet (1834) detailed the manufacture of possum and kangaroo skin coats using mussel shell scrapers to render the skin pliable. Kangaroo tail sinew made into thread and bone awls were used to stitch the skins into cloaks, many of which had ornamental patterns scratched onto the inner side. The kangaroo sinew was also recorded as used to create head ornaments in the form of hair nets stained with ochre or pipeclay for both men and women (Bennet 1834). Both Oxley (1820) and Bennet (1834) observed that both sexes had the *septum naris* perforated in which a bone, straw or stick was worn. The adult men were also missing an upper incisor attributed to a marker of initiation (Oxley 1820, Bennet 1834).

A range of tools and weaponry were recorded including spear throwers, parrying shields, broad shields, clubs, shovels, axes and varieties of throwing sticks (Oxley 1820, Bennet 1834, White 1986) as well as trapping nets made from plant fibre cord (Beveridge 1883).

Digging sticks were used by women to collect vegetable foods and 'grub shovels' or small wooden spades were described by Eyre (1845) as being used to dig up grubs, ants and Mallee roots. Skin bags and bark troughs were used to carry water and baskets were made from grasses, rushes and netting (Beveridge 1889, Lawrence 1967). Beveridge (1883) describes a wooden trough placed over coals for cooking and 'flints, mussel shells, kangaroo bones and split reeds were used in cutting and skinning foods' (Lawrence 1967, p. 86). Grindstones and pestles were used to pound roots and mill seed and along the Darling River the deliberate cultivation and harvesting of wild millets was recorded (Mitchell 1839, Allen 1974).

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.

Food and Resources

There are a number of ethnographic recordings of Aboriginal life in the Riverina region from the 1800s. Most notably, the observations of Beveridge (1883) focused on the prevalence of Aboriginal people around water ways in the region. 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, Aboriginal people were adept at identifying and utilising resources either on a seasonal basis or all year round.

Historic accounts of Aboriginal people in the Riverine Plains of south eastern Australia reflect a group of people reliant on a range of both aquatic and terrestrial food resources. During certain seasons, fish, shellfish and waterfowl provided a significant part of the flesh diet and corresponds to periods where relatively small areas of land could support large groups of people. In other seasons populations living along the rivers was greatly reduced and the focus on and acquisition of aquatic resources changed. It is during these periods that terrestrial resources became more important and food gathering activities diversified.

During the annual flooding of the rivers, swamps and river flats were inundated and billabongs filled. Under these conditions the netting and trapping of fish by large groups of people became prevalent. The base of a large fibre net would be weighted down with clay heat retainers and at the top of the net reed bundles would be attached as floats. One man would hold one end of the net on the shore while the other would wade into the lagoon gradually dropping the net, once he reached the shore, forming a semi-circle. The two people would start pulling the net back, moving towards one another, hauling the catch of fish towards them. Such activities were recorded to have produced very large volumes of fish (Sturt 1833, p. 92, Beveridge 1883, pp. 28–30). Within major billabongs log traps were also constructed to trap fish within a smaller area, for easier access and often associated with large gatherings of people (Gilmore 1934). Additionally, women were recorded catching crayfish, where two women would trawl a fine gauged net along the lagoon bottom.

The trapping of ducks and other waterfowl in lagoons using large nets has also been observed and Beveridge suggests that over a season hundreds of birds are caught in this manner (Beveridge 1883). Additionally huge numbers of waterbird eggs during breeding season are collected using canoes (Beveridge 1883, p. 18). Bird species including ducks, emus, pelicans, crows, curlews, plains turkeys and their eggs were hunted and gathered from areas set aside by the Wiradjuri as sanctuaries, ensuring the continued survival of the species as a reliable food resource (Gilmore 1934:165).

Beveridge (1883) observed canoes being manufactured from a single sheet of Red Gum bark that was propped and moulded into the desired shape and left to season in the sun for ten to fifteen days (Beveridge 1883, pp. 24–25). He details pronged fish spears that doubled as a means to pole and paddle the canoes, used to harpoon fish in areas of reedy shallow water (Beveridge 1883, Kabaila 1999). Lawrence (1967) suggests that these spears were probably only used when the reed beds were filled with water and consequently not as important during the remainder of the year.

As the flood waters began to subside, the number of people the land could support began to decline. People began to fish in the broader reaches of the rivers using short, stout spears (Lawrence 1967, p. 76) and women would create weirs made of wooden stakes to trap larger fish in pools as the waters receded (Beveridge 1883, p. 30). Other types of fish traps across rivers have been recorded such as the bridging of a watercourse with a tree trunk with interwoven brush or saplings forming a net beneath the tree preventing larger fish from moving on. As the river flow dwindled and the fish became concentrated in smaller and smaller pools, fish-poisoning could be effectively employed (Lawrence 1967, p. 76).

Collection of river mussels using the toes was recorded by Sturt (1833) and Balme suggested that mussels were the most common item in the remains of open midden sites along the Darling River and associated lakes in western NSW. The range of methods employed to exploit aquatic resources were not a matter of random choice, but instead formed part of an annual cycle of fluctuations in river level and flow (Lawrence 1967).

A range of reptiles, other mammals and insects were also a common food type, in particular grubs and ants and ant eggs (Fraser 1892, Pearson 1981). Possums appear to have been a common part of the diet, weighing generally 3kg, they would be slowly roasted before eating (Kabaila 1999:126; Gammage 2012:226). 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 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 too (Gott 1982).

3.2.2. AHIMS Search

The Aboriginal Heritage Information Management System (AHIMS) 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 the register to be added. 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 conducted over an area approximately 20 km east-west x 20 km north-south centred on the proposal area on the 19th of November 2018. The AHIMS Client Service Number was: 383450. The search area extended from Lat, Long -35.8269, 146.7923 to Lat, Long -35.5503, 147.231 with a buffer zone of 50 m. There were 99 Aboriginal sites and no declared Aboriginal Places recorded in the search area. Table 3-4 shows a breakdown the of the site types record on AHIMS over an area approximately 20 km east-west x 20 km north-south centred on the proposal area on the 19th of November 2018.

Table 3-4 Breakdown of previously recorded Aboriginal sites in the region.

Site Type	Number
Artefact (1 or more)	62
Modified Tree (Carved or Scarred)	37
TOTAL	99

There were no sites recorded within the proposal area prior to this assessment. A total of three sites were however located within 500 m of the proposal area. The three sites in close proximity to the proposal area are Back Creek 2/AHIMS #55-6-0032, Back Creek Swamp 2/AHIMS #55-6-0033 and Back Creek Tributary/AHIMS #55-6-0028. Each of these sites are artefact scatters recorded by Navin Officer during the survey for the Wodonga to Wagga Pipeline recorded in 1996.

There is a high proportion (37%) of scarred trees recorded in proximity to the proposal area, especially in areas where there are remnant stands of native trees. 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 proportion of scarred trees in the 20 km area surrounding the proposal area is related to lack of surveys in the area and the more obtrusive nature of scarred trees when compared to small artefact scatters and isolated stone artefacts.

Given the extended timeframe between the initial AHIMS search and the completion of the ACHA a new AHIMS search was undertaken on the 21st of October 2019 which was centred on the proposal area. The AHIMS Client Service Number was: 458827. The search area extended from Lat, Long -35.7511, 146.9043 to Lat, Long -35.6591, 147.0502 with a buffer zone of 50 m. There were 62 Aboriginal sites and no declared Aboriginal Places recorded in the search area. The AHIMS sites include 18 modified trees and 44 sites with artefacts (one or more). No new sites were recorded within or adjacent to the proposal area beyond those submitted by the Aboriginal representative Mark Saddler during the survey for the Culcairn Solar Farm which are listed in Section 4.3 and detailed in Appendix B of this report. A total of 24 new sites with artefacts and four new modified trees were recorded approximately 1.5 km south of the southern boundary of the proposal area for the Walla Walla Solar Farm which was assessed in 2019 as detailed in Section 3.3.4. These 28 new Aboriginal sites were not recorded in the local area when the original AHIMS search for this assessment was undertaken in 2018 as detailed above.

Figure 3-3 shows the locations of the AHIMS sites in relation to the proposal area (excluding those recorded during the Culcairn Solar Farm survey) and Figure 3-4 shows those sites in close proximity to the proposal area.

3.2.3. Other Heritage Register Searches

Other heritage register searches were also undertaken to identify any items or places in proximity to the proposal area, with a focus on the proposal area and surrounding landscape. The following resources were used as part of this assessment:

- The NSW State Heritage Inventory (SHI), this includes items on the State Heritage Register and items listed by state agencies and local Government, to identify any items currently listed within or adjacent to the proposal site.
- The Australian Heritage Database, this includes items on the National and Commonwealth Heritage Lists, to identify any items that are currently listed within or adjacent to the proposal site.

The results of the NSW SHI database search indicated that there is one previously recorded Aboriginal Place, Doodle Comer, listed under the *National Parks and Wildlife Act* within the Greater Hume LGA. This recorded Aboriginal Place is not within or in close proximity to the current proposal area.

The results of the NSW SHI database search indicated that four previously recorded heritage sites are listed under the *NSW Heritage Act* within the Greater Hume LGA. None of the sites are located within the current proposal area. The closest site to the proposal area is the Culcairn Railway Station and yard group located approximately 5.5 km north-east of the proposal area in the township of Culcairn. This site will not be impacted by the proposed Culcairn Solar Farm.

The results of the NSW SHI database search indicated that 61 previously recorded heritage sites are listed by the Local and State Agencies within the Greater Hume LGA however none are located within or in close proximity to the current proposal area. The closest sites to the proposal area are those identified within the township of Culcairn. The closest listed heritage items are in the township of Culcairn, include the Bakery Shop, Court House/Police Building, Hotel and Street Trees which are all at least 3 km north-east of the proposal area.

The results of the Australian Heritage Database search indicated that 13 sites are located within the Greater Hume LGA however none of the sites area located within or in close proximity the current proposal area.

No other known previously recorded heritage sites are located within or adjacent to the proposal area.

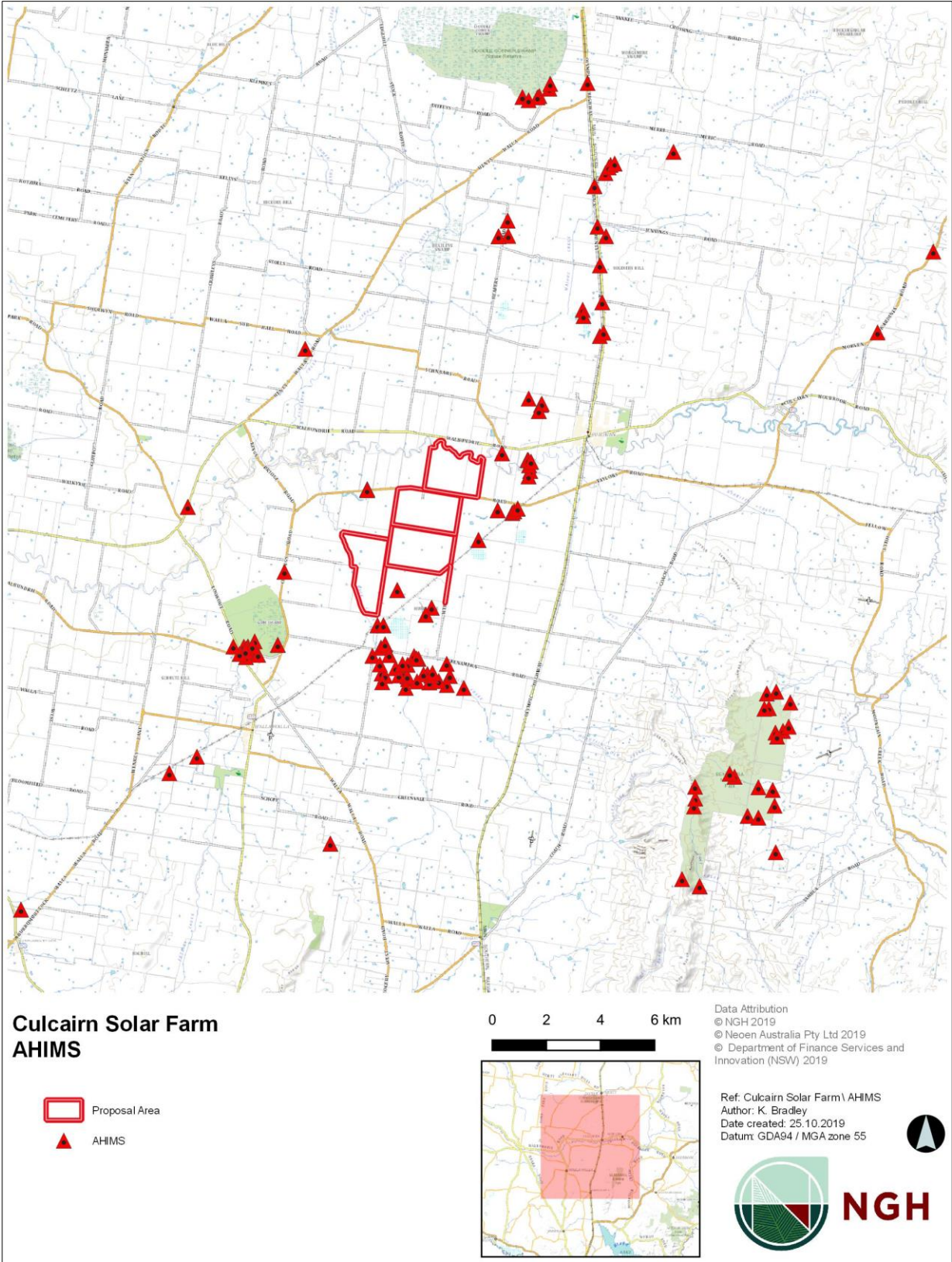


Figure 3-3.AHIMS Sites

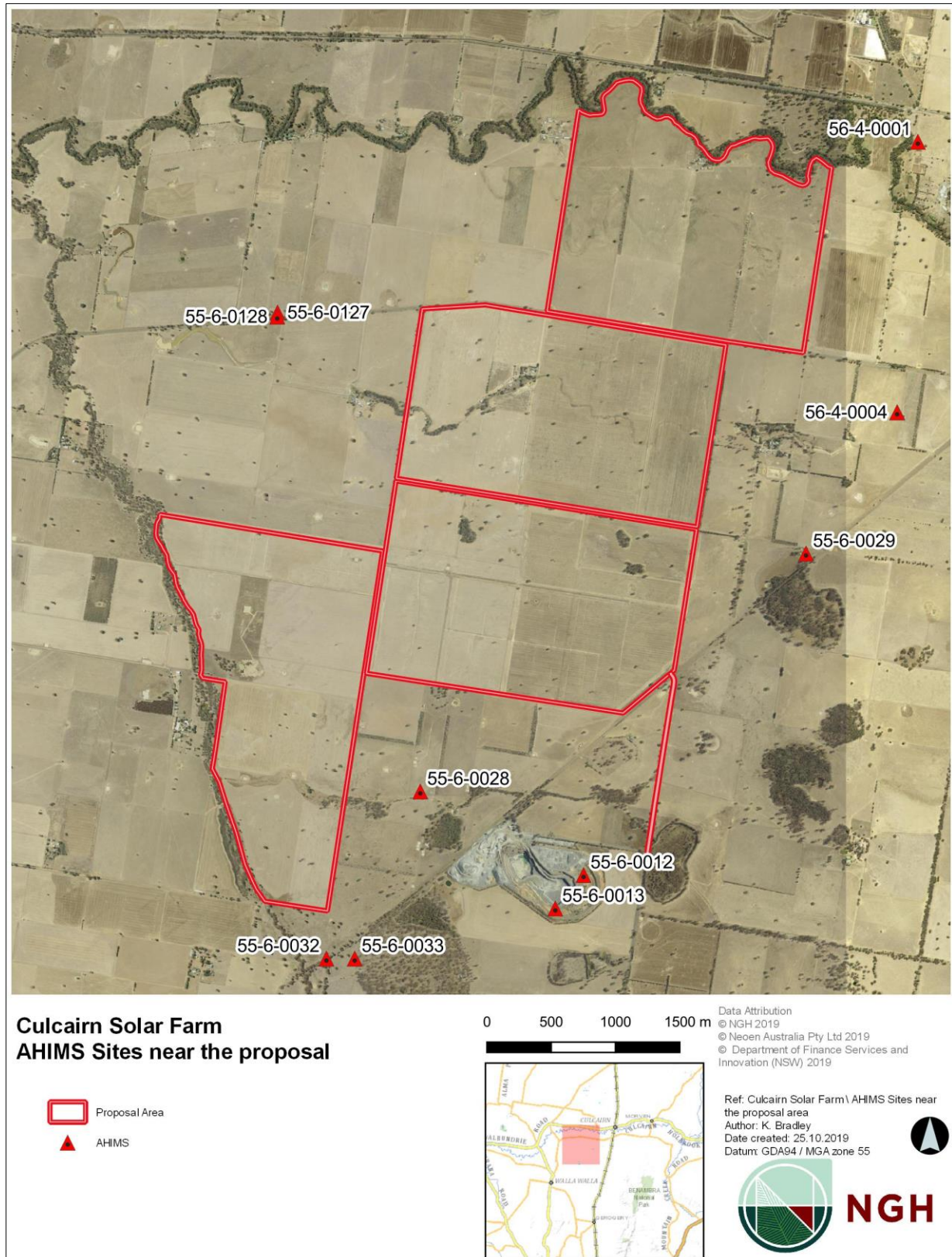


Figure 3-4. AHIMS Sites near the proposal area.

3.2.4. Previous archaeological studies

Aboriginal people have occupied what we now know as the Australian continent for at least 40,000 years and perhaps 60,000 years and beyond. There have been no known dated excavations in the Culcairn or Albury area, although the archaeological evidence from Lake Mungo, approximately 430 km to the north-west provides ample evidence of Aboriginal occupation dating back 40,000 years (Mulvaney and Kamminga 1999, Hiscock 2007). No regional synthesis of the archaeology has been completed for the Culcairn or Albury area. The following are summaries of those archaeological survey reports that have been completed in the surrounding areas and in relative proximity to the current assessment area, these have been primarily driven by development and infrastructure requirements.

A survey of the Albury area by Crosby (1978) identified that open camp sites and scarred trees are the most common site types in the Albury Region. Crosby (1978) noted that due to the limited range of usable stone outcropping in the region it is unlikely that Aboriginal quarries will occur however, areas where vein quartz occurs should be inspected. Additionally, due to geology and topography of the area and lack of large rock outcrops with shelters suitable for painting or banks suitable for carving it is very unlikely that art sites or ceremonial areas will be identified. Crosby's (1978) survey of six sites returned seven Aboriginal artefacts consisting of six scarred trees and a large volcanic cobble.

In 1978 Djekic undertook an archaeological survey for a proposed transmission line from the Wagga Wagga substation to Albury. The route covered approximately 120 km across well-established farming land, with the liner survey corridor intersecting approximately 5 km of the current assessment area. During the survey, six scarred trees were located, four of which were most likely the result of Aboriginal use in the area. Stone artefacts were also recorded on a property just outside Culcairn. The artefacts recorded included a small grinding stone, a hammer stone, a broken pebble and a small round stone of local material that appeared to have been pecked on either side. While none of the sites Djekic recorded are within the current assessment area, a scarred tree (Billabong Creek Scarred tree IV/AHIMS # 56-4-0001) was recorded approximately 700 m north-east of the proposal area. Djekic concluded that the small number of sites located during the survey was a direct result of over 100 years of environmental modification through the intensive development of agriculture in the region.

In 1980 Braz undertook an archaeological survey for a proposed transmission line from Jindera to Ettamogah with a 50-metre-wide easement. Numerous isolated artefacts were identified including quartz cores, flakes, a thumbnail scraper and a granite flaked piece.

In 1980 Haglund undertook field survey as one aspect of the Hume Shire Villages Water Supply Scheme approximately 30 km south east of the current assessment area. The survey area consisted of approximately 90 km of a 6-metre-wide easement for pipelines and five reservoir sites, each approximately 30 metres in diameter. A single scarred tree was recorded during the survey on the border of a pipeline easement. Haglund identified that several adjoining areas may have archaeological potential. The lack of identified sites may have been because of the previous disturbance of the land in the area.

In 1981 Presland completed a series of archaeological investigations throughout the Albury-Wodonga region as part of Victoria Archaeological Survey (VAS), approximately 40 km south of the current assessment area. The aim of these surveys was to record all Aboriginal heritage sites in 19 areas designated for tree planting and assess the impacts and significance of these sites. 22 isolated finds and 1 artefact scatter were identified across the inspected areas. Three planting sites were not inspected due to time restrictions. All but six isolated finds were in low-lying land that had been ploughed prior to inspection. Five finds were within Pleistocene terrace formation south-west of Wodonga. The artefact scatter was located on the edge of an eroding terrace, approximately 100 m from the northern bank of the Murray River.

In 1992 a site survey for a proposed tree plantation approximately 35 km to the south of the current proposal area was undertaken by Smith and Upcher (1992). The study identified five scarred trees, nine open campsites, one open campsite and scarred tree complex and eleven isolated artefacts. All artefacts

recorded, with the exception of a single isolated silcrete artefact, were manufactured on a milky quartz which appears to be the primary raw material type for the Albury area. Both box and river redgum were used for manufacturing wooden artefacts consistent with other studies in the region. This study observed that all open campsites were located within 50 m of creek lines and all but one open camp was located on a creek bank. However, erosion into the creek bank to a depth of <10 cm was needed before archaeological material was exposed. Additionally, Smith and Upcher (1992) noted that despite the presence of erosion scars and recently ploughed paddocks on hill tops and slopes within the project area no open camp sites were identified. Scarred trees however, occurred consistently across all of these landforms.

In 1994 Navin Officer undertook an archaeological survey for the proposed extension to the Culcairn Hard Rock Quarry, Hurricane Hill, located 1.5 km south-east of the southern boundary of the current assessment area. The survey area consisted of approximately 7 ha on the upper and middle slopes of a locally prominent hill, Hurricane Hill. Hurricane Hill was noted to be a prominent low hill which rises above the relatively level and flat topography of the Back Creek- Billabong Creek flood plain. A single probable scarred tree and an isolated find were recorded within the study area. The isolated find was a quartz core which has been bifacially flaked. The scarred tree was a White Box tree. Additionally, a large mature Kurrajong tree was recorded within the study area that was noted to have been considered by locals to either be planted by the first European settlers in the area, or by the local Aboriginal people. Navin Officer deduced that the tree was likely to have been European in origin.

A number of Aboriginal heritage surveys were conducted from 1995 to 1997 for the Wodonga to Wagga Wagga Natural Gas Pipeline by Navin Officer. In total 65 sites were recorded that consisted of 39 surface artefact scatters, 19 isolated finds and seven subsurface artefact scatters (identified during subsurface testing programme with all excavated PADs containing artefacts). Following the assessments Navin Officer concluded that artefact scatters are likely to be located in well drained contexts adjacent to a water source. The portion of the Wodonga to Wagga Wagga Natural Gas Pipeline survey area in close proximity to the current assessment area is summarised below.

In 1996 Navin Officer completed an archaeological assessment for the Wodonga to Wagga Wagga Natural Gas Pipeline that intersects the south-eastern portion of the current assessment area. The survey resulted in the identification of a number of Aboriginal archaeological sites although none are recorded within the current assessment area. The three sites closest to the proposal area recorded by Navin Officer are Back Creek 2/AHIMS #55-6-0032, Back Creek Swamp 2/AHIMS #55-6-0033 and Back Creek Tributary/AHIMS #55-6-0028. Each of these three sites are surface artefact scatters comprised of flakes, flaked fragments, cores and core fragments all manufactured mostly from milky quartz, with a small percentage being made from crystal quartz. A single sandstone grindstone was also recorded at Back Creek Swamp 1 located approximately 1 km south-east of the proposal area. Each of these sites is located on elevated ground immediately adjacent too, or a short distance, from Back Creek and its associated tributaries. The top five centimetres of ground at each of these sites had undergone disturbance associated with cattle grazing, resulting in a higher level of ground surface visibility. Navin Officer also recorded a total of five isolated finds along the Corowa-Culcairn railway in close proximity to Billabong Creek.

Navin Officer (1996) also identified two areas of Potential Archaeological Deposits (PAD) located approximately 1 km south-east of the Culcairn Solar Farm proposal area. The 'South Bank of Back Creek' referred to as PAD 3 (Officer 1996) was located on the southern bank of Back Creek and was considered to have a high level of archaeological potential due to its increased level of elevation and minimal level of disturbance compared with the north bank. The second PAD referred to as 'Back Creek Swamp Margin' (i.e. PAD 4) (Officer 1996) is located in close proximity to an identified artefact scatter, (i.e. Back Creek Swamp 1), on elevated ground, on the western margin of a minor wetland basin. The archaeological potential of this area was determined to be moderate due to its minor elevation and the high level of water movement across and around the site.

In 1998 Officer, Navin and Kamminga undertook a subsurface testing programme for the proposed Wodonga to Wagga Wagga Natural Gas pipeline. Four of the sites and seven PAD areas previously recorded were subject to further investigation through a subsurface testing programme as they were unable to be avoided by the pipeline works. All of the PADs subject to the subsurface testing programme were found to have *in situ* archaeological material, although in some case very low densities were recovered. The extent of the assemblages recovered were thought to extend beyond the proposed pipeline easement. A summary of the testing programme conducted by Officer, Navin and Kamminga (1998) has been provided in Table 3-5 below.

Table 3-5 Summary of finds for the Wodonga to Wagga Wagga Natural Gas Pipeline Testing Programme.

Site Name	No of Test Pits	Finds	Artefact density	Find Type	Location
West Pomigalarna 2	5 mechanical pits	4 artefacts	3.1/m ²	Milky quartz broken flakes with edgewear and bipolar crushing	Crest of rise adjacent to shallow flood channel on southern side of Murrumbidgee River in ploughed paddock margin.
Buckargingah Creek 1 and 2	25 mechanical pits and 19 manual pits	246 lithic items 140 identified artefacts	Ranged from 0 to 155.6/m ² BC1 averaged 24/m ² , BC2 averaged 13/m ² .	Bipolar flaking, microblade production, microliths, probable microlith backing flakes	Within 15 m of northern and southern banks of bend in creek line in relation to surface artefacts in ploughed margins of adjacent paddock.
Negarie 1	20 mechanical pits and 4 manual pits	62 lithic items (26% artefactual)	Ranged from 4 to 144/m ² Averaged 24/m ²	Micro blades from microlith production including Bondi points.	Elevated western bank of billabong in old flood channel on northern side of Murray River floodplain.
Burrumbuttock Creek 1	8 mechanical pits	32 artefacts	Ranged 2 to 30/m ² Averaged 11/m ²	Micro debitage from microlith production including a geometric microlith.	Eastern side of creek line on mid-slope of elevated area.
Petries Creek 1	7 mechanical pits	3 artefacts	4/m ²	Quartz lithic fragments and a bipolar flake.	Western side of creek line on flats associated with basal slopes
Back Creek 2	3 mechanical pits	1 artefact	0.14/m ²		Elevated southern bank of inside bend of streamline
Back Creek Swamp 2	11 mechanical pits	18 artefacts	Ranged 2 to 15/m ² Averaged 6/m ²	Micro debitage from microblade and bipolar flaking	Edge of wetland basin
Billabong Creek Flood Channel 1, 2, & 3	18 mechanical pits	21 artefacts	Ranged 2 to 11/m ² Averaged 4/m ²	Micro debitage from microblade flaking	Either side of flood channel

A comparison was made between the densities per square metre between six of the sites subjected to subsurface investigation including Buckargingah Creek 1 and 2 (BC1 & BC2), Negarie 1 (NG1), Burrumbuttock Creek 1 (BurrC1), Back Creek Swamp 2 (BCS2) and Billabong Creek Flood Channel (BCFC). The average densities at the sites was noted to be low ranging from 4/ m² to 24/ m² (Officer,

Navin & Kamminga 1998:108). The comparison of the densities showed that the sites tested all had a similar density structure indicative of small groups of people camping for short periods of time along creek banks. No evidence was identified to suggest long term occupation of the sites.

Microliths and microblades recovered from Back Creek Swamp, Negarie and Burrumbuttock Creek indicated an age range of less than 4,500 years BP for the assemblage recovered. The overall size of the lithic fragments, in particular the microlith examples, was noted to infer a lack of raw material sources in the region. The density of the assemblage was summarised to indicate that small groups were occupying short-term camps for short periods along creek banks with no direct evidence of longer-term base camps identified. Most of the artefactual material was identified in subsurface contexts at least 100 m away from larger order water sources and 40 m away from smaller order water courses and basin edge depressions. Following the completion of the subsurface investigations along a proposed gas pipeline route Officer, Navin and Kamminga noted that quartz was the main raw material type in the area. Quartz was likely to have been sourced from bedrock exposures rather than water rolled material collected from alluvial contexts. The findings of the subsurface investigation were interpreted as demonstrating that there was not sustained or repeated visits to particular areas, and that the generally small size of the recovered artefacts was the result of raw material shortages (Officer, Navin & Kamminga 1998).

A survey of development areas in Thurgoona by Kelly (2002), located approximately 40 km south of the current proposal area, identified a single potential archaeological deposit that was later excavated as part of the Centaur Rd subsurface investigation (Border Archaeology 2006a). A total of 153 artefacts were located during excavation, primarily consisting of quartz debitage. This was similar to survey undertaken of the Hamilton Valley causeway construction site where a single quartz lithic scatter of 12 artefacts was recorded on a river terrace (Border Archaeology 2003).

In 2006 Biosis surveyed the North-South Rail corridor for the Albury to Junee Passing Lanes. The southernmost section of Passing Lane 14 (Culcairn- Henty) is located approximately 4 km north-east of the current assessment area while the northern most section of Passing Lane 13 (Table Top – Gerogery) is located approximately 4 km south-east of the current assessment area. During the survey for Passing Lane 14 seven sites were identified, including two artefact scatters and five isolated finds. Four of the sites recorded for Passing Lane 14 were recorded between 5 and 11 km north of the township of Culcairn. The four sites located in close proximity to the township of Culcairn consisted primarily of quartz flakes and flake fragments. The sites were all recorded in moderately disturbed contexts within graded areas and fire breaks. During the survey for Passing Lane 13 four isolated finds were recorded. All four isolated finds were manufactured from quartz and noted to be fragmented artefacts recorded in disturbed contexts.

Survey and subsequent test pitting was undertaken by Border Archaeology (2006b, 2007a) of the Carsten Street Residential Development approximately 40 km south of the current proposal area. The original survey identified three quartz lithic scatters, one isolated find, one scarred tree and an area of high archaeological potential. Visibility was however very low and consequently test pitting was recommended. The 2007 excavations of the Carsten Street Residential Development used a grader to excavate three areas in 10 cm spits down to approximately 20 cm depth. A total of 303 artefacts were recovered from grader scrape 1 with 86.8% of artefacts recorded manufactured from plain quartz and 12.8% manufactured from crystal quartz. Based upon the authors experience in the Albury region they proposed that "Aboriginal archaeological deposits [are] strongly associated with terrace landform rather than current water course margins" (Border Archaeology 2007a, p.51).

In 2007 Border Archaeology undertook a survey of the proposed Hume Country Club Estate Residential Development, approximately 38 km south of the current proposal area. Eight previously unrecorded sites were identified and consisted primarily of quartz debitage (Border Archaeology 2007b). A previously recorded AHIMS site #60-3-0099 was relocated and was subsequently salvaged by Border Archaeology in 2008. During the salvage programme 65 quartz artefacts were relocated, primarily consisting of debitage and angular fragments (<3 cm) with a small number of cores, flakes and flaked pieces. The site occurred within a heavily disturbed terrace landform (Border Archaeology 2008).

In 2008 Biosis undertook site survey of a proposed Albury waste management facility, approximately 36 km south of the current proposal area, and located a single smoky quartz isolated flake within the valley flat associated with a small creek line. Biosis (2008) assessed creek terraces within the project area as having moderate archaeological sensitivity and valley flats and lower and mid valley slopes as having low archaeological sensitivity.

In 2015, Associates Archaeology & Heritage Pty Ltd undertook an ACHA for Lot 204 DP753345 on Drumwood Road, Jindera, located approximately 25 km south of the current proposal area. The area consisted of a 41 ha area on a gentle slope southward of Bowna Creek. The site was located within 200 m of water, but it was predicted by Associates Archaeology & Heritage (2015) that while artefacts were likely to be found, they would most probably be in relatively low density because the area was a low-lying creek flat, and more complex residential or tool-making sites are typically located on more raised terrace landforms adjacent to creeks. Two surface flaked stone artefacts were recovered during the initial survey which prompted the need for further investigation in the area. Test excavation was carried out across the proposed subdivision area with 82 test pits excavated. A total of eight subsurface artefacts were recovered from 20.5 m² of excavated material across the project area. This is an artefact density of 0.36 artefacts/ m². The artefacts recovered were all made from white milky quartz and were located on ridge crest, slope and flat topographic units. The artefact types identified during the survey and testing programme were all flakes, flake fragments and angular fragments with no cores recorded. Associates Archaeology suggested that the wide distribution of the eight artefacts across the site was considered to demonstrate that the area was subject to frequent land use by Aboriginal people in the past but was not the site of complex / residential activity. Given that the artefacts were spread from the creek flat up to the ridge crest covering an area of up to 500 m from water with very little significant apparent concentration Associates Archaeology noted this was suggestive of the relatively regular, dispersed use of the landscape by Aboriginal people during the course of foraging, hunting and travel. Associates Archaeology concluded that the absence of notable concentrations of artefacts within the project area was consistent with the modelling in the area which suggests that complex moderate-high density lithic sites are found on elevated terraces near to water rather than on low lying flats.

In 2018 NGH undertook survey and subsurface testing for the proposed expansion of the Anderson Clay Mine extraction area, located approximately 12 km south-east of the current proposal area. The field survey identified two PADs in the subject area, termed Andersons PAD 1 and Andersons PAD 2. Under the development proposal disturbance to Andersons PAD 1 was unavoidable, and poor surface visibility meant the PAD was not fully assessed for its potential to contain Aboriginal objects. Therefore, a programme of test excavation was undertaken to establish the presence of subsurface archaeological material. While 25 test pits were proposed for excavation, only 13 were excavated as it was determined that at the completion of the excavation of the 13 test pits that enough data had been gathered to conclude that the area of Andersons PAD 1 had very little topsoil deposit in place and no Aboriginal objects were identified in the excavated test pits. The lack of subsurface deposit may be the result of previous farming practices or that the area has a naturally thin profile however this was unable to be determined as there was also evidence of significant disturbance to the ridge crest. It was consequently determined that Andersons PAD 1 was highly disturbed and modified, and the likelihood of *in situ* archaeology occurring reduced to very low. Despite the highly disturbed area identified during the test excavation programme an isolated quartz flake was recorded which indicated that despite the apparent surface disturbance, the area most likely contained an Aboriginal heritage site which has now been largely removed.

In 2019(a) NGH completed the Aboriginal Cultural Heritage Assessment for the proposed Jindera Solar Farm comprising 521 ha of land and approximately 20 km south east of the current proposal area. The survey of the Jindera Solar Farm proposal area identified seven artefact scatters and 15 isolated finds. The Aboriginal community representatives also identified three cultural trees. Four areas of archaeological potential were noted which included a crest landform in close proximity to water (PAD 1) and three slightly raised areas along spur landforms in close proximity water (PAD 2 – PAD 4). The four PADs were subject to a limited subsurface testing programme as part of the assessment. A total of 52

test pits were excavated across the four PADs with subsurface stone artefacts recovered from 25 pits. The artefacts densities for each of the pits excavated ranged from nil to 12 with a total of 80 subsurface quartz artefacts recovered. The subsurface testing programme was noted to be characterised by discrete low-density clusters of artefacts interspersed with areas of very low or no artefactual material. The subsurface material recovered was recorded as three additional subsurface artefact scatters.

In 2019 NGH (2019b) completed the Aboriginal Cultural Heritage Assessment for the proposed Walla Walla Solar Farm, approximately 4 km south of the current assessment area. Despite the variable visibility encountered during the survey 11 artefact scatters, 23 isolated finds and two scarred trees were recorded. Two areas of potential archaeological deposit (PAD) were also identified that were avoided by the proposed development works. The Aboriginal community representatives also identified three cultural trees that were unable to be unequivocally determined to be Aboriginal in origin by the archaeologist. NGH noted that the results indicate that artefact scatters and Aboriginal objects can occur throughout the landscape, even in areas of highly disturbed farming activities and that while Aboriginal sites may be expected through all landscapes there appears to be a pattern of sites that relate to the presence of potential resources for Aboriginal use. NGH concluded that the area was likely used intermittently over a period of time for camping, hunting and gathering resources and that the sites recorded during the survey were most likely representative of the use of country along Back Creek.

Based on the studies discussed above it is plausible to suggest that while Aboriginal sites may be expected through all landscapes there does appear to be a pattern of sites that relate to the presence of potential resources for Aboriginal use. In the local area the dominant raw material type is quartz, with variations of colour and quality. Sites tend to be concentrated on elevated level ground associated with a reliable water source and are noted to consistently occur on raised terrace landforms within 50 m of perennial or seasonal creeks (Djekic 1978; Navin Officer 1996; Associates Archaeology & Heritage Pty Ltd). Additionally, the presence of scarred trees is relatively common and can occur across all landscapes. Based on site modelling and the prevalence of sites in the surrounding and immediate area, the site types most likely to be encountered within the Culcairn Solar Farm proposal area are quartz lithic scatters, isolated artefacts and scarred trees in remnant old growth vegetation areas bordering the cleared proposed development area and/or as isolated paddock trees.

3.2.5. Summary of Aboriginal land use

The results of previous archaeological surveys in the region show that there are sites and artefacts present throughout the landscape, albeit concentrated closer to water courses. There does appear, however, to be a pattern of site location that relates to the presence of potential resources for Aboriginal use with high density sites generally located in elevated flat areas adjacent to waterways. Lower density background scatters also occur across undulating plains in proximity to water. The dominate lithology within the area appears to be quartz with lesser quantities of silcrete artefacts. A number of scarred trees are recorded in the area, but this site type tends to occur in areas where old growth trees remain.

In addition, site densities in close proximity to the proposal area appears to be low. This may suggest the seasonal occupation of the area by Aboriginal people though it is more likely that there has been a lack of survey in the area or that land clearing and farming activities have disturbed or removed the cultural material evidence of Aboriginal occupation in the area.

A detailed understanding of Aboriginal land use of the region is lacking, as few in depth studies have been completed in close proximity to the proposal area. 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 limited.

3.2.6. Archaeological Site Location Model

The Aboriginal site modelling for the region to date suggests that there is a strong association between the presence of potential resources for Aboriginal use and the presence of archaeological sites. Areas directly associated with water and or elevated ground appear to have the greatest potential for identification of Aboriginal cultural material. There are exceptions to this however, and relatively low lying floodplain areas also have potential for the identification of isolated artefacts or campsites.

Based on the results of the previous archaeological investigations in the general area, and through extrapolation of sites from the Culcairn area, it is possible to provide the following model of site location in relation to the proposal area.

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. This feature is likely to occur.

Stone artefact scatters – representing camp sites or flaking and maintenance activity can occur across the landscape, usually in association with some form of resource or landscape. Water bodies, such as rivers, ephemeral creeks or clay pans can also be a focus of Aboriginal occupation. Given the proximity of the proposal area to Billabong Creek and Back Creek low density artefact scatters are likely 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 within and adjacent to the proposal area particularly adjacent to Billabong Creek and Back Creek. This feature is therefore likely to occur.

Hearths/Ovens – are identified by burnt clay used for heat retainers. Some are recorded in the district in association with resource locations. However, they could occur either independently or in association with other Aboriginal cultural features such as artefact scatters. Hearths are generally considered to be limited, one-off use or reused but few times and are smaller concentrations. Ovens are considered to represent larger features, often extending over a larger area and can include other material such as bone. No such sites have been recorded in the area and therefore such sites are less likely to occur.

Mounds - are accumulations of heat retainer ovens that have built up over time. They are typically round or oval in shape and range in length from just a few metres to over 100 m and range in height from 0.1 m to 2 m. They are identified by the presence of baked clay heat retainers, which have usually been brought to the location from a nearby source of natural clay such as a lakebed, swamp or drainage line. Mounds are generally found in proximity to wetland areas such as lakes, swamps and creeks, often elevated above these areas by being situated on sandy rises, lunettes, source bordering dunes and paleochannels. Mounds are likely to contain a range of other archaeological features such as bone, shell, stone artefacts and burials. No such sites have been recorded in the area and therefore such sites are less likely to occur.

Burials – are generally found within mound sites, in elevated sandy contexts or in association with rivers and major creeks. Given the proximity to Billabong Creek which is a major creek line in the area it is possible that this feature could occur however no such sites have been recorded in the area and therefore such sites are less likely to occur.

Stone resources – are areas where people used natural stone resources as a source material for flaking. This requires geologically suitable material outcropping to be accessible. The proposal area contains no natural outcropping stone and therefore this feature is unlikely to 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. Given the close proximity of Billabong Creek it is possible that this site type will be identified within the proposal area.

In summary, the topography and landscape features within the proposed Culcairn Solar Farm indicate that this area would likely have been part of the Wiradjuri landscape and has a possibility of providing an

archaeological signature. Nonetheless, 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 and modified 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. 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 general vicinity of the Culcairn Solar Farm proposal 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. Past land use activity has also greatly disturbed the archaeological record and there are unlikely to be many places that retain *in situ* archaeological material.

With regard to the limitations of the information available, archaeologists rely on Aboriginal parties to divulge information about places with cultural or spiritual significance in situations where non archaeological sites may be threatened by development. To date, we have not been told of any such places within the proposal area beyond the use of Billabong Creek as a transitional route however there is always the potential for such places to exist but insofar as the current proposed works area, no such places or values have been identified.

4. ARCHAEOLOGICAL INVESTIGATION RESULTS

4.1. SURVEY STRATEGY

The survey strategy objective was to cover as much of the ground surface within the proposal area as possible. Consequently, the survey strategy was devised to walk a series of transects across the landscape to achieve maximum coverage. Because the proposal area was generally disturbed and cleared, transects were spaced evenly with the survey team spread apart at 30 m intervals, walking in parallel lines. The harvested nature of the paddocks at the time of the survey fieldwork made this an ideal survey strategy as the team were able to walk in parallel lines following the harvested crop furrows at a similar pace. This allowed for maximum survey coverage and maximum opportunity to identify any heritage objects.

The survey team consisted of five to seven people which allowed for a 150 to 210-meter-wide tract of the proposal area to be surveyed with each transect, depending on the number of people participating in each transect. 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. Any mature trees within the proposal area were also inspected for any evidence of Aboriginal scarring (c.f. Long 2005).

We believe that the survey strategy was comprehensive and the most effective way to identify the presence of Aboriginal heritage objects and sites within the proposal area. Discussions were held in the field between the archaeologists and the Aboriginal community representative to ensure all were satisfied and agreed with the spacing, coverage and methodology.

The proposal area was divided into two soil landforms, Quaternary Alluvial Flats and Cenozoic Shepparton Formation flats, based on the NSW 1:1,500,000 surface geology map and on-site soil



observations as shown previously in Figure 3-1 with the portion of Weeamera Road incorporated into the Cenozoic Shepparton Formation soil landform.







The field survey of the proposal area was undertaken by archaeologists Kirsten Bradley, Chelsea Jones and Brett Chalmers from NGH with representatives from the Aboriginal community from the 4th of February to the 11th of February 2019. Notes were made about visibility, photographs were taken, and any possible Aboriginal objects or features identified were inspected, assessed and recorded if deemed to be Aboriginal in origin.

4.2. SURVEY COVERAGE

The solar farm area comprised primarily of cleared and harvested paddocks that had been subject to farming activities. Survey transects were undertaken on foot and traversed the entire Culcairn Solar Farm proposal area. Visibility within the proposal area was variable however as a whole it generally had excellent visibility averaging 60% overall. The effective visibility in the recently harvested paddocks ranged from 60-95%. The proposal area also exhibited exposures, mostly along established access tracks and averaged about 90% visibility. Between the survey participants, over the course of the field survey, approximately, 100 km of transects were walked across the proposal area.

Table 4-1 below shows the calculations of effective survey coverage and Plates 1-8, show examples of the transects and two soil landforms within the proposal area. 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 15.4% of the proposal area. It is considered that the survey of the Culcairn Solar Farm proposal area had sufficient and effective survey coverage with very high ground surface visibility at the time the field survey was undertaken. The discovery of a number of Aboriginal sites indicates that the survey technique was effective enough to identify the presence of Aboriginal occupation and in what areas it was concentrated. Therefore, the results identified are considered a true reflection of the nature of the Aboriginal archaeological record present within the proposal area.

	
Plate 1. View north along transmission line on the Cenozoic Shepparton Formation.	Plate 2. View west towards Back Creek on the Cenozoic Shepparton Formation.

	
<p>Plate 3. View west close to the eastern bank of Back Creek on the Cenozoic Shepparton Formation.</p>	<p>Plate 4. View north showing east-west running drainage depression on the Cenozoic Shepparton Formation.</p>
	
<p>Plate 5. View south along Weeamera Road on the Cenozoic Shepparton Formation.</p>	<p>Plate 6. View west of the southern bank of Billabong Creek on the Quaternary Alluvial Flats.</p>
	
<p>Plate 7. View east across the Quaternary Alluvial Flats from the northern side of Cummings Road within the proposal area.</p>	<p>Plate 8. View west across the Quaternary Alluvial Flats in the northern portion of the proposal area adjacent to Billabong Creek.</p>

4.2.1. Consideration of potential for subsurface material

The field survey of the Culcairn Solar Farm proposal area in conjunction with an assessment of contour data, archaeological modelling and consideration of the comments from the RAPs resulted in the identification of several areas adjacent to Back Creek, Billabong Creek and a paleochannel considered to have potential for high densities of *in situ* subsurface deposits that require further assessment if they are proposed to be impacted. These areas of Potential Archaeological Deposit (PADs) within the proposal area are shown in Figure 4-1. It was recommended that the areas of PAD identified within the proposal area that are unable to be avoided by the proposed development footprint should be subject to a limited subsurface testing programme to establish the true archaeological potential of the landforms, significance and extent of sites.

Based on the land use history, an appraisal of the landscape, soil, level of disturbance and observations from the field survey, it was concluded that there was negligible potential for the presence of intact subsurface deposits with high densities of cultural material within the remainder of the proposal area outside the PADs identified as shown in Figure 4-1. Consequently, subsurface testing is not warranted beyond the PADs identified adjacent to Back Creek, Billabong Creek and a paleochannel located south of Billabong Creek within the proposal area.

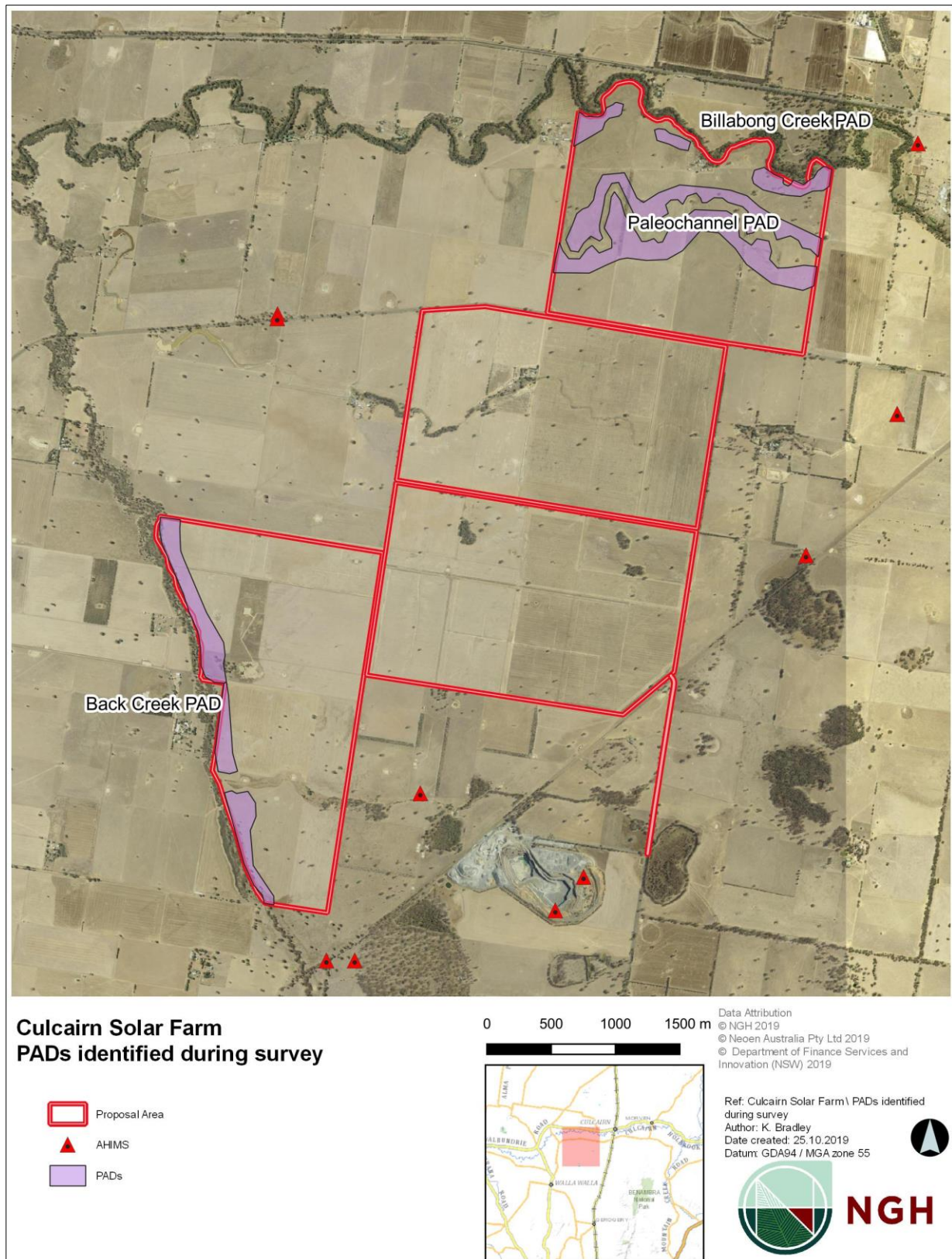


Figure 4-1. PADs identified during survey within the proposal area.

Table 4-1 Transect information.

Survey Section/ Topography	Number of Survey Transects	Exposure type	Proposal Area ha	Surveyed area (length m x width m)	Survey Area m ²	Visibility	Effective coverage (area x visibility) m ²	Proposal Area surveyed (ha)	Percentage of Proposal area effectively surveyed	Survey Archaeological result
Quaternary Alluvial Flats	28	Bare ground, vehicle and animal tracks, ploughed ground, disturbance areas and bull holes.	312	6,500 X 35 4,300 X 30 15,600 X 25	746,500	40% average	298,600	29.9	9.6	2 Isolated artefacts Paleochannel PAD Billabong Creek PAD
Cenozoic Shepparton Formation	65	Bare ground, vehicle and animal tracks, ploughed ground and disturbance areas	1039	31,800 X 35 47,400 X 30 1,500 X 10	2,550,000	70% average	1,785,000	178.5	17.2	24 Isolated artefacts 16 artefact scatters 1 cultural sites-stone 5 cultural sites- trees 3 modified trees Back Creek PAD
Total	93	Bare ground, vehicle and animal tracks, ploughed ground, disturbance areas and bull holes.	1351		3,072,000	-	2,083,600	208.4	15.4	26 Isolated artefacts 16 artefact scatters with surface artefacts 1 cultural sites-stone 5 cultural sites- trees 3 modified trees Billabong Creek, Back Creek and Paleochannel PADs

4.3. SURVEY RESULTS

Despite the variable visibility encountered during the survey 26 isolated finds, 16 artefact scatters, five cultural tree sites, three modified trees and a single cultural stone site were recorded. Several areas of PAD were also identified adjacent to Back Creek, Billabong Creek and a paleochannel. The Aboriginal community representatives identified the cultural sites which were unable to be unequivocally determined to be Aboriginal in origin by the NGH archaeologist but deemed to have cultural value by the Aboriginal community representatives.

It should be noted that the Aboriginal representative Mark Saddler independently assigned his own naming convention to a number of sites he identified, particularly those unable to be unequivocally determined to be Aboriginal in origin by the NGH archaeologist. Mark Saddler also submitted his own AHIMS site cards and provided NGH with a report on his participation in the survey which is provided in full in Appendix A.

NGH has identified that in one instance Mark Saddler has submitted an AHIMS site card for objects that form part of a larger stone assemblage along the bank of Back Creek (Culcairn Solar 494492/ AHIMS# 55-6-0135). Rather than creating a duplicate site in AHIMS NGH has simply updated the AHIMS site card.

A summary of all the archaeological and cultural Aboriginal sites recorded during the field survey of the proposal area are provided in Table 4-2 and their locations shown in Figure 4-2. The detailed site descriptions are provided in Appendix B. The surface artefact data is provided in Appendix C.

Table 4-2 Summary of all cultural and archaeological Aboriginal sites.

AHIMS	Name	Type	Notes
55-6-0199	Culcairn Solar AFT1	Artefact scatter	Submitted by NGH in 2019
55-6-0241	Culcairn Solar AFT2	Artefact scatter	Submitted by NGH in 2019
55-6-0223	Culcairn Solar AFT 3	Artefact scatter	Submitted by NGH in 2019
55-6-0224	Culcairn Solar AFT 4	Artefact scatter	Submitted by NGH in 2019
55-6-0225	Culcairn Solar AFT 5	Artefact scatter	Submitted by NGH in 2019
55-6-0226	Culcairn Solar AFT 6	Artefact scatter	Submitted by NGH in 2019
55-6-0227	Culcairn Solar AFT 7	Artefact scatter	Submitted by NGH in 2019
55-6-0228	Culcairn Solar AFT 8	Artefact scatter	Submitted by NGH in 2019
55-6-0229	Culcairn Solar AFT 9	Artefact scatter	Submitted by NGH in 2019
55-6-0230	Culcairn Solar AFT 10	Artefact scatter	Submitted by NGH in 2019
55-6-0231	Culcairn Solar AFT 11	Artefact scatter	Submitted by NGH in 2019
55-6-0232	Culcairn Solar AFT 12	Artefact scatter	Submitted by NGH in 2019
55-6-0233	Culcairn Solar AFT 13	Artefact scatter	Submitted by NGH in 2019
55-6-0234	Culcairn Solar AFT 14	Artefact scatter	Submitted by NGH in 2019
55-6-0139	Culcairn Solar 497239	Artefact scatter	Submitted by Mark Saddler in 2019
55-6-0135	Culcairn Solar 494492	Artefact scatter	Originally submitted by Mark Saddler February 2019. Updated by NGH in 2019.
55-6-0136	Culcairn Solar 495094	Isolated Find	Submitted by Mark Saddler in 2019
55-6-0239	Culcairn Solar IF1	Isolated Find	Submitted by NGH in 2019
55-6-0240	Culcairn Solar IF2	Isolated Find	Submitted by NGH in 2019

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AHIMS	Name	Type	Notes
55-6-0203	Culcairn Solar IF3	Isolated Find	Submitted by NGH in 2019
55-6-0204	Culcairn Solar IF4	Isolated Find	Submitted by NGH in 2019
55-6-0205	Culcairn Solar IF5	Isolated Find	Submitted by NGH in 2019
55-6-0206	Culcairn Solar IF6	Isolated Find	Submitted by NGH in 2019
55-6-0207	Culcairn Solar IF7	Isolated Find	Submitted by NGH in 2019
55-6-0208	Culcairn Solar IF8	Isolated Find	Submitted by NGH in 2019
55-6-0209	Culcairn Solar IF9	Isolated Find	Submitted by NGH in 2019
55-6-0210	Culcairn Solar IF10	Isolated Find	Submitted by NGH in 2019
55-6-0211	Culcairn Solar IF11	Isolated Find	Submitted by NGH in 2019
55-6-0212	Culcairn Solar IF12	Isolated Find	Submitted by NGH in 2019
55-6-0213	Culcairn Solar IF13	Isolated Find	Submitted by NGH in 2019
55-6-0214	Culcairn Solar IF14	Isolated Find	Submitted by NGH in 2019
55-6-0215	Culcairn Solar IF15	Isolated Find	Submitted by NGH in 2019
55-6-0216	Culcairn Solar IF16	Isolated Find	Submitted by NGH in 2019
55-6-0217	Culcairn Solar IF17	Isolated Find	Submitted by NGH in 2019
55-6-0218	Culcairn Solar IF18	Isolated Find	Submitted by NGH in 2019
55-6-0219	Culcairn Solar IF19	Isolated Find	Submitted by NGH in 2019
55-6-0220	Culcairn Solar IF20	Isolated Find	Submitted by NGH in 2019
55-6-0222	Culcairn Solar IF21	Isolated Find	Submitted by NGH in 2019
55-6-0221	Culcairn Solar IF22	Isolated Find	Submitted by NGH in 2019
55-6-0200	Culcairn Solar IF23	Isolated Find	Submitted by NGH in 2019
55-6-0201	Culcairn Solar IF24	Isolated Find	Submitted by NGH in 2019
55-6-0202	Culcairn Solar IF25	Isolated Find	Submitted by NGH in 2019
55-6-0130	Culcairn Solar 494957	Modified Tree	Submitted by Mark Saddler in 2019
55-6-0137	Culcairn Solar 494924	Modified Tree	Submitted by Mark Saddler in 2019
55-6-0238	Artefact scatter	Modified Tree	Submitted by NGH in 2019
55-6-0132	Culcairn Solar 495666	Cultural site- tree	Submitted by Mark Saddler in 2019
55-6-0133	Culcairn Solar 498265	Cultural site- tree	Submitted by Mark Saddler in 2019
55-6-0134	Culcairn Solar 497439	Cultural site- tree	Submitted by Mark Saddler in 2019
55-6-0140	Culcairn Solar 497151	Cultural site- tree	Submitted by Mark Saddler in 2019
N/A	Culcairn Solar CT1	Cultural site- tree	Albury LALC requested tree avoided. NGH identify as cultural tree and not an archaeological site. Not submitted to AHIMS
55-6-0138	Culcairn Solar 497037	Cultural site-stone	Submitted by Mark Saddler in 2019

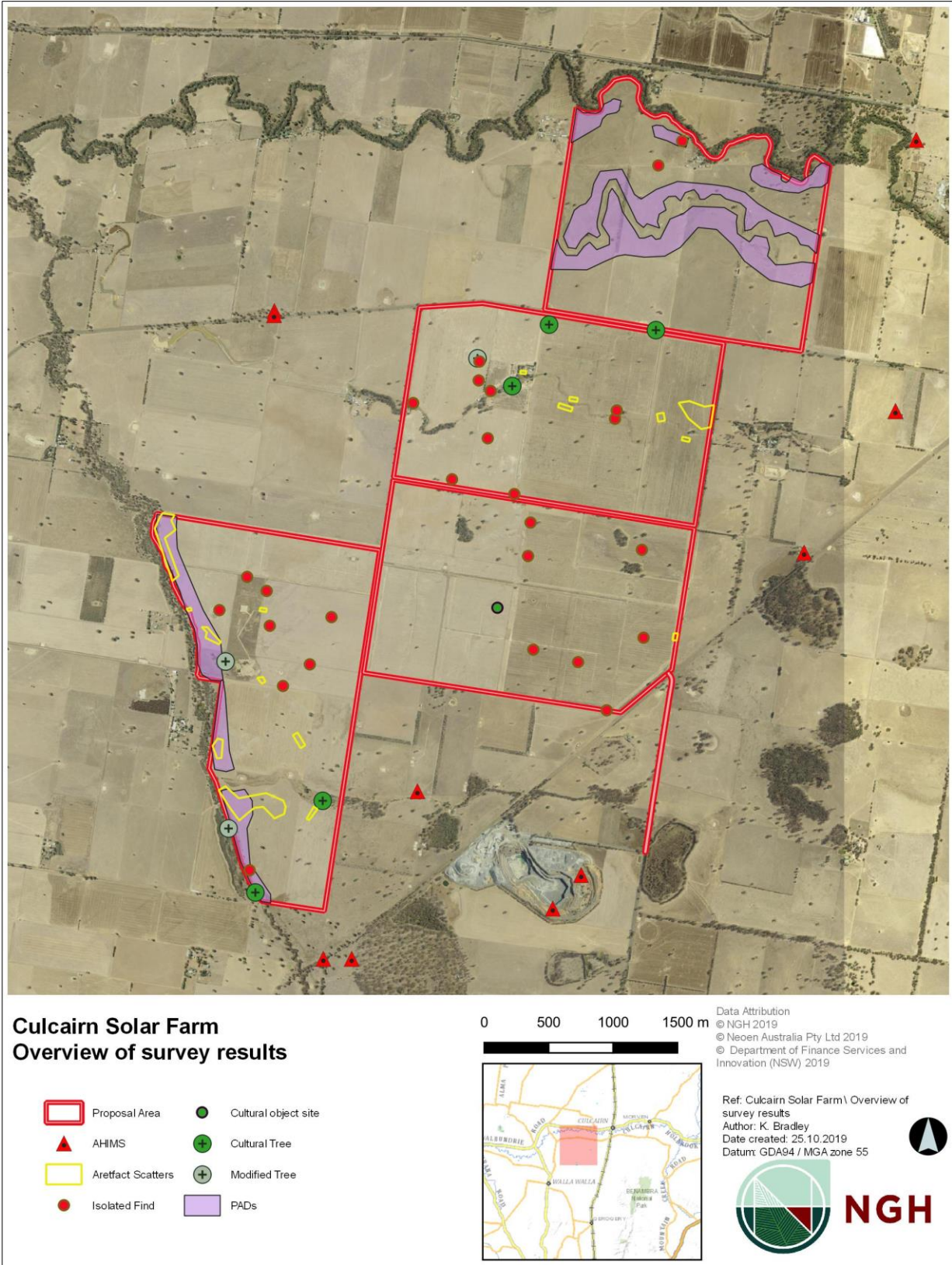


Figure 4-2. Overview of survey results.

4.4. EXCAVATION METHODOLOGY

The subsurface excavation of the areas considered to have potential for *in situ* subsurface deposits that could not be avoided by the proposed development works was undertaken following the *Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales*. As such, the basic parameters of the investigation were limited to the methodology outlined in the Code. The following provides details of the methodology used in the testing strategy for the subsurface testing programme within the Culcairn Solar Farm proposal area.

Based on the results of the NGH survey of the proposal area it was determined that subsurface testing was required to investigate the presence and extent of archaeological material at the PADs adjacent to Billabong Creek, Back Creek and a paleochannel. These PAD areas were all on raised, flat landforms adjacent to water courses and considered to have potential for high density *in situ* subsurface deposits.

It was determined that the most effective way of testing the PADs was through the hand excavation of a series of test pits along nominal baselines across the PADs within the proposed development footprint. Test pits were therefore placed along a nominal baseline transects within the PADs which could not be avoided by the proposed development works to investigate the potential for subsurface deposits.

Test pits were placed to investigate the PADs at 20 m intervals along nominal baselines to assess the presence or absence of archaeological material. Plates 9 to 15 show the landscape of the PADs tested. The result was a total of 68 pits test pits along 12 nominal baselines in the PADs as shown in Figure 4-3. Test pits were numbered in sequential order as they were excavated from Pit 1 to Pit 68. The location of the test pits was recorded in the field using a GPS enabled Samsung Tablet, running QFIELD.

Excavation proceeded for all PAD areas in line with the requirements of the Code of Practice and outlined in the methodology provided to the Aboriginal stakeholders. The test pitting methodology involved the following actions.

- Each test pit was 50 cm x 50 cm in area;
- Removal of initial deposit of 5 cm in the first pit of each PAD with subsequent spits excavated in 10 cm spits unless features were found requiring a different strategy;
- Test pits were excavated to a clay or until they were unable to be excavated by hand any deeper;
- All excavated material from each spit was dry sieved through a 5 mm mesh;
- Descriptions of soil and any other features were noted on standardised recording sheets;
- Photos were taken of each completed test pit;
- Scale-drawn records of the stratigraphy/soil profile were completed for each test pit;
- A sort through the residual gravels and material retained in the sieve was conducted in the field;
- Any suspected cultural material was retained and bagged according to pit and spit details for later recording in the lab; and
- All test pits were backfilled with the excavated deposit.

The recording and analysis of the artefacts recovered from the test excavations was undertaken at the NGH office in Canberra. The artefacts had a range of variables and technological attributes recorded including the following:

- Provenance (pit number, spit number);
- Raw material;
- Technological category;

- Dimensions (for complete flakes this included percussion length, platform, mid and distal width, platform thickness, maximum thickness; for other items the maximum dimensions);
- Platform details (including size, type and presence of overhang removal);
- Cortex (type and %);
- Scar count and location;
- Use wear/retouch type and location; and
- General comments.



Plate 9. View west along baseline from Pit 1.





Plate 10. View north-east along baseline from Pit 11.



Plate 11. View north-west along baseline from Pit 28.



Plate 12. View south-west along baseline from Pit 35.

	
<p>Plate 13. View south- east along baseline from Pit 55.</p>	<p>Plate 14. View north-west along baseline from Pit 68.</p>

4.5. EXCAVATION RESULTS

4.5.1. Testing Results

Of the 68 test pits excavated across the PAD areas investigated only 13 contained stone artefacts. Figure 4-4 shows the locations of the test pits that the subsurface artefacts recorded were recovered. A total of six artefacts were recovered from six of the 48 test pits excavated in the PAD area that encompassed a paleochannel in the northern portion of the proposal area, south of Billabong Creek. A total of 11 artefacts were recovered from seven of the 20 test pits excavated within the portion of the PAD tested along Back Creek. Only three of the 13 test pits which contained artefacts had more than a single artefact recovered. Plates 15 to 18 show some of the artefacts recovered from the subsurface testing programme of work.





The low number of artefacts recovered from the subsurface testing programme prevents any meaningful analysis of technology or density but does provide an indication of the low distribution of subsurface archaeological material across the raised areas in close proximity to water within the proposal area, particularly along Back Creek and the paleochannel south of Billabong Creek. The highest artefact density was identified in pit 58 with 12 artefacts/ m². The overall density of artefacts across the entire excavated area for all test pits was 1 artefact/ m², which is likely representative of the upper most density for the artefact occurrences within the archaeologically sensitive landforms within the proposal area. The average density is relatively low in comparison to the previous test subsurface artefact densities recovered by Officer, Navin and Kamminga (1998) while testing the site Back Creek Swamp 2, located approximately 500 m south of the southern proposal boundary, which ranged from 2 to 15 artefacts /m² and averaged 6 artefacts /m².

The artefacts recovered were predominantly flakes (n= 13; 76.5%) with a lesser number of distal fragments (n=2; 11.75%) and flakes pieces (n=2; 11.75%). The artefacts were all manufactured from quartz (see Plates 15 to 18) which is a common lithology for the proposal area. The full details of these artefacts are provided in Appendix D. All the artefacts were recovered from the upper deposit, 0-20 cm below the surface. A total of seven artefacts were recovered from 10-20 cm below the surface (41.2%) with ten artefacts recovered from 0-10 cm below the surface (58.8%).

From the 68 test pits placed across the PADs, a total of 5.0 m³ of deposit was excavated and sieved. Test pits ranged in depth from 10 cm to 60 cm. All soil descriptions, stratigraphic drawings and photos are provided in Appendix E.

The subsurface artefacts recovered from the portion of the PAD tested along Back Creek were incorporated into the sites Culcairn Solar AFT2 and AFT3 which were recorded during the survey fieldwork. The subsurface artefacts recovered from the PAD area that encompassed the paleochannel in the northern portion of the proposal area were assigned the subsequent appropriate sites names Culcairn Solar AFT15 to Culcairn Solar AFT17 (AHIMS# 55-6-0235 to 55-6-0237). The site description are provided in Appendix B.

Given the low density of subsurface material recovered from the PADs subject to testing as part of this assessment no further salvage excavation of these areas is deemed to be warranted. Consequently, no further mitigation measures are deemed to be warranted for impacts to the PADs subject to testing as part of this assessment.

	
<p>Plate 15. Artefact 5, quartz flake from Pit 35 Spit 1 in the northern portion of the proposal area.</p>	<p>Plate 16. Artefact 7, quartz flake from Pit 19 Spit 1 in the northern portion of the proposal area.</p>
	
<p>Plate 17. Artefact 10, quartz flake from Pit 52 Spit 2 near Back Creek.</p>	<p>Plate 18. Artefact 11, quartz flake from Pit 56 Spit 1 near Back Creek.</p>

4.5.2. Deposit Characteristics

Across the paleochannel PAD area in the northern portion of the proposal area the test excavation revealed a largely similar soil profile to the Culcairn Soil Landscape which was anticipated to continue into the proposal area. The soils across the paleochannel PAD area comprised of three main sediment units which consisted of a brown to grey sandy silty loam topsoil with no gravels, overlying a pale

yellowish brown silty clay loam. Below this was a compacted reddish brown mottled silty clay. The clay layer generally appeared at a depth of 20 to 60 cm.



Across the portion of the Back Creek PAD area tested a largely similar deflated soil profile was recorded. The soils across the Back Creek PAD area tested comprised of three main sediment units which consisted of a brown to grey silty loam deflated topsoil with no gravels, overlying a compacted yellowish brown silty clay loam, sitting over reddish brown to dark grey or red mottled clay. The clay layer generally appeared at a depth of 5 to 20 cm. Occasionally, the test pits in the Back Creek PAD went straight from the silty loam topsoil onto clay. The general sediment units described above that were recorded across the PAD areas tested are also shown in Table 4-3.

The soil stratigraphy encountered across the portion of the Back Creek PAD area tested was noted to generally be similar to the results of testing programme undertaken in 1998 by Officer, Navin and Kamminga at the site Back Creek Swamp 2, located approximately 500 m south of the southern proposal boundary. The previous excavations at Back Creek Swamp noted a grey brown silty loam (0-10 cm) overlaying a cracking brown clay. This was interesting as when Officer, Navin and Kamminga (1998) completed a testing programme at another site referred to as Back Creek 2, located approximately 1 km south of the southern proposal boundary, they recorded a deeper soil profile similar to the Culcairn Soil Landscape described above. The variation in the depths of deposits recorded by Officer, Navin and Kamminga (1998) along Back Creek when compared with the current testing programme are likely to be reflective of the variation in depositional erosion occurring along Back Creek.

The PAD areas excavated all had crops and/ or grasses covering the area which meant that roots were present in the initial 10 cm of deposit excavated. The excavation was also made difficult by the compaction of the soils due to dryness. Consequently, the primary hand tools used for excavation were mattocks and crowbars. The presence of insects and roots were noted to be present through the deposits across the PAD areas tested. The impacts of these actions results in the continual movement of soil and through it the movement of stone artefacts in a process known as bioturbation. However, the greatest impact on the deposits is through the agricultural and pastoral activities that have occur on the land including vegetation clearing and ploughing.

While some charcoal and burnt clay nodules were noted during the excavations these were not considered to be unequivocally cultural in origin given the occurrence of bushfires, land clearing and that stubble burning practises are used locally for crop management.

Table 4-3 Sediment units at Culcairn Solar Farm

PAD	Unit	Image	Sediment Description	Artefacts Present
Paleochannel PAD	1		Brown to grey sandy silty loam topsoil with no gravels	4
	2		Pale yellowish brown silty clay loam	2
	3		Compacted reddish brown mottled silty clay.	NA
Back Creek PAD	1		Brown to grey silty loam deflated topsoil with no gravels	6
	2		Compacted yellowish brown silty clay loam	5
	3		Reddish brown to dark grey or red mottled clay	NA

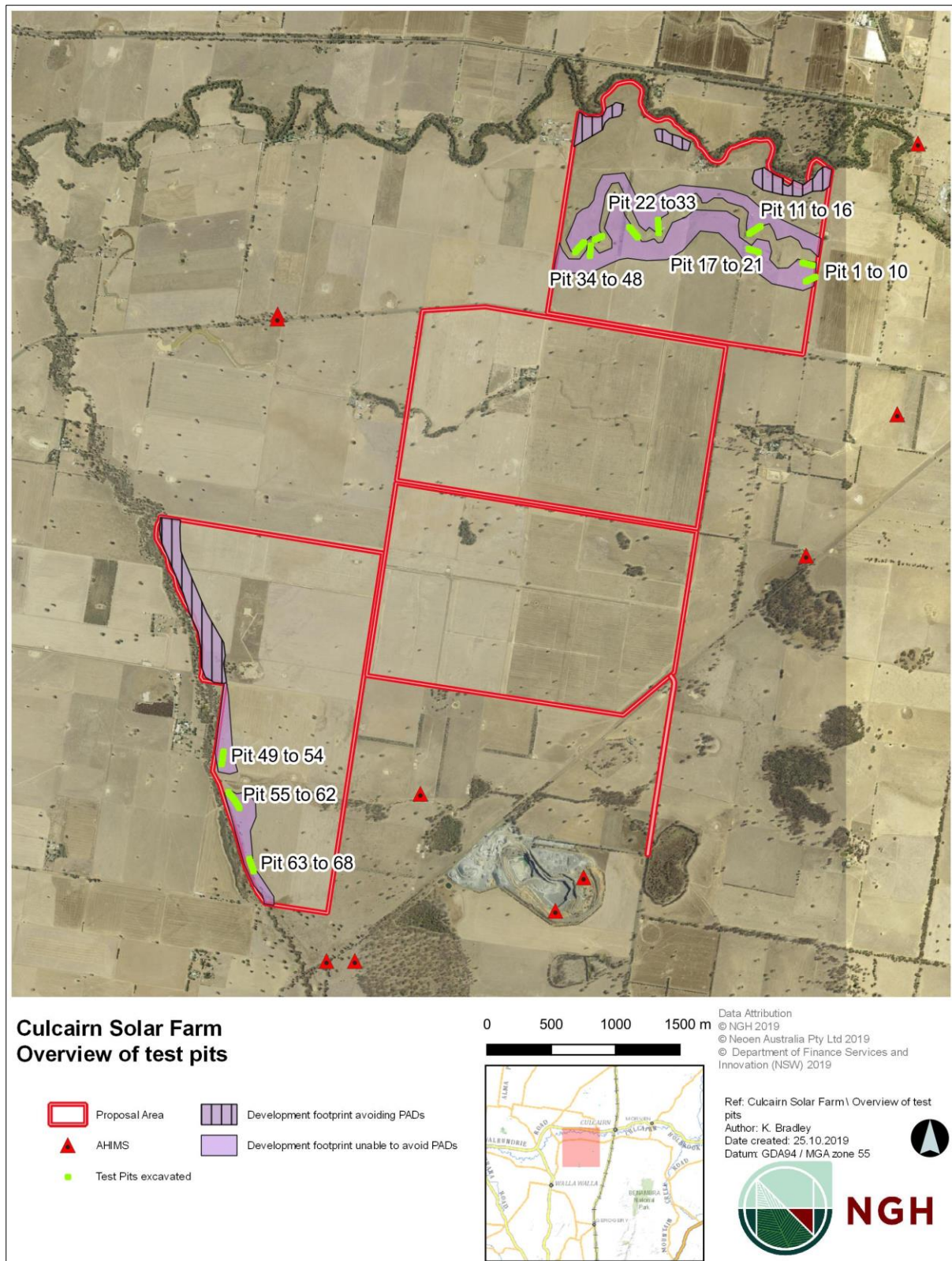


Figure 4-3. Overview of test pits locations and PADs to be impacted and avoided by the development footprint.

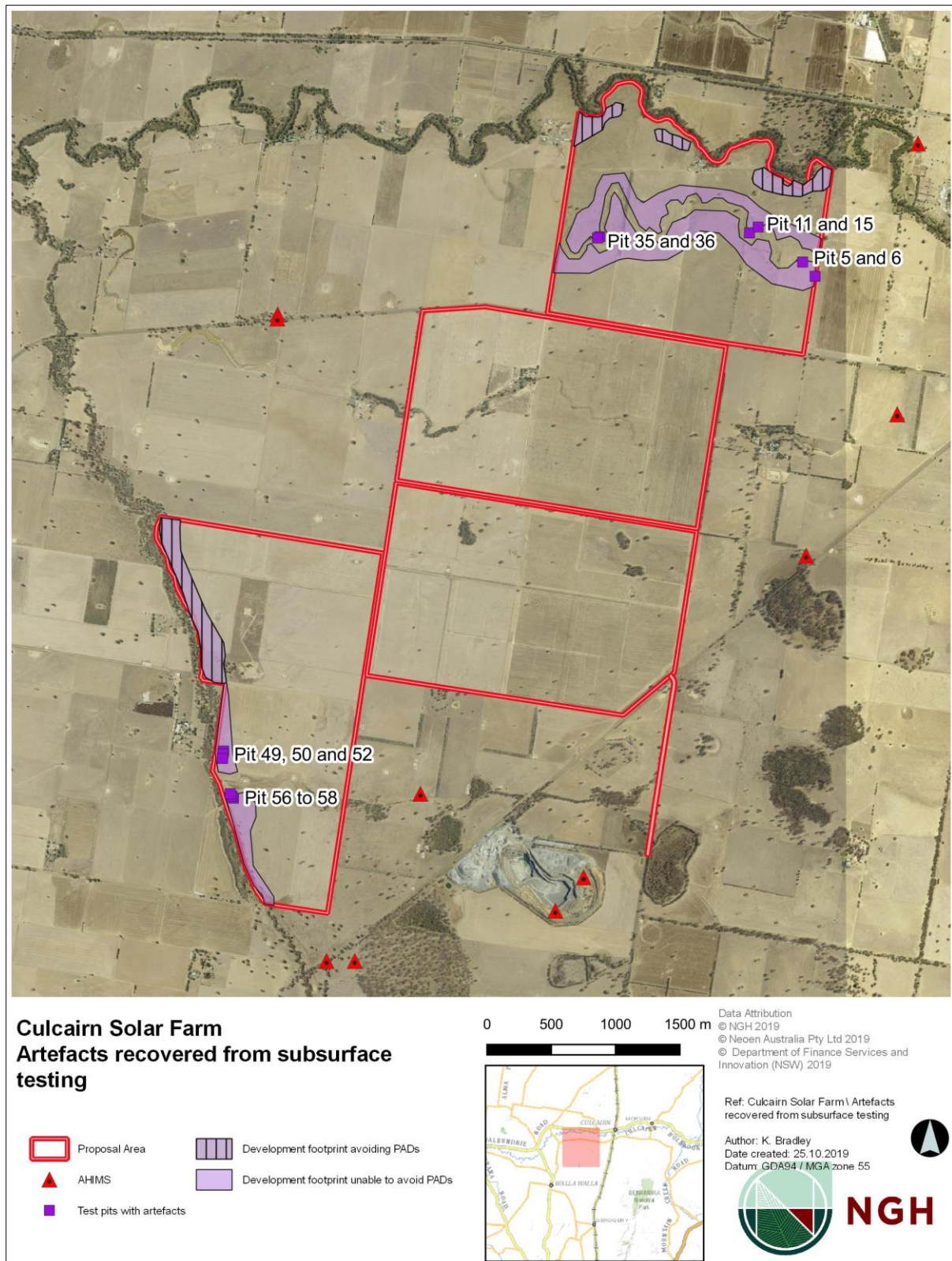


Figure 4-4. Artefacts recovered from the subsurface testing programme of works.

4.6. DISCUSSION

The predictions, based on modelling for the proposal area, were that isolated artefacts and artefact scatters consisting predominately of quartz objects were the most likely manifestation of Aboriginal occupation in the proposal area. Modified trees were also noted to likely occur as isolated paddock trees or in areas of remnant vegetation. The results of the survey and subsurface testing programme indicate that low density and isolated Aboriginal objects can occur throughout the landscape, even in areas of highly disturbed farming activities. Modified trees were recorded as isolated paddock trees and in areas of remnant vegetation.

While Aboriginal sites may be expected through all landscapes there does appear to be a pattern of sites that relate to the presence of potential resources for Aboriginal use particularly in the southern portion of the proposal area in proximity to Back Creek. Surprisingly, there was very few sites and stone artefacts recorded within approximately 2 km of Billabong Creek within the proposal area. Given that Billabong Creek is noted to be a major east-west travel corridor for Aboriginal people due to location between the Murrumbidgee and Murray River higher density artefact scatters were anticipated to be identified in close proximity to Billabong Creek. The presence of only a few low density artefact sites within approximately 2 km of Billabong Creek appears to correspond with the NSW 1:1,500,000 simplified surface geology divide between Quaternary alluvial deposits (Qa) and the Cenozoic Shepparton Formation (Czss) deposits in the proposal area. The absence of high density surface and subsurface sites may also be represented of the flood zone along Billabong Creek and a possible preference for camping on the northern side of Billabong Creek near Culcairn given its slightly higher elevation when compared to the southern bank within the proposal area.

Moderate to high archaeological sensitivity was also predicted to occur along elevated flat ground associated with Back Creek and a paleochannel south of Billabong Creek. While the subsurface testing of a portion along Back Creek and the paleochannel south of Billabong Creek identified that there were less artefacts present than expected the low density distribution which averaged 1 artefact/ m² suggests that the larger proposal area as a whole may contain a very low density of subsurface artefacts which are predominantly manufactured from quartz interspersed with areas with no artefactual material.

No direct evidence of long term base camps were identified within the proposal area during the field survey and subsurface testing programme. The sites identified in this assessment were scattered across the proposal area and are representative of the opportunistic use and movement of small groups of Aboriginal people through the landscape occupying short term camps or traveling through the proposal area. 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 low density artefact scatters or isolated artefacts across similar landforms in the Culcairn area. It also suggests that Aboriginal stone objects are more prevalent in the Culcairn area than previously envisaged.

The majority of the artefacts recorded during the survey and subsurface testing programme were manufactured from quartz which is common for the general region with a lesser number of silcrete, volcanic, fine grained siliceous and sandstone artefacts also recorded. The presence of flakes, broken flakes, flaked pieces and cores in low densities across the proposal area indicates that tool manufacture may have occurred onsite. The low number and small average size of cores recorded during the survey is likely to be representative of the low discard rate of quality raw materials in the area until they were exhausted. The low number of cores identified within the proposal area may also imply that artefacts were not being manufactured within the proposal area and were instead simply being transported through the landscape. Alternately, the low number of cores may also indicate that farming activities in the area have removed any larger stones from the paddocks given that historically a number of larger stone artefact were collected from across the property and relocated to the homestead in the centre of the proposal area by the current landowners ancestors.

Given the level of clearing within the proposal area, the presence of three modified trees and five cultural tree sites which were unable to be determined to be unequivocally Aboriginal in origin which were located within and/or adjacent to the proposal area is considered to be a relatively high density of these site types in the local 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. Trees can also be modified by Aboriginal people to create “ring trees” which are generally seen as marker trees that have had the branches modified and joined together to make a ring or oval shape. It is likely that the dominance of scarred and modified trees as a site type in the local area is related to the more obtrusive nature of scarred trees compared to stone artefacts. The prevalence of the Aboriginal community recording possible modified trees on the AHIMS database may also increase the number of modified trees recorded in the area.

It should also be noted that the results of this survey and subsurface testing programme of works have substantially increased the number of stone artefact sites recorded in the local area. In terms of the current proposal, extrapolating from the results of this survey and subsurface testing programme, it is likely that additional low density surface and subsurface artefacts could occur within the proposed development footprint and the surrounding areas. We consider that there is little value in undertaking further investigations such as salvage excavation within the proposed development footprint based on the generally low density of subsurface material identified through the testing programme conducted to date.

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 should be considered.

5.1. 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 all the registered Aboriginal stakeholders for this proposal through the draft reporting process.

Feedback about the cultural value of the sites while in the field with the representatives was that all sites hold cultural value to the 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 the surface artefacts that are unable to be avoided by the development collected before any construction works 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 artefact scatter site Culcairn 497239/ AHIMS #55-6-0139 which was recorded under a Kurrajong Tree near one of the homesteads within the proposal area has been requested by the Aboriginal community representatives to be avoided by the development footprint.

It was also clear that scarred and modified trees were viewed as important and a particular site type that should be avoided by development. Five cultural tree sites were recorded by the Aboriginal representatives during the survey. These trees had scarring and/or possible modification that NGH archaeologist determined were not unequivocally archaeological in nature however they were identified by Mark Saddler and/or the Albury LALC representatives to be Aboriginal in origin. These sites are therefore considered to be cultural sites, the value of which may only be determined by the local Aboriginal community. The Aboriginal community representatives have requested that the five cultural tree sites, including a possible ring tree, are avoided by the proposed development. The Aboriginal community representatives have also requested that the three modified trees sites (Culcairn Solar 494957, Culcairn Solar 494924 and Culcairn Solar ST1) that NGH archaeologist determined were likely archaeological in nature were also avoided by the proposed development.

The proposal area as a whole was noted by Mark Saddler and the Albury LALC representatives to be very important to Wiradjuri people given the proximity to Billabong Creek which runs along the northern boundary of the proposal area. Billabong Creek was a major walkway for Wiradjuri people and is considered to have cultural value to the Aboriginal community. Aboriginal bush tucker, such as Old Man Weed, was also noted to be present by Mark Saddler within the proposal area, particularly near the homestead towards the centre of the proposal area.

5.2. SCIENTIFIC (ARCHAEOLOGICAL) VALUE.

The research potential of the sites located during this assessment is considered to be low. 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 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 disturbed nature of the landscape and the subsequent movement of objects by clearing and ploughing activities.

The possible axe blank (Culcairn Solar 495094) and artefacts recorded at the site Culcairn Solar 497239 which consists of a pestle, anvil and grindstones are considered of higher value due to the relative rarity of the artefact compared to common flaking material of cores and flakes. Axes, pestles, anvils and grindstones are indicators of a different tool use and activities being conducted on site such as food preparation and the removal of wood from trees. The only other potential area of research would be to analyse the axe blank, pestle, anvil and grindstones identified within the proposal area to see if there are any residues present on the objects 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 agricultural crops and livestock. Additionally, the artefacts from Culcairn Solar 497239 are known not to be *in situ* with the true contextual information about these objects unknown.

The three modified trees most likely represent the opportunistic use of the landscape, but any further observations are limited. The fact that the surrounding landscape has been cleared and modified means that as a representative example of this site type the three modified trees identified by NGH archaeologist as likely to be Aboriginal in origin have high value. Only one of the three modified trees recorded, Culcairn Solar ST1, was alive and healthy which enhances the viability of its medium-term survival. The other two modified trees (Culcairn Solar 494924 and Culcairn Solar 494957) were noted to be dying which decreases the viability of their medium-term survival. The integrity of the modified tree sites is also high.

The fact that the survival of modified trees is subject to natural factors such as death and decay and bushfires, as well as man-made threats such as land clearing, means that their long-term survival prospects are diminished. This leads to the conclusion that while scarred trees are a common site type in the area the remaining scarred trees in the landscape have high value as examples of an ever-reducing Aboriginal cultural feature. The three modified trees in the proposal area therefore are assessed overall as having high conservation value.

The cultural tree sites have no further research potential given that the scars and/or modification of the trees was unable to be unequivocally determined to be Aboriginal in origin by the NGH archaeologist. The Aboriginal community representatives however requested that they are not impacted by the proposed works. Neoen has agreed to ensure that the five cultural tree sites recorded within and in close proximity to the proposal areas are not impacted by this development.

Given the low density of subsurface material recovered from the PADs subject to testing as part of this assessment no further salvage excavation of these areas is deemed to be warranted. Consequently, no further mitigation measures are deemed to be warranted for impacts to the PADs subject to testing as part of this assessment.

The findings of this project have substantially increased the number of sites listed in the AHIMS database for the area. In terms of representativeness and rarity however, we would argue that there are likely to be many hundreds of such sites in the local area, the relatively low number of sites in AHIMS in the local area is merely an indication that few surveys have been undertaken in the Culcairn area and therefore they are yet to be found. The nature of Aboriginal occupation in almost any landscape in Australia is that stone artefact sites considerably outnumber any other site type, including scarred trees.

5.3. AESTHETIC VALUE

There are no aesthetic values associated with the archaeological site *per se*, apart from the presence Billabong Creek along the northern boundary of the proposal area and the presence of Aboriginal

artefacts, scarred trees and cultural sites in the landscape. The modified and heavily disturbed landscape within the solar farm development area however detracts from this aesthetic setting.

The proposed development will also have a minimum buffer of approximately 100 m along Billabong Creek which will ensure that the aesthetic values associated with Billabong Creek are not impacted by the proposed development.

5.4. HISTORIC VALUE

There are no known historic values associated with the proposal area, the sites identified or links to known important historic events, phases or persons.

5.5. OTHER VALUES

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 that historically the Culcairn Solar Farm proposal area has been impacted through land use practices, in particular clearing, ploughing and grazing.

The implications for this activity are that the archaeological record has been compromised in terms of the potential for scarred trees to remain outside the areas of remnant vegetation. 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 they were discarded by Aboriginal people.

Despite these impacts, Aboriginal artefacts and cultural material 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 in section 1.2, the proposal involves the construction of a solar farm. The power generated will be fed into the National Electricity Market (NEM) via a new substation to connect to the 330kV Trans Grid transmission line the runs through the proposal area.

Disturbances will largely be in the preparation of the ground for the solar farm. Piles would be driven or screwed into the ground to support the solar array's mounting system, which reduces the potential overall level of ground disturbance. Flat plate PV modules would be installed and mounted across the site. Each of them would be linked to an inverter and a transformer. Trenches would be dug for the installation of a series of underground cables linking the arrays across the proposal site. Internal access tracks would also be required, and typically these would comprise of a compacted layer of gravel laid on stripped bare natural ground. Some ancillary facilities would also be required including parking facilities, operations and maintenance buildings, battery units and an electrical substation. Electrical transmission infrastructure will be required to connect the solar arrays and substation to the existing 330 kV transmission line that runs through the proposal area.

The Culcairn Solar Farm is expected to operate for around 30 years. The construction phase of the proposal is expected to take less than 18 months . After the initial 30 year operating period, the solar

farm would either be decommissioned, removing all above ground infrastructure and returning the site to its existing land capability, or repowered with new PV equipment subject to landowner and planning consents.

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

6.3. ASSESSMENT OF HARM

As described in this report, 26 isolated finds, 19 artefact scatters (with surface and/or subsurface artefacts), five cultural tree sites, three modified trees and a single cultural stone site were recorded within the proposal area. Table 6-1 and

Table 6-2 provides a summary of sites to be impacted and avoided while Table 6-3 details the degree of harm and the consequence of that harm upon the heritage value of each site resulting from the proposed works. Figure 6-1 shows the location of the sites and the proposed development footprint while Figure 6-2, Figure 6-3 and Figure 6-4 provide a close up of the proposed development footprint impact on the sites recorded.

It should be noted that design changes to the original layout have been made to avoid the three modified trees, five cultural trees and the artefact scatter site Culcairn 497239/ AHIMS #55-6-0139 as requested by the Aboriginal community representatives. Additionally, the proposed development footprint was modified to avoid the PADs adjacent to Billabong Creek and the northern portion of the PAD along Back Creek.

Given that there is Aboriginal archaeological material present within the solar farm proposal area it is likely that other artefacts will also be present as well, although in similar low densities within the proposed development footprint. The proposed level of disturbance for the construction of the solar farm will likely impact the stone artefacts recorded during the field survey and others that may be present within other areas of the development site.

Of the 26 isolated finds, 19 artefact scatters (with surface and/or subsurface artefacts), five cultural tree sites, three modified trees and a single cultural stone site recorded within the proposal area, 25 isolated finds (96.2%), 15 artefact scatters with surface and/or subsurface artefacts (78.9%) and a single cultural stone site (100%) are situated within the area of the proposed solar arrays, tracks, fencing and associated infrastructure. These 41 sites would be impacted by the proposed development (see Figure 6-1). The impact to these 41 sites with stone artefacts 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. 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 project will however result in only small areas of disturbance. The construction of access and maintenance tracks may involve some grading but given the flat nature of the majority of the terrain, this is 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 is required to accomplish this. The major ground disturbance will be the trenching for cables and vehicle movement during construction.

The remaining five sites with stone artefact, three modified trees, five cultural tree sites, the PADs adjacent to Billabong Creek and the PAD along the northern portion of Back Creek will not be impacted by the proposed development.

The assessment of harm overall for the project is therefore assessed as low to moderate.

Table 6-1. Summary of the degree of harm and the consequence of that harm upon site types

Site Type	Type of Harm	Degree of Harm	Consequence of harm	No. of Sites	% of site type
Isolated Finds	Direct	Complete	Total loss of value	25	96.2
	Nil	Nil	Not Applicable	1	3.8
Artefact Scatters	Direct	Complete	Total loss of value	15	78.9
	Nil	Nil	Not Applicable	4	21.1
Modified Trees	Nil	Nil	Not Applicable	3	100
Cultural tree sites	Nil	Nil	Not Applicable	5	100
Cultural stone sites	Direct	Complete	Total loss of value	1	100
PADs	Nil	Nil	Not Applicable	2	100

Table 6-2. Summary of sites to be impacted and avoided by the proposed development

Sites impacted	Sites avoided
<ul style="list-style-type: none"> • Culcairn Solar AFT 1 to Culcairn Solar AFT5 (artefact scatters) • Culcairn Solar AFT 8 to Culcairn Solar AFT 17 (artefact scatters) • Culcairn Solar IF 1 to Culcairn Solar IF 6 (isolated finds) • Culcairn Solar IF 8 to Culcairn Solar 25 (isolated finds) • Culcairn Solar 494492 (artefact scatter) • Culcairn Solar 497037 (cultural stone site) 	<ul style="list-style-type: none"> • Culcairn Solar 497239 (artefact scatter) • Culcairn Solar 494492 (artefact scatter) • Culcairn Solar AFT 6 (artefact scatter) • Culcairn Solar AFT 7 (artefact scatter) • Culcairn Solar IF7 (isolated find) • Culcairn Solar 494957 (modified tree) • Culcairn Solar 494924 (modified tree) • Culcairn Solar ST1 (modified tree) • Culcairn Solar 497151 (cultural tree site) • Culcairn Solar 497439 (cultural tree site) • Culcairn Solar 498265 (cultural tree site) • Culcairn Solar 495666 (cultural tree site) • Culcairn Solar CT1 (cultural tree site)

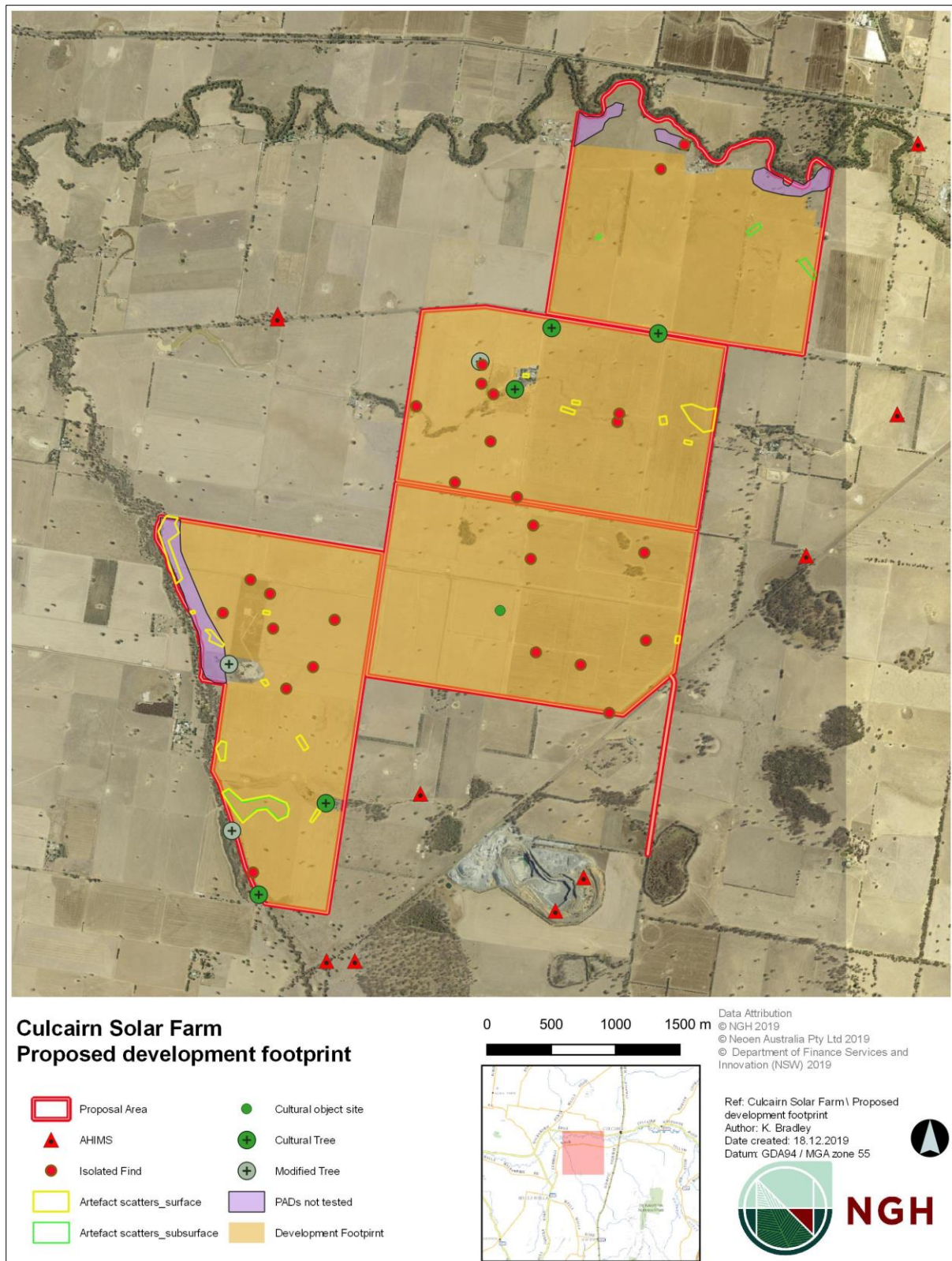


Figure 6-1. Overview of archaeological and cultural sites within the proposed development footprint.

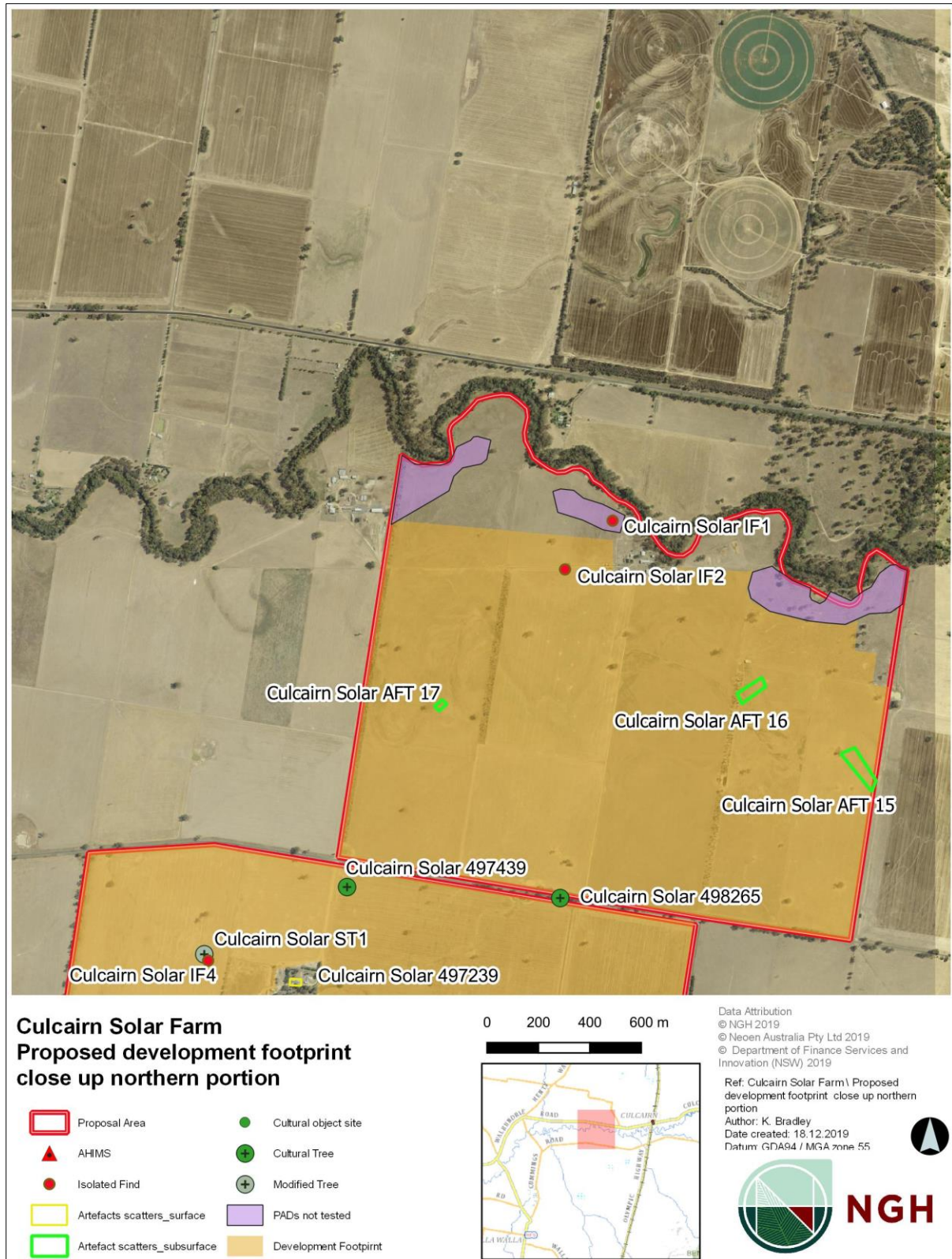


Figure 6-2. Archaeological and cultural sites within the northern portion of the proposed development footprint.

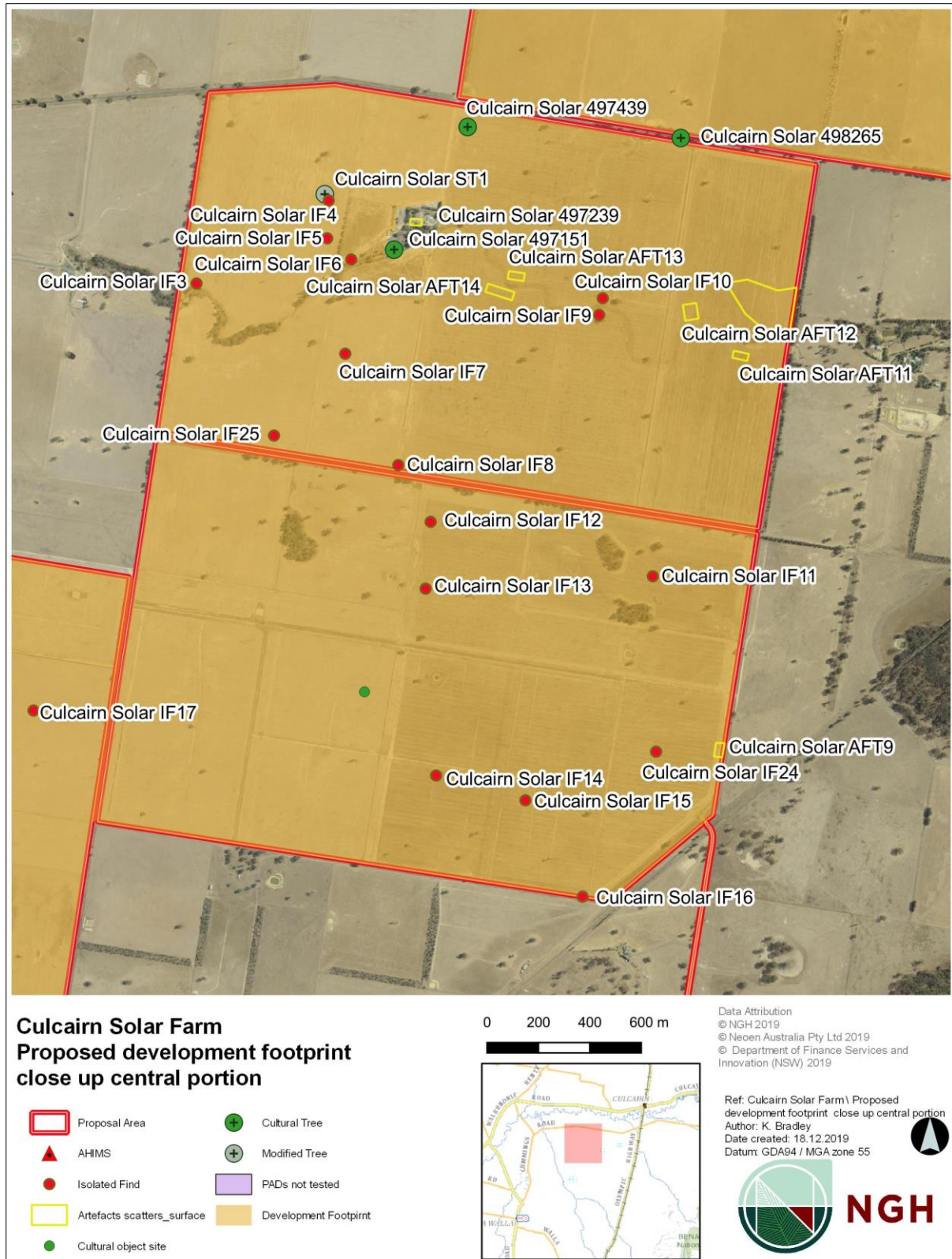


Figure 6-3. Archaeological and cultural sites within the central portion of the proposed development footprint.

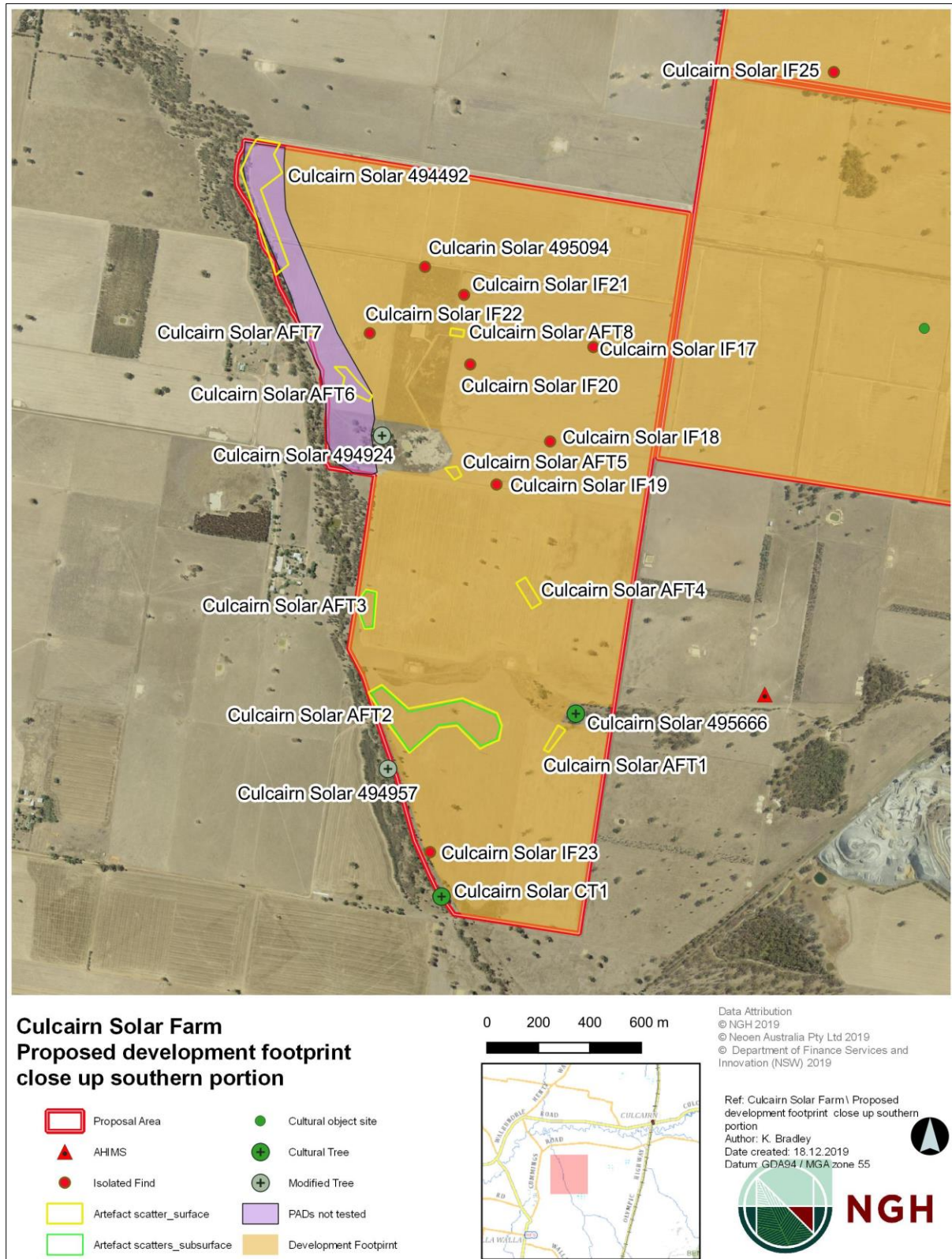


Figure 6-4. Archaeological and cultural sites within the southern portion of the proposed development footprint.

Table 6-3. Identified risk to known archaeological and cultural sites within the proposal area.

AHMIS #	Site name	Site integrity	Scientific significance	Type of harm	Degree of harm	Consequence of harm	Recommendation
55-6-0199	Culcairn Solar AFT1	Poor – 100+ year history of agricultural and pastoral use.	Low	Direct	Total	Total loss of value	Salvage surface objects prior to development of proposal area.
55-6-0241	Culcairn Solar AFT2	Poor – 100+ year history of agricultural and pastoral use.	Low	Direct	Total	Total loss of value	Salvage surface objects prior to development of proposal area.
55-6-0223	Culcairn Solar AFT 3	Poor – 100+ year history of agricultural and pastoral use.	Low	Direct	Total	Total loss of value	Salvage surface objects prior to development of proposal area.
55-6-0224	Culcairn Solar AFT 4	Poor – 100+ year history of agricultural and pastoral use.	Low	Direct	Total	Total loss of value	Salvage surface objects prior to development of proposal area.
55-6-0225	Culcairn Solar AFT 5	Poor – 100+ year history of agricultural and pastoral use.	Low	Direct	Total	Total loss of value	Salvage surface objects prior to development of proposal area.
55-6-0226	Culcairn Solar AFT 6	Poor – 100+ year history of agricultural and pastoral use.	Low	None— outside of development footprint	None	None	Site will be avoided by proposed development. Ensure avoidance with 5m buffer around site
55-6-0227	Culcairn Solar AFT 7	Poor – 100+ year history of agricultural and pastoral use.	Low	None— outside of development footprint	None	None	Site will be avoided by proposed development. Ensure avoidance with 5m buffer around site
55-6-0228	Culcairn Solar AFT 8	Poor – 100+ year history of agricultural and pastoral use.	Low	Direct	Total	Total loss of value	Salvage surface objects prior to development of proposal area.
55-6-0229	Culcairn Solar AFT 9	Poor – 100+ year history of agricultural and pastoral use.	Low	Direct	Total	Total loss of value	Salvage surface objects prior to development of proposal area.
55-6-0230	Culcairn Solar AFT 10	Poor – 100+ year history of agricultural and pastoral use.	Low	Direct	Total	Total loss of value	Salvage surface objects prior to development of proposal area.
55-6-0231	Culcairn Solar AFT 11	Poor – 100+ year history of agricultural and pastoral use.	Low	Direct	Total	Total loss of value	Salvage surface objects prior to development of proposal area.
55-6-0232	Culcairn Solar AFT 12	Poor – 100+ year history of agricultural and pastoral use.	Low	Direct	Total	Total loss of value	Salvage surface objects prior to development of proposal area.

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AHMIS #	Site name	Site integrity	Scientific significance	Type of harm	Degree of harm	Consequence of harm	Recommendation
55-6-0233	Culcairn Solar AFT 13	Poor – 100+ year history of agricultural and pastoral use.	Low	Direct	Total	Total loss of value	Salvage surface objects prior to development of proposal area.
55-6-0234	Culcairn Solar AFT 14	Poor – 100+ year history of agricultural and pastoral use.	Low	Direct	Total	Total loss of value	Salvage surface objects prior to development of proposal area.
55-6-0235	Culcairn Solar AFT 15	Poor – 100+ year history of agricultural and pastoral use.	Low	Direct	Total	Total loss of value	Rebury artefacts recovered from the testing program onsite. No further salvage required.
55-6-0236	Culcairn Solar AFT 16	Poor – 100+ year history of agricultural and pastoral use.	Low	Direct	Total	Total loss of value	Rebury artefacts recovered from the testing program onsite. No further salvage required.
55-6-0237	Culcairn Solar AFT 17	Poor – 100+ year history of agricultural and pastoral use.	Low	Direct	Total	Total loss of value	Rebury artefacts recovered from the testing program onsite. No further salvage required.
55-6-0139	Culcairn Solar 497239	Poor – 100+ year history of agricultural and pastoral use.	Low to moderate	None— outside of development footprint	None	None	Site will be avoided by proposed development. Ensure avoidance with 5m buffer around site
55-6-0135	Culcairn Solar 494492	Poor – 100+ year history of agricultural and pastoral use.	Low	None— outside of development footprint	None	None	Site will be avoided by proposed development. Ensure avoidance with 5m buffer around site
55-6-0136	Culcairn Solar 495094	Poor – 100+ year history of agricultural and pastoral use.	Low	Direct	Total	Total loss of value	Salvage surface objects prior to development of proposal area.
55-6-0239	Culcairn Solar IF1	Poor – 100+ year history of agricultural and pastoral use.	Low	Direct	Total	Total loss of value	Salvage surface objects prior to development of proposal area.
55-6-0240	Culcairn Solar IF2	Poor – 100+ year history of agricultural and pastoral use.	Low	Direct	Total	Total loss of value	Salvage surface objects prior to development of proposal area.
55-6-0203	Culcairn Solar IF3	Poor – 100+ year history of agricultural and pastoral use.	Low	Direct	Total	Total loss of value	Salvage surface objects prior to development of proposal area.
55-6-0204	Culcairn Solar IF4	Poor – 100+ year history of agricultural and pastoral use.	Low	Direct	Total	Total loss of value	Salvage surface objects prior to development of proposal area.

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AHMIS #	Site name	Site integrity	Scientific significance	Type of harm	Degree of harm	Consequence of harm	Recommendation
55-6-0205	Culcairn Solar IF5	Poor – 100+ year history of agricultural and pastoral use.	Low	Direct	Total	Total loss of value	Salvage surface objects prior to development of proposal area.
55-6-0206	Culcairn Solar IF6	Poor – 100+ year history of agricultural and pastoral use.	Low	Direct	Total	Total loss of value	Salvage surface objects prior to development of proposal area.
55-6-0207	Culcairn Solar IF7	Poor – 100+ year history of agricultural and pastoral use.	Low	None— outside of development footprint	None	None	Site will be avoided by proposed development. Ensure avoidance with 5m buffer around site
55-6-0208	Culcairn Solar IF8	Poor – 100+ year history of agricultural and pastoral use.	Low	Low	Direct	Total	Salvage surface objects prior to development of proposal area.
55-6-0209	Culcairn Solar IF9	Poor – 100+ year history of agricultural and pastoral use.	Low	Low	Direct	Total	Salvage surface objects prior to development of proposal area.
55-6-0210	Culcairn Solar IF10	Poor – 100+ year history of agricultural and pastoral use.	Low	Low	Direct	Total	Salvage surface objects prior to development of proposal area.
55-6-0211	Culcairn Solar IF11	Poor – 100+ year history of agricultural and pastoral use.	Low	Low	Direct	Total	Salvage surface objects prior to development of proposal area.
55-6-0212	Culcairn Solar IF12	Poor – 100+ year history of agricultural and pastoral use.	Low	Low	Direct	Total	Salvage surface objects prior to development of proposal area.
55-6-0213	Culcairn Solar IF13	Poor – 100+ year history of agricultural and pastoral use.	Low	Low	Direct	Total	Salvage surface objects prior to development of proposal area.
55-6-0214	Culcairn Solar IF14	Poor – 100+ year history of agricultural and pastoral use.	Low to moderate	Low	Direct	Total	Salvage surface objects prior to development of proposal area.
55-6-0215	Culcairn Solar IF15	Poor – 100+ year history of agricultural and pastoral use.	Low	Low	Direct	Total	Salvage surface objects prior to development of proposal area.
55-6-0216	Culcairn Solar IF16	Poor – 100+ year history of agricultural and pastoral use.	Low	Low	Direct	Total	Salvage surface objects prior to development of proposal area.
55-6-0217	Culcairn Solar IF17	Poor – 100+ year history of agricultural and pastoral use.	Low	Low	Direct	Total	Salvage surface objects prior to development of proposal area.

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AHMIS #	Site name	Site integrity	Scientific significance	Type of harm	Degree of harm	Consequence of harm	Recommendation
55-6-0218	Culcairn Solar IF18	Poor – 100+ year history of agricultural and pastoral use.	Low	Low	Direct	Total	Salvage surface objects prior to development of proposal area.
55-6-0219	Culcairn Solar IF19	Poor – 100+ year history of agricultural and pastoral use.	Low	Low	Direct	Total	Salvage surface objects prior to development of proposal area.
55-6-0220	Culcairn Solar IF20	Poor – 100+ year history of agricultural and pastoral use.	Low	Low	Direct	Total	Salvage surface objects prior to development of proposal area.
55-6-0222	Culcairn Solar IF21	Poor – 100+ year history of agricultural and pastoral use.	Low	Low	Direct	Total	Salvage surface objects prior to development of proposal area.
55-6-0221	Culcairn Solar IF22	Poor – 100+ year history of agricultural and pastoral use.	Low	Low	Direct	Total	Salvage surface objects prior to development of proposal area.
55-6-0200	Culcairn Solar IF23	Poor – 100+ year history of agricultural and pastoral use.	Low	Low	Direct	Total	Salvage surface objects prior to development of proposal area.
55-6-0201	Culcairn Solar IF24	Poor – 100+ year history of agricultural and pastoral use.	Low	Low	Direct	Total	Salvage surface objects prior to development of proposal area.
55-6-0202	Culcairn Solar IF25	Poor – 100+ year history of agricultural and pastoral use.	Low	Low	Direct	Total	Salvage surface objects prior to development of proposal area.
55-6-0130	Culcairn Solar 494957	Good – <i>in situ</i> dying tree	Low to Moderate	None— outside of development footprint	None	None	Site will be avoided by proposed development. Ensure avoidance with 10m buffer around site
55-6-0137	Culcairn Solar 494924	Good – <i>in situ</i> dying tree	Low to Moderate	None— outside of development footprint	None	None	Site will be avoided by proposed development. Ensure avoidance with 10m buffer around site
55-6-0238	Culcairn Solar ST1	Good – <i>in situ</i> living tree	Low to Moderate	None— outside of development footprint	None	None	Site will be avoided by proposed development. Ensure avoidance with 10m buffer around site

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AHMIS #	Site name	Site integrity	Scientific significance	Type of harm	Degree of harm	Consequence of harm	Recommendation
55-6-0132	Culcairn Solar 495666	Good – <i>in situ</i> living tree	Low	None— outside of development footprint	None	None	Site will be avoided by proposed development. Ensure avoidance with 10m buffer around site
55-6-0133	Culcairn Solar 498265	Good – <i>in situ</i> living tree	Low	None— outside of development footprint	None	None	Site will be avoided by proposed development. Ensure avoidance with 10m buffer around site
55-6-0134	Culcairn Solar 497439	Good – <i>in situ</i> living tree	Low	None— outside of development footprint	None	None	Site will be avoided by proposed development. Ensure avoidance with 10m buffer around site
55-6-0140	Culcairn Solar 497151	Good – <i>in situ</i> living tree	Low	None— outside of development footprint	None	None	Site will be avoided by proposed development. Ensure avoidance with 10m buffer around site
N/A	Culcairn Solar CT1	Good – <i>in situ</i> living tree	Low	None— outside of development footprint	None	None	Site will be avoided by proposed development. Ensure avoidance with 10m buffer around site
55-6-0138	Culcairn Solar 497037	Poor – 100+ year history of agricultural and pastoral use.	Low	Low	Direct	Total	Salvage surface objects prior to development of proposal area.
N/A	PAD along Back Creek	Unknown	Unknown	None— outside of development footprint	None	None	PAD area will be avoided by the proposed development footprint.
N/A	PADs adjacent to Billabong Creek	Unknown	Unknown	None— outside of development footprint	None	None	PAD area will be avoided by the proposed 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 detailed in Table 6-3 with the 40 stone artefact sites and the cultural stone site that will be impacted by the proposed development footprint rated as having low loss of scientific value. While the majority of the stone artefact sites are rated as having total loss of scientific value it is argued that there are likely to be a number of similar sites in the local area and therefore the impact to the overall local archaeological record is considered to be low. Additionally, there are five stone artefact sites that will not be harmed.

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

The three modified trees and five cultural tree sites will not be impacted by the proposal as per the proposed design in this report.

The proposed development footprint is shown in Figure 6-1 shows the location of the sites and the proposed development footprint while Figure 6-2, Figure 6-3 and Figure 6-4 provide a close of the proposed development footprint.

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

7. AVOIDING OR MITIGATING HARM

7.1. CONSIDERATION OF ESD PRINCIPLES

Consideration of the principles of Ecologically Sustainable Development (ESD) and the use of the precautionary principle was undertaken when assessing the harm to the sites and the potential for mitigating impacts to the sites recorded during the survey and subsurface testing programme for the proposed Culcairn Solar Farm. 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 region, comprising of isolated finds and low-density artefact scatters dominated by quartz lithology and scarred trees. The identification of an additional three modified trees and 45 sites with one or more stone artefacts during this survey and subsurface testing programme correlates with previously identified site types in the area. The presence of five cultural tree sites and a single culture stone site also relates with the previously identified site types in the area despite the cultural sites not being able to be unequivocally determined to be archaeological in origin.

While there have been archaeological investigations for other projects in the region, including subsurface investigations, there is no clear regional synthesis of the nature, number, extent and content for archaeological sites within the Greater Hume Shire LGA. Nevertheless, given the size of the geographical area, it is almost certain that there would be similar site types present within the region. The result of this Aboriginal heritage assessment supports the proposed model of site location and site

distribution, whereby objects and sites could be expected to occur across all landscapes even in areas of highly disturbed farming activities. The results of this Aboriginal heritage assessment suggest that more low density artefact sites could be expected to occur in the area than was previously envisaged.

The implications for the ESD principles are that in fact more sites, particularly sites with stone artefacts, are likely to be present in the region than previously thought. This reduces the individual value of the particular sites within the proposal area as they are also 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 in the region reduces the representative values of the sites within the proposal area. 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 farm development.

As noted above, the archaeological values of the sites within the development footprint, considering the scientific, representative and rarity values assigned to them was deemed to be low. In terms of representativeness and rarity the previous relatively low number of overall sites in the local area on AHIMS was merely an indication that few surveys have been undertaken in the immediate Culcairn area and therefore they are yet to be found. It is believed therefore that the proposed impacts to the stone artefact sites and cultural stone site through the development of this particular solar farm proposal 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 solar farm proposal, particularly given that three modified trees and five cultural tree sites will be avoided by the development. Additionally, the PADs near Billabong Creek and along a portion of Back Creek will not be impacted by the development. Further to this, the number of yet unknown sites in the wider region allow opportunity for identification by future generations.

We estimate, that while the current development proposal will impact the majority of the stone artefact sites identified, the overall cumulative impact on the archaeological record for the region is likely to be minimal, assuming a similar density of artefact 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 archaeological and cultural sites identified within the proposed Culcairn Solar Farm proposal area is technically possible through avoidance. However, the scattered nature of the archaeological and cultural sites across the proposal area would pose serious design constraints on the proposed development of a solar farm. Where possible the design has already been altered to avoid remnant vegetation, the three modified trees, the five cultural tree sites, a portion of the Back Creek PAD and the PADs adjacent to Billabong Creek.

Based on the assessment of the sites and in consideration of discussions with the Aboriginal representatives during the field survey and subsurface testing programme, it is not considered necessary to prevent all development at the solar farm location, or for total avoidance of the stone artefact sites or cultural stone sites identified within the solar farm proposal area.

The stone artefact sites have been shown to be in highly disturbed contexts 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.

A total of 40 archaeological sites with stone artefacts and a cultural stone site are situated within the area of the proposed solar arrays, tracks, cables and fencing. The most likely cause of harm to these

sites with stone artefacts and a stone object will therefore be through ground preparation such as vegetation clearance, installation of the posts and solar arrays.

However, the question remains about possible occurrence of artefacts and cultural material within the balance of the solar farm site. It is possible and considered likely that additional stone artefacts will be present, most likely in the form of isolated artefacts or 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 subsurface testing programme, and potentially present in the remainder of the development area 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/s. Mitigation can also occur in the form of minimising harm through slight changes in the development plan or through direct management measures of the sites and Aboriginal objects.

Given the avoidance of the five cultural trees, three modified trees, the artefact scatter Culcairn Solar 497239, a portion of the PAD along Back Creek and the PADs adjacent to Billabong Creek which are sites, site types and areas deemed significance to the Aboriginal community it is argued here that mitigation in the form of further alteration is not feasible or warranted within the remainder of the solar farm area in this situation. However, the surface stone artefact sites and cultural stone site within the development footprint that will be impacted by the proposed works are conducive to surface collection salvage as a mitigation strategy. The surface collection salvage of the surface stone artefact sites and cultural stone site was also requested by the Aboriginal representatives during the fieldwork programme of works for the Culcairn Solar Farm proposal area.

It is recommended that the surface stone artefacts sites and cultural stone site that will be impacted by the proposed development of the Culcairn Solar Farm 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 solar farm related ground disturbance works.

Given the low density of the subsurface material recovered from the testing program undertaken for the Culcairn Solar Farm mitigation in the form of salvage excavation is deemed not be feasible or warranted in this instance.

The Aboriginal community representatives onsite during the field survey and subsurface testing programme noted their preference for the surface stone artefacts, surface cultural stone site and the subsurface artefacts recovered during the testing programme (currently in temporary care at the NGH Canberra office) be relocated and reburied outside the development footprint within the proposal area prior to development construction works commencing for the Culcairn Solar Farm.

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 an AHIMS site card 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. This does not apply in this instance as the development is listed as a State Significant Development (SSD) and project approval will be determined by the Department of Planning.

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 projects. Under this Act, cultural heritage is considered to be a part of the environment. This Act requires that Aboriginal cultural heritage and the possible impacts to Aboriginal heritage are formally considered in land-use planning and development approval processes.

Proposals classified as State Significant Development (SSD) or State Significant Infrastructure (SSI) under the *Environmental Planning and Assessment Act 1979* (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, Infrastructure and Environment (DPIE) is required to ensure that Aboriginal heritage is considered in the environmental impact assessment process.

The Culcairn Solar Farm proposal is an SSD project and will therefore be assessed via this pathway, which does not negate the need to carry out an appropriate level of Aboriginal heritage assessment or the need to conduct adequate consultation with the local Aboriginal community in accordance with the requirements outlined by the *Aboriginal cultural heritage consultation requirements for proponents 2010* (OEH 2010b). The requirement for Aboriginal heritage assessment was also stipulated by the Secretary of the DPIE Environmental Assessment Requirements (SEARs) relating to Aboriginal heritage for the Culcairn Solar Farm. Therefore, as part of the development impact assessment process, the proposed development application which includes this Aboriginal heritage assessment will be assessed by DPIE who will also consult with other departments, including the appropriate government heritage divisions, prior to development consent being approved by the Minister for Planning.

9. RECOMMENDATIONS

The recommendations are based on the following information and considerations:

- Results of the current archaeological survey and subsurface testing of the proposal area;
- 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 avoids the three modified trees and five cultural tree sites. A minimum 10 m buffer should be in place around each modified tree and cultural tree site to prevent any inadvertent impacts to the canopy and root system.
2. If complete avoidance of any of the 26 isolated find sites, 16 artefact scatters and single cultural stone site recorded within the proposal area is not possible the surface stone artefacts and cultural stone site within the development footprint must be salvaged. The surface collection salvage of these stone artefacts and cultural stone object must occur prior to the proposed construction works commencing for the Culcairn Solar Farm. Until surface collection salvage has occurred a minimum 5 m buffer must be observed around all stone artefact sites and the cultural stone site.
3. The collection and relocation of the surface artefacts and cultural stone site 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*. The salvage of Aboriginal objects can only occur following development consent that is issued for State Significant Developments and must occur prior to any construction works commencing.
4. All artefacts recovered from the subsurface testing programme undertaken within the Culcairn Solar Farm proposal are currently in temporary care at the NGH Canberra office must be reburied in line with Requirement 26 of the *Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales* and in an appropriate location within the proposal area that will not be subject to any ground disturbance.
5. All objects salvaged, including those recovered from the subsurface testing program, must have their reburial location submitted to the AHIMS database. An Aboriginal Site Impact Recording Form must be completed and submitted to AHIMS following harm for each site collected or destroyed from salvage and/or construction works.
6. A minimum 5 m buffer should be observed around all stone artefact sites that are being avoided by the proposed development.
7. If the proposed development footprint is changed and the areas of PAD along Back Creek and Billabong Creek will be impacted, a limited subsurface testing program must be conducted at the PADs not subject to the subsurface testing program undertaken during the current assessment. Excavated material may need to be analysed off site and this is most likely to be undertaken in NGH offices, where the material will be analysed and then subsequently returned to site for reburial.
8. Neoen Australia Pty Ltd should prepare a Cultural Heritage Management Plan (CHMP) to address the potential for finding additional Aboriginal artefacts during the construction of the Culcairn Solar Farm and for the management of known sites and artefacts within the proposal area. 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.

9. In the unlikely event that human remains are discovered during the construction of the Culcairn Solar Farm, all work must cease in the immediate vicinity. The appropriate heritage team within DPIE and the local police should be notified. Further assessment would be undertaken to determine if the remains were Aboriginal or non-Aboriginal. If the remains are deemed to be Aboriginal in origin the Registered Aboriginal Parties should be advised of the find as directed by the appropriate heritage team within DPIE.
10. Further archaeological assessment would be required if the proposal activity extends beyond the area assessed in this report. This would include consultation with the registered Aboriginal parties and may include further field survey.

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APPENDIX A ABORIGINAL CONSULTATION

Organisation/ Individual	Action	Date Sent	Reply Date	Replied by	Response
OEH	letter to OEH via email	6/11/2018	19/11/2018	letter via email to NGH	Provided list of possible additional stakeholders to write to
NTScorp	Letter to NTScorp via email	6/11/2018			
National Native Title Tribunal	online search	6/11/2018			no determined native title registered
Office of Registrar Aboriginal Land Rights Act	Letter to Office of the Registrar via email	6/11/2018	6/11/2018	letter via email	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. I suggest that you contact the Albury Local Aboriginal Land Council
Albury and District LALC	Letter to LALC via email	6/11/2018	22/11/2018	via email	registered via email, NGH acknowledged registration
Murray Local Land Services	Letter to LLS via email	6/11/2018			
Greater Hume Shire Council	Letter sent via email	6/11/2018	16/01/2018	letter via post	noted to contact the Albury LALC
Local Newspapers	Eastern Riverina Chronicle	7/11/2018			close 21/11/2018
Previous OEH possible stakeholders written to in advance of OEH letter					
Bundi Cultural Knowledge Group	Letter sent via email	6/11/2018	9/11/2018	registered via email	registered via email, NGH acknowledged registration
Alice Williams	Letter sent via email	6/11/2018			
Dan Clegg	Letter sent via email	6/11/2018			
Nancy Rooke	Letter sent via email	6/11/2018			

Organisation/ Individual	Action	Date Sent	Reply Date	Replied by	Response
Mungabareena Aboriginal Corporation	Letter sent via email	6/11/2018			
Wagga Wagga LALC	Letter sent via email	6/11/2018			
Leonie McIntosh	Letter sent via email	6/11/2018			
Denise McGrath	Letter sent via email	6/11/2018			
Yalmambirra	Letter sent via email	6/11/2018	6/11/2018	registered via email	registered via email, NGH acknowledged registration
OEH list of possible stakeholders provided on the 19/11/2018					
Albury LALC	previously written to see above				
Wagga LALC	previously written to see above				
Yalmambirra	previously written to see above				
Mungabareena Aboriginal Corporation	previously written to see above				
Denise McGrath	previously written to see above				
Leonie McIntosh	previously written to see above				
Nancy Rooke	previously written to see above				
Dan Clegg	previously written to see above				
Alice Williams	previously written to see above				

Organisation/ Individual	Action	Date Sent	Reply Date	Replied by	Response
Bundy Cultural Knowledge Group	previously written to see above				
OEH Informed of RAPs					
OEH	Via email	4/12/2018	4/12/2018	Via Email	Please note that the Registered Aboriginal Parties for the proposed Culcairn Solar Farm are: <ul style="list-style-type: none"> • Albury and District Local Aboriginal Land Council, • Bundy Aboriginal Cultural Knowledge, and • Yalmambirra No other party registered their interest in the project should you wish to update your project file.
OEH	Via email	4/12/2018	4/12/2018	Vi email	Andrew Fisher also acknowledged RAPs
Methodology sent to RAPs					
Albury LALC	Methodology sent via email	14/12/2018			
Bundy Cultural Knowledge Group	Methodology sent via email	14/12/2018	17/12/2018	Via Email	Would like to participate in fieldwork no other comments provided
Yalmambirra	Methodology sent via email	14/12/2018	20/12/2018	Via Email	Asked if artefacts will be eventually removed for safe keeping should they be located in the development area and relocated following completion of development? Would like to participate in fieldwork but does not have insurances requested. No other comments provided.
Yalmambirra	Via email	18/01/2019	18/01/2019	via email	Email from KB to Yal replying to comment re movement of stone artefacts and insurances.

Organisation/ Individual	Action	Date Sent	Reply Date	Replied by	Response
Albury and District LALC	reminder comments due 25 jan	14/01/2019	16/01/2019	phone call with Sam	rates and insurances provided; no other comments provided
Subsurface testing methodology					comments due 14 June
Albury and District LALC	sent via email	17/05/2019			
Bundyi Cultural Knowledge Group	sent via email	17/05/2019	17/05/2019	via email	All looks good, thanks
Yalmambirra	sent via email	17/05/2019			
Albury and District LALC	sent via email	3/06/2019	14/06/2019	via email	I had Andom, our sites officer, have a look at the methodology and he's happy with everything. Our rates and terms of engagement have not changed.
Yalmambirra	sent via email	3/06/2019	3/06/2019	via email	Everything looks ok to me
Sent updated final subsurface testing methodology					
Albury and District LALC	sent via email	8/08/2019			
Albury and District LALC	phone call with KB	19/08/2019			c
Albury and District LALC	via email	26/08/2019			Rates and insurances provided no other comments provided
Bundyi Cultural Knowledge Group	sent via email	8/08/2019	9/08/2019	via email	All looks OK
Yalmambirra	sent via email	8/08/2019	8/08/2019	via email	Thanks for the update. It all looks ok to me.
OEH notification of testing	via email	29/08/2019			
OEH notification of testing	via email	3/09/2019	4/09/2019	via email	testing acknowledged by OEH

Organisation/ Individual	Action	Date Sent	Reply Date	Replied by	Response
Draft sent to RAPs					comments due COB 18 dec 2019
Albury and District LALC	sent via email	20/11/2019			
Bundy Cultural Knowledge Group	sent via email	20/11/2019			
Yalmambirra	sent via email	20/11/2019			
Albury and District LALC	sent reminder via email and checking of needed any high res maps or images from report sent	3/12/2019			
Bundy Cultural Knowledge Group	sent reminder via email and checking of needed any high res maps or images from report sent	3/12/2019			
Yalmambirra	sent reminder via email and checking of needed any high res maps or images from report sent	3/12/2019			
Albury and District LALC	sent reminder comments due 18/dec	13/12/2019	13/12/2019	via email	All good
Bundy Cultural Knowledge Group	sent reminder comments due 18/dec	13/12/2019			
Yalmambirra	sent reminder comments due 18/dec	13/12/2019			
Yalmambirra	sent reminder comments due COB today report to be finalised on 20 Dec	18/12/2019			
Albury and District LALC	sent reminder comments due COB today report to be finalised on 20 Dec	18/12/2019	19/12/2019	Via email	We don't have any comments.

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Units Available to Rent

These single bedroom units are provided by the Greater Hume Council to support our pensioners wanting to downsize at an affordable cost, subject to meeting eligibility requirements.

- Newly renovated and painted
- Split system air conditioner
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- Yard maintained by Council

Council has 2 units available in Elizabeth Street, Culcairn.

Culcairn has a lot to offer with its relaxed lifestyle, great sense of community and these 2 lovely single bedroom units are in a great location, close to town.

If you are on a pension expressions of interest are now open. Contact Carly Toll on (02) 6036 0100 for eligibility requirements and an application form.

LOCKHART SHIRE COUNCIL
DEVELOPMENT PROPOSAL

Lockhart Shire Council has received an application for modification to the following development consent:

Application No.	Proposal	Address
DA16/14	Modification to existing NBN fixed wireless facility	126 Lagettie Lane THE ROCK NSW 2655

In accordance with the Lockhart Development Control Plan 2016, the application is now available for public comment and may be inspected at the Lockhart Shire Council Office, 65 Green Street, Lockhart during the hours of 8.30 am to 4.00 pm, Monday to Friday.

Any written submissions must be made before 4.00 pm, 21 November 2018. Any person who makes a submission by way of objection must specify the grounds for objection.

If the application is approved, a person who makes a submission by way of objection:

- does not have a right of appeal to the Land and Environment Court under Section 98 of the EP&A Act; and
- may only appeal to the Land and Environment Court on matters of law under Section 123 of the said Act.

Peter Voneris
General Manager

PO Box 21
LOCKHART NSW 2656
Phone: 02 6820 5305
E-mail: mail@lockhart.nsw.gov.au

Notification for registration of interest for Aboriginal stakeholders

NGH Environmental has been contracted by Neoen to undertake an Aboriginal Cultural Heritage Assessment (ACHA) for a proposed solar farm near Culcairn, NSW. The assessment area includes Lot 1 DP171815; Lot 1 DP179884; Lot 1 DP 575478; Lot 114 DP664997; Lots 9-11, 45-47, and 53-54 DP753735; Lots 70-73 and 86 DP753764; Lot 1 DP945904; and Lot B DP972054 in the Greater Hume Local Government Area.

The purpose of the consultation with Aboriginal people is to assist the proponent in the preparation of the ACHA and to be involved in consultation as part of possible lodgement of an Aboriginal Heritage Impact Permit 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 area to register their interest in the consultation process for the project and to assist in the determination of cultural significance of any Aboriginal objects or places located there.

Registrations should be provided in writing to:

NGH Environmental Pty Ltd

PO Box 5464

WAGGA WAGGA NSW 2650

Or via email to:

ngh@nghenvironmental.com.au

Closing date for registration is **Wednesday 21 November 2018**.

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.

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Operational Positions

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Council has recently undertaken an extensive reorganisation of the operational staff structure with the aim of building an innovative and efficient team of employees responsible for the construction and maintenance of Council's public assets.

Council is seeking to engage the services of energetic, enthusiastic and skilled individuals to be part of the operational work force in the positions of:

Bridge and Drainage Ganger - Jindera

This position is graded at Grade 11 under Council's salary system with salary in the range of \$1174.30 - \$1315.20 gross per 38 hour week.

Plant Operator - Loader Backhoe - Jindera

This position is graded at Grade 7 under Council's salary system with salary in the range of \$986.90 - \$1105.30 gross per 38 hour week.

Plant Operator - Loader Backhoe - Holbrook

This position is graded at Grade 7 under Council's salary system with salary in the range of \$986.90 - \$1105.30 gross per 38 hour week.

Bitumen Operator - Holbrook

This position is graded at Grade 5 under Council's salary system with salary in the range of \$923.50 - \$1034.30 gross per 38 hour week.

Plant Operator Parks and Town Maintenance - Holbrook

This position is graded at Grade 6 under Council's salary system with salary in the range of \$955.20 - \$1069.80 gross per 38 hour week.

Roller Operator - Holbrook

This position is graded at Grade 6 under Council's salary system with salary in the range of \$955.20 - \$1069.80 gross per 38 hour week.

Conditions

Attractive employment conditions including a 38 hour week working arrangement and 9 day fortnight will be offered to the successful applicants.

Enquiries

Council's Employment Application Guidelines and Position Description for these vacancies can be downloaded from Council's website www.greaterhume.nsw.gov.au.

Further information regarding the above position can be obtained by contacting Council's Manager Works, Phil McDonald on (02) 6036 0100.

Applications along with your resume should be emailed to jobs@greaterhume.nsw.gov.au.

Applications for the above positions will be received **until 5pm Friday 16 November 2018**.

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Bundy Cultural Services

Mark Saddler

Culcairn Solar Farm, Culcairn, NSW.

04/02/2019

Bundy Cultural Services, Mark Saddler

09/03/2019



Artwork by Mark Saddler. (Copyright)

Artwork Title, Murrawarra (stand your ground, protect)

Contents:

This report was compiled by Bundy Cultural Services, Mark Saddler.

Page 1: Title Page.
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Page 6: Due Diligence Flow Chart.
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Page 12: References and End Report

“I would like to acknowledge the traditional custodians of this land, my land, “The Wiradjuri People”

What I record and find is dedicated to those who have gone before us, to those present and to those who will follow us”

Mark Saddler, Wiradjuri Gibrir (man)

Travelling Stock Reserves (TSRs)

Travelling Stock Reserves (TSRs) are parcels of Crown land reserved under legislation for use by travelling stock. Local Land Services is responsible for the care, control and maintenance of almost 500,000ha of TSRs in NSW.

TSRs provide pasture reserves for travelling or grazing stock. These reserves can be beneficial in times of drought, bushfire or flood. They are also used for public recreation, apiary sites and for conservation.

Local Land Services manages the land to strike a balance between the needs of travelling or grazing stock and the conservation of native species.

The role of Local Land Services role in managing TSRs includes:

- Authorising and monitoring stock, recreation and apiary site use
- Controlling noxious weeds
- Controlling pest animals and insects
- Provision and maintenance of fencing, watering points and holding yards
- Consideration of land management and animal health legislation.

Local Land Services has developed the first draft state-wide planning framework for TSRs to support the future management of this land. We are now keen to hear from the public with their opinions on how to manage TSRs in the future. We want to understand the values people hold important for TSRs, including biodiversity and Aboriginal cultural heritage values.

The draft state-wide framework allows for the development of TSR regional management plans to facilitate more consistent and transparent management, resourcing and reporting.

[NSW Travelling Stock Reserves Draft State Planning Framework 2016-19](#)
[TSR State Planning Framework Fact Sheet](#)
[Frequently asked questions](#)

Aboriginal objects:

Aboriginal objects are physical evidence of the use of an area by Aboriginal people. They can also be referred to as 'Aboriginal sites', 'relics' or 'cultural material'.

Aboriginal objects include:

- * Physical objects, such as stone tools, Aboriginal-built fences and stockyards, scarred trees and the remains of fringe camps
- * Material deposited on the land, such as middens
- * The ancestral remains of Aboriginal people.

Handicrafts made by Aboriginal people for sale are **not** 'Aboriginal objects' under the NPW Act. Known Aboriginal objects and sites are recorded on OEH's Aboriginal Heritage Information Management System (AHIMS). If you find a site you should report it to us.

Protecting Aboriginal objects and places:

You will need to exercise due diligence in determining whether your actions will harm Aboriginal objects. The **Due Diligence Code of Practice for the Protection of Aboriginal Objects in NSW**
<http://www.environment.nsw.gov.au/resources/cultureheritage/ddcop/10798ddcop.pdf>

This link will explain and provide practical guidance about what due diligence means. Anyone who exercises due diligence in determining that their actions will not harm Aboriginal objects has a defence against prosecution for the strict liability objects offence if they later harm an Aboriginal object.

An Aboriginal Heritage Impact Permit (AHIP) can be issued by OEH under Part 6 of the NPW Act where harm to an Aboriginal object or Aboriginal place cannot be avoided. An AHIP is a defence to a prosecution for harming Aboriginal objects and/or Aboriginal places if the harm was authorised by the AHIP and the conditions of that AHIP were not contravened.

Find out about AHIPs, due diligence and care agreements see **Information on Aboriginal Heritage Impact Permits**. <http://www.environment.nsw.gov.au/licences/Section87Section90.htm>

Purpose of code of practice for Due Diligence.

This code of practice is to assist individuals and organisations to exercise due diligence when carrying out activities that may harm Aboriginal objects and to determine whether they should apply for consent in the form of an Aboriginal Heritage Impact Permit (AHIP). The National Parks and Wildlife Act 1974 (NPW Act) provides that a person who exercises due diligence in determining that their actions will not harm Aboriginal objects has a defence against prosecution for the strict liability offence if they later unknowingly harm an object without an AHIP.

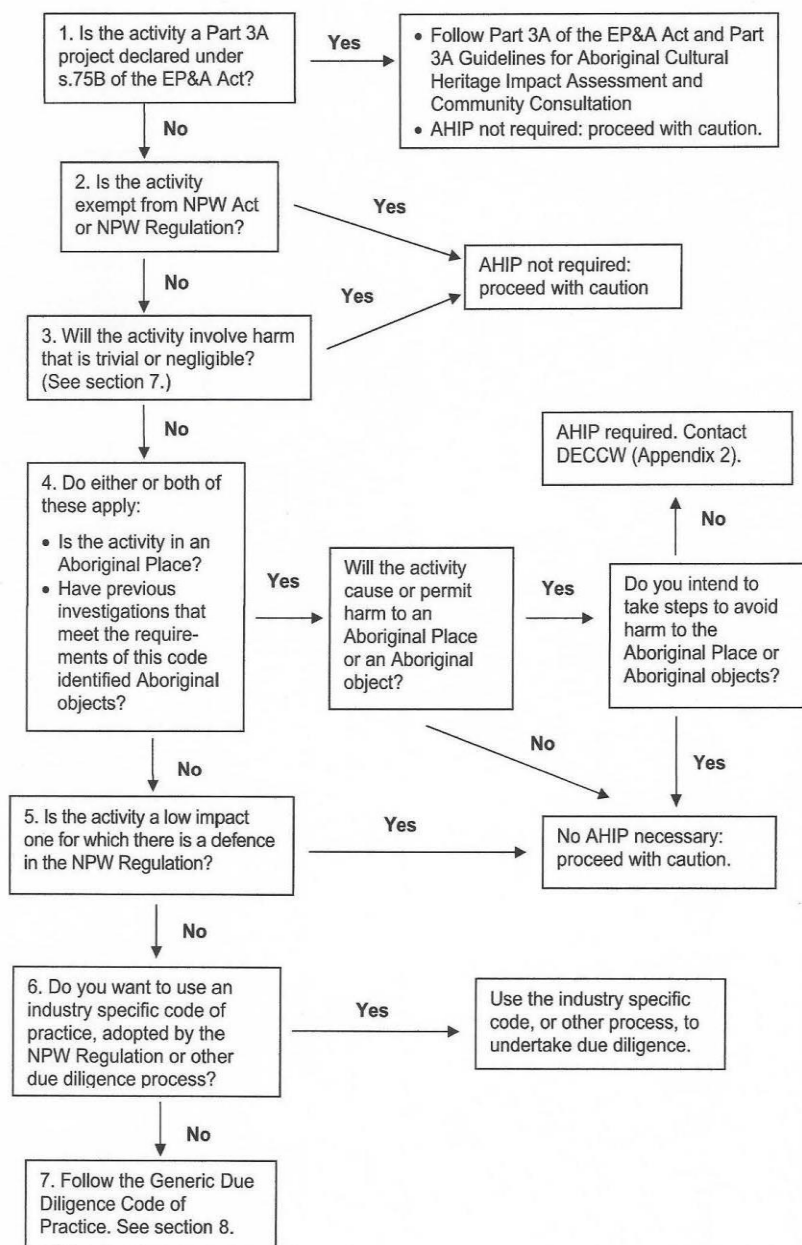
The NPW Act allows for a generic code of practice to explain what due diligence means. Carefully following this code of practice, which is adopted by the National Parks and Wildlife Regulation 2009 (NPW Regulation) made under the NPW Act, would be regarded as 'due diligence'. This code of practice can be used for all activities across all environments.

This code sets out the reasonable and practicable steps which individuals and organisations need to take in order to: 1 identify whether or not Aboriginal objects are, or are likely to be, present in an area 2 determine whether or not their activities are likely to harm Aboriginal objects (if present) 3 determine whether an AHIP application is required.

If Aboriginal objects are present or likely to be present and an activity will harm those objects, then an AHIP application will be required. Information about the permits and how to apply for them can be obtained through the Department of Environment, Climate Change and Water (DECCW) website at

www.environment.nsw.gov.au/licences/index.htm.

1 Do you need to use this due diligence code?



AHIMS Data Base Search.



AHIMS Web Services (AWS) Search Result

Purchase Order/Reference : 9.3.19

Client Service ID : 404983

Mark Saddler

Date: 09 March 2019

P.O.Box 8005 Koorringal Post Office
Koorringal New South Wales 2650

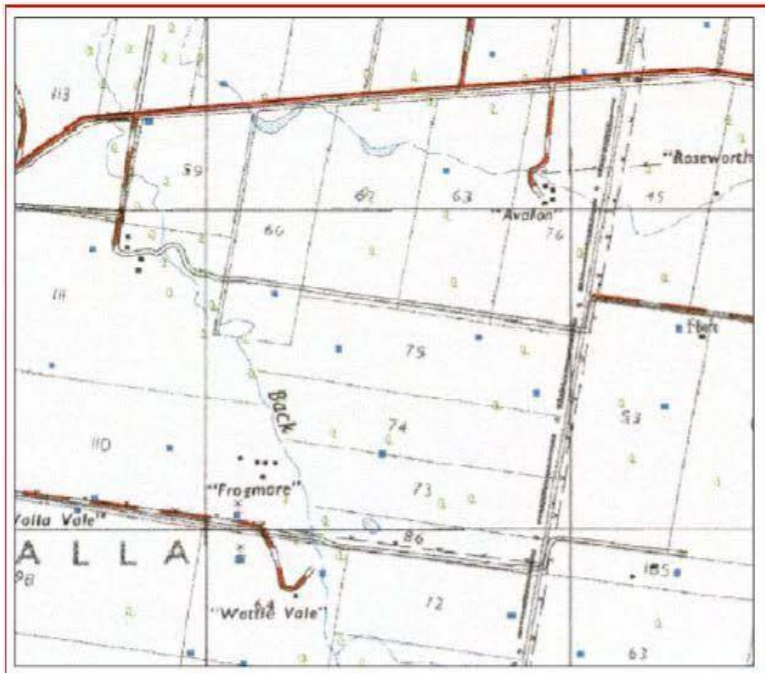
Attention: Mark Saddler

Email: marksad@live.com.au

Dear Sir or Madam:

AHIMS Web Service search for the following area at Datum :GDA, Zone : 55, Eastings : 494058 - 496113, Northings : 6049268 - 6049415 with a Buffer of 1000 meters. Additional Info : Due Diligence, conducted by Mark Saddler on 09 March 2019.

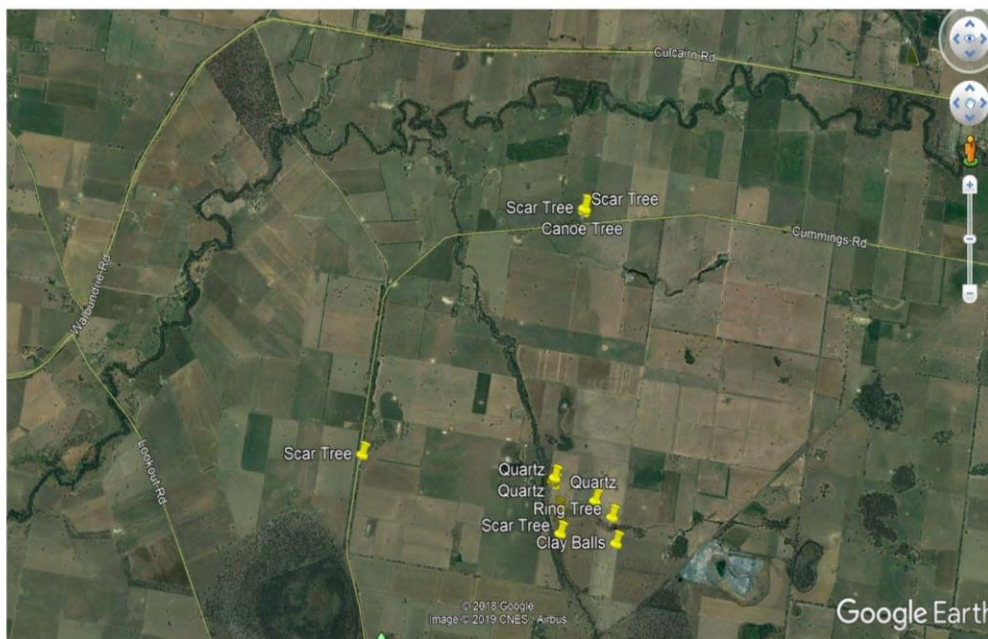
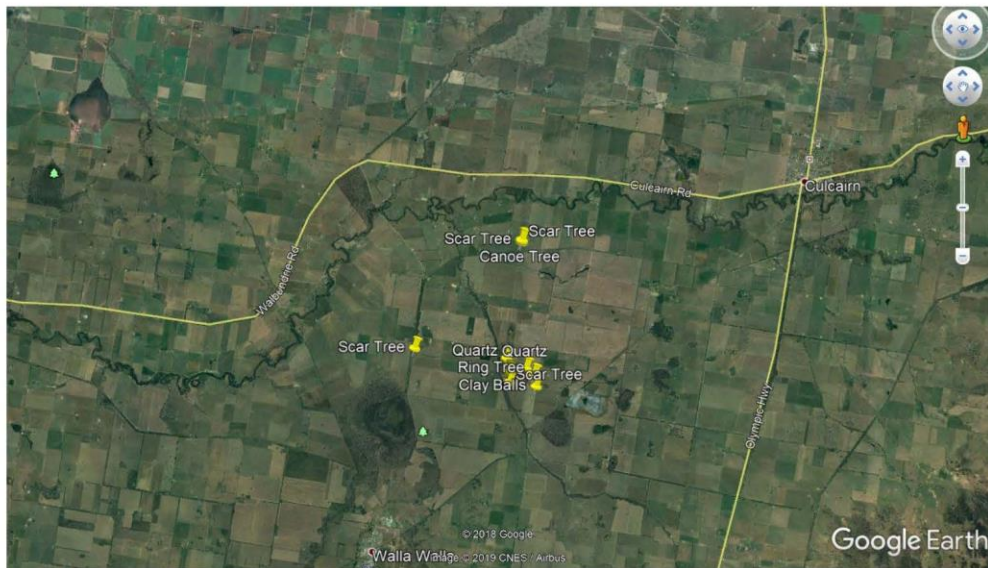
The context area of your search is shown in the map below. Please note that the map does not accurately display the exact boundaries of the search as defined in the paragraph above. The map is to be used for general reference purposes only.



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

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

Map and reference location to site:



Site recordings and location of site cards relevant to this site:

Site name	Culcairn Solar Farm, Culcairn, NSW.		
Recorder	Mark Saddler		
Contact details	Ph 0412 693 030	Email:	marksad@live.com.au
Date prepared	12/02/2019	Web:	http://www.bundyculture.com.au/

AHIMS ID (Site Card ID)	Site Type	Location of Site Cards on Web Page.	Date Recorded
55-6-0130	Item	http://www.environment.nsw.gov.au/awssapp/login.aspx	12/02/2019
55-6-0131	Item	http://www.environment.nsw.gov.au/awssapp/login.aspx	12/02/2019
55-6-0132	Item	http://www.environment.nsw.gov.au/awssapp/login.aspx	12/02/2019
55-6-0133	Item	http://www.environment.nsw.gov.au/awssapp/login.aspx	12/02/2019
55-6-0134	Item	http://www.environment.nsw.gov.au/awssapp/login.aspx	12/02/2019
55-6-0135	Item	http://www.environment.nsw.gov.au/awssapp/login.aspx	12/02/2019
55-6-0136	Item	http://www.environment.nsw.gov.au/awssapp/login.aspx	12/02/2019
55-6-0137	Item	http://www.environment.nsw.gov.au/awssapp/login.aspx	12/02/2019
55-6-0138	Item	http://www.environment.nsw.gov.au/awssapp/login.aspx	12/02/2019
55-6-0139	Item	http://www.environment.nsw.gov.au/awssapp/login.aspx	12/02/2019
55-6-0140	Item	http://www.environment.nsw.gov.au/awssapp/login.aspx	12/02/2019
55-6-0141	Item	http://www.environment.nsw.gov.au/awssapp/login.aspx	12/02/2019

Contacts

Stakeholder details	Responsibilities	
Bundiyi Cultural Services, Mark Saddler	Culture Advisor, Recorder, Knowledge Holder	0412 693 030

To find out more about Cultural Site Management, rules and protection go to this these web page links for more in-depth information.

Do you need to use the due diligence code?

<http://www.environment.nsw.gov.au/resources/cultureheritage/ddcop/10798ddcop.pdf>

OEH **legislation** which ensures that Aboriginal cultural heritage must be considered as part of land management practices.

<http://www.environment.nsw.gov.au/conservation/aboriginalculture.htm>

Site Report and Recommendations.

09/03/2019

Culcairn Solar Farm, Culcairn, NSW.

On my site inspection on the 04/02/2019, I inspected a large property known as Culcairn Solar Farm, Culcairn NSW. This inspection took several days. These areas are very important to my Wiradjuri people as it takes in the Billabong Creek area, this is the largest creek in the world and is also one of our major walkways for my people. Many very important items were found and recorded on this survey.

Any of the scar and ring trees that have been recorded are to stay and will need protection from damage. Also, I would ask that test pits be dug at this position, Easting 494454 Northing 6049255.

This area had a very high yield of good quality items, so doing test pits to confirm what is here is important.

A section of the farm has an old wetland that contains Aboriginal bush tucker, such as Old Man Weed. This area is just behind the main homestead that is access by Cummings Rd. Also, some artifacts have been placed at the back of the homestead under a Kurrajong Tree. These items need to remain in this area and are not to be moved. They have been recorded.

This area has been heavily impacted by cattle and machinery. Some Aboriginal sites have been damaged and driven over, this needs to stop, and actions taken to stop this from happening again.

I would insist that all Aboriginal Sites are treated with respect and that any work in this area take into consideration any impact on these very important sites. I would also ask that cattle and horse are to be excluded from any scar trees in this area and that protective fencing be erected around any scar trees.

Any Aboriginal items that have been recorded and that need to be moved should be done so in the presence of an Elder or community member, also any items that can not be moved (scar trees, etc) should have exclusions zones placed around them and all workers be given some cultural awareness training or education, also to be done by local Elders or community members.

Any items that must be moved will be returned and placed back into country by local Elders. Also, whilst the solar farm is under construction, I would ask that local Aboriginal people be employed to assist in the work and to also look out, care for and record any other items that may surface due to construction work.

Procedures to work around Aboriginal sites can be found at this link,

<http://www.aboriginalheritage.org/sites/legislation/>

References:

OEH, <http://www.environment.nsw.gov.au/>

Local Land Services, <http://www.lls.nsw.gov.au/livestock/stock-routes>

Mark Saddler, Cultural Advisor and Knowledge holder, www.bundyculture.com.au

Goggle Earth Maps, <https://www.google.com/earth/>

Aboriginal Heritage, <http://www.aboriginalheritage.org/sites/legislation/>

Prepared by:

Mark Saddler, Bundyi Cultural Services

P.O.B 8005 Koorringal Post Office NSW 2650

Ph: 0412 693 030

Email: marksad@live.com.au

Web: www.bundyculture.com.au

Copyright Mark Saddler Artwork and Photography and Report.

Draft ACHA response from Mark Saddler provided on the 13th December 2019

From: Mark Saddler [REDACTED]
Sent: Friday, 13 December 2019 4:24 PM
To: Kirsten Bradley [REDACTED]
Subject: Re: Culcairn Solar Farm ACHA- draft

All good.

Guwayu

(Safe travel)

Mark Saddler

www.bundyiculture.com.au

Draft ACHA response from the Albury LALC provided on the 19th December 2019

From: Admin | Albury District ALC [REDACTED]
Sent: Thursday, 19 December 2019 10:36 AM
To: Kirsten Bradley [REDACTED]
Subject: RE: Culcairn Solar Farm Draft ACHA

Hi Kirsten

We don't have any comments.

Regards

Milly Thomson

Interim CEO

Albury & District Local Aboriginal Land Council



APPENDIX B ARCHAEOLOGICAL AND CULTURAL SITE DESCRIPTIONS

Archaeological Sites-Artefact Scatters

Culcairn Solar AFT 1

AHIMS# 55-6-0199



This site consisted of two quartz flakes and a flaked piece of quartz scattered across a 70 m area on a flat recently harvested paddock. The two complete flakes were identified as products of the tertiary stage of reduction. The artefacts were located on a reddish-brown clayey loam deposit and visibility within the area was approximately 60%. The area has been subject to disturbance from ploughing and farming activities in the past and in recent years.

	
View south from Culcairn Solar AFT 1.	View of quartz flake at Culcairn Solar AFT 1.

Culcairn Solar AFT 2



AHIMS# 55-6-0241

This site consisted of 17 artefacts scattered across an area measuring 100 m x 400 m on a flat and recently harvested paddock adjacent to Back Creek. The artefacts recorded included 13 quartz flakes, a quartz core, a quartz distal flake fragment, a silcrete core and a volcanic hammerstone. All quartz flakes were identified as products of the tertiary stage of reduction. The hammerstone was noted to have some plough damage. The artefacts were located on a reddish-brown clayey loam deposit and visibility within the area was approximately 80%. The area has been subject to disturbance from ploughing and farming activities in the past and in recent years.

	
View south-west of Culcairn Solar AFT 2.	View of Volcanic Hammerstone within Culcairn Solar AFT 2.



Culcairn Solar AFT 3**AHIMS# 55-6-0223**

This site consisted of three artefacts scattered across approximately 80 metres on a flat paddock adjacent to Back Creek. The three artefacts recorded were all complete quartz flakes. The artefacts were located on a reddish-brown clayey loam deposit and visibility within the area was approximately 60%. The area has been subject to disturbance from ploughing and farming activities in the past and in recent years.

	
View south from Culcairn Solar AFT 3.	View of quartz flake in Culcairn Solar AFT 3.



Culcairn Solar AFT 4**AHIMS# 55-6-0224**

This site consisted of two artefacts scattered across approximately 40 m on a flat recently harvested paddock. The artefacts recorded included one quartz distal flake fragment and one quartz flake. The artefacts were located on a reddish-brown clayey loam deposit and visibility within the area was approximately 60%. The area has been subject to disturbance from ploughing and farming activities in the past and in recent years.

	
View north of Culcairn Solar AFT 4.	View of quartz flake from Culcairn Solar AFT 4.

Culcairn Solar AFT 5**AHIMS# 55-6-0225**



This site consisted of three artefacts scattered across approximately 30 m on a flat recently harvested paddock. The artefacts recorded include two quartz flakes and a flake fragment. The artefacts were located on a reddish-brown clayey loam deposit and visibility within the area was approximately 60%. The area has been subject to disturbance from ploughing and farming activities in the past and in recent years.

	
View south-east of Culcairn Solar AFT 5.	View of quartz flake from Culcairn Solar AFT 5.

Culcairn Solar AFT 6

AHIMS# 55-6-0226

This site consisted of four artefacts scattered across approximately 150 m on flat recently harvested paddock. The artefacts recorded included three tertiary quartz flakes and one quartz distal flake fragment. The artefacts were located on a reddish-brown clayey loam deposit and visibility within the area was approximately 60%. The area has been subject to disturbance from ploughing and farming activities in the past and in recent years.

	
View south from Culcairn Solar AFT 6.	View of quartz flake from Culcairn Solar AFT 6.

Culcairn Solar AFT 7**AHIMS# 55-6-0227**

This site consisted of two artefacts scattered across approximately 10 m on flat recently harvested paddock adjacent to Back Creek. The artefacts recorded included two tertiary quartz flakes. The artefacts were located on a reddish-brown clayey loam deposit and visibility within the area was approximately 60%. The area has been subject to disturbance from ploughing and farming activities in the past and in recent years.



View north-west from Culcairn Solar AFT 7.



View of quartz flake from Culcairn Solar AFT 7.

Culcairn Solar AFT 8**AHIMS# 55-6-0228**

This site consisted of two artefacts scattered across approximately 15 m on flat recently harvested paddock. The artefacts recorded included two tertiary quartz flakes. The artefacts were located on a reddish-brown clayey loam deposit and visibility within the area was approximately 60%. The area has been subject to disturbance from ploughing and farming activities in the past and in recent years.





View south from Culcairn Solar AFT 8.



View of quartz flake from Culcairn Solar AFT 8.



Culcairn Solar AFT 9**AHIMS# 55-6-0229**

This site consisted of three artefacts scattered across approximately 25 m running parallel with the eastern fence-line, on flat, open, recently harvested paddock in the mid-eastern section of the proposal area. The artefacts recorded included two tertiary quartz flakes and one flaked piece. The artefacts were located on a reddish-brown clayey loam deposit and visibility within the area was approximately 80%. The area has been subject to disturbance from ploughing and farming activities in the past and in recent years.

	
View west from Culcairn Solar AFT 9.	View of quartz flake from Culcairn Solar AFT 9.

Culcairn Solar AFT 10**AHIMS# 55-6-0230**



This site consisted of eight artefacts scattered across approximately 250 m on flat recently harvested paddock adjacent to Weeamera Road. The artefacts recorded included five tertiary quartz flakes, one secondary quartz flake, one quartz distal fragment and one quartz flaked piece. The artefacts were located on a reddish-brown clayey loam deposit and visibility within the area was approximately 60%. The area has been subject to disturbance from ploughing and farming activities in the past and in recent years.

	
View west from Culcairn Solar AFT 10.	View of secondary quartz flake from Culcairn Solar AFT 10.

Culcairn Solar AFT 11**AHIMS# 55-6-0231**

This site consisted of two artefacts scattered across approximately 20 m on flat recently harvested paddock approximately 170 m west of Weeamera Road. The artefacts recorded included two tertiary quartz flakes. The artefacts were located on a reddish-brown clayey loam deposit and visibility within



the area was approximately 60%. The area has been subject to disturbance from ploughing and farming activities in the past and in recent years.

	
View west from Culcairn Solar AFT 11.	View of tertiary quartz flake from Culcairn Solar AFT 11.

Culcairn Solar AFT 12



AHIMS# 55-6-0232

This site consisted of two artefacts scattered across approximately 30 m on a flat recently harvested paddock. The artefacts recorded included one tertiary quartz flake and one quartz distal fragment. The artefacts were located on a reddish-brown clayey loam deposit and visibility within the area was approximately 60%. The area has been subject to disturbance from ploughing and farming activities in the past and in recent years.

	
View east from Culcairn Solar AFT 12.	View of secondary quartz flake from Culcairn Solar AFT 12.



Culcairn Solar AFT 13**AHIMS# 55-6-0233**

This site consisted of two artefacts scattered across approximately 30 m on flat recently harvested paddock. The artefacts recorded included two tertiary quartz flakes. The artefacts were located on a reddish-brown clayey loam deposit and visibility within the area was approximately 60%. The area has been subject to disturbance from ploughing and farming activities in the past and in recent years.

	
View east from Culcairn Solar AFT 13.	View of tertiary quartz flake from Culcairn Solar AFT 13.

Culcairn Solar AFT 14**AHIMS# 55-6-0234**

This site consisted of two artefacts scattered across approximately 70 m on flat recently harvested paddock. The artefacts recorded included two tertiary quartz flakes. The artefacts were located on a reddish-brown clayey loam deposit and visibility within the area was approximately 60%. The area has been subject to disturbance from ploughing and farming activities in the past and in recent years.



	
View east from Culcairn Solar AFT 14.	View of tertiary quartz flake from Culcairn Solar AFT 14.

Culcairn Solar AFT 15**AHIMS# 55-6-0235**

This site consisted of two subsurface artefacts recovered from the testing programme of works scattered across approximately 140 m on a raised area south of a paleochannel. The artefacts were recovered from the first 20 cm of deposit and included a quartz flake and a quartz distal fragment.



Culcairn Solar AFT 16**AHIMS# 55-6-0236**

This site consisted of two subsurface artefacts recovered from the testing programme of works scattered across approximately 80 m on a raised area north of a paleochannel. The artefacts were recovered from the first 10 cm of deposit and included a two quartz flakes.

	
View north-west from Pit 6 of Culcairn Solar AFT 15.	View north-east from Pit 11 of Culcairn Solar AFT 16.



Culcairn Solar AFT 17**AHIMS# 55-6-0237**

This site consisted of two artefacts subsurface artefacts recovered from the testing programme of works scattered across approximately 20 m on a raised area north of a paleochannel. The artefacts were recovered from the first 10 cm of deposit and included a two quartz flakes.

	
View south-west from Pit 35 of Culcairn Solar AFT 17.	Artefact 5, quartz flake from Pit 35 Spit 1 in the northern portion of the proposal area.



Culcairn Solar 497239**AHIMS# 55-6-0139**

This site consists of five artefacts that have collected from various locations on the property over the years. The artefacts have been placed at the back of the homestead under a Kurrajong Tree. The artefacts recorded included one sandstone pestle, one sandstone anvil, one volcanic grindstone, one volcanic hammerstone and one fine-grained siliceous grindstone.

	
View south-west of Culcairn Solar 497239	View of fine-grained siliceous grindstone from Culcairn Solar 497239

Culcairn Solar 494492**AHIMS# 55-6-0135**

This site consisted of 26 artefacts scattered across approximately 400 m on a flat recently harvested paddock and track adjacent to Back Creek. The artefacts recorded included ten quartz flakes, six quartz distal fragments, three quartz flaked pieces, two quartz broken flakes, one quartz core, one quartz proximal fragment, one silcrete distal fragment, one silcrete flake and one volcanic possible pestle. The artefacts were located on a reddish-brown clayey loam deposit and visibility within the area was approximately 60%. The area has been subject to disturbance from ploughing and farming activities in the past and in recent years.



	
View west from Culcairn Solar 494492	View of quartz flake from Culcairn Solar 494492

Archaeological Sites- Culturally Modified Trees

Culcairn Solar 494957

AHIMS# 55-6-0130



This site consists of a single scar on a tree assessed as conforming to the standard scarring morphology accepted for Aboriginal modification (cf. Long 2005). The scarred tree is a still standing, dying Eucalypt located on the eastern bank of Back Creek. The tree has an approximate height of 20 m, a diameter of 1.3 m, a circumference of 2.75 m and is in good condition with some weathering and insect/termite damage. The scar is oriented to the north-east, has a length of 215 cm, width of 38 cm, a depth of 10 cm, a height above ground of 30 cm and is oval in shape.

	
<p>Close up of scar on Culcairn Solar 494957</p>	<p>View south-west of Culcairn Solar 494957</p>

Culcairn Solar 494924

AHIMS# 55-6-0137

This site consists of a single scar on a tree assessed as conforming to the standard scarring morphology accepted for Aboriginal modification (cf. Long 2005). The scarred tree is a still standing dying Eucalypt located 250 m from the eastern bank of Back Creek, within a small patch of open woodland. The tree has an approximate height of 10 m, a diameter of 60 cm, a circumference of 1.65 m and is in poor condition having undergone extreme weathering and insect/termite damage. The scar is oriented to the north, has a length of 154 cm, width of 31 cm, a depth of 5 cm, a height above ground of 30 cm and is oval in shape.

	
<p>Close up of scar on Culcairn Solar 494924</p>	<p>View east of Culcairn Solar 494924</p>

Culcairn Solar ST1**AHIMS# 55-6-0238**

This site consists of a single scar on a tree assessed as conforming to the standard scarring morphology accepted for Aboriginal modification (cf. Long 2005). The Eucalypt tree is located 300 m from a creek-line and 400 m south of Cummings Road within an open paddock. The tree has an approximate height of 20 m, a diameter of 2 m, a circumference of 6.7 m and is in poor condition with extensive insect/termite damage. The scar is oriented to the south-east, has a length of 75 cm, width of 28 cm, a depth of 23 cm, a height above ground of 65 cm and is oval in shape.





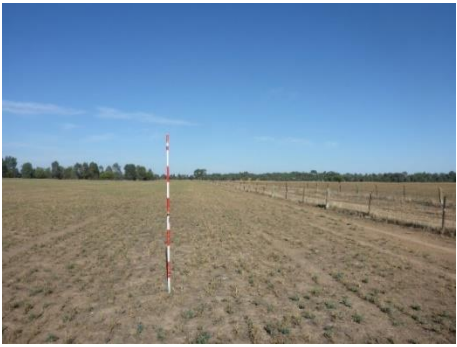
Close up of scar on Culcairn Solar ST1











View north-west of Culcairn Solar ST1





Archaeological sites- Isolated Finds





The details of the isolated finds recorded are detailed in the Table below.


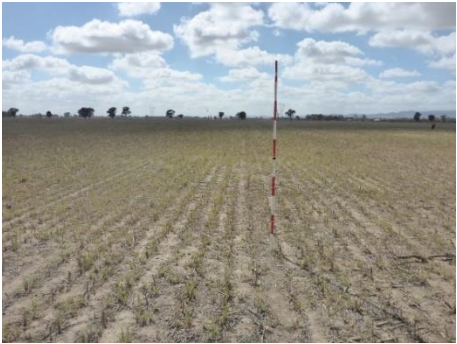


AHIMS #	Site Name	Comments	Pictures
55-6-0136	Culcairn Solar 495094	The site consisted of a single volcanic core (possibly a wasted axe blank) on flat, open, recently harvested paddock. The dimensions were 98 (l) x 79 (w) x 28 (t). The deposits consisted of a reddish-brown clayey loam and visibility within the general area was approximately 15%. This site was recorded by Mark Saddler.	
55-6-0239	Culcairn Solar IF1	The site consisted of a single quartz flake on a flat, open, recently harvested paddock, adjacent to fence-line, approximately 100 m from Billabong Creek. The dimensions were 15 (l) x 13 (w) x 4 (t). It was recorded as a product of the tertiary stage of reduction. The deposits consisted of a grey clayey loam and the visibility within the general area of the track was approximately 80%.	
55-6-0240	Culcairn Solar IF2	The site consisted of a single quartz flake on a flat, open, recently harvested paddock, adjacent to fence-line, approximately 350 m from Billabong Creek. The dimensions were 21 (l) x 32 (w) x 18 (t). It was recorded as a product of the tertiary stage of reduction. The deposits consisted of a grey clayey loam and the visibility within the general area of the track was approximately 80%.	




AHIMS #	Site Name	Comments	Pictures
55-6-0203	Culcairn Solar IF3	The site consisted of a single quartz flake on a flat, open, recently harvested paddock. The dimensions were 25 (l) x 14 (w) x 6 (t). It was recorded as a product of the tertiary stage of reduction. The deposits consisted of a reddish-brown clayey loam and the visibility within the general area of the track was approximately 80%.	
55-6-0204	Culcairn Solar IF4	The site consisted of a single quartz flake on a flat, open, recently harvested paddock. The dimensions were 16 (l) x 9 (w) x 4 (t). It was recorded as a product of the tertiary stage of reduction. The deposits consisted of a reddish-brown clayey loam and the visibility within the general area of the track was approximately 80%.	
55-6-0205	Culcairn Solar IF5	The site consisted of a single quartz flake on a flat, open, recently harvested paddock. The dimensions were 19 (l) x 23 (w) x 8 (t). It was recorded as a product of the tertiary stage of reduction. The deposits consisted of a reddish-brown clayey loam and the visibility within the general area of the track was approximately 80%.	
55-6-0206	Culcairn Solar IF6	The site consisted of a single quartz flaked piece on a flat, open, recently harvested paddock. Artefact located on exposed access track at southern edge of paddock. The dimensions were 16 (l) x 22 (w) x 8 (t). It was recorded as a product of the tertiary stage of reduction. The deposits consisted of a reddish-brown clayey loam and the visibility within the general area of the track was approximately 100%.	

AHIMS #	Site Name	Comments	Pictures
55-6-0207	Culcairn Solar IF7	The site consisted of a single silcrete flake on a flat, open, recently harvested paddock, on exposed access track. The dimensions were 24 (l) x 30 (w) x 6 (t). It was recorded as a product of the tertiary stage of reduction. The deposits consisted of a reddish-brown clayey loam and the visibility within the general area of the track was approximately 80%.	
55-6-0208	Culcairn Solar IF8	The site consisted of a single quartz distal fragment on a flat, open, recently harvested paddock, on exposed access track. The dimensions were 8 (l) x 14 (w) x 4 (t). It was recorded as a product of the tertiary stage of reduction. The deposits consisted of a reddish-brown clayey loam and the visibility within the general area of the track was approximately 100%.	
55-6-0209	Culcairn Solar IF9	The site consisted of a single quartz flake on a flat, open, recently harvested paddock. The dimensions were 18 (l) x 14 (w) x 3 (t). It was recorded as a product of the tertiary stage of reduction. The deposits consisted of a reddish-brown clayey loam and the visibility within the general area of the track was approximately 80%.	
55-6-0210	Culcairn Solar IF10	The site consisted of a single quartz flake on a flat, open, recently harvested paddock. The dimensions were 16 (l) x 15 (w) x 3 (t). The deposits consisted of a reddish-brown clayey loam and the visibility within the general area of the track was approximately 80%.	

AHIMS #	Site Name	Comments	Pictures
55-6-0211	Culcairn Solar IF11	The site consisted of a single quartz flaked piece in a flat, open, recently harvested paddock. The dimensions were 18 (l) x 12 (w) x 8 (t). It was recorded as a product of the tertiary stage of reduction. The deposits consisted of a reddish-brown clayey loam and visibility within the general area was approximately 60%.	
55-6-0212	Culcairn Solar IF12	The site consisted of a single quartz flaked piece in a flat, open, recently harvested paddock. The dimensions were 6 (l) x 12 (w) x 3 (t). The visibility within the general area was approximately 80%.	
55-6-0213	Culcairn Solar IF13	The site consisted of a single quartz flake on a flat, open, recently harvested paddock. The dimensions were 33 (l) x 20 (w) x 10 (t). It was recorded as a product of the tertiary stage of reduction. The visibility within the general area of the track was approximately 80%.	
55-6-0214	Culcairn Solar IF14	The site consisted of a single quartz flake in a flat, open, recently harvested paddock. The dimensions were 20 (l) x 10 (w) x 6 (t). It was recorded as a product of the tertiary stage of reduction. The visibility within the general area was approximately 60%.	

AHIMS #	Site Name	Comments	Pictures
55-6-0215	Culcairn Solar IF15	The site consisted of a single quartz flake in a flat, open, recently harvested paddock. The dimensions were 18 (l) x 18 (w) x 5 (t). It was recorded as a product of the tertiary stage of reduction. The visibility within the general area was approximately 60%.	
55-6-0216	Culcairn Solar IF16	The site consisted of a single quartz flake on flat, open, recently harvested paddock adjacent to southern fence-line on access track. The dimensions were 12 (l) x 12 (w) x 4 (t). It was recorded as a product of the tertiary stage of reduction. The deposits consisted of a reddish-brown clayey loam and visibility within the general area was approximately 80%.	
55-6-0217	Culcairn Solar IF17	The site consisted of a single quartz broken flake, on flat, open, recently harvested paddock adjacent to fence-line on access track. The dimensions were 8 (l) x 9 (w) x 3 (t). It was recorded as a product of the tertiary stage of reduction. The deposits consisted of a reddish-brown clayey loam and visibility within the general area was approximately 80%.	
55-6-0218	Culcairn Solar IF18	The site consisted of a single quartz broken flake, on flat, open, recently harvested paddock adjacent to fence-line on access track. The dimensions were 11 (l) x 9 (w) x 3 (t). It was recorded as a product of the tertiary stage of reduction. The deposits consisted of a reddish-brown clayey loam and visibility within the general area was approximately 80%.	

AHIMS #	Site Name	Comments	Pictures
55-6-0219	Culcairn Solar IF19	The site consisted of a single quartz flake , on flat, open, recently harvested paddock adjacent to fence-line on access track. The dimensions were 30 (l) x 11 (w) x 6 (t). It was recorded as a product of the tertiary stage of reduction. The deposits consisted of a reddish-brown clayey loam and visibility within the general area was approximately 80%.	
55-6-0220	Culcairn Solar IF20	The site consisted of a single quartz flaked piece on flat, open, recently harvested paddock. The dimensions were 19 (l) x 18 (w) x 5 (t). It was recorded as a product of the tertiary stage of reduction. The visibility within the general area was approximately 60%.	
55-6-0222	Culcairn Solar IF21	The site consisted of a single quartz flaked piece on flat, open, recently harvested paddock. The dimensions were not recorded as it is an incomplete flake. It was recorded as a product of the tertiary stage of reduction. The visibility within the general area was approximately 60%.	
55-6-0221	Culcairn Solar IF22	The site consisted of a single quartz flake on flat, open, recently harvested paddock. The dimensions were 25 (l) x 19 (w) x 11 (t). It was recorded as a product of the tertiary stage of reduction. The visibility within the general area of the track was approximately 60%.	



AHIMS #	Site Name	Comments	Pictures
55-6-0200	Culcairn Solar IF23	The site consisted of a single quartz flake on a flat, open, recently harvested open paddock directly adjacent to Back Creek. The dimensions were 8 (l) x 11 (w) x 3 (t). It was recorded as a product of the tertiary stage of reduction. The visibility within the general area was approximately 80%.	
55-6-0201	Culcairn Solar IF24	The site consisted of a single quartz flake in a flat, open, recently harvested paddock. The dimensions were 13 (l) x 11 (w) x 3 (t). It was recorded as a product of the tertiary stage of reduction. The visibility within the general area was approximately 60%.	
55-6-0202	Culcairn Solar IF25	The site consisted of a single silcrete flake in a flat, open, recently harvested paddock, approximately 70 m from southern fence-line. The dimensions were 25 (l) x 16 (w) x 6 (t). It was recorded as a product of the tertiary stage of reduction. The visibility within the general area was approximately 80%.	




Cultural sites


A total of six cultural sites were recorded by the Aboriginal representatives as having cultural value however NGH archaeologists determined they were probably not archaeological in nature. The cultural sites recorded included five sites identified by Mark Saddler who independently assigned a naming convention to the sites he recorded and submitted site cards to AHIMS. Mark Saddler requested that the four cultural tree sites he recorded be avoided by the development. Mark Saddler requested that the cultural stone site he recorded is subject to surface collection/salvage if it cannot be avoided by the development.

A single cultural tree site was identified by the Albury LALC representatives in addition to the sites recorded by Mark Saddler. The site was a single cultural tree which had scarring that NGH archaeologists have determined to likely not be archaeological in nature. No site card has been submitted to AHIMS for this cultural site however the Albury LALC representatives requested that the site not be impacted by the proposed development.

Given that these sites have been determined not to be unequivocally Aboriginal in origin by NGH archaeologists they are noted in this assessment and shown in the mapping as cultural sites. The details of the cultural sites recorded within the proposal area are outlined below.

AHIMS #	Site Name	Comments	Pictures
55-6-0140	Culcairn Solar 497151	The Aboriginal representative Mark Saddler considers the tree to have features he identified as being Aboriginal in origin. Mark Saddler has submitted a site card to AHIMS for this location and requested that the tree be avoided by the development.	
55-6-0134	Culcairn Solar 497439	The Aboriginal representative Mark Saddler considers the tree to have features he identified as being Aboriginal in origin. Mark Saddler has submitted a site card to AHIMS for this location and requested that the tree be avoided by the development.	

55-6-0133	Culcairn Solar 498265	The Aboriginal representative Mark Saddler considers the tree to have features he identified as being Aboriginal in origin. Mark Saddler has submitted a site card to AHIMS for this location and requested that the tree be avoided by the development.	
55-6-0132	Culcairn Solar 495666	This site consists of a single culturally modified tree noted by the Aboriginal community representatives to be a Ring-Tree. The standing Eucalypt is located adjacent to a drainage depression, approximately 750 m north-east of Back Creek. The modification was noted by the Aboriginal community representatives to have been formed by the manipulation of branches by their Ancestors to create a ring shape in the branches. Such trees were noted to be boundary markers but the Aboriginal community representative Mark Saddler.	
55-6-0138	Culcairn Solar 497037	The Aboriginal representative Mark Saddler, considers the object to be Aboriginal in origin and has submitted a site card to AHIMS for this location and requested that the stone object be salvaged prior to any development.	

N/A	Culcairn Solar CT1	<p>The Aboriginal representatives from the Albury LALC consider the tree to have features identified as being Aboriginal in origin and requested that the tree be avoided by the development.</p>	
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APPENDIX C SURFACE ARTEFACT DATA

Site ID	Type	Raw Material	Size class	Length	Width	Thickness	Platform surface	Platform type	Termination	Reduction stage	Comments
Culcairn Solar IF1	Flake	Quartz	<20mm	15	13	4	Indeterminate	Focal	Feather		
Culcairn Solar IF2	Flake	Quartz	<40mm	21	32	18	Flake scar	Broad	Hinge	Tertiary	
Culcairn Solar IF3	Flake	Quartz	<30mm	25	14	6	Crushed	Focal	Feather	Tertiary	
Culcairn Solar IF4	Flake	Quartz	<20mm	16	9	4	Flake scar	Focal	Feather	Tertiary	
Culcairn Solar IF5	Flake	Quartz	<20mm	19	23	8	Flake scar	Broad	Feather	Tertiary	
Culcairn Solar IF6	Flake	Quartz	<30mm	16	22	8	Flake scar	Broad	Feather	Tertiary	
Culcairn Solar IF7	Flake	Silcrete	<40mm	24	30	6	Flake scar	Broad	Feather	Tertiary	
Culcairn Solar IF8	Distal Fragment	Quartz	<20mm	8	14	4			Feather	Tertiary	
Culcairn Solar IF9	Flake	Quartz	<20mm	18	14	3	Flake scar	Focal	Feather	Tertiary	
Culcairn Solar IF10	Flake	Quartz	<10mm	16	15	3	Crushed	Broad	Hinge		
Culcairn Solar IF11	Flake	Quartz	<30mm	18	12	8	Flake scar	Broad	Feather	Tertiary	
Culcairn Solar IF12	Flaked Piece	Quartz	<20mm	6	12	3	Flake scar				
Culcairn Solar IF13	Flake	Quartz	<40mm	33	20	10	Flake scar	Broad	Feather	Tertiary	
Culcairn Solar IF14	Flake	Quartz	<20mm	20	10	6	Flake scar	Focal	Feather	Tertiary	
Culcairn Solar IF15	Flake	Quartz	<20mm	18	18	5	Flake scar	Broad	Feather	Tertiary	
Culcairn Solar IF16	Flake	Quartz	<20mm	12	12	4	Flake scar	Broad	Feather	Tertiary	
Culcairn Solar IF17	Broken Flake	Quartz	<10mm	8	9	3	Indeterminate	Broad			Proximal flake
Culcairn Solar IF18	Broken Flake	Quartz	<10mm	11	9	3	Crushed	Focal	Feather		

Site ID	Type	Raw Material	Size class	Length	Width	Thickness	Platform surface	Platform type	Termination	Reduction stage	Comments
Culcairn Solar IF19	Flake	Other	<10mm	30	11	6	Indeterminate	Focal			
Culcairn Solar IF20	Flake	Quartz	<20mm	19	18	5	Flake scar	Focal	Feather	Tertiary	
Culcairn Solar IF21	Flaked Piece	Quartz	<20mm	0	0	0					
Culcairn Solar IF22	Flake	Quartz	<30mm	25	19	11		Focal	Feather	Tertiary	
Culcairn Solar IF23	Flake	Quartz	<20mm	8	11	3	Indeterminate	Focal	Feather		
Culcairn Solar IF24	Flake	Quartz	<10mm	13	11	3	Crushed	Focal	Feather		
Culcairn Solar IF25	Flake	Silcrete	<30mm	25	16	6	Flake scar	Focal	Feather	Tertiary	
Culcairn Solar 495094	Axe	Volcanic	>100mm	98	79	28					Axe blank adjacent to fence line
Culcairn Solar AFT1	Flaked Piece	Quartz	<10mm	4	2	1	Indeterminate	Focal	Feather		
Culcairn Solar AFT1	Flake	Quartz	<20mm	20	12	8	Flake scar	Broad	Feather	Tertiary	1 neg scar
Culcairn Solar AFT1	Flake	Quartz	<20mm	12	12	6	Flake scar	Broad	Feather	Tertiary	
Culcairn Solar AFT2	Flake	Quartz	<20mm	11	12	4	Indeterminate	Broad	Step		
Culcairn Solar AFT2	Flake	Quartz	<20mm	18	13	3	Ridge	Broad	Feather		
Culcairn Solar AFT2	Core	Quartz	<20mm	11	22	13	Indeterminate	Indeterminate	Axial		x 3 negative flaking scars 1 platform
Culcairn Solar AFT2	Flake	Quartz	<10mm	11	0	0	Crushed	Shattered	Feather		
Culcairn Solar AFT2	Flake	Quartz	<10mm	11	2	3	Crushed	Shattered	Feather		

Site ID	Type	Raw Material	Size class	Length	Width	Thickness	Platform surface	Platform type	Termination	Reduction stage	Comments
Culcairn Solar AFT2	Flake	Quartz	<30mm	25	16	5	Flake scar	Focal	Feather	Tertiary	
Culcairn Solar AFT2	Flake	Quartz	<40mm	28	20	6	Flake scar	Broad	Feather	Tertiary	
Culcairn Solar AFT2	Flake	Quartz	<20mm	14	9	3	Flake scar	Broad	Feather	Tertiary	Crystal quartz
Culcairn Solar AFT2	Flake	Quartz	<40mm	23	35	12	Flake scar	Broad	Step	Tertiary	
Culcairn Solar AFT2	Flake	Quartz	<40mm	38	20	8	Flake scar	Broad	Feather	Tertiary	
Culcairn Solar AFT2	Core	Silcrete	<90mm	67	87	36					Single platform 4 neg scars plough damage
Culcairn Solar AFT2	Flake	Quartz	<20mm	19	12	4	Flake scar	Focal	Feather	Tertiary	
Culcairn Solar AFT2	Hammerstone	volcanic	<50mm	50	43	25					
Culcairn Solar AFT2	Flake	Quartz	<20mm	11	18	5	Flake scar	Broad	Feather	Tertiary	
Culcairn Solar AFT2	Flake	Quartz	<30mm	25	29	5	Flake scar	Broad	Feather	Tertiary	
Culcairn Solar AFT2	Flake	Quartz	<20mm	17	13	5	Flake scar	Broad	Feather	Tertiary	
Culcairn Solar AFT2	Distal Fragment	Quartz	<40mm	22	34	5			Feather	Tertiary	
Culcairn Solar AFT3	Flake	Quartz	<40mm	31	28	12	Flake scar	Broad	Feather	Primary	riverine cortex
Culcairn Solar AFT3	Flake	Quartz	<30mm	29	20	8	Flake scar	Broad			flake scaring
Culcairn Solar AFT3	Flake	Quartz	<40mm	32	32	14	Flake scar	Broad	Feather	Tertiary	
Culcairn Solar AFT4	Flake	Quartz	<20mm	20	8	3	Crushed	Focal	Feather		1 neg scar on ventral left
Culcairn Solar AFT4	Distal Fragment	Quartz	<20mm	14	12	3			Feather	Tertiary	
Culcairn Solar AFT5	Flake	Quartz	<10mm	10	8	2	Crushed	Focal	Feather		

Site ID	Type	Raw Material	Size class	Length	Width	Thickness	Platform surface	Platform type	Termination	Reduction stage	Comments
Culcairn Solar AFT5	Broken Flake	Quartz	<10mm	16	14	3	Indeterminate	Broad			
Culcairn Solar AFT5	Flake	Quartz	<10mm	10	7	1	Indeterminate	Broad	Hinge		
Culcairn Solar AFT6	Flake	Quartz	<20mm	11	12	2	Ground	Focal	Feather	Tertiary	
Culcairn Solar AFT6	Flake	Quartz	<10mm	17	10	3	Crushed	Focal	Hinge		
Culcairn Solar AFT6	Distal Fragment	Quartz	<10mm	17	26	6			Feather		Distal flake
Culcairn Solar AFT6	Flake	Quartz	<10mm	14	6	2	Indeterminate	Focal	Feather		
Culcairn Solar AFT7	Flake	Quartz	<30mm	18	24	9	Flake scar	Broad	Feather	Tertiary	
Culcairn Solar AFT7	Flake	Quartz	<10mm	20	18	3	Crushed	Focal	Feather		
Culcairn Solar AFT8	Flake	Quartz	<20mm	20	13	5		Focal	Feather	Tertiary	
Culcairn Solar AFT8	Flake	Quartz	<40mm	33	16	12		Focal	Step	Tertiary	
Culcairn Solar AFT9	Flaked Piece	Quartz	<10mm	14	2	2	Crushed	Shattered	Step		
Culcairn Solar AFT9	Flake	Quartz	<20mm	11	0	0	Indeterminate	Broad	Feather		
Culcairn Solar AFT9	Flake	Quartz	<10mm	11	10	1	Indeterminate	Broad	Feather		
Culcairn Solar AFT10	Flake	Quartz	<30mm	26	24	11	Flake scar	Broad	Feather	Tertiary	
Culcairn Solar AFT10	Flaked Piece	Quartz	<10mm	0	0	0					
Culcairn Solar AFT10	Flake	Quartz	<20mm	18	12	4	Flake scar	Broad	Feather	Tertiary	

Site ID	Type	Raw Material	Size class	Length	Width	Thickness	Platform surface	Platform type	Termination	Reduction stage	Comments
Culcairn Solar AFT10	Distal Fragment	Quartz	<10mm	8	10	3			Feather	Tertiary	
Culcairn Solar AFT10	Flake	Quartz	<30mm	29	22	8	Flake scar	Focal	Feather	Secondary	30% riverine cortex
Culcairn Solar AFT10	Flake	Quartz	<20mm	16	10	3	Flake scar	Focal	Feather	Tertiary	Crystal quartz
Culcairn Solar AFT10	Flake	Quartz	<30mm	14	9	2	More than 1	Broad	Feather		
Culcairn Solar AFT10	Flake	Quartz	<10mm	11	9	4	Indeterminate	Broad	Feather		
Culcairn Solar AFT11	Flake	Quartz	<20mm	16	10	4	Flake scar	Focal	Feather	Tertiary	
Culcairn Solar AFT11	Flake	Quartz	<30mm	20	24	8	Flake scar	Broad	Feather	Tertiary	
Culcairn Solar AFT12	Distal Fragment	Quartz	<40mm	18	30	5			Feather		
Culcairn Solar AFT12	Flake	Quartz	<30mm	26	25	7	Indeterminate	Broad	Feather		
Culcairn Solar AFT13	Flake	Quartz	<10mm	16	7	4	Crushed	Focal	Feather		
Culcairn Solar AFT13	Flake	Quartz	<10mm	9	4	1	Crushed	Broad	Feather		
Culcairn Solar AFT14	Flake	Quartz	<20mm	14	18	5	Flake scar	Broad	Feather	Tertiary	
Culcairn Solar AFT14	Flake	Quartz	<20mm	18	14	6	Flake scar	Broad	Feather	Tertiary	
Culcairn Solar 497239	Grindstone	Fine-grained siliceous	>100mm	110	75	30					
Culcairn Solar 497239	Pestle	Sandstone	>100mm	76	53	54					

Site ID	Type	Raw Material	Size class	Length	Width	Thickness	Platform surface	Platform type	Termination	Reduction stage	Comments
Culcairn Solar 497239	Anvil	Sandstone	>100mm	135	130	55					pitting 10 x 10
Culcairn Solar 497239	Grindstone	Volcanic	>100mm	165	120	60					1 ground platform , 65 x 50 , some plough damage
Culcairn Solar 497239	Hammerstone	Volcanic	<80mm	79	75	42					
Culcairn Solar 494492	Flake	Quartz	<20mm	20	12	5	Flake scar	Focal	Feather	Tertiary	
Culcairn Solar 494492	Flaked Piece	Quartz	<30mm	0	0	0					
Culcairn Solar 494492	Flaked Piece	Quartz	<20mm	0	0	0					
Culcairn Solar 494492	Flake	Quartz	<20mm	0	0	0					
Culcairn Solar 494492	Distal Fragment	Silcrete	<20mm	14	20	5			Feather	Tertiary	
Culcairn Solar 494492	Flake	Silcrete	<50mm	40	36	14	Flake scar	Broad	Feather	Tertiary	
Culcairn Solar 494492	Flake	Quartz	<40mm	24	31	12	Flake scar	Broad	Feather		
Culcairn Solar 494492	Pestle	Volcanic	<80mm	75	65	48					river pebble, possible grinding
Culcairn Solar 494492	Flake	Quartz	<20mm	10	12	4	Flake scar	Focal	Feather	Tertiary	
Culcairn Solar 494492	Core	Quartz	<30mm	18	28	20					Single platform 1 scar
Culcairn Solar 494492	Flake	Quartz	<20mm	18	12	4	Flake scar	Broad	Feather	Tertiary	



Site ID	Type	Raw Material	Size class	Length	Width	Thickness	Platform surface	Platform type	Termination	Reduction stage	Comments
Culcairn Solar 494492	Flake	Quartz	<10mm	18	9	1	Flake scar	Focal	Feather	Tertiary	
Culcairn Solar 494492	Broken Flake	Quartz	<20mm	18	10	6	Flake scar	Focal	Feather	Tertiary	
Culcairn Solar 494492	Flaked Piece	Quartz	<20mm	0	0	0					
Culcairn Solar 494492	Flake	Quartz	<20mm	16	8	8	Flake scar	Broad	Feather		
Culcairn Solar 494492	Flake	Quartz	<20mm	19	12	4	Flake scar	Focal	Feather		
Culcairn Solar 494492	Distal Fragment	Quartz	<20mm	18	16	4			Feather	Tertiary	
Culcairn Solar 494492	Distal Fragment	Quartz	<20mm	12	14	3			Feather		
Culcairn Solar 494492	Broken Flake	Quartz	<30mm	24	14	10	Crushed	Focal	Feather	Tertiary	
Culcairn Solar 494492	Proximal Fragment	Quartz	<20mm	17	17	6		Broad		Tertiary	
Culcairn Solar 494492	Distal Fragment	Quartz	<20mm	12	17	5			Feather	Tertiary	
Culcairn Solar 494492	Distal Fragment	Quartz	<20mm	12	12	4			Feather	Tertiary	
Culcairn Solar 494492	Distal Fragment	Quartz	<20mm	9	11	3			Feather	Tertiary	
Culcairn Solar 494492	Flake	Quartz	<20mm	11	10	1	Crushed	Focal	Feather	Tertiary	
Culcairn Solar 494492	Flake	Quartz	<10mm	13	14	3	Crushed	Broad	Hinge		
Culcairn Solar 494492	Distal Fragment	Quartz	<10mm	9	14	2			Feather		distal fragment

Site ID	Type	Raw Material	Size class	Length	Width	Thickness	Platform surface	Platform type	Termination	Reduction stage	Comments
Culcairn Solar 497037	Other		>100mm	101	45	24					Not stone artefacts however RAP recorded as believes possibly cultural. Noted in report as cultural stone site



APPENDIX D SUBSURFACE ARTEFACT DATA

#	Test Pit #	Spit	Type	Raw Material	Colour	Length (mm)	Width (mm)	Thickness (mm)	Weight (g)	Platform surface	Platform Type	Termination	Retouch	Reduction stage	Comments
1	5	2	Flake	Quartz	White	22	21	5	4.17	Flake scar	Focal	Feather		Tertiary	
2	6	2	Distal Fragment	Quartz	White	12	15	4	0.9			Feather		Tertiary	
3	11	1	Flake	Quartz	Crystal	11	9	2	0.56	Flake scar	Focal	Feather		Tertiary	Recovered from top 5cm of deposit
4	15	1	Flake	Quartz	White	16	10	4	0.82	Flake scar	Focal	Feather		Tertiary	
5	35	1	Flake	Quartz	White	18	21	5	3.92	Flake scar	Broad	Feather		Tertiary	
6	36	1	Flake	Quartz	White	15	11	7	1.6	Flake scar	Broad	Feather		Tertiary	
7	49	1	Flake	Quartz	Grey	23	14	8	2.79	Flake scar	Broad	Feather		Tertiary	
8	50	1	Flake	Quartz	White	19	13	5	1.49	Crushed	Indeterminate	Feather		Tertiary	
9	50	1	Flake	Quartz	White	16	16	7	2.6	Flake scar	Focal	Feather		Secondary	
10	52	2	Flake	Quartz	White	13	17	5	1.35	Flake scar	Broad	Feather		Tertiary	
11	56	1	Flake	Quartz	White	14	5	3	0.37	Flake scar	Focal	Feather		Tertiary	Micro blade
12	56	1	Flaked piece	Quartz	White	5	7	1	0.12					Tertiary	
13	57	1	Flake	Quartz	White	7	9	1	0.17	Flake scar	Focal	Feather		Tertiary	
14	58	2	Flake	Quartz	White	10	4	2	0.3	Flake scar	Focal	Feather		Tertiary	
15	58	2	Distal Fragment	Quartz	White	14	10	4	0.81			Feather		Tertiary	
16	58	2	Flaked piece	Quartz	White	15	10	5	1.21					Tertiary	
17	59	2	Flake	Quartz	Grey	13	15	4	1.22	Flake scar	Focal	Feather		Tertiary	



APPENDIX E SOIL PROFILES



Pit no	Grid Reference	Spit number	Depth (cm)	Soil Description	Artefacts
1	499463 6051345	1	0-5	Mid yellow brown fine sandy silty loam with no gravels	
		2	5-15	Mid yellow brown fine sandy silt loam with no gravels that becomes a mottled and compacted yellow brown fine sandy loam.	
		3	15-25	Compacted mottled yellow brown fine sand with abrupt transition to a medium orange brown fine sandy loam with some pale mottling.	
		4	25-35	Medium orange brown mottle fine sandy loam.	
		5	35-45	Increasing compact medium orange brown fine sandy silty clayey loam with some pale mottling.	
		6	45-55	Medium orange brown compacted fine sandy clayey loam	
		7	55-60	Very compacted medium orange brown sandy clayey loam with mottling.	
2	499446 6051352	1	0-10	Fine greys brown sandy silt loam with a few roots, soil very compact due to dryness	
		2	10-20	As above with compaction increasing with depth	
		3	20-30	As above with some mottled fine sandy silt loam with a low clay content.	
		4	30-40	Compacted in northern section becoming a mottled orange, brown, grey silty clay. Clay content increasing with depth.	
		5	40-50	Compacted mottled orange, brown, grey silty clay. Clay content increasing with depth.	
		6	50-60	Compacted mottled orange, brown, grey silty clay. Clay content increasing with depth. Unable to excavate deeper by hand.	
					
3	499426 6051355	1	0-10	Fine grey brown sandy silt loam with a few roots, soil very compact due to dryness	
		2	10-20	As above that becomes a light reddish brown fine sandy silty loam with roots.	
		3	20-30	As above	
		4	30-40	becoming a mottled orange, brown, grey silty clay. Clay content increasing with depth.	
		5	40-50	Compacted mottled orange, brown, grey clayey loam. Unable to excavate deep by hand due to compaction and high clay content.	
4	499406 6051360	1	0-10	Fine grey brown sandy silt loam with a few roots, soil very compact due to dryness	





		2	10-20	As above that becomes a compacted yellow brown fine sandy silty loam with mottling towards the base	
		3	20-30	Compacted light yellow brown fine sandy silty clay soil with brown and orange mottling.	
		4	30-40	Orange brown compacted silty clayey fine silty clay.	
		5	40-50	As above compacted mottled orange clayey loam. Unable to excavate deep by hand due to compaction and high clay content.	

			
View Pit 3 Spit 5		View Pit 43 Spit 5	

5	499387 6051366	1	0-10	Light grey brown very fine sandy silty loam	
		2	10-20	As above becomes a compacted orange brown mottled silty clayey loam.	1
		3	20-30	Compacted mottled light yellow brown leached silty clayey loam that sits on a compacted orange brown clay. Bioturbation noted.	
6	499485 6051255	1	0-10	Light grey brown very fine sandy silty loam with roots	
		2	10-20	As above with a light yellowish brown very fine sandy silty loam with roots.	1
		3	20-30	Light yellow brown very fine silty sandy loam with no gravels	
		4	30-40	As above	
		5	40-50	As above then becomes a dark reddish brown compacted clay silty. Clay content increasing with depth.	
		6	50-57	Compaction increasing with depth unable to excavate deeper by hand. Reddish brown clayed loam.	

			
Pit 5 Spit 3		Pit 6 Spit 6	

7	499467 6051246	1	0-10	Light grey brown very fine sandy silty loam with roots	
		2	10-20	As above at 12 cm becomes a light yellowish reddish brown very fine sandy silty loam with roots and charcoal inclusions	
		3	20-30	As above	
		4	30-40	At 45 cm becomes a reddish brown silty clayey loam with compaction and clay content increasing with depth. No gravel inclusions	
		5	40-50	As above	
		6	50-57	As above with clay content and compaction increasing until unable to excavate deeper by hand	
8	499448 6051237	1	0-10	Greyish yellowish brown very fine sandy silty loam with roots	
		2	10-20	As above with compaction increasing with some mottling.	
		3	20-30	Pale compacted yellowish brown very fine sandy silty loam. Dark brown and orange brown mottling at base.	
		4	30-40	Dark orange brown compacted silty clayey very fine silty clayey loam.	
<div><div><p>View pf Pit 7 Spit 6</p></div><div><p>View Pit 8 Spit 4</p></div></div>					
9	499431 6051229	1	0-10	Greyish brown very fine sandy silty loam with root and some pale mottling at base	
		2	10-20	Mottled grey brown to pale yellowish brown compacted sandy silty loam	
		3	20-30	Compacted leached fine sandy clayey loam	
		4	30-40	As above with orange brown mottling at base	
		5	40-50	Compacted orange brown silty clayey loam which is very compacted.	
10	499414 6051220	1	0-10	Very fine greyish brown sandy silty loam with root, no gravels some charcoal inclusions	
		2	10-20	At 15 cm becomes a light orange reddish brown fine sandy silty loam with roots	
		3	20-30	Light orange reddish brown fine sandy silty loam	
		4	30-40	As above	
		5	40-50	At 45 cm become a very compacted reddish brown clayey loam. Compaction and clay content increasing with depth.	
		6	50-55	As above with clay content increasing with depth until unable to excavate deeper by hand.	

											
View 9 Spit 5						View Pit 10 Spit 6					
11	498974 6051592	1	0-10	Very fine greyish brown sandy silty loam with root, no gravels		1					
		2	10-20	Becomes a light yellowish brown fine sandy silty loam with roots. Compaction increasing with depth and clay content coming through at base of spit							
		3	20-25	Becomes a reddish brown silty medium clay							
12	498989 6051603	1	0-10	Very fine greyish brown sandy silty loam with root, no gravels							
		2	10-20	Becomes a light yellowish brown fine sandy silty loam with roots. Orange brown mottling at base. Compaction increasing with depth and clay content coming through at base of spit							
		3	20-30	Mottled compacted orange brown medium clay							
											
View Pit 11 Spit 3						View Pit 12 Spit 3					
13	499007 6051614	1	0-10	Very fine greyish brown sandy silty loam with root, no gravels. Becomes a compacted yellowish brown leached sandy silty loam.							
		2	10-20	Compacted yellow brown leached sandy silty loam which becomes a mottled compacted orange brown medium clay.							
14	499027 6051627	1	0-10	Very fine greyish brown sandy silty loam with root, no gravels. Becomes a compacted yellowish brown leached compacted sandy silty loam at 6 cm.							
		2	10-20	Vey compacted yellow brown leached sandy silty loam which becomes a mottled compacted orange brown/ reddish brown medium clay.							



View Pit 13 Spit 2



View Pit 14 Spit 2

15	499042 6051638	1	0-10	Very fine greyish brown sandy silty loam with root, no gravels. Occasional charcoal fragment.	1
		2	10-20	Becomes a light yellowish brown fine sandy silty loam with roots. Orange brown mottling at base. Compaction increasing with depth and clay content coming through at base of spit	
		3	20-30	Mottled compacted orange brown medium clay with some burnt roots present.	
16	499059 6051648	1	0-10	Very fine greyish brown sandy silty loam with root, no gravels	
		2	10-20	At 12 cm becomes a light yellowish brown sandy silty loam with no gravels and few roots present	
		3	20-30	At 27 cm becomes a very compacted reddish brown clayey silt with clay content and compaction increasing with depth	
		4	30-35	Very compacted reddish brown medium clay.	





View Pit 15 Spit 3





View Pit 16 Spit 4

17	499046 6051447	1	0-10	Very fine greyish brown sandy silty loam with root, no gravels	
		2	10-20	As above becoming a compacted mottled pale yellow brown fine sandy silty clayey loam	
		3	20-30	As above becoming more compacted and becomes an orange brown mottled silty clay at base	
		4	30-40	Very compacted orange brown medium clay.	
18	499028 6051455	1	0-10	Very fine greyish brown sandy silty loam with root, no gravels	



		2	10-20	As above at 14 cm becomes a compacted pale yellow brown fine sandy silty clayey loam with no inclusions	
		3	20-30	As above becoming more compacted	
		4	30-40	At 32 cm becomes a very compacted reddish brown medium clay.	

			
View Pit 17 Spit 4		View Pit 18 Spit 4	

19	499008 6051460	1	0-10	Very fine greyish brown sandy silty loam with root, no gravels	
		2	10-20	As above becomes a compacted pale yellow brown fine sandy silty clayey loam with no inclusions. Compaction increasing with depth.	
		3	20-30	As above becoming more compacted at 26 cm becomes a very compacted reddish brown medium clay	
20	498989 6051466	1	0-10	Very fine greyish brown sandy silty loam with root, no gravels	
		2	10-20	As above becomes a compacted pale yellow brown fine sandy silty clayey loam with no inclusions. Compaction increasing with depth.	
		3	20-30	As above becoming more compacted and becomes a very compacted reddish brown medium clay	

			
View Pit 19 Spit 3		View Pit 20 Spit 3	

21	498969 6051472	1	0-10	Very fine greyish brown sandy silty loam with root, no gravels	
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		2	10-20	As above, at 15 cm becomes a compacted pale yellow brown fine sandy silty clayey loam with no inclusions. Compaction increasing with depth.	
		3	20-30	As above becoming more compacted and becomes a very compacted mottled reddish brown silty clay at base	
		4	30-35	At 33 cm becomes a reddish brown medium clay	
22	498263 6051698	1	0-10	Very fine greyish brown sandy silty loam with root, no gravels	
		2	10-20	As above becomes a compacted pale yellow brown fine sandy silty clayey loam with no inclusions. Compaction increasing with depth. Some mottling present and fragments of charcoal.	
		3	20-30	As above becoming more compacted and becomes a very compacted yellowish reddish brown medium clay	
<div><div><p>View Pit 21 Spil 4</p></div><div><p>View Pit 22 Spil 3</p></div></div>					
23	498264 6051678	1	0-10	Very fine greyish brown sandy silty loam with root, no gravels	
		2	10-20	As above at 12 cm becomes a compacted pale yellow brown fine sandy silty clayey loam with no inclusions. Compaction increasing with depth. Some mottling present.	
		3	20-30	As above becoming more compacted	
		4	30-40	Becomes a very compacted yellowish reddish brown medium clay	
24	498264 6051659	1	0-10	Very fine greyish brown sandy silty loam with root, no gravels	
		2	10-20	As above at 12 cm becomes a compacted pale yellow brown fine sandy silty clayey loam with no inclusions. Compaction increasing with depth. Some mottling present.	
		3	20-30	As above becoming more compacted	
		4	30-35	Becomes a very compacted reddish brown medium clay	



View Pit 23 Spit 4



View Pit 24 Spit 4

25	498266 6051638	1	0-10	Compacted very fine greyish brown sandy silty loam with root, no gravels	
		2	10-20	As above becomes a compacted pale yellow brown fine sandy silty clayey loam with no inclusions. Compaction increasing with depth. Some mottling present.	
		3	20-30	As above becoming more compacted	
		4	30-35	Becomes a very compacted reddish brown medium clay	
26	498269 6051618	1	0-10	Compacted very fine greyish brown sandy silty loam with root, no gravels	
		2	10-20	As above becomes a compacted pale yellow brown fine sandy silty clayey loam with no inclusions. Compaction increasing with depth.	
		3	20-30	As above becoming more compacted. Charcoal appearing in the North and North east corner from burnt roots. Orange brown clayey silt in the base of pit.	
		4	30-40	Orange brown clayey silt which becomes a very compacted reddish brown medium clay	









View Pit 25 Spit 3



View Pit 26 Spit 4

27	498268 6051598	1	0-10	Compacted very fine greyish brown sandy silty loam with root, no gravels	
		2	10-20	Becomes a compacted pale yellow brown fine sandy silty clayey loam with no inclusions. Compaction increasing with depth then at 18 cm becomes a reddish brown medium clay.	
28	498104 6051563	1	0-10	Compacted very fine greyish brown sandy silty loam with root, no gravels	

		2	10-20	As above becomes a compacted pale yellow brown fine sandy silty clayey loam with no inclusions. Compaction increasing with depth.	
		3	20-30	As above at 25 cm becoming amore compacted reddish brown medium clay	
<div><div><p>View Pit 27 Spit 2</p></div><div><p>View pit 28 Spit 3</p></div></div>					
29	498091 6051579	1	0-10	Compacted very fine greyish brown sandy silty loam with root, no gravels	
		2	10-20	As above becomes a compacted pale yellow brown fine sandy silty clayey loam with no inclusions. Compaction increasing with depth. Some mottling at base	
		3	20-30	As above becoming amore compacted yellowish reddish brown medium clay	
30	498079 6051595	1	0-10	Compacted very fine greyish brown sandy silty loam with root, no gravels	
		2	10-20	As above becomes a compacted pale yellow brown fine sandy silty clayey loam with no inclusions. Compaction increasing with depth.	
		3	20-30	As above becoming amore compacted orange brown medium clay	
<div><div><p>View Pit 29 Spit 3</p></div><div><p>View Pit30 Spit 3 (incorrect pit number)</p></div></div>					
31	498067 6051609	1	0-10	Compacted very fine greyish brown sandy silty loam with root, no gravel inclusions	
		2	10-20	As above at 15 cm becomes a yellowish brown sandy silty loam with compaction increasing with depth	
		3	20-30	As above becomes a compacted pale yellow brown fine sandy silty clayey loam with no	

				inclusions. Compaction increasing with depth. Some mottling at base	
		4	30-40	As above	
		5	40-50	As above becoming amore compacted reddish brown medium clay.	
32	498054 6051625	1	0-10	Compacted very fine greyish brown sandy silty loam with root, no gravel inclusions	
		2	10-20	As above at 12 cm becomes a yellowish brown sandy silty loam with compaction increasing with depth	
		3	20-30	As above becomes a compacted pale yellow brown fine sandy silty clayey loam with no inclusions. Compaction increasing with depth. Some mottling at base	
		4	30-33	As above becoming compacted reddish brown medium clay.	
<div><div><p>View Pit 31 Spit 5</p></div><div><p>View Pit 32 Spit 4</p></div></div>					
33	498040 6051641	1	0-10	Compacted very fine greyish brown sandy silty loam with root, no gravel inclusions Mottling present at base	
		2	10-20	As above becomes a pale yellowish brown sandy silty loam with compaction increasing with depth. Bioturbation evident.	
		3	20-30	A compacted pale yellow brown fine sandy silty clayey loam with no inclusions. Bioturbation evident. Compaction increasing with depth. becoming a reddish brown medium clay.	
34	497827 6051572	1	0-10	Compacted very fine greyish brown sandy silty loam with root, no gravel inclusions	
		2	10-20	As above becomes a pale yellowish brown sandy silty loam with compaction increasing with depth.	
		3	20-30	A compacted pale yellow brown fine sandy silty clayey loam with no inclusions. Compaction increasing with depth and. becoming an orange brown medium clay.	



View of Pit 33 Spit 3



View of Pit 34 Spit 3

35	497810 6051563	1	0-10	Compacted very fine greyish brown sandy silty loam with root, no gravel inclusions Some charcoal fragments noted	1
		2	10-20	As above becomes a pale yellowish brown sandy silty loam with compaction increasing with depth.	
		3	20-30	A compacted pale yellow brown fine sandy silty clayey loam with no inclusions that at 22 cm becomes a reddish brown medium clay.	
36	497792 6051553	1	0-10	Compacted very fine greyish brown sandy silty loam with root	1
		2	10-20	As above becomes a pale yellowish brown sandy silty loam with compaction increasing with depth.	
		3	20-30	A compacted pale yellow brown fine sandy silty clayey loam that becomes an orange brown medium clay.	











View Pit 35 Spit 3





View Pit 36 Spit 6

37	497773 6051545	1	0-10	Compacted very fine greyish brown sandy silty loam with root	
		2	10-20	As above becomes a pale yellowish brown sandy silty loam with compaction increasing with depth. At 15 cm becomes a reddish brown medium clay.	
38	497619 6051449	1	0-10	Compacted very fine greyish brown sandy silty loam with root, no gravel inclusions	
		2	10-20	As above at 14 cm becomes a pale yellowish brown sandy silty loam with compaction increasing with depth.	

		3	20-25	A compacted pale yellow brown fine sandy silty clayey loam with no inclusions that at 22 cm becomes a reddish brown medium clay.	
					
View Pit 37 Spit 2				View Pit 38 Spit 3	
39	497632 6051464	1	0-10	Compacted very fine greyish brown sandy silty loam with root, no gravel inclusions	
		2	10-20	As above becomes a pale yellowish brown sandy silty loam with compaction increasing with depth.	
		3	20-30	A compacted pale yellow brown fine sandy silty clayey loam with no inclusions that becomes an orange brown medium clay.	
40	497645 6051479	1	0-10	Compacted very fine greyish brown sandy silty loam with root, no gravel inclusions	
		2	10-20	As above becomes a pale yellowish brown sandy silty loam with compaction increasing with depth.	
		3	20-30	As above	
		4	30-40	A compacted pale yellow brown fine sandy silty clayey loam that becomes an orange brown medium clay. Bioturbation noted with insect activity.	
					
View Pit 39 Spit 3				View Pit 40 Spit 4	
41	497659 6051493	1	0-10	Compacted very fine greyish brown sandy silty loam with root, no gravel inclusions	
		2	10-20	As above at 13 cm becomes a pale yellowish brown sandy silty loam with compaction increasing with depth.	

		3	20-30	A compacted pale yellow brown fine sandy silty clayey loam with no inclusions that at 22 cm becomes a reddish brown medium clay.	
42	497673 6051508	1	0-10	Compacted very fine greyish brown sandy silty loam with root, no gravel inclusions	
		2	10-20	As above becomes a pale yellowish brown sandy silty loam with compaction increasing with depth.	
		3	20-30	As above with some mottling appearing at base	
		4	30-33	Becomes an orange brown medium clay.	
					
					
				View Pit 41 Spit 3	
				View Pit 42 Spit 4	
43	497686 6051523	1	0-10	Compacted very fine greyish brown sandy silty loam with root, no gravel inclusions	
		2	10-20	As above becomes a pale yellowish brown sandy silty loam with compaction increasing with depth. At 17 cm becomes a reddish brown medium clay.	
44	497740 6051498	1	0-10	Compacted very fine greyish brown sandy silty loam with root, no gravel inclusions	
		2	10-20	As above becomes with compaction increasing with depth. Becomes an orange brown medium clay.	
					
					
				View Pit 43 Spit 2	
				View Pit 44 Spit 2	
45	497738 6051480	1	0-10	Compacted very fine greyish brown sandy silty loam with root, some small gravel inclusions	
		2	10-20	As above at 15 cm becomes a pale yellowish brown sandy silty loam with compaction	

				increasing with depth. Roots in NW corner and charcoal present.	
		3	20-30	A compacted pale yellow brown fine sandy silty clayey loam that at 27 cm becomes a reddish brown medium clay.	
46	497738 6051460	1	0-10	Compacted very fine greyish brown sandy silty loam with root, some small gravel inclusions	
		2	10-20	As above becomes a pale yellowish brown sandy silty loam with compaction increasing with depth.	
		3	20-30	A compacted pale yellow brown fine sandy silty clayey loam that becomes a reddish brown medium clay. Charcoal noted in the East side of pit.	
					
View Pit 45 Spill 3				View Pit 46 Spill 3	
47	497736 6051440	1	0-10	Compacted very fine greyish brown sandy silty loam with root, some small gravel inclusions Some mottling occurring.	
		2	10-20	As above becomes a pale yellowish brown sandy silty loam with compaction increasing with depth. Orange brown mottling increasing with depth.	
		3	20-30	Becomes a mottled reddish brown medium clay.	
48	497733 6051420	1	0-10	Compacted very fine greyish brown sandy silty loam with root, some small gravel inclusions Some charcoal present.	
		2	10-20	As above at 13 cm becomes a pale yellowish brown sandy silty loam with compaction increasing with depth.	
		3	20-30	At 26 cm becomes a reddish brown medium clay.	



View Pit 47 Spit 3



View Pit 48 Spit 3

49	494884 6047566	1	0-10	Compacted very fine greyish brown silty loam with root, no gravel inclusions At 8 cm becomes a mottle silty clay.	1
		2	10-17	Mottled silty clay that becomes a mottled reddish brown medium clay.	
50	494879 6047546	1	0-10	Compacted very fine greyish brown s silty loam with root, that a 7 cm becomes a becomes mottle silty clay.	1
		2	10-17	Mottled silty clay that becomes a mottled reddish brown medium clay.	



View Pit 49 Spit 2



View Pit 50 Spit 2

51	494878 6047529	1	0-10	Compacted very fine greyish brown silty loam with roots. Very compacted with clay content developing	
		2	10-20	As above becomes a mottled grey and brown clay	
52	494876 6047508	1	0-10	Compacted very fine greyish brown silty loam with roots. Very compacted with clay content developing and becomes a mottled grey brown compacted silty clay	
		2	10-20	As above becomes a mottled grey and brown clay at base	1



View Pit 51 Spit 2



View Pit 52 Spit 2

53	494873 6047489	1	0-10	Compacted very fine greyish brown silty loam with roots.	
		2	10-17	At 7 cm becomes a very compacted mottled silty clay that becomes a reddish brown medium clay.	
54	494869 6047470	1	0-10	Compacted very fine greyish brown silty loam with root, Brown flecking and mottling at base	
		2	10-20	A very compacted mottled silty clay that becomes a light grey to brown medium clay.	







View Pit 53 Spit 2



View Pit 54 Spit 2

55	494922 6047251	1	0-10	Compacted very fine greyish brown silty loam with roots, Brown flecking and mottling at base	
		2	10-20	A very compacted mottled silty clay that becomes a reddish brown medium clay.	
56	494935 6047234	1	0-10	Compacted very fine greyish brown silty loam with roots. At 8 cm becomes a reddish brown mottling silty clay.	2
		2	10-20	A very compacted mottled reddish brown silty clay that becomes a reddish brown medium clay.	

							
View Pit 55 Spit 2				View Pit 56 Spit 2			
57	494950 6047216	1	0-10	Compacted very fine greyish brown silty loam with roots. At 8 cm becomes a reddish brown mottling silty clay.	1		
		2	10-15	A very compacted mottled reddish brown silty clay that becomes a reddish brown medium clay.			
58	494961 6047200	1	0-10	Compacted very fine greyish brown silty loam with roots.			
		2	10-20	A very compacted mottled orange brown red medium clay.	3		
							
View Pit 57 Spit 2				View Pit 55 Spit 2			
59	494974 6047183	1	0-10	Compacted very fine greyish brown silty loam with roots. Pale mottling at base			
		2	10-20	A very compacted pale grey silt that becomes a mottled orange brown medium clay at base .	1		
60	494985 6047165	1	0-10	Compacted very fine greyish brown silty loam with roots.			
		2	10-20	A very compacted pale grey silt that becomes a mottled orange brown medium clay at base .			



View Pit 59 Spit 2



View Pit 60 Spit 2

61	494997 6047147	1	0-10	Compacted very fine greyish brown silty loam with roots. That becomes a mottled orange brown clay	
62	495006 6047129	1	0-10	Compacted very fine greyish brown silty loam with roots.	
		2	10-20	A very compacted mottled brown red silty clay that becomes a mottled orange brown medium clay at base .	







View Pit 61 Spit 1



View Pit 62 Spit 2

63	495085 6046732	1	0-10	Compacted very fine greyish brown silty loam with roots. Glass noted in spit.	
		2	10-20	A very compacted mottled brown red silty clay that becomes a mottled orange brown medium clay at base .	
64	495091 6046713	1	0-10	Compacted very fine greyish brown silty loam with roots. At 7 cm becomes a gravelly mottled compacted silty clay.	
		2	10-17	A very compacted gravelly mottled orange brown medium clay at base .	

							
View Pit 63 Spit 2				View Pit 64 Spit 2			
65	495098 6046693	1	0-10	Compacted very fine greyish brown silty loam with roots. Becomes a gravelly mottled compacted mottled pale grey to orange brown gravelly silt.			
		2	10-20	A very compacted gravelly mottled orange brown medium clay at base .			
66	495104 6046676	1	0-10	Grey brown silty loam with some charcoal and clay pellets in the south west corner. Tree root present			
		2	10-20	As above that becomes a brown heavy clay loam with pale grey mottles silty deposit at base.			
		3	20-30	Pale grey compacted mottled silt that becomes a grey mottled yellowish brown clay.			
							
View Pit 65 Spit 2				View Pit 66 Spit 3			
67	495112 6046656	1	0-10	Compacted very fine greyish brown silty loam with roots.			
		2	10-17	A very compacted gravelly mottled orange brown medium clay at base .			
68	495117 6046638	1	0-10	Compacted grey brown silty loam becomes a mottled silty clay which becomes a hard cracking grey clay.			

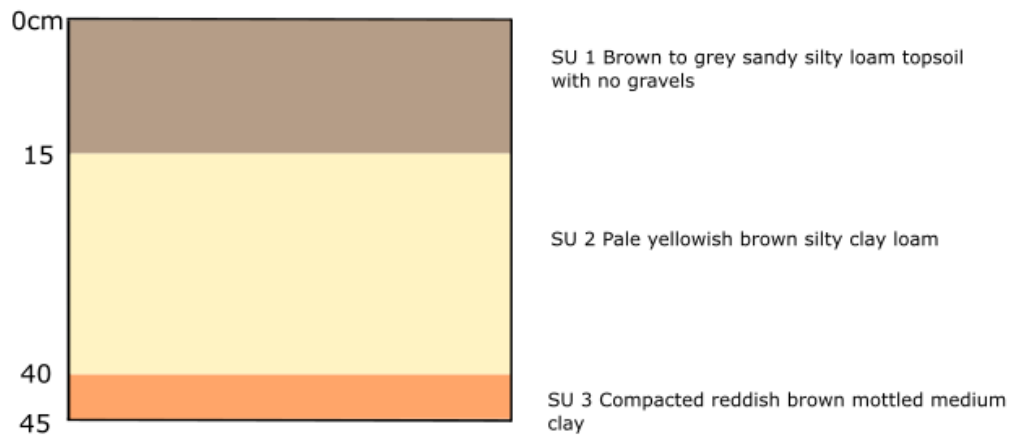


View Pit 67 Spit 2

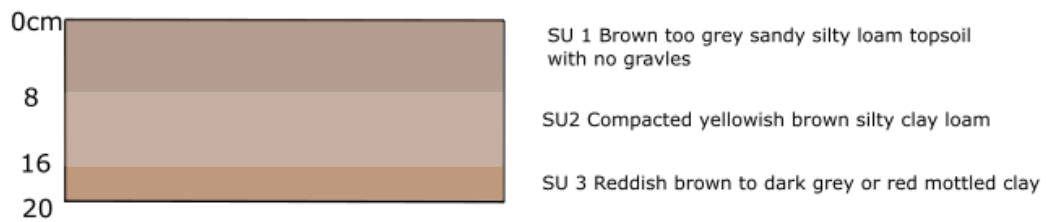


View Pit 68 Spit 1

Paleochannel PAD Pit 31



Back Creek PAD Pit 65



APPENDIX F SITE CARDS

Site Cards withheld due to cultural sensitivities