

## Appendix C – Aboriginal Heritage Assessment

# Springdale Solar Farm

Aboriginal Archaeological and Cultural Heritage Impact Assessment

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## Aboriginal Archaeological and Cultural Heritage Impact Assessment

**Client: Renew Estate Pty Ltd**

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## Executive Summary

AECOM Australia Pty Ltd (AECOM) was commissioned by Renew Estate Pty Ltd (Renew Estate) to complete an Aboriginal Archaeological and Cultural Heritage Impact Assessment (AACHIA) for the proposed Springdale Solar Farm (SSF) (the Project), located near Sutton, New South Wales (Figure 1). This assessment forms part of an Environmental Impact Statement (EIS) being prepared by AECOM to support an application for State Significant Development (SSD) Approval under Division 4.1 of Part 4 of the *Environmental Planning and Assessment Act 1979* (EP&A Act) for the Project.

This AACHIA documents the results of AECOM's assessment and has been compiled with reference to the NSW Office of Environment and Heritage's *Aboriginal Cultural Heritage Consultation Requirements for Proponents* (DECCW 2010a), *Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales* (DECCW 2010b) and *Guide to Investigating, Assessing and Reporting on Aboriginal Cultural Heritage in NSW* (OEH 2011).

The Secretary of the Director General of the NSW Department of Planning and Environment (DP&E) issued the Secretary's Environmental Assessment Requirements (SEARs) for the Project on 26 September 2017 (Appendix A). For heritage, the SEARs require the proponent to undertake:

- an assessment of the likely Aboriginal and historic heritage (cultural and archaeological) impacts of the development, including adequate consultation with the local Aboriginal community.

This AACHIA, which documents the results of AECOM's Aboriginal heritage assessment, fulfils the Aboriginal heritage component of this requirement.

The proposal site for this assessment, shown on Figure 2, comprises an irregularly shaped c.370 ha parcel of land located near the rural village of Sutton in NSW, approximately 3.5 km northeast of the NSW / ACT border. Registered as Lot 111 on DP754908, Lot 182 on DP754908, Lot 10 on DP754908, Lot 15 on DP754908, Lot 190 on DP754908, Lot 209 on DP754908 Lot 189 on DP754908, Lot 161 on DP754908, Lot 54 on DP754908, Lot 202 on DP754908, Lot 97 on DP754908 and Lot 1 on DP198933, land within the proposal site is currently, and was historically, used for cattle grazing and cropping. The proposal site falls wholly within the Yass Valley Local Government Area (LGA) and is situated in the Parish of Talagandra in the County of Murray.

The proposed Project would consist of up to 100 megawatts of alternating current (MWac) solar generation equipment and associated infrastructure. The SSF would be in operation during daylight hours every day of the year for 30 years duration.

A search of the AHIMS database was undertaken on 23 October 2017 for a 10 x 10 km area centred on the proposal site. No AHIMS sites were identified within the proposal site. A field team of two AECOM archaeologists (Geordie Oakes and Andrew McLaren) and five RAPs representatives completed the archaeological survey of the proposal site over three days between 25 to 29 November 2017. A total of 15 Aboriginal archaeological sites, comprising 12 open artefact sites and three potential Aboriginal scarred trees were recorded during the archaeological survey. All but one site was assessed as of low scientific significance with open artefact scatter site SSF-AS6-17 assigned moderate significance due to its research potential.

Consideration of the location of sites within the proposal site in relation to the location of proposed project related impacts, as well as exclusion areas for environmental constraints, indicates that three open artefact sites comprising two artefact scatters and one isolated artefact site will be wholly impacted by the Project (SSF-IA1-17, SSF-AS2-17, and SSF-AS4-17).

A management strategy to address the impacts of the Project on the known Aboriginal archaeological resource of the proposal site is provided in Section 11.0. It is recommended that this strategy be detailed in an Aboriginal Cultural Heritage Management Plan (ACHMP) for the Project, prepared in consultation with RAPs, and to the satisfaction of OEH and DP&I. Subject to Development Consent under Part 4, Division 4.1 of EP&A Act, this ACHMP will guide the management of the known and potential Aboriginal archaeological resource of the proposal site, as well identified cultural values.

The ACHMP should contain procedures for consultation and involvement of RAPs in the management of Aboriginal cultural heritage values within the proposal site. In addition, the ACHMP will include details of proposed mitigation and management strategies of all Aboriginal sites, procedures for the

identification and management of previously unrecorded sites, details of an appropriate long term management for any Aboriginal objects salvaged, details of an Aboriginal cultural heritage awareness program for all contractors and personnel associated with construction activities and compliance procedures. The key elements of the ACHMP would include the following, which are detailed in Section 11.0 of this report:

- An archaeological salvage program;
- Conservation of non-impacted sites;
- Aboriginal cultural heritage awareness training;
- Procedure for managing previously unrecorded Aboriginal archaeological evidence;
- Management of potential human remains;
- Completion of AHIMS site cards; and
- Management of an Aboriginal site database.

## 1.0 Introduction & Background

### 1.1 Introduction

AECOM Australia Pty Ltd (AECOM) was commissioned by Renew Estate Pty Ltd (Renew Estate) to complete an Aboriginal Archaeological and Cultural Heritage Impact Assessment (AACHIA) for the proposed Springdale Solar Farm (SSF) (the Project), located near Sutton, New South Wales (Figure 1). This assessment forms part of an Environmental Impact Statement (EIS) being prepared by AECOM to support an application for State Significant Development (SSD) Approval under Division 4.1 of Part 4 of the *Environmental Planning and Assessment Act 1979* (EP&A Act) for the Project.

This AACHIA documents the results of AECOM's assessment and has been compiled with reference to the NSW Office of Environment and Heritage's *Aboriginal Cultural Heritage Consultation Requirements for Proponents* (DECCW 2010a), *Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales* (DECCW 2010b) and *Guide to Investigating, Assessing and Reporting on Aboriginal Cultural Heritage in NSW* (OEH 2011).

### 1.2 Proposal Site

The proposal site for this assessment, shown on Figure 2, comprises an irregularly shaped c.370 ha parcel of land located near the rural village of Sutton in NSW, approximately 3.5 km northeast of the NSW / ACT border. Registered as Lot 111 on DP754908, Lot 182 on DP754908, Lot 10 on DP754908, Lot 15 on DP754908, Lot 190 on DP754908, Lot 209 on DP754908, Lot 189 on DP754908, Lot 161 on DP754908, Lot 54 on DP754908, Lot 202 on DP754908, Lot 97 on DP754908 and Lot 1 on DP198933, land within the proposal site is currently, and was historically, used for cattle grazing and cropping. The proposal site falls wholly within the Yass Valley Local Government Area (LGA) and is situated in the Parish of Talagandra in the County of Murray.

### 1.3 The Project

The proposed Project would consist of up to 100 megawatts of alternating current (MWac) solar generation equipment and associated infrastructure. The SSF would be in operation during daylight hours every day of the year for 30 years duration.

The proposed project would consist of the following components:

- Photovoltaic solar modules fixed on a single-axis tracking framing system mounted on steel piles with underground DC and AC cabling for electrical reticulation (referred to as the 'proposal site' in this report);
- Approximately 24 containerised power conversion stations, containing the electrical switchgear, inverters and MW transformers;
- Electrical switchyard and substation that will be connected to the existing 132 kilovolt (kV) TransGrid transmission line that traverses the site;
- Control building including office, SCADA systems, meteorological stations and operation and maintenance (O&M) facilities; and
- Upgrading of site access roads and establishment of internal all weather access tracks together with security perimeter fencing.

The single-axis tracking system will orient the solar modules to follow the sun from east to west each day. The tracking structures will be mounted on piles, which will be screwed or pile driven depending on final geotechnical analysis. This eliminates the need for concrete and foundations which significantly reduces the impact of construction.

This construction methodology keeps ground disturbance to a minimum and allows the final site design to follow the existing lie of the land. The intention of the Project is to maintain the existing vegetation on site and future vegetation management, in collaboration with the final bushfire

management and environmental management plans. Vegetation will be maintained by grazing sheep as much as possible.

The onsite switchyard and substation will lie adjacent to the existing 132kV TransGrid Easement. Final design will be carried out in collaboration with TransGrid and the Australian Energy Market Operator (AEMO). Civil and earthworks will be carried out to meet the transmission substation design guidelines.

The operational lifetime of the solar farm is 30 years, at which time the site will either be decommissioned or continue to operate subject to further approval and commercial agreements. Decommissioning will return the site to the predevelopment condition.

Based on the initial design and the current solar engineering, procurement and construction market the estimated gross capital expenditure cost of the project will be approximately \$150,000,000.

## 1.4 Secretary's Environmental Assessment Requirements (SEARs)

The Secretary of the Director General of the NSW Department of Planning and Environment (DP&E) issued the Secretary's Environmental Assessment Requirements (SEARs) for the Project on 26 September 2017 (Appendix A). For heritage, the SEARs require the proponent to undertake:

- an assessment of the likely Aboriginal and historic heritage (cultural and archaeological) impacts of the development, including adequate consultation with the local Aboriginal community.

This AACHIA, which documents the results of AECOM's Aboriginal heritage assessment, fulfils the Aboriginal heritage component of this requirement.

## 1.5 Assessment Objectives

The overarching objectives of this AACHIA are as follows:

- to identify the Aboriginal cultural heritage values of the proposal site by way of background research, archaeological survey and consultation with Registered Aboriginal Parties (RAPs);
- to assess the potential impact of the Project on the identified Aboriginal cultural heritage values of the proposal site;
- to provide an appropriate management strategy for avoiding or minimising potential harm to the identified Aboriginal cultural heritage values of the proposal site; and
- to compile an AACHIA report that will assist DP&E in their assessment of the current application.

## 1.6 Scope of Current Assessment

This assessment has been undertaken in accordance with OEH's *Guide to Investigating, Assessing and Reporting on Aboriginal Cultural Heritage in NSW* (OEH 2011) and *Aboriginal Cultural Heritage Consultation Requirements for Proponents* (DECCW 2010a), and with reference to the *Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales* (DECCW 2010b). As such, its key requirements have been:

- to conduct a search of OEH's Aboriginal Heritage Information Management System (AHIMS);
- to review the landscape context of the proposal site, with specific consideration to its implications for past Aboriginal land use;
- to review relevant archaeological and ethnohistoric information for the proposal site and environs;
- to prepare a predictive model for the Aboriginal archaeological record of the proposal site;
- to undertake an archaeological field investigation;
- to identify, notify and register Aboriginal people who hold cultural knowledge relevant to determining the cultural significance of Aboriginal objects and/or places in the proposal site;
- to provide RAPs with information about the scope of the proposed works and Aboriginal heritage assessment process;



- to facilitate a process whereby RAPs can:
  - contribute culturally appropriate information to the proposed assessment methodology;
  - provide information that will enable the cultural significance of Aboriginal objects and/or places within the proposal site to be determined; and
  - have input into the development of cultural heritage management options.
- to prepare and finalise an AACHIA with input from RAPs.

## 1.7 Project Team

Geordie Oakes (Senior Archaeologist, AECOM) managed all aspects of the Aboriginal heritage assessment detailed herein and was the primary author of this report. Dr Andrew McLaren (Senior Archaeologist, AECOM) assisted Geordie with reporting and fieldwork.

Geordie holds a Bachelor of Arts (Honours) degree in historic and prehistoric Archaeology from Sydney University and a Graduate Certificate in Paleoanthropology from the University of New England. Geordie has over ten years of Australian Aboriginal cultural heritage management experience.

Andrew holds a Bachelor of Arts (Honours) degree from the University of Queensland, a Master of Cultural Heritage from Deakin University, and a PhD from the University of Cambridge in England and has over eight years of Australian Aboriginal cultural heritage management experience.

The archaeological survey was undertaken by a combined field team of two AECOM archaeologists (Oakes and McLaren) and RAP field representatives.

## 1.8 Report Structure

This report contains eleven sections. This section - **Section 1.0** - has provided background information on the Project and assessment undertaken. The remainder of the report is structured as follows:

- **Section 2.0** outlines the statutory framework within which this assessment has been undertaken;
- **Section 3.0** details the Aboriginal community consultation program undertaken for this assessment;
- **Section 4.0** describes the existing environment of the proposal site and its associated archaeological implications;
- **Section 5.0** summarises relevant ethnohistoric information for the proposal site;
- **Section 6.0** describes the archaeological context of the proposal site on a regional and local scale. Predictions regarding the nature of the proposal site's Aboriginal archaeological record are also provided;
- **Section 7.0** describes the archaeological survey methodology;
- **Section 8.0** presents the survey results;
- **Section 9.0** assess the archaeological (scientific) and cultural significance of Aboriginal sites within the proposal site;
- **Section 10.0** provides an assessment of the potential impacts of the Project on identified Aboriginal heritage values;
- **Section 10.0** details an appropriate management strategy for the identified Aboriginal heritage values of the proposal site; and
- **Section 11.0** lists the references cited in-text.

Figure 1 Regional Context

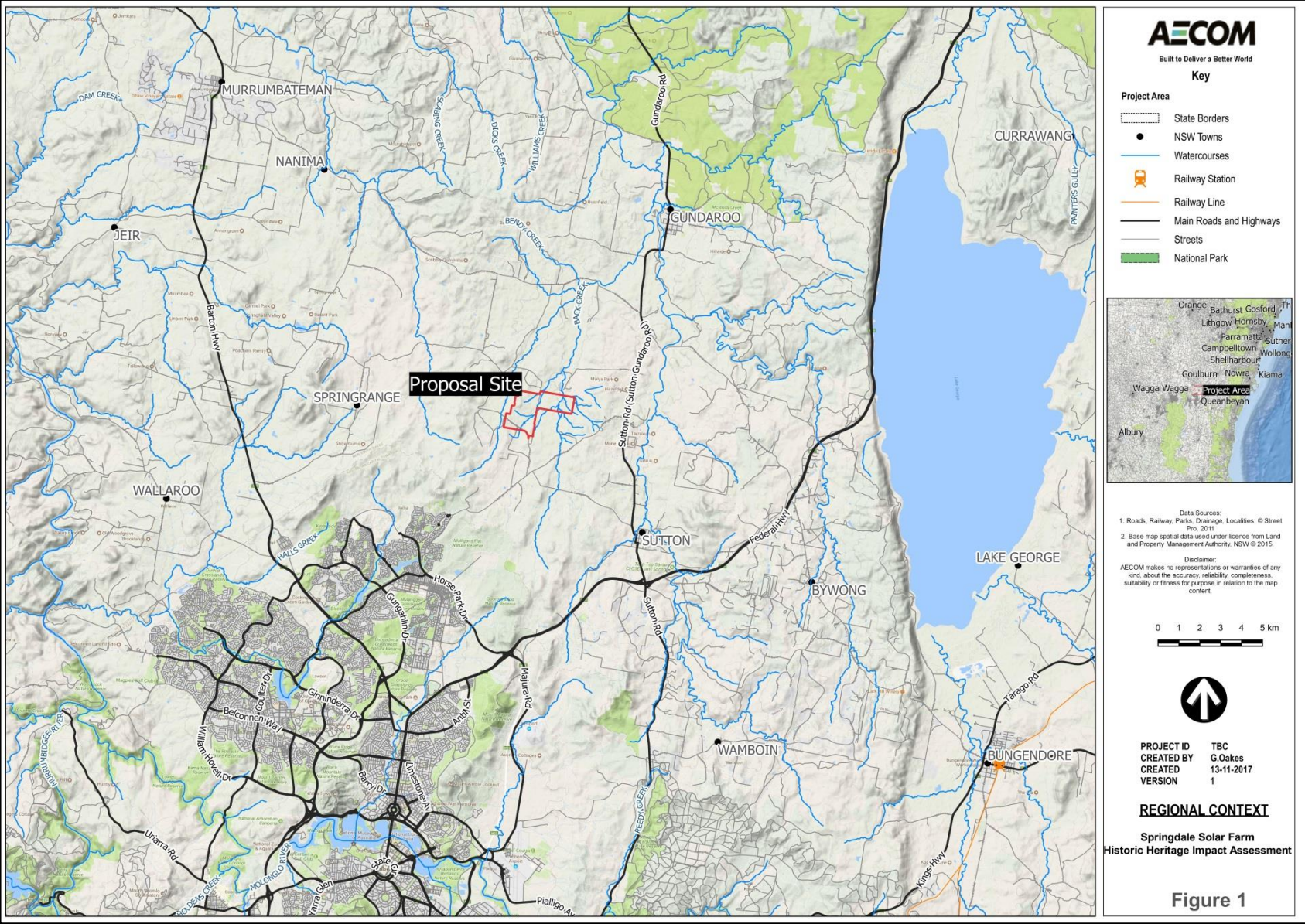


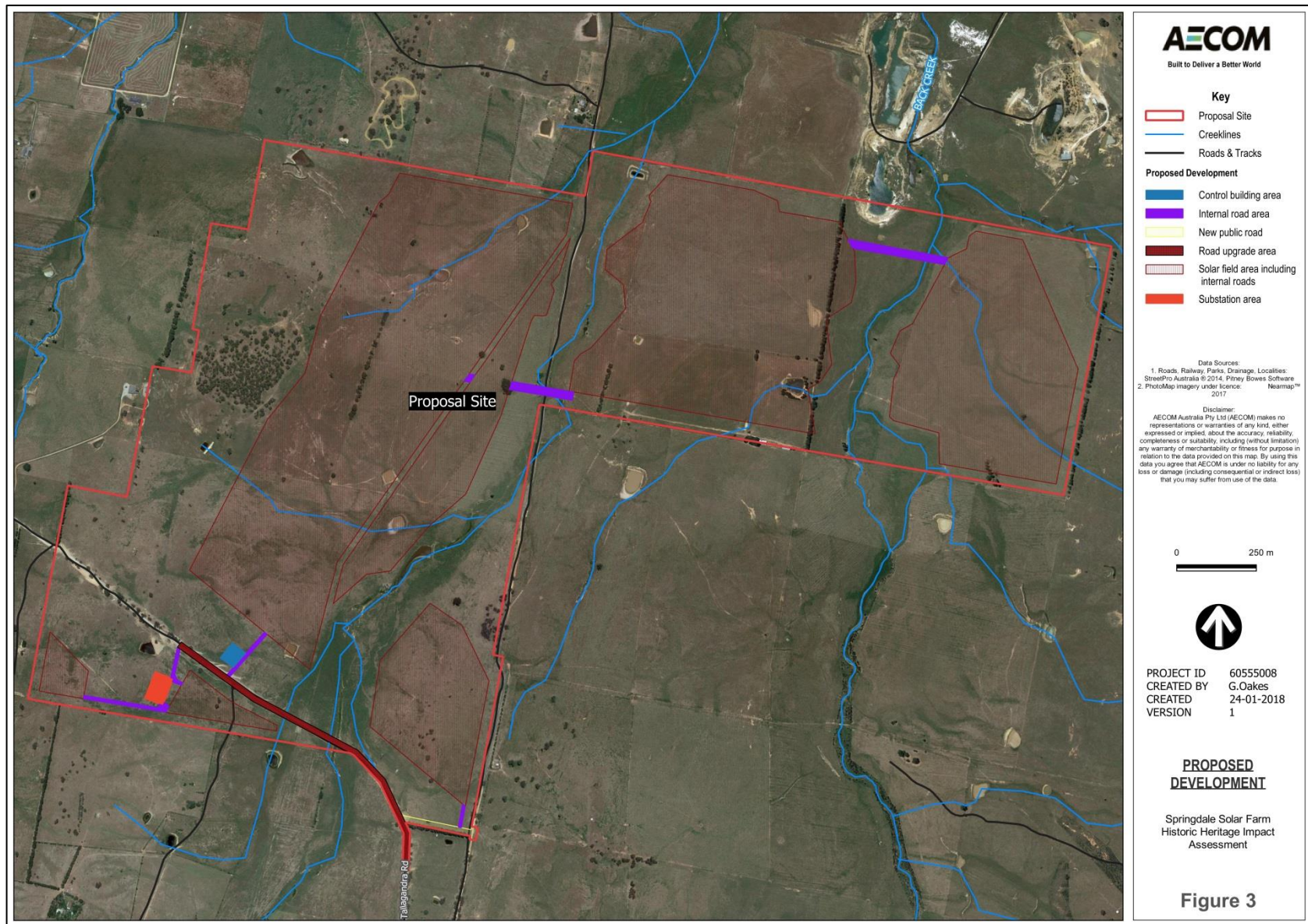
Figure 2 Proposal Site







Figure 3 Proposed Development



## 2.0 Applicable Policy & Legislation

### 2.1 Commonwealth Legislation

#### 2.1.1 Aboriginal and Torres Strait Islander Heritage Protection Act 1984

The *Aboriginal and Torres Strait Islander Heritage Protection Act 1984* (the ATSIHP Act) provides for the preservation and protection of places, areas and objects of particular significance to Indigenous Australians. The stated purpose of the ATSIHP Act is the *“preservation and protection from injury or desecration of areas and objects in Australia and in Australian waters, being areas and objects that are of particular significance to Aboriginals in accordance with Aboriginal tradition”* (Part I, Section 4).

Under the Act, ‘*Aboriginal tradition*’ is defined as *“the body of traditions, observances, customs and beliefs of Aboriginals generally or of a particular community or group of Aboriginals, and includes any such traditions, observances, customs or beliefs relating to particular persons, areas, objects or relationships”* (Part I, Section 3). A ‘*significant Aboriginal area*’ is an area of land or water in Australia that is of *“particular significance to Aboriginals in accordance with Aboriginal tradition”* (Part I, Section 3). A ‘*significant Aboriginal object*’, on the other hand, refers to an object (including Aboriginal remains) of like significance.

For the purposes of the Act, an area or object is considered to have been be injured or desecrated if:

- a. In the case of an area:
  - i. it is used or treated in a manner inconsistent with Aboriginal tradition;
  - ii. the use or significance of the area in accordance with Aboriginal tradition is adversely affected; and
  - iii. passage through, or over, or entry upon, the area by any person occurs in a manner inconsistent with Aboriginal tradition
- b. in the case of an object:
  - i. it is used or treated in a manner inconsistent with Aboriginal tradition.

The ATSIHP Act can override state and territory laws in situations where a state or territory has approved an activity, but the Commonwealth Minister prevents the activity from occurring by making a declaration to protect an area or object. However, the Minister can only make a decision after receiving a legally valid application under the ATSIHP Act and, in the case of long term protection, after considering a report on the matter. Before making a declaration to protect an area or object in a state or territory, the Commonwealth Minister must consult the appropriate minister of that state or territory (Part 2, Section 13).

No declarations relevant to the proposal site have been made under the ATSIHP Act.

#### 2.1.2 Native Title Act 1993

The *Native Title Act 1993* (NTA) provides for the recognition and protection of native title for Aboriginal peoples and Torres Strait Islanders. The NTA recognises native title for land over which native title has not been extinguished and where persons able to establish native title are able to prove continuous use, occupation or other classes of behaviour and actions consistent with a traditional cultural possession of those lands. It also makes provision for Indigenous Land Use Agreements (ILUA) to be formed as well as a framework for notification of Native Title Stakeholders for certain future acts on land where Native Title has not been extinguished.

Searches of the *Schedule of Applications (unregistered claimant applications)*, *Register of Native Title Claims*, *National Native Title Register*, *Register of Indigenous Land Use Agreements* and *Notified Indigenous Land Use Agreements* were undertaken in November 2017, with no relevant listings identified for the proposal site.

### 2.1.3 Environment Protection and Biodiversity Act 1999

The Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) took effect on 16 July 2000. Under Part 9 of the EPBC Act, any action that is likely to have a significant impact on a matter of National Environmental Significance may only progress with approval of the Commonwealth Minister for Environment and Energy. An action is defined as a project, development, undertaking, activity, series of activities, or alteration. An action will also require approval if:

- It is undertaken on Commonwealth land and will have or is likely to have a significant impact;
- It is undertaken outside Commonwealth land and will have or is likely to have a significant impact on the environment on Commonwealth land; and
- It is undertaken by the Commonwealth and will have or is likely to have a significant impact.

The EPBC Act defines 'environment' as incorporating both natural and cultural environments and therefore includes Aboriginal heritage. Under the Act, protected heritage items are listed on the National Heritage List (items of significance to the nation) or the Commonwealth Heritage List (items belonging to the Commonwealth or its agencies). These two lists replaced the Register of the National Estate (RNE), which was closed in 2007 and is no longer a statutory list. Statutory references to the RNE in the EPBC Act were removed on 19 February 2012. However, the RNE remains an archive of over 13,000 heritage places throughout Australia.

Searches of the National Heritage List, Commonwealth Heritage List and RNE were undertaken in November 2017, with no relevant listings identified for the proposal site.

## 2.2 State Legislation

### 2.2.1 Environmental Planning and Assessment Act 1979

The *Environmental Planning and Assessment Act 1979* (EP&A Act), administered by DP&E, requires that consideration be given to environmental impacts as part of the land use planning process in NSW. In NSW, environmental impacts are interpreted as including impacts to Aboriginal and non-Aboriginal (i.e., European) cultural heritage.

Upon repeal of Part 3A of the EP&A Act on 1 October 2011, the *Environmental Planning and Assessment Amendment (Part 3A Repeal) Act 2011* inserted a new Division 4.1 into Part 4 of the EP&A Act. Division 4.1 provides a determination regime for State Significant Development (SSD). Section 89C of the EP&A Act stipulates that a development will be considered SSD if it declared to be such by the new *State Environmental Planning Policy (State and Regional Development) 2011* (SEPP SRD).

Under Clause 8(1) of SEPP SRD, a development is declared to be State Significant Development if:

- a. the development on the land concerned is, by the operation of an environmental planning instrument, permissible with development consent under Part 4 of the EP&A Act; and
- b. the development is specified in Schedule 1 or 2 of SEPP SRD.

The Project is SSD as it meets both of these criteria, namely:

- it is permissible with development consent on the land on which it is located; and
- it is development that is specified in Schedule 1 of SEPP SRD.

Pursuant to Section 89J of the EP&A Act, Aboriginal Heritage Impact Permits (AHIPs) are not required for projects approved under Division 4.1 of Part 4 of the EP&A Act. Impacts to Aboriginal heritage values associated with approved SSD projects are typically managed under Aboriginal Cultural Heritage Management Plans (ACHMPs). ACHMPs are statutorily binding once approved by DP&E.

### 2.2.2 Aboriginal Land Rights Act 1983

The Aboriginal Land Rights Act 1983 (ALR Act) was established to return land in NSW to Aboriginal peoples through a process of lodging claims for certain Crown lands. The Act, administered by the NSW Department of Aboriginal Affairs, is a compensatory regime which recognises that land is of spiritual, social, cultural and economic importance to Aboriginal people. The ALR Act establishes the

NSW Aboriginal Land Council (NSWALC) and a network of over 120 autonomous Local Aboriginal Land Councils (LALCs) and requires these bodies to:

- a. to take action to protect the culture and heritage of Aboriginal persons in the LALC's area, subject to any other law; and
- b. to promote awareness in the community of the culture and heritage of Aboriginal persons in the LALC's area.

LALCs constituted under the ALR Act can make claims. The Registrar of the ALR Act has responsibility for maintaining the Register of Aboriginal Land Claims under section 166 of the Act. All land claims that have been made since the Act came into force in 1983 have been recorded in the Register.

Consultation with the Registrar of the ALR Act in November 2017 has indicated that the proposal site does not have any Registered Aboriginal Owners pursuant to Division 3 of the ALR Act.

### 2.2.3 National Parks and Wildlife Act 1974

The *National Parks and Wildlife Act 1974* (NPW Act), administered by OEH, is the primary legislation for the protection of Aboriginal cultural heritage in NSW. The NPW Act gives the Secretary of OEH responsibility for the proper care, preservation and protection of 'Aboriginal objects' and 'Aboriginal places', defined under the Act as follows:

- An *Aboriginal object* is any deposit, object or material evidence (that is not a handicraft made for sale) relating to Aboriginal habitation of NSW, before or during the occupation of that area by persons of non-Aboriginal extraction (and includes Aboriginal remains).
- An *Aboriginal place* is a place declared so by the Minister administering the NPW Act because the place is or was of special significance to Aboriginal culture. It may or may not contain Aboriginal objects.

Part 6 of the NPW Act provides specific protection for Aboriginal objects and places by making it an offence to harm them and includes a 'strict liability offence' for such harm. A 'strict liability offence' does not require someone to know that it is an Aboriginal object or place they are causing harm to in order to be prosecuted. Defences against the 'strict liability offence' in the NPW Act include the carrying out of certain 'Low Impact Activities', prescribed in Clause 80B of the *National Parks and Wildlife Amendment Regulation 2010* (NPW Regulation), and the demonstration of due diligence.

An AHIP issued under Section 90 of the NPW Act is required if impacts to Aboriginal objects and/or places cannot be avoided. An AHIP is a defence to a prosecution for harming Aboriginal objects and places if the harm was authorised by the AHIP and the conditions of that AHIP were not contravened. Consultation with Aboriginal communities is required under OEH policy when an application for an AHIP is considered and is an integral part of the process. AHIPs may be issued in relation to a specified Aboriginal object, Aboriginal place, land, activity or person or specified types or classes of Aboriginal objects, Aboriginal places, land, activities or persons.

As indicated in Section 2.2.1, pursuant to Section 89J of the EP&A Act, AHIPs are not required for projects approved under Division 4.1 of Part 4 of the EP&A Act, with impacts typically managed under ACHMPs. ACHMPs are statutorily binding once approved by DP&E.

Section 89A of the NPW Act requires notification of the location of Aboriginal sites within a reasonable time, with penalties for non-notification. Section 89A is binding in all instances, including Division 4.1 projects

## 2.3 Local Government

### 2.3.1 Yass Valley Local Environmental Plan 2013

Clause 5.10 of the *Yass Valley Local Environmental Plan 2013* (YLEP 2013) provides specific provisions for the protection of heritage items, heritage conservation areas, archaeological relics, Aboriginal objects and Aboriginal places of heritage significance within the Yass Valley LGA.

Under Section 2 of Clause 5.10 of the YLEP 2013, development consent is required for any of the following:

- a. demolishing or moving any of the following or altering the exterior of any of the following (including, in the case of a building, making changes to its detail, fabric, finish or appearance):
  - (i) a heritage item,
  - (ii) an Aboriginal object,
  - (iii) a building, work, relic or tree within a heritage conservation area,
- b. (b) altering a heritage item that is a building by making structural changes to its interior or by making changes to anything inside the item that is specified in Schedule 5 in relation to the item,
- c. (c) disturbing or excavating an archaeological site while knowing, or having reasonable cause to suspect, that the disturbance or excavation will or is likely to result in a relic being discovered, exposed, moved, damaged or destroyed,
- d. (d) disturbing or excavating an Aboriginal place of heritage significance,
- e. (e) erecting a building on land:
  - (i) on which a heritage item is located or that is within a heritage conservation area, or
  - (ii) on which an Aboriginal object is located or that is within an Aboriginal place of heritage significance,
- f. (f) subdividing land:
  - (i) on which a heritage item is located or that is within a heritage conservation area, or
  - (ii) on which an Aboriginal object is located or that is within an Aboriginal place of heritage significance.

In relation to Aboriginal heritage, Section 8 of the YLEP 2013 states the consent authority must, before granting consent under this clause to the carrying out of development in an Aboriginal place of heritage significance:

- a. consider the effect of the proposed development on the heritage significance of the place and any Aboriginal object known or reasonably likely to be located at the place by means of an adequate investigation and assessment (which may involve consideration of a heritage impact statement), and
- b. notify the local Aboriginal communities, in writing or in such other manner as may be appropriate, about the application and take into consideration any response received within 28 days after the notice is sent.

Schedule 5 of the YLEP 2013 provides a list of heritage items, conservation areas and archaeological sites within the Yass Valley LGA. A review of the list indicates there are no Aboriginal objects or places of heritage significance located within the proposal site.

Subject to development consent under Division 4.1 of Part 4 of the EP&A Act, the planning controls required by the YLEP 2013 will not apply to the Project.



## 3.0 Aboriginal Community Consultation

Aboriginal community consultation acknowledges the right of Aboriginal people to be involved, through direct participation, on matters that directly affect their heritage. Involving Aboriginal people in all facets of the assessment process ensures that they are given adequate opportunity to share information about cultural values, and to actively participate in the development of appropriate management and/or mitigation measures. The successful identification, assessment and management of Aboriginal cultural heritage values are dependent on an inclusive and transparent consultation process.

Aboriginal community consultation for the current assessment was undertaken in accordance with OEH's *Aboriginal Cultural Heritage Consultation Requirements for Proponents* (DECCW, 2010a) (Consultation Requirements). The results of the consultation process undertaken are detailed below. Associated correspondence is provided in Appendices B to H.

### 3.1 Stage 1 - Notification and Registration

The aim of Stage 1 of the Consultation Requirements is to identify, notify and register Aboriginal people who hold cultural knowledge relevant to determining the cultural significance of Aboriginal objects and/or places in the proposal site.

#### 3.1.1 Consultation with Regulatory Agencies

Section 4.1.2 of the Consultation Requirements stipulates that proponents are responsible for ascertaining, from reasonable sources of information, the names of Aboriginal people who may hold cultural knowledge relevant to determining the cultural significance of Aboriginal objects and/or places. Proponents are required to compile a list of Aboriginal people who may have an interest for the proposed proposal site and hold knowledge relevant to determining the cultural significance of Aboriginal objects and/or places by writing to:

- a. the relevant regional office of the NSW Office of Environment & Heritage (OEH);
- b. the relevant Local Aboriginal Land Council(s);
- c. the Registrar, Aboriginal Land Rights Act 1983 for a list of Aboriginal owners;
- d. the National Native Title Tribunal for a list of registered native title claimants, native title holders and registered Indigenous Land Use Agreements;
- e. Native Title Services Corporation Limited (NTSCORP Limited);
- f. The relevant local council(s); and
- g. The relevant catchment management authorities for contact details of any established Aboriginal reference group.

In accordance with this requirement, the following agencies were contacted via letter or email on 10 October 2017 requesting information on relevant Aboriginal persons and organisations (Appendix B):

- Office of Environment and Heritage;
- Ngambri Local Aboriginal Land Council (Ngambri LALC);
- Office of the Registrar, *Aboriginal Land Rights Act 1983* (NSW);
- The National Native Title Tribunal (NNTT);
- NTSCORP Limited;
- Yass Valley Council; and
- South East Local Land Services (SE LLS).

Responses were received from four agencies and are attached as Appendix C:

- OEH responded on 19 October 2017 providing the contact details for 17 groups that may have an interest in the development;

- SE LLS responded on 25 Oct 2017 indicating Ngambri LALC was the relevant land council for the proposal site and that Onerwal LALC may also be interested in consultation;
- Yass Valley Council responded on 10 November 2017 indicating the Onerwal LALC was the peak body representing Aboriginal people in the Yass Valley; and
- Office of Registrar responded on 19 October 2017 stating the proposal site 'does not have Registered Aboriginal Owners pursuant to Division 3 of the Aboriginal Land Rights Act 1983 (ALRA)' and suggesting we contact the Ngambri LALC.

### 3.1.2 Public Notification

Section 4.1.3 of the Consultation Requirements requires that, in addition to writing to the Aboriginal people identified by the agencies listed in Section 3.1.1, the proponent must also place a notice in the local newspaper circulating in the general location of the proposed project. The notification must outline the project and identify its location.

In accordance with this requirement, a public notice was placed in the Bungendore Weekly on 18 October 2017 (Appendix D). The closing date for registration via this notice was 2 November 2017, which provided the necessary minimum 14-day period for expressions of interest.

No responses to the notice were received prior to, or after, this date.

### 3.1.3 Invitations for Expressions of Interest

Section 4.1.3 of the Consultation Requirements requires that proponents must write to the Aboriginal people whose names were obtained through the regulatory agencies and the relevant Local Aboriginal Land Council(s) to notify them of the proposed project and invite them to register an interest in participating in a process of community consultation.

In accordance with this requirement, on 23 October 2017, a letter inviting expressions of interest and containing summary information on the project was sent to all Aboriginal persons and organisations identified by the regulatory agencies. A total of 18 Aboriginal stakeholders were invited to register an interest in being consulted. No closing date for expressions of interest was issued and all stakeholders interested in the being consulted were included from this date to project finalisation.

A total of seven organisations registered an interest in the assessment. Summary information on all RAPs, including registration dates, is provided in Table 1.

**Table 1 Registered Aboriginal Parties**

Organisation	Date of registration	Method	Contact Person
Corroboree Aboriginal Corporation	26/10/2017	Email	Marilyn Carroll-Johnson
Didge Ngunawal Clan	26/10/2017	Email	Paul Boyd
Thunderstone Aboriginal Cultural and Land Management Services Aboriginal Corporation	3/11/2017	Email	Tyronne Bell
Gulgunya Ngunawal Heritage Aboriginal Consultancy	6/11/2017	Email	Glen Freeman
Muragadi Heritage Indigenous Corporation	13/11/2017	Email	Jesse Carroll-Johnson
Murri Bidgee Mullangari Aboriginal Corporation	13/11/2017	Email	Ryan Johnson
Ngambri Local Aboriginal Land Council	22/11/2017	Phone	Dave Johnston

### 3.1.4 Notification of Registered Aboriginal Parties (RAPs)

Section 4.1.6 of the Consultation Requirements requires that the proponent make a record of the names of each Aboriginal person who registered an interest and provide a copy of that record, along with a copy of the EOI letter forwarded to the Aboriginal parties, to the relevant OEH regional office and LALC. Section 4.1.5 of the Consultation Requirements provides the opportunity for Aboriginal persons to withhold their details from being forwarded to these parties.

In accordance with these requirements, on 1 December 2017, a list of all RAPs that had not requested their details be withheld was forwarded to the relevant OEH regional office (Queanbeyan) and the Ngambri LALC. A copy of the EOI letter sent out on 23 October 2017 was included in this correspondence (Appendix E).

### 3.2 Stage 2 - Presentation of Information about Project

The aim of Stage 2 of the Consultation Requirements is to provide RAPs with information about the scope of the proposed project and the proposed cultural heritage assessment process.

For the current assessment, presentation of information about the proposal site and proposed development was provided to RAPs as part of the registration of interest process detailed in Section 3.1.3. Basic information on the proponent and proposed development was included in the Expression of Interest (EOI) letter mailed on 23 October 2017.

### 3.3 Stage 3 – Gathering Information about Cultural Significance

The aim of Stage 3 of the Consultation Requirements is to facilitate a process whereby RAPs can:

- Contribute to culturally appropriate information gathering and the assessment methodology;
- Provide information that will enable the cultural significance of Aboriginal objects and/or places on the proposed proposal site to be determined; and
- To have input into the development of any cultural heritage management measures.

For the assessment, consultation with RAPs regarding the cultural heritage values of the proposal site included:

- A request with the draft assessment methodology for any initial comments regarding the Aboriginal cultural heritage values of the proposal site;
- Discussion of cultural heritage values during fieldwork; and
- The provision of a draft report to all RAPs for comment prior to finalisation.

#### 3.3.1 Draft Assessment Methodology

Sections 4.3.1 and 4.3.2 of the Consultation Requirements require that the proponent present and/or provide the proposed methodology for the cultural heritage assessment to RAPs and that RAPs be given a minimum of 28 days to review and provide feedback on this methodology.

All RAPs for the current assessment were provided with a draft of AECOM's proposed assessment methodology as part of the EOI package sent out on 23 October 2017. RAPs were given a minimum of 28 days to review and provide feedback on this methodology (Appendix F).

Four responses were received from RAPs relating to the draft methodology, all via email. Responses are summarised in Table 2 and are attached as Appendix G. All RAPs who provided a response to the draft methodology indicated that they supported it.

No specific cultural heritage values relating to the proposal site were identified by RAP respondents.

**Table 2 RAP responses to draft methodology**

Registered Aboriginal Party	Date	Method	Summary of response	AECOM response
Didge Ngunawal Clan	26/10/2017	Email	Supports the methodology	None required
Thunderstone Aboriginal Cultural and Land Management Services Aboriginal Corporation	3/11/2017	Email	Supports the methodology	None required
Gulgunya Ngunawal Heritage Aboriginal Consultancy	6/11/2017	Email	Supports the methodology	None required
Murra Bidgee Mullangari Aboriginal	13/11/2017	Email	Supports the	None required

Registered Aboriginal Party	Date	Method	Summary of response	AECOM response
Corporation			methodology	

### 3.3.2 Archaeological Survey

The following RAPs participated in the fieldwork component of this AACHIA:

**Table 3 RAP field representatives by organisation**

Registered Aboriginal Party	Field representative(s)
Corroboree Aboriginal Corporation	Steve Johnson
Didge Ngunawal Clan	Paul Boyd
Thunderstone Aboriginal Cultural and Land Management Services Aboriginal Corporation	Tyronne Bell
Murra Bidgee Mullangari Aboriginal Corporation	Ryan Johnson
Ngambri Local Aboriginal Land Council	Robert Williams, Ambrose House

RAP field representatives involved in the archaeological survey identified the following social or cultural values for the proposal site in conversation with AECOM archaeologists:

- Elevated rises and spurs adjacent to creeks would have been prime camping locations for Aboriginal people camping within and travelling through the proposal site;
- Owing to generally poor visibility conditions, subsurface testing will be necessary to adequately characterise the Aboriginal archaeological record of the proposal site. Any subsurface investigation within the proposal site should utilise a landscape-based sampling strategy;
- Quartz and silcrete are locally and regionally common rock types in terms of flaked stone tool technologies. Relative to quartz, which occurs in abundance across the proposal site, imported silcrete blanks appear to have more intensively worked; and
- Scarred tree SSF-ST1-17 represents a 'shield tree'.

### 3.4 Stage 4 - Review of Draft Assessment Report:

The aim of Stage 4 of the Consultation Requirements is to prepare and finalise an AACHIA with input from RAPs.

In accordance with Section 4.4.2 of the Consultation Requirements, on 9 February 2018 all RAPs were sent a draft copy of this AACHIA for review and comment. The specified closing date for comments was 2 March 2018, which provided the necessary minimum 28 day review period. However, all RAP comments were accepted up to submission of the AACHIA.

On 10 April 2018 RAPs were contacted again to provide comment on the draft report.

RAP responses are summarised in Table 4, with written responses attached as Appendix H. No other RAPs provided comment on the draft report.

**Table 4 RAP responses to draft ACHAR**

Registered Aboriginal Party	Date	Method	Summary of response	AECOM response
Didge Ngunawal Clan	10/04/2018	Email	Supports the assessment	N/A
Corroboree Aboriginal Corporation	12/04/2018	Email	Supports the assessment	N/A
Murra Bidgee Mullangari	17/04/2018	Email	Supports the assessment	N/A

## 4.0 Landscape Context

This section reviews the landscape context of the proposal site as a basis for predicting both the character of past Aboriginal occupation within it and its associated archaeological record. Consideration of the landscape context of the proposal site is predicated on the now well established proposition that the nature and distribution of Aboriginal archaeological materials are closely connected to the environments in which they occur. Environmental variables such as topography, geology, hydrology and the composition of local floral and faunal communities will have played an important role in influencing how Aboriginal people moved within and utilised their respective Country. Amongst other things, these variables will have affected the availability of suitable campsites, drinking water, economic<sup>1</sup> plant and animal resources, and raw materials for the production of stone and organic implements. At the same time, an assessment of historical and contemporary land use activities, as well as geomorphic processes such as soil erosion and aggradation, is critical to understanding the formation and integrity of archaeological deposits, as well any assessment of Aboriginal archaeological sensitivity.

### 4.1 Physical Setting

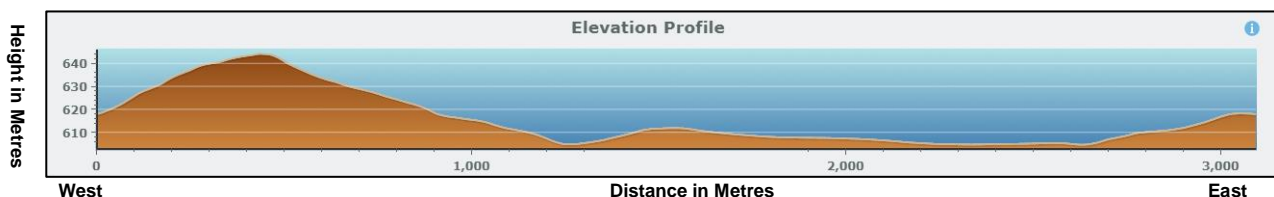
As shown on Figure 2, the proposal site for this assessment comprises an irregularly shaped c.370 ha parcel of land located 8 km northwest of the rural Village of Sutton, NSW, approximately 3.5 km northeast of the ACT border. It lies within an area described by Jenkins (2000) as Canberra Lowlands portion of the Southern Tablelands geographic area. Registered as Lot 111 on DP754908, Lot 182 on DP754908, Lot 10 on DP754908, Lot 15 on DP754908, Lot 190 on DP754908, Lot 209 on DP754908, Lot 189 on DP754908, Lot 161 on DP754908, Lot 54 on DP754908, Lot 202 on DP754908, Lot 97 on DP754908, Lot 1 on DP198933, land within the Project area is currently, and was historically, used for cattle grazing and cropping.

Reference to the Geographical Name Register (GNR) of NSW indicates that the proposal site falls wholly within the boundaries of the Yass Valley LGA within the Parish of Talagandra in the County of Murray. Surrounding suburbs include Gundaroo to the north, Wamboin to the south, Bywong to the east and Springrange to the west.

### 4.2 Topography

The topography of the proposal site is typical of that described by Jenkins (2000) for the Canberra Lowlands physiographic region and can be broadly described as flat to undulating, with level to very gently inclined creek flats associated with Back Creek and an unnamed 3<sup>rd</sup> order tributary giving way to the gently to moderately-inclined side slopes of elevated crests and associated spur crests. Elevations across the proposal site range from 600 m AHD along Back Creek and its unnamed tributary to 650 m AHD on the central summit of a locally prominent N-S trending crest in the western portion of the proposal site, providing a total local relief of 50 m (Figure 4). Following Speight (2009), a breakdown of the relative representation of morphological landform units within the proposal site is provided in Table 5. Identified landform units, meanwhile, are shown on Figure 5.

Figure 4 Elevation profile



<sup>1</sup> I.e., edible and/or otherwise useful (e.g., medicine, clothing)

**Table 5 Morphological landform units within the proposal site**

Landform unit	Area (ha)	%
Crest	125	33.8
Flat	104	28.1
Simple slope	141	38.1
Total	370	100

### 4.3 Hydrology

Located within the Murrumbidgee Catchment, a large (c. 84,000 km<sup>2</sup>) catchment in southern NSW encompassing the city of Canberra, as well as the urban centres of Wagga Wagga, Yass, Gundagai and Queanbeyan, the proposal site contains parts of several, ephemeral to intermittent watercourses ranging in magnitude from 1<sup>st</sup> to 3<sup>rd</sup> order streams.

Back Creek, an intermittent, northerly-flowing tributary of the Yass River, is the only named watercourse within the proposal site. Following Strahler (1952), the creek flows northward across the easternmost portion of the proposal site as a 3<sup>rd</sup> order stream (Plate 1). An unnamed, north-northeasterly trending tributary of Back Creek, referred to throughout this report as the 'Central Tributary', traverses the western portion of the proposal site as a 3<sup>rd</sup> order stream (Plate 2). Both watercourses are fed within the site by a number of ephemeral 1<sup>st</sup> order streams, all unnamed.

At present, Back Creek and the Central Tributary can be classified as highly degraded, intermittent streams with semi-continuous incised channels and extensively eroded banks. However, prior to European settlement, both watercourses would have comprised chains of ponds. Chains of ponds, sometimes referred to as swampy meadows, are a hydrologically distinctive form of watercourse, generally found in alluvial valley floors, that are characterised by a linear series of irregularly-spaced ponds of varying dimensions (Eyles 1977a, 1977b). Once common across the Southern Tablelands, known examples, including those within the proposal site, are now highly degraded and characterised by continuous or semi-continuous incised channels. As in other landscape contexts (e.g., Dean-Jones & Mitchell 1993; Eyles 1977a, 1977b), transitions from chains of ponds to incised channels across the Southern Tablelands can be attributed to dramatically increased flow rates associated with intensive, broad-scale native vegetation clearance and the widespread construction of hard surfaces.





**Plate 1** View north of Back Creek's channel (Source: AECOM 2017)



**Plate 2** View north of the Central Tributary channel (Source: AECOM 2017)



## 4.4 Geology

The Canberra Lowlands is an area characterised by undulating terrain overlaying Canberra Formation geology and interbedded sediments of Deakin Volcanics (Jenkins 2000). Reference to the 1:100,000 Geological Map Sheet for Canberra (9030) indicates that the surface geology of the proposal site is a mixture of Middle Silurian Canberra Formation groups Silurian mudstone (Sua) and Silurian dacitic ignimbrite (Sua4), as well as Early Ordovician sandstones (Oa) and Quaternary alluvium (Qal). Silurian mudstone is mapped across the most western portion of the proposal site and is characterised by mudstone, siltstone, minor sandstone, limestone, hornfels, dacitic ignimbrite, and volcanoclastic sediments. Silurian dacitic ignimbrite is likewise mapped in the western proposal site and characterised by dacitic ignimbrite volcanoclastic sediments, minor agglomerate and ashstone. Ordovician sandstone is found in the eastern proposal site and characterised by sandstone, mudstone, shale; quartzite, quartz phyllite, phyllite and slate (Plate 3 and Plate 4). Finally, Quaternary alluvium, comprising gravel, sand, silt and clay, is mapped in association with Back Creek the Central Tributary.

Stone suitable for flaked stone artefact manufacture is available within the proposal site in the form of outcropping veins of milky quartz and associated gravel deposits (both colluvial and fluvial). These occur widely and abundantly across the proposal site, with several extensive deposits observed across the proposal site's slopes and crests. While other knappable rock types (e.g., mudstone, siltstone, hornfels and quartzite) are known to occur within the mapped geological formations of the proposal site, no exploitable deposits of these materials were identified during the field investigation component of the assessment.



**Plate 3** Exposed sandstone within the proposal site (Source: AECOM 2017)





**Plate 4** Quartz and shale gravels within the proposal site (Source: AECOM 2017)



**Plate 5** Cobble-sized, angular quartz clast identified in crest context (Source: AECOM 2017)



## 4.5 Soils

Soils within the proposal site have been mapped by Jenkins (2000) as belonging to the Williamsdale (w), Winnunga (wn), and Ginninderra Creek (gc) soil landscapes. Soils of the Williamsdale soil landscape, which cover the western half of the proposal site, have been characterised on slopes as varied, ranging from texture contrast Yellow Chromosol to massive and gradational Red and Brown Kandosols. In drainage lines, they are characterised as poorly drained, texture contrasts and sodic (Plate 6). Dominant 'A' horizon soils comprise brown to black loams with pH levels ranging from mildly acidic (pH 5.5) to mildly alkaline (pH 8.0). 'B' horizon soils are dominated by reddish brown medium clays with pH levels ranging from mildly acidic (pH 6.5) to neutral (pH 7.5).

Soils of the Winnunga soils landscape occupy the eastern portion of the proposal site and have been characterised as generally sandy where sandstone is the primary substrate material and clayey where shale is the parent material. Dominant 'A' horizon soils comprise brown to black, silty to sandy, loams with pH levels ranging from mildly acidic (pH 5.0) to neutral (pH 7.0). 'B' horizon soils are dominated by light clays with pH levels ranging from mildly acidic (pH 6.5) to alkaline (pH 8.5).

Soils of the Ginninderra Creek soil landscape are found associated with Back Creek and its larger tributary within the proposal site, and are generally characterised as alluvial with texture contrast soils developed in less active areas. Dominant 'A' horizon soils comprise brown loams with pH levels ranging from mildly acidic (pH 6.0) to neutral (pH 7.5). 'B' horizon soils are dominated by clays with pH levels ranging from mildly acidic (pH 6.0) to alkaline (pH 8.5).



Plate 6 Exposed texture contrast soil profile on right bank of Central Tributary (Source: AECOM 2017)



Figure 5 Landform &amp; Hydrology

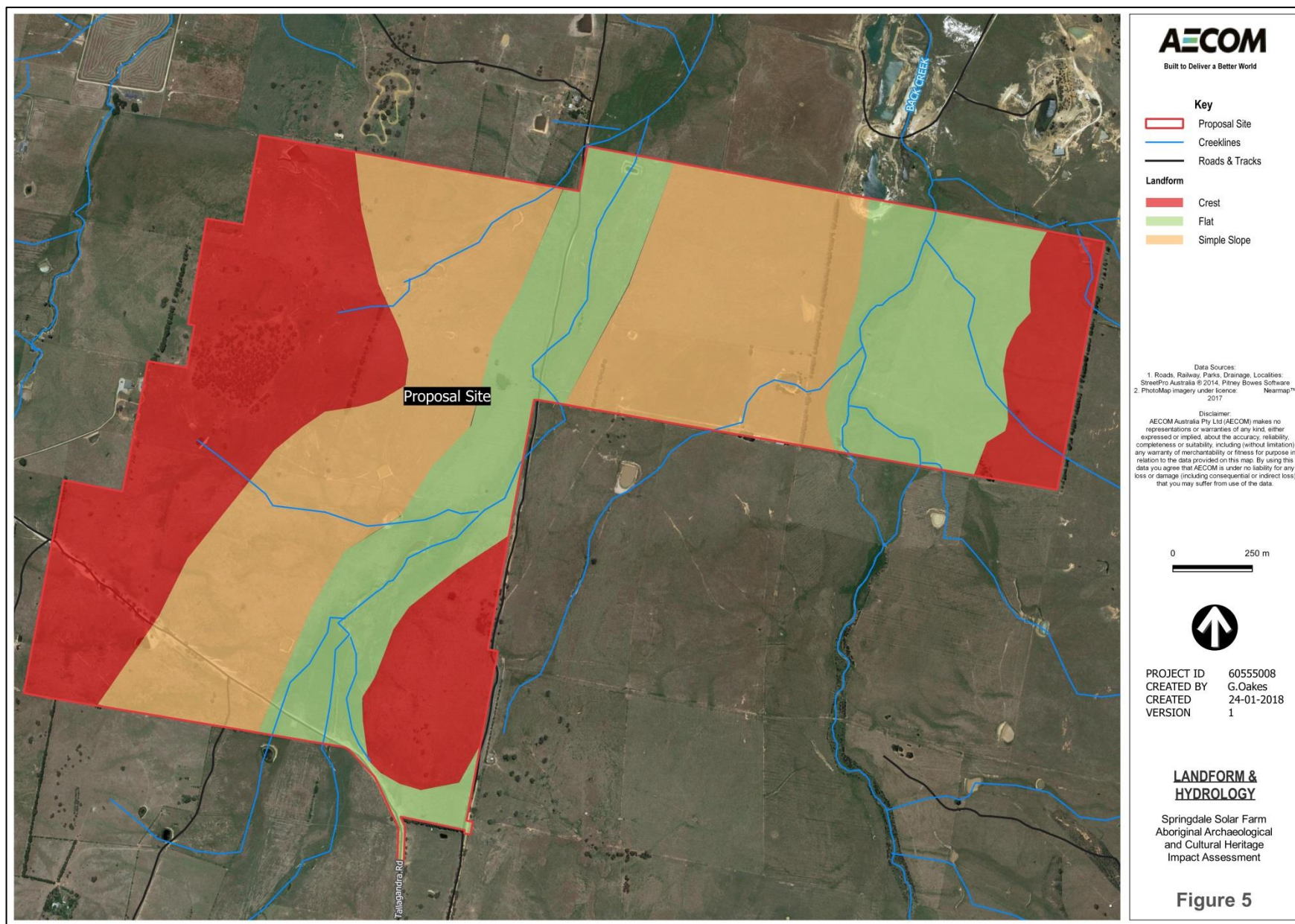


Figure 6 Geology



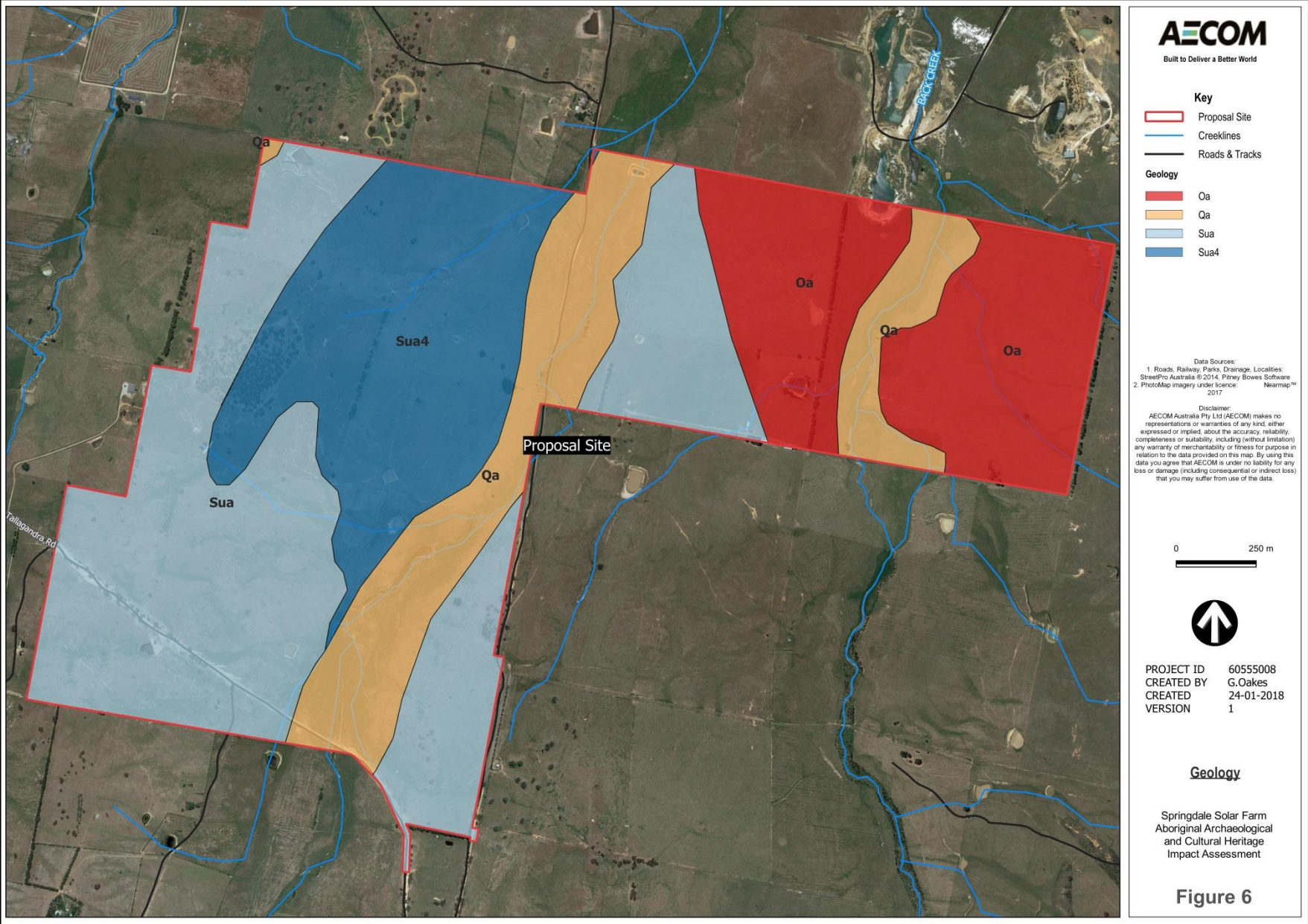
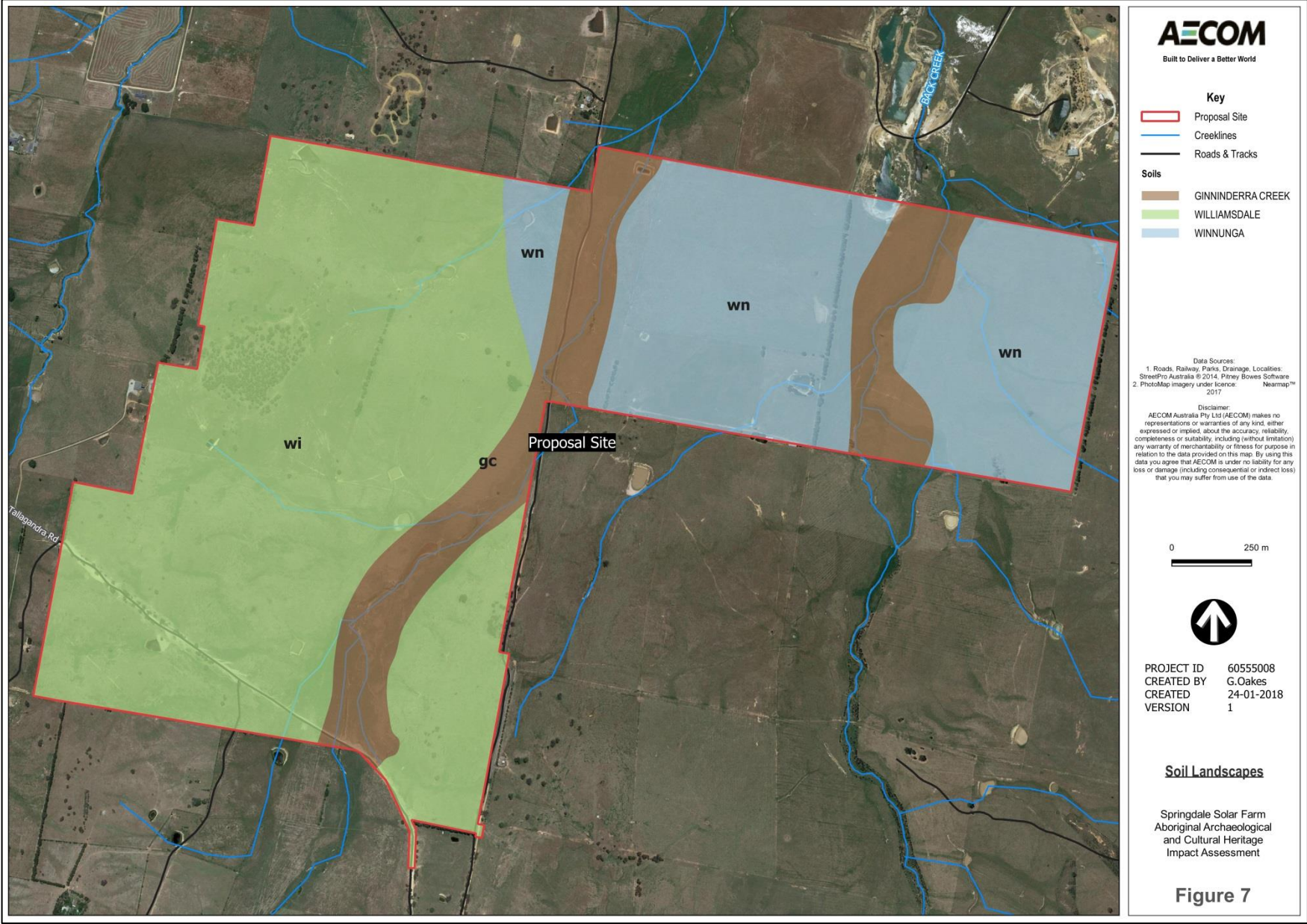


Figure 7 Soil Landscapes





## 4.6 Flora & Fauna

Native vegetation within the proposal site has been extensively modified as a result of agricultural and pastoral land use activities, with the overwhelming majority cleared historically for grazing and/or cropping. Vegetation today consists predominantly of mixed native and exotic grassland with scattered paddock trees. Nonetheless, field observations and available reference materials suggest that the pre- and early-post European settlement native vegetation regime of the site would have consisted primarily of savanna woodland, with sedgelands and/or rushlands also occurring in association with Back Creek and the Central Tributary.

Historical clearance activities notwithstanding, it can be confidently asserted that the original vegetation communities of the proposal site and its environs will have supplied Aboriginal people camping within or travelling through the area with an extensive array of edible and otherwise useful plant species. Recorded native vegetation communities and locally occurring watercourses would likewise have supported a large and diverse range of economic terrestrial, aquatic and avian fauna.

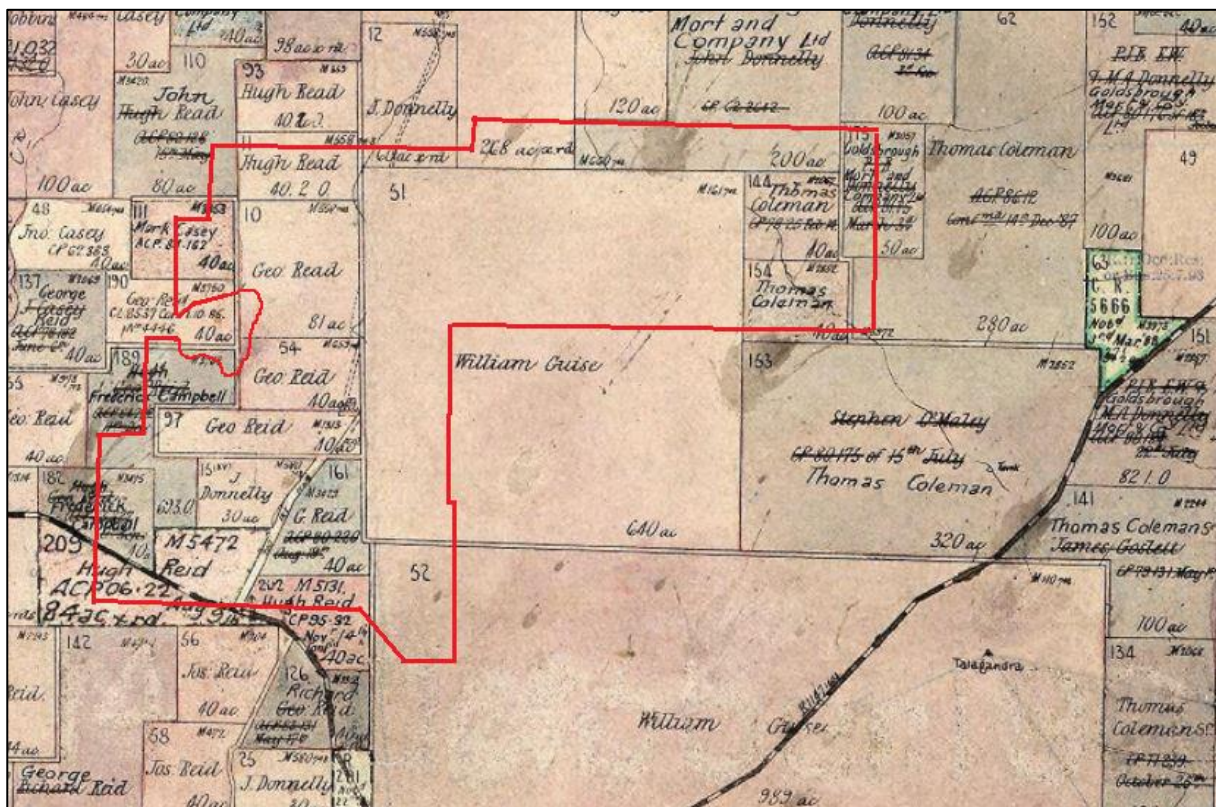
## 4.7 Historical Context and Land Use

The Lake George region was initially explored by Charles Throsby, who arrived in the NSW colony in 1802 as a navy surgeon and became a pastoralist and explorer. Having explored the Bathurst region in 1819, the following year he sent his servant Joseph Wild to investigate the Lake George area having heard rumours from local Aboriginal people of a large salt water lake in the area. Wild found the eastern shore of Lake George in August 1820 and sent word back to Throsby, who notified Governor Macquarie. That same year, Throsby and his party pushed further west through Bywong, Gundaroo and Sutton in search of the Murrumbidgee River. In 1821, he crossed the Molonglo and Queanbeyan Rivers into the region mapped as Canberra today (Lord, 1996). Throsby's explorations, and his subsequent reports back to the colony of suitable pasture lands, saw the opening up of the region to land grants for cattle and sheep grazing.

As early as 1825 squatters and scattered settlements were appearing in the Gundaroo Valley and surrounding areas, including the regions of Sutton and Gundaroo. In fact, in one account there was such a rush to claim land in the area that numerous conflicts were occurring between squatters and holders of land grants (Lea-Scarlett, 1972). During this period, the only access to the area was by road, which was essentially little more than a bush track. Nonetheless, by the end of the 1830s most of the prime land in the district, particularly lands fronting the Yass River, were occupied. With increasing land grants and squatting, the area saw a population increase, including large numbers of convicts and ex-convict servants. Accordingly, police courts, with resident magistrates, were established at Yass and Queanbeyan to service the region's increasing population. A general census of the Colony completed in 1841 records a population of 388 at Gundaroo region with 37 houses, two of stone (Barnsdale and the Travellers Home inn (near Lake George)), four of brick (Nanima, Jerrabiggery, Bywong and the Harrow Inn), and the rest of timber. Early Twentieth Century parish maps for the Parish of Tallagandra indicate that the landowners within the proposal site were John Brown, the Guise family, Thomas Coleman, John Donnelly, the Read family and Goldsbrough Mort & Company (Figure 8). A brief history of each landowner is provided below.



Figure 8 Talagandra Parish map (proposal site in red) (source: Department of Lands)



John Brown was thought to be earliest official settler in Sutton. Brown was formerly a Methodist minister who moved from Devonshire in 1827 and occupied land north of the present site of the town on a property known as 'Jerrabiggery'. He built a cottage and dairy, and purchased sheep and cattle to graze on the property. However, after a severe drought caused his crops to fail and disease killed off his sheep and cattle, he was forced to sell him land to William Guise (Lord, 1996).

The largest landholder in the area was the Guise family, whose holdings in 1911 account for a large portion of the proposal site. The Guise family (Elizabeth and Richard) arrived in the colony in 1792, with Richard Guise enlisted in the NSW Corps as a Sergeant. Soon after arriving the couple gave birth to their first son Richard (Jnr) in 1794 followed by William in 1796. In 1811, the Guise family purchased land in Minto, building a homestead (Casula) which adjoined another property belonging to Charles Throsby (Haiblen, 2006). Reference to the General Muster of 1822 indicates that the Guise brothers, Richard and William, now aged 28 and 26, had been granted 100 acres at Jerrabiggery (north of Sutton) as payment for carting wheat and provisions to the men working on new roads to the interior. In 1826, after the death of Richard Guise (Senior) who passed away in 1821, the family moved from Casula to Gundaroo and three years later to their property at Bywong, having built a homestead there which they named 'Bywong Station' (Blackmore-Lee, 2006). The 1828 census indicates that they had 700 cattle and 20 horses at Bywong, as well as a dairy farm (Lea-Scarlett, 1972). The next two decades saw Richard and William significantly expand their holdings to include properties at Gunning, Gundaroo, Yass, Benenborough, Walwa, Bong Bong, Burra, Twofold Bay, Williamsdale, Groongal Station, Buluko (Beloco) as well as properties around the proposal site. In 1845 the Guise family is recorded as owning over one hundred and eighty thousand acres in Bywong and Gundaroo alone, making them the largest landowner in the region at the time (Blackmore-Lee, 2006).

Figure 8 indicates that Thomas Coleman owned several small to medium sized properties in the eastern portion of the proposal site. Coleman arrived in Sydney from Warwickshire, England with his wife in 1856 and worked with a bullock team that frequently travelled to and from Sydney. He selected a property near Back Creek to settle with his seven sons in the early 1860s. His family built a brick homestead and named the combined estate Glenrock (Lea-Scarlett, 1972). According to the Canberra Times (1926) the property was sold by the Coleman family in 1911, passing through the hands of several owners before being purchased by the Allen Brothers who put the property up for sale in 1926.

The property is listed in Canberra Times in 1926 as 1,617 acres of well grassed sheep grazing land with 10 acres planted with lucerne.

John Donnelly is shown as owning a number of properties in the area ranging in size from 60 acres to 640 acres, with a small portion of several properties located within the northern portion of the proposal site. Donnelly was an early pioneer in the area obtaining property in the 1840s and was known for his success in agricultural pursuits. He bred high quality sheep for which it is said that he obtained high prices in London due to their quality (Queanbeyan Age, 1913). Donnelly was grandfather of Jack (John) Donnelly, a soldier, grazier and auctioneer who was born in 1885 at Bywong Station. He served as part of the Australian Imperial Force in World War I where he was wounded at Gallipoli. After recovering from his wounds he embarked for France attaining the rank of lieutenant-colonel for his outstanding service. Returning to Bungendore in 1923, he became an auctioneer (K. R. White, 1981).

George Reid arrived in the Colony in 1849 from Somerset, England as a free settler with his brother Hugh arriving seven years later. Both George and Hugh purchased small plots of land in the western portion of the Project in the late 1850s. Parish maps show several different spellings of Reid including Reed and Read with this apparently related to differences in religion between the brothers but the correct spelling is Reid. George was a farm labourer and had eleven children, several of which also purchased land within and surrounding the proposal site including Joseph and Richard. The Reids ran cattle and sheep on their properties. In 1903, George Reid purchased the Sutton Hotel which he ran for six years before transferring the licence. Hugh Reid, then opened a store at the site (Lea-Scarlett, 1972).

Goldsbrough Mort & Company owned a small portion of the northeastern proposal site, as well as a number of other small properties in the region which they began buying from landowners in the late 1800s. The company was originally formed in 1843 by Thomas Sutcliffe Mort as Mort & Co in Sydney, focussed on selling wool. In 1888 it merged with R Goldsbrough and Co to form Goldsbrough Mort & Company and was one of the largest, if not largest, wool traders in NSW with huge wool stores in Circular Quay, Sydney (Wotherspoon, 2008).

Landuse within the proposal site from this early settlement period until today has focussed on cattle/sheep grazing and limited cropping. Historical aeriels provide a framework for assessing the nature and extent of previous land disturbance across the proposal site. Examination of aeriels from 1959 (Figure 9), 1967 (Figure 10), 1976 (Figure 11), 1985 (Figure 12), 1992 (Figure 13), 1998 (Figure 14), 2005 (Figure 15) and 2011 (Figure 16), provided below, attest to a range of land use activities and associated ground surface impacts across the site including:

- Extensive native vegetation clearance prior to 1959;
- Pastoral activities, including livestock grazing, fencing and the construction of a farm dams and access tracks prior to 1959;
- Construction of Tallagandra Road prior to 1959;
- Construction of additional dams across the area post 1959 to 1992;
- Construction of a transmission line across the southern portion of the proposal site (c. 1992);
- Construction of a fibre optic cable through the centre of the proposal site (c. 2000);
- Construction of a residential dwelling, farm buildings and associated infrastructure (i.e., driveways and access tracks) (c. 1965, 1970 and 1982);
- Planting of trees, primarily She oak, along various fencelines;
- Construction of a stockyard in the central portion of the proposal site (c. 2005); and
- Cropping in the eastern portion of the proposal site (c. 2011); and
- Erosion (sheet and creek bank).

A disturbance map combining these various ground surface impacts is provided as Figure 17.



**Figure 9 1959 aerial photograph of the proposal site (Source: Land & Property Information NSW)**



**Figure 10 1967 aerial photograph of the proposal site (Source: Land & Property Information NSW)**

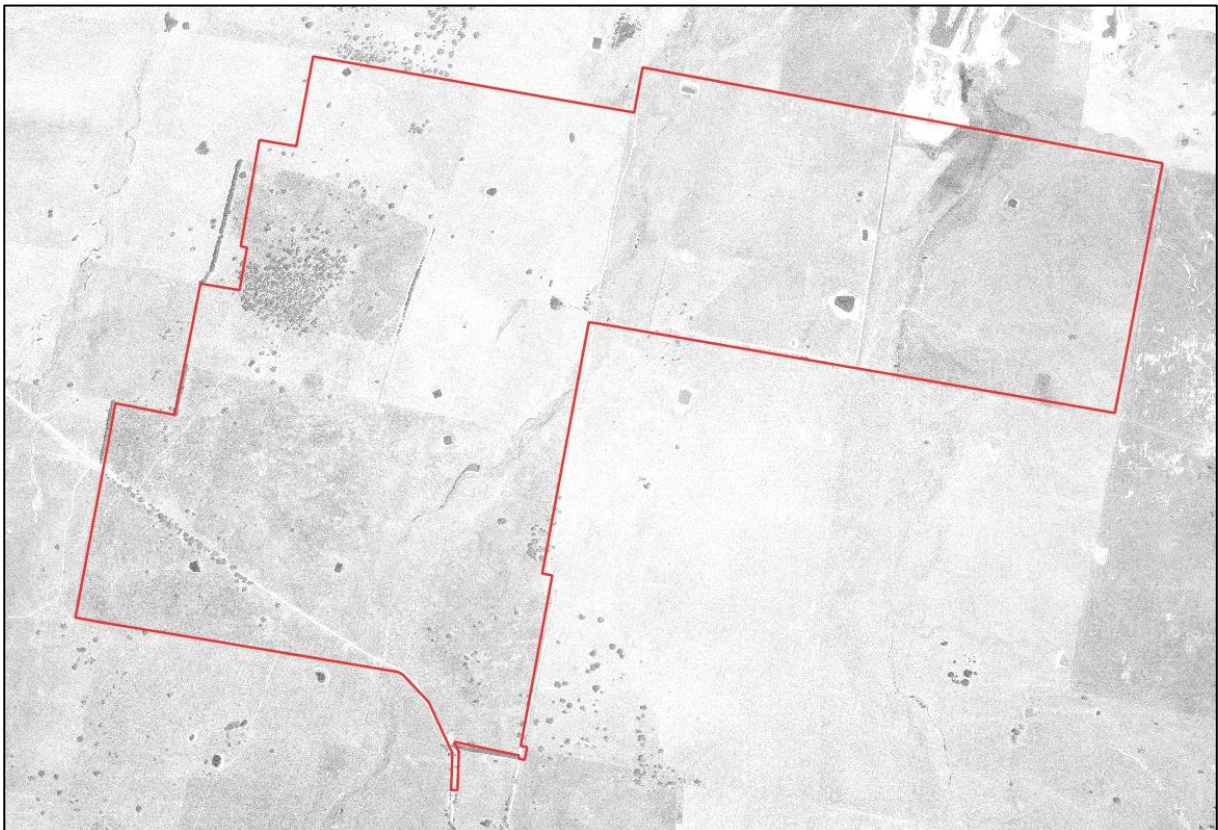




**Figure 11 1976 aerial photograph of the proposal site (Source: Land & Property Information NSW).**



**Figure 12 1985 aerial photograph of the proposal site (Source: Land & Property Information NSW)**





**Figure 13 1992 aerial photograph of the proposal site (Source: Land & Property Information NSW)**



**Figure 14 1998 aerial photograph of the proposal site (Source: Land & Property Information NSW)**





Figure 15 2005 aerial photograph of the proposal site (Source: Land & Property Information NSW)

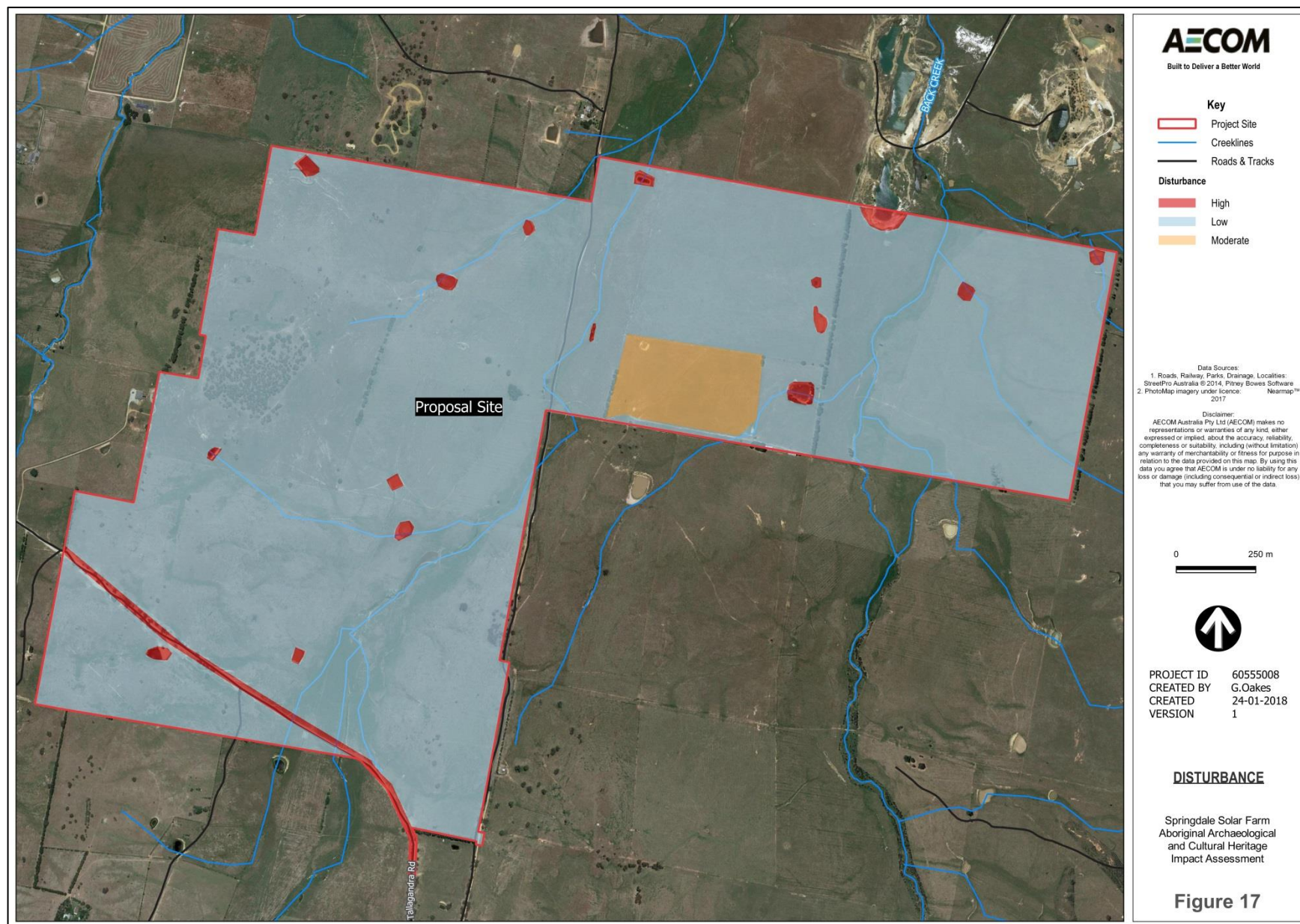


Figure 16 2011 aerial photograph of the proposal site (Source: Land & Property Information NSW)





Figure 17 Land Disturbance



## 4.8 Key Observations

Key observations to be drawn from a review of the existing environment of the proposal site are as follows:

- The topography of the proposal site is typical of that described by Jenkins (2000) for the Canberra Lowlands and can be broadly characterised as flat to undulating.
- Back Creek, an intermittent, northerly-flowing tributary of the Yass River, is the only named watercourse within the proposal site. Following Strahler (1952), the creek flows northward across the easternmost portion of the proposal site as a 3<sup>rd</sup> order stream (Plate 1). An unnamed, north-northeasterly trending tributary of Back Creek, referred to throughout this report as the 'Central Tributary', traverses the western portion of the proposal site as a 3<sup>rd</sup> order stream (Plate 2). Both watercourses are fed within the site by a number of ephemeral 1<sup>st</sup> order streams, all unnamed.
- At present, Back Creek and the Central Tributary can be classified as highly degraded, intermittent watercourses with semi-continuous incised channels and extensively eroded banks. However, field observations and available historical reference materials for the greater area suggest that the pre- and early post-European settlement morphology of these watercourses was likely that of a chains of ponds.
- Reference to the 1:100,000 Geological Map Sheet for Canberra (9030) indicates that the surface geology of the proposal site is a mixture of Middle Silurian Canberra Formation groups Silurian mudstone (Sua) and Silurian dacitic ignimbrite (Sua4), as well as Early Ordovician sandstones (Oa) and Quaternary alluvium (Qal).
- Stone suitable for flaked stone artefact manufacture is available within the proposal site in the form of outcropping veins of milky quartz and associated gravel deposits (both colluvial and fluvial). These occur widely and abundantly across the proposal site, with several extensive deposits observed across the proposal site's slopes and crests. While other knappable rock types (e.g., mudstone, siltstone, hornfels and quartzite) are known to occur within the mapped geological formations of the proposal site, no exploitable deposits of these materials were identified during the field investigation component of the current assessment.
- Prior to European settlement, the floral and faunal resources of the proposal site and environs will have been sufficient to facilitate intensive and/or repeated occupation by Aboriginal people.
- Examination of historical aerial imagery for the proposal site indicates a range of historical land use activities and associated ground surface impacts. Major activities/impacts include native vegetation clearance, the construction of farm dams, erosion and ploughing. However, the majority of land within the proposal site retains moderate integrity.

## 5.0 Ethnohistoric Context

The proposal site falls within the traditional country of Ngunawal-speaking peoples. As highlighted by Flood (1996: 5), Ngunawal was first identified as the name of both the language and “tribe” of the Southern Tablelands by the anthropologist R.H. Matthews, who worked among Aboriginal people in southeastern Australia around the turn of the century. According to Matthews (1904 cited in Flood 1996: 5), the boundaries of the Ngunawal language group were from “Goulburn to Yass and Burrowa, extending southerly to Lake George and Goodradigbee”, and “from Queanbeyan to Yass, Boorroowa and Goulburn”. Surrounding language groups comprised the Ngarigo and Walgalu to the south, Gandangara to the north, Wandandian and Walbanga to the east and Wiradjuri to the west. Significantly, Flood (1996: 5) suggests that the boundary between the Ngunawal and Ngarigo was “roughly the Molonglo River, with Ngunawal being the language of the Southern Tablelands, and Ngarigo of the highlands to the south”.

Available ethnohistoric information for contact-period Aboriginal lifeways in the Canberra region combined with available archaeological data, the observations of explorers, surveyors, travellers, settlers and anthropologists provide a number of valuable insights into the nature of Aboriginal occupation in the area. Available documentation, for example, suggests that this region was significantly less densely populated than the coast and western riverine plains of southern New South Wales, with 70% of groups seen by early observers containing less than ten people (Flood, 1980: 160). The only occasions on which large gatherings were observed, Flood (1980:127) has noted, “were in summer for ceremonial purposes and to exploit seasonally abundant food resources such as Bogong moths”. Flood (1980: 160-70), in particular, has used this information to hypothesise a ‘settlement pattern’ comprising “a few” large lowland camps, “some” very small high-level camps and a “large number” of medium to small size camps.

Information regarding the social organisation of named Aboriginal language groups in the Canberra region varies dramatically by group. We have, for example, no information on the social organisation of the Ngunawal at this time (Flood 1996: 7). Fortunately, however, this is not the case for the Ngarigo and Walgalu language groups and it seems reasonable, given reported cultural and linguistic similarities between these groups, to speculate that the Ngunawal shared a similar system. As highlighted by Howitt (1904), social organisation amongst the Ngarigo and Walgalu was based on a system of kinship involving two classes or moieties (Flood 1996: 7). Members belonged to either the Eaglehawk or Crow moiety. The same moiety, Flood (1996: 7) reports, was shared by all members of each group’s clans (i.e. individual land owning units). Clan membership, meanwhile, was based on matrilineal descent groups, with each clan associated with a particular species of animal of totem (Flood 1996: 7). Howitt (1904) lists nine totems within both the Eaglehawk and Crow moieties of the Ngarigo and Walgalu. Examples include the lyre-bird (Ngarigo - Eaglehawk), red wallaby (Ngarigo - Eaglehawk), emu (Ngarigo - Crow), dingo (Walgalu - Eaglehawk) and bandicoot (Walgalu - Crow).

Flood (1980) has speculated, on the basis of available archaeological and ethnohistoric data, that the annual settlement and subsistence cycles of Aboriginal groups living in the Canberra region were based around the seasonal exploitation of animal and plant resources within three principal ecological zones: large rivers, montane valleys and ‘high’ bogong moth localities. The first two zones, she suggests “were visited by the whole group, but high-level moth hunting was an all-male activity, although some of the spoils would be carried back to the women, children and old people in their camp below” (Flood 1980: 175). The rich animal and plant resources of the montane valleys and rivers, Flood proposes, will have facilitated both winter and summer occupation. The bogong moth localities, in contrast, were visited only in summer and for relatively short periods of time (Flood 1980: 127).

Available ethnohistoric records attest to the exploitation, for food and other purposes (e.g. medicinal use, clothing, and building materials) of a wide range of animal and plant resources. The main food staples, Flood (1996: 9) has proposed, “were possums, kangaroos, wallabies, birds, fish and vegetable foods”. In addition to “fruits and vegetables of all sorts” (Flood 1996: 12), food items typically collected by women included nectar and manna, birds’ eggs, grubs, ants, lizards, native cats and shellfish. Men, in contrast, hunted fish, possums, koalas, wombats, kangaroos, wallabies, emus, brolgas, wild turkey, wild turkey, ducks, and bogong moths (Flood 1996: 12). Seasonally abundant, highly nutritious and easy to collect and cook, the Bogong moth was a highly prized food for Aboriginal groups living in the Southern Tablelands and Uplands and, as highlighted by Flood (1996: 14) “enabled large gatherings of many as 500 people from different friendly tribes for initiation ceremonies,

arrangement of marriages, corroborees and exchange of goods". Food stuffs hunted/collected by both sexes included native honey, bandicoots, snakes, echidnas, crayfish, yabbies, platypus, and turtles.

Compared with that of their coastal and western plains counterparts, the material equipment of Aboriginal groups occupying the Southern Tablelands and Uplands at contact was somewhat restricted in range, quantity and complexity (Flood 1980: 127). Flood (1996: 25) notes that a man would typically have two to six spears, a spear-thrower, stone hatchet, knobbed club, one or more boomerang, and two types of shield. 'Death spears', wooden spears barbed with a row of jagged stone chips set into a groove with the gum of a grass tree, were used in fights and for hunting large game such as emus. Other specialized hunting equipment included nets made from Pimelea fibre for collecting Bogong moths. Shell scrapers, bone points and stone knives were also employed. Spear shafts were made from the seed stalks of the grass tree, box tree or iron bark. The primary equipment of women included yam sticks (used as digging sticks, staffs, and weapons), carrying dishes and 'dilly-bags' (Flood 1996: 26). In terms of shelter, strong, weatherproof huts were built from large sheets of stringybark. Clothing comprised possum or kangaroo skin cloaks, with ornamental marks scratched on the underside. Substantial belts and headbands were also worn, the latter made from either plaited kurrajong fibre or possum skin.

Information regarding the religious beliefs and burials customs of Aboriginal people occupying the Southern Tablelands and Uplands at contact is available for Ngarigo and Walgalu-speaking peoples. According to Flood (1996: 23), spiritual authority in Ngarigo society was vested principally in Daramulan, son of Baiame and his emu-wife Birrahgnooloo. Daramulan once lived on earth and taught the Ngarigo elders tribal religion, the 'Kuringal' initiation ceremony and what foods they were allowed eat. Upon his death, Daramulan entered the sky and, from there, was able to keep watch over his people. Like Daramulan, the spirit of dead person, known as a 'bulabong', was believed to enter the sky (kulumbi) and, beyond it, another country complete with rivers, trees and abundant game. At the same time, Bulbongs, the Ngarigo believed, could camp, kill game and make fires in the bush for a time after death. Accordingly, the Ngarigo tied a corpse up tightly, with knees drawn up to the head and hands placed open on each side of the face. Bodies were buried either naked or fully clothed and painted, with graves sometimes made like a well with a side chamber and others simple cavities in a bank. Personal weapons and implements were buried with the body. Flood (1996: 23) notes that, like the Ngarigo, Walgalu-speaking peoples were careful to bury their dead with all of their personal belongings. Other forms of burial practised included burial in cave, burial in a tree or secondary burial (i.e. corpse placed initially in tree and bones buried a year later).



## 6.0 Archaeological Context

This section describes the archaeological context of the proposal site on a regional and local scale. Archaeological data of relevance to this area, including the results of previous archaeological investigations in the greater Sutton area, are reviewed in order to contextualise the results of the current assessment.

### 6.1 Regional Context

Available archaeological data indicate that Aboriginal people have occupied the Southern Tablelands and northernmost ranges and plateaus of the Australian Alps<sup>2</sup> for at least 21,000 years (Flood et al. 1987). Compared with some other parts of NSW (e.g., the Sydney and Hunter Valley regions), the Aboriginal archaeological records of these adjoining physiographic regions<sup>3</sup> have seen only limited investigation, a product of comparatively minor development pressures, as well as environmental and legislative factors<sup>4</sup>. This fact notwithstanding, the past four decades have seen hundreds of Aboriginal archaeological investigations incorporating survey and/or excavations carried out across these regions, the overwhelming majority in development-impact contexts. Together with the regional and LGA-based research efforts of individuals such as Flood (1973, 1976, 1980, 1984, 1996), Packard (1984, 1986), Gillespie (1984), Huys and O'Sullivan (2013) and Lance and Koettig (1986), these have revealed a rich and diverse record of past Aboriginal occupation, with thousands of Aboriginal archaeological sites now registered on the AHIMS database and ACT Heritage Register. While a detailed review of the Aboriginal archaeology of the southeastern tablelands and highlands is beyond the scope of this report, some key investigation themes are detailed in brief below.

#### 6.1.1 Open Artefact Sites: Distribution, Contents & Definition

Surface and subsurface distributions of stone artefacts, variously referred to as open artefact sites, open sites and open campsites are the most common and widely distributed form of Aboriginal archaeological site across the southeastern tablelands and highlands (Attenbrow, 1984; Attenbrow & Hughes, 1983; Flood, 1980, 1996; Gillespie, 1984). Other site types, such as rockshelters, burials, scarred trees, quarries, grinding grooves and stone arrangements have also been identified but are comparatively rare (Flood 1980, 1996; Gillespie, 1984; Huys & O'Sullivan, 2013; Lance & Koettig, 1986). Accordingly, open artefact sites remain the most intensively investigated component of the Aboriginal archaeological record of these regions, with site distribution, geomorphology and the technology of associated flaked stone artefact assemblages, in particular, comprising key research topics (e.g., Attenbrow, 1984; Attenbrow & Hughes, 1983; Baker et al., 1984; Ferguson, 1988; Flood, 1980; Hughes et al., 1984; Hughes & Koettig, 1983; Hughes et al., 2014; Kinhill Engineers, 1996; Koettig, 1982, 1984; Lance, 1985; McBryde, 1975; Navin Officer Heritage Consultants, 2012; Packard, 1986; Paton, 1990; Witter, 1980, 1981).

Existing archaeological survey data for the southeastern tablelands and highlands indicate a strong trend for the presence of open artefact sites on landform elements adjacent to creeks, rivers, lakes, swamps and springs (e.g., beach-ridges, source-bordering dunes, creek flats, terraces, lower slopes and spur crests). Although this distribution pattern can be attributed in part to geomorphic dynamics and archaeological sampling bias, with fluvial erosion activity along watercourses, for example, resulting in higher levels of surface visibility and concentrated survey effort, an occupational emphasis on linear and area-based water features is supported by the results of numerous subsurface investigations (e.g. Baker et al., 1984; Ferguson, 1988; Flood, 1980; Hughes et al., 1984; Hughes & Koettig, 1983; Hughes et al., 2014; Kinhill Engineers, 1996; Koettig, 1982, 1984; Lance, 1985; McBryde, 1975; Navin Officer Heritage Consultants, 2012; Packard, 1986; Paton, 1990; Witter, 1981). Together with available survey data, the results of these investigations have demonstrated that assemblage size and complexity tend to vary significantly in relation to the landscape variables of landform and water permanency, with larger, more complex<sup>5</sup> assemblages occurring on landform

<sup>2</sup> Following Flood (1980), we refer here to the 'Namadgi Ranges', comprising the Tidbinbilla, Brindabella, Bimberi, Scabby and Booth Ranges, as well as the Bogong Mountains and Yarrangobilly Plateau to their west.

<sup>3</sup> Note that, for ease of reference, these two distinct physiographic regions are referred to throughout this section as the 'southeastern tablelands and highlands'.

<sup>4</sup> E.g., statutory protection in the form of National Parks and Nature Reserves and the strong representation of rugged, largely undevelopable terrain

<sup>5</sup> Those containing a wider variety of raw materials and technological types and/or higher mean artefact densities.

elements adjacent to regionally / locally significant watercourses (e.g., the Yass, Lachlan, Murrumbidgee, Mulwaree and Molonglo Rivers), as well as lakes (e.g., Lake Bathurst, Lake George), swamps and springs. Outside of these contexts, surface and subsurface artefact distributions have typically been found to be sparse and discontinuous and are often referred to as 'background scatter', being "artefactual material which is insufficient in number or in association with other material to suggest focussed activity in a particular location" (Douglas and McDonald, 1993).

Flood (1980: 156-175), in discussing the open site record of the Canberra region, distinguished between five different types of open campsites, the most significant of which, in terms of size and artefactual content, were designated as 'large lowland bases'. Flood (1980: 162) defined these as "open campsites extending over 2 or 3 square kilometres" and containing "1500 or more stone artefacts and manuports". Three such sites were identified within the region, the first on an extensive aeolian sand deposit c.5 km to the east of Lake George (the 'Nardoo' site), the second on the banks of the Molonglo River at Pialligo (the 'Pialligo' site) and the third on the property 'Reidsdale', close to the NSW / ACT border. Of the remaining four types of open campsites identified by Flood (1980) only one - designated as 'medium-size lowland camps' - fell within the cited elevation range of the Southern Tablelands component of the broader "Southern Uplands" region (i.e., 550 to 730 m AHD, Flood, 1980: 7). For these types of campsites, Flood (1980: 162) noted an association with the exploitation of riverine resources and argued that, relative to higher elevations camps<sup>6</sup>, medium-size lowland camps represented locations of more sustained or prolonged occupation.

Of the thousands of open artefact sites identified across the southeastern tablelands and highlands to date, those identified on and within sand deposits have received the most intensive archaeological investigation (Packard, 1986). Well documented examples include the 'GIL 1' and 'GIL 2' sites in the Lake Bathurst area (Baker et al., 1984), the 'Mt Pleasant 1' site on the southern bank of the Lachlan River (Hughes & Koettig, 1983), the 'WE-1', 'Nardoo', 'Butmaroo 1', 'Bridge Creek 1' and 'ELG1' sites in the Lake George area (Flood, 1980; Hughes et al, 1984, 2014; Kinhill Engineers, 1996; Lance, 1985; Packard, 1986), the 'G17' site on the eastern bank of the Mulwaree River (Koettig, 1983; Paton, 1990), the 'Windermere' site near Collector (Baker & Feary, 1984) and the Reedy Creek site complex, located approximately 2.5 km upstream of the junction of Reedy Creek and the Shoalhaven River (Ferguson, 1988). As highlighted by Packard (1986), sand deposits across the Southern Tablelands can be divided into three basic types - alluvial, lacustrine and shoreline deposits - with each having its own distinct formational origins. In general, available archaeological and geomorphological data for investigated sand deposits across the southeastern tablelands indicate complex formational histories, with associated archaeological materials affected by a range of natural and anthropogenic phenomena. Available radiometric dates and typological evidence indicate that the overwhelming majority of occupation deposits identified within investigated sand deposits to date are of mid-to-late Holocene antiquity. However, deposits of potential Late Pleistocene to early Holocene have also been identified (see, in particular, Flood, 1999: 114-116).

Flaked stone artefacts dominate archaeological finds assemblages from investigated open artefact sites across the southeastern tablelands and highlands. Items such as complete and broken grindstones, 'moth pestles', hammerstones and edge-ground hatchet heads have also been recorded though comparatively infrequently. With the notable exception of 'knapping floors'<sup>7</sup>, a relatively common component of the Aboriginal archaeological record of the Southern Tablelands, associated archaeological features (e.g., hearths, pits) have likewise proven elusive (but see Attenbrow, 1984; Packard, 1986; Witter, 1980 for potential examples). Investigated knapping floors across the Southern Tablelands have varied considerably in size and complexity, with the largest and most complex examples identified through excavation as opposed to surface survey. Backed artefacts (i.e., Bondi points, geometric microliths and elouera) are a common feature of knapping floors and most of these features were likely specifically associated with their production. In common with regions such as the Hunter Valley (e.g., Hiscock, 1993; Moore, 2000) and Sydney Region (Attenbrow, 2010; McDonald, 2008), available evidence supports the suggestion that backed artefact manufacture across the Southern Uplands was a highly structured or systematic activity.

<sup>6</sup> In ascending order of elevation, these higher elevations camps comprised 'montane valley camps', 'high summer camps' and 'camps above winter snowline' (Flood, 1980: 168-170).

<sup>7</sup> Following White (1997: 8), knapping floors can be defined as activity areas "where primacy was given the systematic reduction of stone, with or without additional activities being carried out". Note that these features have also been referred to as 'flaking floors' and 'workshops'.

Although relevant to a variety of site types, geomorphic processes such as soil erosion and fluvial/aeolian/colluvial aggradation are of particular relevance to the identification and definition of open artefact sites. As in other archaeological contexts (e.g., Dean-Jones & Mitchell, 1993; McDonald, 2008), the visibility of open artefact sites across the southeastern tablelands and highlands can, to a certain extent at least, be attributed to such processes, which have variously exposed or obscured them. The prevailing (contemporary) vegetation regime of the tablelands, which could be described as being generally unfavourable for site identification, is also of note here, as are the regionally common “site revealing” activities of sand mining, dam construction, ploughing and cattle grazing<sup>8</sup>. Critically, surface artefacts invariably represent only a fraction of the total number of artefacts present within recorded surface open artefact sites across the southeastern tablelands and highlands, with subsurface densities typically significantly higher than their surface counterparts. Artefact exposure, unsurprisingly, is highest on erosional surfaces, as well as in areas of modern disturbance. At the same time, in many areas, surface artefacts have been shown through dispersed testing programs to form part of more-or-less continuous subsurface distributions of artefacts, albeit with highly variable artefact densities. For the tablelands, in particular, the presence or absence of surface artefacts across is not a reliable indicator of Aboriginal archaeological sensitivity.

### 6.1.2 Flaked Stone Artefact Technology

Virtually indestructible, flaked stone artefacts are a ubiquitous element of the Aboriginal archaeological record of the southeastern tablelands and highlands have assumed a prominent position in archaeological reconstructions of past Aboriginal land use across these regions. Studies of excavated and surface collected stone artefact assemblages to date have ranged from basic descriptive accounts of assemblage composition<sup>9</sup> to detailed technological analyses. Excavated and surface collected assemblages of particular interpretive value within the southeastern tablelands and highlands include those recovered from ‘sand deposit’ sites in the Lake George and Lake Bathurst areas (i.e., Flood, 1980; Baker et al., 1984; Hughes et al., 1984, 2014; Kinhill Engineers, 1996; Lance, 1985), selected rockshelter sites in the Namadgi Ranges (i.e., Birrigai, Yankee Hat Shelters 1 & 2, Hanging Rock Shelter 1 and Nursery Swamp 2; Flood, 1980; Rosenfeld et al., 1983; Flood et al., 1987), the ‘G17’ site on the Mulwaree River (Koettig, 1983; Paton, 1990), the ‘SS 2.4’ site in the Yass River Basin (Packard, 1984), the ‘CAB-1’ and ‘CAB-2’ sites near Collector (Koettig, 1982), the ‘CAB-16’ site near Sutton (Koettig, 1984), the ‘DC-2’ and ‘Mt Pleasant’ sites near Dalton (Witter, 1981; Hughes & Koettig, 1983), the Reedy Creek site complex (Ferguson, 1988) and the salvage excavations completed as part of the Highlands Source Project (Navin Officer Heritage Consultants, 2012).

Available technological and typological data for surface collected and excavated flaked stone artefact assemblages from the southeastern tablelands and highlands suggest that the overwhelming majority of these assemblages belong to what is known as the ‘Australian small-tool tradition’, a term coined by Gould (1969) to describe what was then thought to be the first appearance, in the mid-Holocene<sup>10</sup>, of a new suite of flaked stone tool forms in the Aboriginal archaeological record of Australia, including backed artefacts, adzes and points (both unifacially and bifacially flaked). Complex, hierarchically-organised reduction sequences associated with the production of these tools contrast markedly with the simple sequences of earlier periods (Moore, 2011). Tools of the Australian small-tool tradition, it has been suggested, formed part of a portable, standardised and multifunctional tool kit aimed specifically at risk reduction (Hiscock, 1994, 2002, 2006). Stone artefact assemblages from late Pleistocene and early Holocene contexts, in contrast, are described by archaeologists as belonging to the ‘Australian core tool and scraper tradition’, a term first used by Bowler *et al.* (1970) to describe the Pleistocene assemblages recovered from Lake Mungo in western New South Wales. Bowler *et al.* (1970) saw the main components of these assemblages - core tools, steep-edged scrapers and flat scrapers - as characteristic of early Australian Aboriginal assemblages and as being of a distinctly different character to those associated with the preceding small-tool tradition.

In southeastern Australia, the Australian ‘small-tool’ and ‘core tool and scraper’ traditions are most commonly described in terms of McCarthy’s (1967) Eastern Regional Sequence (ESR) of stone tool assemblages, with ‘Capertian’ assemblages assigned to the latter tradition and ‘Bondaian’

<sup>8</sup> I.e., via stock movements and trampling

<sup>9</sup> I.e., with respect to the relative representation of different artefact types and raw materials

<sup>10</sup> More recent research into the chronology of backed artefacts and points in Australia (e.g., Hiscock & Attenbrow 1998, 2004; Hiscock 1993b) has demonstrated a long history of production and use for these implement types, with both types now known to have been produced, albeit in small numbers, in the early Holocene and likely in the late Pleistocene as well.

assemblages, the former. Based on appreciable changes in the composition of chipped stone artefact assemblages over time, the ERS hypothesises a three phase sequence of 'Capertian' (earliest), 'Bondaian' and 'Eloueran' (most recent) assemblages and was developed on the basis of McCarthy's (1948, 1964) pioneering analyses of stratified flaked stone assemblages from the Lapstone Creek rockshelter, on the lower slopes of the Blue Mountains eastern escarpment, and the Capertee 3 rockshelter in the Capertee Valley north of Lithgow.

At present, the most widely cited characterisation of the ERS is that of a four-phase sequence beginning with the Pre-Bondaian (McCarthy's Capertian) and moving successively through the Early, Middle and Late phases of the Bondaian, the last of which equates to McCarthy's (1967) Eloueran phase. The tripartite division of the Bondaian is based principally on the presence/absence and relative abundance of backed artefacts (Attenbrow, 2010: 101). However, other factors, such as changes in the abundance of bipolar artefacts and different stone materials, as well as the presence/absence of ground implements are also relevant. Importantly, while there is now a general consensus amongst researchers regarding the naming and key technological / typological characteristics of the various phases of the ERS, it should be noted that, based as they are on spatially and temporally-specific archaeological datasets, published and unpublished versions of the sequence do differ with respect to the dating of individual phases (Table 6), as well the relative frequencies of various diagnostic traits (Table 7 and Table 8). Attention is also drawn to the fact that, while widely employed by archaeologists working within the Sydney, Hunter Valley and Central Coast regions, the ERS, as currently formulated, has yet to widely applied to the Aboriginal archaeological record of the southeastern tablelands and highlands, a product of both the scarcity of Late Pleistocene to early Holocene occupation evidence across these regions and the continuing influence of Flood's (1980) seminal regional study, which failed to identify evidence of the transition between the 'small-tool' and 'core tool and scraper' traditions and used different terminology.

Flaked stone artefact assemblages from excavated and surface collected/recorded open artefact sites across the southeastern tablelands and highlands attest to the exploitation of a diverse range of lithic raw materials. However, two rock types - quartz and silcrete - dominate the region's existing stone artefact record. Other, less commonly exploited raw materials represented in excavated and surface collected/recorded assemblages include materials such as quartzite, chert, silicified tuff, felsite, chalcedony and fine-to-coarse-grained volcanics. Alongside silcrete and quartz, these materials occur variously in a number of geological formations and units across the southeastern tablelands and highlands. Notably, cortical data for analysed flaked stone artefact assemblages indicate the exploitation of both primary (i.e., outcrop) and secondary (i.e., fluvial gravel deposits) raw material sources.

**Table 6 Chronology of the Eastern Regional Sequence, as proposed by Attenbrow (1987, 2006) and McDonald (1994, 2008)**

McCarthy's (1967) phasing	Current Phasing (after Stockton and Holland, 1974)	Attenbrow 1987	McDonald 1994	Attenbrow 2004	McDonald 2008
Capertian	Pre-Bondaian	Pre-5,000 BP	Pre-5,000 BP	11,300-5,000 BP	30,000 BP-8,000 BP
Bondaian	Early Bondaian	5,000-2,800 BP	5,000-3,000 BP	5,000-2,800 BP	8,000 BP-4,000 BP
	Middle Bondaian	2,800 BP-1,600 BP	3,000-1,000 BP	2,800 BP-1,600 BP	4,000 BP-1,000 BP
Eloueran	Late Bondaian	1,600 BP-110 BP	1,000 BP to contact	1,600 BP-110 BP	1,000 BP to contact

**Table 7** McCarthy's (1967) Eastern Regional Sequence (ESR) of stone artefact assemblages, as proposed by McDonald (2008) for the Sydney region. Following Attenbrow (2006: 73, Table 3.8), number of • indicates relative frequency within analysed assemblages; Y, N indicates yes, no.

Current Phasing	McCarthy's (1967) Phase	Date range	Diagnostic criteria				
			Backed artefacts	Ground stone	Bipolar artefacts	S. tuff predom.	Other FGS predom.
Pre-Bondaian	Capertian	30,000 BP-8,000 BP	-	N	•	Y	N
Early Bondaian	Bondaian	8,000 BP-4,000 BP	••	N	•	N	Y
Middle Bondaian		4,000 BP-1,000 BP	•••	Y	••	N	Y
Late Bondaian	Eloueran	1,000 BP to contact	•	Y	•••	N	Y

**Table 8** McCarthy's (1967) Eastern Regional Sequence (ESR) of stone artefact assemblages, as proposed by Attenbrow (2006) for the Upper Mangrove Creek catchment. Following Attenbrow (2006: 73, Table 3.8), number of • indicates relative frequency within analysed assemblages; Y, N indicates yes, no.

Current Phasing	McCarthy's (1967) Phase	Date range	Diagnostic criteria					
			Bondi points	Other backed	Ground stone	Bipolar artefacts	Quartz predom.	FGS predom.
Pre-Bondaian	Capertian	11,300-5,000 BP	•	-	-	•	N	Y
Early Bondaian	Bondaian	5,000-2,800 BP	••	•	•	•	N	Y
Middle Bondaian		2,800 BP-1,600 BP	•••	••	••	••	Y	N
Late Bondaian	Eloueran	1,600 BP-110 BP	-	•	•••	•••	Y	N

As at many other Aboriginal archaeological sites across eastern Australia (e.g., Attenbrow, 2006, 2010; McDonald, 2008), various excavated assemblages from the southeastern tablelands and highlands attest to a shift, over time, in the relative significance of particular raw materials for flaked stone artefact manufacture, as well as the relative importance of both backed artefact manufacture and bipolar flaking. For the most part, archaeological considerations of this topic to date have focused on change over the course of the mid-to-late Holocene (e.g., Flood, 1980; Rosenfeld et al., 1983; Hughes et al., 2014). However, longer-term perspectives have also been provided (Flood et al., 1987). Regarding the former, as recently highlighted by Hughes et al. (2014), several excavated sites from across these adjoining regions have yielded flaked stone artefact assemblages that document a change from 'early' silcrete or chert-dominated assemblages with moderate to high frequencies of backed artefacts and low frequencies of bipolar artefacts to 'later' quartz-dominated assemblages with high proportions of bipolar artefacts and few backed artefacts. At Nardoo, near Lake George, and Yankee Hat Shelter 2, in the Namadgi National Park, Flood (1980) placed the transition between these distinctive 'industries' as occurring about 900 cal. BP. At Hanging Rockshelter Shelter 1, also in the Namadgi National Park, the transition was suggested by Flood (1980) to have occurred even later, at around 500-300 cal. BP. Packard (1986), in summarising the results of Jones and Allen's 1983 investigation of the 'Butmaroo 1' site, southeast of Lake George, cites a date range of 500-1,000 BP for the site's upper "quartz-dominant assemblage" and a range of 3,000-4000 BP for an underlying assemblage "of silcrete and quartz artefacts with backed blades made on both raw materials". More recently, Hughes et al. (2014: 30-31) cited a minimum age of "2,400 ya" for the 'early' silcrete and backed artefact-rich / bipolar-poor assemblage recovered from the eastern ridge of the 'WE-1' site,



located on the Woolshed Embankment at the northern end of Lake George. A quartz and bipolar-rich 'later' assemblage recovered from the western ridge, in contrast, was argued to post-date 1300 cal. BP (Hughes et al., 2014: 31).

Backed artefacts, scrapers and cores dominate the "formed" components of dated and undated Bondaian stone artefact assemblages from the southeastern tablelands and highlands. Other implements types, such as unifacially and bifacially-flaked pebble tools (i.e., 'choppers'), notched flakes, edge-ground hatchet heads, points, burins and miscellaneous retouched flakes, have also been recorded, albeit relatively infrequently. Excavated and surface collected / recorded assemblages of backed artefact assemblages attest to an *overall* emphasis on the production of Bondi points, with geometric microliths and elouera produced in lower numbers. Scrapers, meanwhile, have been identified in a wide range of shapes and sizes, with many sites containing multiple scraper 'types' (e.g., thumbnail, side, double side, end, discoidal) (see, for example, Flood, 1980: 212, 338-339, 348). Recovered cores indicate the use of both freehand percussion and bipolar reduction, with cores flaked via freehand percussion attesting to the application of a variety of core reduction methods.

### 6.1.3 Chronology of Occupation

Evidence for late Pleistocene/early Holocene Aboriginal occupation of the southeastern tablelands and highlands has proven elusive, with confirmed or probable occupation evidence from these periods obtained from only four localities: Birrigai rockshelter in the Tidbinbilla Nature Reserve (Flood et al., 1987), the Y259 rockshelter on the Yarrangobilly Plateau (Aplin et al., 2010), the 'Wombeyan 1' site in the Wombeyan Karst Conservation Reserve (Navin Officer, 2003) and the Lake George area (Flood, 1999: 114-116). Available radiometric dates and finds data for the Birrigai rockshelter, which remains the oldest Aboriginal archaeological site in the Southern Uplands, indicate occasional, non-intensive Aboriginal use of the shelter from 21,000 BP till modern times, with a marked increase in occupation from 3,000 BP. While comparably non-intensive use has been inferred, Aboriginal occupation of the Y259 rockshelter appears to have been restricted to the period 9,700-9,120 cal. BP (Aplin et al., 2010: 206). Late Pleistocene occupation at the Wombeyan 1 site, meanwhile, is indicated by two radiocarbon dates - 9,998±75 BP (Wk-11561) and 12,178±66 BP (Wk-11562) - both of which were obtained on potential hearths (Navin Officer, 2003: 21-23). Stratified deposit at this site occurred in association with an alluvial fan deposit adjacent to Wombeyan Creek, which included a continuous palaeosol horizon that varied in depth from 1.2 to 1.4 m BGL (Navin Officer, 2003: 18-20).

Evidence for Late Pleistocene / early Holocene occupation of the Lake George area comes from two separate locations: Fernhill Gully, east of Murrays Lagoon, and the 'Butmaroo 1' site, located on the top of Butmaroo Hill near the highest former eastern shore of the lake. Regarding the former, Flood (1999: 115) has cited the 1980 identification, by archaeologist Rhys Jones, of "some small amorphous quartz flakes" in aeolian sands dated by Coventry and Walker (1977) to between 22,000 and 26,000 BP. At Butmaroo 1, a lag deposit of quartz and metamorphosed volcanic rocks found underlying a 1.5 m thick sand sheet was found to contain a single *in situ* quartz core, with several other artefacts also inferred to have been derived from it. The base of this deposit is thought, on extrapolation of available radiometric dates, to date back to at least 10 kyr. Several heavily weathered implements and cores/core tools manufactured on metamorphosed volcanics, which included dome-shaped "horsehoof" cores, were also identified the tailings of sand-mining operations around the site and on the lake floor.

In stark contrast to the late Pleistocene/early Holocene, evidence for mid-to-late Holocene Aboriginal occupation of the southeastern tablelands and highlands abounds, with numerous excavated and surface collected sites producing assemblages that can be confidently assigned to these periods on the basis of radiometric dates and/or their typological/technological profiles. While radiometric dates are available for several sites, the largely undated open site record of these regions has led to a reliance on the dating of excavated archaeological finds assemblages through relative means, specifically, through consideration of the typological and technological composition of associated flaked stone artefact assemblages and reference to a modified version of McCarthy's (1967) ESR, the broad temporal parameters of which are now well established. While offering a useful chronological framework within which to assess diachronic changes in stone artefact technologies and raw material use, the largely undated and palimpsest character of the open site record of the southeastern tablelands and highlands represents a significant analytical and interpretive obstacle for period-specific reconstructions of Aboriginal mobility regimes (cf. Cowan, 1999).

#### 6.1.4 Rockshelter Sites: Distribution and Contents

Despite forming only a minor component of the identified Aboriginal archaeological record of the southeastern tablelands and highlands, rockshelter sites have featured prominently in the archaeological literature of these regions. Sustained archaeological interest in rockshelter sites can be attributed to a range of factors, with notable stimuli including: 1) the demonstrated antiquity of Aboriginal rockshelter use across these regions, with two highland sites - Birrigai (Flood et al., 1987) and Y259 (Aplin et al., 2010) - containing Late Pleistocene / early Holocene occupation deposits; 2) the nature of the archaeological finds assemblages recovered from rockshelter sites, which often include faunal remains; 3) the presence of rock art in some shelters; and 4) the frequent availability of radiometric dates for excavated occupation deposits.

Excavated rockshelter sites within the southeastern tablelands and highlands, all of which are located in 'highland' contexts, are listed in Table 9 below, with basic site information provided therein. As indicated, excavated examples range in elevation from 733 m to 1433 m and can, under Flood's (1980) classification scheme, be characterised as 'montane valley' and 'high summer' camps, with the former assigned an elevation range of "between about 745 m and 1160 m" (Flood, 1980: 168). Flood (1980:168-169) links the former to the exploitation of surrounding wet sclerophyll forests and the latter to the harvesting of Bogong moths. In common with other parts of NSW, the presence of a suitably-sized rock overhang, whether formed by cavernous weathering and/or block-fall or block-slide, and an associated habitable floor space appear to have been the only *fundamental requirements* for a shelter's potential use by Aboriginal people. However, other variables, such as aspect, outlook, degree of protection from the elements and the shelter's location relative to water and other economic resources were clearly also important (Flood, 1980). Archaeologically, such variables are particularly germane to assessments of intensity of use<sup>11</sup>.

Analysis of archaeological finds assemblages from excavated rockshelter sites have provided a range of insights into pre-contact Aboriginal settlement and subsistence patterns, with excavated faunal assemblages, in particular, offering insights thus far unavailable from investigated open site deposits. For their part, recovered faunal assemblages have complemented existing ethnohistorical accounts for the region in attesting to the exploitation of a diverse range of terrestrial, freshwater and avian fauna (see, in particular, Aplin et al., 2010; Flood, 1980; Flood et al., 1987; Rosenfeld et al., 1983). Together with available historical reference materials, such assemblages are important for the reconstruction of pre-contact diets and subsistence behaviours, as well as assessments of seasonal mobility patterns. Excavated stone artefact assemblages have likewise provided a range of insights into pre-contact settlement and subsistence behaviours and have facilitated an assessment of diachronic changes in stone artefact technologies and raw material use (Flood, 1980; Flood et al., 1987; Rosenfeld et al., 1983).

As suggested by the data presented in Table 9, relatively few rockshelters with art have been identified across the southeastern tablelands and highlands to date (Flood, 1996). Nonetheless, previously recorded / reported rock art in shelter contexts, which has included both engraved and pigment art, indicates a range of artistic motifs and techniques (Flood, 1980, 1996; Gillespie, 1984; Rosenfeld et al., 1983). Recorded motifs have consisted principally of animals and anthropomorphs. However, other motifs, including items of material cultural and non-figurative representations have also been identified (Gillespie, 1984: 3-4). While detailed sub-regional and/or regional assessments of the rock art record of southeastern tablelands and highlands are lacking, reference to the results of regional rock art studies in surrounding regions (e.g., McDonald, 2008) suggests that such art likely served variously as a communicative medium for the assertion of local group identity and broader culture area cohesion.

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<sup>11</sup> As opposed to use alone, whether ephemeral or intensive.

**Table 9 Excavated rockshelter sites within the southeastern tablelands and highlands**

Site Name	Location	Elevation	Lithology of shelter	Excavated finds (excluding charcoal)	Rock Art?	Dominant lithic raw material	Backed artefacts?	Earliest radiometric date	Reference(s)
Birrigai	Tidbinbilla Nature Reserve	730 m	Granite	Stone artefacts, bone, shell and ochre	No	Quartz	No	21,000±220 BP (Beta-16886)	Flood et al., 1987
Nursery Swamp 2	Namadgi National Park	1140 m	Granite	Stone artefacts, bone and shell	Yes	Quartz	Yes	3,770±110 BP (ANU-3033)	Rosenfeld et al., 1983
Yankee Hat 1	Namadgi National Park	1098 m	Granite	Stone artefacts	Yes	Quartz	Yes	No dates available	Flood, 1980
Yankee Hat 2	Namadgi National Park	1098 m	Granite	Stone artefacts	No	Quartz	Yes	770±140 BP (ANU-1051)	Flood, 1980
Rendezvous Creek	Namadgi National Park	1128 m	Granite	Stone artefacts and bone	Yes	Quartz	No	No dates available	Flood, 1980
Front Paddock Shelter	Namadgi National Park	1021 m	Granite	Stone artefacts	No	Quartz	No	No dates available	Flood, 1980
Hanging Rock Shelter 1	Tidbinbilla Nature Reserve	823 m	Granite	Stone artefacts, bone and ochre	No	Quartz	Yes	370±60 BP (ANU-1047)	Flood, 1980
Hanging Rock Shelter 2	Tidbinbilla Nature Reserve	823 m	Granite	Stone artefacts	No	Quartz	Yes	No dates available	Flood, 1980
Bogong Cave	Tidbinbilla Nature Reserve	1433 m	Granite	Moth debris	No	No stone artefacts	No	No dates available	Flood, 1980
Bogong Shelter 1	Tidbinbilla Nature Reserve	1433 m	Granite	Stone artefacts	No	Quartz	No	No dates available	Flood, 1980
Bogong Shelter 2	Tidbinbilla Nature Reserve	1433 m	Granite	Stone artefacts	No	Quartz	Yes	1,000±60 BP (ANU-1050)	Flood, 1980
Y259	Yarrangobilly Plateau	1,100 m	Limestone	Stone artefacts and bone	No	Quartz	No	8,668±43 BP (Wk-18839)	Aplin et al., 2010

### 6.1.5 Archaeological Site Location

A number of Aboriginal archaeological site distribution models have been proposed for the southeastern tablelands and highlands, with the models of Flood (1980: 158-159) and Lance and Koettig (1986: 26-32), summarised in Table 10 below, of particular relevance to the current assessment. Flood's (1980) model, developed as part of her pioneering regional investigation, covers both physiographic regions while that of Lance and Koettig (1986), prepared as part of an Aboriginal planning study for the City of Goulburn, relates specifically to the Southern Tablelands. As indicated, Aboriginal site distribution across the subject regions has been linked to a variety of environmental factors, with proximity to water, landform, water permanency, outlook, aspect and proximity to food and other resources variously highlighted as key determinants.

**Table 10 Aboriginal Site Distribution models for the southeastern tablelands and highlands**

Researcher(s)	Year	Summary of model
Flood	1980	<ul style="list-style-type: none"> <li>• All sites are located within 1 km, and most within 100m, of a river, creek, lake or spring. Sites do not occur at the water's edge;</li> <li>• All sites have a reasonably good view of their respective approaches, with none located in cul-de-sac positions. Montane camps will typically be located on spurs or in naturally open flats;</li> <li>• All sites are located on well-drained ground, with sand hills favoured locations;</li> <li>• Most sites are located in savannah woodland or dry sclerophyll forest, frequently on the top of a low spur or rise;</li> <li>• Where sites occur on the side of a mountain range or valley, their aspect is always east or north, providing shelter from prevailing westerly winds;</li> <li>• High level camps are generally high on the lee side of their respective mountain ridges, perhaps indicating a preference for walking along open ridge tops;</li> <li>• Proximity of camps to forest edges may be due in part to the availability of bark for hut making; and</li> <li>• Excluding stone quarries, identified sites can be divided into three broad groups: those close to aquatic food resources; those adjacent to wet sclerophyll forest and high-level camps close to Bogong Moth habitats.</li> </ul>
Lance & Koettig	1986	<ul style="list-style-type: none"> <li>• Most open artefact sites are located within 100 m of water;</li> <li>• Open artefact sites located at the junction of creeks or rivers tend to be large with high densities of stone artefacts;</li> <li>• The most favourable landscape setting for open artefact sites, and hence the location where most will occur, is gentle, well-drained lower slopes. However, such sites will also occur on ridgetops and creek flats;</li> <li>• The location of habitation sites is independent of bedrock geology;</li> <li>• Sand bodies located near water sources were ideal locations for habitation and may contain burials;</li> <li>• Rockshelters with evidence of Aboriginal use will be restricted to areas in which suitable rock types (e.g., granite boulders, limestone) provide overhangs;</li> <li>• Quarries are located on primary or secondary outcrops of suitable lithic raw materials;</li> <li>• Grinding grooves will be located on sandstone near creeks;</li> <li>• The location of bora grounds, carved trees and burials cannot be predicted accurately. However, such sites are likely to be located on hilltops and some in cases in sand bodies.</li> </ul>

## 6.2 AHIMS Database

The AHIMS database, administered by the NSW Office of Environment and Heritage (OEH), contains records of all Aboriginal objects reported to the Secretary of the Department of Premier and Cabinet in accordance with Section 89A of the *National Parks and Wildlife Act 1974*. It also contains information about Aboriginal places, which have been declared by the Minister to have special significance with

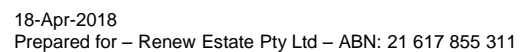
respect to Aboriginal culture. Previously recorded Aboriginal objects and declared Aboriginal places are known as 'Aboriginal sites'.

A search of the AHIMS database undertaken on 23 October 2017 for a 10 x 10 km area centred on the proposal site. A total of 14 Aboriginal archaeological sites were identified within the search area all comprising open artefact sites. Consideration of the location of previously identified AHIMS sites indicates that no sites are mapped within the proposal site, with the closest site – open artefact site 'MFR OC3' (57-2-0697) located 1.5 km to the southwest.





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### 6.3 Archaeological Predictions

A review of the existing archaeological and environmental context of the proposal site suggests that material evidence of past Aboriginal activity within the area is likely to be restricted to flaked stone artefacts in surface and subsurface contexts and scarred trees where mature trees remain.

Accordingly, key predictions for the proposal site's Aboriginal archaeological record are as follows:

- The dominant raw material for flaked stone artefact production within the proposal site will be quartz, with silcrete the second most common material;
- Flaked stone artefact assemblages will be dominated by flake and non-flake debitage items (*sensu* Andrefsky 2005), with formed objects (i.e., cores and retouched implements) comparatively poorly represented;
- Flake debitage will dominate recorded site assemblages whilst retouched implements will be rare;
- Knapping floors, if present, will exhibit evidence indicative of on-site backed artefact manufacture;
- Tool types of demonstrated chronological significance will be restricted to backed artefacts and/or edge-ground hatchet heads;
- Potential exists for the presence of modified or carved Aboriginal scarred trees where mature trees are present; and
- Subsurface artefact distribution across the proposal site will vary significantly in relation to proximity water.

## 7.0 Archaeological Survey Methodology

### 7.1 Aim and Objectives

The aim of the archaeological survey was to identify, record and map Aboriginal heritage values within the proposal site. These values include both the tangible remains of past Aboriginal activity (i.e. archaeological evidence) as well as intangible cultural values. To achieve these aims, the following specific survey objectives were developed:

- to comprehensively survey, by pedestrian transects, land within the proposal site.
- to identify and record Aboriginal archaeological sites within the proposal site.
- to inspect, where appropriate, areas of known or potential Aboriginal cultural value, including AHIMS sites, and areas identified by RAP representatives.
- to obtain sufficient data to facilitate the development of appropriate management and mitigation measures for identified Aboriginal sites and areas of archaeological sensitivity.

### 7.2 Methodology

A field team of two AECOM archaeologists (Geordie Oakes and Andrew McLaren) and five RAPs representatives completed the archaeological survey of the proposal site over three days between 25 to 29 November 2017. A list of representatives who participated in the archaeological survey is provided in Section 3.0.

All survey was conducted on foot, with a total of 11 transects executed across the proposal site. The location of each transect completed during survey, including start and end points, was recorded using one of two handheld differential GPS units, with associated transect data (e.g., GSV and GI ratings) entered directly into the same unit upon the completion of each transect.

### 7.3 Site Definition

The definition, in spatial terms, of Aboriginal archaeological sites is a topic of considerable importance to modern cultural heritage management and one that has generated significant discussion in Australian archaeology (e.g., Doleman 2008; Holdaway, 1993; Holdaway et al. 1998, 2000; MacDonald & Davidson 1998; McNiven 1992; Robins 1997; Shiner 2008). Aboriginal archaeological sites can be broadly defined as places in the landscape that retain physical evidence of past Aboriginal activity. Such evidence, of course, can assume a range of forms, depending on the nature of the activity or activities that produced it, and can vary dramatically in quantity and extent. Some Aboriginal archaeological sites are, by their very nature, easy to define in spatial terms, with scarred trees and rockshelters, for example, readily distinguishable from their surrounding landscapes. Difficulties arise, however, for sites whose present-day physical extent is, more often than not, a product of geomorphic processes, as opposed to the actions of Aboriginal people in the past.

Although relevant to a variety of site types, geomorphic processes such as soil erosion and aggradation, are of particular relevance to identification and definition of surface scatters of stone artefacts, commonly referred to as 'open camp sites' or 'artefact scatters'. It is, for example, now widely accepted that the archaeological visibility of such sites is, in most instances at least, entirely dependent on the variable operation of such processes, which will have acted variously to expose, conceal or remove completely associated archaeological materials (Dean-Jones & Mitchell 1993; Fanning et al. 2008, 2009; Shiner 2008). As demonstrated by countless large-scale excavations projects in south-eastern Australia, surface artefacts invariably represent only a fraction of the total number of artefacts present within these sites, with the majority occurring in subsurface contexts. Artefact exposure, unsurprisingly, is highest on erosional surfaces and lowest on depositional ones. At the same time, in many areas, surface artefacts have been shown to form part of more-or-less continuous subsurface distributions of artefacts, albeit with highly variable artefact densities linked to environmental variables such as stream order and landform.

Such evidence poses a significant analytical and interpretive dilemma. Defining sites on the basis of surface artefacts alone is clearly problematic, with modern site boundaries invariably reflecting the size

and distribution of surface exposures as opposed to the actions of Aboriginal people in the past. Nonetheless, for pragmatic reasons, this is the most commonly used approach, with 'distance' and 'density-based' definitions dominating. In NSW, two of the most commonly employed distance-definitions are '*two artefacts within 50m of each other*' and '*two artefacts within 100 m of each other*'. Neither definition is derived from a particular theoretical approach or body of empirical research - they are simply pragmatic devices for site definition. Definitions based on artefact density also vary in their particulars. However, one of most commonly used definitions is that which isolates, within an arbitrarily defined 'background scatter' of one artefact/100 m<sup>2</sup>, higher density clusters that are subsequently defined as 'sites'.

Non-site or distributional archaeology offers an alternative approach to distance and density-based site definitions (Ebert 1992; Foley 1981), with individual artefacts, not sites, treated as the basic units of analysis (for published Australian examples see Doelman 2008; Holdaway et al. 2000; McNiven 1992; Robins 1997; Shiner 2008). While recognising the interpretive potential of non-site approaches with respect to data analysis and discussion, their implementation in the context of cultural heritage management studies is difficult. Here, the identification of 'sites' is required for reasons of recording (i.e., their entry into site databases such as AHIMS) as well as ease of relocation, protection, and ongoing management. The identification of spatially-discrete 'sites', therefore, offers the most pragmatic approach to Aboriginal heritage management in impact assessment contexts (but see McDonald 1996 for a different approach). For this assessment, the '*two artefacts within 100 m of each other*' definition has been adopted.



## 8.0 Survey Results

### 8.1 Survey Coverage and Effective Coverage

As indicated in Section 7.2 and shown on Figure 19, a total of 11 pedestrian transects were completed over the proposal site. While all parts of the proposal site and all landforms were investigated, recorded transect data indicate that a total survey coverage of approximately 150.1 ha, representing around 41.3% of the total proposal site, was achieved.

Effective coverage estimates for each transect completed during survey, shown in Table 11, are, for the most part low, with only two exceeding 10%. Ground Surface Visibility (GSV) across the proposal site was generally low, ranging from 10-20% due to dense native and exotic grass cover, and areas of exposure. Areas of enhanced GSV comprised erosion exposures. GSV in these exposures was varied from fair to good (40-70%). Calculation of the total effective coverage achieved for the current survey indicates that around 7.84% (c.11.77 ha) of the survey area could be effectively surveyed for surface Aboriginal archaeological materials.

**Table 11 Effective coverage data for the current survey**

Survey Unit	Landform Units	Survey Unit Area (ha)	Visibility %	Exposure %	Effective coverage (ha)	Effective coverage %
Transect 1	Flat, simple slope, crest	13.9	10	60	0.83	5.97
Transect 2	Flat, simple slope, crest	16.2	20	50	1.62	10
Transect 3	Flat, simple slope, crest	18.3	10	40	0.73	4
Transect 4	Simple slope, crest	23.8	20	70	3.33	14
Transect 5	Flat, simple slope	10.4	10	60	0.62	6
Transect 6	Simple slope, crest	6.7	10	50	0.34	5
Transect 7	Flat, simple slope	6.6	10	50	0.33	5
Transect 8	Flat	5.4	20	70	0.76	14
Transect 9	Simple slope	17.8	10	60	1.1	6
Transect 10	Simple slope	6.6	10	60	0.4	6
Transect 11	Flat, crest	24.4	10	70	1.71	7
<b>Total</b>		<b>150.1</b>	<b>-</b>	<b>-</b>	<b>11.77</b>	<b>7.84</b>

### 8.2 Surface Artefacts

A total of 145 individual stone artefacts were recorded during the archaeological survey. A simplified typological breakdown of the recorded assemblage (Table 12) shows that it is dominated by non-flake debitage (i.e., angular shatter) (n=84; 60%). Flake debitage items include complete flakes (n=11, 7.8%), flake shatter (n=15, 10.6%), proximal flakes (n=13, 9.2%) and a single redirecting flake (0.7%). Formed objects (i.e. cores or tools) make up the remainder of the assemblage and include 13 cores (11.8%) and one Bondi point (0.7%). Quartz was the dominant raw material recovered, accounting for 81% (n=115) of the assemblage. IMTC (indurated mudstone/tuff/chert) was the next most common material accounting for 12.7% (n=18), followed by silcrete 6.4% (n= 12). Recovered artefacts are generally small, with an average maximum linear dimension of 23.8±17.7 mm (range: 1.3-166 mm) (Table 13).

Cortex is poorly represented in the artefactual assemblage, with only 2.8% (n = 4) of recorded artefacts retaining cortical surfaces. This is unsurprising given the nature of locally-occurring quartz deposits, as well as the use of non-local lithic raw materials (e.g., silcrete).

Identified cores include six core fragments, four unidirectional cores, three multidirectional cores, three bifacial cores, and one bipolar core. Thirteen of the cores were manufactured from quartz, three from silcrete and one from IMTC. All were manufactured on indeterminate blanks with only one exhibiting a cortical surface. Retouched implements or tools include one near-complete silcrete Bondi point.

**Table 12 Simplified typological breakdown of artefacts**

Type	Quartz	Silcrete	IMTC	Total (n)	% Total
Complete flakes	4	2	5	11	7.8
Flake shatter	10	1	4	15	10.6
Proximal flakes	7	1	5	13	9.2
Angular shatter	84	0	3	87	60
Redirecting flakes	0	1	0	1	0.7
Bondi points	0	1	0	1	0.7
Cores	13	3	1	17	11.8
<b>Total (n)</b>	<b>118</b>	<b>9</b>	<b>18</b>	<b>145</b>	<b>100.8</b>
% Total (n)	81.4	6.3	12.7	-	-

**Table 13 Descriptive statistics for the size of artefacts**

Attribute	N	Mean	StDev	Min	Max
MLD (mm)	145	23.8	17.7	1.3	166

### 8.3 Sites

A total of 15 Aboriginal archaeological sites, comprising 12 open artefact sites and three potential Aboriginal scarred trees were recorded during the archaeological survey. All of these sites are new sites and will be registered on AHIMS. Site details are provided in Table 14 below and their locations shown on Figure 20.

**Table 14 Aboriginal archaeological sites within the proposal site**

AHIMS Site ID	Site name	AHIMS Centroid Coordinates (zone 55)		Site type
		MGAE	MGAN	
57-2-1055	SSF-IA1-17	700102	6112754	Isolated artefact
57-2-1056	SSF-IA2-17	699037	6112291	Isolated artefact
57-2-1045	SSF-IA3-17	699383	6112064	Isolated artefact
57-2-1046	SSF-IA4-17	699019	6112038	Isolated artefact
57-2-1047	SSF-AS1-17	699675	6113096	Artefact scatter
57-2-1049	SSF-AS2-17	699764	6112985	Artefact scatter
57-2-1052	SSF-AS3-17	699379	6112763	Artefact scatter
57-2-1051	SSF-AS4-17	699859	6112595	Artefact scatter

AHIMS Site ID	Site name	AHIMS Centroid Coordinates (zone 55)		Site type
		MGAE	MGAN	
57-2-1050	SSF-AS5-17	700328	6112341	Artefact scatter
57-2-1053	SSF-AS6-17	699213	6112363	Artefact scatter
57-2-1054	SSF-AS7-17	699992	6112264	Artefact scatter
57-2-1048	SSF-AS8-17	699212	6112105	Artefact scatter
N/A	SSF-ST1-17	699500	6111920	Potential scarred tree
N/A	SSF-ST2-17	699474	6112653	Potential scarred tree
N/A	SSF-ST3-17	699735	6113087	Potential scarred tree

### 8.3.1 Open Artefact Sites

A total of 12 open artefact sites, comprising four isolated artefacts and eight artefact scatters, were identified during the archaeological survey. Site descriptions are provided below.

Table 15 SSF-IA1-17

**Site Name:** SSF-IA1-17  
**Site type:** Isolated artefact  
**Co-ordinates:** 700102mE 6112754mN GDA 94 (Zone 55)  
**Landform:** Simple slope  
**Distance to creekline:** 330 m  
**Dimensions:** 1 x 1 m  
**Artefacts:** 1  
**PAD:** None  
**Scientific significance:** Low



Plate 7 View east of SSF-IA1-17



Plate 8 Complete quartz flake



Table 16 SSF-IA2-17

**Site Name:** SSF-IA2-17  
**Site type:** Isolated artefact  
**Co-ordinates:** 699037mE 6112291mN GDA 94 (Zone 55)  
**Landform:** Crest  
**Distance to creekline:** 300 m  
**Dimensions:** 1 x 1 m  
**Artefacts:** 1  
**PAD:** None  
**Scientific significance:** Low



Plate 9 View east of SSF-IA2-17



Plate 10 Complete quartz flake

Table 17 SSF-IA3-17

**Site Name:** SSF-IA3-17  
**Site type:** Isolated artefact  
**Co-ordinates:** 699383mE 6112064mN GDA 94 (Zone 55)  
**Landform:** Simple slope  
**Distance to creekline:** 320 m  
**Dimensions:** 1 x 1 m  
**Artefacts:** 1  
**PAD:** None  
**Scientific significance:** Low



Plate 11 View east of SSF-IA3-17



Plate 12 Quartz flake shatter



Table 18 SSF-IA4-17

**Site Name:** SSF-IA4-17  
**Site type:** Isolated artefact  
**Co-ordinates:** 699019mE 6112038mN GDA 94 (Zone 55)  
**Landform:** Crest  
**Distance to creekline:** 320 m  
**Dimensions:** 1 x 1 m  
**Artefacts:** 1  
**PAD:** None  
**Scientific significance:** Low



Plate 13 View west of SSF-IA4-17



Plate 14 Quartz flake shatter

Table 19 SSF-AS1-17

**Site Name:** SSF-AS1-17  
**Site type:** Artefact scatter  
**Co-ordinates:** 699675mE 6113096mN GDA 94 (Zone 55)  
**Landform:** Crest  
**Distance to creekline:** 750 m  
**Dimensions:** 512 m<sup>2</sup>  
**Artefacts:** 13  
**PAD:** None  
**Scientific significance:** Low



Plate 15 View north of SSF-AS1-17



Plate 16 IMTC flake shatter fragments



Table 20 SSF-AS2-17

**Site Name:** SSF-AS2-17  
**Site type:** Artefact scatter  
**Co-ordinates:** 699764mE 6112985mN GDA 94 (Zone 55)  
**Landform:** Crest  
**Distance to creekline:** 820 m  
**Dimensions:** 500 m<sup>2</sup>  
**Artefacts:** 3  
**PAD:** None  
**Scientific significance:** Low



Plate 17 View north of SSF-AS2-17



Plate 18 Silcrete proximal flake

Table 21 SSF-AS3-17

**Site Name:** SSF-AS3-17  
**Site type:** Artefact scatter  
**Co-ordinates:** 699379mE 6112763mN GDA 94 (Zone 55)  
**Landform:** Crest  
**Distance to creekline:** 540 m  
**Dimensions:** 119 m<sup>2</sup>  
**Artefacts:** 3  
**PAD:** None  
**Scientific significance:** Low



Plate 19 View north of SSF-AS3-17



Plate 20 Quartz flake shatter



Table 22 SSF-AS4-17

**Site Name:** SSF-AS4-17  
**Site type:** Artefact scatter  
**Co-ordinates:** 699859mE 6112595mN GDA 94 (Zone 55)  
**Landform:** Simple slope  
**Distance to creekline:** 340 m  
**Dimensions:** 2,431 m<sup>2</sup>  
**Artefacts:** 10  
**PAD:** None  
**Scientific significance:** Low



Plate 21 View north of SSF-AS4-17



Plate 22 Quartz flake shatter

Table 23 SSF-AS5-17

**Site Name:** SSF-AS5-17  
**Site type:** Artefact scatter  
**Co-ordinates:** 700328mE 6112341mN GDA 94 (Zone 55)  
**Landform:** Crest  
**Distance to creekline:** 110 m  
**Dimensions:** 5,817 m<sup>2</sup>  
**Artefacts:** 3  
**PAD:** None  
**Scientific significance:** Low



Plate 23 View north of SSF-AS5-17



Plate 24 Quartz flake shatter

Table 24 SSF-AS6-17

**Site Name:** SSF-AS6-17  
**Site type:** Artefact scatter  
**Co-ordinates:** 699213mE 6112363mN GDA 94 (Zone 55)  
**Landform:** Crest  
**Distance to creekline:** 460 m  
**Dimensions:** 4,310 m<sup>2</sup>  
**Artefacts:** 96  
**PAD:** Yes  
**Scientific significance:** Moderate



Plate 25 View north of SSF-AS6-17



Plate 26 Silcrete Bondi point

Table 25 SSF-AS7-17

**Site Name:** SSF-AS7-17  
**Site type:** Artefact scatter  
**Co-ordinates:** 699992mE 6112264mN GDA 94 (Zone 55)  
**Landform:** Flat  
**Distance to creekline:** 0 m  
**Dimensions:** 605 m<sup>2</sup>  
**Artefacts:** 6  
**PAD:** Yes  
**Scientific significance:** Low



Plate 27 View north of SSF-AS7-17



Plate 28 Silcrete flake shatter



Table 26 SSF-AS8-17

**Site Name:** SSF-AS8-17  
**Site type:** Artefact scatter  
**Co-ordinates:** 699212mE 6112105mN GDA 94 (Zone 55)  
**Landform:** Simple slope, crest  
**Distance to creekline:** 450 m  
**Dimensions:** 460 m<sup>2</sup>  
**Artefacts:** 7  
**PAD:** No  
**Scientific significance:** Low



Plate 29 View east of SSF-AS8-17



Plate 30 View north of SSF-AS8-17

### 8.3.2 Potential Scarred Trees

Three scar-bearing trees were identified during the archaeological survey that RAPs requested to be recorded. These have been classified as potential scarred trees. Site details are provided below.

Table 27 SSF-ST1-17

**Site Name:** SSF-ST1-17  
**Site type:** Potential scarred tree  
**Co-ordinates:** 699500mE 6111920mN GDA 94 (Zone 55)  
**Landform:** Simple slope  
**Distance to creekline:** 170 m  
**Tree type:** Eucalypt  
**Scar length:** 124 cm, **Scar width:** 36 cm  
**Condition:** Tree deceased



Plate 31 View east of SSF-ST1-17



Plate 32 View east of SSF-ST1-17

Table 28 SSF-ST2-17

**Site Name:** SSF-ST2-17  
**Site type:** Potential scarred tree  
**Co-ordinates:** 699474mE 6112653mN GDA 94 (Zone 55)  
**Landform:** Crest  
**Distance to creekline:** 620 m  
**Tree type:** Apple box  
**Scar length:** 50 cm, **Scar width:** 34 cm  
**Condition:** Tree deceased



Plate 33 View south of SSF-ST2-17



Plate 34 View south of SSF-ST2-17



Table 29 SSF-ST3-17

**Site Name:** SSF-ST3-17  
**Site type:** Potential scarred tree  
**Co-ordinates:** 699735mE 6113087mN GDA 94 (Zone 55)  
**Landform:** Crest  
**Distance to creekline:** 740 m  
**Tree type:** Eucalypt  
**Scar length:** 4 m, **Scar width:** 10 cm  
**Condition:** Good



Plate 35 View east of SSF-ST3-17



Plate 36 View east of SSF-ST3-17

## 8.4 Spatial Distribution

The distribution of Aboriginal archaeological materials within any given landscape can be assessed from two analytical positions. The first, known as a site-based approach, utilises the 'site' as the basic unit of analysis whilst the second, referred to as a non-site approach, utilises the individual artefact as the unit of analysis.

The non-site approach is employed here as a means of assessing the relationship of recorded artefacts to the environmental variables of distance to water and landform.

### 8.4.1 Distance to Watercourse

The proximity and permanency of potable water sources are routinely cited as key determinants of Aboriginal settlement patterns. Accordingly, Table 30 tabulates the relationship of these variables to recorded artefact locations within the proposal site. In terms of distance to water, as indicated, the majority (73.1%,  $n = 106$ ) of artefacts and sites are located at a distance greater than 300 m of a watercourse with the largest count within the 301-400 m range (53.7%,  $n=78$ ). Only 39 artefacts (26.9%) are located at a distance less than 300 m of a watercourse. This patterning can likely be attributed to localised topographic conditions, with land closer to watercourses, particularly higher order watercourses, comprising swampy meadows, not favourable to camping.

All artefacts are associated with lower order (i.e., 1<sup>st</sup> and 2<sup>nd</sup> order) streams, with 1st order associations accounting for the overwhelming majority (93.8%, n=136). However, consideration of the ephemeral nature of 1<sup>st</sup> order streams within the proposal site, and their frequency, this patterning is likely not a real association. First order creeklines within the Project area are unlikely to have been a source of permanent potable water, unlike 3<sup>rd</sup> and 4<sup>th</sup> order streams.

**Table 30 Relationship between watercourses distance/stream order and artefact/site counts**

Distance to Water Source (m)	Creekline Order				Total	% of Total
	1	2	3	4		
0 – 100	3	6	0	0	9	6.2
101 – 200	26	3	0	0	29	20
201 – 300	1	0	0	0	1	0.7
301 – 400	78	0	0	0	78	53.8
401 – 500	25	0	0	0	25	17.2
501 – 600	3	0	0	0	3	2.1
<b>Total</b>	136	9	0	0	145	100
<b>% of Total vs. Stream Order</b>	<b>93.8</b>	<b>6.3</b>	<b>0</b>	<b>0</b>	<b>100</b>	<b>N/A</b>

#### 8.4.1.1 Landform Analysis

Examination of the distribution of recorded artefacts in relation to landform indicates a strong trend towards higher artefact counts on crests (86.2%, n=125) followed by simple slopes (9.7%, n=14) and flats (4.1%, n=6). Whilst acknowledging the bias introduced by higher overall levels of effective coverage on crests due to erosion, and the limited visibility due to dense grass cover on flats, this data is supported by the distance to water findings above.

**Table 31 Artefact distribution in relation to landform**

Landform Type	No. of Artefacts	%
Crest	125	86.2
Simple slope	14	9.7
Flat	6	4.1
<b>Total</b>	<b>145</b>	<b>100</b>

## 8.5 Archaeological Sensitivity: Subsurface Archaeological Potential

Subsurface archaeological potential is addressed in the context of this assessment by the concept of 'archaeological sensitivity'. Figure 21 provides archaeological sensitivity mapping based on three key factors including the nature and extent of visible surface artefacts at the site, a review of the findings of previous archaeological investigations in analogous landforms in the surrounding area, and on-site observations of post-depositional processes affecting artefact exposure and burial. Using these variables, the level of archaeological sensitivity has been graded into three categories: nil, low and high. These ratings have then been applied to the proposal site to determine levels of potential subsurface deposit (Table 32).

As shown on Figure 22, approximately half of the proposal site has been assessed as being of low archaeological sensitivity. Areas of low sensitivity have been associated with areas of slope within the proposal site. Areas of high archaeological sensitivity have been linked to crests and creekline flats. Areas of nil archaeological sensitivity area have been associated with areas of gross disturbance.

**Table 32 Rating scheme for archaeological sensitivity**

Rating	Definition	Finding
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Rating	Definition	Finding
Nil	Land with no potential for subsurface archaeological deposit(s) due to past ground disturbance(s).	Areas of damming, built structures and roads have been identified as having no potential for subsurface deposit
Low	Subsurface archaeological deposit(s) may be present. Relative to areas of high sensitivity, lower artefact counts, densities and assemblage richness values expected. Integrity of deposit(s) will be dependent on the nature of localised land disturbances.	Approximately half of the proposal site has been assessed as being of low archaeological sensitivity due to slope.
High	Subsurface archaeological deposit(s) may be present. Relative to areas of low sensitivity, higher artefact counts, densities and assemblage richness values expected. Integrity of deposit(s) will be dependent on the nature of localised land disturbances.	Areas of high archaeological sensitivity have been linked to crests and creekline flats within the proposal site.

## 8.6 Evaluation of Predictive Model

Table 33 provides an evaluation of the predictive model provided in Section 6.3.

**Table 33 Evaluation of Predictive Model**

Prediction	Survey Result
The dominant raw material for flaked stone artefact production within the proposal site will be quartz, with silcrete the second most common material.	The results of the archaeological survey support this prediction.
Flaked stone artefact assemblages will be dominated by flake and non-flake debitage items ( <i>sensu</i> Andrefsky 2005), with formed objects (i.e., cores and retouched implements) comparatively poorly represented.	The results of the archaeological survey support this prediction.
The majority of silcrete lithics will exhibit evidence of thermal alteration.	The results of the archaeological survey do not support this prediction.
Knapping floors, if present, will exhibit evidence indicative of on-site backed artefact manufacture.	No knapping floors were identified during the archaeological survey.
Flake debitage will dominate recorded site assemblages whilst retouched will be rare.	The results of the archaeological do not support this prediction.
Tool types of demonstrated chronological significance will be restricted to backed artefacts and/or edge-ground hatchet heads;	The results of the archaeological survey support this prediction.
Scarred trees may occur where original remnant vegetation remains.	The results of the archaeological survey support this prediction.



Figure 19 Survey Coverage

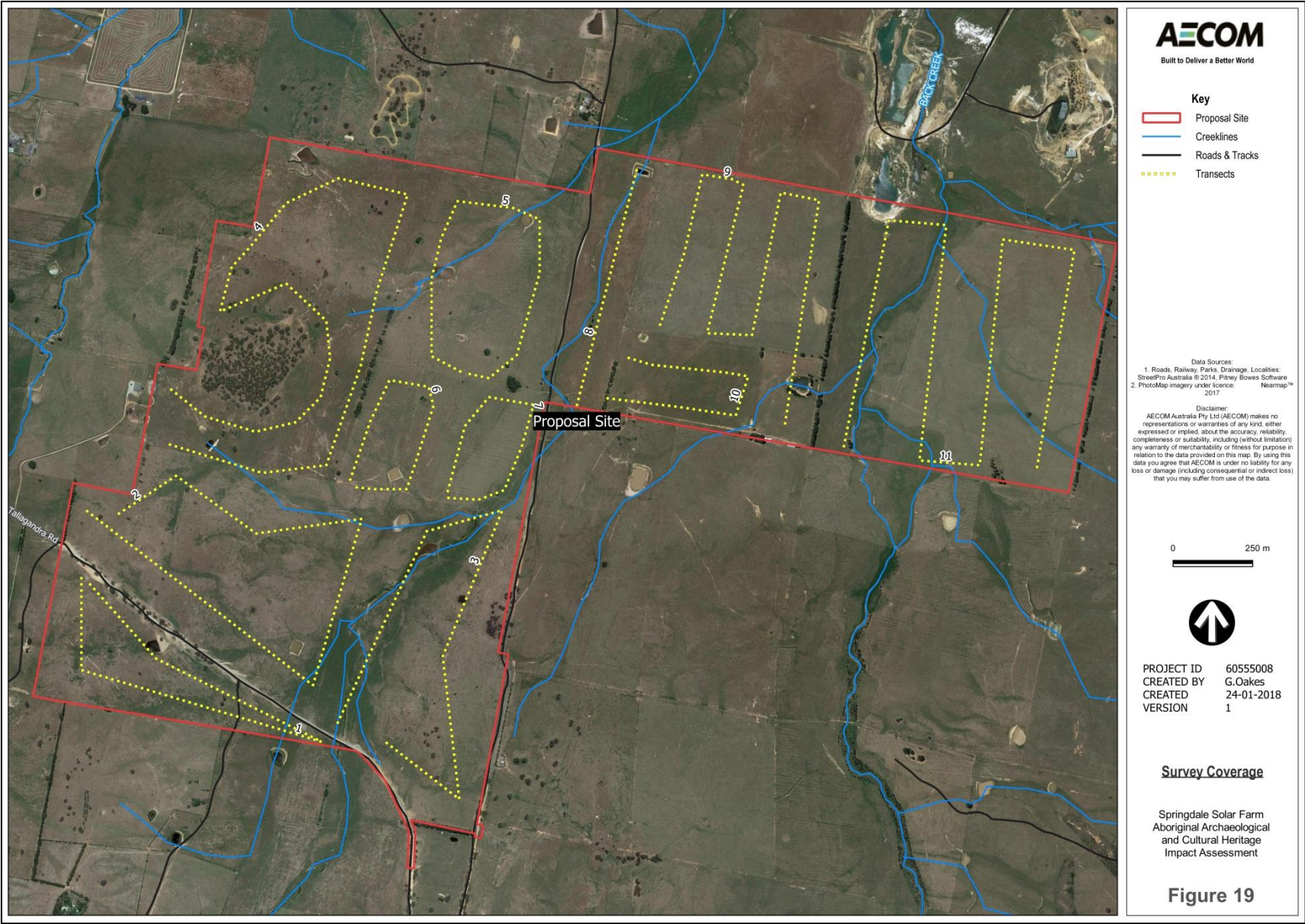


Figure 20 Recorded surface artefacts



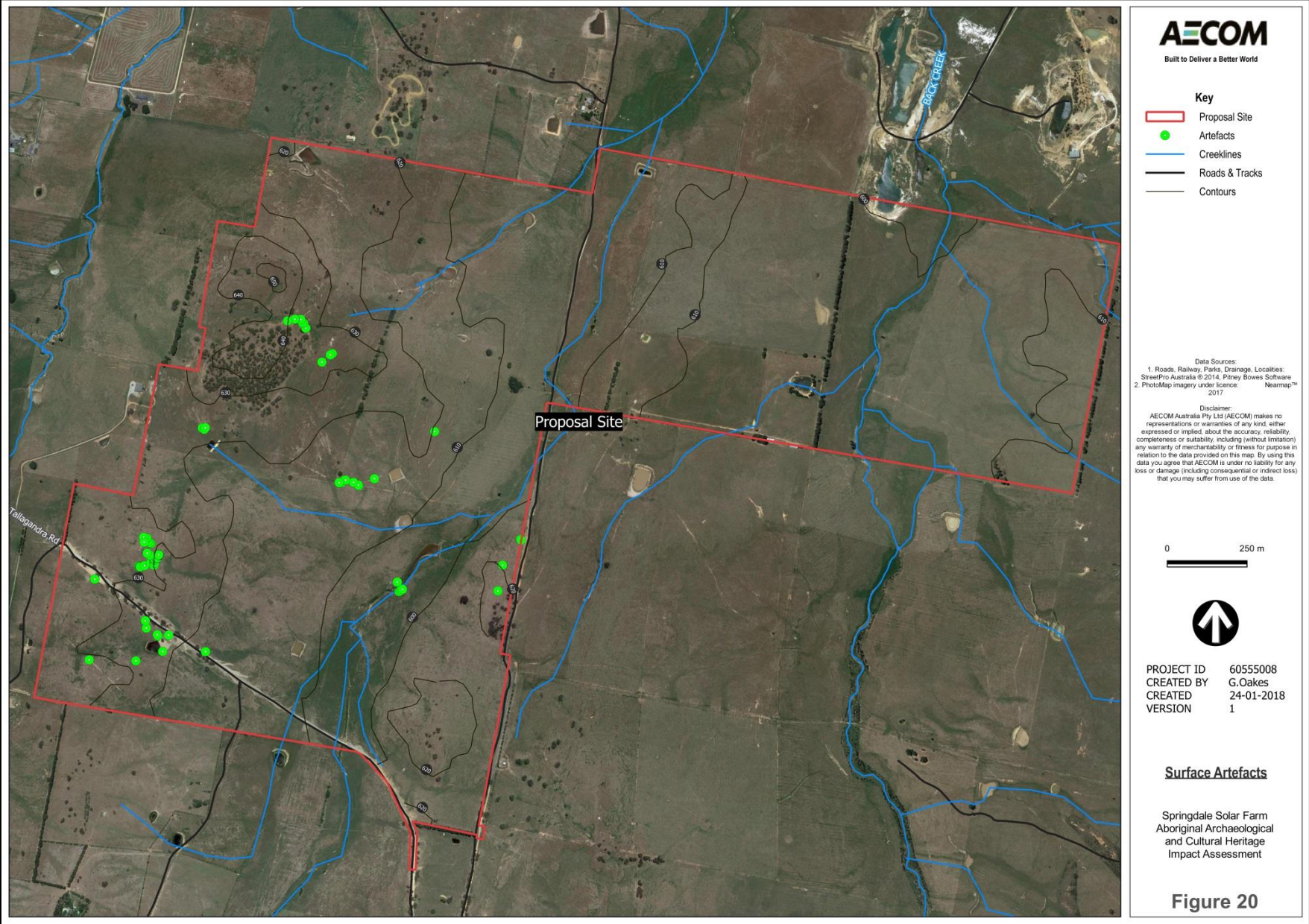


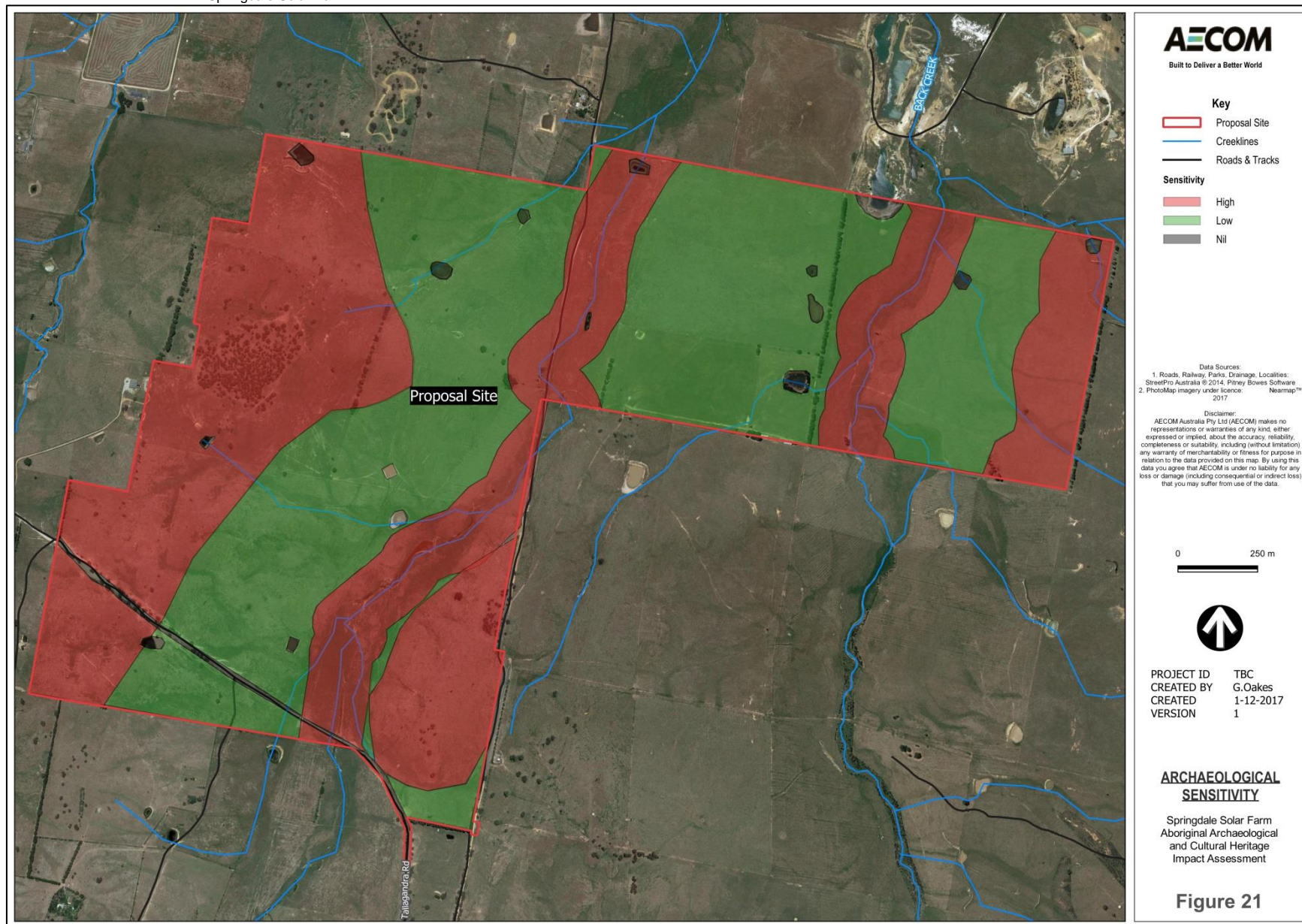
Figure 21 Aboriginal Sites





Figure 22 Areas of Archaeological Sensitivity





## 9.0 Significance Assessment

### 9.1 Principles of Assessment

Heritage sites hold value for different communities in a variety of different ways. All sites are not equally significant and thus not equally worthy of conservation and management (Pearson & Sullivan 1995: 17). One of the primary responsibilities of cultural heritage practitioners, therefore, is to determine which sites are worthy of preservation and management (and why) and, conversely, which are not (and why) (Smith & Burke 2007: 227). This process is known as *the assessment of cultural significance* and, as highlighted by Pearson and Sullivan (1995: 127), incorporates two interrelated and interdependent components. The first involves identifying, through documentary, physical or oral evidence, the elements that make a heritage site significant, as well as the type(s) of significance it manifests. The second involves determining the degree of value that the site holds for society (i.e., its cultural significance) (Pearson & Sullivan 1995: 126).

In Australia, the primary guide to the assessment of cultural significance is the *Australian ICOMOS Charter for Places of Cultural Significance* (1999), informally known as *The Burra Charter*, which defines cultural significance as the “aesthetic, historic, scientific, social or spiritual value for past, present or future generations” of a site or place (ICOMOS 1999: 2). Under the Burra Charter model, the cultural significance of a heritage site or place is assessed in terms of its aesthetic, historic, scientific and social values, none of which are mutually exclusive (Table 34). Establishing cultural significance under the Burra Charter model involves assessing all information relevant to an understanding of the site and its fabric (i.e., its *physical* make-up) (ICOMOS 1999: 12). The assessment of cultural significance and the preparation of a statement of cultural significance are critical prerequisites to making decisions about the management of any heritage site or place (ICOMOS 1999: 11).

With respect to Aboriginal heritage, it is possible to identify two major streams in the overall significance assessment process: the assessment of *scientific value(s)* by archaeologists and the assessment of *social (or cultural) value(s)* by Aboriginal people. Each is considered separately below.

**Table 34 Values relevant to determining cultural significance, as defined by The Burra Charter (ICOMOS 1999).**

Value	Definition
Aesthetic	“Aesthetic value includes aspects of sensory perception for which criteria can and should be stated. Such criteria may include consideration of the form, scale, colour, texture and material of the fabric; the smells and sounds associated with the place and its use” (ICOMOS 1999: 12).
Historic	“Historic value encompasses the history of aesthetics, science and society...[a] place may have historic value because it has influenced, or has been influenced by, an historic figure, event, phase or activity. It may have historic value as the site of an important event” (ICOMOS 1999: 12).
Scientific	“The scientific or research value of a place will depend on the importance of the data involved, on its rarity, quality or representativeness, and on the degree to which the place may contribute further substantial information” (ICOMOS 1999: 12).
Social	“Social value embraces the qualities for which a place has become a focus of spiritual, political, national or other cultural sentiment to a majority or minority group” (ICOMOS 1999: 12).

### 9.2 Scientific Value

Scientific value refers to the importance of a place in terms of its rarity, representativeness and the extent to which it may contribute further information (i.e., its research potential) (OEH 2011: 9).

#### 9.2.1 Rarity and Representativeness

*Rarity* and *representativeness* are related concepts. Rarity refers to the relative uniqueness of a site within its local and regional context. The scientific significance of a site is assessed as higher if it is

unique or rare within either context. Conversely, it is considered to be of lower significance if it is common in one or both. The concept of representativeness, meanwhile, refers to the question of whether or not a site is “a good example of its type, illustrating clearly the attributes of its significance” (Burke & Smith 2004: 247). Representativeness is an important criterion as one of the primary goals of cultural heritage management is to preserve for future generations a representative sample of all archaeological site types in their full range of environmental contexts.

In common with rarity, assessments of representativeness within a region are dependent on the state of current knowledge concerning the number and type of archaeological sites present within that region<sup>12</sup>. This is a critical point, for as suggested by Kuskie (2000) and others (e.g., Bowdler 1981; Godwin 2011; Pearson & Sullivan 1995), the absence across most of Australia of regional-scale quantitative data for Aboriginal sites and places represents a major constraint in assessments of representativeness and rarity. As stressed by Bowdler (1981) some 30 years ago, detailed regional-scale assessments of the Aboriginal archaeological record of Australia are required to address this issue.

### 9.2.2 Research Potential

Research potential can be defined as the potential of an archaeological site to address what Bowdler (1981: 129) has referred to as “timely and specific research questions”. These questions may relate to any number of issues concerning past human lifeways and environments and, as suggested by Bowdler’s quote, will inevitably reflect current trends or problems in academic research (Burke & Smith 2004: 249). For their part, Bowdler and Bickford (1984: 23-4) suggest that the research potential of an archaeological site can be determined by answering the following series of questions:

1. Can the site contribute knowledge which no other resource can?
2. Can the site contribute knowledge which no other such site can?
3. Is this knowledge relevant to general questions about human history or other substantive subjects?

Several criteria can be used to assess the research potential of an archaeological site. Particularly important in the context of Aboriginal archaeology are the intactness or integrity of the site in question, its complexity and its potential for archaeological deposit (NPWS 1997: 7). The connectedness of the site to other sites or natural landscape features may also be relevant.

*Integrity* refers to the extent to which a site has been disturbed by natural and/or anthropogenic phenomena and includes both the state of preservation of particular remains (e.g., animal bones, plant remains) and, where applicable, stratigraphic integrity. Assessments of archaeological integrity are predicated on the notion that undisturbed or minimally disturbed sites are likely to yield higher quality archaeological and/or environmental data than those whose integrity has been significantly compromised by natural and/or anthropogenic phenomena. Establishing levels of preservation or integrity in the context of a surface survey is difficult. Nonetheless, useful rating schemes are available for ‘open’ sites (Coutts & Witter 1977: 34) and scarred trees (Long 2003).

The *complexity* of a site refers primarily to the nature or character of the artefactual materials or features that constitute it but also includes site structure (e.g., the physical size of the site, spatial patterning in observed cultural materials). In the case of open artefact sites, for example, the principal criteria used to assess complexity are the site’s size (i.e., number of artefacts and/or spatial extent), the presence, range and frequency of artefact and raw material types, and the presence of features such as hearths.

*Potential for archaeological deposit* refers to the potential of a site to contain subsurface archaeological evidence which may, through controlled excavation and analysis, assist in answering questions that are of contemporary archaeological interest. Assessing subsurface potential in the absence of subsurface investigation is difficult. Nonetheless, consideration of a range of factors, including the integrity of the site, the complexity of extant surface evidence, the nature of the local geomorphology (as established through surface observations and documentary research) and the results of previous archaeological excavations in the area, will help inform assessment of this criterion.

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<sup>12</sup> There is, of course, a temporal fluidity to this criterion (i.e., as knowledge of the Aboriginal archaeology of a region increases, assessed levels of representativeness may change, a point of equal relevance to rarity).



*Connectedness* concerns the relationship between archaeological sites within a given area and may be expressed through a combination of factors such as site location, type and contents. It may, for example, be possible to establish a connection between a stone quarry and hatchet found nearby. Demonstrating connectedness archaeologically, however, is far from straightforward, especially when dealing with surface evidence alone. Ultimately, this difficulty rests with the need to demonstrate contemporaneity between sites that may have been created hundreds, if not thousands, of years apart. As Shiner (2008: 13) has observed, “much of the surface archaeological record documents the accumulation of materials from multiple behavioural episodes occurring over long periods of discontinuous time”. Contemporaneity, then, needs to be demonstrated not assumed.

### 9.2.3 Identification Process for the Assessment

For the current assessment, information on the scientific values of the proposal site has been obtained through a review of existing environmental and archaeological data for the proposal site, as detailed in Sections 4.0, and 5.0, and archaeological survey across the proposal site described in Section 8.0.

## 9.3 Assessment of Scientific Significance

An assessment of the scientific significance of newly recorded sites is presented in Table 35 below. The significance rating is offered on the basis of the assessed research potential, rarity and representativeness on a local and regional scale.

**Table 35 Scientific significance assessment**

Site	Scientific significance ranking	Justification
SSF-IA1-17 (57-2-1055)	Low	<p><b>Complexity</b></p> <ul style="list-style-type: none"> <li>Single quartz complete flake.</li> <li>Locally and regionally common artefact type (i.e., complete flake).</li> <li>No formed object (<i>sensu</i> Brumm et al., 2010).</li> <li>Locally and regionally common raw material (i.e., quartz).</li> </ul> <p><b>Integrity</b></p> <ul style="list-style-type: none"> <li>Moderate ground surface disturbance from vegetation clearance.</li> </ul> <p><b>Potential for deposit</b></p> <ul style="list-style-type: none"> <li>Archaeological deposit not anticipated.</li> </ul> <p><b>Rarity and representativeness</b></p> <ul style="list-style-type: none"> <li>Isolated artefact sites are a locally and regionally common site type.</li> <li>Poor example of its type. Open artefact sites with greater integrity are known on a local and regional scale and offer comparable/higher research potential.</li> </ul>
SSF-IA2-17 (57-2-1056)	Low	<p><b>Complexity</b></p> <ul style="list-style-type: none"> <li>Single quartz complete flake.</li> <li>Locally and regionally common artefact type (i.e., complete flake).</li> <li>No formed objects (<i>sensu</i> Brumm et al., 2010).</li> <li>Locally and regionally common raw material (i.e., quartz).</li> </ul> <p><b>Integrity</b></p> <ul style="list-style-type: none"> <li>Moderate ground surface disturbance from vegetation clearance.</li> </ul> <p><b>Potential for deposit</b></p> <ul style="list-style-type: none"> <li>Archaeological deposit not anticipated.</li> </ul> <p><b>Rarity and representativeness</b></p> <ul style="list-style-type: none"> <li>Isolated artefact sites are a locally and regionally common site type.</li> <li>Poor example of its type. Open artefact sites with greater integrity are known on a local and regional scale and offer comparable/higher research potential.</li> </ul>
SSF-IA3-17 (57-2-1045)	Low	<p><b>Complexity</b></p> <ul style="list-style-type: none"> <li>Single quartz flake shatter piece.</li> <li>Locally and regionally common artefact type (i.e., flake shatter).</li> <li>No formed objects (<i>sensu</i> Brumm et al., 2010).</li> <li>Locally and regionally common raw material (i.e., quartz).</li> </ul> <p><b>Integrity</b></p>

Site	Scientific significance ranking	Justification
		<ul style="list-style-type: none"> <li>Moderate ground surface disturbance from vegetation clearance.</li> </ul> <p><b>Potential for deposit</b></p> <ul style="list-style-type: none"> <li>Archaeological deposit not anticipated.</li> </ul> <p><b>Rarity and representativeness</b></p> <ul style="list-style-type: none"> <li>Isolated artefact sites are a locally and regionally common site type.</li> <li>Poor example of its type. Open artefact sites with greater integrity are known on a local and regional scale and offer comparable/higher research potential.</li> </ul>
SSF-IA4-17 (57-2-1046)	Low	<p><b>Complexity</b></p> <ul style="list-style-type: none"> <li>Single quartz flake shatter piece.</li> <li>Locally and regionally common artefact type (i.e., flake shatter).</li> <li>No formed objects (<i>sensu</i> Brumm et al., 2010).</li> <li>Locally and regionally common raw material (i.e., quartz).</li> </ul> <p><b>Integrity</b></p> <ul style="list-style-type: none"> <li>Moderate ground surface disturbance from vegetation clearance.</li> </ul> <p><b>Potential for deposit</b></p> <ul style="list-style-type: none"> <li>Archaeological deposit not anticipated.</li> </ul> <p><b>Rarity and representativeness</b></p> <ul style="list-style-type: none"> <li>Isolated artefact sites are a locally and regionally common site type.</li> <li>Poor example of its type. Open artefact sites with greater integrity are known on a local and regional scale and offer comparable/higher research potential.</li> </ul>
SSF-AS1-17 (57-2-1047)	Low	<p><b>Complexity</b></p> <ul style="list-style-type: none"> <li>13 artefacts including seven IMTC complete flakes, flake shatter fragments and angular shatter as well as two quartz cores, two complete flakes, and two flake shatter fragments.</li> <li>Locally and regionally common artefact types (i.e., flakes, cores, flake shatter).</li> <li>Two formed objects (one quartz unidirectional core and one quartz multidirectional core) (<i>sensu</i> Brumm et al., 2010).</li> <li>Locally and regionally common raw material (i.e., quartz).</li> </ul> <p><b>Integrity</b></p> <ul style="list-style-type: none"> <li>Severe ground surface disturbance from vegetation clearance and erosion.</li> </ul> <p><b>Potential for deposit</b></p> <ul style="list-style-type: none"> <li>Archaeological deposit not anticipated.</li> </ul> <p><b>Rarity and representativeness</b></p> <ul style="list-style-type: none"> <li>Low density artefact scatter sites are a locally and regionally common site type.</li> <li>Poor example of its type. Open artefact sites with greater integrity are known on a local and regional scale and offer comparable/higher research potential.</li> </ul>
SSF-AS2-17 (57-2-1049)	Low	<p><b>Complexity</b></p> <ul style="list-style-type: none"> <li>Three artefacts including one silcrete proximal flake one, IMTC angular shatter fragment and one quartz angular shatter fragment.</li> <li>Locally and regionally common artefact types (i.e., proximal flake and flake shatter).</li> <li>No formed objects (<i>sensu</i> Brumm et al., 2010).</li> <li>Locally and regionally common raw materials (i.e., silcrete, IMTC and quartz).</li> </ul> <p><b>Integrity</b></p> <ul style="list-style-type: none"> <li>Moderate ground surface disturbance from vegetation clearance and erosion.</li> </ul> <p><b>Potential for deposit</b></p> <ul style="list-style-type: none"> <li>Archaeological deposit not anticipated.</li> </ul> <p><b>Rarity and representativeness</b></p> <ul style="list-style-type: none"> <li>Low density artefact scatter sites are a locally and regionally common site type.</li> <li>Poor example of its type. Open artefact sites with greater integrity are known on a local and regional scale and offer comparable/higher research potential.</li> </ul>
SSF-AS3-17 (57-2-1052)	Low	<p><b>Complexity</b></p> <ul style="list-style-type: none"> <li>Three quartz flake shatter pieces.</li> <li>Locally and regionally common artefact types (i.e., flake shatter).</li> </ul>

Site	Scientific significance ranking	Justification
		<ul style="list-style-type: none"> <li>No formed objects (<i>sensu</i> Brumm et al., 2010).</li> <li>Locally and regionally common raw material (i.e., quartz).</li> </ul> <p><b>Integrity</b></p> <ul style="list-style-type: none"> <li>Severe ground surface disturbance from vegetation clearance and erosion.</li> </ul> <p><b>Potential for deposit</b></p> <ul style="list-style-type: none"> <li>Archaeological deposit not anticipated.</li> </ul> <p><b>Rarity and representativeness</b></p> <ul style="list-style-type: none"> <li>Low density artefact scatter sites are a locally and regionally common site type.</li> <li>Poor example of its type. Open artefact sites with greater integrity are known on a local and regional scale and offer comparable/higher research potential.</li> </ul>
SSF-AS4-17 (57-2-1051)	Low	<p><b>Complexity</b></p> <ul style="list-style-type: none"> <li>Ten artefacts including three cores, three angular shatter fragments, two proximal flakes, one complete flake and one flake shatter fragment.</li> <li>Locally and regionally common artefact types (i.e., cores, flake and non-flake debitage).</li> <li>Three formed objects i.e., two unidirectional cores and one core fragment (<i>sensu</i> Brumm et al., 2010).</li> <li>Locally and regionally common raw materials (i.e., IMTC and quartz).</li> </ul> <p><b>Integrity</b></p> <ul style="list-style-type: none"> <li>Severe ground surface disturbance from vegetation clearance, erosion and access track construction.</li> </ul> <p><b>Potential for deposit</b></p> <ul style="list-style-type: none"> <li>Archaeological deposit not anticipated.</li> </ul> <p><b>Rarity and representativeness</b></p> <ul style="list-style-type: none"> <li>Low density artefact scatter sites are a locally and regionally common site type.</li> <li>Poor example of its type. Open artefact sites with greater integrity are known on a local and regional scale and offer comparable/higher research potential.</li> </ul>
SSF-AS5-17 (57-2-1050)	Low	<p><b>Complexity</b></p> <ul style="list-style-type: none"> <li>Three artefacts including two complete flakes (quartz and IMTC), and one quartz angular shatter fragment.</li> <li>Locally and regionally common artefact types (i.e., flake and non-flake debitage).</li> <li>No formed objects (<i>sensu</i> Brumm et al., 2010).</li> <li>Locally and regionally common raw materials (i.e., quartz and IMTC).</li> </ul> <p><b>Integrity</b></p> <ul style="list-style-type: none"> <li>Moderate ground surface disturbance from vegetation clearance and erosion.</li> </ul> <p><b>Potential for deposit</b></p> <ul style="list-style-type: none"> <li>Archaeological deposit not anticipated.</li> </ul> <p><b>Rarity and representativeness</b></p> <ul style="list-style-type: none"> <li>Low density artefact scatter sites are a locally and regionally common site type.</li> <li>Poor example of its type. Open artefact sites with greater integrity are known on a local and regional scale and offer comparable/higher research potential.</li> </ul>
SSF-AS6-17 (57-2-1053)	Moderate	<p><b>Complexity</b></p> <ul style="list-style-type: none"> <li>96 artefacts including 71 angular shatter fragments, nine cores, eight flake shatter fragments, four complete flakes, two proximal flakes, one redirecting flake and one retouched flake.</li> <li>Locally and regionally common artefact types (i.e., cores, flake and non-flake debitage).</li> <li>Ten formed objects i.e., four core fragments, three bifacial cores, two multidirectional cores and one Bondi point (<i>sensu</i> Brumm et al., 2010).</li> <li>Locally and regionally common raw materials (i.e., quartz, silcrete, IMTC).</li> </ul> <p><b>Integrity</b></p> <ul style="list-style-type: none"> <li>Moderate ground surface disturbance from vegetation clearance and erosion.</li> </ul> <p><b>Potential for deposit</b></p>



Site	Scientific significance ranking	Justification
		<ul style="list-style-type: none"> <li>Shallow archaeological deposit anticipated in non-eroded portions of the site.</li> </ul> <p><b>Rarity and representativeness</b></p> <ul style="list-style-type: none"> <li>Moderate density artefact scatter sites are a locally and regionally common site type.</li> <li>Good example of its type. Retains a moderate degree of integrity and some research potential.</li> </ul>
SSF-AS7-17 (57-2-1054)	Low	<p><b>Complexity</b></p> <ul style="list-style-type: none"> <li>Six artefacts including one core, one proximal flake, two angular shatter fragments, and two flake shatter fragments.</li> <li>Locally and regionally common artefact types (i.e., cores, flake and non-flake debitage).</li> <li>One formed object i.e., one core fragment (<i>sensu</i> Brumm et al., 2010).</li> <li>Locally and regionally common raw materials (i.e., silcrete, IMTC and quartz).</li> </ul> <p><b>Integrity</b></p> <ul style="list-style-type: none"> <li>Moderate ground surface disturbance from vegetation clearance, and erosion.</li> </ul> <p><b>Potential for deposit</b></p> <ul style="list-style-type: none"> <li>Archaeological deposit not anticipated.</li> </ul> <p><b>Rarity and representativeness</b></p> <ul style="list-style-type: none"> <li>Low density artefact scatter sites are a locally and regionally common site type.</li> <li>Poor example of its type. Open artefact sites with greater integrity are known on a local and regional scale and offer comparable/higher research potential.</li> </ul>
SSF-AS8-17 (57-2-1048)	Low	<p><b>Complexity</b></p> <ul style="list-style-type: none"> <li>Seven artefacts including two cores, one proximal flake, three angular shatter fragments, and one flake shatter fragment.</li> <li>Locally and regionally common artefact types (i.e., cores, flake and non-flake debitage).</li> <li>Two formed objects i.e., one bipolar and one unidirectional core (<i>sensu</i> Brumm et al., 2010).</li> <li>Locally and regionally common raw materials (i.e., quartz).</li> </ul> <p><b>Integrity</b></p> <ul style="list-style-type: none"> <li>Moderate ground surface disturbance from vegetation clearance, and erosion.</li> </ul> <p><b>Potential for deposit</b></p> <ul style="list-style-type: none"> <li>Shallow archaeological deposit anticipated in some portions of the site.</li> </ul> <p><b>Rarity and representativeness</b></p> <ul style="list-style-type: none"> <li>Low density artefact scatter sites are a locally and regionally common site type.</li> <li>Poor example of its type. Open artefact sites with greater integrity are known on a local and regional scale and offer comparable/higher research potential.</li> </ul>
SSF-ST1-17	N/A	<ul style="list-style-type: none"> <li>SSF-ST1-17 is a potential scarred tree recorded at the request of RAPs. It is unlikely to contribute knowledge not available from another resource or site. It is a poor example of its type and is in poor condition.</li> </ul>
SSF-ST2-17	N/A	<ul style="list-style-type: none"> <li>SSF-ST2-17 is a potential scarred tree recorded at the request of RAPs. It is unlikely to contribute knowledge not available from another resource or site. It is a poor example of its type and is in poor condition.</li> </ul>
SSF-ST3-17	N/A	<ul style="list-style-type: none"> <li>SSF-ST3-17 is a potential scarred tree recorded at the request of RAPs. It is unlikely to contribute knowledge not available from another resource or site. It is a poor example of its type and is in poor condition.</li> </ul>

## 9.4 Cultural Value

This assessment finds that the Aboriginal heritage values of the proposal site rest principally with the Aboriginal archaeological sites identified within it. These sites attest to past Aboriginal use of the proposal site. RAPs for this assessment have identified the proposal site as forming part of a much larger and highly significant cultural landscape for Aboriginal people and have indicated that Aboriginal people will have moved across and utilised the proposal site as evidenced by the identified archaeological sites. During the archaeological survey RAP field representatives identified the following social or cultural values for the proposal site:

- Elevated rises and spurs adjacent to creeks would have been prime camping locations for Aboriginal people camping within and travelling through the proposal site;
- Owing to generally poor visibility conditions, subsurface testing will be necessary to adequately characterise the Aboriginal archaeological record of the proposal site. Any subsurface investigation within the proposal site should utilise a landscape-based sampling strategy;
- Quartz and silcrete are locally and regionally common rock types in terms of flaked stone tool technologies. Relative to quartz, which occurs in abundance across the proposal site, imported silcrete blanks appear to have more intensively worked; and
- Scarred tree SSF-ST1-17 represents a 'shield tree'.

## 10.0 Impact Assessment

### 10.1 Summary of Proposed Impacts

The proposed Project would consist of up to 100 megawatts of alternating current (MWac) solar generation equipment and associated infrastructure. The proposed project would consist of the following components:

- Photovoltaic solar modules fixed on a single-axis tracking framing system mounted on steel piles with underground DC and AC cabling for electrical reticulation
- Approximately 24 containerised power conversion stations, containing the electrical switchgear, inverters and MW transformers
- Electrical switchyard and substation that will be connected to the existing 132 kilovolt (kV) TransGrid transmission line that traverses the site.
- Control building including office, SCADA systems, meteorological stations and operation and maintenance (O&M) facilities
- Upgrading of site access roads and establishment of internal all weather access tracks together with security perimeter fencing

The single-axis tracking system will orient the solar modules to follow the sun from east to west each day. The tracking structures will be mounted on piles, which will be screwed or pile driven depending on final geotechnical analysis. This eliminates the need for concrete and foundations which significantly reduces the impact of construction. This construction methodology keeps ground disturbance to a minimum and allows the final site design to follow the existing lie of the land. The intention of the Project is to maintain the existing vegetation on site and future vegetation management, in collaboration with the final bushfire management and environmental management plans. Vegetation will be maintained by grazing sheep as much as possible.

The onsite switchyard and substation will lie adjacent to the existing 132kV TransGrid Easement. Final design will be carried out in collaboration with TransGrid and the Australian Energy Market Operator (AEMO). Civil and earthworks will be carried out to meet the transmission substation design guidelines.

The operational lifetime of the solar farm is 30 years, at which time the site will either be decommissioned or continue to operate subject to further approval and commercial agreements. Decommissioning will return the site to the predevelopment condition.

Key impacts resulting from the Project will include:

- Targeted tree removal;
- Construction of access tracks; and
- Ground surface levelling for construction of power conversion stations, electrical switchyard and substation
- Piles for solar modules
- Trenching for underground cabling.

### 10.2 Impacts to Identified Aboriginal Sites

A total of 15 Aboriginal archaeological sites, comprising 12 open artefact sites and three potential Aboriginal scarred trees have been identified within the proposal site (Figure 23). Consideration of the location of sites within the proposal site in relation to the location proposed project related impacts, as well as exclusion areas for environmental constraints indicates that three open artefact sites comprising two artefact scatters and one isolated artefact site will be wholly impacted by the Project. No potential scarred trees will be impacted. Table 36 presents a list of impacted sites.



Table 36 Impacted sites

Site name/AHIMS ID	AHIMS Centroid Coordinates (zone 55)		Site type	Impact
	MGAE	MGAN		
SSF-IA1-17 (57-2-1055)	700102	6112754	Isolated artefact	Total
SSF-AS2-17 (57-2-1049)	699764	6112985	Artefact scatter	Total
SSF-AS4-17 (57-2-1051)	699859	6112595	Artefact scatter	Total

## 10.3 Cumulative Impact Assessment

### 10.3.1 Assessment of Ecologically Sustainable Development (ESD)

In NSW, the NPW Act provides the legislative framework for the protection of Aboriginal objects and places. Section 2A(2) of the NPW Act stipulates that such protection is to be achieved by applying the principles of Ecologically Sustainable Development (ESD). ESD requires the integration of economic and environmental considerations (including cultural heritage) in decision-making processes and, in the context of Aboriginal cultural heritage, can be achieved through the implementation of two key principles: intergenerational equity and the precautionary principle.

Intergenerational equity is the principle whereby the present generation should ensure the health, diversity and productivity of the environment for the benefit of future generations. With regards to Aboriginal heritage, intergenerational equity can be assessed in terms of cumulative impacts to Aboriginal objects and places in a region. Central to any assessment of intergenerational equity is the proposition that regions with fewer Aboriginal objects and places necessarily retain fewer opportunities for future generations of Aboriginal people to enjoy their cultural heritage. Accordingly, information regarding the known and potential Aboriginal heritage resource of a given region is critical to any assessment of intergenerational equity.

The precautionary principle holds that if there are threats of serious or irreversible environmental damage, lack of full scientific certainty should not be used as a reason for postponing cost-effective measures to prevent environmental degradation. In NSW, the precautionary principle is relevant to OEH's consideration of potential impacts to Aboriginal cultural heritage in situations where:

- the proposed development involves a risk of serious or irreversible damage to Aboriginal objects or places or to the value of those objects or places; and
- there is uncertainty about the Aboriginal cultural heritage values or scientific or archaeological values, including in relation to the integrity, rarity or representativeness of the Aboriginal objects or places proposed to be impacted.

In these instances, OEH has indicated that a precautionary approach should be taken and all cost-effective measures implemented to prevent or reduce damage to Aboriginal objects and/or places. In addition to these measures, a cumulative impact assessment should be undertaken to gain an understanding and appreciation of the impacts development will have on NSW's Aboriginal cultural heritage resource.

It should be noted that the results of cumulative impact assessments undertaken for cultural heritage sites and places, Aboriginal or otherwise, must be interpreted with caution, not least because they are based (in part) on heritage datasets that are inevitably incomplete and contain various inconsistencies and errors. Godwin (2011), in particular, has questioned the value of cumulative impact assessments to cultural heritage management in Australia, arguing that the 'fundamentals' necessary for undertaking such assessments simply do not exist. The 'fundamentals' Godwin is referring are robust regional and national data sets for measuring proposed impacts and the determination of acceptable scientific and cultural impact thresholds. While recognising the validity of the issues raised by Godwin (2011), current OEH guidelines necessitate that a cumulative impact assessment be undertaken as part of any Aboriginal cultural heritage assessment in NSW.

### 10.3.2 Intergenerational Equity - Cumulative Impact Assessment

Two avenues for assessing the cumulative impact of the Project on Aboriginal heritage can be pursued:

1. A comparison, using the results of AHIMS searches, of the identified Aboriginal archaeological resource of the proposal site with that of the surrounding region, defined here as an arbitrary 20 x 20 km (400 km<sup>2</sup>) area roughly centred on the proposal site; and
2. The use of existing environmental data sources (e.g., digital land use data and topographic maps) to identify the potential open artefact resource of the study region as a whole.

### 10.3.3 Known Resource

Alongside sites identified within the proposal site, existing open artefact sites in the study region offer opportunities for future research, conservation and education. Accordingly, it is necessary to quantify the impacts of the proposed development on this joint resource.

As indicated in Section 10.0, three open artefact sites will be partially or be completely destroyed by the proposed development. AHIMS data obtained from OEH on 22 November 2017 indicate that these sites represent 3.8% of the valid extant open artefact resource of the study region, with searches of the AHIMS database returning 79 'Valid' open artefact sites for this search region. While acknowledging the limitations of the AHIMS database with respect to the validity of listed site statuses, on the basis of these data, it seems reasonable to conclude that the loss of these sites would not constitute a significant impact to the known open artefact resource of the region. Consideration of the character of these sites, which have all been assessed as being of low scientific significance, provides further support to this assessment, as does the observation that the majority of land within this region has not been physically inspected for Aboriginal sites.

### 10.3.4 Potential Resource

AHIMS results only represent a fraction of the likely archaeological resource present within a region, as these results are only representative of land that has been subject to archaeological investigations. Accordingly, an assessment of the *potential* Aboriginal heritage resource of an approximate 20 x 20 km study region centred on the proposal site is also a useful guide. For the present analysis, land use data (dated 2017) obtained from the Land Assessment Unit at OEH was utilised (Table 37).

As a starting point, it is necessary to quantify the amount of land within the study region that has the *potential* to retain to open artefact sites. A basic assumption here is that grossly disturbed terrain is unlikely to retain such sites whereas non-grossly disturbed terrain does, both in surface and subsurface contexts. Analysis of available digital land use data for the study region is summarised in Table 37. This analysis indicates that grossly modified or disturbed terrain (e.g., urban and industrial areas) accounts for approximately 27.5% of land within the region. Outside of grossly disturbed areas, fully to semi-cleared grazing land is particularly well represented, accounting for approximately 68.2% of land within the region and tree and shrub cover c.3.1%. Horticultural land is comparatively poorly represented at 0.2%. Areas specifically reserved for conservation meanwhile, account for approximately 0.7% of land within the region.

**Table 37 Land use analysis for study region (20 x 20 km)**

Existing Land Use	Hectares	%	Archaeological Potential?
Conservation Area	273.1	0.7	Yes
Cropping	103.9	0.3	Yes
Grazing	27,260.8	68.2	Yes
Horticulture	63.2	0.2	Yes
Intensive Animal Production	199.2	0.5	No
Mining & Quarrying	50	0.1	No
Other	6,650	16.6	No
River & Drainage System	228	0.6	No
Special Category	270	0.7	No
Transport & Other Corridors	998.4	2.5	No
Tree and Shrub Cover	1,244.3	3.1	Yes
Urban	2,655.7	6.5	No
<b>Total</b>	<b>39,996.6</b>	<b>100</b>	

**Source:** NSW Landuse Data 2017 obtained from OEH.

Viewed from an Aboriginal archaeological perspective, the results of the land use analysis presented in Table 37 suggest that approximately 72.5% of the study region (c.28,945 ha) can reasonably be considered to comprise a *potential open artefact resource*. As indicated, land upon which open artefact deposits are unlikely to survive accounts for just over 27.5% of land within the region. This figure increases to 95.5% if agricultural and grazing land is included. However, as indicated by the results of numerous Aboriginal archaeological investigations, both within and outside of the study region, cropped and grazed areas can and frequently do retain significant surface and subsurface stone artefact records. It can, therefore, be concluded that around 72.5% of land within the study region has the potential to retain open artefact deposits in surface and subsurface contexts. While acknowledging the fact that the nature and distribution of such deposits will vary markedly in relation to environmental variables such as landform and the availability of potable water, analysis of available land use data does help to quantify the extent of the region's potential Aboriginal open artefact resource. Moreover, it provides a basis from which assess the cumulative impact of the proposed development on this resource.

In order to quantify the impact of the proposed development on the potential open artefact resource of the study region it is necessary to compare the amount of impacted land within the proposal site that could be considered a potential open artefact resource (i.e., 190 ha) with that available in the search area (i.e., 28,945 ha). On this basis, it can be stated that the Project will result in an approximate 0.7% decline in the region's potential open artefact resource (assuming total impact of the proposal site). As such, it can be concluded that the impact of the Project on the potential Aboriginal archaeological resource of the region will be low.

With regards to the existence, outside of the proposal site, of environmental contexts that have the potential to contain sites comparable to those identified within it, an examination of relevant topographic maps for the study region indicates that many such contexts exist including unmodified sections of Back Creek, Spring Flat Creek and Yass River. On the basis of this evidence, it can be confidently concluded that land outside of the current proposal site but within the wider region contains a significant, as yet unidentified, open artefact site resource.

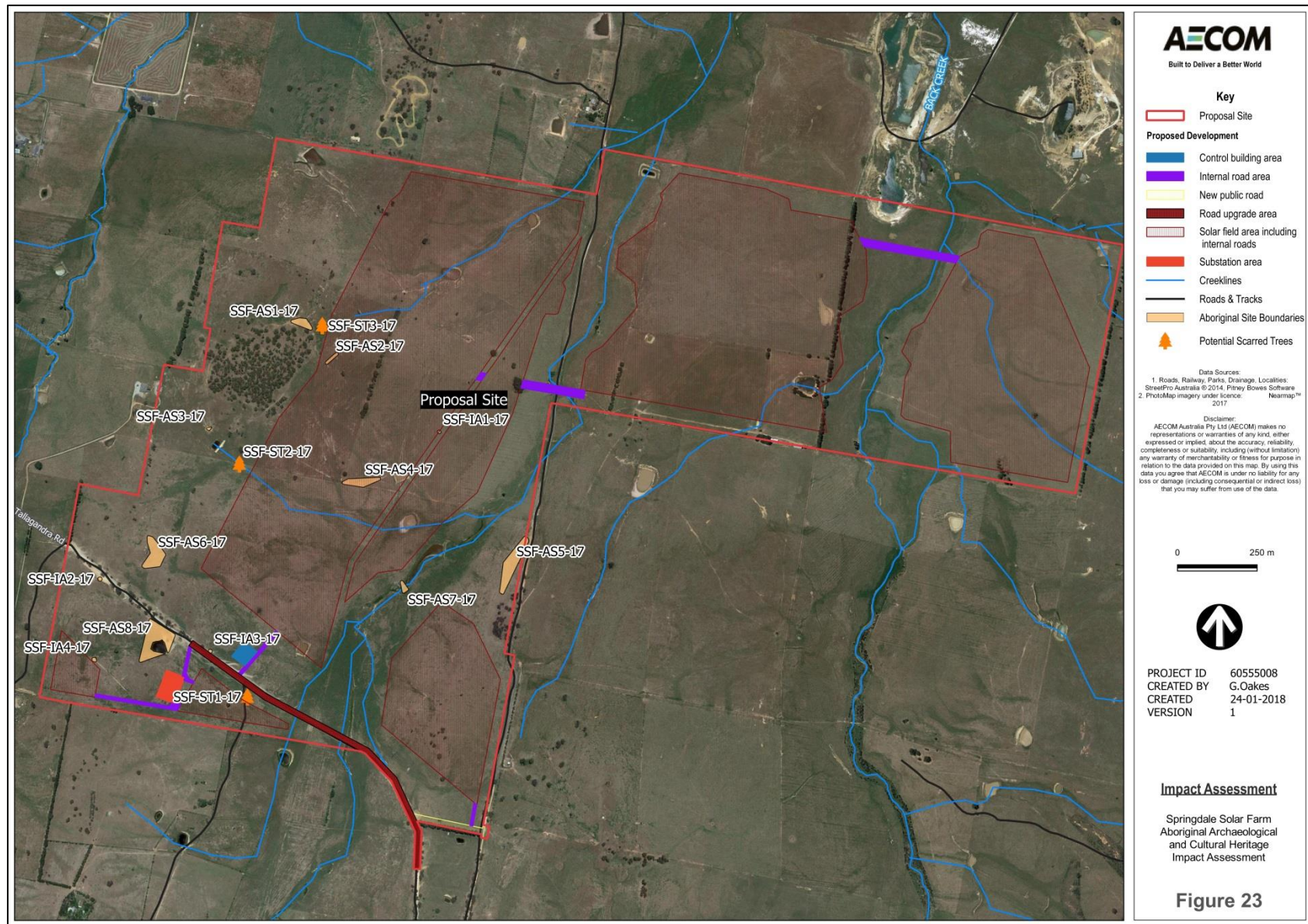
### 1.1.1 The Precautionary Principle

As indicated in Section 10.3.1, the precautionary principle holds that if there are threats of serious or irreversible environmental damage, lack of full scientific certainty should not be used as a reason for postponing cost-effective measures to prevent environmental degradation.



In the context of the current assessment, it can be stated that AECOM has adopted a precautionary approach in our assessment of the impacts of the proposed development on the Aboriginal archaeological resource of the proposal site and that this approach is reflected in our proposed management strategy.

Figure 23 Impact Assessment



## 11.0 Management Recommendations

The following management recommendations are made regarding the identified Aboriginal heritage values of the proposal site, with recommendations made on the basis of:

- A review of previous archaeological investigations completed within and surrounding the proposal site;
- the results of the archaeological investigation described in Section 8.0
- the significance and impact assessments detailed in Section 9.0 and 10.0; and
- consultation with Registered Aboriginal Parties (RAPs).

### 11.1 Statutory Requirements

As indicated in Section 1.0, this Aboriginal archaeology and cultural heritage impact assessment forms part of an EIS being prepared by AECOM to support Renew Estate's development application under Part 4, Division 4.1 of the EP&A Act.

This AACHIA documents the results of AECOM's assessment and has been compiled with reference to the NSW Office of Environment and Heritage's *Aboriginal Cultural Heritage Consultation Requirements for Proponents* (DECCW 2010a), *Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales* (DECCW 2010b) and *Guide to Investigating, Assessing and Reporting on Aboriginal Cultural Heritage in NSW* (OEH 2011).

### 11.2 Management Strategy

This assessment has identified Aboriginal heritage constraints across the proposal site including 12 open artefact sites (i.e., artefact scatters and isolated artefacts) and three potential Aboriginal scarred trees. The impact assessment undertaken in Section 10.0 has identified that three open artefact sites alongside areas of identified archaeological sensitivity would be impacted by the Project. A management strategy to address the impacts of the Project on the known and potential Aboriginal archaeological resource of the proposal site is provided below.

It is recommended that this strategy be detailed in an Aboriginal Cultural Heritage Management Plan (ACHMP) for the Project, prepared in consultation with RAPs, and to the satisfaction of OEH and DP&I. Subject to Development Consent under Part 4, Division 4.1 of EP&A Act, this ACHMP will guide the management of the known and potential Aboriginal archaeological resource of the proposal site, as well identified cultural values.

The ACHMP should contain procedures for consultation and involvement of RAPs in the management of Aboriginal cultural heritage values within the proposal site. In addition, the ACHMP will include details of proposed mitigation and management strategies of all Aboriginal sites, procedures for the identification and management of previously unrecorded sites, details of an appropriate long term management for any Aboriginal objects salvaged, details of an Aboriginal cultural heritage awareness program for all contractors and personnel associated with construction activities and compliance procedures. The key elements of the ACHMP are detailed below.

#### 11.2.1 Archaeological Salvage Program

A comprehensive archaeological salvage program should be undertaken for the Project prior to the commencement of any ground disturbance works within the proposal site. The salvage program should incorporate the following components:

1. Surface collection of three impacted open artefact sites (i.e., SSF-IA1-17, SSF-AS2-17, and SSF-AS4-17) of low scientific significance. Surface collection is considered an appropriate and effective mitigation option for these sites given their content and level of archaeological significance. Table 38 provides a list of sites to be surface collected. Collected artefacts should be relocated to a section of the proposal site where impacts are not proposed.



2. A landscape-based program of archaeological excavation across selected areas of low and high Aboriginal archaeological sensitivity within Project disturbance areas, as determined through consultation with RAPs.

The ACHMP for the Project should include a detailed research design for the surface collection and excavation components of the salvage program.

All archaeological salvage works should be undertaken by a combined field team of archaeologists and RAP field representatives. Post-salvage work for the surface collection and excavation components of the archaeological salvage program should, at minimum, include:

- The analysis and cataloguing of all recovered Aboriginal objects (e.g., stone artefacts, hearth stones) by a suitably qualified person or persons;
- The submission, where deemed appropriate by a qualified archaeologist and/or geomorphologist, of excavated charcoal samples for conventional or Accelerator Mass Spectrometry (AMS) radiocarbon dating;
- The submission, where deemed appropriate by a qualified geomorphologist, of excavated sediment samples for Optically Stimulated Luminescence (OSL) dating;
- The submission, where deemed appropriate by a qualified archaeologist, of a selection of stone artefacts for functional use-wear/residue analysis; and
- The submission, where deemed appropriate by a qualified archaeologist, of a selection of non-artefactual rock samples to a qualified geologist for the purposes of raw material identification.

All Aboriginal objects salvaged as part of the archaeological salvage program should be curated in an appropriate manner, as determined through consultation with RAPs, OEH and DP&I during preparation of the ACHMP. Temporary off-site storage of salvaged objects should be allowed for the purposes of analysis and recording.

Aboriginal Site Impact Recording (ASIR) forms for all salvaged sites should be submitted to OEH at the completion of the salvage program.

#### **11.2.2 Conservation of Non-impacted Sites**

All Aboriginal sites not impacted by the Project but within the proposal site should be conserved *in-situ*. Potential scarred tree sites should be protected via permanent stock-proof fencing and appropriate associated signage. Site fencing is to be erected after consultation with a qualified archaeologist and RAP representatives. All relevant staff and contractors are to be made aware of the nature and locations of all sites as well as Renew Estate's legal obligations with respect to them. Protected sites will need to be identified on all relevant site plans. Details for the care of protected sites should be incorporated into the ACHMP.

#### **11.2.3 Aboriginal Cultural Heritage Awareness Training**

An Aboriginal cultural heritage awareness training package should be developed for use throughout the life of the Project. This package should be developed in consultation with RAPs and completed prior to the commencement any ground disturbance works within the proposal site. A register of all persons having completed the training package should be maintained throughout the life of the Project.

Aboriginal cultural awareness training should be mandatory for all staff and contractors whose roles may reasonably bring them into contact with Aboriginal sites and/or involve consultation with local Aboriginal community members. Training should also be offered on a voluntary basis to all other staff and contractors.

Renew Estate should ensure that as part of all standard site inductions, an Aboriginal cultural heritage component is included. At a minimum, this should outline current protocols and responsibilities with respect to the management of Aboriginal cultural heritage within the proposal site, provide an overview of the diagnostic features of potential Aboriginal site types (e.g., scarred trees) and procedures for reporting the identification of Aboriginal archaeological sites.

#### 11.2.4 Previously Unrecorded Aboriginal Archaeological Evidence

Provisions regarding the appropriate management action(s) for previously unrecorded Aboriginal archaeological evidence identified within the proposal site throughout the operational life of the Project should be incorporated into the ACHMP. Management action(s) will vary according to the type of evidence identified, its significance (both scientific and cultural), and the nature of potential impacts.

#### 11.2.5 Management of Potential Human Remains

In the event that potential human skeletal remains are identified within the proposal site at any point during the life of the Project, the following standard procedure (New South Wales Police Force, 2015; NSW Health, 2013) should be followed.

1. All work in the vicinity of the remains should cease immediately;
2. The location should be cordoned off and the NSW Police notified.
3. If the Police suspect the remains are Aboriginal, they will contact the Office of Environment and Heritage and arrange for a forensic anthropologist or archaeological expert to examine the site.

Subsequent management actions will be dependent on the findings of the inspection undertaken under Point 3.

- If the remains are identified as modern and human, the area will become a crime scene under the jurisdiction of the NSW Police;
- If the remains are identified as pre-contact or historic Aboriginal, OEH and all RAPs are to be formally notified in writing. Where impacts to exposed Aboriginal skeletal remains cannot be avoided an appropriate management mitigation strategy will be developed in consultation with OEH and RAPs;
- If the remains are identified as historic non-Aboriginal, the site is to be secured and the NSW Heritage Division contacted; and
- If the remains are identified as non-human, work can recommence immediately.

#### 11.2.6 AHIMS Site Cards

AHIMS sites cards will be completed and submitted to OEH for all newly recorded sites within the proposal site at the completion of the assessment.

In the event that a previously unidentified Aboriginal site is discovered within the proposal site at any point during the operational life of the Project, an AHIMS site card for that site should be submitted to OEH as promptly as possible. Timing protocols for the submission of AHIMS site cards should be included in the ACHMP for the Project.

#### 11.2.7 Aboriginal Site Database

A comprehensive Aboriginal Site Database for the proposal site and its immediate environs should be established upon commencement of the Project. Renew Estate would be responsible for the creation and maintenance of this database which will, at a minimum, contain the name, type, size (where applicable), MGA coordinates and status of all Aboriginal sites within and directly adjacent to the proposal site. The database should be regularly updated throughout the operational life of Project. Printed site lists and maps should be made available to RAPs upon request.

### 11.3 Summary of Management Mitigation Measures

Table 38 presents a summary of management mitigation measures for identified Aboriginal sites within the proposal site.

**Table 38 Summary of site management**

Site name	AHIMS Centroid Coordinates (zone 55)		Site type	Management
	MGAE	MGAN		
SSF-IA1-17 (57-2-1055)	700102	6112754	Isolated artefact	Surface collection

Site name	AHIMS Centroid Coordinates (zone 55)		Site type	Management
	MGAE	MGAN		
SSF-IA2-17 (57-2-1056)	699037	6112291	Isolated artefact	Conservation
SSF-IA3-17 (57-2-1045)	699383	6112064	Isolated artefact	Conservation
SSF-IA4-17 (57-2-1046)	699019	6112038	Isolated artefact	Conservation
SSF-AS1-17 (57-2-1047)	699675	6113096	Artefact scatter	Conservation
SSF-AS2-17 (57-2-1049)	699764	6112985	Artefact scatter	Surface collection
SSF-AS3-17 (57-2-1052)	699379	6112763	Artefact scatter	Conservation
SSF-AS4-17 (57-2-1051)	699859	6112595	Artefact scatter	Surface collection
SSF-AS5-17 (57-2-1050)	700328	6112341	Artefact scatter	Conservation
SSF-AS6-17 (57-2-1053)	699213	6112363	Artefact scatter	Conservation
SSF-AS7-17 (57-2-1054)	699992	6112264	Artefact scatter	Conservation
SSF-AS8-17 (57-2-1048)	699212	6112105	Artefact scatter	Conservation
SSF-ST1-17	699500	6111920	Scarred tree	Conservation (Fencing)
SSF-ST2-17	699474	6112653	Scarred tree	Conservation (Fencing)
SSF-ST3-17	699735	6113087	Scarred tree	Conservation (Fencing)



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# Appendix A

Project SEARs



**D R A F T**

## Appendix A    Project SEARs

# Environmental Assessment Requirements

## State Significant Development

Section 78A(8A) of the *Environmental Planning and Assessment Act 1979*

<b>Application Number</b>	SSD 8703
<b>Proposal</b>	Springdale Solar which includes: <ul style="list-style-type: none"><li>• the construction and operation of a photovoltaic (PV) generation facility with an estimated capacity of 100 MW; and</li><li>• development of associated infrastructure, including a grid connection.</li></ul>
<b>Location</b>	Tallagandra Lane, Sutton,
<b>Applicant</b>	Renew Estate Pty Ltd
<b>Date of Issue</b>	26 September 2017
<b>General Requirements</b>	<p>The Environmental Impact Statement (EIS) for the development must comply with the requirements in Schedule 2 of the <i>Environmental Planning and Assessment Regulation 2000</i>.</p> <p>In particular, the EIS must include:</p> <ul style="list-style-type: none"><li>• a stand-alone executive summary;</li><li>• a full description of the development, including:<ul style="list-style-type: none"><li>– details of construction, operation and decommissioning;</li><li>– a site plan showing all infrastructure and facilities (including any infrastructure that would be required for the development, but the subject of a separate approvals process);</li><li>– a detailed constraints map identifying the key environmental and other land use constraints that have informed the final design of the development;</li></ul></li><li>• a strategic justification of the development focusing on site selection and the suitability of the proposed site;</li><li>• an assessment of the likely impacts of the development on the environment, focusing on the specific issues identified below, including:<ul style="list-style-type: none"><li>– a description of the existing environment likely to be affected by the development;</li><li>– an assessment of the likely impacts of all stages of the development (which is commensurate with the level of impact), taking into consideration any relevant legislation, environmental planning instruments, guidelines, policies, plans and industry codes of practice;</li><li>– a description of the measures that would be implemented to avoid, mitigate and/or offset the impacts of the development (including draft management plans for specific issues as identified below); and</li><li>– a description of the measures that would be implemented to monitor and report on the environmental performance of the development;</li></ul></li><li>• a consolidated summary of all the proposed environmental management and monitoring measures, identifying all the commitments in the EIS; and</li><li>• the reasons why the development should be approved having regard to:<ul style="list-style-type: none"><li>– relevant matters for consideration under the <i>Environmental Planning and Assessment Act 1979</i>, including the objects of the Act and how the principles of ecologically sustainable development have been incorporated in the design, construction and ongoing operations of the development;</li><li>– the suitability of the site with respect to potential land use conflicts with existing and future surrounding land uses; and</li><li>– feasible alternatives to the development (and its key components), including the consequences of not carrying out the development.</li></ul></li></ul>

	<p>While not exhaustive, Attachment 1 contains a list of some of the environmental planning instruments, guidelines, policies, and plans that may be relevant to the environmental assessment of this development.</p> <p>In addition to the matters set out in Schedule 1 of the <i>Environmental Planning and Assessment Regulation 2000</i>, the development application must be accompanied by:</p> <ul style="list-style-type: none"> <li>• a signed report from a suitably qualified person that includes an accurate estimate of the capital investment value of the development (as defined in Clause 3 of the <i>Environmental Planning and Assessment Regulation 2000</i>), including details of all the assumptions and components from which the capital investment value calculation is derived; and</li> <li>• the consent in writing of the owner of the land (as required in clause 49(1)(b) of the <i>Environmental Planning and Assessment Regulation 2000</i>).</li> </ul>
<b>Specific Issues</b>	<p>The EIS must address the following specific issues:</p> <ul style="list-style-type: none"> <li>• <b>Biodiversity</b> – including an assessment of the biodiversity values and the likely biodiversity impacts of the project in accordance with the <i>Biodiversity Conservation Act 2016</i> (NSW), a detailed description of the proposed regime for minimising, managing and reporting on the biodiversity impacts of the project over time, and a strategy to offset any residual impacts of the project in accordance with the <i>Biodiversity Conservation Act 2016</i> (NSW);</li> <li>• <b>Heritage</b> – including an assessment of the likely Aboriginal and historic heritage (cultural and archaeological) impacts of the development, including adequate consultation with the local Aboriginal community;</li> <li>• <b>Land</b> – including an assessment of the impact of the development on agricultural land and flood prone land, a soil survey to consider the potential for erosion to occur, and paying particular attention to the compatibility of the development with the existing land uses on the site and adjacent land (e.g. operating mines, extractive industries, mineral or petroleum resources, exploration activities, aerial spraying, dust generation, and risk of weed and pest infestation) during operation and after decommissioning, with reference to the zoning provisions applying to the land;</li> <li>• <b>Visual</b> – including an assessment of the likely visual impacts of the development (including any glare, reflectivity and night lighting) on surrounding residences, scenic or significant vistas, air traffic and road corridors in the public domain, including a draft landscaping plan for on-site perimeter planting, with evidence it has been developed in consultation with affected landowners;</li> <li>• <b>Noise</b> – including an assessment of the construction noise impacts of the development in accordance with the <i>Interim Construction Noise Guideline</i> (ICNG) and operational noise impacts in accordance with the <i>NSW Industrial Noise Policy</i> (INP), and a draft noise management plan if the assessment shows construction noise is likely to exceed applicable criteria;</li> <li>• <b>Transport</b> – including an assessment of the site access route, site access point and likely transport impacts of the development on the capacity and condition of roads (including on any Crown land), a description of the measures that would be implemented to mitigate any impacts during construction, and a description of any proposed road upgrades developed in consultation with the relevant road authorities (if required);</li> <li>• <b>Water</b> – including: <ul style="list-style-type: none"> <li>– an assessment of the likely impacts of the development (including flooding) on surface water (including Back Creek and riparian land) and groundwater resources, wetlands, riparian land, groundwater dependent ecosystems, key fish habitat and acid sulfate soils, related infrastructure, adjacent licensed water users and basic landholder rights, and measures proposed to monitor, reduce and mitigate these impacts;</li> <li>– details of water requirements and supply arrangements; and</li> <li>– a description of the erosion and sediment control measures that would be implemented to mitigate any impacts in accordance with <i>Managing Urban Stormwater: Soils &amp; Construction</i> (Landcom 2004);</li> </ul> </li> </ul>

# **Appendix B**

## **Agency Letters**



## Appendix B    Agency Letters



AECOM Australia Pty Ltd  
Level 21, 420 George Street  
Sydney NSW 2000  
PO Box Q410  
QVB Post Office NSW 1230  
Australia  
www.aecom.com

+61 2 8934 0000 tel  
+61 2 8934 0001 fax  
ABN 20 093 846 925

10 October 2017

Archaeologist  
Landscape and Aboriginal Heritage Protection Section  
Office of Environment and Heritage NSW  
PO Box 733  
Queanbeyan NSW 2620

Dear Sir/Madam,

**Request for Relevant Aboriginal Stakeholder Information, Sutton, NSW**

I am writing to inform you that AECOM Australia Pty Ltd (AECOM) has been commissioned by Renew Estate to undertake an Aboriginal cultural heritage assessment for the proposed Springdale Solar Farm located in Sutton, NSW.

The purpose of this letter is to request from you, in accordance with Section 4.1.2 of the Office of Environment and Heritage's (OEH) *Aboriginal Cultural Heritage Consultation Requirements for Proponents* (DECCW 2010), information regarding Aboriginal individuals and/or organisations whom you consider may hold cultural knowledge relevant to determining the cultural significance of Aboriginal objects/places in the area of the proposed project, and who may be interested in being consulted.

Kind regards,

Geordie Oakes  
Archaeologist  
Geordie.Oakes@aecom.com

Direct Dial: +61 2 8934 0610  
Direct Fax: +61 2 8934 0001



AECOM Australia Pty Ltd  
Level 21, 420 George Street  
Sydney NSW 2000  
PO Box Q410  
QVB Post Office NSW 1230  
Australia  
www.aecom.com

+61 2 8934 0000 tel  
+61 2 8934 0001 fax  
ABN 20 093 846 925

10 October 2017

Office of the Registrar  
PO Box 112  
Glebe NSW 2037

Dear Sir/Madam,

**Request for Relevant Aboriginal Stakeholder Information, Sutton, NSW**

I am writing to inform you that AECOM Australia Pty Ltd (AECOM) has been commissioned by Renew Estate to undertake an Aboriginal cultural heritage assessment for the proposed Springdale Solar Farm located in Sutton, NSW.

The purpose of this letter is to request from you, in accordance with Section 4.1.2 of the Office of Environment and Heritage's (OEH) *Aboriginal Cultural Heritage Consultation Requirements for Proponents* (DECCW 2010), information regarding Aboriginal individuals and/or organisations whom you consider may hold cultural knowledge relevant to determining the cultural significance of Aboriginal objects/places in the area of the proposed project, and who may be interested in being consulted.

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Australia  
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+61 2 8934 0000 tel  
+61 2 8934 0001 fax  
ABN 20 093 846 925

10 October 2017

Southern Rivers Catchment Authority  
13 Mitchell Street  
PO Box 10  
Yass NSW 2582

Dear Sir/Madam,

**Request for Relevant Aboriginal Stakeholder Information, Sutton, NSW**

I am writing to inform you that AECOM Australia Pty Ltd (AECOM) has been commissioned by Renew Estate to undertake an Aboriginal cultural heritage assessment for the proposed Springdale Solar Farm located in Sutton, NSW.

The purpose of this letter is to request from you, in accordance with Section 4.1.2 of the Office of Environment and Heritage's (OEH) *Aboriginal Cultural Heritage Consultation Requirements for Proponents* (DECCW 2010), information regarding Aboriginal individuals and/or organisations whom you consider may hold cultural knowledge relevant to determining the cultural significance of Aboriginal objects/places in the area of the proposed project, and who may be interested in being consulted.

Kind regards,

Geordie Oakes  
Archaeologist  
Geordie.Oakes@aecom.com

Direct Dial: +61 2 8934 0610  
Direct Fax: +61 2 8934 0001





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Level 21, 420 George Street  
Sydney NSW 2000  
PO Box Q410  
QVB Post Office NSW 1230  
Australia  
[www.aecom.com](http://www.aecom.com)

+61 2 8934 0000 tel  
+61 2 8934 0001 fax  
ABN 20 093 846 925

10 October 2017

Heritage Advisor  
Yass Valley Council  
PO Box 6  
Yass NSW 2582

Dear Sir/Madam,

**Request for Relevant Aboriginal Stakeholder Information, Sutton, NSW**

I am writing to inform you that AECOM Australia Pty Ltd (AECOM) has been commissioned by Renew Estate to undertake an Aboriginal cultural heritage assessment for the proposed Springdale Solar Farm located in Sutton, NSW.

The purpose of this letter is to request from you, in accordance with Section 4.1.2 of the Office of Environment and Heritage's (OEH) *Aboriginal Cultural Heritage Consultation Requirements for Proponents* (DECCW 2010), information regarding Aboriginal individuals and/or organisations whom you consider may hold cultural knowledge relevant to determining the cultural significance of Aboriginal objects/places in the area of the proposed project, and who may be interested in being consulted.

Kind regards,

Geordie Oakes  
Archaeologist  
[Geordie.Oakes@aecom.com](mailto:Geordie.Oakes@aecom.com)

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Australia  
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+61 2 8934 0000 tel  
+61 2 8934 0001 fax  
ABN 20 093 846 925

10 October 2017

Ngambri Local Aboriginal Land Council  
70 Monaro Street  
Queanbeyan NSW 2620

Dear Sir/Madam,

**Request for Relevant Aboriginal Stakeholder Information, Sutton, NSW**

I am writing to inform you that AECOM Australia Pty Ltd (AECOM) has been commissioned by Renew Estate to undertake an Aboriginal cultural heritage assessment for the proposed Springdale Solar Farm located in Sutton, NSW.

The purpose of this letter is to request from you, in accordance with Section 4.1.2 of the Office of Environment and Heritage's (OEH) *Aboriginal Cultural Heritage Consultation Requirements for Proponents* (DECCW 2010), information regarding Aboriginal individuals and/or organisations whom you consider may hold cultural knowledge relevant to determining the cultural significance of Aboriginal objects/places in the area of the proposed project, and who may be interested in being consulted.

Kind regards,

Geordie Oakes  
Archaeologist  
Geordie.Oakes@aecom.com

Direct Dial: +61 2 8934 0610  
Direct Fax: +61 2 8934 0001

# **Appendix C**

## **Agency Responses**

## Appendix C    Agency Responses



19 October 2017



11-13 Mansfield Street  
Glebe NSW 2037  
PO Box 112, Glebe NSW 2037  
P. 02 9562 6327 F. 02 9562 6350

Geordie Oakes  
AECOM  
Level 21  
420 George Street  
SYDNEY NSW 2000

Dear Geordie

**Re: Request - Search for Registered Aboriginal Owners**

I refer to your letter dated 10 October 2017 regarding an Aboriginal Cultural Heritage Assessment located within the area of Sutton, NSW

I have searched the Register of Aboriginal Owners and the project area described does not have Registered Aboriginal Owners pursuant to Division 3 of the Aboriginal Land Rights Act 1983 (ALRA).

I suggest that you contact the Ngambri Local Aboriginal Land Council on 02 6297 4152. They may be able to assist you in identifying other Aboriginal stakeholders for this project.

Yours sincerely

**Jodie Rikiti**  
**Administration Officer**  
Office of the Registrar, ALRA

Oakes, Georgie

---

From: Sam Light <sam.light@lls.nsw.gov.au>  
Sent: Wednesday, 25 October 2017 8:51 AM  
To: Oakes, Georgie  
Subject: re: Request for Aboriginal Stakeholder Information, Sutton, NSW

Hi Georgie,

The relevant Local Aboriginal Land Council for Sutton is Ngambri who are best contacted on (02) 6297 4152. Onerwal LALC may also be interested in consultation and CEO Brad Bell can be contacted on [onerwal@gmail.com](mailto:onerwal@gmail.com) or (02) 6226 5349.

Hope this is helpful,

Sam

--

**Sam Light** | Land Services Officer - Projects  
**South East Local Land Services**  
13 Mitchell Street | PO Box 10 | Yass NSW 2582  
T: [+61 2 6118 7706](tel:+61261187706) | F: [+61 2 6226 2989](tel:+61262262989) | M: 0439 614 903 |  
E: [Sam.Light@lls.nsw.gov.au](mailto:Sam.Light@lls.nsw.gov.au) |  
W: [www.trade.nsw.gov.au](http://www.trade.nsw.gov.au)

Visit our online hub [South East Open](#) to provide feedback to us



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This message is intended for the addressee named and may contain confidential information. If you are not the intended recipient, please delete it and notify the sender. Views expressed in this message are those of the individual sender, and are not necessarily the views of their organisation.



Office of  
Environment  
& Heritage

Your reference:  
Our reference:  
Contact:

Springdale Solar Project  
DOC17/511995  
Rose O'Sullivan (02) 4224 4177

Geordie Oakes  
AECOM Australia Pty Ltd  
PO Box Q410  
QVB Post Office NSW 1230  
via email: [Geordie.Oakes@aecom.com](mailto:Geordie.Oakes@aecom.com)

Dear Geordie,

**WRITTEN NOTIFICATION OF PROPOSAL AS REQUIRED UNDER DECCW ABORIGINAL  
CULTURAL HERITAGE CONSULTATION REQUIREMENTS FOR PROPONENTS 2010**

**RE: Springdale Solar Farm – Sutton, NSW**

I refer to your mailed letter received on 16 October 2017 to the Office of Environment and Heritage (OEH) regarding the above matter.

Attached is a list of known Aboriginal parties for the Yass Valley local government area that OEH feels are likely to have an interest in the development. Please note this list is not necessarily an exhaustive list of all interested Aboriginal parties and receipt of this list does not remove the requirement of a proponent/consultant to advertise in local print media and contact other bodies seeking interested Aboriginal parties, in accordance with the *Aboriginal Cultural Heritage Consultation Requirements for Proponents 2010* (April 2010).

Under Section 4.1.6 of the *Consultation Requirements* you must also provide a copy of the names of each Aboriginal person who registered an interest to the relevant OEH regional office and Local Aboriginal Land Council (LALC) within 28 days from the closing date for registering an interest.

Please note: the contact details in the list provided by OEH may be out of date as it relies on Aboriginal parties advising OEH when their details need changing. If individuals/ companies undertaking consultation are aware that any groups contact details are out of date, or letters are returned unopened, please contact either the relevant stakeholder group (if you know their more current details) and/ or OEH. AHIP applicants should make a note of any group they are unable to contact as part of their consultation record.

If you wish to discuss any of the above matters further please feel free to contact me on (02) 4224 4177.

Yours sincerely

19 Oct. 2017

**ROSE O'SULLIVAN**  
**A/Team Leader, Aboriginal Heritage - South East**  
**Regional Operations Division**

Enclosure: Attachment 1 – Yass Valley LGA

PO Box 733 Queanbeyan NSW 2620  
11 Farrer Place Queanbeyan NSW  
Tel: (02) 6229 7188 Fax: (02) 6229 7001  
ABN 30 841 387 271  
[www.environment.nsw.gov.au](http://www.environment.nsw.gov.au)



**ATTACHMENT 1: Yass Valley local government area**

Organisation/Individual Name	Address	Contact Details
Onerwal LALC	95 Meehan St, (PO Box 644) Yass NSW 2582	Ph: (02) 6226 5349 Email: onerwal1@gmail.com
Yass Valley Indigenous Consultative Committee Community Development Manager: Cathy Campbell	PO Box 6 Yass NSW 2582	Ph: (02) 6226 9285 Fax: (02) 62262598 Email: cathy.campbell@yass.nsw.gov.au
Ngunawal Heritage Aboriginal Corporation Mrs Dorothy Carroll	245 Ash Road, Prestons NSW 2170	Mob: 0412 176 081 Fax: 07 5630 8597 Email: ngunawalhac@gmail.com
Ngunnawal Elders Corporation Mr Arnold Williams CEO		Mob:0431271500 not connected as at 18/11/14 email: blakneycreek@gmail.com
Yurwang Gundana Consultancy Cultural Heritage Services Dean Bell	PO Box 5628 South Windsor NSW 2756	Mob: 0403 744 008 or 0415 100 189 Fax: 02 4577 8707 Email.yurwang_gundana@bigpond .com
Buru Ngunawal Aboriginal Corporation. Contact Person: Wally Bell	PO Box 255 KIPPAX ACT 2615	Mob: 0419 425 347; Email: walbell@bigpond.net.au
Carl and Tina Brown	12 Pleasance Place, Belconnen ACT 2617	Mob: 0414 283 216 Email: tina.kingbrown@gmail.com
Gunjeewong Cultural Heritage Aboriginal Corporation: Cherie Carroll Turrise	1 Bellevue Place Portland NSW 2847	Mob: 0458491539, Email: cheriecarroll68@yahoo.com
Ms Alice Williams	3 Goonda St, Cooma NSW 2630	Mob: 0431190127
Koomurri Ngunawal Aboriginal Corporation (KNAC) Contact/Director: Glen Freeman	16A Progress Street, Goulburn NSW 2580	Mob: 0451 790 215 Email: KoomurriNAC@hotmail.com
Corroboree Aboriginal Corporation Director: Steve Johnson	PO Box 3340 ROUSE HILL NSW 2155 (prefers correspondence to be sent via registered mail)	PH: 0406 991 221 FAX: 02 8824 4324 Email: corroboreecorp@bigpond.com
Murri Bidgee Mullangari Aboriginal Corporation. Contact: Darleen Johnson	PO Box 246, Seven Hills NSW 2147	mob: 0490051102 or 0435040842 email: murrabidgeemullangari@yahoo.co m.au
Merrigarn Aboriginal Corporation: Contact person Shaun Carroll	PO Box 495 Seven Hills NSW 2147	Mob: 0497000586 Email: merrigarn@yahoo.com.au
Didge Ngunawal clan - Contact: Lillie Carroll	7 Siskin Street, Quakers Hill NSW 2763	mobile: 0450616404 or 0426823944 email: didgengunawalclan@yahoo.com.a u
Ginninderra Aboriginal Corporation: Contact - Krystle Carroll	PO BOX 3143, Grose Vale NSW 2754	Mobile: 0404297224 email: ginninderra.corp@gmail.com
Muragadi Heritage Indigenous Corporation: Contact - Jesse Johnson	5 Hession Road, Nelson NSW 2765	Mobile:0447970049 email: muragadi@yahoo.com.au
Thunderstone Aboriginal Cultural and Land Management Services Aboriginal Corporation. Contact Person - Tyrone Bell	PO Box 6900 Charnwood ACT 2615	mobile: 0407517844 email: thunderstonemg@gmail.com



# Appendix D

Newspaper  
Advertisement –  
Bungendore Weekly

## Appendix D Newspaper Advertisement – Bungendore Weekly

Aboriginal Stakeholder Consultation  
Springdale Solar Farm, Sutton, NSW

Lot1 DP198933, Lots 10, 15, 54, 97, 111, 161, 182, 189, 190, 202, 209 DP754908

Renew Estate Pty Ltd

(Level 18, Grosvenor Place, 225 George Street, Sydney NSW 2000)

AECOM on behalf of Renew Estate is seeking to identify Aboriginal persons or organisations who wish to be consulted in relation to a proposed solar farm in Sutton, NSW.

An Aboriginal heritage assessment will be undertaken for the development area and should it be required an Aboriginal Heritage Impact Permit (AHIP) prepared. Consultation with Aboriginal people is to assist the applicant in preparation of an AHIP (if required) and the Director General of the NSW Office of Environment and Heritage (OEH) in their determination of the application. Interested Aboriginal persons or organisations can register their interest in writing to:  
Geordie Oakes  
c/- AECOM Australia Pty Ltd  
PO Box Q410, QVB Post Office,  
Sydney, NSW 1230  
Ph: +61 2 8934 0610  
Email: Geordie.Oakes@aecom.com  
The closing date for registration is 2/11/17

NOTICE OF ANNUAL GENERAL MEETING

MONDAY 13th NOVEMBER 2017

The Bungendore Netball Club's AGM will be held on Monday 13<sup>th</sup> November 2017 at 6pm in the upstairs meeting room at the Royal Hotel, Bungendore.

The continuation of the club relies on volunteers for the Committee and many hands make light work. Nominations for committee members are being accepted now and all positions are vacant. There are generous registration discounts for committee members and their families. Please come along and volunteer as your support is vital to the future of the club!

Contact Tiffany Knight at  
bncsecretary@hotmail.com for more information.



Barbara Ann Heathcote


31.1.1944 – 10.10.2017

Late of Wamboin and Cobargo.  
Much loved wife of Graham.  
Loving mother of Kate, Darren and Kylie.

A Celebration of Life of the late Mrs Barbara Heathcote will be held in the Clavering Park Crematorium Chapel, Wolumla at 11.00am, Saturday 21st October, 2017.

Relatives and friends are respectfully invited to attend. Please wear bright and colourful clothing.

John R Whyman Funeral Services  
Bega 6492 4111



QPRC





Message from the Mayor

Weeds winner

Council was again a winner at the Local Government Excellence in Environment Awards, taking out both Division C and the Overall Category Winner for Invasive Species Management. The project involved developing a risk assessment and analysis model across south east NSW, covering 764 localities. The mapping identified regional priority weeds.

Arts Trail 2017

Don't miss the QPRC Arts Trail this weekend, with more than 45 artists and studios opening their doors to the public to view artworks and see behind the scenes. Many studios are open on both Saturday 21 and Sunday 22 October between 10am and 4pm. There are studios across the region who are opening their doors, visit <http://www.visitqueanbeyan.com.au/qprc-arts-trail-2017> for studio opening times and locations.

Brumbies vs Melbourne Rebels

The Brumbies will kick-off their 2018 Super Rugby pre-season campaign with a fixture against the Melbourne Rebels in Queanbeyan on Saturday 3 February. The fixture will take place at Seiffert Oval with a 6pm start. Save the date in your calendars and more information about tickets will be advised closer to the date.

Q-One Aquatics Queanbeyan Wet Play Area

Construction of the Wet Play Area at the Q-One Aquatics Centre in Queanbeyan is underway. This is an exciting addition to the aquatic centre and will have water slides, interactive water guns and fountains and more. The project is expected to be opened to the public in early 2018.

Motorcycle Awareness Week

16-22 October is Motorcycle Awareness Week and Council is partnering with local motorcyclists in the Spot Joe Rider campaign. Riders in Braidwood, Bungendore, Queanbeyan and surrounding roads will be wearing high visibility vests with "Joe Rider" on them. If you spot a motorcyclist, when you reach your destination, visit Council's website to report your sighting and you could win 1 of 5 \$50 fuel vouchers or a \$150 fuel voucher. Be motorcycle aware and help motorcyclists ride to live.

QPRC News

The October edition of Council's newsletter the QPRC News should be delivered to residents this week.

Cr Tim Overall

Mayor

For more information call: 6285 6000  
[www.qprc.nsw.gov.au](http://www.qprc.nsw.gov.au)

Dear Garlic Grower,

The Braidwood Garlic Growers group is pleased to announce that it will be holding a **Co-operative formation meeting** on **Sunday, October 29th from 4pm - 6pm** in the Old Library Building, Park Lane, Braidwood (opposite the current library building which is at the rear of the Braidwood Council Offices on Wallace St).

All garlic growers in the region interested in becoming members of the Braidwood Garlic Growers Co-op Ltd are invited to attend.

Please bring:

- A printed, completed copy of the "Application for Membership" (P.27 - Annexure 4 of the Disclosure Statement).
- Your cheque book or cash to pay the membership and application fee and to purchase the shares you require (these fees are outlined in the Application for Membership)

Before attending please read the Approved Rules. These have been approved by the Registrar of Co-operatives NSW and are not subject to debate or alteration at the meeting but are accepted or rejected at the meeting. Changes to rules can be made once the co-operative has formed.

We welcome your attendance and membership in the co-operative.

For any queries please contact Georgina on mobile 0487 357 660 or email [georginabymes6@gmail.com](mailto:georginabymes6@gmail.com).

STUDIO 13 at the War Memorial Hall this weekend

As part of the Queanbeyan-Palerang Council's regional arts trail, Studio 13 has been formed as a pop-up workshop which will showcase 13 local artists at one location. Each studio will feature an artist demonstrating their creative talents and exhibiting a collection of their works for the public to see and purchase. Each artist will also be on hand to talk about their work. We have selected 13 artists each specialising in a different area to provide a wide variety of interest. You will be able to see glass mosaics, pen turning, pottery, leatherwork, printing, drawing, wirework, millinery, woodwork, collage, silverwork, quilting and beadwork.

The artists of Studio 13 hope to see you during the weekend of October 21-22 at Bungendore War Memorial Hall, 10-4pm each day.




CWA Trash and Treasure sale Saturday October 28

The Bungendore CWA will be holding its annual Trash & Treasure Sale on Saturday October 28, 9am-1pm at 40 Gibraltar Street, Bungendore. If you have never been before - think of a garage sale,

now make it bigger and much more fun. That's what happens when a team of ladies gets busy de-cluttering their homes for a good cause. Bargains galore are guaranteed!





BLESSING OF THE ANIMALS

SUNDAY 19TH NOVEMBER 9:30AM  
BUNGENDORE ANGLICAN CHURCH  
CAKE STALL & PHOTO BOOTH IN AID OF RSPCA

[www.bungendoreanglican.org.au](http://www.bungendoreanglican.org.au)

community

notebook

Wednesdays

The Bungendore Bridge Club always welcomes new members. Meetings are held Wednesday evenings at the Community Centre, Turallo Terrace at 7pm. Contact Fred Heywood (President) at: [fheywood@hotmail.com](mailto:fheywood@hotmail.com)

Wed 18 Oct

QPRC Workshop to develop Regional Economic Development Strategy - Bungendore Council Chambers, Majara St, Bungendore 5.30pm to 7pm. Register at: [qprc.nsw.gov.au](http://qprc.nsw.gov.au)

Thu 19 Oct

Workshop to develop Regional Economic Development Strategy - Queanbeyan Council Chambers, Crawford Street. 5.30pm to 7pm. Register at: [qprc.nsw.gov.au](http://qprc.nsw.gov.au)

Fri 20 Oct

Bungendore Public School Twilight Fair from 3.30pm.

Sat Sun 21-22 Oct

Garage Sale Trail, Queanbeyan. More info at: [www.qprc.nsw.gov.au](http://www.qprc.nsw.gov.au)

Sat Sun 21-22 Oct

Arts Trail weekend: QPRC LGA. More info at:

www.qprc.nsw.gov.au

**Mon 23 Oct**  
CWA Craft and Chat – 10am, CWA Rooms, Gibraltar Street, for more information contact: 6238 1679.

**Tues 24 Oct**  
Mahjong – 10am, CWA Rooms, Gibraltar Street, for more information contact: 6238 1679.

**Wed 25 Oct**  
QPRC Ordinary Council Meeting - Bungendore Council Chambers, Majara St, Bungendore 5.30pm start. More info [www.qprc.nsw.gov.au](http://www.qprc.nsw.gov.au). Meetings can be viewed at [www.webcast.qprc.nsw.gov.au](http://www.webcast.qprc.nsw.gov.au)

**Sat 28 Oct**  
CWA Trash and Treasure Sale - 9am to 1pm. CWA rooms, Gibraltar Street, for more info contact 6238 1679

**Sat 28 October**  
Bungendore Spring Ball at the Multi-purpose Hall. Theme: *An Evening on the Titanic*. More info on our Facebook page or email: [bungendorespringball@gmail.com](mailto:bungendorespringball@gmail.com)

# **Appendix E**

**OEH & LALC RAP  
Notification**



## Appendix E    OEH & LALC RAP Notification

22 November 2017

Archaeologist  
Landscape and Aboriginal Heritage Protection Section  
Office of Environment and Heritage NSW  
PO Box 733  
Queanbeyan NSW 2620

To Whom it May Concern,

**Re: Notification of Registered Aboriginal Parties (RAPs) for the proposed Springdale Solar Farm****Notification of Registered Aboriginal Parties (RAPs) for a residential development across Lot 1060 of DP 2475 located at 300 Sixth Avenue, Austral, NSW**

In accordance with Section 4.1.6 of OEH's *Aboriginal Cultural Heritage Consultation Requirements for Proponents 2010*, please find enclosed for your records a list of the Aboriginal organisations and individuals who have registered an interest in being consulted for an Aboriginal Cultural Heritage Assessment being undertaken by AECOM Australia Pty Ltd (AECOM) for a development across Lot 1060 of DP2475 located at 300 Sixth Avenue, Austral, NSW.

As was stated in the letters of invitation issued to Aboriginal organisations and individuals requesting registrations of interest, the official registration period for this project closed on 8 September 2017. A copy of the invitation is attached to this letter as well as the newspaper advertisement stakeholder request.

A total of 14 registrations of interest have been received regarding consultation for this project (Table 1). Please note that in accordance with Section 4.1.5 of the Consultation Requirements, AECOM provides the opportunity for Registered Aboriginal Parties (RAPs) to withhold their details from being forwarded on to the Local Aboriginal Land Council and/or OEH, and respects the wishes of RAPs to withhold their details at their discretion. No RAPs requested that their details be withheld in regard to this project.

**Table 1 List of Registered Aboriginal Parties**

No.	Organisation	Contact Person	Date of registration
1	Darug Aboriginal Land Care Inc	Des Dyer	25-Aug-17
2	Darug Aboriginal Cultural Heritage Assessments	Celestine Everingham	24-Aug-17
3	Darug Land Observations	Anna Workman	30-Aug-17
4	Darug Custodian Aboriginal Corporation	Justine Coplin	24-Aug-17
5	Tocomwall Pty Ltd	Jennifer Norfolk	16-Aug-17
6	Didge Ngunawal Clan	Lilly Carroll	16-Aug-17
7	Darug Tribal Aboriginal Corporation	John Reilly	17-Aug-17
8	Cullendulla	Corey Smith	4-Sep-17
9	Goobah	Basil Smith	4-Sep-17
10	Biamanga	Seli Storer	4-Sep-17
11	Murramarang	Roxanne Smith	4-Sep-17

No.	Organisation	Contact Person	Date of registration
12	Kamilaroi-Yankuntjatjara Working Group	Phil Kahn	16-Aug-17
13	Cubbitch Barta	Glenda Chalker	25-Aug-17
14	Gulaga	Wendy Smith	22-Aug-17

Yours faithfully,



Geordie Oakes  
Archaeologist  
geordie.oakes@aecom.com

Direct Dial: +64 2 89340610  
Direct Fax: +64 2 89340001

# **Appendix F**

## **Draft Assessment Methodology**



## Appendix F     Draft Assessment Methodology

23 October 2017

Dear Stakeholder,

**RE: Notification of Project Proposal, Registration of Interest and Proposed Project Methodology - Aboriginal Archaeological and Cultural Heritage Impact Assessment for a proposed solar farm located in Sutton, NSW**

**1.0 Registration of Interest**

AECOM Australia Pty Ltd (AECOM) was commissioned by Renew Estate Pty Ltd to prepare an Aboriginal Archaeological and Cultural Heritage Impact Assessment (AACHIA) for a proposed solar farm across Lot 1 on DP 198933 and Lots 10, 15, 54, 97, 111, 161, 182, 189, 190, 202, 209 on DP 754908, near Sutton, NSW ('the Project area', Figure 1).

I am writing to you as it has been identified that you may have an interest in registering for consultation in relation to this assessment. Please also find enclosed a copy of AECOM's draft assessment methodology. Should you wish to register your interest or would like to make comment on the proposed methodology, it would be greatly appreciated if you could please provide written and/or verbal confirmation/comments within 28 days of the date shown on this letter. My contact details are provided at the end of this letter.

In addition to providing our draft methodology, I would also like to take this opportunity to request from you any initial comments regarding the cultural values of the Project area.

Please be advised that if you register an interest for consultation, your details will be forwarded to the Office of Environment and Heritage (OEH) and Ngambri Local Aboriginal Land Council, unless you specify that you do not want your details released.

**2.0 Notification of Project Proposal**

Renew Estate Pty Ltd is proposing to construct a solar farm within the Project area. AECOM has been engaged to complete an AACHIA that will be form part of an Environmental Impact Statement (EIS) for the project.

**3.0 Proponent Contact Details**

Name: Renew Estate Pty Ltd

ABN: 21 617 855 311

Address: Level 18, Grosvenor Place, 225 George Street, Sydney NSW 2000

Contact: Lauren Lambert (lauren@beast.solutions)

**4.0 Project Archaeological Background**

Aboriginal Heritage Information Management System (AHIMS) Search

A search of the AHIMS database was undertaken on 23 September 2017 for a 10 x 10 km area centred on the Project area. A total of 15 Aboriginal archaeological sites were identified within the search area, all comprising open artefact sites. Consideration of the location of previously recorded sites indicates none are located within the Project area, with the closest site – 'MFR OC3' (AHIMS# 57-2-0697) located 1.5km south.

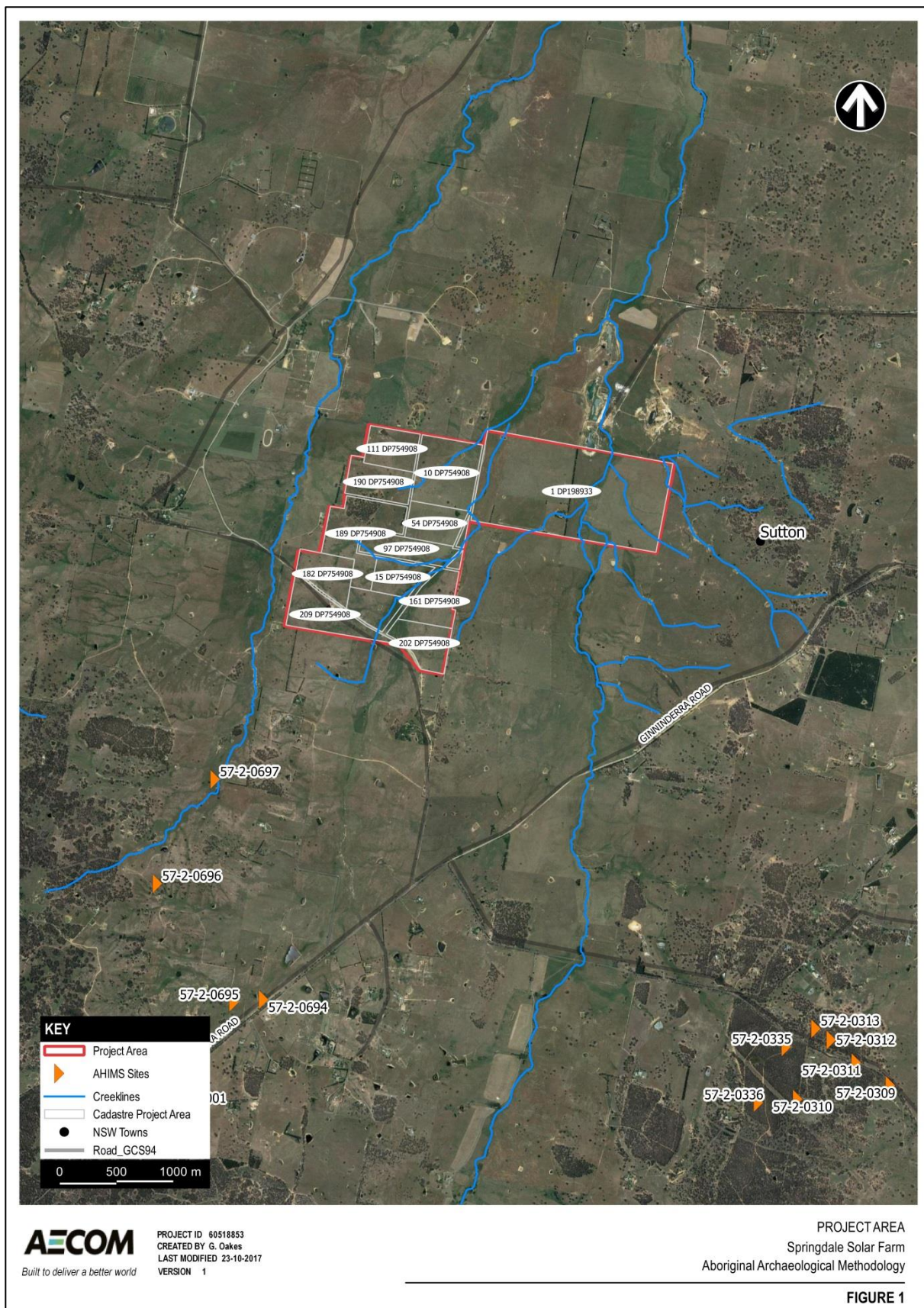


Figure 1: Project area

## 5.0 Draft Methodology

In accordance with the Office of Environment and Heritage's (OEH) *Aboriginal Cultural Heritage Consultation Requirements for Proponents 2010* (DECCW, 2010a), AECOM is providing for your review a draft assessment methodology for the Project, and allowing 28 days from the date of this letter for comment.

AECOM proposes the following assessment methodology:

- A. Desktop assessment;
- B. Archaeological survey of the Project area with Registered Aboriginal Parties (RAPs);
- C. Consultation with RAPs in order to identify the Aboriginal cultural heritage values of the Project area; and
- D. Preparation of an AACHIA for the Project area detailing the results of the above. Appropriate management/mitigation measures for the identified Aboriginal heritage values of the Project area will be provided in these reports.

### A. Desktop Assessment

The desktop assessment will comprise:

- A search of OEH's AHIMS database prior to archaeological survey;
- A review of the landscape context of the Project area;
- A review of relevant archaeological and ethnohistoric information for the Project area; and
- Preparation of a predictive model for Aboriginal archaeological site type and distribution within the Project area.

### B. Archaeological Survey

A targeted archaeological survey of the Project area, focussing on sensitive landforms (i.e., creeklines), will be undertaken over two days by a combined field team of two AECOM archaeologists and an appropriate number of RAP representatives. Any new sites identified during survey will be recorded to the standard required by the *Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales* (DECCW, 2010b). For each site located, individual artefact locations will be captured by differential GPS with associated technological attributes entered into the same device. Photographic records of each site will also be taken.

### D. Consultation with RAPs

RAP representatives are in the best position to provide information on the Aboriginal social/cultural heritage values of a given area. During the assessment process, AECOM archaeologists will consult with RAPs regarding the cultural heritage values of the Project area. This will include:

- A request (with this draft methodology) for any initial comments regarding the Aboriginal cultural heritage values of the Project area;
- The provision of this project information package, including draft assessment methodology to all RAPs for comment prior to fieldwork;
- RAP participation in field survey;
- Discussion of cultural heritage values with RAPs during field survey; and
- Provision of draft AACHIA to all RAPs for comment prior to finalisation.

## 6.0 Contact Details

To register your interest in this project and/or should you have any queries/comments regarding the proposed methodology or cultural heritage values of the Project area, please contact Geordie Oakes by any of the below contact details.

**Phone:** 02 8934 0610

**Fax:** 02 8934 0001



**Email:** Geordie.Oakes@aecom.com

**Post:** Geordie Oakes

AECOM Australia Pty Ltd

PO Box Q410

QVB PO, Sydney NSW 1230

The comment period for the draft methodology will close 28 days from the date of this letter.

Yours faithfully,



Geordie Oakes

Archaeologist

geordie.oakes@aecom.com

Direct Dial: +64 2 89340610

Direct Fax: +64 2 89340001

# Appendix G

## RAP Responses to Draft Methodology

## Appendix G RAP Responses to Draft Methodology



26 October 2017

Geordie Oakes  
AECOM Australia Pty Ltd  
PO Box Q410  
SYDNEY NSW 1230

Dear Geordie

RE: Expression of Interest all aspects, Proposal, Registration of Interest Proposed Project Methodology –  
Aboriginal Archaeology & Cultural Heritage Impact Assessment for a proposed solar farm located in  
Sutton, NSW.

We are pleased to be considered to consult in Sutton, NSW. Our members are qualified Cultural Heritage Site Officers, due to previous knowledge passed down by our Elders Phillip Carroll, Donald Carroll Bell, Dot Carroll, Phyllis (Carroll) Phillips and our Elders Phillip James Carroll and Cherie Carroll Turrise. We have consulted in Yass and surrounding areas. As our father was Ngunawal Elder Phillip Edward Carroll he was born on Yass Mission. They used to call it 'Hollywood Mission.' Being a nomadic black fella he travelled all over Australia and passed on his stories to us of his travels and those of his ancestry, our ancestry. He was the best story teller. He often said, "I travelled all over the landscape. When I die I'll die a happy man." My father Phillip Carroll our Ngunawal Elder was only a young boy, when he hit the road as a drover and later a boxer with Jimmy Sharman 'Boxing Tent' to support his family. He's mother had no one to support her and his siblings when his father James Lesley Carroll died as a result of a knife wound obtained on the Hollywood Mission. The incident made the local paper, the 'Yass Tribune.' My father's name is also mentioned in the article. Travelling around to support his mother and siblings suited my dad well, as he was a black fella and therefore liked to go walk about. As is documented of aboriginal people, my father fitted this description to a tee. As such when he had his own family, we his children moved our home many, many, times a year too.

Therefore as well as working on site with archaeologists Navin Officer, AECOM, Niche, Kayandel, to name some. Our experience has been sufficient to find and collect/protect our aboriginal culture and heritage as passed down from our father and other elders. Our corporation Corroboree Aboriginal Corporation also has archaeological fieldwork experience with many archaeologists.

- As a Culture and Heritage Site Officer we have taken directions from project archaeologists. I or one of our members have attended numerous project sites we have consulted with RMS, Navin Officer, AECOM, Niche, Ben Streat, Dom Steele, Crystal Mines, Environment & Heritage and ECM to name some.
- I and my members have undertaken manual labour over extended periods of time. With the archaeologists listed above. Some of the project sites to name: Rouse Hill, Pitt Town, Marulan, Queanbeyan, Yass, Burrinjuck, Goulburn, Harden, Googong Riverstone, Mt Pleasant, etc.
- The use of archaeological field tools such as mattocks, shovels, trowels, wheelbarrows, buckets and wet & dry sieving stations have been standard provision on project sites for the preservation of aboriginal artefacts and culture.
- We have worked in a range of climates, consisting of heat, cold and wet weather. To which we have all worn the correct protective clothing as per OH&S guidelines. Wear long trousers, closed steel-cap footwear (lace up preferably in case of ankle breakage), long sleeve shirt, hat, sunblock, fluoro vests and take water, plus lunch if isolated site.





CORROBOREE ABORIGINAL  
CORPORATION PRESERVING  
OUR HERITAGE & CULTURE

Mobile | 0415911159 Phone | 02 8824 4324 Fax | 02 8824 4324  
Email | [corroboreecorp@bigpond.com](mailto:corroboreecorp@bigpond.com)  
<http://corroboreecorp.wix.com/corroboreecorp>  
PO BOX 3340 ROUSE HILL, NSW 2155  
ICN 810

- We have always worked well in teams with a broad range of people. We are able to identify a broad range of aboriginal objects across the landscape:

We have a WorkCover NSW General Induction for Construction Work in NSW card (sometimes referred to as a green card). White card No: 1733337. We have public liability insurance, workers compensation insurance. Please refer attachments.

We request our details not be given to the local aboriginal land council (LALC) or OEH. Or for our correspondence to be posted as it's personal family history. We look forward to your earliest response.

Yours faithfully

Marilyn Carroll Johnson  
Corroboree Aboriginal Corporation  
Director

Oakes, Georgie

---

From: lilly carroll <didgengunawalclan@yahoo.com.au>  
Sent: Thursday, 26 October 2017 11:43 AM  
To: Oakes, Georgie  
Subject: Register interest

Good morning Georgie

Didge Ngunawal Clan would like to register an interest into Re:proposed solar farm across lot 1 on Dp 198933 and lots 10,15,54,97,111,161,182,189,190,202,209 on Dp 754908, Near Sutton nsw

Didge Ngunawal Clan agrees to the draft methodology & All proposals from Renew Estate

Kind regards  
Directors of DNC  
Paul boyd and Lilly carroll  
0426823944

Sent from myMail for iOS

Oakes, Georgie

---

From: Tyrone Bell <thunderstonemg@gmail.com>  
Sent: Friday, 3 November 2017 11:56 AM  
To: Oakes, Georgie  
Subject: Aboriginal Cultural Heritage Draft Methodology Sutton Solar Farm

Dear Georgie

Thank you for providing documentation in relation to the proposed solar farm located in Sutton, NSW

We welcome the opportunity to provide comment for the proposed works prior to any construction commencing. We appreciate that the proper protocol of advising and consulting with Thunderstone Aboriginal Cultural & Land Management Services has occurred.

As a Ngunawal traditional custodian, I agree with AECOM draft methodology for the project.

Thunderstone Aboriginal Cultural & Land Management Services look forward to working with you collaboratively on this project.

Kind regards

Tyrone Bell  
Thunderstone Aboriginal Cultural and Land Management Services  
PO Box 6900  
Charnwood ACT 2615  
(M) 0407 517844

**2017 ACT NAIDOC 'Indigenous Business of the Year' Award Winner**

Oakes, Georgie

---

From: Glen Freeman <GulgunyaNHAC@hotmail.com>  
Sent: Monday, 6 November 2017 11:58 AM  
To: Oakes, Georgie  
Subject: Registration of Interest for Proposed solar farm in Sutton NSW

Dear Georgie,

Please note that all Cultural Heritage matters that were formerly undertaken by Koomurri Ngunawal Aboriginal Corporation will now be handled through Gulgunya Ngunawal Heritage Aboriginal Consultancy.

As such I am formerly registering for the Proposed solar farm in Sutton NSW.

I have no issues in regards to the Methodology and prefer to speak on a one on one basis in regards to Heritage values.

Regards  
Glen Freeman

Sent from [Outlook](#)





# Murra Bidgee Mullangari

Aboriginal Corporation Cultural Heritage  
ICN: 8112

Date: 13/11/2017

Attention: Georgie Oakes

Aecom Australia  
PO Box Q410,  
QVB Post Office NSW 1230

Dear Georgie,

**Re: Registration – Solar Farm located in Sutton**

Murra Bidgee Mullangari Aboriginal Corporation would like to register an interest in the above project. I have read the draft methodology and endorse the recommendations made by Aecom Australia. Our family and members hold a strong connection to the Canberra, Yass, and surrounding areas, we have lived and some of our family still reside in the area and surrounding areas. My Grandfather Phillip Carroll was Ngunnawal Elder, my mother and grandparents lived with my aunty in Yass for a number of years. Ryan Johnson will be the contact person for this project. Our corporation's members and family holds cultural knowledge relevant to determining the significance of Aboriginal objects(s) and/or places(s) in the area of the proposed project. We have been involved in projects with the RMS Parramatta (Mark Lester 0448731510), RMS Wollongong (Joanne Damcevski), RMS Wagga Wagga (Andrew Whitton 0418486685), RMS Wollongong (Lee Davison), Aecom Australia (Geordie Oakes 0410513509), Dominic Steele Consulting Services (Dom 0411884232), Apex Archaeology (Leigh Bate 0401443218), Artefact Heritage (Veronica Norman 0415660490), Navin Officer Heritage (Nicola Hayes 0421274470), EMM Consulting (Ryan Desic 0411329712), Niche Environment and Heritage (Balazs), Kelleher Nightingale (Mark Rawson), Virtus Heritage (Dr Mary – Jean Sutton) and Extent Heritage (Alistair Hobbs 0437241221), (Alan Williams 0428 810 150).

If you require further details please feel free to contact me either by mobile or email. I look forward to hearing from you.

Kind regards

Ryan Johnson (Carroll) | Site Officer

**0467255733**

**Murra Bidgee Mullangari**

Aboriginal Corporation Cultural Heritage

**A:** PO Box 246, Seven Hills, NSW, 2147

**E:** [murrabidgeemullangari@yahoo.com.au](mailto:murrabidgeemullangari@yahoo.com.au)



**Department  
of Industry**

Murra Bidgee Mullangari Support their community in financial hardship with Energy Assistance packages. We are a NSW Government approved EAPA voucher distributor. We are a not for profit organisation.



# Appendix H

## RAP Submission on Draft Report

# **D R A F T**

## Appendix H RAP Submissions on Draft Report

Oakes, Georgie

---

From: Corroboree Aboriginal Corporation <corroboreecorp@bigpond.com>  
Sent: Thursday, 12 April 2018 4:06 PM  
To: Oakes, Georgie  
Subject: Re: Springdale Solar Farm - Aboriginal Heritage Assessment - Review

Hi Georgie  
We see no problems with the review. Thanks.

Kind regards  
Marilyn Carroll-Johnson  
Director CAC

On 10 Apr 2018, at 1:51 pm, Oakes, Georgie <[Geordie.Oakes@aecom.com](mailto:Geordie.Oakes@aecom.com)> wrote:

Hi Steve/Marilyn,

Just chasing up comments on the attached report. If you could get back to me over the next couple of days that would be great.

Thanks,  
Geordie

**Geordie Oakes**  
Senior Heritage Specialist  
D +61 2 8934 0610  
[Geordie.Oakes@aecom.com](mailto:Geordie.Oakes@aecom.com)

**AECOM**  
Level 21, 420 George Street, Sydney, NSW 2000  
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T +61 2 8934 0000 F +61 2 8934 0001  
[aecom.com](http://aecom.com)

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---

From: Oakes, Georgie  
Sent: Friday, 9 February 2018 11:02 AM  
To: Oakes, Georgie  
Subject: Springdale Solar Farm - Aboriginal Heritage Assessment - Review

Dear Stakeholder,

Please find attached a copy of the draft Aboriginal heritage assessment for the Springdale Solar Farm project. Should you have any cultural knowledge that you wish to contribute to the report or any comments, please provide them by mail or email within 28 days of this email.

Should you wish to receive a hard-copy (paper) version of the report, please let me know.

Regards,



Geordie

**Geordie Oakes**

Senior Heritage Specialist

D +61 2 8934 0610

[Geordie.Oakes@aecom.com](mailto:Geordie.Oakes@aecom.com)

**AECOM**

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<AECOM\_DftRpt\_Sprindale Solar\_Aboriginal\_2018\_02\_09.compressed.pdf>

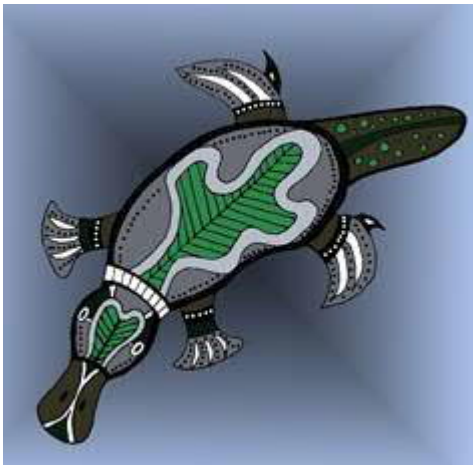
Oakes, Georgie

---

From: Ryan Johnson <murrabidgeemullangari@yahoo.com.au>  
Sent: Tuesday, 17 April 2018 10:17 AM  
To: Oakes, Georgie  
Subject: RE: Springdale Solar Farm - Aboriginal Heritage Assessment - Review

Hi Georgie,  
I have read the proposed Aboriginal heritage assessment for the above project. I endorse the recommendations made by Aecom Australia.  
If you require further details please feel free to contact me either by mobile 0475565517 or email. I look forward to hearing from you.  
Kind regards

Ryan Johnson | **Murra Bidgee Mullangari**



Aboriginal Corporation Cultural Heritage

**A:** PO Box 246, Seven Hills, NSW, 2147  
**E:** [murrabidgeemullangari@yahoo.com.au](mailto:murrabidgeemullangari@yahoo.com.au)  
**ICN:** 8112

Note: Privileged/Confidential information may be contained in this message and may be subject to legal privilege. Access to this e-mail by anyone other than the intended is unauthorised. If you are not the intended recipient (or responsible for delivery of the message to such person), you may not use, copy, distribute or deliver to anyone this message (or any part of its contents ) or take any action in reliance on it. In such case, you should destroy this message, and notify us immediately. If you have received this email in error, please notify us immediately by e-mail or telephone and delete the e-mail from any computer. If you or your employer does not consent to internet e-mail messages of this kind, please notify us immediately. All reasonable precautions have been taken to ensure no viruses are present in this e-mail. As our company cannot accept responsibility for any loss or damage arising from the use of this e-mail or attachments we recommend that you subject these to your virus checking procedures prior to use. The views, opinions, conclusions and other informations expressed in this electronic mail are not given or endorsed by the company unless otherwise indicated by an authorized representative independent of this message.

---

From: Oakes, Georgie [<mailto:Geordie.Oakes@aecom.com>]  
Sent: Tuesday, 10 April 2018 1:54 PM  
To: [murrabidgeemullangari@yahoo.com.au](mailto:murrabidgeemullangari@yahoo.com.au)  
Subject: FW: Springdale Solar Farm - Aboriginal Heritage Assessment - Review

Hi Ryan,

Just chasing up comments on the attached report. If you could get back to me over the next couple of days that would be great.

Hope all is well.

Thanks,  
Geordie

**Geordie Oakes**

Senior Heritage Specialist

D +61 2 8934 0610

[Geordie.Oakes@aeacom.com](mailto:Geordie.Oakes@aeacom.com)

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---

From: Oakes, Geordie

Sent: Friday, 9 February 2018 11:02 AM

To: Oakes, Geordie

Subject: Springdale Solar Farm - Aboriginal Heritage Assessment - Review

Dear Stakeholder,

Please find attached a copy of the draft Aboriginal heritage assessment for the Springdale Solar Farm project. Should you have any cultural knowledge that you wish to contribute to the report or any comments, please provide them by mail or email within 28 days of this email.

Should you wish to receive a hard-copy (paper) version of the report, please let me know.

Regards,  
Geordie

**Geordie Oakes**

Senior Heritage Specialist

D +61 2 8934 0610

[Geordie.Oakes@aeacom.com](mailto:Geordie.Oakes@aeacom.com)

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Oakes, Georgie

---

From: lilly carroll <didgengunawalclan@yahoo.com.au>  
Sent: Tuesday, 10 April 2018 1:59 PM  
To: Oakes, Georgie  
Subject: Re: FW: Springdale Solar Farm - Aboriginal Heritage Assessment - Review

Good afternoon Georgie

DNC agrees to all proposals of the draft for the go ahead @ Springdale solar farm

Kind regards DNC  
Paul Boyd  
0426823944

Sent from myMail for iOS

Tuesday, 10 April 2018, 1:20 pm +0930 from Oakes, Georgie <[Geordie.Oakes@aecom.com](mailto:Geordie.Oakes@aecom.com)>:

Hi Paul,

Just chasing up comments on the attached report. If you could get back to me over the next couple of days that would be great.

Thanks,

Geordie

**Geordie Oakes**  
Senior Heritage Specialist  
D +61 2 8934 0610  
[Geordie.Oakes@aecom.com](mailto:Geordie.Oakes@aecom.com)

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