APPENDIX D
ABORIGINAL AND CULTURAL HERITAGE AND HISTORIC HERITAGE ASSESSMENT REPORT

View southwest of Stubbo Creek.

ABORIGINAL CULTURAL HERITAGE & HISTORIC HERITAGE ASSESSMENT REPORT

STUBBO SOLAR FARM

MID-WESTERN REGIONAL COUNCIL LOCAL GOVERNMENT AREA, NSW

DECEMBER 2020

Report prepared by

OzArk Environment & Heritage

for UPC\AC Renewables Australia

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ABORIGINAL CULTURAL HERITAGE ASSESSMENT REPORT COVER SHEET

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Acknowledgement

OzArk acknowledge Traditional Owners of the area on which this assessment took place and pay respect to their beliefs, cultural heritage and continuing connection with the land. We also acknowledge and pay respect to the post-contact experiences of Aboriginal people with attachment to the area and to the elders, past and present, as the next generation of role models and vessels for memories, traditions, culture and hopes of local Aboriginal people.

ABBREVIATIONS AND GLOSSARY

ACHAR	Aboriginal Cultural Heritage Assessment Report. As set out in the *Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales*, all developments where harm to Aboriginal objects is likely must be assessed in an ACHAR.
ACHCRs	*Aboriginal Cultural Heritage Consultation Requirements for Proponents.* Guidelines for conducting Aboriginal community consultation for developments where harm to Aboriginal objects is likely.
ACHMP	Aboriginal Cultural Heritage Management Plan.
AHIMS	Aboriginal Heritage Information Management System. Administered by Department of Premier and Cabinet, AHIMS is the central register of all Aboriginal sites within NSW.
AHIP	Aboriginal Heritage Impact Permit
ASIRF	Aboriginal Site Impact Recording Form.
Assemblage:	All artefacts recorded at a location. In this report, assemblage refers to stone artefacts as this was the only artefact class recorded.
BCD	Biodiversity and Conservation Division. Now HNSW.
Carboniferous	A geological time period between 359–299 million years ago.
Code of Practice	*Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales* under Part 6 NPW Act. Issued by DECCW in 2010, the Code of Practice is a set of guidelines that allows limited test excavation without the need to apply for an AHIP.
Debitage:	The term debitage refers to all the waste material produced during lithic reduction and the production of stone tools. Therefore, technically, all artefacts other than reworked tools are debitage. However, in this report debitage is used in its other common meaning being the small flakes and chips produced purely as a by-product of knapping. This distinguishes these small flakes from the larger flakes that were removed (while technically 'debitage', a non-retouched flake can be used as a tool and therefore could have been the intended end point for a knapping event).
DPIE	NSW Department of Planning, Industry and Environment
EARs	Environmental Assessment Requirements issued by the NSW Department of Planning, Industry and Environment.

EIS	Environmental Impact Statement. A required document for major projects documenting all potential impacts to the environment, including heritage, that may arise due to the development.
GSE	Ground surface exposure
GSV	Ground surface visibility
HNSW	Heritage NSW. Government department tasked with ensuring compliance with the NPW Act. HNSW is advised by the Aboriginal Cultural Heritage Advisory Committee (ACHAC) and is part of the Department of Premier and Cabinet.
NPW Act	*National Parks and Wildlife Act 1974*. Primary legislation governing Aboriginal cultural heritage within NSW.
OEH	Office of the Environment and Heritage. Now HNSW.
PAD	Potential archaeological deposit. Indicates that a particular location has potential to contain subsurface archaeological deposits, although no Aboriginal objects are visible.
RAP	Registered Aboriginal Party. An individual or group who have indicated through the ACHCR process that they wish to be consulted regarding the project.
SEARs	Secretary's Environmental Assessment Requirements issued by the NSW Department of Planning and Environment.

EXECUTIVE SUMMARY

OzArk Environment & Heritage (OzArk) has been engaged by UPC\AC Renewables Australia (UPC; the proponent) to complete an *Aboriginal Cultural Heritage Assessment Report* (ACHAR) and Historic Heritage Assessment Report for the proposed Stubbo Solar Farm, located north of Gulgong, NSW (the project). The project is in the Mid-Western Regional Council Local Government Area.

The assessment of the study area was undertaken by OzArk Senior Archaeologists, Dr Alyce Cameron and Stephanie Rusden, on 10–14 August and 17–19 August 2020. Representatives from several Registered Aboriginal Parties (RAPs) were present during the survey.

The survey resulted in 23 Aboriginal sites being recorded, and two previously recorded AHIMS sites located. No historic sites were recorded during the survey.

The 25 Aboriginal sites inside the study area consist of nine isolated finds, three isolated finds with potential archaeological deposits (PADs), two artefact scatters, nine artefact scatters with PADs, one PAD, and one modified tree.

Overall, of the 25 Aboriginal sites, all sites will be avoided by the project, except one isolated find (Rosevale IF-01).

Aboriginal Cultural Heritage

Recommendations concerning Aboriginal cultural values within the study area are as follows:

1. Following development consent of the project, the proponent will develop an *Aboriginal Cultural Heritage Management Plan* (ACHMP) which is to be agreed to by the RAPs and Department of Planning, Industry and the Environment (DPIE). The ACHMP will also include an unanticipated finds protocol, unanticipated skeletal remains protocol and long-term management of any artefacts.
2. Should development consent for the project be granted, archaeological management strategies to manage and mitigate the impact of the solar farm are set out in **Section 9.3**. The Aboriginal site (Rosevale IF-01) within the development footprint for the project will be salvaged by a surface collection of visible artefacts.
    a. The recommended methodology for the salvage will be finalised after the approvals process has been completed in the ACHMP, but will include the measures outlined in **Section 9.3.1**.
    b. The salvage works will include the mapping, analysis and collection of the surface artefact at the affected site. Results will be included in a brief report to preserve the data in a useable form and an Aboriginal Site Impact Recording Form (ASIRF) will be submitted to AHIMS.

3. All land-disturbing activities must be confined to within the development footprint and associated tracks and/or cable crossings. Should the parameters of the proposed work extend beyond this, then further archaeological assessment may be required.
4. Of the three potential access track options, Option Two is the preferred alignment based on the heritage assessment (see **Section 7.1.2.1**). If Option One is chosen, then further archaeological assessment will be necessary due to its proximity and intersection with an archaeologically sensitive landform.

Historic Heritage

Recommendations concerning the historic values within the study area are as follows:

1. Should development consent for the project be granted, archaeological management strategies to manage and mitigate the impact of the solar farm development are set out in **Section 13.2**.
2. Following development consent of the project, an unanticipated finds protocol for historic heritage must be developed and then used during the construction and ongoing use of the project. If items of historic heritage significance are uncovered during the project, then the Unanticipated Finds Protocol for Historic Heritage will be enacted.
3. To avoid the potential for harm to historic objects on unassessed adjacent landforms, all ground surface disturbing activities must be confined to the development footprint and associated tracks and/or cable crossings.

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FIGURES

TABLES

1 INTRODUCTION

1.1 DESCRIPTION OF THE PROJECT

OzArk Environment & Heritage (OzArk) has been engaged by UPC\AC Renewables Australia (UPC; the proponent) to complete an *Aboriginal Cultural Heritage Assessment Report* (ACHAR) and Historic Heritage Assessment Report for the proposed Stubbo Solar Farm, located north of Gulgong, NSW (the project). The project is in the Mid-Western Regional Council Local Government Area (LGA) (**Figure 1-1**).

1.2 BACKGROUND

In May 2019, RPS drafted a Preliminary Environmental Assessment (PEA) for the proposed Stubbo Solar Farm (RPS 2019). Part of the report included preliminary assessments for Aboriginal and historical heritage. A preliminary targeted inspection was undertaken regarding heritage. This inspection noted that the study area is across an undulating terrain and that disturbance in select areas inspected was low. RPS (2019: 30) also notes there are areas with either moderate or high levels of disturbance associated with erosion or agricultural activity. No Aboriginal sites were recorded during the preliminary inspection, though a previously recorded site, AHIMS #36-3-2515, was located.

In April 2020, RPS refined the heritage information contained in the original report to match the extent of the current study area. The results were included in a Scoping Report to support the request to the Department of Planning, Industry and Environment (DPIE) for the Secretary's Environmental Assessment Requirements (SEARs) for the project. The Scoping Report was lodged on 15 April 2020 and the SEARs were issued on 5 May 2020. The SEARs included requirements and recommendations regarding the heritage assessment within the study area.

1.3 PROPOSED WORK

The proposed development includes the construction and operation of a solar farm and its ancillary infrastructure of approximately 400 MW. The exact layout for the solar farm is still under consideration, and it is understood that not all 1771.89 hectare (ha) study area will be impacted. For this report, the study area is the area assessed for the EIS (**Figure 1-1**). The development footprint is the area that will be impacted by the proposed works. There are also two creek crossings proposed. Overall, the proposed development footprint or impact area will be 1243.18 ha. There will also be an access track from either Blue Springs Road (Option 1) or Barneys Reef Road (Option 2 and Option 3). These options are shown on **Figure 1-2** as easements.

The proponent has excluded some areas of higher environmental value (e.g. patches of vegetation and waterway buffers) from the development footprint. This is referred to as the

environmental exclusion zone. The proposed impacts, the environmental exclusion zone, and other exclusion zones are shown on **Figure 1-2**.

1.4 STUDY AREA

The study area is located approximately 10 kilometres (km) northeast of Gulgong, NSW. **Figure 1-3** shows an aerial of the study area. The study area is currently used for agricultural practices, particularly grazing on native or modified pastures.

Figure 1-1: Map showing the location of the project.

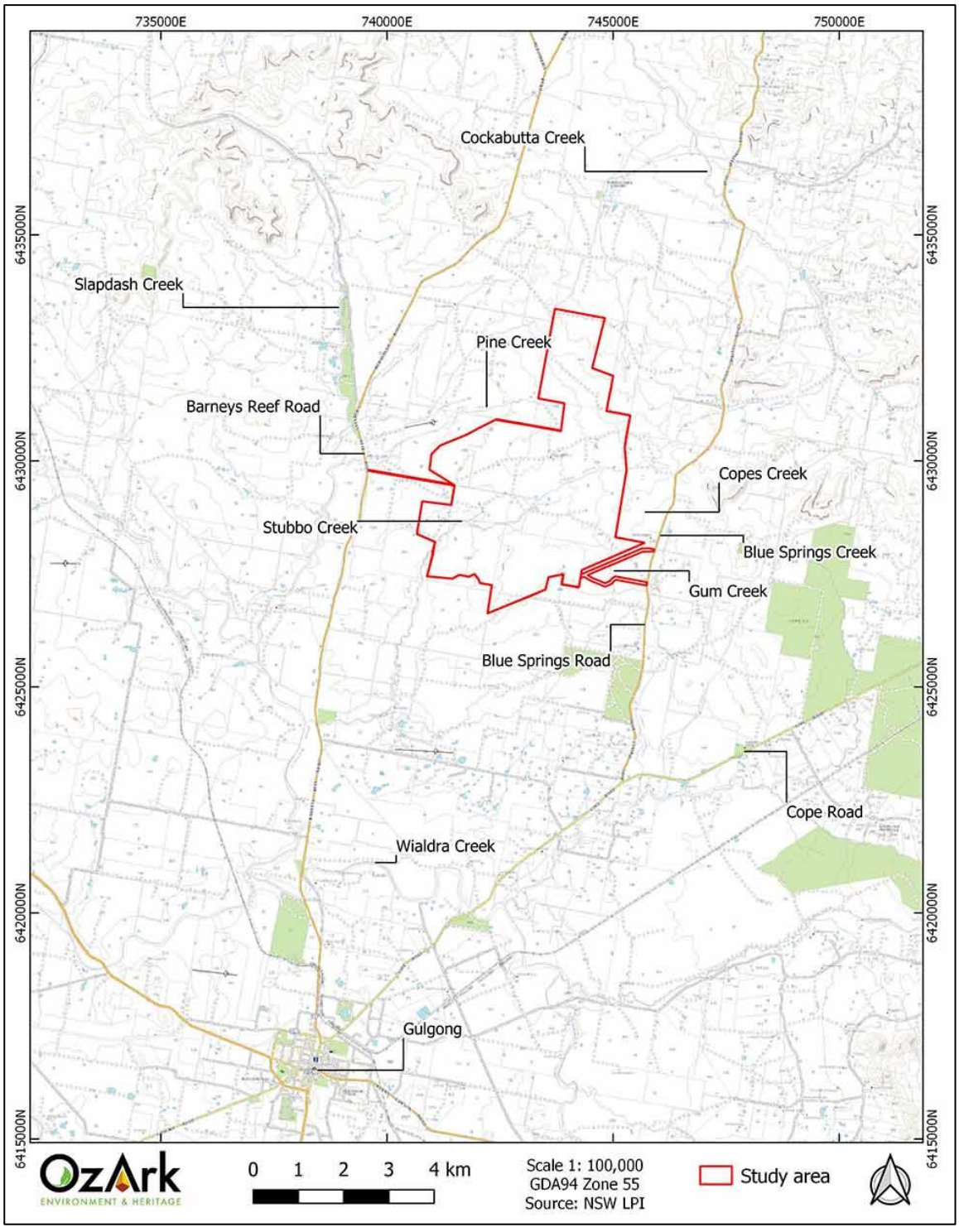


Figure 1-2: Proposed work showing impact footprint.

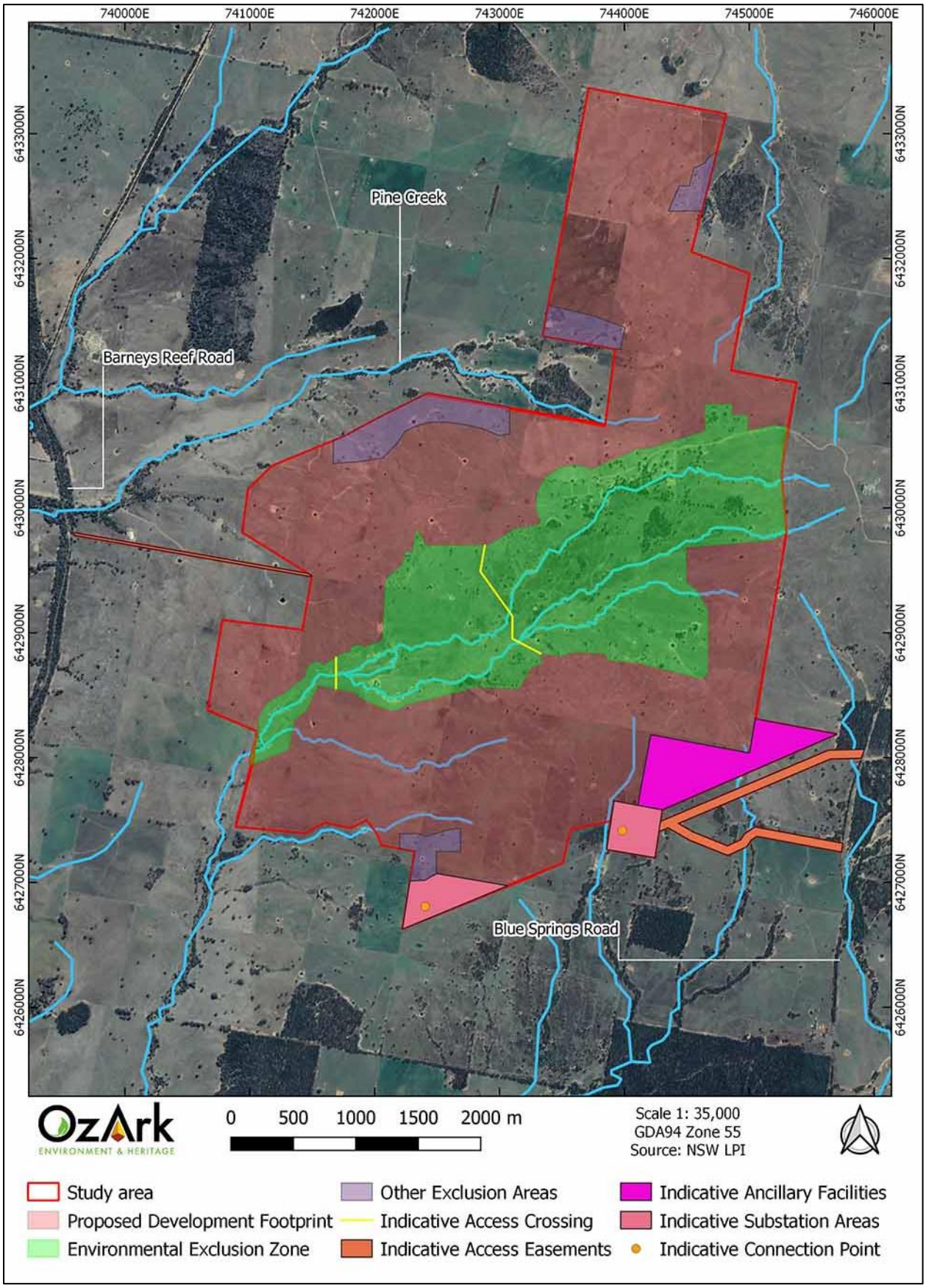
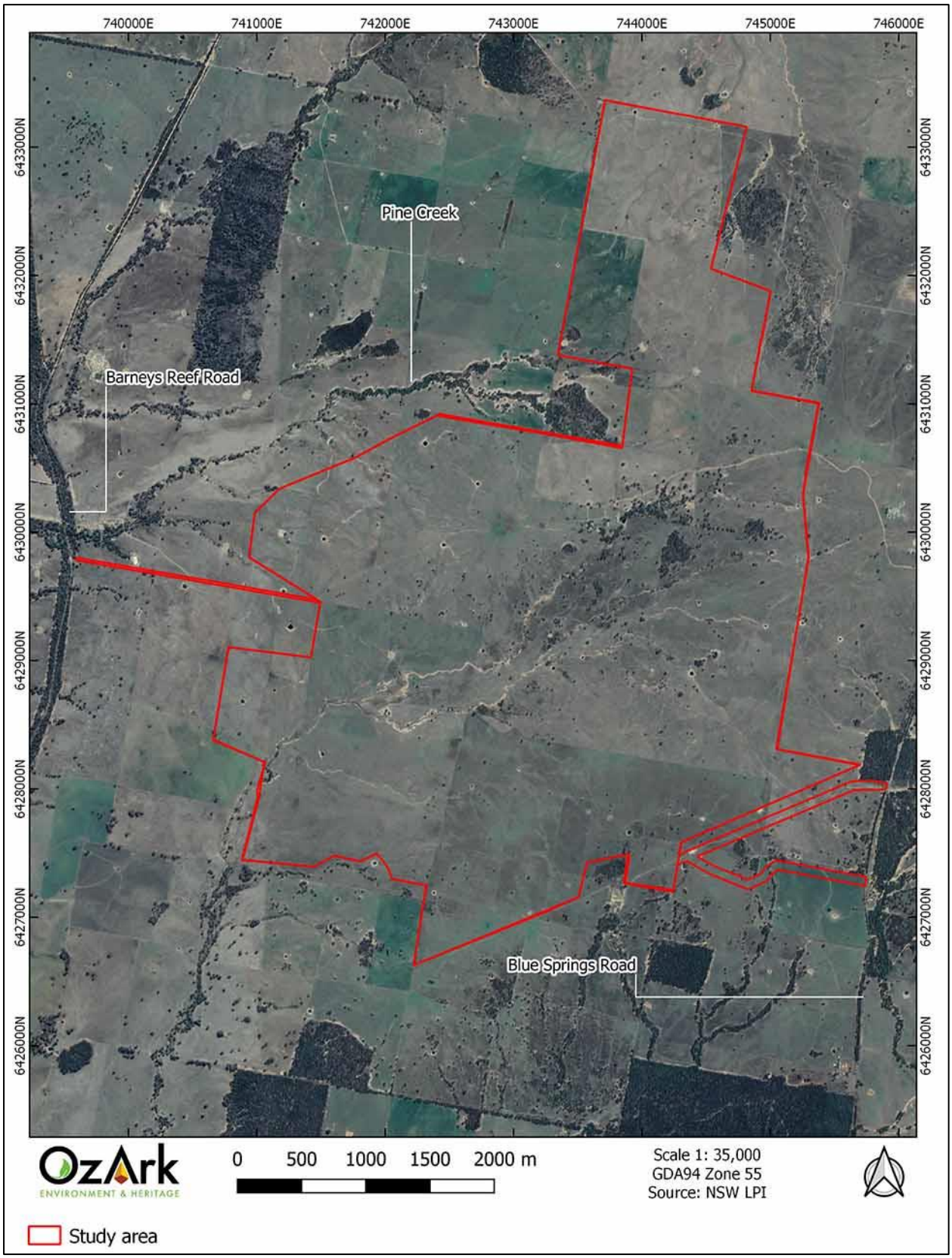


Figure 1-3: Aerial showing the study area.



2 LANDSCAPE CONTEXT

An understanding of the environmental contexts of a study area is requisite in any archaeological investigation (DECCW 2010b). It is a particularly important consideration in the development and implementation of survey strategies for the detection of archaeological sites. In addition, natural geomorphic processes of erosion and/or deposition, as well as humanly activated landscape processes, influence the degree to which these material culture remains are retained in the landscape as archaeological sites; and the degree to which they are preserved, revealed and/or conserved in present environmental settings.

2.1 TOPOGRAPHY

The study area is located at the eastern edge of the NSW South Western Slopes bioregion, specifically, the Inland Slopes sub-bioregion. The South Western Slopes bioregion extents from Albury in the south to Dunedoo. The topography of the study area is primarily gentle slopes, with the highest point being in the north-eastern corner of the study area. There are rock outcrops of varying sizes throughout the study area.

There are four main types of landforms within the study area. These are detailed in **Table 2-1** with examples of the landforms within the study area shown on **Figure 2-1** and mapped on **Figure 2-2**.

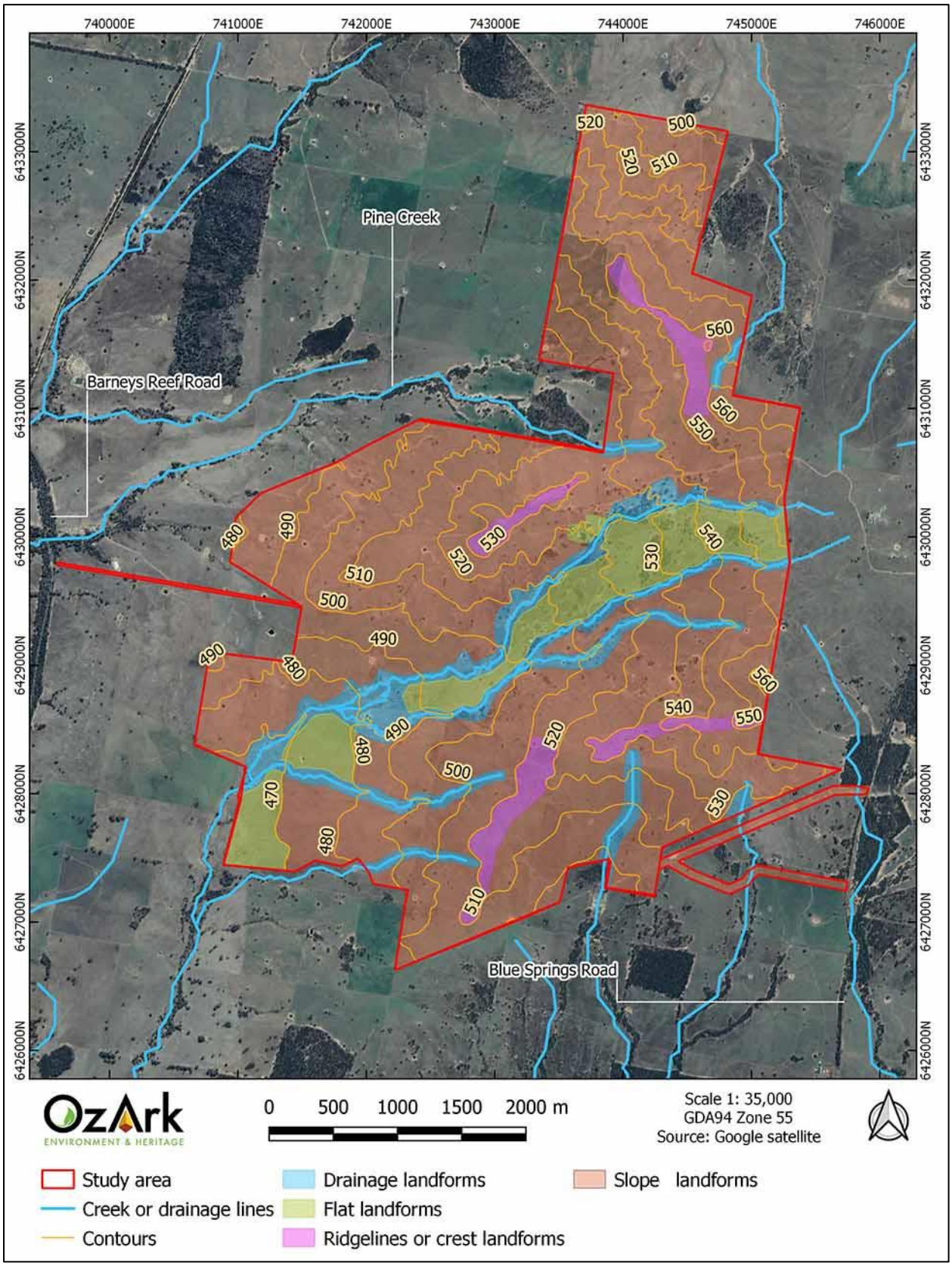
Table 2-1: Landforms within the study area.

Landform type	Description	Area (ha)
Drainage	Banks and elevated terraces adjacent to drainage lines or watercourses	175.0
Flat	Flat or very gently sloping landforms	154.4
Slopes	Gentle to moderate slopes, often intersected with minor drainage lines	1373.9
Ridgelines or crests	Elevated crests and minor ridgelines. Also includes spurs.	68.6
TOTAL		**1771.9**

Figure 2-1: Topography of the study area.

<table>
<tr><td>  </td><td>  </td></tr>
<tr><td>1. View of a drainage landform, specifically the incised Stubbo Creek and an elevated terrace adjacent to the creek.</td><td>2. View of a very gently sloping landform.</td></tr>
<tr><td>  </td><td>  </td></tr>
<tr><td>3. View of a sloped landform with a minor drainage line running down slope.</td><td>4. View along the top of a ridgeline.</td></tr>
</table>

Figure 2-2: Landforms within the study area.



2.2 GEOLOGY AND SOILS

The majority of the study area falls within the Cope Hills Granite landscape as characterised by Mitchell (2002). This landscape generally consists of undulating and rolling hills on Carboniferous period granite and granodiorite and has a general elevation between 500–740 metres (m). Soils are generally a gritty gradational red earth with red texture-contrast soils. A smaller section of the study area, containing Stubbo creek, falls within Talbragar–Upper Macquarie Terrace Sands and Gravels landscape (Mitchell 2002). Stubbo Creek is made up of sandy quaternary alluvial sediments. The general elevation of these areas is usually between 350–500 m. The soils are generally red-brown and red-yellow earthy sands with some yellow texture-contrast soils on the valley margins.

2.3 HYDROLOGY

The study area is intersected by several drainage lines. This includes Stubbo Creek and its tributaries that flow from the northeast towards the south-western corner of the study area. One other named creek, Pine Creek, also intersects the study area from the north-western corner. In addition, there are numerous minor ephemeral drainage lines which have formed in shallow valleys between hill slopes. The well-incised tributaries which flow into Stubbo Creek near the south-western corner of the study area, as well as Stubbo Creek itself, all have areas of erosion in the form of bank scour, gully erosion, and sheet wash erosion. **Figure 2-2** shows the location of the larger drainage lines and Stubbo Creek in relation to the study area.

2.4 VEGETATION

The study area is mostly cleared of vegetation, however there are scattered remnant trees throughout the study area, and there is a concentration of trees around the existing homestead, 'The Pinnacle' located near the centre of the study area. The remainder of the study area consists of a variety of grasses.

2.5 CLIMATE

This bioregion is characterised by hot summers and no dry season, with more temperate climates appearing at higher elevations. The mean annual temperature is 11–17 degrees Celsius and the mean annual rainfall is 360–1266 millimetres (mm).

2.6 LAND–USE HISTORY AND EXISTING LEVELS OF DISTURBANCE

The study area is classified as being used primarily for grazing modified or native vegetation. Historically, the study area was also likely used for limited cropping. Though a small section of the south boundary is inside the Gulgong Gold Field extent, the majority of the study area is outside the gold field extent, and as such is unlikely to have been used for gold mining purposes. Today, the majority of the study area is used for grazing sheep and cattle, with some paddocks

used for cropping. There is also two electricity transmission lines, a 66 kV and a 330 kV, which run parallel to the southern boundary of the study area and intersects with a small section of it.

2.7 CONCLUSION

The topography, hydrology and climate of the study area would have been conducive to occupation and use by Aboriginal people. As the main water sources inside the study area appear to be relatively constant during periods of normal weather conditions (i.e. not drought periods), occupation could have occurred year round. The historic and ongoing use of the land for grazing purposes, means that any Aboriginal sites located within the study area are likely to have been at least partially disturbed.

There are many areas along the incised drainage lines of Stubbo Creek and its tributaries which show signs of erosion. This erosion has potentially removed Aboriginal sites had they been in close proximity to the drainage lines.

Due to the proximity of the study area to the township of Gulgong, in particular the Gulgong Gold Fields (see **Section 2.6**), there is potential for historic sties in the form of gold diggings to be present along the southern most extent of the study area. Furthermore, as the current land use is for grazing and limited cropping, there is also potential for historic heritage sites relating to the historic use of the land to be present inside the study area. Such sites could include items such as old farming equipment or the physical remains of huts, sheds and historic homesteads.

ABORIGINAL CULTURAL HERITAGE ASSESSMENT

3 ASSESSMENT INTRODUCTION

3.1 DATE OF ARCHAEOLOGICAL ASSESSMENT

The fieldwork component of this assessment was undertaken by OzArk on 10–14 August and 17–19 August 2020.

3.2 OZARK INVOLVEMENT

3.2.1 Field assessment

The fieldwork component of the Aboriginal cultural heritage assessment was undertaken by:

- Fieldwork Director: Dr Alyce Cameron (OzArk Senior Archaeologist, BA [Hons] and PhD [Archaeology & palaeoanthropology] Australian National University)
- Archaeologist: Stephanie Rusden (OzArk Senior Archaeologist, BS University of Wollongong, BA University of New England)

3.2.2 Reporting

The reporting component of the Aboriginal cultural heritage assessment was undertaken by:

- Report Author: Dr Alyce Cameron
- Contributor: Taylor Foster (Archaeologist, OzArk, BA[Hons] Archaeology)
- Reviewer: Ben Churcher (Principal Archaeologist, OzArk, BA[Hons], Dip Ed).

3.3 RELEVANT LEGISLATION

Cultural heritage is managed by several state and national Acts. Baseline principles for the conservation of heritage places and relics can be found in the *Burra Charter* (Burra Charter 2013). The *Burra Charter* has become the standard of best practice in the conservation of heritage places in Australia, and heritage organisations and local government authorities have incorporated the inherent principles and logic into guidelines and other conservation planning documents. The *Burra Charter* generally advocates a cautious approach to changing places of heritage significance. This conservative notion embodies the basic premise behind legislation designed to protect our heritage, which operates primarily at a state level.

Several Acts of parliament provide for the protection of heritage at various levels of government.

3.3.1 State legislation

Environmental Planning and Assessment Act 1979 (EP&A Act)

This Act established requirements relating to land use and planning. The framework governing environmental and heritage assessment in NSW is contained within the following parts of the EP&A Act:

- Part 4: Local government development assessments, including heritage. May include schedules of heritage items
    - Division 4.7: Approvals process for state significant development.

National Parks and Wildlife Act 1974 (NPW Act)

Amended during 2010, the NPW Act provides for the protection of Aboriginal objects (sites, objects and cultural material) and Aboriginal places. Under the Act (Part 6), an Aboriginal object is defined as: any deposit, object or material evidence (not being a handicraft for sale) relating to indigenous and non-European habitation of the area that comprises NSW, being habitation both prior to and concurrent with the occupation of that area by persons of European extraction, and includes Aboriginal remains.

An Aboriginal place is defined under the NPW Act as an area which has been declared by the Minister administering the Act as a place of special significance for Aboriginal culture. It may or may not contain physical Aboriginal objects.

As of 1 October 2010, it is an offence under Section 86 of the NPW Act to 'harm or desecrate an object the person knows is an Aboriginal object'. It is also a strict liability offence to 'harm an Aboriginal object' or to 'harm or desecrate an Aboriginal place', whether knowingly or unknowingly. Section 87 of the Act provides a series of defences against the offences listed in Section 86, such as:

- The harm was authorised by and conducted in accordance with the requirements of an *Aboriginal Heritage Impact Permit* (AHIP) under Section 90 of the Act;
- The defendant exercised 'due diligence' to determine whether the action would harm an Aboriginal object; or
- The harm to the Aboriginal object occurred during the undertaking of a 'low impact activity' (as defined in the regulations).

Under Section 89A of the Act, it is a requirement to notify the Secretary of the Department of Premier and Cabinet of the location of an Aboriginal object. Identified Aboriginal items and sites are registered on Aboriginal Heritage Information Management System (AHIMS) that is administered by Heritage NSW (HNSW).

3.3.2 Commonwealth legislation

Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act)

The EPBC Act, administered by the Commonwealth Department of Agriculture, Water and the Environment, provides a framework to protect nationally significant flora, fauna, ecological communities and heritage places. The EPBC Act establishes both a National Heritage List and Commonwealth Heritage List of protected places. These lists may include Aboriginal cultural sites or sites in which Aboriginal people have interests. The assessment and permitting processes of

the EPBC Act are triggered when a proposed activity or development could potentially have an impact on one of the matters of national environment significance listed by the Act. Ministerial approval is required under the EPBC Act for proposals involving significant impacts to national/commonwealth heritage places.

Other

The *Aboriginal and Torres Strait Islander Heritage Protection Act 1984* is aimed at the protection from injury and desecration of areas and objects that are of significance to Aboriginal Australians. This legislation has usually been invoked in emergency and conflicted situations.

The *Protection of Movable Cultural Heritage Act 1986* includes legislation that prevents objects of cultural heritage significance, such as those that are sacred to Aboriginal peoples' heritage, from being exported out of Australia.

3.3.3 Applicability to the project

The current project will be assessed under Division 4.7 of the EP&A Act as a State Significant Development (SSD).

Any Aboriginal sites within the study area are afforded legislative protection under the NPW Act.

It is noted there are no Commonwealth or National heritage listed places within the study area, and as such, the heritage provisions of the EPBC Act and other Commonwealth Acts do not apply.

3.4 ASSESSMENT APPROACH

The current assessment follows the *Code of Practice for the Investigation of Aboriginal Objects in New South Wales* (Code of Practice; DECCW 2010b).

Field assessment and reporting followed the *Guide to investigating, assessing and reporting on Aboriginal cultural heritage in NSW* (OEH 2011).

3.5 PURPOSE AND OBJECTIVES

The purpose of the current study is to identify and assess heritage constraints relevant to the proposed works.

3.5.1 Aboriginal archaeological assessment objectives

The current assessment will apply the Code of Practice in the completion of an Aboriginal archaeological assessment to meet the following objectives:

Objective One: Undertake background research on the study area to formulate a predicative model for site location within the study area

Objective Two: Identify and record objects or sites of Aboriginal heritage significance within the study area, as well as any landforms likely to contain further archaeological deposits

Objective Three: Assess the likely impacts of the proposed work to Aboriginal cultural heritage and provide management recommendations.

3.6 REPORT COMPLIANCE WITH THE CODE OF PRACTICE

The Code of Practice establishes requirements that should be followed by all archaeological investigations where harm to Aboriginal objects may be possible. **Table 3-1** tabulates the compliance of this report with the requirements established by the Code of Practice.

Table 3-1: Report compliance with the Code of Practice.

Code of Practice Requirement	Context of the Requirement	Concordance in this report
Requirement 1	Review previous archaeological work	*See subheadings below*
Requirement 1a	Previous archaeological work	**Section 5**
Requirement 1b	AHIMS searches	**Section 5.4.1**
Requirement 2	Review the landscape context	**Section 2**
Requirement 3	Summarise and discuss the local and regional character of Aboriginal land use and its material traces	**Section 5.5**
Requirement 4	Predict the nature and distribution of evidence	*See subheadings below*
Requirement 4a	Predictive model	**Section 5.5**
Requirement 4b	Predictive model results	**Section 5.5.5**
Requirement 5	Archaeological survey	*See subheadings below*
Requirement 5a	Survey sampling strategy	**Section 6.1**
Requirement 5b	Survey requirements	This Requirement was fulfilled during the undertaking of the survey
Requirement 5c	Survey units	**Section 6.1**
Requirement 6	Site definition	**Section 5.5.5**
Requirement 7	Site recording	*See subheadings below*
Requirement 7a	Information to be recorded	**Section 6.1**
Requirement 7b	Scales for photography	All artefact photographs employed a centimetre scale bar.
Requirement 8	Location information and geographic reporting	*See subheadings below*
Requirement 8a	Geospatial information	All artefact locations were logged using a non-differential handheld GPS.
Requirement 8b	Datum and grid coordinates	All coordinates are provided in GDA94 Zone 55.
Requirement 9	Record survey coverage data	**Section 6.3**
Requirement 10	Analyse survey coverage	**Section 6.3**
Requirement 11	Archaeological Report content and format	This report adheres to this Requirement.
Requirement 12	Records	OzArk undertakes to maintain all survey records for at least five years.
Requirement 13	Notifying OEH and reporting	*See subheadings below*

Code of Practice Requirement	Context of the Requirement	Concordance in this report
Requirement 13a	Notification of breaches	Not applicable
Requirement 13b	Provision of information	Not applicable
Requirement 14	Test excavation which is not excluded from the definition of harm	Not applicable
Requirement 15	Pre-conditions to carrying out test excavation	*See subheadings below*
Requirement 15a	Consultation	Consultation has included the ACHCRs, see **Section 4**.
Requirement 15b	Test excavation sampling strategy	Not applicable
Requirement 15c	Notification	Not applicable
Requirement 16	Test excavation that can be carried out in accordance with this Code	*See subheadings below*
Requirement 16a	Test excavations	Not applicable
Requirement 16b	Objects recovered during test excavations	Not applicable
Requirement 17	When to stop test excavations	Not applicable

4 ABORIGINAL COMMUNITY CONSULTATION

4.1 ABORIGINAL COMMUNITY CONSULTATION

The Aboriginal cultural heritage assessment of the project has followed the *Aboriginal Cultural Heritage Consultation Requirements for Proponents 2010* (ACHCRs) (DECCW 2010). A log and copies of correspondence with Aboriginal community stakeholders is presented in **Appendix 1 Figure 1.**

The ACHCRs include four main stages and these will be detailed in the following sections.

4.1.1 ACHCRs Stage 1

The aim of Stage 1 is to identify the Registered Aboriginal Parties (RAPs) who wish to be consulted about the project.

On 22 May 2020, an advertisement was placed in the 'Mudgee Guardian' requesting expressions of interest in being consulted about the project (**Appendix 1 Figure 2**). An advertisement was also placed in the 'Dunedoo District Diary' on 3 June 2020 (**Appendix 1 Figure 2**). In addition, the following agencies were contacted to identify potential stakeholders for the area: Biodiversity and Conservation Division (BCD; now HNSW); Mudgee Local Aboriginal Land Council (LALC); Office of The Registrar: Aboriginal Land Rights Act; National Native Title Tribunal; Native Title Service Corporation (NTSCORP); Mid-Western Regional Council; and Central Tablelands Local Land Services. A sample agency letter is provided in **Appendix 1 Figure 3**. Based on the agency responses, Aboriginal groups and individuals were contacted to determine if they wished to be consulted about the project. A sample community letter is shown in **Appendix 1 Figure 4**.

As a result, the groups or individuals listed below registered to be consulted about the project. These groups or individuals constitute the RAPs for the project.

- Muronggialinga
- Wellington Valley Wiradjuri Aboriginal Corporation (WVWAC)
- Paul Brydon
- Corroboree Aboriginal Corporation (CAC)
- Gallanggabang Aboriginal Corporation (GAC)
- Gunjeewong Cultural Heritage Aboriginal Corporation (GCHAC)
- Mudgee Local Aboriginal Land Council (MLALC)
- Warrabinga Native Title Claimants Aboriginal Corporation
- North-Eastern Wiradjuri

4.1.2 ACHCRs Stages 2 & 3

The aim of Stages 2 and 3 is provide information about the project to the RAPs and to acquire information regarding Aboriginal cultural values associated with the project either through

consultation and/or field work. Often these two stages are run together, and the detailed project information is provided in the assessment methodology that is issued to all RAPs for their consideration.

On 7 July 2020 RAPs were sent information about the project and a copy of the assessment methodology (see **Appendix 1 Figure 5**). RAPs were provided the stipulated 28 days in which to review and comment on these documents as per Stage 3 of the ACHCRs. The closing date for comment was 4 August 2020.

OzArk received several comments from RAPs regarding the assessment methodology. These comments are summarised in **Table 4-1** and presented in full in **Appendix 1 Figure 6**. The feedback was incorporated into the assessment methodology prior to the fieldwork occurring (**Appendix 1 Figure 7**).

Table 4-1: RAP comments on the draft assessment methodology.

RAP	Comment	OzArk response
Gallanggabang Aboriginal Corporation and Wellington Valley Wiradjuri Aboriginal Corporation	Page 17 states the following: "Archaeological potential is generally reduced on steep landforms unsuitable for camping, and landforms disturbed by erosion and historical impacts (e.g. farming and infrastructure installation)". GAC Object to this as our Cultural heritage sites and artefacts are often found on landforms disturbed by erosion and historical impacts e.g. farming and infrastructure installation.	The assessment methodology was adjusted, and the survey included disturbed landforms (including but not limited to areas of erosion, ploughing, dams, farming infrastructure and vehicle tracks).
Gallanggabang Aboriginal Corporation and Wellington Valley Wiradjuri Aboriginal Corporation	Page 17 states the following: "The study area will be assessed by sampling the different landforms as outlined in Section 3.1 using pedestrian survey. The landforms will be refined as necessary during the survey. Survey transects will be approximately 100 m wide, with surveyors spaced approximately 30 m apart". GAC Object to the 30m spacing as due to experience on other Solar Farms within the Region at Wollar, First Solar Wellington North, AGL Wellington North and Beryl Solar Farm, the 30m spacing has been to greater gap and on revisiting these other projects to collect artefacts or do sub-surface testing a multitude of additional sites and artefacts were required to be recorded. We as RAP's then have been questioned by Archaeologists who were not present during the initial survey as to why these sites were not found which causes issues around salvage of sites. We will concede to an absolute maximum of 20m to assist Field Officers during the survey.	The assessment methodology was adjusted, and surveyors were spaced approximately 20 m apart instead of 30 m.
Gallanggabang Aboriginal Corporation and Wellington Valley Wiradjuri Aboriginal Corporation	Page 18 states the following: "The study area is 1743 ha. The proposed sampling will cover approximately 1046 ha, meaning that approximately 60% of the overall study area will be surveyed. It is estimated that survey of the sample areas will be undertaken in eight days by two archaeologists and up to four RAP representatives". GAC Object to the 60% survey coverage of the overall study area, as too many cultural and or artefact sites will be missed and cause later issues and potential loss by site destruction by the development as we have seen at the Wellington North Solar Farm	The sampling strategy covered all landform types within the study area as per the Code. It also included more intensive survey in areas with higher archaeological sensitivity as determined through the course of the survey and in discussion with RAP site officers.

4.1.3 ACHCRs Stage 4

Stage 4 involves the production of a draft ACHAR that is issued to all RAPs for their consideration (see **Appendix 1 Figure 8** for letter sent to RAPs). The draft ACHAR was sent to all RAPs on 27 October 2020, with a closing date of 24 November 2020.

WVWAC provided comments on the draft ACHAR. These are provided in full in **Appendix 1 Figure 9** and summarised in **Table 4-2**. OzArk responded to WVWAC comments on 9 December 2020 and the full response is provided in **Appendix 1 Figure 10** and summarised in **Table 4-2**.

Table 4-2: Stage 4 comments from WVWAC and OzArk responses.

WVWAC comment	OzArk response
WVWAC have concerns over the actual spacing of Cultural Heritage Field Officers, as discussions with various Field Officers present including those from other RAP's indicate that the spacing was far greater than the reported 20m.	The survey spacing was amended to having surveyors approximately 20 metres (m) apart at the recommendation of WVWAC's review of the assessment methodology. The 20 m spacing was used during the field survey, with some deviations in spacing due to physical constraints such as fences, dams, and swampy ground. **Section 6.1** has been revised with additional information.
WVWAC have concerns over the splitting of RAP's Cultural Heritage Field Officers into two groups in an attempt to cover more area within a short time period. The Cultural Heritage Field Officers should have operated as one group as to mutually verify what is found in the area covered and to ensure adequate survey coverage of the project area.	For a large project it is reasonable to have two separate teams working apart from each other and OzArk has used this method successfully for other projects. In addition, there were difficulties related to vehicular movements through the study area (access, boggy conditions). Having two separate teams therefore made the survey more efficient and increased our survey coverage.
WVWAC have concerns around missed artefact sites that may have been present between the Cultural Heritage Field Officers and that fact that the project area was sampled in an almost Due Diligence manner rather than a more comprehensive field survey.	The survey was conducted following the guidelines outlined in Requirement 5 of the Code of Practice; particularly Requirement 5a which states that the survey must: • include all landforms that will potentially be impacted. Where there is more than one instance of similar or the same landforms that have the potential to be impacted each individual landform must be sampled. • place a proportional emphasis on those landforms deemed to have archaeological potential, clearly describing, and justifying the reasons for their selection Therefore, the assessment methodology was to conduct pedestrian survey through all survey areas (as defined in **Section 6.1**) which were designed around sampling the various types of landforms present in the study area (outlined in **Section 2.1**, **Section 6.1** and **Section 6.3**). At no time, was a due diligence approach used during the survey.
WVWAC cite issues with the current Wellington Solar Farm where the spacing between Cultural Heritage Field Officers was too great and ground cover impeded the Field Officers from properly identifying cultural artefact sites, which were later found during collection and sub-surface testing phases which prolonged the project by an additional 3 weeks due to the location within the approved area and RAP's forcing the issue that these areas be Recorded, Salvaged and sub surface tested correctly. It is due to this and other projects in recent times where initial surveys were rushed or conducted in a sample methodology to have a 100% project area approved, that WVWAC raise serious concerns of unrecorded sites future loss through this development without being properly identified, recorded and salvaged.	OzArk notes the concerns WVWAC raise concerning the unsurveyed areas. However, the higher potential sections of the study area have been surveyed comprehensively (as noted above in connection to Requirement 5a). The unsurveyed areas of the study area have low potential for archaeological deposits or Aboriginal sites to be present. This was confirmed by sample survey of these landform types in other parts of the study area. In relation to the conservation and management of Aboriginal cultural values in the study area, we note: • The areas and sites which are associated with potential archaeological deposits (PAD) have been excluded from the impact footprint of the proposal including buffers around any site or PAD extent (see Section 8.3). • The Aboriginal Cultural Heritage Management Plan (ACHMP) which will be prepared for the ongoing management of Aboriginal heritage sites inside the study area will include procedures for unanticipated finds; particularly in those landforms of low potential

WVWAC comment	OzArk response
	that were not surveyed to the same extent as other areas.
WVWAC again would like to indicate that areas close by to this development area have known Cultural Heritage sites and that this Development area is a known to be in our traditional information relating back to the Mudigee Clan as the clan boundary is very close by. This is a boundary of three Clan areas and is highly culturally significant as meetings took place in and around this project development site.	OzArk thanks WVWAC for the cultural information which has been incorporated into **Section 8.2**.
WVWAC recommend that all remaining areas of this project development area be surveyed comprehensively with ALL RAP's Field Officers present as 1 large group to ensure adequate survey coverage of the project area. Further archaeological assessment would be required if the proposal activity extends beyond the sampled area assessed in this report. This would include full consultation and involvement with the Registered Aboriginal Parties.	The ACHAR already recommends that all land-disturbing activities must be confined to within the development footprint and associated tracks and/or cable crossings, and if the proposed work extends beyond these areas, then further archaeological assessment will be required. • As the survey has followed Requirement 5 of the Code of Practice, further survey is not necessary, provided the development footprint and associated tracks and/or cable crossings do not change.
The Proponent should prepare a Cultural Heritage Management Plan (CHMP) to address the potential for finding additional Aboriginal artefacts during the construction of the Proposed Solar Farm and for the management of known sites and artefacts within the proposal area. The Plan should include the unexpected finds procedure to deal with construction activity which includes the written notification of ALL RAP's within 24hrs of the Unexpected Find. Preparation of the CHMP should be undertaken in consultation with the registered Aboriginal parties.	The necessity of the proponent preparing an Aboriginal Cultural Heritage Management Plan (ACHMP) has already been addressed in the ACHAR (see **Section 9.1**, **Section 9.3** and **Section 14.1**). This includes an unanticipated finds protocol and inclusion of RAPs in the ACHMP preparation process.
In the unlikely event that human remains are discovered during the construction of the Proposed Solar Farm, all work must cease in the immediate vicinity. The appropriate heritage team within the Department of Planning, Industry and Environment (DPIE) and the local police should be notified. Further assessment would be undertaken to determine if the remains were Aboriginal or non-Aboriginal. If the remains are deemed to be Aboriginal in origin the Registered Aboriginal Parties should be advised of the find as directed by the appropriate heritage team within DPIE. WVWAC have been in this situation previously and require that ALL RAP's be notified immediately upon discovery, site inspection be arranged and be involved in all meetings and discussions with Forensics Officers, DPIE, Archaeologists and Project Managers before any decision is made in regards to the origins of the burial or bone deposit.	A protocol regarding human skeletal remains will be included in the ACHMP as outlined in **Section 9.3.2**. OzArk will supply the proponent with the recommended procedures by WVWAC, so these recommendations can be taken into account when the ACHMP is being prepared.

4.2 ABORIGINAL COMMUNITY INVOLVEMENT IN THE ASSESSMENT

The field survey was undertaken 10–14 August 2020 and 17–19 August 2020. The following RAPs or representatives of RAPs participated in the fieldwork as site officers:

- Steven George Flick (Muronggialinga) 10–11 August 2020
- Larry Flick (Muronggialinga) 12 August and 17–19 August 2020
- Brenda Waters (WVWAC and GAC) 11–13 August and 17–18 August 2020
- Tammy Peterson (MLALC) 10–14 August and 17–19 August 2020
- Scott Perrin (Warrabinga Native Title Claimants Aboriginal Corporation) 10–11 August 2020
- Tyron Pennell (Warrabinga Native Title Claimants Aboriginal Corporation) 12–14 August 2020

- Tayla Pennell (Warrabinga Native Title Claimants Aboriginal Corporation) 17–19 August 2020
- Terri McConnell (North-Eastern Wiradjuri) 11–14 August and 17 August 2020.

4.2.1 Comments arising from the assessment

No specific cultural values were shared during the field assessment, except for the observation that every site and artefact is important to Aboriginal people. There were multiple discussions during the field assessment concerning archaeological potential and which areas of the study area were most likely to contain sites. The discussions concluded that it was unlikely larger sites would be present on the higher slopes and occupation sites would be more likely along Stubbo Creek and its tributaries.

5 ABORIGINAL ARCHAEOLOGY BACKGROUND

5.1 ETHNO-HISTORIC SOURCES OF REGIONAL ABORIGINAL CULTURE

At the time of European settlement, the study area was situated within the territory of people belonging to the *Wiradjuri* tribal and linguistic group (Tindale 1974). The Wiradjuri tribal area is situated within the Murray Darling Basin and extends across three general physiographic regions: the highlands or central tablelands in the east, the riverine plains in the west, and the transitional western slopes zone in-between (Navin Officer 2005: 48).

The Wiradjuri is one of the largest language groups within New South Wales extending across the districts of Mudgee, Bathurst, Dubbo, Parkes, West Wyalong, Forbes, Orange, Junee, Cowra, Young, Holbrook, Wagga Wagga, Narrandera, Griffith, and Mossgiel (Tindale, 1974). While the area was noted to have a single basic language, various dialects could be found throughout the region (Tindale 2000). The study area is located within the central tablelands and on the eastern margin of the Wiradjuri territory.

Oral tradition records the presence of over 20 clans within the broader Bathurst–Mudgee region, organised according to matrilineal descent (Navin Officer 2005: 48). Clans were made up of a number of fairly independent groups, of up to 20 members, in friendly contact with each other, moving separately for much of the year over a shared territory (Pearson 1981; Haglund 1985).

Within the Wiradjuri region, the presence of Aboriginal people in the Darling Basin has been dated to 40,000 years ago (Hope 1981 as cited in Haglund 1985). A spread east into the mountains is thought to have occurred between 14,000 to 12,000 years ago.

5.2 REGIONAL ARCHAEOLOGICAL CONTEXT

The Aboriginal occupation of Australia begins prior to 40,000 BP (years before present) and possibly earlier than 50,000 BP. Dates exceeding 20,000 years occur in almost all parts of Australia resulting in the expectation that most areas should have a Pleistocene (>12,000 BP) occupational signature. However, such dates remain relatively rare due to a range of factors, both behavioural and post-depositional. These factors include a possible low density of occupation in the Pleistocene period, poor preservation of archaeological materials (particularly dateable organic materials) and significant coastline change over the past 18,000 years.

There are a number of broad scale regional archaeological studies which either cover the study area itself or are in general proximity to it. These studies have been summarised below.

5.2.1 PhD thesis – changing land use and settlement patterns in the upper Macquarie River region of NSW from prehistoric times to 1860 (Pearson 1981)

Pearson's work was primarily in the Upper Macquarie region, which reflects topographic similarities to the current study area. Pearson divided the archaeological sites he recorded into

two main categories: occupation sites and non-occupation sites (including grinding grooves, scarred or carved trees, ceremonial and burial sites). Analysis of site locations produced a site prediction model with occupation occurring in areas with access to water, good drainage, level ground, adequate fuel and appropriate localised weather patterns for summer or winter occupation. Occupation sites were most frequently found on low ridge tops, creek banks, gently undulating hills and river flats and usually in open woodland vegetation (Pearson 1981: 101). The location of non-occupation sites was dependent upon a variety of factors relating to site function. For instance, grinding grooves were found where appropriate sandstone outcropping occurred, as close to occupation sites as possible. The location of scarred trees displayed no obvious patterning, other than proximity to watercourses where camps were more frequently located. Pearson suggested that these patterns would differ on the drier plains to the west, towards Dubbo and beyond, where dependence upon larger, more permanent water supplies was greater.

5.2.2 An assessment of Aboriginal sites in the Dubbo City Area (Koettig 1985)

In 1985, the survey by Koettig investigated the evidence of Aboriginal occupation within 5 km of Dubbo's city limits. The investigation concluded that sites exist throughout all environmental landscapes surveyed. Artefact scatters, scarred trees and grinding grooves were the most frequently occurring site types; and site location and size were determined by various environmental and social factors. Of the environmental factors, proximity to water, geological formation and availability of food resources were the most important. As such, Koettig's site prediction model suggested that: all site types would occur along watercourses; stone arrangements would occur most frequently on knolls or prominent landscape features; larger campsites would occur most frequently along permanent watercourses, near springs or wetlands; small campsites could occur anywhere; scarred trees could occur anywhere, but particularly in remnant native woodland communities; campsites would be smaller and more sporadic near the headwaters of creeks; grinding grooves could occur where appropriate sandstone existed; quarries could occur wherever there were suitable stone sources; and shell middens could occur only along the Macquarie River.

5.2.3 Assessment of the prehistoric heritage in the Mudgee Shire (Haglund 1985)

Haglund (1985) conducted a study into the prehistoric heritage in the Mudgee Shire and noted that prior to colonial settlement small groups of approximately twenty Aborigines acted independently but engaged in friendly contact. These groups moved after short intervals, often over a short distance or within the same area, to obtain and use different resources.

Early British explorers and settlers noted considerable variation in the numbers of Aboriginal people that would gather for food procurement activities during different seasons of the year. This seasonality was most obvious in the case of gatherings along major rivers, and it has been

suggested that during dry periods the water holes remaining in the major rivers would become focal points for the usually scattered groups (Haglund 1985: 5).

Concerning the Mudgee/Gulgong area, Haglund (1985: 3) notes that the distribution of known sites cannot be seen as accurately reflecting past Aboriginal land use or site location patterns because of site loss since colonial settlement. Those sites known to exist, however, do fit within the general pattern for the various resource zones discerned by Koettig (1985) and Pearson (1981).

5.2.4 Aboriginal heritage study: Dubbo local government area (OzArk 2006)

An assessment of Aboriginal heritage resources within the then Dubbo LGA to assist Dubbo City Council (now amalgamated into the Dubbo Regional Council) with planning was undertaken by OzArk (2006). This study aimed to consolidate previous surveys and assessments of Aboriginal heritage; set a baseline for further study; and survey areas zoned for future expansion. Approximately 1120 ha of land was surveyed within five study areas surrounding the city of Dubbo. During the survey, 26 new Aboriginal sites were recorded, and eight out of 12 previously recorded sites were relocated. A number of the newly recorded site types were similar to those found in previous studies. Fewer scarred trees were found than expected, likely due to intensive agricultural practices and associated tree clearance around Dubbo city compared to the broader former Dubbo LGA. No new grinding groove sites were recorded, which was understandable given that this site type comprised only 3.6% of previously located sites within the former Dubbo LGA. Scarred tree distribution adhered to the predictive model, exclusively following waterways and fence-lines, although this probably reflected land clearing practices more than Aboriginal site patterning. Isolated finds and open sites followed a similar pattern, largely limited to watercourse edges and elevated terraces within 500 metres (m) of the Macquarie River and other permanent to semi-permanent waterways. No significant patterning emerged in terms of site size or quality, perhaps because surface manifestations of artefacts often do not adequately reflect site size or complexity.

5.3 DEVELOPMENT DRIVEN ASSESSMENTS

5.3.1 Archaeological survey of the Proposed Beryl to Ulan 132kV electricity transmission line (Cubis 1981)

Cubis (1981) recorded two open sites, two isolated artefacts, a shelter and a possible stone arrangement during the 35 km transmission line survey between Beryl and Ulan. These sites, recorded south of the study area, included open site #36-3-0048 that contained artefacts of chert and quartzite and site #36-3-0047 containing quartzite, chert, basalt, siltstone and greywacke artefacts. During the survey Cubis (1981: 11) also recorded two isolated finds on Stubbo Creek and Sportsmans Hollow Creek, both southeast and outside of the study area.

5.3.2 Ulan Coal Mine (Kuskie and Webster 2002; Corkill 1991; Haglund 1981, 1996, 1999)

Numerous studies undertaken over the past twenty-five years for the Ulan Coal Mine over all portions of their lease areas and have recorded hundreds of Aboriginal sites. Surveys carried out through the 1980s and 1990s by Haglund have been summarised by Kuskie (2000). As expected, the variety of landforms present within the Ulan project area resulted in all site types being recorded as a result of these studies (including more unusual sites such as ochre quarries and a utilised rock pool); although, it was noted that in general, the landscapes were highly disturbed as a result of agricultural activities (clearing, ploughing, grazing) and erosional processes. Overall quartz appears to be the predominant raw material recorded at Ulan, although significant quantities of chert are also present (Kuskie and Webster 2002; Corkill 1991; Haglund 1996).

5.3.3 Indigenous and non-Indigenous Heritage Assessment: Wollar – Wellington 330kV Electricity Transmission Line (OzArk 2005)

OzArk (2005) undertook an assessment of a proposed 330kV electricity transmission line (ETL) between Wollar and Wellington. The area assessed for the ETL is adjacent to the southeast boundary of the solar farm study area and intersects a small area of it. During the assessment 28 Aboriginal sites were recorded, three of which are in the general vicinity though outside of the study area: #36-3-0670, #36-3-0669, and #36-3-0671.

5.3.4 Cobbora Coal Project (EMM 2012)

In 2012, EMM conducted an Aboriginal cultural heritage assessment for the Cobbora Coal Project. The proposed Cobbora Coal Mine is located approximately 13 km northwest of the study area. The original assessment area for the Cobbora Coal Project also included an approximate 35 km corridor for a pipeline between Tallawang and Ulan, which crossed the northern half of the Stubbo Solar Farm study area. The survey of the pipeline corridor was conducted in 2009–2010 by ERM, though the results of this survey is included in EMM 2012.

Overall, within the Cobbora Coal Project area, artefact scatters were the most frequent site type recorded, followed by scarred trees, grinding grooves, hearths and rock shelters with either potential archaeological deposit (PAD) or artefacts. Quartz was the predominant material recorded for stone artefacts. To a much lesser degree, stone artefacts manufactured from volcanic materials, silcrete, quartzite, chert, calcedony, mudstone and sandstone were also recorded.

A series of 1 m by 2 m test pits were mechanically excavated during the 2009–2010 fieldwork. Artefacts were recovered from three pits within the recorded site boundaries. The results of the subsurface testing demonstrated that artefacts are present in the topsoil in association with a

minor tributary watercourse inside the Cobbora Coal Project area, as well as near the confluence of Sandy Creek and Laheys Creek.

The overall assessment concluded that Aboriginal sites, especially artefact scatters, were predominately associated with major watercourses such as Sandy Creek and Laheys Creek and commonly occurred within 200 m of such watercourses. Artefact scatters along minor watercourses and drainage lines tended to be within 30 m of the watercourses.

5.3.5 Beryl Solar Farm (NGH Environmental 2017)

An Aboriginal cultural heritage assessment for the Beryl Solar Farm, 13 km southwest of the study area, was conducted by NGH Environmental in 2017. The Beryl Solar Farm study area consisted of 332 ha of low undulating slopes surrounding two ephemeral drainage channels. Five sites were identified during the survey, three of which were located close to Wialdra Creek near the Castlereagh River.

The assessment concluded that the survey results were consistent with the model predicting site location close to waterways, and that there was negligible potential for intact subsurface deposits with high densities of objects or cultural materials. The low level of topographic variation across the Beryl study area led to a generic predictive model that has limited applicability to the current study area. However, the survey did record uncommon site types, including an axe blank and a ground-edge axe, despite the small number of identified sites.

5.4 LOCAL ARCHAEOLOGICAL CONTEXT

5.4.1 Desktop database searches conducted

A desktop search was conducted on the following databases to identify any potential previously recorded heritage within the study area. The results of this search are summarised in **Table 5-1** and presented in detail in **Appendix 2**.

Table 5-1: Aboriginal cultural heritage: desktop-database search results.

Name of Database Searched	Date of Search	Type of Search	Comment
Commonwealth Heritage Listings	12 June 2020	Mid-Western Regional Council LGA	No places listed on either the National or Commonwealth heritage lists are located within the study area
National Native Title Claims Search	12 June 2020	NSW	One Native Title Claim covers the study area: Warrabinga-Wiradjuri #7
AHIMS	12 June 2020	6 x 6 km centred on the study area	63 AHIMS sites were recorded within the vicinity but only two occur within the study area.
Local Environmental Plan (LEP)	12 June 2020	Mid-Western Regional LEP of 2012	None of the Aboriginal places noted occur near the study area.

As per **Table 5-1**, it is noted that the study area includes land currently subject to Native Title Claim (NC2018/002, NSD857/2017, Warrabinga-Wiradjuri #7).

A search of the Aboriginal Heritage Information Management System (AHIMS) database on 12 June 2020 returned 63 records for Aboriginal heritage sites within a 6 km radius search area around the study area (GDA Zone 55 Eastings: 734662–751633; Northings: 6420682–6437259 with no buffer) (see **Table 5-2** and **Figure 5-1**).

The most frequent site type in the vicinity of the study area is artefact scatters (49%), isolated finds (17%), and isolated finds with PAD (11%). Axe grinding grooves and / or waterholes and wells (3%), burial/s (3%) and shelters with deposit (3%) are slightly more frequently recorded than the remaining site types. Aboriginal resource and gathering with PAD, art sites with either an artefact scatter or grinding grooves, modified trees, PADs, and stone arrangements, only occur once each within the designated search area (**Table 5-2**).

Table 5-2: Site types and frequencies of AHIMS sites near the study area.

Site Type	Number	% Frequency
Artefact scatter	31	49
Isolated find	11	17
Isolated find and PAD	7	11
Axe grinding groove	2	3
Axe grinding groove and/or waterhole/well	2	3
Burial/s	2	3
Shelter with deposit	2	3
Aboriginal resource and gathering and PAD	1	2
Art (pigment / engraving) and artefact scatter	1	2
Art (pigment / engraving) and grinding groove	1	2
Modified tree	1	2
PAD	1	2
Stone arrangement	1	2
Total	**63**	**100**

There are two previously recorded sites within the study area: #36-3-2515 (TRE 21) and #36-3-1423 (IF23). Both sites are recorded on a landform between Stubbo Creek and a major tributary (see **Figure 5-2**) and were recorded during the 2009–2010 heritage survey for the Cobbora Coal Project (see **Section 5.3.4** and EMM 2012). Although site #36-3-2515 is recorded as an isolated find with PAD on the AHIMS extensive search, the site card records the site as a scarred tree with three scars. As the site card description agrees with the nomenclature of the site name, this site is regarded as a culturally modified tree, not an artefact scatter. Site #36-5-1423 is an isolated quartz core with one negative flake scar.

Several other sites are also within the general vicinity of the study area:

- 36-3-1422, an isolated find located 100 m northwest of the study area

- 36-3-1421, an isolated find located 68 m northwest of the study area
- 36-3-2511, an isolated find with PAD located 170 m northwest of the study area, adjacent to a tributary of Pine Creek.
- 36-3-0671, a low density artefact scatter located 490 m southeast of the study area, adjacent to Copes Creek
- 36-3-0669, a low density artefact scatter located 2.1 km southeast of the study area, adjacent to Stubbo Creek
- 36-3-0670, a low density artefact scatter located 4.6 km southeast of the study area, adjacent to Slapdash Creek.

Figure 5-1: Location of previously recorded AHIMS sites in relation to the study area.

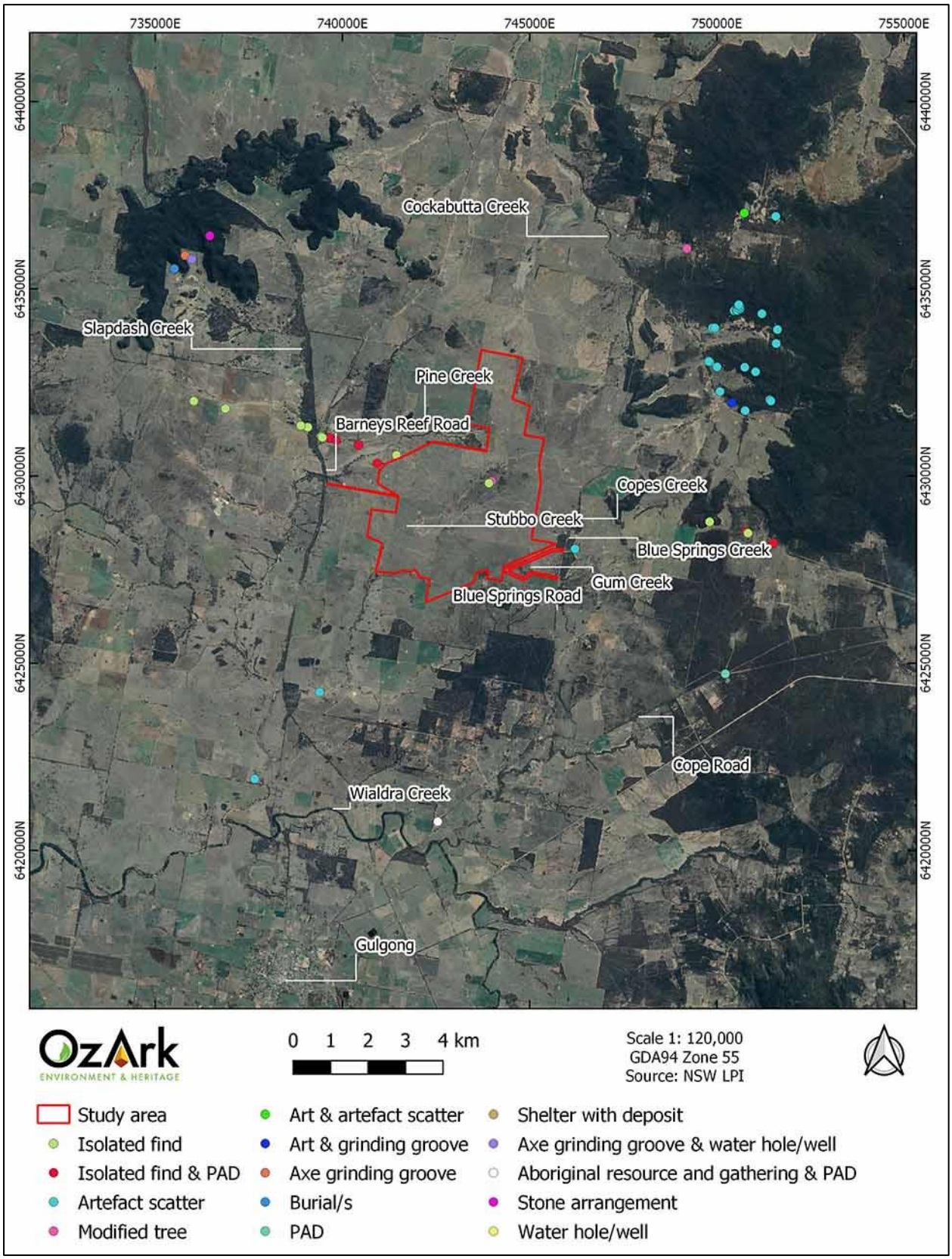
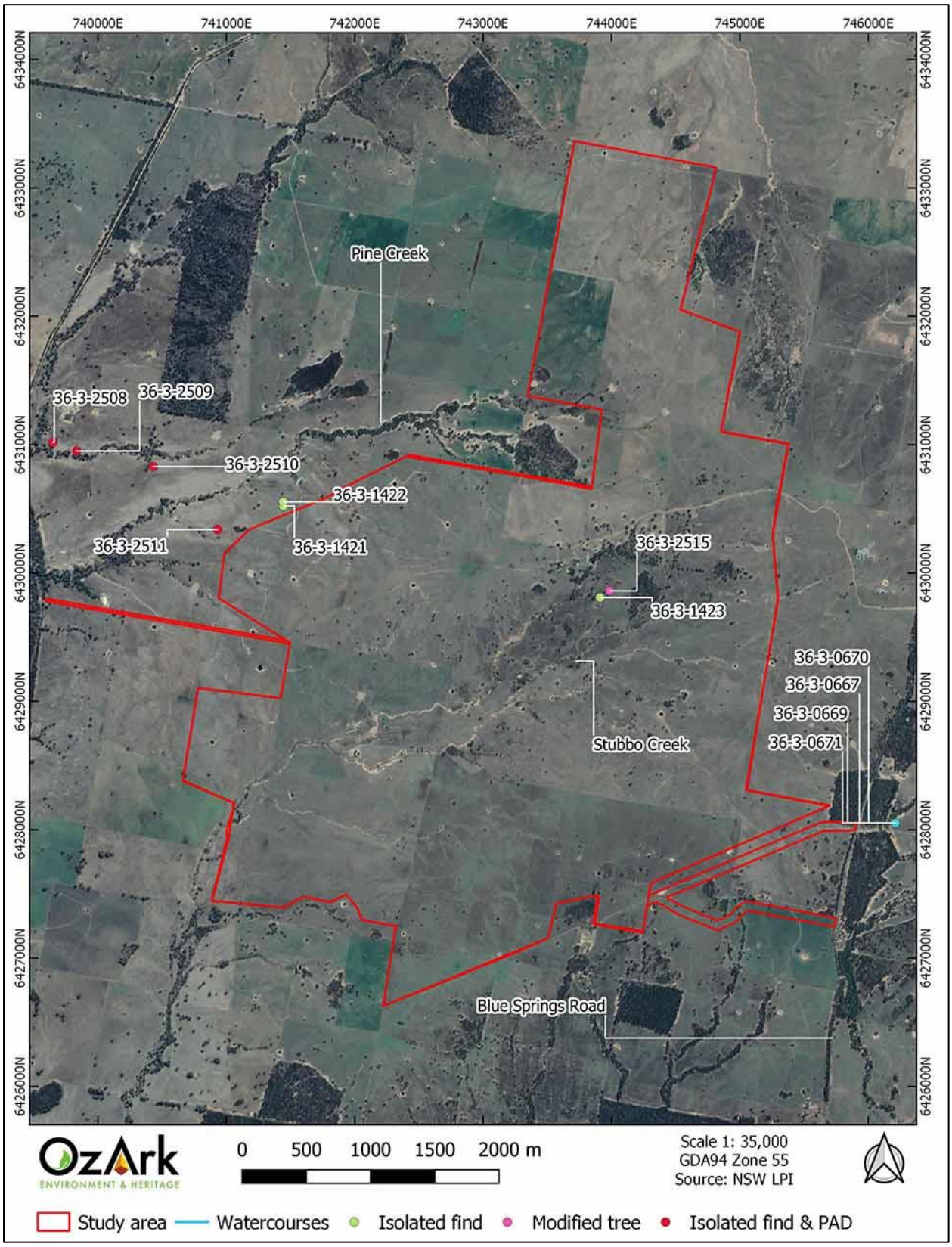


Figure 5-2: Detail of previously recorded AHIMS inside the study area.



5.5 PREDICTIVE MODEL FOR SITE LOCATION

Across Australia, numerous archaeological studies in widely varying environmental zones and contexts have demonstrated a high correlation between the permanence of a water source and the permanence and/or complexity of Aboriginal occupation. Site location is also affected by the availability of and/or accessibility to a range of other natural resources including: plant and animal foods; stone and ochre resources and rock shelters; as well as by their general proximity to other sites/places of cultural/mythological significance. Consequently, sites tend to be found along permanent and ephemeral water sources, along access or trade routes or in areas that have good flora/fauna resources and appropriate shelter.

In formulating a predictive model for Aboriginal archaeological site location within any landscape it is also necessary to consider post-depositional influences on Aboriginal material culture. In all but the best preservation conditions very little of the organic material culture remains of ancestral Aboriginal communities survives to the present. Generally, it is the more durable materials such as stone artefacts, stone hearths, shells, and some bones that remain preserved in the current landscape. Even these, however, may not be found in their original depositional context since these may be subject to either (a) the effects of wind and water erosion/transport—both over short- and long-time scales—or (b) the historical impacts associated with the introduction of European farming practices including grazing and cropping, land degradation, and farm related infrastructure. Scarred trees, due to their nature, may survive for up to several hundred years but rarely beyond.

5.5.1 Settlement strategies

The archaeological studies undertaken within the vicinity of the study area are all development driven, and the spatial distribution of Aboriginal sites recorded during these assessments (see **Section 5.3** are more due to the assessments than due to any type of settlement pattern. However, the general pattern is that most sites are present close to watercourses. A number of Aboriginal sites have been identified in and around the study area, in the vicinity of creeks and drainage lines, as well as remnant vegetation. In relation to the study area itself, Stubbo Creek and its tributaries would have helped enable occupation, perhaps on a seasonal basis or depending on water flow.

5.5.2 Past land use

Crucial for the preservation of archaeological deposits is the history of past land use in an area. The study area has been used for sheep and cattle grazing, as well as limited cropping. The effect of grazing on site integrity is negligible, except where cattle and sheep contribute to erosion along the banks of watercourses. Cropping and the use of ploughing, does affect the integrity of archaeological Aboriginal sites, in particular open camp sites, especially if such sites have

potential for subsurface deposits. However, ploughing will usually only affect the top 20 cm of topsoil, and so there is the potential for intact subsurface deposits below the plough-zone.

The clearing of vegetation inside the study area is widespread, despite some remnant trees remaining in particular areas. This is likely to have had an impact on any modified trees which may have been present.

5.5.3 Landform modelling

Preliminary landform mapping (**Figure 2-2**) shows that the study area is intersected with several drainage lines, including Stubbo Creek. The topography of the study area is primarily gentle slopes, with the highest point being in the north-eastern corner of the study area. There are also several rock outcrops visible on the aerial imagery. There are scattered remnant trees throughout the study area and across the different landforms, though the main concentration is around the existing homestead, 'The Pinnacle', as well as the creek and drainage lines.

OzArk (2006) used landform modelling and how it related to site type distribution, concluding that for stone artefact sites were largely limited to watercourse edges and elevated terraces within 500 m of a major watercourse (the Macquarie River) and other permanent to semi-permanent watercourses. The OzArk study also found that scarred tree distribution followed waterways and fence-lines, although noted that this probably reflected land clearing practices more than Aboriginal site patterning. By extrapolating these results and those of other regional studies (see **Section 5.2**) it is possible that the environment of the study area is likely to have been an area for Aboriginal occupation for periods of time, depending on the availability of natural resources such as water, flora and fauna.

5.5.3.1 Aboriginal Sites Decision Support Tool

OEH (2014) have produced a series of 'pre-1750' predictive models termed the Aboriginal Sites Decision Support Tool (ASDST) which combines data derived from AHIMS with a series of spatial variables that describe the landscape such as elevation, geology and proximity to water. The ASDST outputs GIS raster layers composed of one hectare cells that predict the likelihood of Aboriginal sites (e.g. mounds, artefacts, modified trees, grinding grooves, burials and hearths) occurring in the landscape prior to European settlement. These models do not account for land use disturbance in the intervening period, or local conditions leading to differential preservation of features. However, the ASDST includes an 'accumulated impacts' model that indicates impacts of post-European settlement land-use and its impact upon Aboriginal site features in the landscape. In combination, these models are used to predict the likelihood of encountering different Aboriginal site types prior to European settlement, and how the distribution of Aboriginal sites are likely to have been affected since this time.

According to the pre-1750 models shown in **Figure 5-3**:

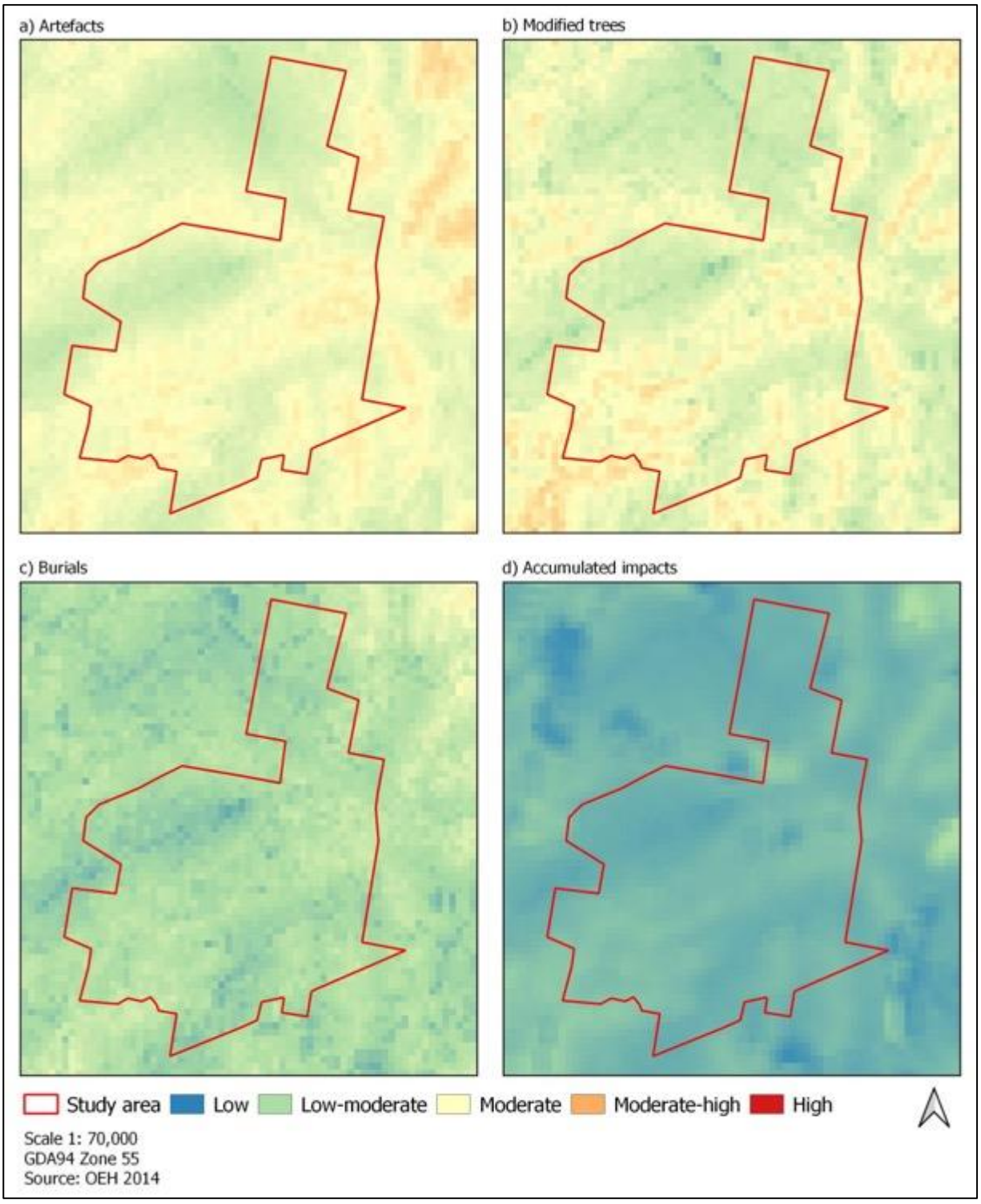
- Modified (scarred) trees have a low-moderate to moderate likelihood to occur within the study area, most likely due to the prevalent clearing of native vegetation
- The study area models as an area with low-moderate to moderate potential to contain stone artefact sites, these have increased potential to be located along the edges of Stubbo Creek and its tributaries
- The study area models as a low to low-moderate potential to contain burial sites, especially along the edges and on the slopes adjacent to Stubbo Creek and its tributaries
- The ASDST accumulated impacts model indicates low to low-moderate levels of disturbance throughout the study area, indicating that sites have an increased likelihood of being located in their original context.

Preliminary predictive modelling, based upon archaeological studies in the region and the ASDST models shown in **Figure 5-3**, indicates a high correlation between the permanence of a water source and the permanence and / or complexity of Aboriginal occupation. Site location is also affected by the availability of and/or accessibility to a range of other natural resources including: plant and animal foods; stone and ochre resources and rock shelters; as well as by their general proximity to other sites/places of cultural significance. Consequently, sites tend to be found along permanent and ephemeral water sources, along access or trade routes, and in areas that have good flora/fauna resources and appropriate topography (i.e. flat or gently sloping landforms or those providing shelter).

5.5.4 Previous studies

The results of past archaeological investigations near the study area indicates that the most common site type will be stone artefact sites (isolated finds and artefact scatters). Other site types, such as grinding grooves, modified trees and rock shelters are rare or non-existent. Stone artefact sites tend to be associated with elevated level ground associated with water sources, and a number of these sites have also been recorded with PAD (see **Section 5.4.1**). Of the stone artefact sites recorded during previous assessments, quartz is the predominant material for stone artefacts in the area, though volcanic materials, silcrete, quartzite, mudstone, chert and chalcedony could also be present based on nearby results.

Figure 5-3: ASDST and the study area.



5.5.5 Conclusion

Based on knowledge of the environmental contexts of the study area and a desktop review of the known local and regional archaeological record, the following predictions are made concerning the probability of those site types being recorded within the study area:

- Isolated finds may be indicative of the random loss or deliberate discard of a single artefact, the remnant of a now dispersed and disturbed artefact scatter, or an otherwise

obscured or sub-surface artefact scatter. They may occur anywhere within the landscape but are more likely to occur in topographies where open artefact scatters typically occur.

  - As isolated finds can occur anywhere, particularly within disturbed contexts, it is predicted that this site type could be recorded within the study area. Isolated finds have been recorded in the region and one isolated find has been previously recorded within the study area.

- Open artefact scatters are defined as two or more artefacts, not located within a rock shelter, and located no more than 50 m away from any other constituent artefact. This site type may occur almost anywhere that Aboriginal people have travelled and may be associated with hunting and gathering activities, short- or long-term camps, and the manufacture and maintenance of stone tools. Artefact scatters typically consist of surface scatters or sub-surface distributions of flaked stone discarded during the manufacture of tools but may also include other artefactual rock types such as hearth and anvil stones. Less commonly, artefact scatters may include archaeological stratigraphic features such as hearths and artefact concentrations which relate to activity areas. Artefact density can vary considerably between and across individual sites. Small ground exposures revealing low density scatters may be indicative of a background scatter rather than a spatially or temporally distinct artefact assemblage. These sites are classed as 'open', that is, occurring on the land surface unprotected by rock overhangs, and are sometimes referred to as 'open camp sites'.

  Artefact scatters are most likely to occur on level or low gradient contexts, along the crests of ridgelines and spurs, and elevated areas fringing watercourses or wetlands. Larger sites may be expected in association with permanent water sources.

  Topographies which afford effective through-access across, and relative to, the surrounding landscape, such as the open basal valley slopes and the valleys of creeks, will tend to contain more and larger sites, mostly camp sites evidenced by open artefact scatters.

  - Stone artefact distributions of variable artefact densities are the most common Aboriginal object found within the region. Regional studies show a general correlation between stone artefact sites and distance to permanent or semi-permanent watercourses. It is possible further artefact sites will be present inside the study area. Such sites are most likely to be located on flat elevated landforms adjacent or overlooking Stubbo Creek and its tributaries. There are some areas along Stubbo Creek and its tributaries which appear to be heavily eroded, meaning that site preservation may be affected.

- Aboriginal scarred trees contain evidence of the removal of bark (and sometimes wood) in the past by Aboriginal people, in the form of a scar. Bark was removed from trees for a wide range of reasons. It was a raw material used in the manufacture of various tools, vessels and commodities such as string, water containers, roofing for shelters, shields and canoes. Bark was also removed because of gathering food, such as collecting wood boring grubs or creating footholds to climb a tree for possum hunting. Due to the multiplicity of uses and the continuous process of occlusion (or healing) following removal, it is difficult to accurately determine the intended purpose for any example of bark removal. Scarred trees may occur anywhere old growth trees survive. The identification of scars as Aboriginal cultural heritage items can be problematical

because some forms of natural trauma and European bark extraction create similar scars. Many remaining scarred trees probably date to the historic period when bark was removed by Aboriginal people for both their own purposes and for roofing on early European houses. Consequently, the distinction between European and Aboriginal scarred trees may not be clear.

  - The study area is mostly cleared of vegetation; however, it is possible that culturally modified trees may be present in stands of remnant native vegetation and it is noted that one scarred tree has been previously recorded within the study area.

- Quarry sites and stone procurement sites typically consist of exposures of stone material where evidence for human collection, extraction and/or preliminary processing has survived. Typically, these involve the extraction of siliceous or fine grained igneous and meta-sedimentary rock types for the manufacture of artefacts. The presence of quarry/extraction sites is dependent on the availability of suitable rock formations.

  - There are rock outcrops present inside the study area, however, based on the underlying geology, these are unlikely to be suitable stone for tool manufacture. As such, this type is not predicted to be present inside the study area.

- Burials are generally found in soft sediments such as aeolian sand, alluvial silts and rock shelter deposits. In valley floor and plains contexts, burials may occur in locally elevated topographies rather than poorly drained sedimentary contexts. Burials are also known to have occurred on rocky hilltops in some limited areas. Burials are generally only visible where there has been some disturbance of sub-surface sediments or where some erosional process has exposed them.

  - Given the topography, and the nature of the soils which are likely to have a high frequency of quartz gravels, burials are not predicted to be present in the study area.

6 RESULTS OF ABORIGINAL ARCHAEOLOGICAL ASSESSMENT

6.1 SAMPLING STRATEGY AND FIELD METHODS

Standard archaeological field survey and recording methods were employed in this study (Burke & Smith 2004).

The study area was assessed by sampling the different landforms as outlined in **Appendix 1** using pedestrian survey. The landforms were refined during the survey resulting in those landform types discussed in **Section 2** and shown in **Figure 2-2**. Survey transects were approximately 60–80 m wide, with surveyors spaced approximately 20 m apart as requested by RAP feedback on the assessment methodology (see **Section 4.1.2**). Survey transects were narrower where visibility was higher and in areas of higher archaeological potential (i.e. near watercourses), and occasionally wider depending on physical constraints such as fences, cattle, dams and swampy grounds.

The areas sampled using pedestrian transects are shown on **Figure 6-1**. These were chosen based on the need to survey a range of landforms at different locations across the study area. **Table 6-1** outlines the details of each survey area. Survey areas within the proposed impact area were prioritised, though areas of the environmental exclusion zone were also included in the survey. This is so areas around the main watercourses, Stubbo Creek and its tributaries, were also sampled to help gain a holistic archaeological understanding of the study area as a whole. The pedestrian survey efforts are shown on **Figure 6-2**. The transects shown on **Figure 6-2** are only for two of the six surveyors.

Table 6-1: Survey areas and landforms.

Survey Area	Hectares (ha)	Landforms
1	65	Slopes, drainage & flats
2	181	Slopes, drainage & flats
3	223	Slopes, drainage & flats
4	67	Slopes
5	37	Slopes & drainage
6	94	Slopes, ridgeline/crest & drainage
7	128	Slopes, ridgeline/crest & drainage
8	57	Slopes
9	54	Slopes, drainage & flats
10	36	Slopes, ridgelines/crests & drainage
11	104	Slopes

Figure 6-1: Landforms and survey areas within the study area.

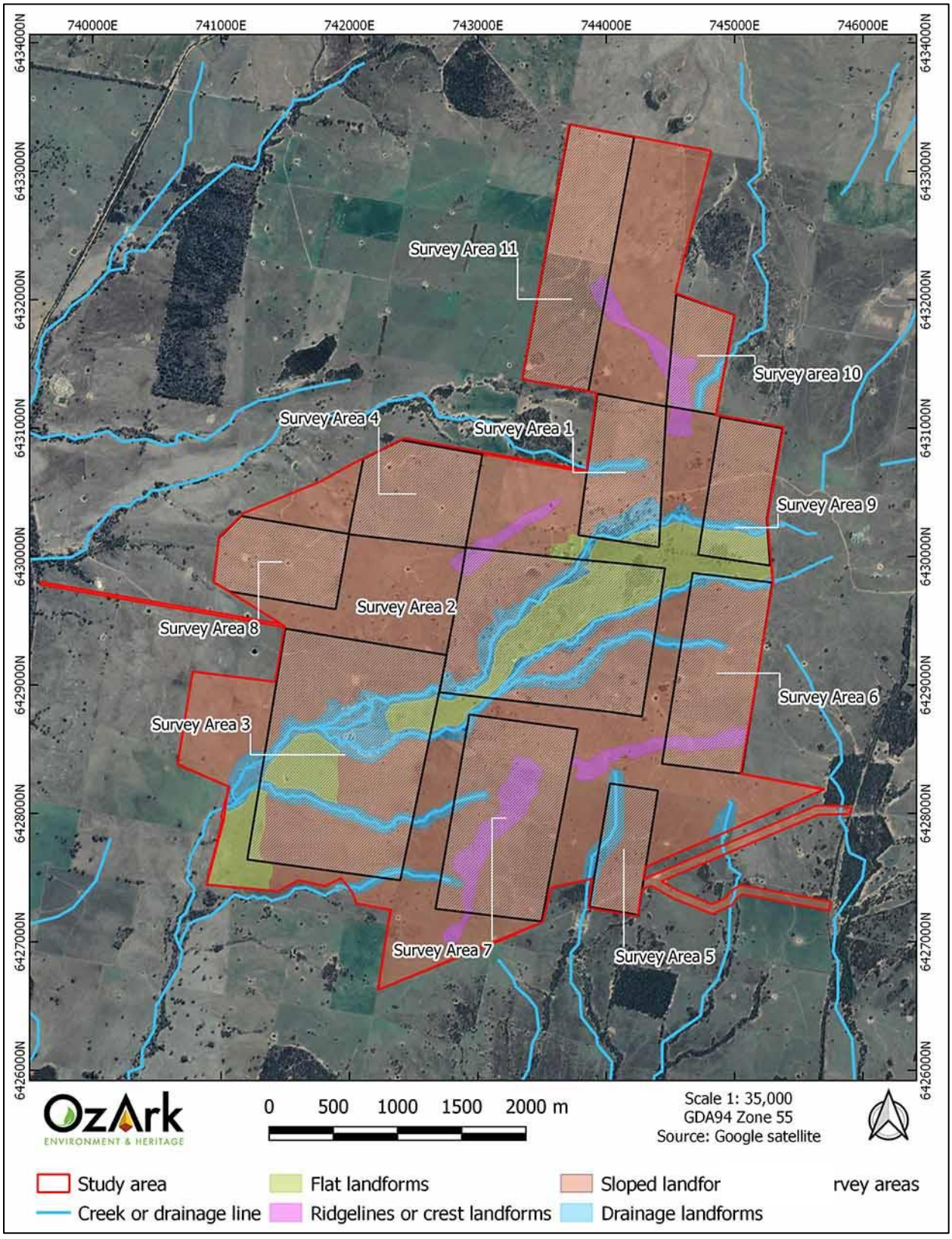
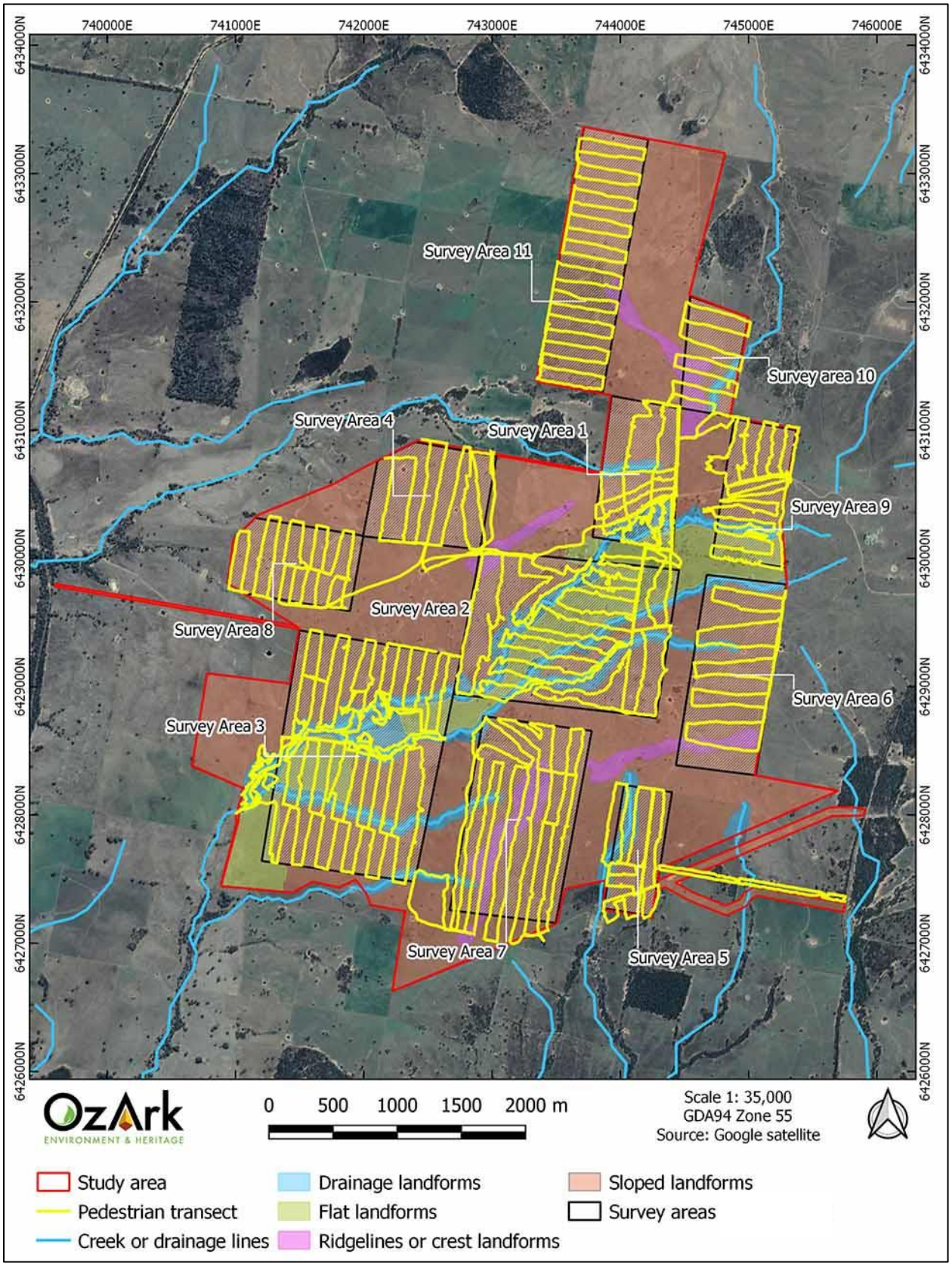


Figure 6-2: Aerial showing the pedestrian transects undertaken during the survey.



The two previously recorded AHIMS sites within the study area, #36-3-1423 and #36-3-2515 (see **Section 5.4.1**), were also ground truthed during the field survey to assess their current condition and to ensure GPS coordinates provided by AHIMS were correct.

In the field, OzArk staff identified, recorded and evaluated physical (i.e. archaeological) evidence. Site recording captured all the information required to complete current AHIMS site recording forms (e.g. site location, site boundary, site plan, representative photographs, artefact recording and feature recording).

6.2 PROJECT CONSTRAINTS

There were no significant constraints in completing the archaeological assessment of the study area. The main project constraint was the ground surface visibility (GSV) being hampered due to grass and vegetation regrowth. However, this did not unduly affect survey efficiency as shown in **Section 6.3**. Also, the week prior the survey began, the study area had a high amount of heavy rainfall which made the ground surface in certain locations unable to be traversed by vehicle. This meant that certain survey areas, or parts of survey areas, were only accessible by foot from the closest main track. However, as seen on **Figure 6-2**, this did not prevent full survey of all designated survey areas.

6.3 EFFECTIVE SURVEY COVERAGE

Two of the key factors influencing the effectiveness of archaeological survey are GSV and ground surface exposure (GSE). These factors are quantified to ensure that the survey data provides adequate evidence for the evaluation of the archaeological materials across the landscape. For the purposes of the current assessment, these terms are used in accordance with the definitions provided in the Code of Practice.

GSV is defined as:

> *… the amount of bare ground (or visibility) on the exposures which might reveal artefacts or other archaeological materials. It is important to note that visibility, on its own, is not a reliable indicator of the detectability of buried archaeological material. Things like vegetation, plant or leaf litter, loose sand, stone ground or introduced materials will affect the visibility. Put another way, visibility refers to 'what conceals'* (DECCW 2010b: 39).

GSE is defined as:

> *… different to visibility because it estimates the area with a likelihood of revealing buried artefacts or deposits rather than just being an observation of the amount of bare ground. It is the percentage of land for which erosion and exposure was sufficient to reveal archaeological evidence on the surface of the ground. Put another way, exposure refers to 'what reveals'* (DECCW 2010b: 37).

Table 6-2 calculates the effective survey coverage within the study area. In general, **Table 6-2** presents an approximation of the amount of ground surface able to be seen at any location within particular landform units. For example, at any one location within the slope landforms of the study

area, approximately 30–50% of the ground surface could be seen. Exposures in these landforms were generally confined to small scalds or exposures due to existing vehicle or animal tracks. The amount of visible ground increased across the drainage and flat landforms as these landforms generally had larger erosion scalds present and less dense ground cover than across the slopes and ridgeline/crests. Visibility across all landforms was hampered by grasses and small quartz gravels.

Table 6-2: Effective survey coverage within the study area.

Survey Unit	Landform/s	Survey Unit Area (sq m)	Visibility %	Exposure %	Effective Coverage Area (sq m) (= Survey Unit Area x Visibility % x Exposure %)	Effective Coverage % (= Effective Coverage Area / Survey Unit Area x 100)
1	Slopes, drainage & flats	650000	30	10	19500	3
2	Slopes, drainage, flats & ridgeline/crest	1810000	60	30	325800	18
3	Slopes, drainage & flats	2230000	60	30	401400	18
4	Slopes	670000	40	10	26800	4
5	Slopes & drainage	370000	30	10	11100	3
6	Slopes, ridgeline/crest & drainage	940000	60	20	112800	12
7	Slopes, ridgeline/crest & drainage	1280000	30	10	38400	3
8	Slopes	570000	50	10	28500	5
9	Slopes, drainage & flats	540000	30	10	16200	3
10	Slopes, ridgelines/crests & drainage	360000	40	10	14400	4
11	Slopes	1040000	30	10	31200	3

Table 6-3 demonstrates that although the survey efficacy within slope or ridgeline/crest landforms was the lowest at 2 per cent and 3 per cent respectively, as some sites were recorded in these landforms. Drainage landforms had the greatest survey efficiency, as well as the highest prevalence of sites recorded; generally, this is because the available exposures were in the most archaeologically sensitive areas (i.e. along the banks and terraces of waterways in the drainage landform).

Table 6-3: Effective survey coverage and incidences of site recording.

Landform	Landform area (sq m)	Area Effectively Surveyed (sq m) (= Effective Coverage Area)	% of Landform Effectively Surveyed (= Area Effectively Surveyed / Landform x 100)	Number of Sites	Number of Artefacts or Features
Slopes	13739000	278466	2	2	2
Drainage	1750000	328927	19	21	302
Ridgeline/Crest	686000	22073	3	0	0

Landform	Landform area (sq m)	Area Effectively Surveyed (sq m) (= Effective Coverage Area)	% of Landform Effectively Surveyed (= Area Effectively Surveyed / Landform x 100)	Number of Sites	Number of Artefacts or Features
Flats	1544000	182912	12	2	7

The study area is approximately 1771 ha in total. The sampling covered approximately 1101 ha, including an additional 62 ha than what was outlined in the assessment methodology, meaning that at least 63% of the overall study area was surveyed via pedestrian transects, including a sample of each landform type present inside the study area. The areas not surveyed via pedestrian transects consisted primarily of grazed slopes.

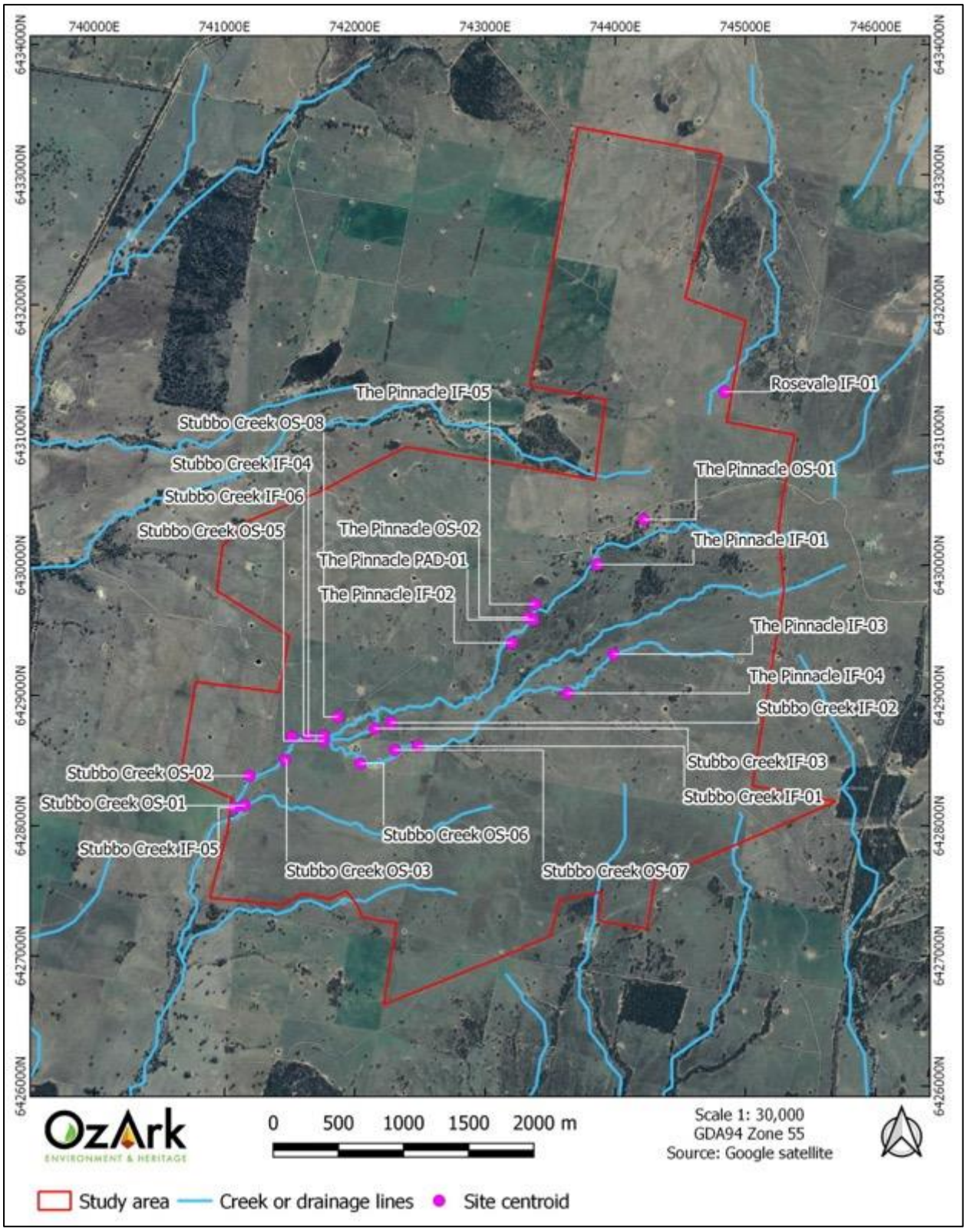
6.4 ABORIGINAL SITES RECORDED

Table 6-4 summarises the Aboriginal cultural heritage sites recorded during the survey of the study area and **Figure 6-3** shows the location of the sites in relation to the study area. Further details on each site follows.

Table 6-4: Aboriginal cultural heritage sites recorded during the survey.

Site Name & number	Feature(s)	Survey Unit	Landform	Number of artefacts and/or features
Stubbo Creek IF-01 (#36-3-3685)	Isolated find	3	Drainage	1
Stubbo Creek IF-02 (#36-3-3686)	Isolated find	3	Drainage	1
Stubbo Creek IF-03 (#36-3-3687)	Isolated find	3	Drainage	1
Stubbo Creek IF-04 (#36-3-3688)	Isolated find	3	Drainage	1
Stubbo Creek IF-05 (#36-3-3689)	Isolated find	None	Drainage	1
Stubbo Creek IF-06 (#36-3-3690)	Isolated find	3	Drainage	1
Rosevale IF-01 (#36-3-3691)	Isolated find	10	Slopes	1
The Pinnacle IF-01 (#36-3-3670)	Isolated find and PAD	None	Drainage	1
The Pinnacle IF-02 (#36-3-3671)	Isolated find and PAD	2	Drainage & flats	1
The Pinnacle IF-03 (#36-3-3672)	Isolated find	2	Drainage	1
The Pinnacle IF-04 (#36-3-3673)	Isolated find and PAD	2	Drainage	1
The Pinnacle IF-05 (#36-3-3674)	Isolated find	2	Slopes	1
Stubbo Creek OS-01 (#36-3-3675)	Artefact scatter and PAD	None	Drainage	98
Stubbo Creek OS-02 (#36-3-3676)	Artefact scatter and PAD	None	Drainage	43
Stubbo Creek OS-03 (#36-3-3677)	Artefact scatter	3	Drainage	18
Stubbo Creek OS-04 (#36-3-3678)	Artefact scatter and PAD	3	Drainage	23
Stubbo Creek OS-05 (#36-3-3679)	Artefact scatter and PAD	3	Drainage	16
Stubbo Creek OS-06 (#36-3-3680)	Artefact scatter and PAD	3	Drainage	53
Stubbo Creek OS-07 (#36-3-3681)	Artefact scatter and PAD	3	Drainage	8
Stubbo Creek OS-08 (#36-3-3682)	Artefact scatter and PAD	3	Drainage	27
The Pinnacle OS-01 (#36-3-3683)	Artefact scatter	1	Drainage	3
The Pinnacle OS-02 (#36-3-3684)	Artefact scatter and PAD	3	Drainage	2
The Pinnacle PAD-01	PAD	3	Drainage	1
IF23 (#36-3-1423)	Artefact scatter and PAD	3	Flats	6
TRE21 (#36-3-2515)	Scarred tree	3	Flats	1

Figure 6-3: Location of Aboriginal cultural heritage sites recorded during the survey.



Stubbo Creek IF-01 (#36-3-3685)

Site Type: Isolated find

GPS Coordinates: 742486 E / 6428610 N (GDA94 Zone 55)

Location of Site: The site is located 12.7 km north east of Gulgong, NSW. It is 3.1 km east of Barneys Reef Road and 3.6 km west of Blue Springs Road. The site is directly adjacent to the south bank of Stubbo Creek.

Description of Site: The site consists of a single quartz flake (**Table 6-5**) located on the south bank of Stubbo Creek (**Figure 6-4**). There is a gentle slope to the west across the site location. Mature native vegetation is present along Stubbo Creek, and the site has low GSV with dense grass cover. Soil at the site is a mid-brown sandy loam.

Table 6-5: Stubbo Creek IF-01. Artefact attributes.

No.	Artefact type	Material	Integrity	Reduction	Size (length x width x thickness [mm])
1	Flake	Quartz	Complete	Tertiary	42 x 40 x 11

Figure 6-4: Stubbo Creek IF-01. View of site and the recorded artefact.

1. View east of Stubbo Creek IF-01 along the south bank of Stubbo Creek.

2. View of artefact recorded at Stubbo Creek IF-01

Stubbo Creek IF-02 (#36-3-3686)

Site Type: Isolated find

GPS Coordinates: 742281 E / 6428791 N (GDA94 Zone 55)

Location of Site: The site is located 12.8 km north east of Gulgong, NSW. It is 2.8 km east of Barneys Reef Road and 3.8 km west of Blue Springs Road. The site is located east of a dam and 210 m north of Stubbo Creek.

Description of Site: The site consists of a single quartz flake (**Table 6-6**) located on a contour bank east of a dam. The soil is a light tan sandy loam. The site location is surrounded by dense short grass along the contour bank, with longer grasses to the north and south (**Figure 6-5**). The artefact is in a secondary context.

Table 6-6: Stubbo Creek IF-02. Artefact attributes.

No.	Artefact type	Material	Integrity	Reduction	Size (length x width x thickness [mm])
1	Flake	Quartz	Proximal fragment	Tertiary	18 x 18 x 8

Figure 6-5: Stubbo Creek IF-02. View of site and the recorded artefact.

1. View west of Stubbo Creek IF-02.

2. View of artefact from Stubbo Creek IF-02.

Stubbo Creek IF-03 (#36-3-3687)

Site Type: Isolated find

GPS Coordinates: 742156 E / 6428746 N (GDA94 Zone 55)

Location of Site: The site is located 12.7 km north east of Gulgong, NSW. It is 2.6 km east of Barneys Reef Road and 3.9 km west of Blue Springs Road. The site is located east of an unnamed drainage line and 240 m north of Stubbo Creek.

Description of Site: The site consists of a single silcrete core (**Table 6-7**) located adjacent to the south side of a minor drainage line. The GSV was high along the bank of the drainage line, with the GSE being moderate. Soils at the site consist of light brown sandy loam. Short grass is present across the site.

Table 6-7: Stubbo Creek IF-03. Artefact attributes.

No.	Artefact type	Material	Integrity	Reduction	Size (length x width x thickness [mm])
1	Core	Silcrete			100 x 60 x 60

Figure 6-6: Stubbo Creek IF-03. View of site and the recorded artefact.

1. View north of Stubbo Creek IF-03

2. View of artefact recorded at Stubbo Creek IF-03.

Stubbo Creek IF-04 (#36-3-3688)

Site Type: Isolated find

GPS Coordinates: 741644 E / 6428683 N (GDA94 Zone 55)

Location of Site: The site is located 12.5 km north east of Gulgong, NSW. It is 2.2 km east of Barneys Reef Road and 4.5 km west of Blue Springs Road. The site is located on the north bank of Stubbo Creek.

Description of Site: The site consists of a single chert flake (**Table 6-8**) located on the north bank of Stubbo Creek. The artefact is located on the edge of an erosion scald measuring approximately 4 m by 15 m (**Figure 6-7**). The soil at the site is a light to mid-brown sandy loam with small quartz gravels. Sparse grass is present along the edge of the erosion scald.

Table 6-8: Stubbo Creek IF-04. Artefact attributes.

No.	Artefact type	Material	Integrity	Reduction	Size (length x width x thickness [mm])
1	Flake	Chert	Complete	Tertiary	28 x 20 x 6

Figure 6-7: Stubbo Creek IF-04. View of site and the recorded artefact.

1. View south of Stubbo Creek IF-04.

2. View of artefact recorded at Stubbo Creek IF-04.

Stubbo Creek IF-05 (#36-3-3689)

Site Type: Isolated find

GPS Coordinates: 741075 E / 6428138 N (GDA94 Zone 55)

Location of Site: The site is located 11.8 km north east of Gulgong, NSW. It is 1.9 km east of Barneys Reef Road and 4.8 km west of Blue Springs Road. The site is located on the northwest bank of Stubbo Creek near a concrete creek crossing.

Description of Site: The site consists of a single quartz flake (**Table 6-9**). The site is located directly adjacent to the west bank of Stubbo Creek and the artefact is located in small patch of scalding at the bank break of slope (**Figure 6-8**). The area is covered in short dense grass toward the creek with longer grass present to the west.

Table 6-9: Stubbo Creek IF-05. Artefact attributes.

No.	Artefact type	Material	Integrity	Reduction	Size (length x width x thickness [mm])
1	Flake	Quartz	Complete	Tertiary	15 x 25 x 7

Figure 6-8: Stubbo Creek IF-05. View of site and the recorded artefact.

1. View south of Stubbo Creek IF-05.

2. View of artefact recorded at Stubbo Creek IF-05.

Stubbo Creek IF-06 (#36-3-3690)

Site Type: Isolated find

GPS Coordinates: 741761 E / 6428690 N (GDA94 Zone 55)

Location of Site: The site is located 11.8 km north east of Gulgong, NSW. It is 1.9 km east of Barneys Reef Road and 4.8 km west of Blue Springs Road. The site is located on the north bank of Stubbo Creek.

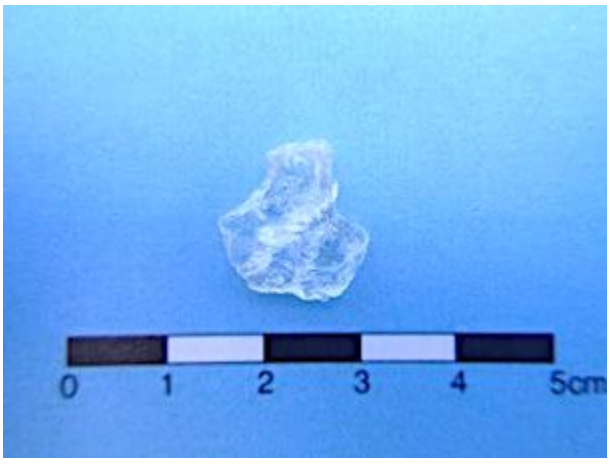
Description of Site: The site consists of a single quartz flake (**Table 6-10**). The site is located directly adjacent to the north bank of Stubbo Creek close to the confluence of Stubbo Creek and two unnamed drainage lines. The site location is on a long gentle slope south towards the creek line. The artefact is located in small patch of scalding at the bank break of slope (**Figure 6-9**). The area is covered in short dense grass.

Table 6-10: Stubbo Creek IF-06. Artefact attributes.

No.	Artefact type	Material	Integrity	Reduction	Size (length x width x thickness [mm])
1	Flake	Quartz	Complete	Tertiary	12 x 13 x 6

Figure 6-9: Stubbo Creek IF-06. View of site and the recorded artefact.

1. View southwest of Stubbo Creek IF-06.



2. View of artefact from Stubbo Creek IF-06.

Rosevale IF-01 (#36-3-3691)

Site Type: Isolated find

GPS Coordinates: 744841 E / 6431333 N (GDA94 Zone 55)

Location of Site: The site is located 16 km north east of Gulgong, NSW. It is 5.4 km east of Barneys Reef Road and 2.6 km west of Blue Springs Road. The site is located on the southeast side of an unnamed drainage line and is 1.1 km east of Pine Creek.

Description of Site: The site consists of a single quartz flake (**Table 6-11**) located on a gentle slope receding north towards the unnamed drainage line (**Figure 6-10**). There are mature isolated trees to the east of the site location. The ground visibility at the site is low overall. Soil at the site is a mid-brown sandy loam. There is short dense grass and scattered longer grasses present across the site location.

Table 6-11: Rosevale IF-01. Artefact attributes.

No.	Artefact type	Material	Integrity	Reduction	Size (length x width x thickness [mm])
1	Flake	Quartz	Complete	Tertiary	38 x 36 x 10

Figure 6-10: Rosevale IF-01. View of site and the recorded artefact.

1. View east of Rosevale IF-01.

2. View of artefact recorded at Rosevale IF-01.

The Pinnacle IF-01 (#36-3-3670)

Site Type: Isolated find and PAD

GPS Coordinates: 743861 E / 6430006 N (GDA94 Zone 55)

Location of Site: The site is located 14 km north east of Gulgong, NSW. It is 4.3 km east of Barneys Reef Road and 2.6 km west of Blue Springs Road. The site is directly adjacent to the east bank of an unnamed drainage line and is 500 m northwest of Stubbo Creek.

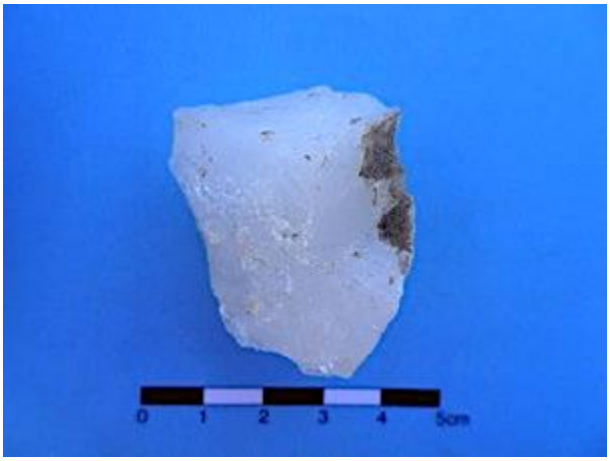
Description of Site: The site consists of a single quartz flake (see **Table 6-12**) located on the east bank of an unnamed watercourse and south of a dam situated along the drainage line (**Figure 6-11**). The artefact is located on a flat terrace with some mature native vegetation remaining along the banks of the watercourse. The soil at the site is mid brown sandy loam with small quartz gravels present. The site has PAD covering the site extent which measures 41 m by 31 m (**Figure 6-12**).

Table 6-12: The Pinnacle IF-01. Artefact attributes.

No.	Artefact type	Material	Integrity	Reduction	Size (length x width x thickness [mm])	Notes
1	Flake	Quartz	Complete	Tertiary	40 x 30 x 18	Use wear on distal edge

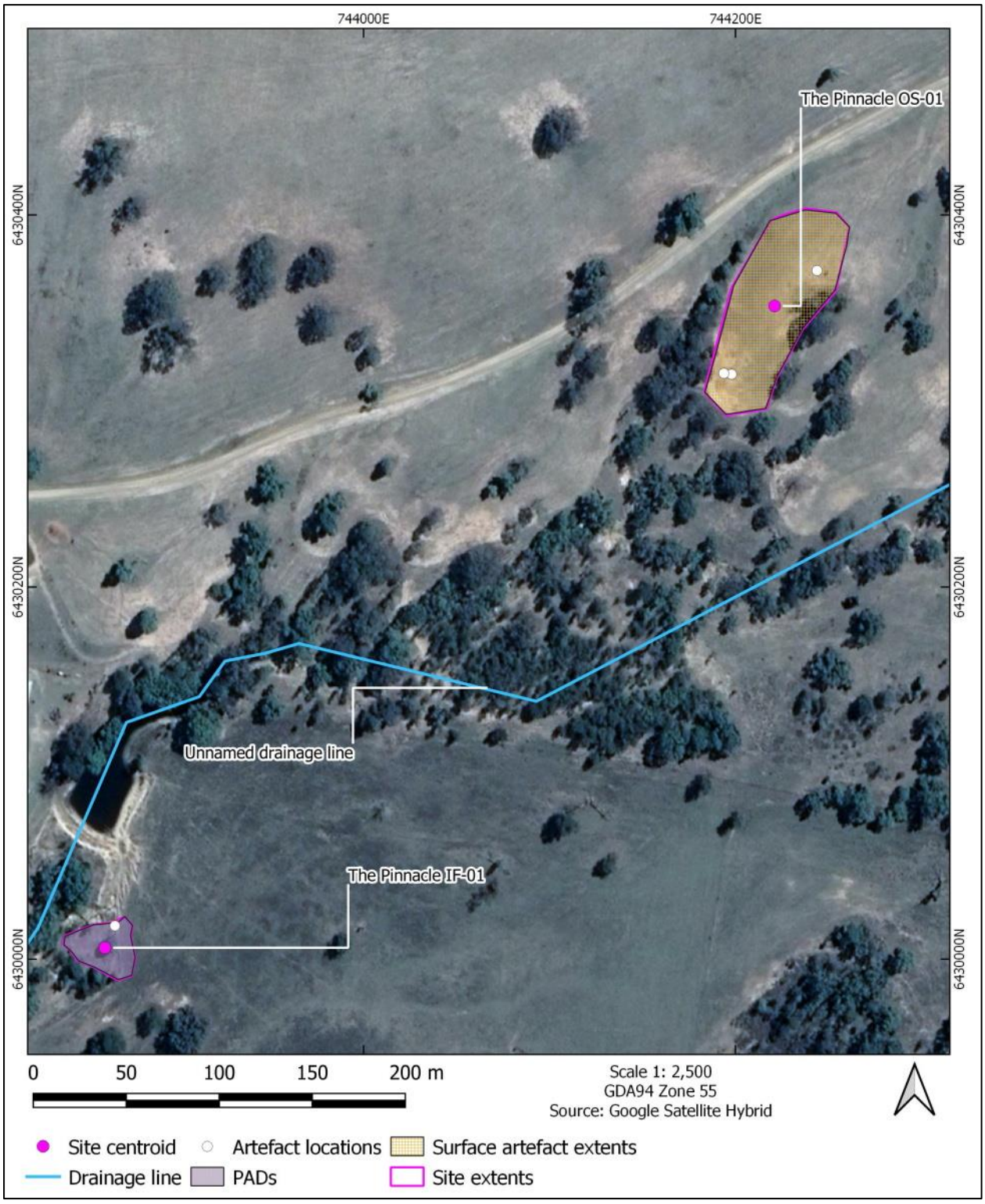
Figure 6-11: The Pinnacle IF-01. View of site and the recorded artefact.

1. View north of The Pinnacle IF-01 along east bank of drainage line.



2. View of artefact recorded at The Pinnacle IF-01.

Figure 6-12: The Pinnacle IF-01 and The Pinnacle OS-01. Site map.



The Pinnacle IF-02 (#36-3-3671)

Site Type: Isolated find and PAD

GPS Coordinates: 743207 E / 6429405 N (GDA94 Zone 55)

Location of Site: The site is located 13.7 km north east of Gulgong, NSW. It is 3.7 km east of Barneys Reef Road and 3.1 km west of Blue Springs Road. The site is directly adjacent to the east bank of an unnamed drainage line and is 270 m northwest of Stubbo Creek.

Description of Site: The site consists of a single quartz flake located approximately 50 m east of the bank of an unnamed drainage line on a flat terrace (**Table 6-13** and **Figure 6-13**). The artefact location was covered in longer dry grass and the soil was a mid-brown sandy loam with small quartz gravels. The GSV across the site was low to moderate. The site has PAD covering measuring 120 m by 48 m along the site extent closest to the drainage line (**Figure 6-14**).

Table 6-13: The Pinnacle IF-02. Artefact attributes.

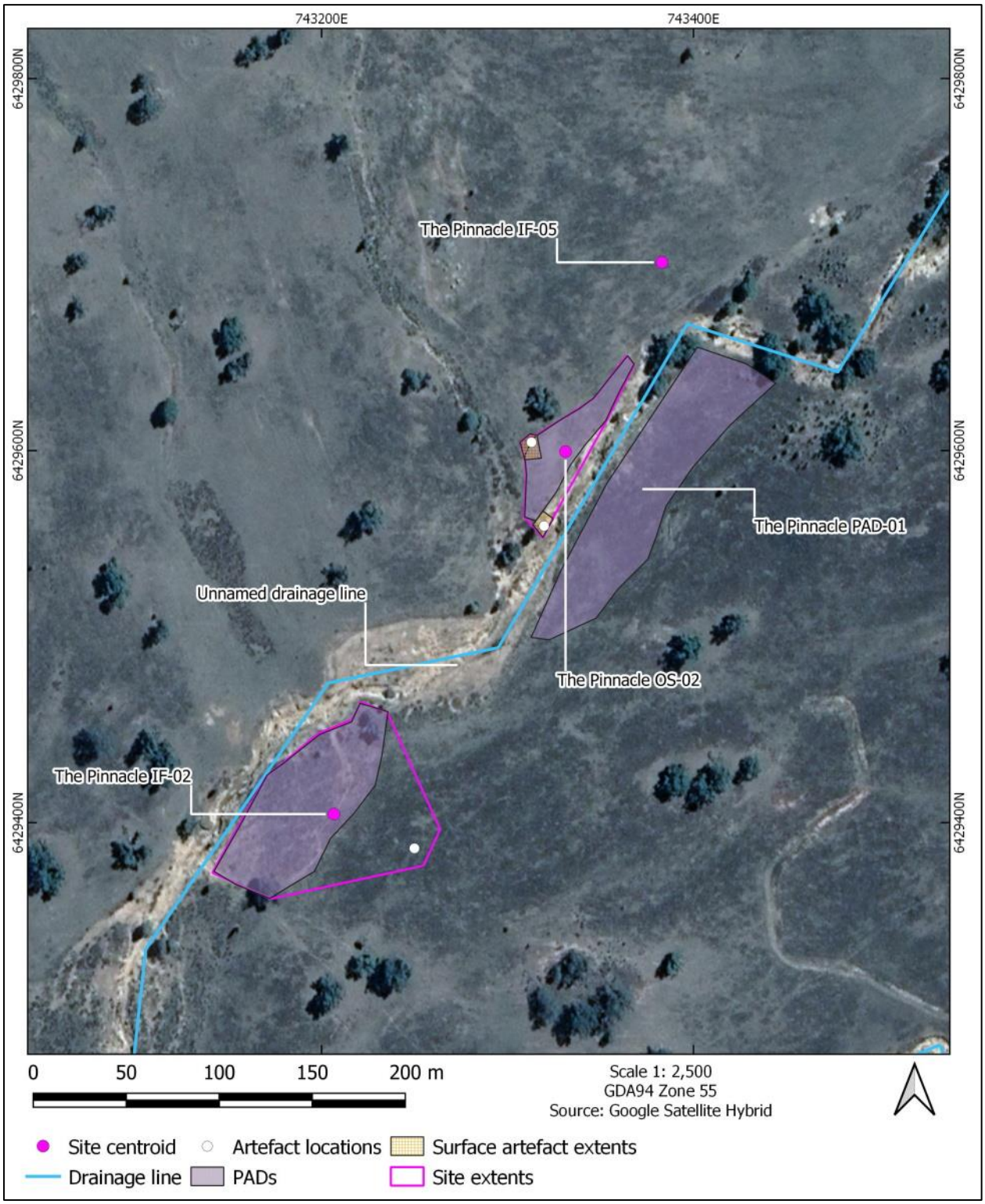
No.	Artefact type	Material	Integrity	Reduction	Size (length x width x thickness [mm])	Notes
1	Flake	Quartz	Complete	Tertiary	35 x 38 x 10	Use wear on margin

Figure 6-13: The Pinnacle IF-02. View of site and the recorded artefact.

1. View east of The Pinnacle IF-02 towards the drainage line.

2. Selection of artefacts from The Pinnacle IF-02.

Figure 6-14: The Pinnacle IF-02, IF-05, OS-02 and PAD-01. Site map.



The Pinnacle IF-03 (#36-3-3672)

Site Type: Isolated find

GPS Coordinates: 743989 E / 6429318 N (GDA94 Zone 55)

Location of Site: The site is located 13.9 km north east of Gulgong, NSW. It is 4.4 km east of Barneys Reef Road and 2.3 km west of Blue Springs Road. The site is directly adjacent to the northwest bank of an unnamed drainage line and is 220 m southeast of Stubbo Creek.

Description of Site: The consists of a single quartz flake (**Table 6-14**). The artefact is located inside the drainage line channel and is in a secondary context. The base of the drainage line channel is sandy with gravels and non-artefactual rocks present (**Figure 6-15**). There is a large eucalyptus directly to the north of the artefact location (**Figure 6-16**).

Table 6-14: The Pinnacle IF-03. Artefact attributes.

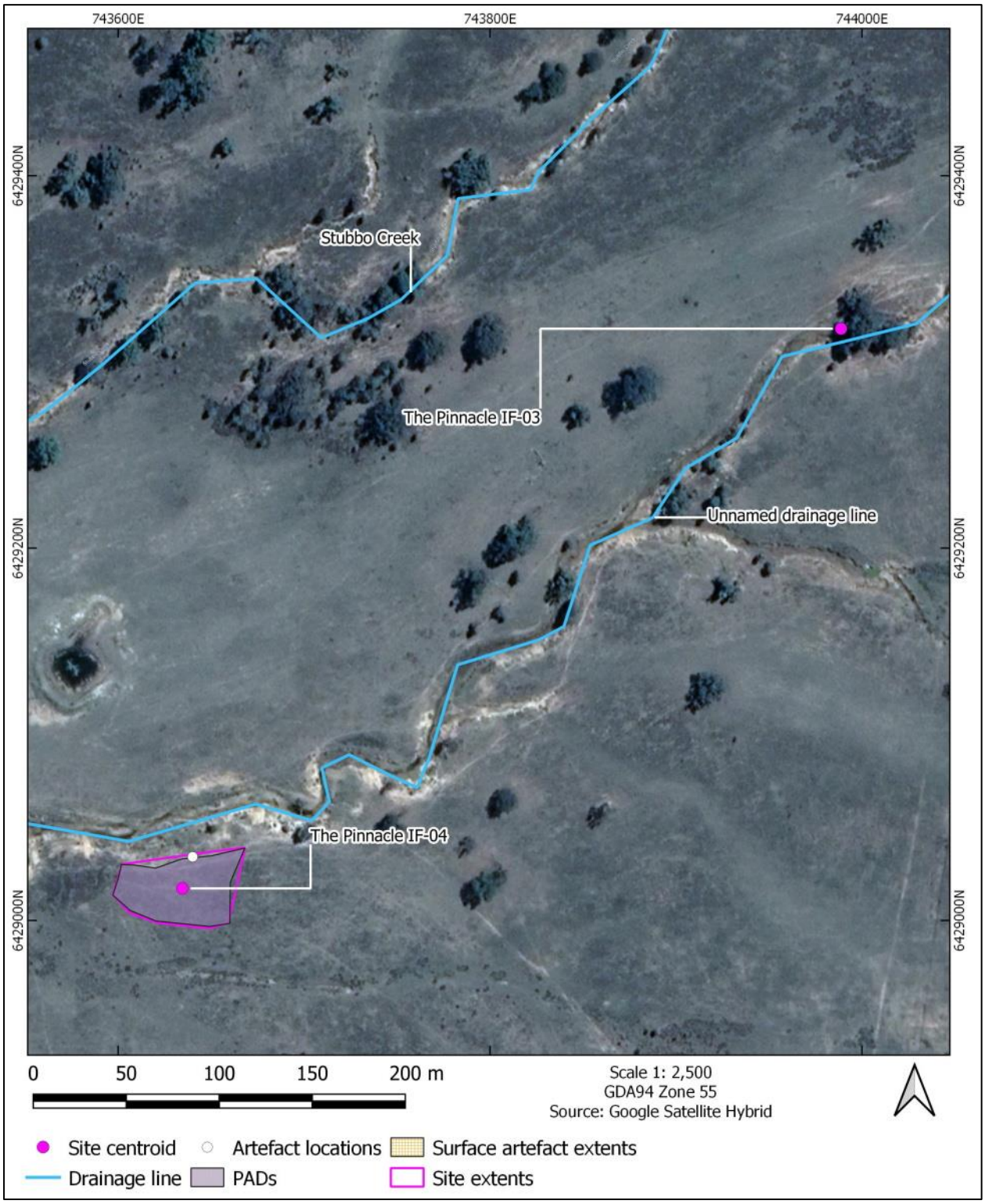
No.	Artefact type	Material	Integrity	Reduction	Size (length x width x thickness [mm])
1	Flake	Quartz	Proximal fragment	Secondary	50 x 45 x 20

Figure 6-15: The Pinnacle IF-03. View of site and the recorded artefact.

1. View southwest of The Pinnacle IF-03 inside the drainage line channel

2. View of artefact recorded at The Pinnacle IF-03.

Figure 6-16: The Pinnacle IF-03 and The Pinnacle IF-04. Site map.



The Pinnacle IF-04 (#36-3-3673)

Site Type: Isolated find and PAD

GPS Coordinates: 743635 E / 6429017 N (GDA94 Zone 55)

Location of Site: The site is located 13.5 km north east of Gulgong, NSW. It is 4.1 km east of Barneys Reef Road and 2.5 km west of Blue Springs Road. The site is directly adjacent to the south bank of an unnamed drainage line and is 260 m southeast of Stubbo Creek.

Description of Site: The site consists of a single quartz flake (**Table 6-15**) located on a terrace adjacent to the south bank of an unnamed drainage line. Soil at the site is mid brown sandy loam with small quartz gravels. The artefact is located on an animal track and is surrounded by short grasses (**Figure 6-17**). The site had PAD associated with it measuring 74 m by 41 m (**Figure 6-16**).

Table 6-15: The Pinnacle IF-04. Artefact attributes.

No.	Artefact type	Material	Integrity	Reduction	Size (length x width x thickness [mm])
1	Flake	Quartz	Complete	Tertiary	36 x 18 x 10

Figure 6-17: The Pinnacle IF-04. View of site and the recorded artefact.

1. View west of The Pinnacle IF-04 towards the drainage line.

2. View of artefact recorded at The Pinnacle IF-04.

The Pinnacle IF-05 (#36-3-3674)

Site Type: Isolated find

GPS Coordinates: 743383 E / 6429701 N (GDA94 Zone 55)

Location of Site: The site is located 14 km north east of Gulgong, NSW. It is 3.8 km east of Barneys Reef Road and 3 km west of Blue Springs Road. The site is approximately 36 m northwest of the north bank of an unnamed drainage line and is 440 m northwest of Stubbo Creek.

Description of Site: The site consists of a single chert core (**Table 6-16**). It is located on the lower slope descending southeast towards the unnamed drainage line (**Figure 6-14**). The soil at the site is mid brown sandy loam with small quartz gravels. The artefact location is surrounded by scattered long grasses.

Table 6-16: The Pinnacle IF-05. Artefact attributes.

No.	Artefact type	Material	Integrity	Reduction	Size (length x width x thickness [mm])	Notes
1	Core	Chert	Complete	Tertiary	35 x 40 x 15	Unidirectional, 5 flake scars, <5% cortex, reduced.

Figure 6-18: The Pinnacle IF-05. View of site and the recorded artefact.

1. View east of The Pinnacle IF-05 towards the drainage line.

2. View of artefact recorded at The Pinnacle IF-05.

Stubbo Creek OS-01 (#36-3-3675)

Site Type: Artefact scatter and PAD

GPS Coordinates: 741155 E / 6428155 N (centroid; GDA94 Zone 55)

Location of Site: The site is located 11.9 km north east of Gulgong, NSW. It is 1.9 km east of Barneys Reef Road and 4.8 km west of Blue Springs Road. The site is on the east bank of Stubbo Creek.

Description of Site: The site consists of several surface exposures of stone artefacts consisting of a minimum of 98 artefacts. The recorded artefacts consist mostly of quartz flakes, though artefacts manufactured from mudstone, chalcedony, greywhackle and volcanics were also recorded (**Table 6-17**). The densest area of surface artefacts is in an exposure along the southern portion of the site, with a moderate frequency of surface artefacts along the northern extent. Overall, the site extent is approximately 570 m following the eastern bank Stubbo Creek. The widest part of the site extent is 155 m from the bank of the creek eastwards (**Figure 6-20**). The site extent includes an area of PAD along the southern half of the site, from the eastern edges of the erosions where surface artefacts are present along a terrace which has not eroded and appears to have topsoil and A-Horizon soils present (**Figure 6-19**). GSV inside erosion scalds is high, with lower GSV across PAD areas due to short dense grass. Soils inside the erosion scalds was either light orange-brown sandy loam with small quartz gravels, or a light orange-brown dry clay. Soils on the PADs tended to be mid-brown sandy loam.

Table 6-17: Stubbo Creek OS-01. Recorded artefact attributes.

No.	Artefact type	Material	Integrity	Reduction	Size (length x width x thickness [mm])	Notes
1	Flake	Quartz	Complete	Tertiary	25 x 10 x 3	
2	Flake	Quartz	Complete	Tertiary	32 x 25 x 10	
3	Core	Chert	Complete	Secondary	60 x 45 x 25	Multidirectional, 10+ flake scars, 40% cortex
4	Flake	Mudstone	Longitudinal break	Tertiary	57 x 35 x 20	
5	Flake	Quartz	Complete	Primary	30 x 25 x 15	Cortex on dorsal
6	Flake	Quartz	Complete	Tertiary	27 x 15 x 5	
7	Shatter	Quartz		Tertiary	25 x 20 x 15	
8	Flake	Quartz	Complete	Tertiary	20 x 15 x 4	
9	Flake	Quartz	Distal fragment	Tertiary	20 x 25 x 5	
10	Flake	Mudstone	Complete	Tertiary	14 x 15 x 3	
11	Flake	Quartz	Complete	Tertiary	30 x 30 x 10	
12	Flake	Mudstone	Complete	Tertiary	38 x 26 x 12	
13	Flake	Quartz	Complete	Tertiary	30 x 25 x 11	
14	Flake	Mudstone	Complete	Tertiary	32 x 24 x 6	

No.	Artefact type	Material	Integrity	Reduction	Size (length x width x thickness [mm])	Notes
15	Flake	Quartz	Proximal fragment	Tertiary	20 x 21 x 8	
16	Flake	Volcanics	Complete	Tertiary	18 x 17 x 4	
17	Core	Quartz		Tertiary	40 x 38 x 15	Multidirectional, 6 flake scars, <5% cortex, reduced
18	Flake	Greywhacke	Complete	Tertiary	29 x 21 x 5	
19	Shatter	Quartz		Tertiary	30 x 25 x 12	
20	Flaked piece	Chert	Complete	Tertiary	35 x 24 x 12	
21	Shatter	Quartz		Tertiary	0-20	
22	End scraper	Mudstone	Complete	Tertiary	39 x 31 x 15	Steep invasive unifacial retouch on distal edge
23	Shatter	Quartz		Tertiary	0-20	
24	Flake	Quartz	Proximal fragment	Tertiary	20 x 17 x 6	
25	Flake	Quartz	Proximal fragment	Tertiary	20 x 12 x 4	
26	Flake	Quartz	Complete	Tertiary	23 x 14 x 5	
27	Flake	Quartz	Proximal fragment	Tertiary	15 x 20 x 8	
28	Flake	Quartz	Complete	Tertiary	34 x 35 x 15	
29	Flake	Quartz	Proximal fragment	Tertiary	15 x 8 x 3	
30	Flake	Quartz	Complete	Tertiary	22 x 15 x 5	
31	Shatter	Quartz			20-40	
32	Flake	Quartz	Complete	Tertiary	29 x 16 x 10	
33	Flake	Quartz	Complete	Tertiary	25 x 20 x 8	
34	Flake	Quartz	Proximal fragment	Tertiary	15 x 31 x 8	
35	Shatter	Silcrete		Secondary	0-20	
36	Flake	Quartz	Complete	Tertiary	18 x 18 x 4	
37	Flake	Quartz	Proximal fragment	Tertiary	15 x 20 x 6	
38	Flake	Quartz	Complete	Tertiary	20 x 22 x 4	
39	Flake	Quartz	Distal fragment	Secondary	10 x 20 x 5	
40	Flake	Quartz	Distal fragment	Tertiary	25 x 10 x 7	
41	Flake	Quartz	Complete	Tertiary	25 x 12 x 15	
42	Flake	Quartz	Complete	Tertiary	32 x 39 x 13	
43	Flake	Quartz	Complete	Tertiary	25 x 17 x 9	
44	Flake	Quartz	Complete	Tertiary	12 x 11 x 4	
45	Flake	Quartz	Longitudinal break	Tertiary	30 x 20 x 11	
46	Flake	Quartz	Distal fragment	Secondary	25 x 30 x 10	
47	Flake	Quartz	Complete	Tertiary	40 x 30 x 18	
48	Flake	Quartz	Complete	Secondary	45 x 30 x 15	
49	Flake	Quartz	Proximal fragment	Tertiary	20 x 25 x 3	

No.	Artefact type	Material	Integrity	Reduction	Size (length x width x thickness [mm])	Notes
50	Flake	Quartz	Complete	Tertiary	25 x 18 x 5	
51	Flake	Quartz	Longitudinal break	Tertiary	25 x 16 x 10	
52	Shatter	Quartz		Tertiary	20-40	
53	Flake	Chert	Distal fragment	Secondary	23 x 19 x 8	
54	Flake	Quartz	Proximal fragment	Tertiary	35 x 10 x 12	
55	Flake	Quartz	Proximal fragment	Tertiary	20 x 18 x 5	
56	Flake	Quartz	Proximal fragment	Tertiary	2 x 18 x 8	
57	Flake	Quartz	Complete	Tertiary	22 x 30 x 10	
58	Flake	Quartz	Complete	Tertiary	23 x 12 x 10	
59	Flake	Silcrete	Distal fragment	Tertiary	32 x 25 x 15	
60	Flake	Chert	Complete	Secondary	50 x 18 x 5	
61	Flake	Silcrete	Complete	Tertiary	40 x 40 x 10	
62	Flake	Quartz	Complete	Tertiary	20 x 11 x 5	
63	Flake	Chalcedony	Complete	Tertiary	30 x 17 x 3	
64	Flake	Quartz	Complete	Tertiary	20-40	
65	Flake	Quartz	Proximal fragment	Tertiary	0-20	
66	Flake	Quartz	Proximal fragment	Tertiary	20-40	
67	Flake	Chert	Complete	Tertiary	53 x 20 x 8	Flake scar on dorsal
68	Shatter	Quartz		Tertiary	20-40	
69	Shatter	Quartz		Secondary	20-40	
70	Flake	Quartz	Distal fragment	Tertiary	35 x 55 x 10	
71	Flake	Quartz	Complete	Tertiary	20 x 20 x 12	
72	Flake	Quartz	Distal fragment	Tertiary	25 x 40 x 10	
73	Shatter	Quartz		Primary	20-40	
74	Flake	Quartz	Distal fragment	Tertiary	18 x 20 x 12	
75	Flake	Quartz	Complete	Tertiary	15 x 10 x 3	
76	Flake	Quartz	Complete	Tertiary	25 x 20 x 5	
77	Flake	Quartz	Proximal fragment	Tertiary	0-20	
78	Flake	Quartz	Distal fragment	Tertiary	0-20	
79	Flake	Quartz	Distal fragment	Tertiary	0-20	
80	Shatter	Quartz		Tertiary	0-20	
81	Shatter	Quartz		Tertiary	0-20	
82	Shatter	Quartz			0-20	
83	Shatter	Quartz			0-20	
84	Shatter	Quartz			0-20	
85	Shatter	Quartz			20-40	
86	Core	Quartz		Tertiary	40 x 30 x 20	Multidirectional, 6 flake scars, <5% cortex, reduced
87	Shatter	Quartz		Tertiary	20-40	

No.	Artefact type	Material	Integrity	Reduction	Size (length x width x thickness [mm])	Notes
88	Shatter	Quartz		Tertiary	20-40	
89	Shatter	Quartz		Tertiary	20-40	
90	Shatter	Quartz		Tertiary	20-40	
91	Shatter	Quartz		Tertiary	20-40	
92	Shatter	Quartz		Tertiary	20-40	
93	Shatter	Quartz		Tertiary	20-40	
94	Shatter	Quartz		Tertiary	20-40	
95	Shatter	Quartz		Tertiary	20-40	
96	Shatter	Quartz		Tertiary	20-40	
97	Shatter	Quartz		Tertiary	20-40	
98	Shatter	Quartz		Tertiary	20-40	

Figure 6-19: Stubbo Creek OS-01. View of site and selection of recorded artefacts.

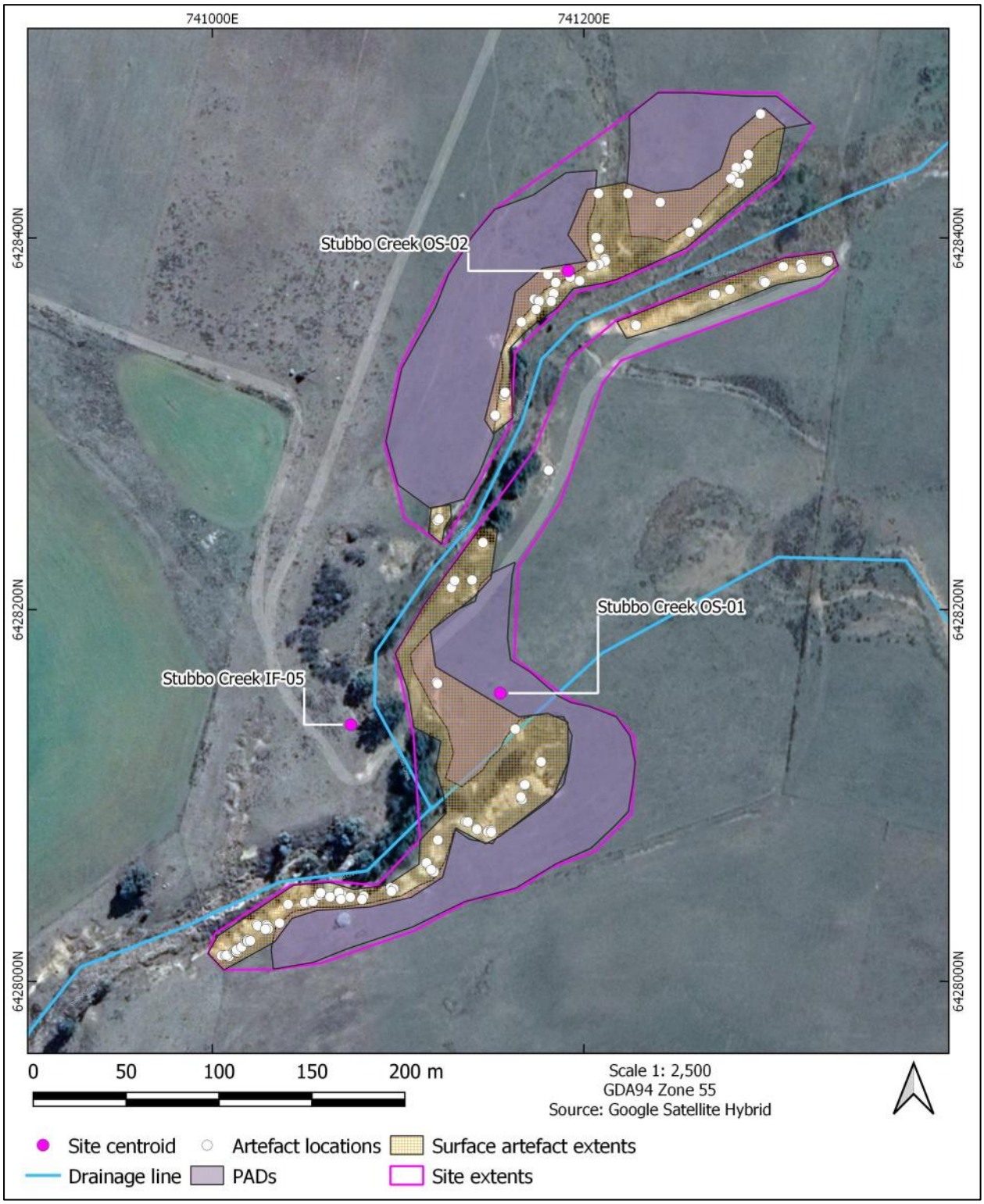
1. View north of Stubbo Creek OS-01 from the southern site extent.

2. View southwest of Stubbo Creek OS-01 from the northern site extent.

3. Selection of artefacts from Stubbo Creek OS-01.

4. Selection of artefacts from Stubbo Creek OS-01.

Figure 6-20: Stubbo Creek OS-01 and OS-02 and Stubbo Creek IF-05. Site map.



Stubbo Creek OS-02 (#36-3-3676)

Site Type: Artefact scatter and PAD

GPS Coordinates: 741192 E / 6428382 N (centroid; GDA94 Zone 55)

Location of Site: The site is located 11.9 km north east of Gulgong, NSW. It is 1.9 km east of Barneys Reef Road and 4.8 km west of Blue Springs Road. The site is on the west bank of Stubbo Creek.

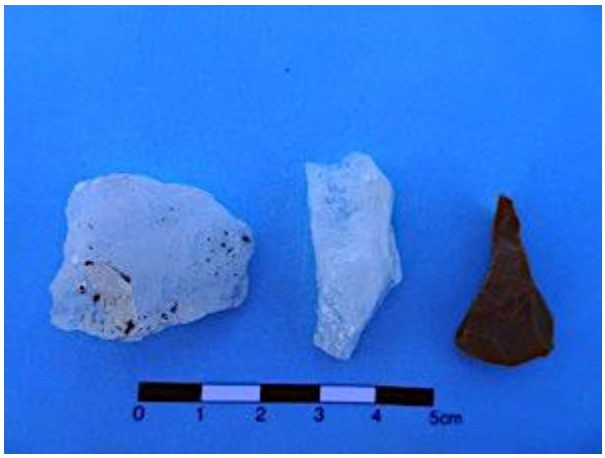
Description of Site: The site consists of a minimum of 43 artefacts located in an erosion scald on the west bank of Stubbo Creek. The artefacts are primarily quartz flakes, though volcanics, petrified wood and chert were also recorded (**Table 6-18**). The surface artefacts extend across an area 240 m by 47 m adjacent to the bank of Stubbo Creek. There is a narrow incised drainage line running north-south through the centre of the site and joining with Stubbo Creek. There are two PAD locations inside the site extent. One PAD is located on the eastern side of the minor drainage line on a flat terrace and measures approximately 110 m by 60 m. The second PAD is located west of the drainage line on a terrace and follows the surface artefact extent and bank of Stubbo Creek and is approximately 200 m by 50 m (**Figure 6-21**). Overall, the site extent is approximately 322 m by 70 m (**Figure 6-20**). GSV inside erosion scalds is high, with lower GSV across PAD areas due to short dense grass. Soils inside the erosion scalds was either light orange-brown sandy loam with small quartz gravels, or a light orange brown dry clay. Soils on the PADs tended to be mid-brown sandy loam.

Table 6-18: Stubbo Creek OS-02. Recorded artefact attributes.

No.	Artefact type	Material	Integrity	Reduction	Size (length x width x thickness [mm])	Notes
1	Flake	Quartz	Complete	Tertiary	38 x 32 x 15	
2	Shatter	Quartz	Complete	Tertiary	20 x 15 x 8	
3	Flake	Quartz	Complete	Tertiary	18 x 20 x 10	
4	Flake	Quartz	Proximal fragment	Tertiary	20 x 18 x 7	
5	Flake	Quartz	Complete	Tertiary	15 x 12 x 5	
6	Flake	Quartz	Complete	Tertiary	15 x 18 x 5	
7	Flake	Quartz	Complete	Tertiary	10 x 18 x 4	
8	Shatter	Quartz	Complete	Tertiary	20 x 10 x 3	
9	Flake	Quartz	Proximal fragment	Tertiary	10 x 18 x 4	
10	Flake	Quartz	Medial fragment	Tertiary	5 x 13 x 3	
11	Flake	Quartz	Complete	Tertiary	25 x 15 x 10	
12	Shatter	Quartz		Tertiary	22 x 11 x 8	
13	Flake	Quartz	Complete	Tertiary	20 x 18 x 8	

No.	Artefact type	Material	Integrity	Reduction	Size (length x width x thickness [mm])	Notes
14	Core	Quartz		Tertiary	40 x 30 x 22	Multidirectional, 7 flake scars, <5%, reduced
15	Flake	Volcanics	Proximal fragment	Tertiary	20 x 33 x 5	
16	Core	Quartz		Secondary	55 x 30 x 25	Multidirectional, 3 flake scars, 20% cortex, opportunistic
17	Flake	Quartz	Distal fragment	Tertiary	30 x 48 x 15	
18	Flake	Quartz	Complete	Tertiary	18 x 12 x 4	
19	Shatter	Quartz		Secondary	35 x 20 x 25	
20	Flake	Quartz	Proximal fragment	Tertiary	10 x 10 x 3	
21	Flake	Chert	Proximal fragment	Tertiary	15 x 30 x 10	
22	Flake	Quartz	Proximal fragment	Tertiary	22 x 30 x 10	
23	Flake	Quartz	Complete	Tertiary	32 x 15 x 11	
24	Shatter	Chert		Tertiary	25 x 15 x 4	
25	Core	Quartz	Complete	Tertiary	55 x 35 x 25	Multidirectional, 4 flake scars, <5%, reduced
26	Blade	Chert	Proximal fragment	Tertiary	28 x 8 x 4	
27	Shatter	Quartz	Complete	Tertiary	0-20	
28	Flake	Petrified Wood	Complete	Tertiary	27 x 22 x 12	
29	Flake	Quartz	Complete	Tertiary	20 x 15 x 3	
30	Flake	Quartz	Complete	Tertiary	20 x 11 x 3	
31	Flake	Quartz	Proximal fragment	Tertiary	21 x 28 x 10	
32	Flake	Petrified Wood	Distal fragment	Tertiary	15 x 15 x 5	
33	Flake	Quartz	Complete	Tertiary	31 x 20 x 12	
34	Flake	Quartz	Complete	Tertiary	45 x 30 x 15	
35	Flake	Quartz	Proximal fragment	Tertiary	20 x 10 x 5	
36	Flake	Quartz	Complete	Tertiary	20 x 12 x 3	
37	Flake	Quartz	Complete	Primary	50 x 45 x 20	
38	Flake	Quartz	Proximal fragment	Tertiary	20 x 15 x 5	
39	Shatter	Quartz		Tertiary	15 x 10 x 2	
40	End scraper	Quartz	Complete	Tertiary	35 x 25 x 8	Broken in half. Two pieces which conjoin.
41	Flake	Quartz	Proximal fragment	Tertiary	15 x 15 x 3	
42	Flake	Quartz	Complete	Tertiary	25 x 20 x 8	
43	Flake	Quartz	Complete	Tertiary	20 x 20 x 10	

Figure 6-21: Stubbo Creek OS-02. View of site and selection of recorded artefacts.

	
1. View south of Stubbo Creek OS-02 from the west site extent	2. View southwest of south extent of Stubbo Creek OS-02.
	
3. Selection of artefacts from Stubbo Creek OS-02.	4. Selection of artefacts from Stubbo Creek OS-02.

Stubbo Creek OS-03 (#36-3-3677)

Site Type: Artefact scatter

GPS Coordinates: 741465 E / 6428505 N (centroid; GDA94 Zone 55)

Location of Site: The site is located 12.4 km north east of Gulgong, NSW. It is 2.1 km east of Barneys Reef Road and 4.6 km west of Blue Springs Road. The site is on the east bank of Stubbo Creek.

Description of Site: The site consists of a low-density artefact scatter (n=18) consisting primarily of quartz flakes (**Table 6-19**). The site is located on the eroding bank of Stubbo Creek (**Figure 6-22**). The site extent is 162 m by 20 m (**Figure 6-23**). There is low GSV along the eastern edge of the site, though the ground becomes soggy due to natural springs and water drainage just outside the site extent. There is low potential for *in situ*

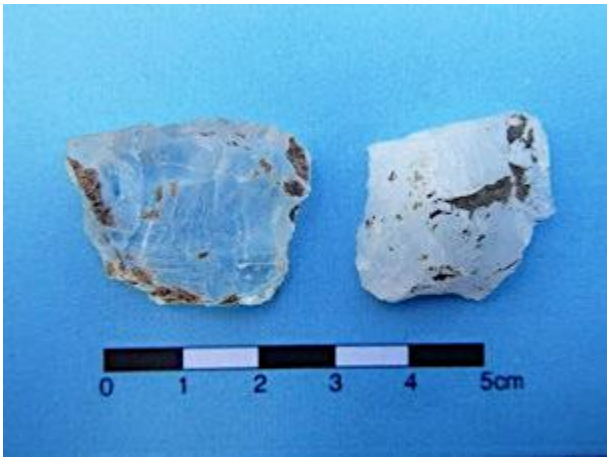
subsurface deposits. Soil at the site is a light orange-brown sandy loam with small quartz gravels.

Table 6-19: Stubbo Creek OS-03. Recorded artefact attributes.

No.	Artefact type	Material	Integrity	Reduction	Size (length x width x thickness [mm])
1	Flake	Quartz	Complete	Tertiary	22 x 25 x 8
2	Flake	Quartz	Distal fragment	Tertiary	22 x 24 x 6
3	Flake	Quartz	Complete	Tertiary	20 x 35 x 12 x
4	Flake	Quartz	Proximal fragment	Tertiary	20 x 22 x 5
5	Flake	Quartz	Complete	Tertiary	30 x 22 x 10
6	Flake	Quartz	Complete	Tertiary	32 x 22 x 12
7	Ground edge axe	Volcanics			78 x 58 x 25
8	Flake	Quartz	Proximal fragment	Tertiary	20 x 12 x 5
9	Flake	Quartz	Distal fragment	Tertiary	14 x 12 x 5
10	Blade	Quartz	Distal fragment	Tertiary	22 x 18 x 4
11	Flake	Quartz	Complete	Tertiary	16 x 15 x 4
12	Blade	Quartz	Complete	Tertiary	21 x 8 x 4
13	Flake	Quartz	Longitudinal break	Tertiary	21 x 11 x 5
14	Flake	Quartz	Complete	Tertiary	17 x 11 x 5
15	Flake	Quartz	Complete	Tertiary	25 x 20 x 8
16	Flake	Quartz	Complete	Secondary	21 x 6 x 4
17	Flake	Quartz	Complete	Tertiary	25 x 21 x 7
18	Flake	Quartz	Complete	Tertiary	20 x 22 x 5

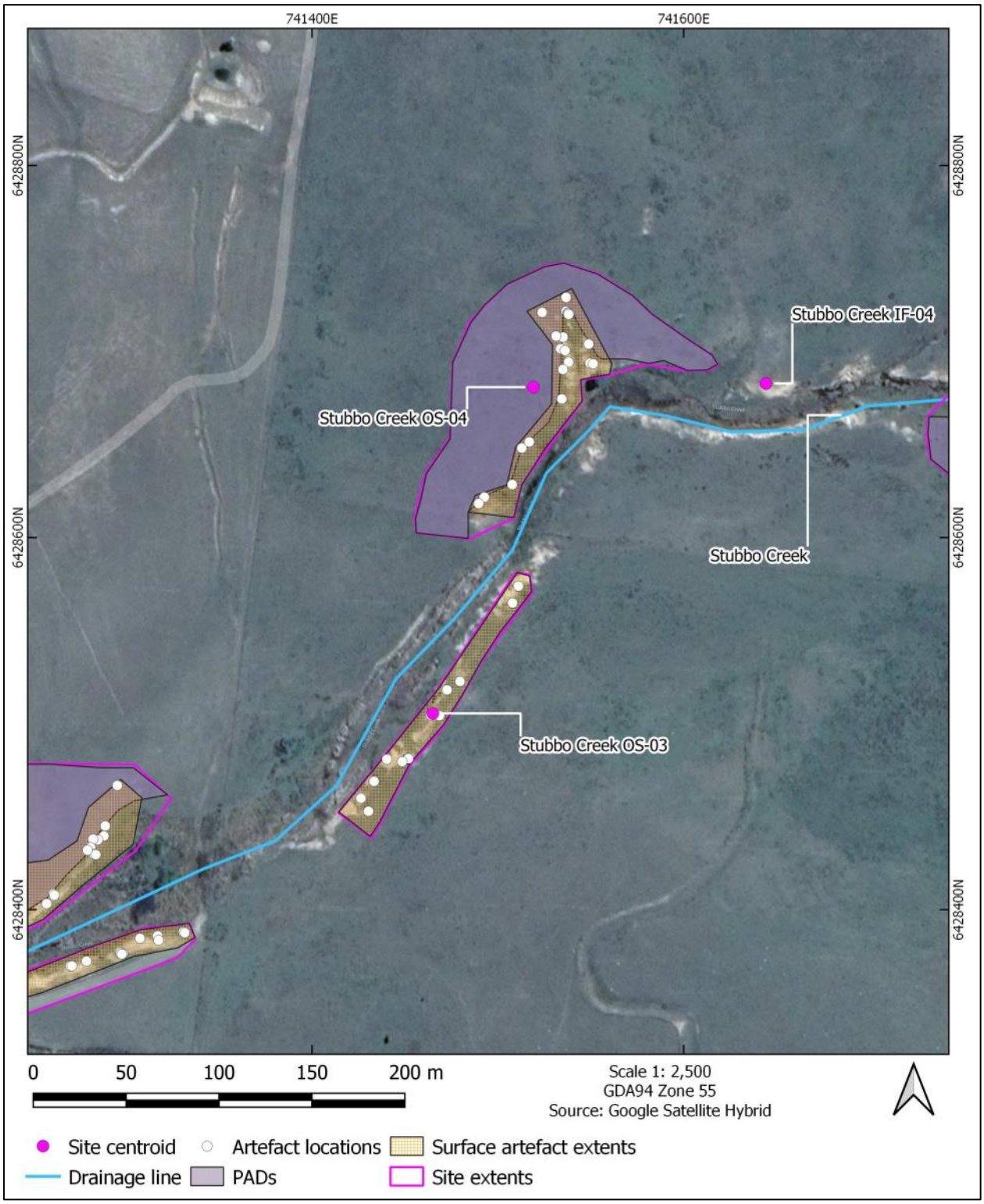
Figure 6-22: Stubbo Creek OS-03. View of site and selection of recorded artefacts.

1. View east of the centre section of Stubbo Creek OS-03.



2. Selection of artefacts from Stubbo Creek OS-03.

Figure 6-23: Stubbo Creek OS-03 and Stubbo Creek OS-04. Site map.



Stubbo Creek OS-04 (#36-3-3678)

Site Type: Artefact scatter and PAD

GPS Coordinates: 741519 E / 6428681 N (centroid; GDA94 Zone 55)

Location of Site: The site is located 12.5 km north east of Gulgong, NSW. It is 2.1 km east of Barneys Reef Road and 4.5 km west of Blue Springs Road. The site is on the west bank of Stubbo Creek.

Description of Site: The site consists of at least 23 stone artefacts, primarily quartz flakes (**Table 6-20**). The surface artefacts are located in erosion scald on the western bank of Stubbo Creek and northwest of a dam adjacent to the creek (**Figure 6-24**). The surface artefact extent measures approximately 126 m by 46 m. The site has PAD along the western edge of the site measuring approximately 160 m by 60 m (**Figure 6-23**). Overall, the site covers an area of 160 m by 75 m. The soil at the site is a wet, dark-brown sandy loam. There are non-artefactual quartz gravels present at the site.

Table 6-20: Stubbo Creek OS-04. Recorded artefact attributes.

No.	Artefact type	Material	Integrity	Reduction	Size (length x width x thickness [mm])	Notes
1	Flake	Quartz	Proximal fragment	Tertiary	14 x 12 x 5	
2	Flake	Quartz	Distal fragment	Tertiary	12 x 12 x 4	Conjoin of artefact no.1
3	Flake	Quartz	Complete	Tertiary	22 x 15 x 5	
4	Flake	Quartz	Complete	Tertiary	25 x 12 x 5	
5	Backed blade	Quartz	Complete	Tertiary	18 x 5 x 5	
6	Flake	Quartz	Distal fragment	Tertiary	6 x 12 x 4	
7	Flake	Quartz	Complete	Tertiary	20 x 12 x 5	
8	Flake	Quartz	Complete	Tertiary	22 x 12 x 8	
9	Flake	Quartz	Proximal fragment	Tertiary	15 x 12 x 5	
10	Flake	Quartz	Complete	Tertiary	38 x 20 x 25	
11	Flake	Quartz	Complete	Tertiary	10 x 10 x 5	
12	Flake	Quartz	Complete	Tertiary	15 x 13 x 5	
13	Flake	Quartz	Complete	Tertiary	12 x 12 x 3	
14	Flake	Quartz	Complete	Tertiary	15 x 14 x 5	
15	Flake	Quartz	Distal fragment	Tertiary	8 x 10 x 5	
16	Flake	Quartz	Longitudinal break	Tertiary	24 x 16 x 10	
17	Flake	Quartz	Complete	Tertiary	12 x 8 x 5	
18	Flake	Mudstone	Distal fragment	Tertiary	42 x 42 x 15	
19	Flake	Quartz	Proximal fragment	Tertiary	18 x 12 x 5	
20	Flake	Quartz	Complete	Tertiary	22 x 20 x 8	
21	Flake	Quartz	Complete	Tertiary	28 x 32 x 8	
22	Flake	Quartz	Complete	Tertiary	12 x 12 x 5	
23	Flake	Quartz	Proximal fragment	Tertiary	15 x 10 x 4	

Figure 6-24: Stubbo Creek OS-04. View of site and selection of recorded artefacts.

1. View east of Stubbo Creek OS-04.

2. Selection of artefacts from Stubbo Creek OS-04.

Stubbo Creek OS-05 (#36-3-3679)

Site Type: Artefact scatter and PAD

GPS Coordinates: 741763 E / 6428651 N (centroid; GDA94 Zone 55)

Location of Site: The site is located 12.5 km north east of Gulgong, NSW. It is 2.3 km east of Barneys Reef Road and 4.3 km west of Blue Springs Road. The site is on the south bank of Stubbo Creek.

Description of Site: The site a low density artefact scatter consisting of 16 stone artefacts, predominately quartz flakes (**Table 6-21**). The artefacts are located in an erosion scald measuring 17 m by 10 m on the southern bank of Stubbo Creek near the confluence of two drainage lines into the creek (**Figure 6-26**). The GSV inside the erosion scald is high, and dense grass obscures the ground surface outside of it. The site includes a PAD extending 80 m by 33 m southwest of the surface artefacts (**Figure 6-25**). Soil at the site consists of mid-brown sandy loam with non-artefactual quartz gravels.

Table 6-21: Stubbo Creek OS-05. Recorded artefact attributes.

No.	Artefact type	Material	Integrity	Reduction	Size (length x width x thickness [mm])
1	Flake	Quartz	Complete	Tertiary	24 x 18 x 5
2	Flake	Quartz	Complete	Tertiary	19 x 15 x 8
3	Flake	Quartz	Complete	Tertiary	25 x 24 x 5
4	Flake	Quartz	Complete	Tertiary	16 x 15 x 5
5	Flake	Quartz	Proximal fragment	Tertiary	18 x 8 x 5
6	Flake	Quartz	Complete	Tertiary	12 x 15 x 5
7	Flake	Quartz	Complete	Tertiary	18 x 15 x 5
8	Shatter	Quartz		Tertiary	0-20 maximum length
9	Flake	Quartz	Complete	Tertiary	15 x 10 x 3
10	Flake	Quartz	Medial fragment	Tertiary	22 x 15 x 5

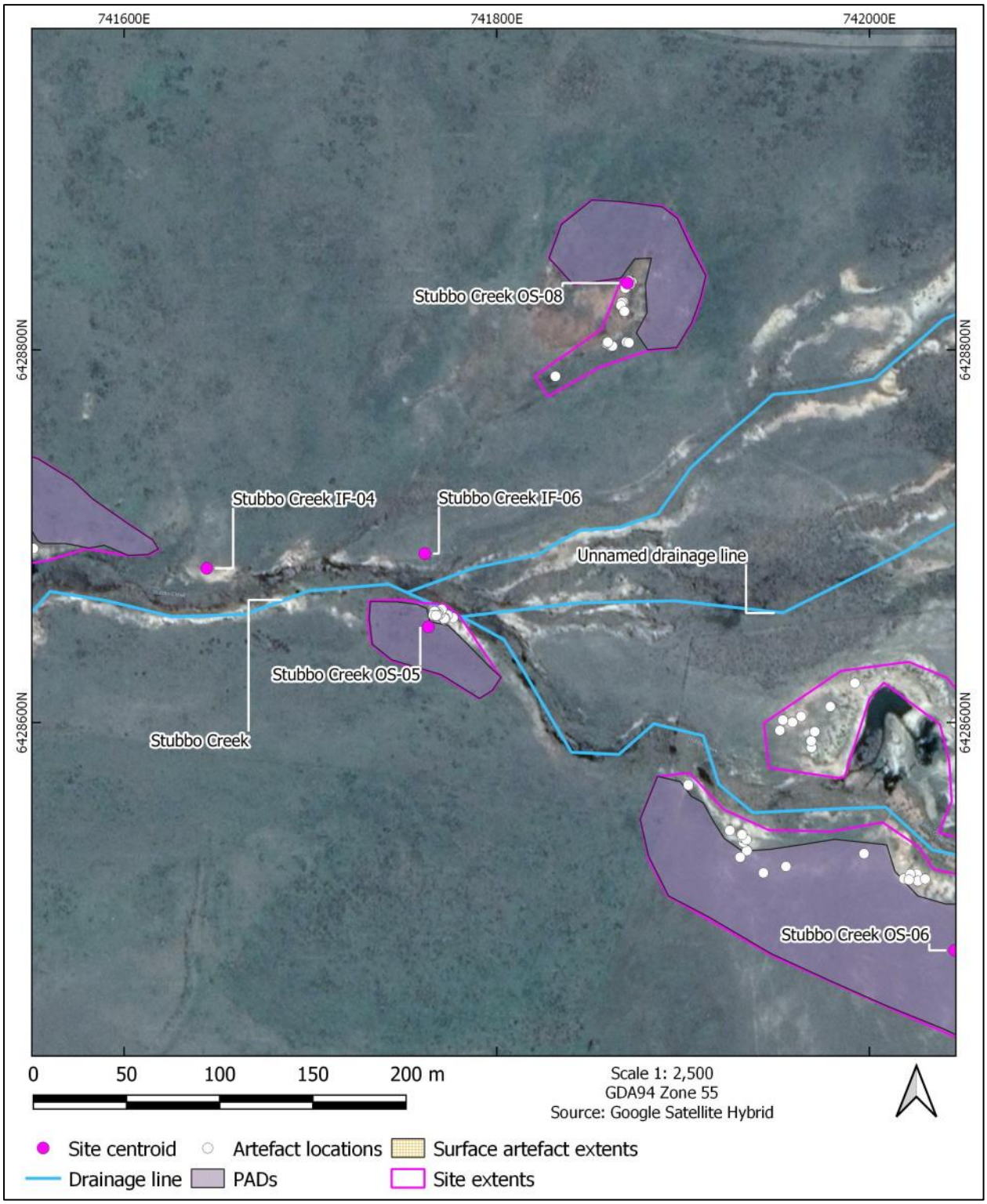
No.	Artefact type	Material	Integrity	Reduction	Size (length x width x thickness [mm])
11	Flake	Quartz	Complete	Tertiary	32 x 15 x 5
12	Flake	Quartz	Complete	Tertiary	22 x 15 x 8
13	Flake	Quartz	Complete	Tertiary	30 x 25 x 12
14	Flake	Quartz	Complete	Secondary	36 x 22 x 12
15	Flake	Quartz	Complete	Tertiary	20 x 12 x 4
16	Flake	Quartz	Complete	Tertiary	22 x 10 x 3

Figure 6-25: Stubbo Creek OS-05. View of site and selection of recorded artefacts.

1. View north of Stubbo Creek OS-05.

2. Selection of artefacts from Stubbo Creek OS-05.

Figure 6-26: Stubbo Creek OS-05 and Stubbo Creek OS-08. Site map.



Stubbo Creek OS-06 (#36-3-3680)

Site Type: Artefact scatter and PAD

GPS Coordinates: 742046 E / 6428478 N (centroid south; GDA94 Zone 55)

Location of Site: The site is located 12.7 km north east of Gulgong, NSW. It is 2.6 km east of Barneys Reef Road and 3.9 km west of Blue Springs Road. The site is on the north and southern bank of Stubbo Creek.

Description of Site: The site consists of two large erosion scalds with surface artefacts on the southern side of Stubbo Creek, and around the northern, eastern and western edges of a large dam on the northern side of Stubbo Creek (**Figure 6-27**). In total, 53 stone artefacts were recorded, predominately flakes made from quartz, mudstone, chert and volcanics (**Table 6-22**). The northern site extent is 150 m by 70 m and the southern site extent is 327 m by 30 m. There are two areas of PAD: one adjacent to the eastern edge of the northern surface exposure (measuring 61 m by 22 m), and one along the south-western edge of the southern surface exposure (measuring 370 m by 77 m). **Figure 6-28** shows the extent of the site. Soils at the site consists of mid brown sandy loam with small quartz gravels.

Table 6-22: Stubbo Creek OS-06. Recorded artefact attributes.

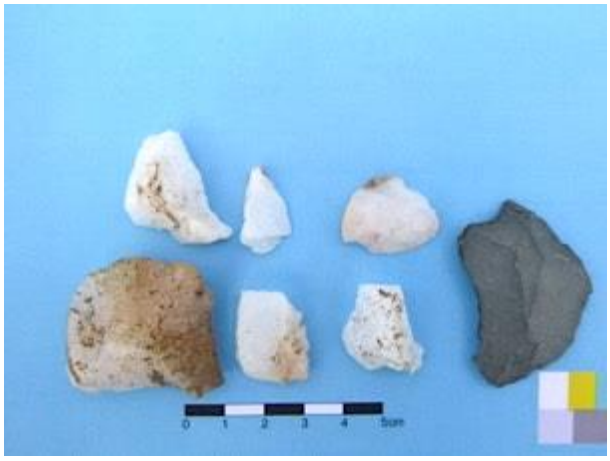
No.	Artefact type	Material	Integrity	Reduction	Size (length x width x thickness [mm])	Notes
1	Flake	Quartz	Proximal fragment	Tertiary	13 x 10 x 6	
2	Flake	Quartz	Distal fragment	Tertiary	21 x 17 x 5	
3	Flake	Quartz	Longitudinal break	Tertiary	25 x 23 x 8	
4	Flake	Quartz	Complete	Tertiary	30 x 33 x 15	
5	Flake	Volcanics	Complete	Tertiary	43 x 30 x 5	
6	Flake	Quartz	Longitudinal break	Tertiary	23 x 18 x 8	
7	Flake	Quartz	Complete	Tertiary	22 x 18 x 6	
8	Flake	Quartz	Longitudinal break	Tertiary	20 x 12 x 4	
9	Flake	Quartz	Complete	Tertiary	28 x 22 x 5	
10	Flake	Quartz	Complete	Tertiary	14 x 17 x 4	
11	Flake	Quartz	Longitudinal break	Tertiary	30 x 25 x 6	Broken. Two pieces conjoin.
12	Flake	Quartz	Longitudinal break	Tertiary	30 x 13 x 8	Broken. Two pieces conjoin.
13	Flake	Quartz	Distal fragment	Tertiary	28 x 14 x 5	
14	Flake	Quartz	Longitudinal break	Tertiary	26 x 14 x 6	
15	Flake	Chert	Complete	Secondary	22 x 20 x 12	
16	Flake	Chert	Complete	Tertiary	22 x 14 x 5	
17	Flake	Quartz	Complete	Tertiary	15 x 15 x 4	
18	Flake	Chert	Complete	Tertiary	15 x 25 x 8	
19	Flake	Mudstone	Complete	Tertiary	13 x 23 x 4	
20	Flake	Mudstone	Distal fragment	Tertiary	23 x 17 x 5	

No.	Artefact type	Material	Integrity	Reduction	Size (length x width x thickness [mm])	Notes
21	Flake	Volcanics	Complete	Tertiary	40 x 50 x 15	
22	Flake	Mudstone	Distal fragment	Secondary	28 x 20 x 10	
23	Blade	Volcanics	Distal fragment	Tertiary	42 x 14 x 4	
24	Flake	Volcanics	Complete	Tertiary	28 x 15 x 4	
25	Blade	Volcanics	Proximal fragment	Tertiary	32 x 12 x 5	
26	Flake	Quartz	Complete	Tertiary	28 x 21 x 5	
27	Flake	Quartz	Complete	Tertiary	29 x 27 x 8	
28	Flake	Quartz	Distal fragment	Tertiary	20 x 9 x 5	
29	Flake	Petrified Wood	Complete	Tertiary	26 x 22 x 8	
30	Flake	Silcrete	Complete	Tertiary	27 x 15 x 5	
31	Flake	Volcanics	Complete	Tertiary	12 x 15 x 4	
32	Backed blade	Volcanics	Complete	Tertiary	28 x 10 x 5	Semi-steep unifacial fine retouch on margin
33	Flake	Chert	Complete	Secondary	21 x 14 x 8	
34	Flake	Chert	Complete	Secondary	18 x 1 x 4	
35	Flake	Chert	Complete	Tertiary	14 x 23 x 5	
36	Blade	Greywhacke	Complete	Secondary	78 x 20 x 15	
37	Flake	Volcanics	Complete	Tertiary	15 x 15 x 4	
38	Flake	Mudstone	Complete	Tertiary	13 x 25 x 8	
39	Flake	Mudstone	Complete	Tertiary	13 x 20 x 6	Use wear on distal edge
40	Backed blade	Chert	Proximal fragment	Tertiary	36 x 12 x 5	Semi-steep unifacial fine retouch on margin
41	Blade	Chert	Proximal fragment	Tertiary	33 x 12 x 5	
42	Flake	Quartz	Longitudinal break	Tertiary	29 x 26 x 8	
43	Flake	Volcanics	Distal fragment	Tertiary	19 x 10 x 3	
44	Flake	Mudstone	Complete	Tertiary	45 x 25 x 12	
45	Flake	Volcanics	Complete	Secondary	25 x 22 x 5	
46	Backed blade	Chert	Complete	Tertiary	38 x 10 x 5	
47	Flake	Mudstone	Complete	Secondary	31 x 28 x 6	
48	Backed blade	Chert	Complete	Tertiary	20 x 8 x 5	Steep invasive unifacial retouch on margin
49	Flake	Quartz	Longitudinal break	Tertiary	30 x 26 x 12	
50	Flake	Quartz	Complete	Tertiary	22 x 27 x 5	
51	Flake	Mudstone	Complete	Tertiary	35 x 30 x 12	
52	Flake	Mudstone	Complete	Secondary	36 x 50 x 20	
53	Flake	Quartz	Complete	Tertiary	42 x 55 x 10	

Figure 6-27: Stubbo Creek OS-06. View of site and selection of recorded artefacts.

1. View south of Stubbo Creek OS-06 on the southern side of Stubbo Creek.

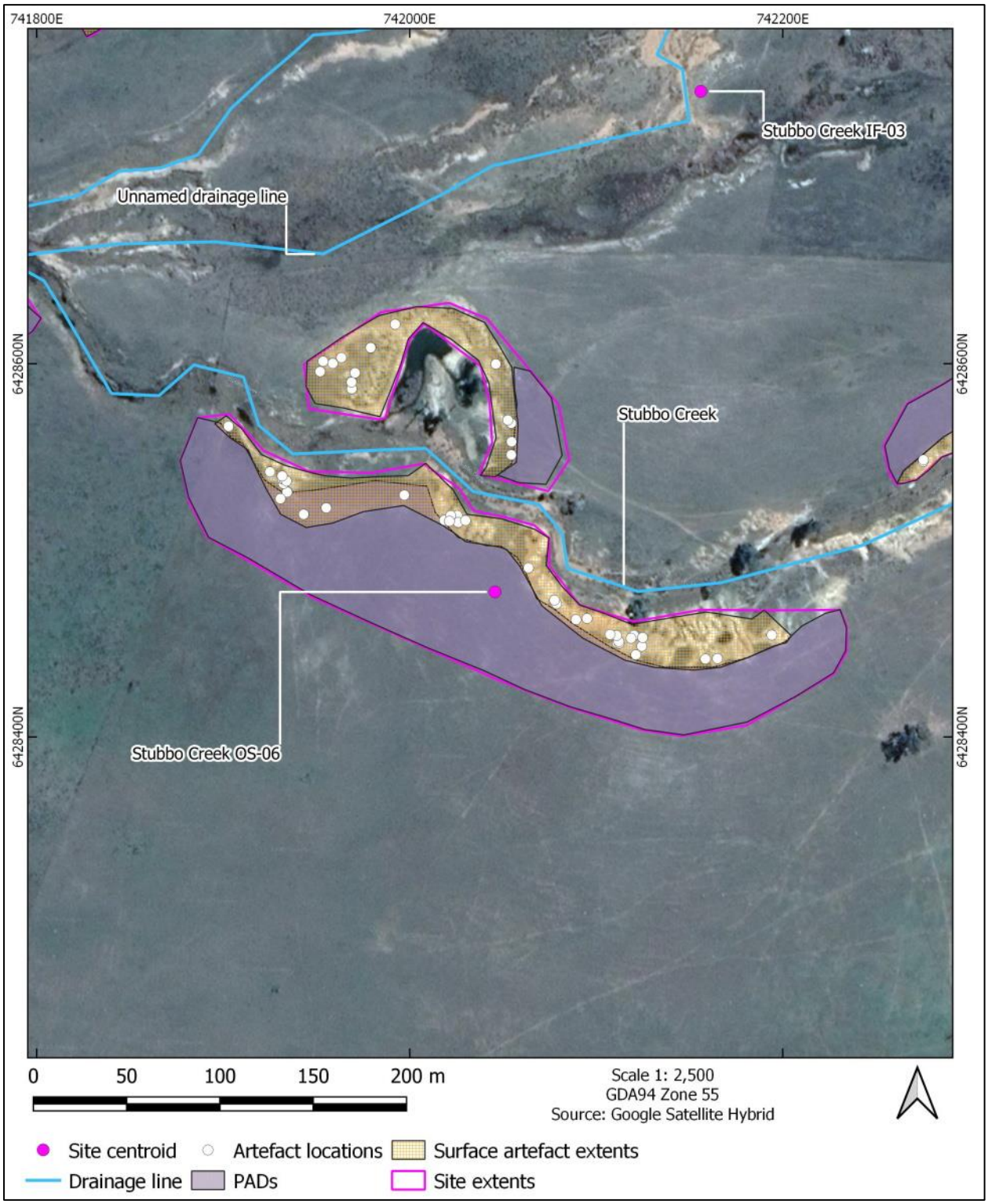
2. View northeast of Stubbo Creek OS-06 on the northern side of Stubbo Creek.



3. Selection of artefacts from Stubbo Creek OS-06.

4. Selection of artefacts from Stubbo Creek OS-06.

Figure 6-28: Stubbo Creek OS-06. Site map.



Stubbo Creek OS-07 (#36-3-3681)

Site Type: Artefact scatter and PAD

GPS Coordinates: 742308 E / 6428581 N (centroid; GDA94 Zone 55)

Location of Site: The site is located 12.6 km north east of Gulgong, NSW. It is 3 km east of Barneys Reef Road and 3.6 km west of Blue Springs Road. The site is on the northern bank of Stubbo Creek.

Description of Site: The site is a low density artefact scatter consisting of eight stone artefacts, all quartz flakes (**Table 6-23**) located in an erosion scald on the north west bank of Stubbo Creek (**Figure 6-29**). The erosion scald measures 132 m by 13 m. Directly adjacent to the erosion scald and the north-western edge of the surface artefact extent is a PAD measuring 130 m by 36 m (**Figure 6-30**). Soil at the site is a mid-brown sandy loam. Dense grass covers the PAD area.

Table 6-23: Stubbo Creek OS-07. Recorded artefact attributes.

No.	Artefact type	Material	Integrity	Reduction	Size (length x width x thickness [mm])
1	Flake	Quartz	Complete	Tertiary	22 x 15 x 5
2	Flake	Quartz	Complete	Tertiary	20 x 15 x 5
3	Flake	Quartz	Complete	Tertiary	25 x 18 x 5
4	Flake	Quartz	Longitudinal break	Tertiary	22 x 15 x 8
5	Flake	Quartz	Complete	Tertiary	32 x 18 x 5
6	Flake	Quartz	Complete	Tertiary	25 x 15 x 6
7	Flake	Quartz	Complete	Tertiary	19 x 11 x 4
8	Flake	Quartz	Distal fragment	Tertiary	22 x 5 x 3

Figure 6-29: Stubbo Creek OS-07. View of site and selection of recorded artefacts.

1. View northeast of Stubbo Creek OS-07 from the southern site extent.

2. Selection of artefacts from Stubbo Creek OS-07.

Figure 6-30: Stubbo Creek OS-07. Site map.

Stubbo Creek OS-08 (#36-3-3682)

Site Type: Artefact scatter and PAD

GPS Coordinates: 741870 E / 6428836 N (centroid; GDA94 Zone 55)

Location of Site: The site is located 12.8 km north east of Gulgong, NSW. It is 2.4 km east of Barneys Reef Road and 4.2 km west of Blue Springs Road. The site is on the northern side of Stubbo Creek, approximately 48 m north from the bank.

Description of Site: The site consists of 27 stone artefacts, primarily quartz flakes (**Table 6-24**). The surface artefacts are located in an erosion scald measuring approximately 90 m by 20 m (**Figure 6-31**). There is PAD around the north and northeast side of the surface artefact exposure (**Figure 6-26**) measuring 90 m by 63 m. The area adjacent to the site along the southern and western edges is wet and boggy. Soils at the site consist of light orange-brown sandy loam. There is short dense grass around the erosion scalds.

Table 6-24: Stubbo Creek OS-08. Recorded artefact attributes.

No.	Artefact type	Material	Integrity	Reduction	Size (length x width x thickness [mm])	Notes
1	Flake	Quartz	Complete	Tertiary	38 x 20 x 8	
2	Flake	Quartz	Complete	Tertiary	34 x 20 x 8	
3	Flake	Quartz	Proximal fragment	Tertiary	35 x 18 x 8	
4	Blade	Quartz	Distal fragment	Tertiary	20 x 8 x 4	
5	Blade	Quartz	Complete	Tertiary	20 x 8 x 4	
6	Flake	Quartz	Complete	Tertiary	22 x 12 x 5	
7	Flake	Quartz	Complete	Tertiary	16 x 25 x 8	
8	Flake	Quartz	Distal fragment	Tertiary	22 x 18 x 6	Use wear
9	Flake	Quartz	Complete	Tertiary	30 x 35 x 12	
10	Flake	Quartz	Complete	Tertiary	22 x 18 x 6	
11	Flake	Quartz	Distal fragment	Tertiary	15 x 12 x 8	
12	Flake	Quartz	Distal fragment	Tertiary	14 x 11 x 5	
13	Flake	Quartz	Complete	Tertiary	21 x 12 x 5	
14	Flake	Quartz	Complete	Tertiary	24 x 12 x 6	
15	Flake	Quartz	Complete	Tertiary	12 x 8 x 4	
16	Flake	Quartz	Complete	Tertiary	30 x 28 x 8	
17	Flake	Quartz	Complete	Tertiary	12 x 15 x 5	
18	Flake	Quartz	Distal fragment	Tertiary	13 x 9 x 4	
19	Flake	Quartz	Proximal fragment	Tertiary	12 x 12 x 4	
20	Flake	Quartz	Complete	Tertiary	32 x 21 x 5	Use wear on margin
21	Core	Quartz		Tertiary	max. 40	Multidirectional. 3 flake scars.
22	Flake	Quartz	Complete	Tertiary	20 x 14 x 6	

No.	Artefact type	Material	Integrity	Reduction	Size (length x width x thickness [mm])	Notes
23	Microlith	Quartz		Tertiary	13 x 8 x 6	Semi-steep unifacial fine retouch on margin
24	Flake	Quartz	Complete	Tertiary	20 x 25 x 8	
25	Flake	Quartz	Distal fragment	Tertiary	8 x 15 x 4	
26	Flake	Quartz	Longitudinal break	Tertiary	18 x 14 x 8	
27	Flake	Quartz	Proximal fragment	Tertiary	8 x 8 x 4	

Figure 6-31: Stubbo Creek OS-08. View of site and selection of recorded artefacts.

1. View east of Stubbo Creek OS-08.

2. Selection of artefacts from Stubbo Creek OS-08.

The Pinnacle OS-01 (#36-3-3683)

Site Type: Artefact scatter

GPS Coordinates: 744221 E / 6430351 N (centroid; GDA94 Zone 55)

Location of Site: The site is located 14.5 km north east of Gulgong, NSW. It is 4.3 km east of Barneys Reef Road and 2.5 km west of Blue Springs Road. The site is on the northern side of an unnamed drainage line, and 730 m north of Stubbo Creek.

Description of Site: The site consists of three artefacts located on a narrow terrace north of an unnamed drainage line (**Table 6-25** and **Figure 6-32**). The site is approximately 20 m south of the main driveway / track between Blue Spring Road and the Pinnacle homestead (**Figure 6-12**). There are two minor drainage lines running north–south along the east and the western edge of the terrace. Mature native vegetation surrounds the edges of the site. The soil at the site is light orange-brown sand with lots of small quartz gravels. The site extent is 124 m by 47 m.

Table 6-25: The Pinnacle OS-01. Recorded artefact attributes.

No.	Artefact type	Material	Integrity	Reduction	Size (length x width x thickness [mm])	Notes
1	Ground edge axe	Volcanic	Longitudinal break	Primary	90 x 60 x 22	One edge ground
2	Core	Quartz	Complete	Tertiary	40 x 35 x 25	Unidirectional, 6 flake scars, 10% cortex, reduced
3	Flaked piece	Chert	Complete	Secondary	72 x 60 x 40	9 flake scars

Figure 6-32: The Pinnacle OS-01. View of site and selection of recorded artefacts.

1. View north of The Pinnacle OS-01 from the southern site extent.

2. View southwest of The Pinnacle OS-01 from the northern site extent.

3. View of ground edge axe recorded at The Pinnacle OS-01.

4. View of flaked piece recorded at The Pinnacle OS-01.

The Pinnacle OS-02 (#36-3-3684)

Site Type: Artefact scatter and PAD

GPS Coordinates: 743331 E / 6429599 N (centroid; GDA94 Zone 55)

Location of Site: The site is located 13.7 km north east of Gulgong, NSW. It is 3.7 km east of Barneys Reef Road and 3.1 km west of Blue Springs Road. The site is directly

adjacent to the western bank of an unnamed drainage line and is 400 m northwest of Stubbo Creek.

Description of Site: The site consists of two surface artefacts, one quartz flake and one mudstone flake (**Table 6-26**). The site is located directly adjacent to the western edge of an unnamed drainage line. There is a gentle slope towards the drainage line from the northwest. A minor drainage line is located south of the site extent (**Figure 6-14**). The two surface artefacts are located in erosion scalds and surrounded by short, dense grass. The site extent includes PAD between the two surface artefact locations and extending north along the bank of the unnamed drainage line (**Figure 6-33**). The soil is mid-brown sandy loam with small quartz gravels. The site extent measures 105 m by 32 m.

Table 6-26: The Pinnacle OS-02. Artefact Attributes.

No.	Artefact type	Material	Integrity	Reduction	Size (length x width x thickness [mm])
1	Flake	Quartz	Proximal fragment	Tertiary	22 x 25 x 9
2	Flake	Mudstone	Proximal fragment	Tertiary	25 x 25 x 3

Figure 6-33: The Pinnacle OS-02. View of site and selection of recorded artefacts.

1. View north of The Pinnacle OS-02 from the southern site extent.

2. View of a quartz flake recorded at The Pinnacle OS-02.

The Pinnacle PAD-01

Site Type: PAD

GPS Coordinates: 743372 E / 6429582 N (centroid; GDA94 Zone 55)

Location of Site: The PAD is located 13.7 km north east of Gulgong, NSW. It is 3.7 km east of Barneys Reef Road and 3.1 km west of Blue Springs Road. The site is directly adjacent to the eastern bank of an unnamed drainage line and is 340 m northwest of Stubbo Creek.

Description of Site: The PAD extent measures 180 m north-south and 35 m east–west. It extends south along the eastern bank of an unnamed drainage line from a bend in the drainage line (see **Figure 6-34**). The PAD is located directly across the unnamed drainage line from The Pinnacle OS-02 and is 90 m northeast of The Pinnacle IF-02 (**Figure 6-14**). The area has not been visibly disturbed and is covered in dense grass obscuring any GSV. The soil at the PAD is a mid-brown sandy loam. There are no areas of erosion or scalding present along the flat terrace where the PAD is located.

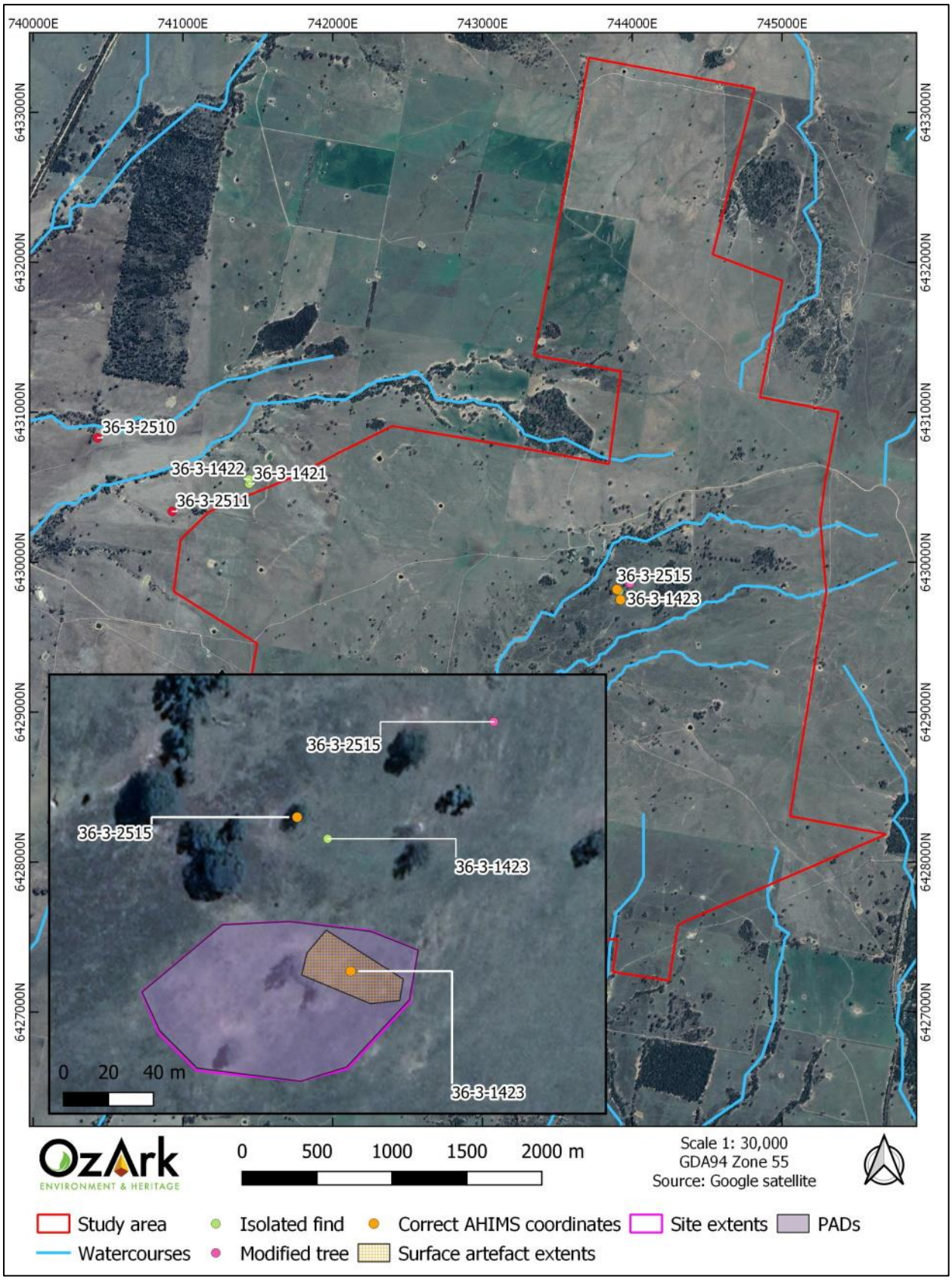
Figure 6-34: The Pinnacle PAD-01. View of site and selection of recorded artefacts.

	
1. View southwest along the eastern extent of The Pinnacle PAD-01 from the northern extent. Note the PAD extent is the non-eroded area to the left of the photograph.	2. View east across the southern extent of The Pinnacle PAD-01 which begins from the edge of the erosion scald.

6.5 PREVIOUSLY RECORDED ABORIGINAL SITES LOCATED

Two previously recorded sites were located during the survey: #36-3-2515 and #36-3-1423. The location of the AHIMS coordinates for the two sites are shown in **Figure 6-35** including the updated and correct GPS locations of each site.

Figure 6-35: Previously recorded Aboriginal sites located.



TRE 21 (#36-3-2515)

Site Type: Modified tree

GPS Coordinates: 743898 E / 6429818 N (centroid; GDA94 Zone 55)

Location of Site: The site is located 14 km north east of Gulgong, NSW. It is 4.3 km east of Barneys Reef Road and 2.6 km west of Blue Springs Road. The site is 320 m northwest of Stubbo Creek on a flat landform between Stubbo Creek and a tributary.

Description of Site: The site was recorded in 2009 during an archaeological survey for the Cobbora Coal Mine (see **Section 5.3.4**). The site is recorded as being a modified tree with three scars present. The tree is also recorded as having fire damage, insect/termite damage and limb fall. Since being recorded in 2009 the tree has deteriorated further due to weathering and insect damage. While three scars were visible on the trunk of the tree in 2009, now only one scar is still visible, with the second scar only having one edge remaining (**Figure 6-36**). The GPS coordinates provided by AHIMS were incorrect with the site located 97 m southwest from where the AHIMS coordinate plots it (see **Figure 6-35**). The site card has been updated with the correct GPS coordinates and the current condition of the site.

Figure 6-36: #36-3-2515. View of site.

1. View southwest of remaining complete scar on #36-3-2515.

2. View east of incomplete scar on #36-3-2515.

	
3. View north of where three scars were present on #36-3-2515 in 2009.	3. View of incomplete scar on #36-3-2515.

IF 23 (#36-3-1423)

Site Type: Artefact scatter and PAD

GPS Coordinates: 743922 E / 6429750 N (centroid; GDA94 Zone 55)

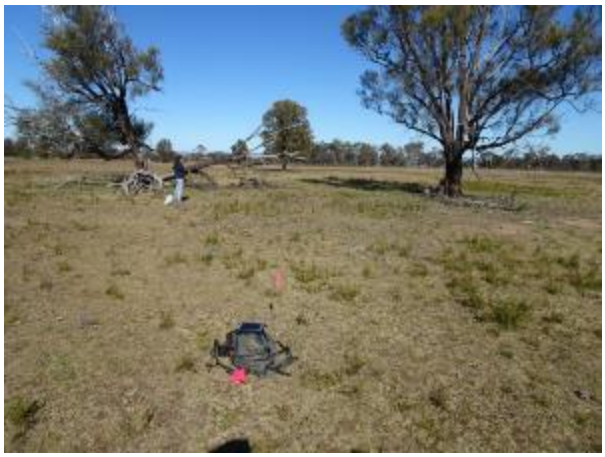
Location of Site: The site is located 14 km north east of Gulgong, NSW. It is 4.3 km east of Barneys Reef Road and 2.6 km west of Blue Springs Road. The site is 230 m northwest of Stubbo Creek on a flat landform between Stubbo Creek and a tributary.

Description of Site: The site was recorded in 2009 during an archaeological survey for the Cobbora Coal Mine (see **Section 5.3.4**). The site is recorded as being an isolated artefact consisting of a quartz core with one negative flake scar. The location of the site is described as being "*on a flat that has a barely perceptible rise, overlooking a creek*". The GPS coordinates provided by AHIMS were incorrect with the site located 58 m south from where the AHIMS coordinate plot it (see **Figure 6-35**). The specific artefact recorded in 2009 was unable to be located, however, six additional artefacts were recorded (**Table 6-27**) and the area was determined to have PAD. The extent of the surface artefacts is 44 m by 19 m while the PAD extent covers the low rise and measures 120 m by 70 m.

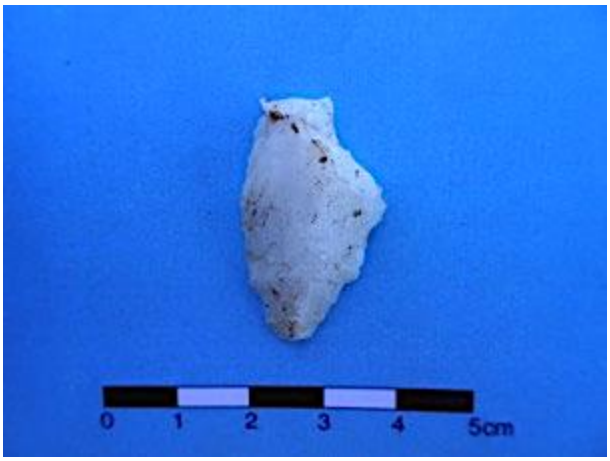
Table 6-27: #36-3-1423. Recorded artefact attributes.

No.	Artefact type	Material	Integrity	Reduction	Size (length x width x thickness [mm])	Notes
1	Flake	Quartz	Complete	Tertiary	30 x 15 x 8	
2	Core	Quartz	Complete	Tertiary	30 x 30 x 30	Multidirectional, 8 flake scars, <5% cortex, reduced
3	Core	Chert	Complete	Primary	90 x 80 x 25	Unidirectional, opportunistic, 2 flake scars, 75-100% cortex
4	Flake	Quartz	Complete	Tertiary	25 x 20 x 12	
5	Flake	Quartz	Complete	Tertiary	30 x 18 x 22	
6	Flake	Quartz	Complete	Tertiary	40 x 42 x 16	

Figure 6-37: The Pinnacle PAD-01. View of site and selection of recorded artefacts.



1. View west across extent of #36-3-1423 from the north-eastern edge of the site extent.



2. View of a quartz flake recorded at #36-3-1423.

7 DISCUSSION

7.1 DISCUSSION OF SURVEY RESULTS

7.1.1 Summary of survey results

The survey of the study area resulted in 23 Aboriginal sites being recorded (#36-3-3670 to 36-3-3691) and two previously recorded AHIMS sites being located (#36-3-2515 and #36-3-1423).

The results from the current survey are:

- 25 Aboriginal sites were recorded or located during the survey. These sites consist of nine isolated finds, three isolated finds with PAD, two artefact scatters, nine artefact scatters with PAD, one PAD, and one modified tree
- In total, 309 stone artefacts were recorded during the survey. The predominate material for stone artefacts was quartz (n=246, 79.6%), followed by chert (n=22, 7.1%), mudstone (n=16, 5.2%) and volcanics (n=13, 4.2%). Also present though in much lower quantities were silcrete, petrified wood, greywacke and chalcedony
- The most frequent type of stone artefact is flakes (n=240, 79.6%), shatter (n=36, 11.7%), cores (n=12, 3.9%), blades (n=9, 2.9%) and backed blades (n=5, 1.6%). Also present in the overall assemblage are end scrapers (n=2), flaked pieces (n=2), ground edge axes (n=2) and a microlith (n=1)
- Most sites were recorded in the 'drainage' landforms along Stubbo Creek or the two main tributaries northwest and southwest of Stubbo Creek.
- The larger and higher-density sites are located at the confluence of Stubbo Creek and the two tributaries or further southwest along Stubbo Creek after the confluence
- The artefact sites (scatters and isolated finds) are located predominately in erosion scalds on the edges of elevated terraces, indicating there is potential for subsurface archaeological deposits where the terrace still has topsoil and A-horizon soils present.

7.1.2 Discussion

The regional studies and predictive model suggested that artefact scatters and isolated finds would be the most common site type recorded and this is supported by the survey results. Most of the study area has been cleared of vegetation, and the remaining stands of mature native vegetation did not have any scarred trees present, excepting the previously recorded AHIMS #36-3-2515. The absence of stone quarries and grinding grooves is attributable to the absence of suitable rock outcropping within the study area. Small rock outcrops were present inside the study area, usually along slopes or at the edges of crests, however the rock type itself, often a conglomerate, is not suitable for stone tool making, and none of the outcrops showed any evidence of having been used as a stone procurement quarry.

The location of artefact sites in the close proximity to Stubbo Creek or its tributaries matches the regional archaeological context and previously recorded sites in the vicinity of the study area. The more extensive archaeological sites, with higher-density scatters and larger PADs are located around the confluence of Stubbo Creek with the northern tributary. It is possible this is due to the section of Stubbo Creek downstream of the confluence having a more substantive and regular waterflow from the tributaries merging with the creek, and as such, was a better location for longer-term occupation by Aboriginal groups.

The specific location of artefact sites within specific landforms also conforms with the predictive model in that artefact scatters tended to be located on elevated terraces or banks adjacent to watercourses. There was only one site, Rosevale IF-01, which is located away from the main three watercourses in the study area, although even this site is close to a minor drainage line.

Regional studies show that most sites will include quartz and chert and that most artefacts recorded were unmodified flakes. The most frequent type of artefact recorded during the survey was quartz flakes, with the majority of flakes being complete but showing no signs of retouch or use wear.

The previous disturbance through the study area relates predominately to farming practices, with fences, vehicle tracks, vegetation clearance, dam construction, silos, and a homestead with associated sheds all causing localised areas of higher disturbance. Overall, the majority of the study area is used for grazing purposes, which is, in general, less destructive to archaeological sites than agricultural practices such as regular ploughing.

The study area is affected by erosion, especially around the watercourses, where bank scour is present along long sections, and there are some areas of gully erosion along Stubbo Creek and its tributaries. The Aboriginal sites recorded during the survey tended to be in areas of erosion directly adjacent to the edge of a watercourse, indicating that there is the potential for *in situ* subsurface archaeological deposits outside and adjacent to these eroded areas. The surface artefacts recorded, especially at the high-density sites such as Stubbo Creek OS-01, OS-02 and OS-06, are likely to be artefacts which have been exposed by erosion over time. The PADs in relation to artefact scatters or isolated finds have been delineated and included in site extents (see **Section 6.5** for specifics).

Within the study area, the highest areas of archaeological sensitivity remain to be along the main watercourses (Stubbo Creek and its tributaries), which would have provided at least a semi-permanent source of water in the area. The remainder of the study area, especially the higher to mid slopes have a much lesser degree of archaeological sensitivity. The ridgelines and crests of the low-lying rolling hills are also less sensitive for archaeological sites than the landforms immediately adjacent to the main watercourses.

7.1.2.1 Access track options

There are three potential access track options (see **Section 1.3**). Option One is located between the western boundary of the study area and Barneys Reef Road. It is approximately 170 m south of Pine Creek near the junction of the Option One track and the road. The remainder of the track is on a gradual slope descending from the east to the west towards the road. Part of Option One follows an existing dirt track. Based on the proximity of this track option to Pine Creek and AHIMS sites recorded further northeast along the creek (see **Section 5.4.1**), this access track would require further assessment in the form of pedestrian survey.

The Option Two and Option Three access tracks are located between the southeast corner of the study area and Blue Springs Road. The original alignment of the potential access track in this area was surveyed (see **Figure 6-2**), during which no Aboriginal sites or PADs were identified. Both Option Two and Option Three do cross the headwater of Gum Creek, which at the intersection locations is a shallow drainage line. Option Two follows a track within the TransGrid easement which is well established and maintained. Option Three is south of the surveyed alignment, following the contour of a gentle to moderate slope descending north to south. Based on the results of the survey nearby and the landforms which Option Two and Three are located in, archaeological sensitivity is low. As Option Two is using an already established track and easement, this is the preferred access route from a heritage perspective.

8 SIGNIFICANCE AND IMPACT ASSESSMENT

8.1 ASSESSMENT OF SIGNIFICANCE

8.1.1 Introduction

The appropriate management of cultural heritage items is usually determined based on their assessed significance, as well as the likely impacts of any proposed developments. Cultural, scientific, aesthetic and historical significance are identified as baseline elements of significance assessment, and it is through the combination of these elements that the overall cultural heritage values of a site, place or area are resolved.

Social or Cultural Value

This area of assessment concerns the importance of a site or features to the relevant cultural group: in this case the Aboriginal community. Aspects of social value include assessment of sites, items, and landscapes that are traditionally significant or that have contemporary importance to the Aboriginal community. This importance involves both traditional links with specific areas, as well as an overall concern by Aboriginal people for their sites generally and the continued protection of these. This type of value may not be in accord with interpretations made by the archaeologist: a site may have low archaeological value but high social value, or vice versa.

Archaeological/Scientific Value

Assessing a site in this context involves placing it into a broader regional framework, as well as assessing the site's individual merits in view of current archaeological discourse. This type of value relates to the ability of a site to answer current research questions and is also based on a site's condition (integrity), content and representativeness.

The overriding aim of cultural heritage management is to preserve a representative sample of the archaeological resource. This will ensure that future research within the discipline can be based on a valid sample of the past. Establishing whether a site can contribute to current research also involves defining 'research potential'. Questions regularly asked when determining significance are: can this site contribute information that no other site can? Is this site representative of other sites in the region?

Aesthetic Value

This refers to the sensory, scenic, architectural and creative aspects of the place. It is often closely linked with the social values. It may consider form, scale, colour, texture and material of the fabric or landscape, and the smell and sounds associated with the place and its use (Burra Charter 2013).

Historic Value

Historic value refers to the associations of a place with a historically important person, event, phase or activity in an Aboriginal community. Historic places do not always have physical evidence of their historical importance (such as structures, planted vegetation or landscape modifications). They may have 'shared' historic values with other (non-Aboriginal) communities.

Places of post-contact Aboriginal history have generally been poorly recognised in investigations of Aboriginal heritage. Consequently, the Aboriginal involvement and contribution to important regional historical themes is often missing from accepted historical narratives. This means it is often necessary to collect oral histories along with archival or documentary research to gain enough understanding of historic values.

8.2 ASSESSED SIGNIFICANCE OF THE RECORDED SITES

Table 8-1 presents a summary of the significance assessment of Aboriginal cultural heritage sites recorded during this assessment. Further details of each of the assessment criteria are provided below.

Social or Cultural Value

The assessment of cultural or social value concerns the importance of a site or features to the relevant cultural group – in this case the Aboriginal community. Aspects of social value include assessment of sites, items, and landscapes that are traditionally significant or that have contemporary importance to the Aboriginal community. This importance involves both traditional links with specific areas, as well as an overall concern by Aboriginal people for their sites generally and the continued protection of these. This type of value may not be in accord with interpretations made by the archaeologist: a site may have low archaeological value but high social value, or vice versa.

During the Stage 2/3 ACHCRs (see **Section 4.1.2** and **Appendix 1 Figure 6**), WVWAC and GAC shared the following cultural information relating to the study area:

> *…to indicate that areas close by to this development area have known Cultural Heritage sites and that this Development area is known to be in our traditional information relating back to the Mudige or Mudigee Clan as the clan boundary is very close by*.

A draft copy of this ACHAR was provided to RAPs for review (see **Section 4.1.3** and **Appendix 1 Figure 8**), and WVWAC shared the following cultural information relating to the study area:

> *WVWAC again would like to indicate that areas close by to this development area have known Cultural Heritage sites and that this Development area is a known to be in our traditional information relating back to the Mudigee Clan as the clan boundary*

is very close by. This is a boundary of three Clan areas and is highly culturally significant as meetings took place in and around this project development site.

For the entirety of WVWAC's response to the draft ACHAR see **Appendix 1 Figure 9**.

Based on comments from site officers in the field, and feedback provided by WVWAC on the draft ACHAR, high social and cultural value has been assigned to all Aboriginal sites inside the study area.

Archaeological/Scientific Value

The scientific significance of Stubbo Creek IF-01 to IF-06, Rosevale IF-01, The Pinnacle IF-03 and IF-05, and the Pinnacle OS-01 is assessed as low. These sites are described as having low scientific/archaeological significance based on the following values:

- Sites tend to represent artefacts in secondary contexts
- Low density of artefacts
- No associated archaeological deposits.

These sites have low scientific values because they have little or no research potential and a very limited ability to inform researchers about the nature and extent of Aboriginal occupation in the area. All sites are highly representative of other sites in the region.

The scientific significance of The Pinnacle IF-01 to IF-02 and IF-04 is assessed as low–moderate as even though these sites consist of isolated finds, they have PAD associated them, and thus a higher research potential. Stubbo Creek OS-03 is assessed as low–moderate as it is a low density surface scatter of artefacts with no PAD. The Pinnacle PAD OS-01 is assessed as low–moderate as no surface artefacts were present but the location has the potential for subsurface deposits.

The scientific significance of Stubbo Creek OS-01 to OS-02, Stubbo Creek OS-04 to OS-08, and The Pinnacle OS-02 is assessed as moderate–high. These sites are described as having a moderate–high scientific/archaeological significance based on the following values:

- Potential for archaeological deposits in association with the recorded surface artefacts
- Formal tool types present at several sites
- Range of raw materials present
- Sites such as Stubbo Creek OS-01, Stubbo Creek OS-02 and Stubbo Creek OS-06 have high densities of surface artefacts.

Aesthetic Value

Stubbo Creek IF-01 to IF-06, Stubbo Creek OS-01 to OS-08, Rosevale IF-01, The Pinnacle IF01 to IF-05, The Pinnacle OS-1 and OS-02, and the Pinnacle PAD-01 have been assessed as having

low aesthetic value. None of the Aboriginal sites recorded have significant aesthetic value as the integrity of the sensory landscape has been altered in historic and modern times.

Historic Value

None of the Aboriginal sites recorded have an apparent direct relationship to known historical Aboriginal sites (such as missions or massacre sites). It is possible that the area saw some of the earliest contact between Aboriginals and non-Aboriginal settlers, however, none of the recorded Aboriginal sites display evidence that they constitute 'contact' or 'post-contact' Aboriginal sites (i.e. flaked glass, etc). To that end, all recorded sites are assessed as having no historic value. Please note that this determination is only based on archaeological and known historic evidence. The RAPs consider all Aboriginal sites to be historic and add to the collective anthropological information and story of their people whether its pre- or post-European contact.

Table 8-1: Aboriginal cultural heritage: significance assessment.

Site Name	AHIMS ID	Social or Cultural Value	Archaeological / Scientific Value	Aesthetic Value	Historic Value
Stubbo Creek IF-01	36-3-3685	High	Low	Low	None
Stubbo Creek IF-02	36-3-3686	High	Low	Low	None
Stubbo Creek IF-03	36-3-3687	High	Low	Low	None
Stubbo Creek IF-04	36-3-3688	High	Low	Low	None
Stubbo Creek IF-05	36-3-3689	High	Low	Low	None
Stubbo Creek IF-06	36-3-3690	High	Low	Low	None
Rosevale IF-01	36-3-3691	High	Low	Low	None
The Pinnacle IF-01	36-3-3670	High	Low–moderate	Low	None
The Pinnacle IF-02	36-3-3671	High	Low–moderate	Low	None
The Pinnacle IF-03	36-3-3672	High	Low	Low	None
The Pinnacle IF-04	36-3-3673	High	Low–moderate	Low	None
The Pinnacle IF-05	36-3-3674	High	Low	Low	None
Stubbo Creek OS-01	36-3-3675	High	Moderate–high	Low	None
Stubbo Creek OS-02	36-3-3676	High	Moderate–high	Low	None
Stubbo Creek OS-03	36-3-3677	High	Low–moderate	Low	None
Stubbo Creek OS-04	36-3-3678	High	Moderate–high	Low	None
Stubbo Creek OS-05	36-3-3679	High	Moderate–high	Low	None
Stubbo Creek OS-06	36-3-3680	High	Moderate–high	Low	None
Stubbo Creek OS-07	36-3-3681	High	Moderate–high	Low	None
Stubbo Creek OS-08	36-3-3682	High	Moderate–high	Low	None
The Pinnacle OS-01	36-3-3683	High	Low	Low	None
The Pinnacle OS-02	36-3-3684	High	Moderate–high	Low	None
The Pinnacle PAD-01		High	Low–-moderate	Low	None

8.3 AVOIDING AND MINIMISING HARM

8.3.1 Conserving significant Aboriginal cultural heritage

An object of the NPW Act is the '*conservation of objects places and features… of cultural value within the landscape, including… places, objects and features of significance to Aboriginal people*' (s.2A(1(b)(i)).

As heritage professionals, OzArk, strives for good conservation outcomes. In particular, OzArk is primarily concerned with the conservation and protection of Aboriginal cultural heritage that is of significance to Aboriginal people.

Two primary objectives when managing harm to an Aboriginal object are:

- Impacts to significant Aboriginal objects and places should always be avoided wherever possible
- Where impacts to Aboriginal objects and places cannot be avoided, projects should be amended so as to reduce the extent and severity of impacts to significant Aboriginal objects and places through the use of reasonable and feasible measures.

8.3.2 Opportunities to conserve Aboriginal cultural heritage values

Twenty-four of 25 Aboriginal sites inside the study area will be conserved and not be impacted by the project. The proponent has elected to expand the environmental exclusion zone to cover the entirety of these 24 Aboriginal sites, including buffer areas, in order to achieve this.

8.3.3 Ecologically sustainable development principles

Ecologically sustainable development principles (ESD) (defined in s.6 of the *Protection of the Environment Administration Act 1991*) requires the integration of economic and environmental considerations (including cultural heritage) in the decision-making process. In regard to Aboriginal cultural heritage, ESD can be achieved by applying the principle of intergenerational equity and the precautionary principle.

8.3.3.1 Intergenerational equity

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.

In terms of Aboriginal heritage, intergenerational equity can be considered in terms of the cumulative impacts to Aboriginal objects and places in a region. If few Aboriginal objects and places remain in a region (for example, because of impacts under previous permits), fewer opportunities remain for future generations of Aboriginal people to enjoy the cultural benefits of those Aboriginal objects and places.

Information about the integrity, rarity or representativeness of the Aboriginal objects and places proposed to be impacted, and how they illustrate the occupation and use of land by Aboriginal people across the region, will be relevant to the consideration of intergenerational equity and the understanding of the cumulative impacts of the project.

Where there is uncertainty, the precautionary principle should also be followed.

8.3.3.2 The precautionary principle

The precautionary principle states 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 relation to Aboriginal cultural values, the precautionary principle should be guided by:

- The project involves a risk of serious or irreversible damage to Aboriginal objects or places or to the value of those objects or places
- 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.

8.3.3.3 Principle of Integration

The Plan of Implementation of the World Summit on Sustainable Development held in Johannesburg, 2002, noted the need to "*promote the integration of the three components of sustainable development- economic development, social development and environmental protection- as interdependent and mutually reinforcing pillars*".

The principle of integration ensures mutual respect and reciprocity between economic and environmental considerations:

- Environmental considerations are to be integrated into economic and other development plans, programs and projects
- Development needs are to be taken into account in applying environmental objectives.

8.3.3.4 Applicability to the project

The project adds to the cumulative impact on the region's Aboriginal cultural heritage as one site (Rosevale IF-01) will be harmed. However, the heritage impact value of this loss is low as the site consists of an isolated artefact. Furthermore, the other 24 Aboriginal sites, many with PAD, will be avoided by the impacts of the project. **Table 8-2** examines the application of ESD principles to the project.

Table 8-2 examines the application of ESD principles to the project

Table 8-2: Application of ESD principles to the project.

ESD principle	Response
Avoiding and minimising harm	24 Aboriginal sites will be avoided during the proposed works. The proponent has elected to expand the environmental exclusion zone in order to avoid these 24 Aboriginal sites inside the study area. One isolated find (Rosevale IF-01) will be impacted by the project, however, the site consists of a single artefact with low potential for *in situ* subsurface deposits.
The integration principle	The project has sought to minimise environmental and heritage harm wherever possible. One site will be impacted by the project, though measures will be implemented to mitigate the loss of value of this site.
The precautionary principle	The archaeological assessment has followed the precautionary principle though undertaking a robust impact assessment to ensure that harm to Aboriginal objects is minimised. The survey adopted a precautionary principle when it came to describing and assessing the archaeological potential of the landforms within the study area.
The intergenerational equity principle	The archaeological measures contained in this ACHAR are designed to mitigate the loss of inter-generational equity as much as possible. The results of the investigation and the undertakings of the proponent have ensured that most of the recorded sites will be preserved and able to be appreciated by future generations.

8.4 LIKELY IMPACTS TO ABORIGINAL HERITAGE FROM THE PROJECT

Table 8-3 presents a summary of potential impacts to Aboriginal cultural heritage associated with the project. Of the 25 Aboriginal sites recorded inside the study area, one site (Rosevale IF-01) will be impacted by the project (see **Figure 8-6**). **Figure 8-1** to **Figure 8-11** shows the Aboriginal sites in relation to the impact footprint of the project, as well as the two proposed internal crossing locations.

Table 8-3: Aboriginal cultural heritage: impact assessment.

Site Name	AHIMS ID	Type of Harm (Direct/Indirect / None)	Degree of Harm (Total/Partial / None)	Consequence of Harm (Total/Partial/No Loss of Value)
Stubbo Creek IF-01	36-3-3685	None	None	No loss of value
Stubbo Creek IF-02	36-3-3686	None	None	No loss of value
Stubbo Creek IF-03	36-3-3687	None	None	No loss of value
Stubbo Creek IF-04	36-3-3688	None	None	No loss of value
Stubbo Creek IF-05	36-3-3689	None	None	No loss of value
Stubbo Creek IF-06	36-3-3690	None	None	No loss of value
Rosevale IF-01	36-3-3691	Direct	Total	Total
The Pinnacle IF-01	36-3-3670	None	None	No loss of value
The Pinnacle IF-02	36-3-3671	None	None	No loss of value
The Pinnacle IF-03	36-3-3672	None	None	No loss of value
The Pinnacle IF-04	36-3-3673	None	None	No loss of value
The Pinnacle IF-05	36-3-3674	None	None	No loss of value
Stubbo Creek OS-01	36-3-3675	None	None	No loss of value
Stubbo Creek OS-02	36-3-3676	None	None	No loss of value
Stubbo Creek OS-03	36-3-3677	None	None	No loss of value
Stubbo Creek OS-04	36-3-3678	None	None	No loss of value
Stubbo Creek OS-05	36-3-3679	None	None	No loss of value
Stubbo Creek OS-06	36-3-3680	None	None	No loss of value
Stubbo Creek OS-07	36-3-3681	None	None	No loss of value

Site Name	AHIMS ID	Type of Harm (Direct/Indirect / None)	Degree of Harm (Total/Partial / None)	Consequence of Harm (Total/Partial/No Loss of Value)
Stubbo Creek OS-08	36-3-3682	None	None	No loss of value
The Pinnacle OS-01	36-3-3683	None	None	No loss of value
The Pinnacle OS-02	36-3-3684	None	None	No loss of value
The Pinnacle PAD-01		None	None	No loss of value
TRE 21	36-3-1423	None	None	No loss of value
IF 23	36-3-2515	None	None	No loss of value

Figure 8-1: Proposed impacts & Stubbo Creek IF-01, IF-02, IF-03 and OS-07.

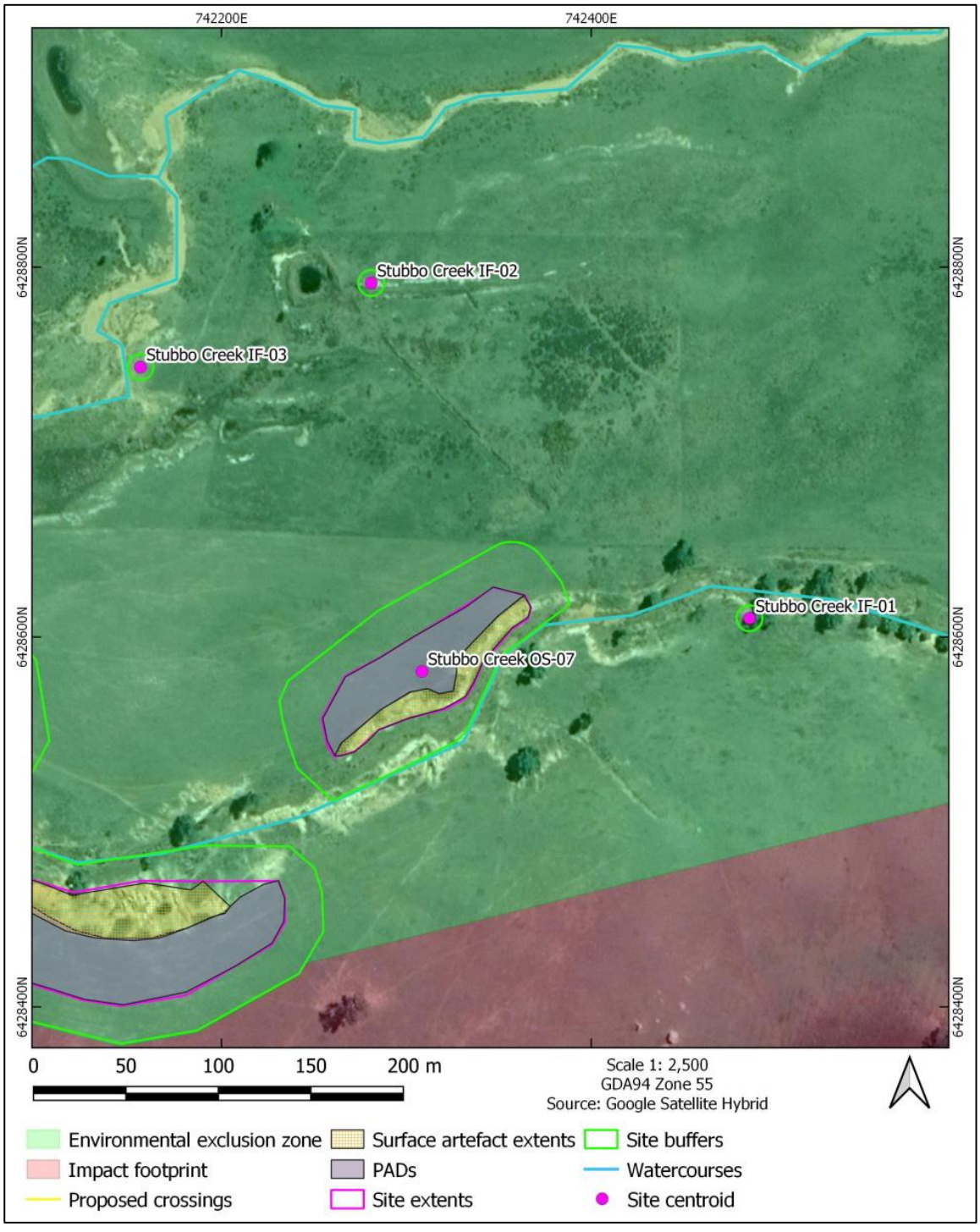


Figure 8-2: Proposed impacts & Stubbo Creek IF-04, IF-06, OS-05 and OS-08.

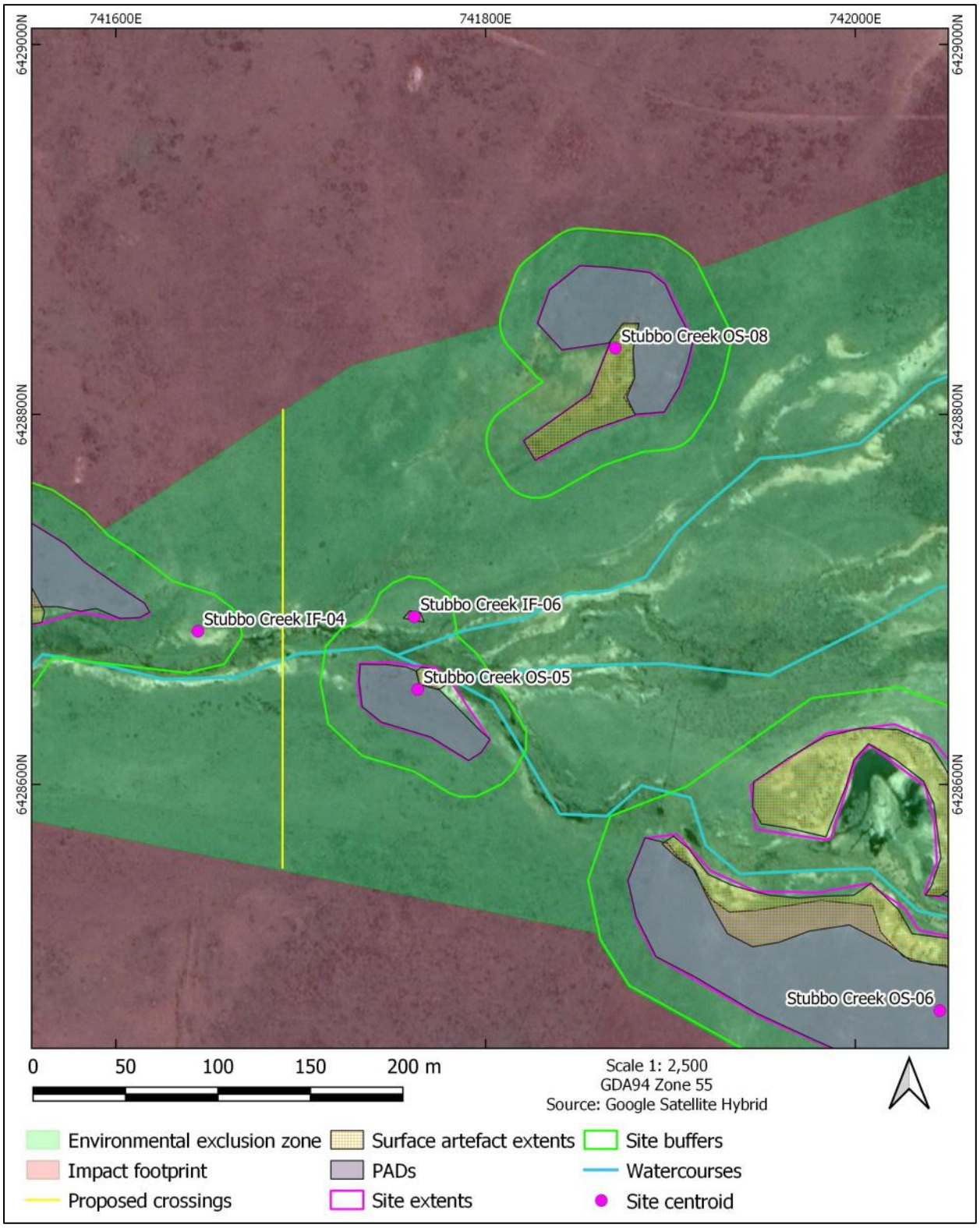


Figure 8-3: Proposed impacts & Stubbo Creek IF-05, OS-01 and OS-02.

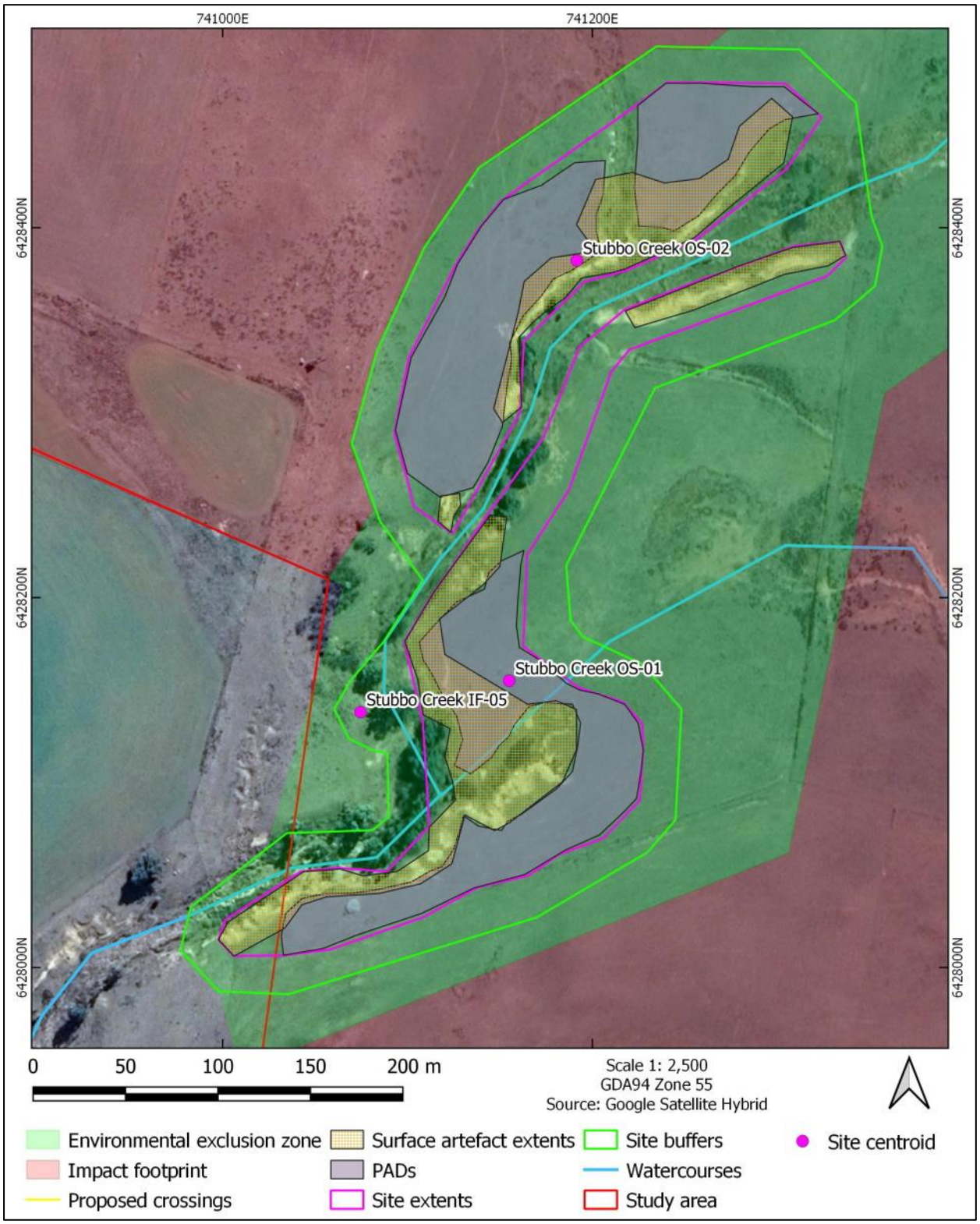


Figure 8-4: Proposed impacts & Stubbo Creek OS-03 and OS-04.

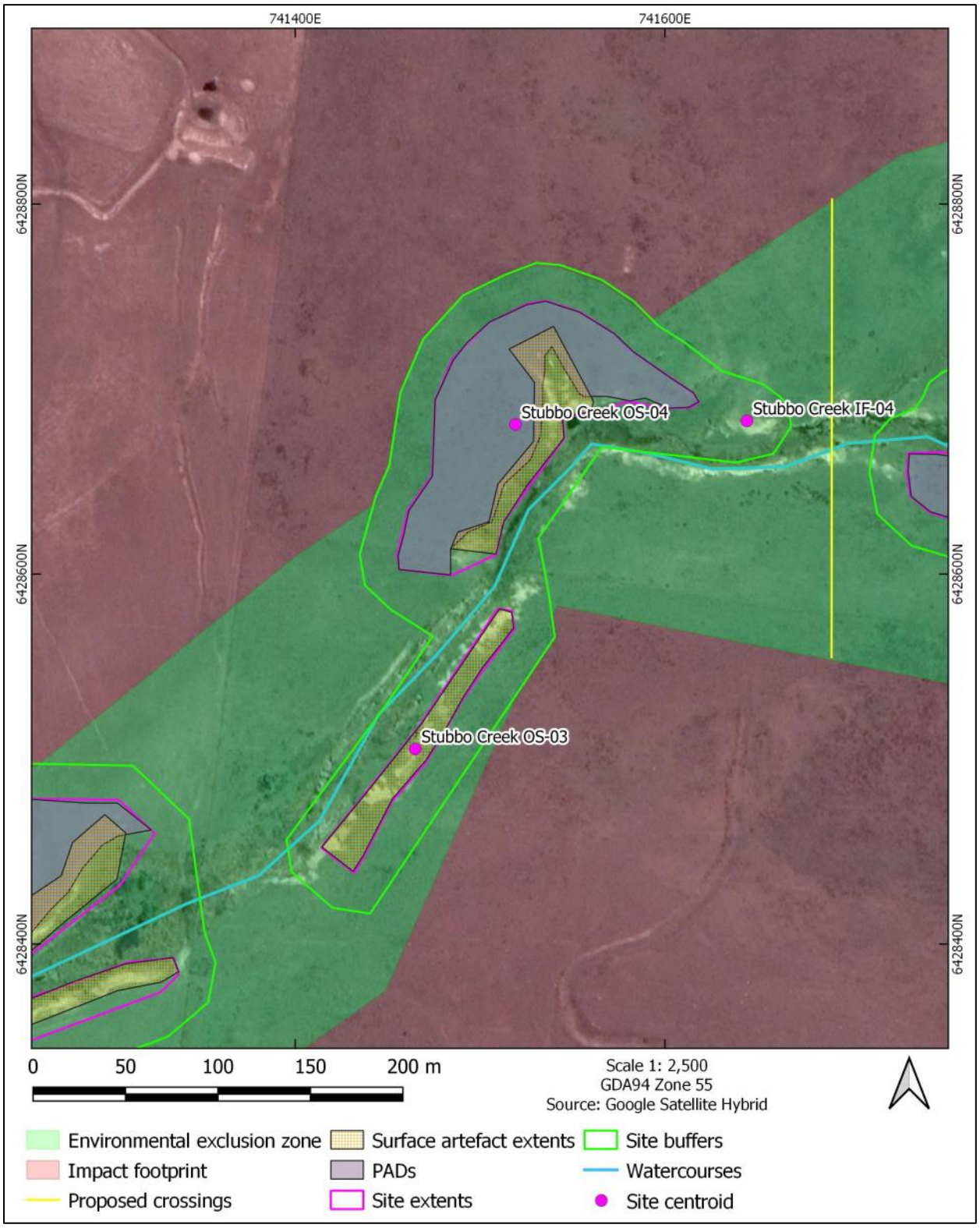


Figure 8-5: Proposed impacts & Stubbo Creek OS-06.

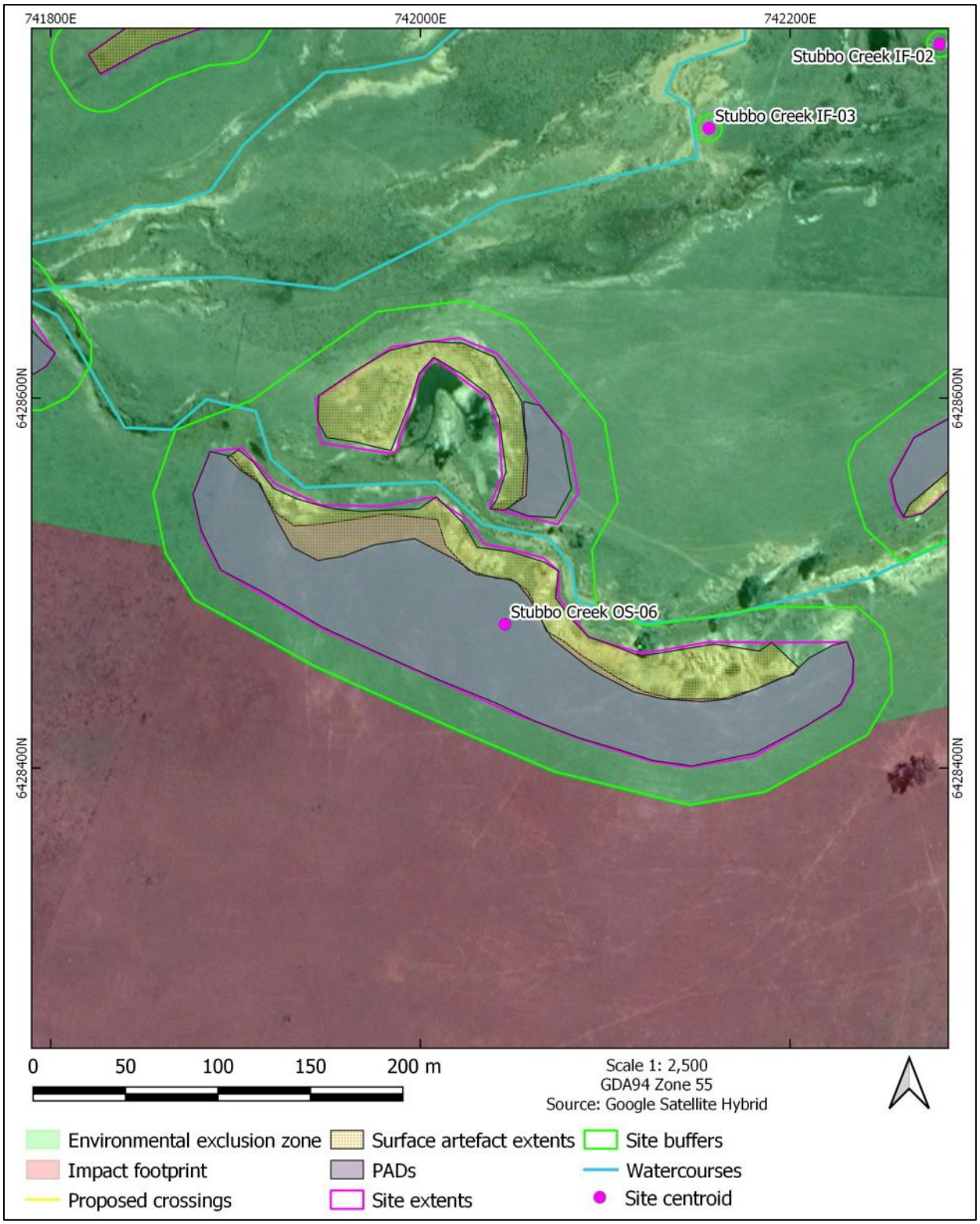


Figure 8-6: Proposed impacts & Rosevale IF-01.

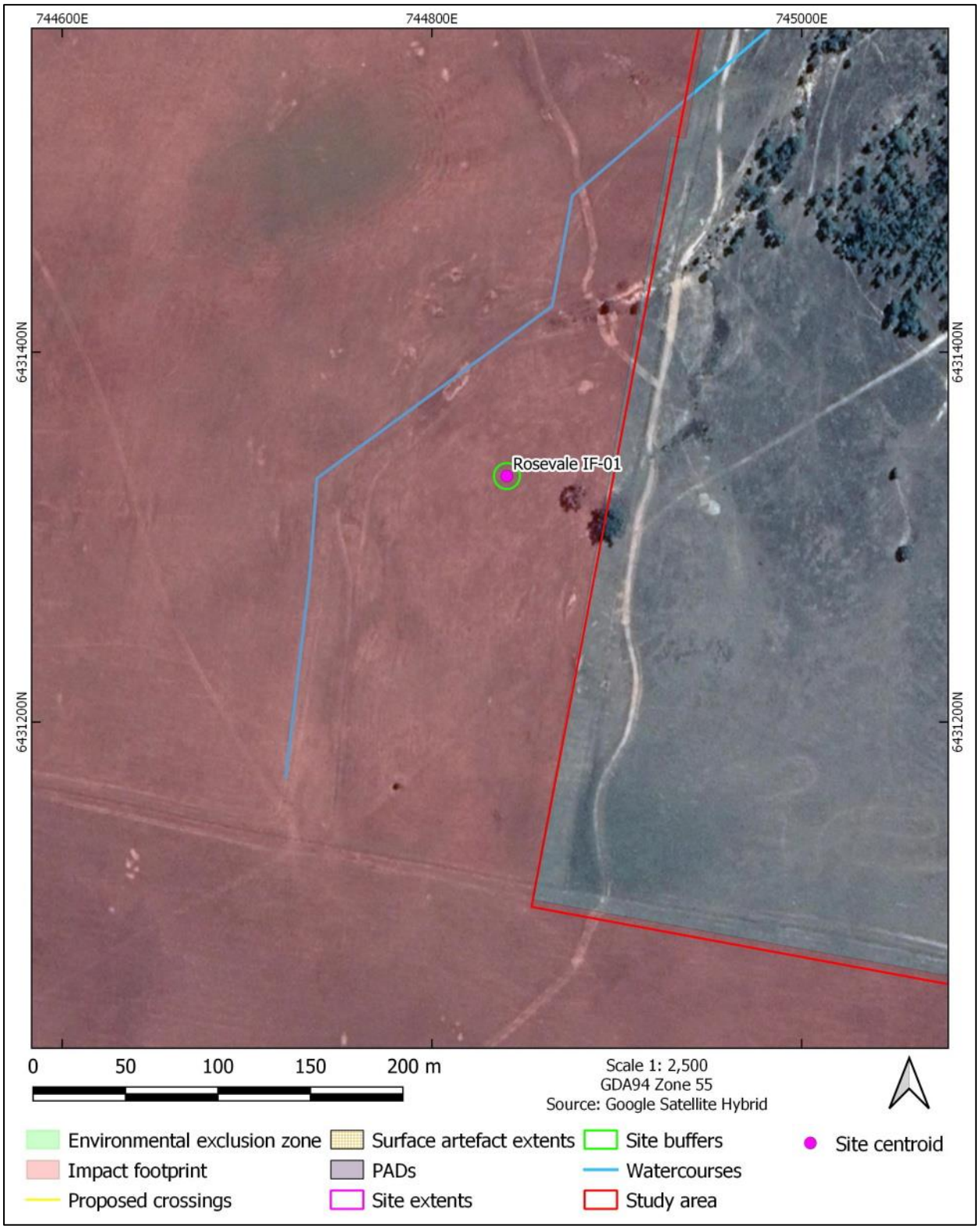


Figure 8-7: Proposed impacts & The Pinnacle IF-01, 36-3-2515 and 36-3-1423.

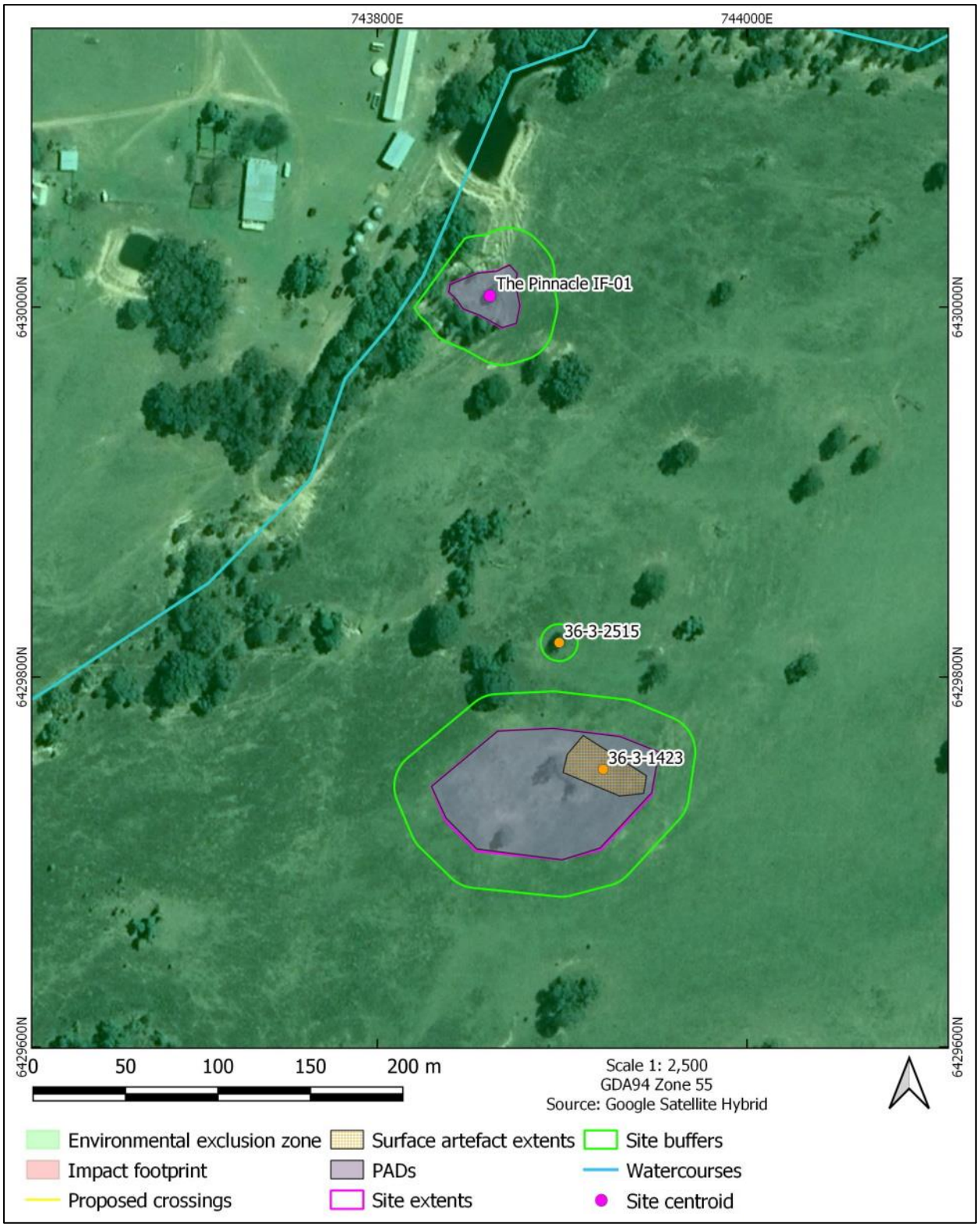


Figure 8-8: Proposed impacts & The Pinnacle IF-04.

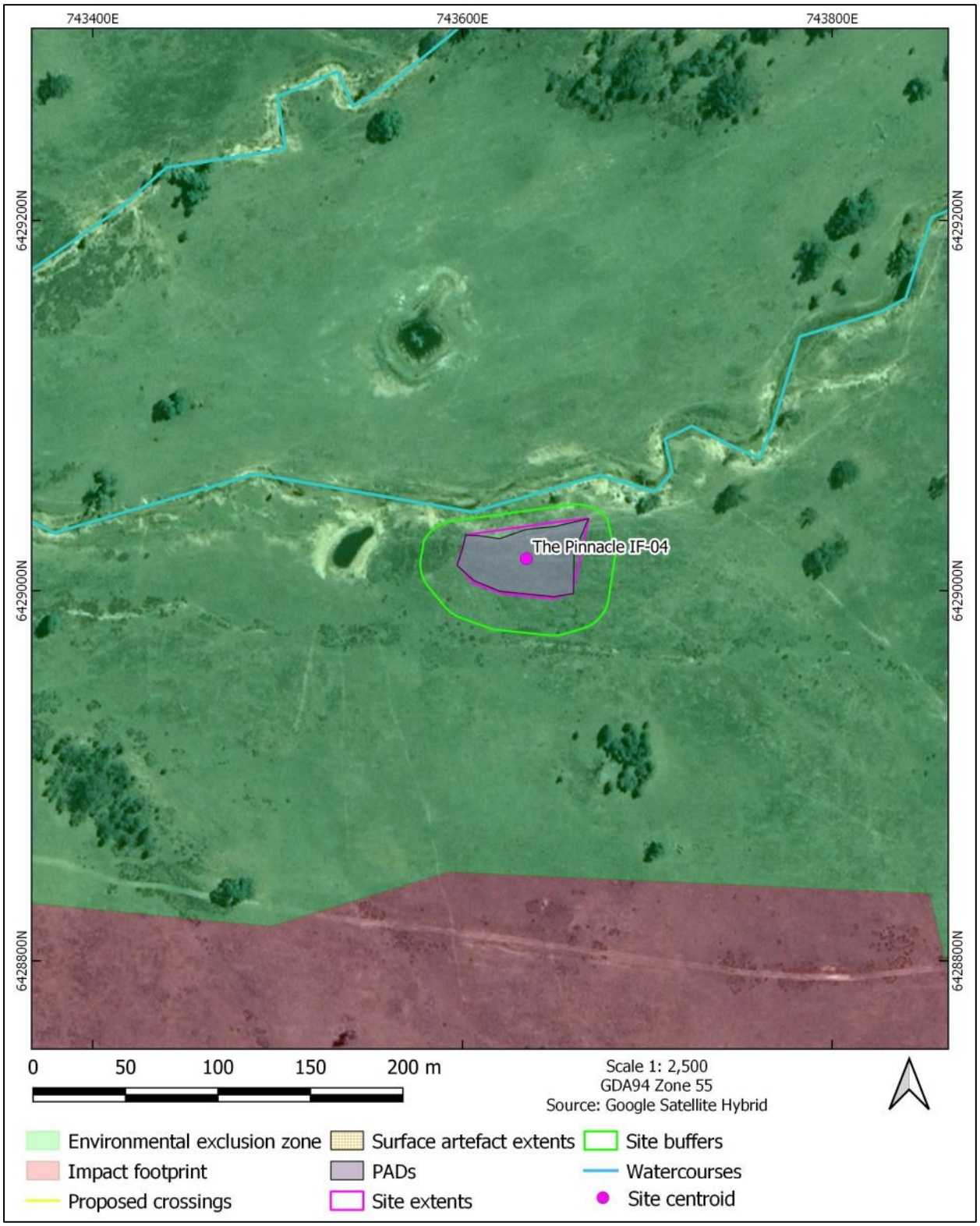


Figure 8-9: Proposed impacts & The Pinnacle IF-02, If-05, OS-02 and PAD-01.

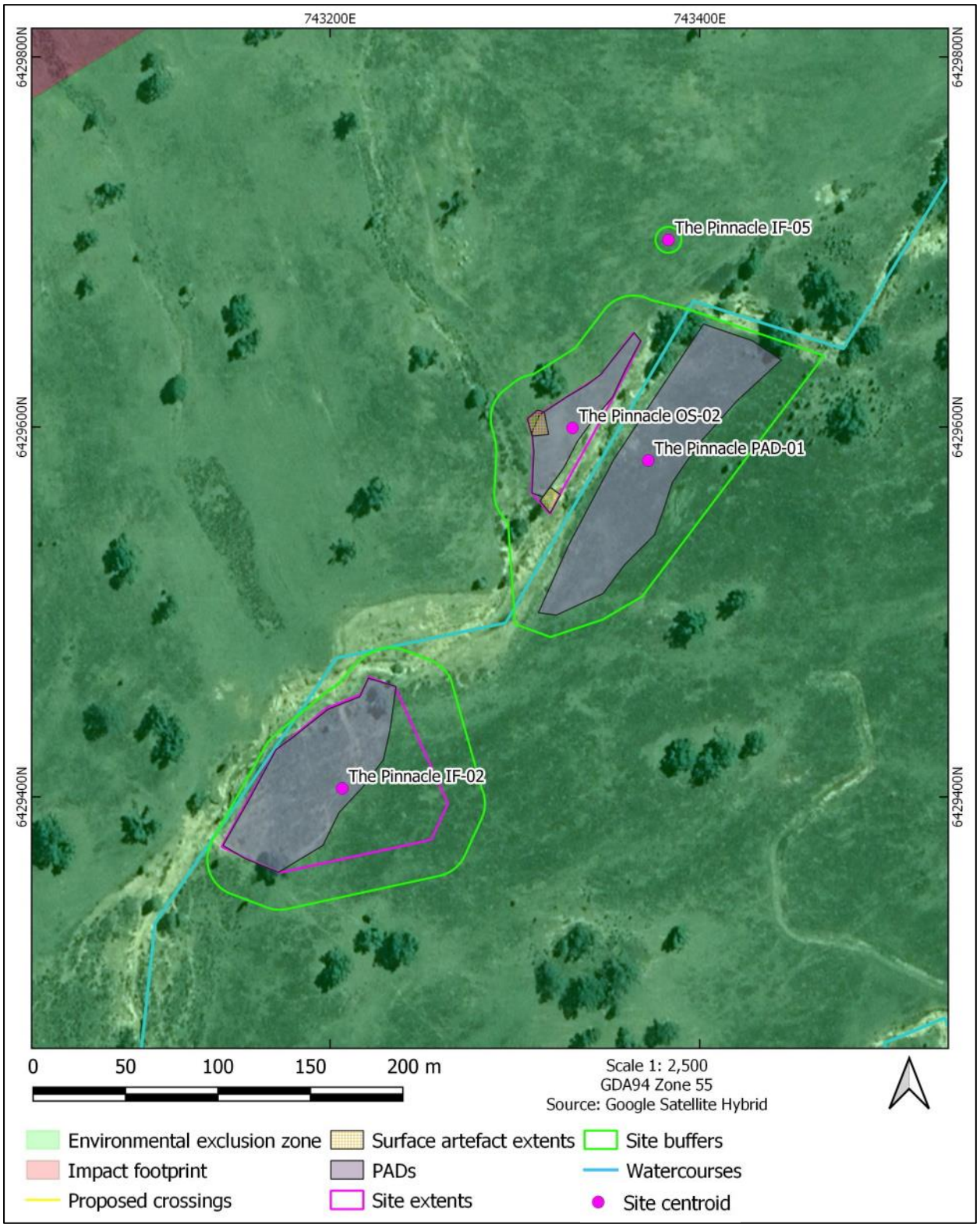
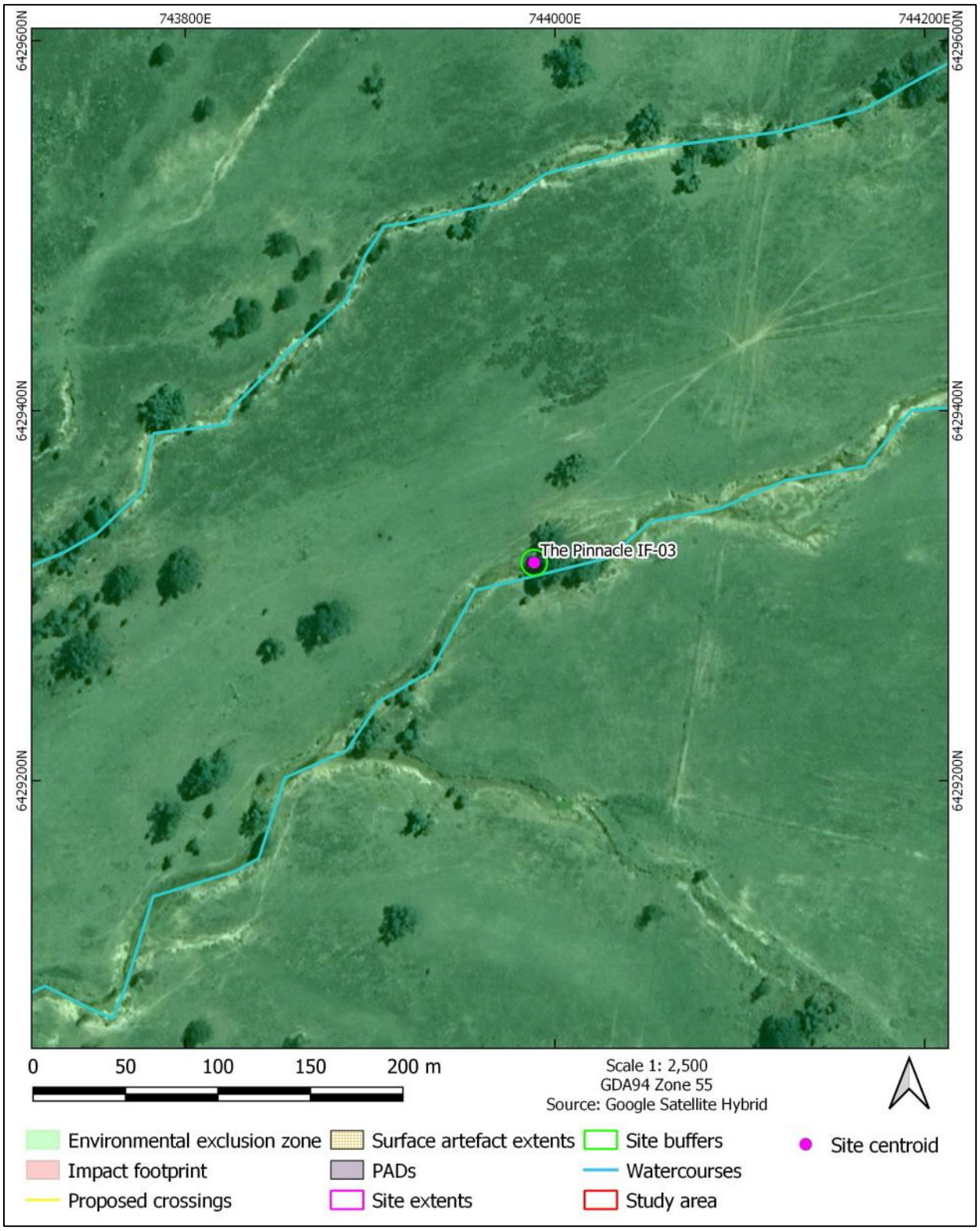


Figure 8-10: Proposed impacts & The Pinnacle OS-01.

Figure 8-11: Proposed impacts & The Pinnacle IF-03.



9 MANAGEMENT OF ABORIGINAL CULTURAL HERITAGE SITES

9.1 GENERAL MANAGEMENT PRINCIPLES

Appropriate management of cultural heritage items is primarily determined based on their assessed significance as well as the likely impacts of the proposed development. **Section 8.2** and **Section 8.3** describe, respectively, the significance / potential of the recorded sites and the likely impacts of the development. The following management options are general principles, in terms of best practice and desired outcomes, rather than mitigation measures against individual site disturbance.

- Avoid impact by altering the development proposal or in this case by avoiding impact to a recorded Aboriginal site. If this can be done, then a suitable curtilage around the site must be provided to ensure its protection both during the short-term construction phase of development and in the long-term use of the area. If plans are altered, care must be taken to ensure that impacts do not occur to areas not previously assessed.

- If impact is unavoidable then appropriate management of the site/object will be determined through policies set out in an *Aboriginal Cultural Heritage Management Plan* (ACHMP). The ACHMP should include measures for site conservation, as well as detailing methods for the management of sites to be impacted. The management will depend on many factors including the assessed significance of the sites (**Section 8.2**). In certain instances, a site may have low archaeological, aesthetic, and historic values but moderate or high cultural value. In these cases, management is aimed to mitigate the loss of the cultural heritage values, rather than the loss of the scientific values. Sites of low scientific significance, such as an isolated find, could, from an archaeological perspective, be removed/destroyed with no further archaeological management being required. However, given the site's cultural value, further management in respect to this site type will be recommended here. For example, due to a site's cultural values, the local Aboriginal community may wish to collect or relocate artefacts, whether temporarily or permanently, and such management will form part of the ACHMP. The ACHMP will be developed in consultation between the proponent, RAPs and DPIE.

9.2 OPPORTUNITIES TO CONSERVE ABORIGINAL CULTURAL HERITAGE VALUES

The current assessment has recorded 23 Aboriginal sites inside the study area and located two previously recorded Aboriginal sites, resulting in a total of 25 Aboriginal sites inside the study area. Of these 25 Aboriginal sites, all but one site can be avoided by the project due to the proponent electing to expand the environmental exclusion zone to cover the 24 Aboriginal sites recorded along the main watercourses (see **Figure 8-1** to **Figure 8-11**). This expansion of the

environmental exclusion zone includes buffer areas around the site extents. These buffer areas consist of 20 m for sites with PAD, 5 m for isolated finds and 10 m for 36-3-2515.

9.3 MANAGEMENT AND MITIGATION

9.3.1 Archaeological salvage

As one Aboriginal site (Rosevale IF-01) could potentially be harmed by the project it is recommended that the site be salvaged through the recording and collection of the surface artefact, prior to construction works proceeding. This recommendation is made due to:

- The cultural value of this site and its importance to the Aboriginal community
- The nature of the impacted site (an isolated find)
- Being in landforms with high previous disturbance from a range of factors including erosion and land use practices
- The low archaeological value assigned to the site preclude more intensive archaeological investigations
- Sites such as these have a limited ability to further inform the community about the history and culture of the area. While any potential research questions are limited, some information can nevertheless be gained.

The recommended methodology for the salvage will be finalised after the approvals process as part of the ACHMP, but will include the following measures:

- All visible surface artefacts at a site should be flagged in the field;
- The site should be photographed after flagging and before recording;
- All artefacts should have the following artefact information recorded:
    - Location
    - Artefact class
    - Artefact type
    - Size
    - Reduction level
    - Raw material
    - Notes
- A selection of indicative and / or unusual artefacts from each site will be photographed;
- Once all recording is complete, the artefacts will be collected according to site with artefacts from each site being kept separate;

- Should the collection team encounter a human burial, all work should cease in the area and advice from authorities and RAPs (should the remains be Aboriginal) sought;
- The recording of the artefacts recovered will largely be completed in the field and this data would be incorporated into a report; and
- The salvaged artefacts should be reburied at an agreed upon location. This will take place in accordance with Requirement 26 "Stone artefact deposition and storage" in the Code of Practice. The location chosen for reburial will be an area where future developments will not occur and as close as possible to their original location. A site card will be submitted to AHIMS to record the relocation area and an Aboriginal Site Impact Recording Form (ASIRF) will be submitted by the archaeologist detailing the salvage process and results of the sites.

9.3.2 Unanticipated finds

The ACHMP will detail the processes for managing unanticipated Aboriginal heritage items or potential human remains encountered during the life of the project but the processes should include the example set out in **Appendix 3** and **Appendix 4**.

9.4 STATEMENT OF COMMITMENTS

The proponent will undertake the following commitments:

1) Should the project be approved, the proponent will develop the ACHMP in consultation with the RAPs. The ACHMP will include the recommendations contained in this report (**Section 14**) and this Statement of Commitments (SOC).
2) As the project design is finalised all efforts will be made to conserve Aboriginal sites in the landscape.
3) The isolated find that will potentially be harmed by the project (Rosevale IF-01) will be salvaged under the methodology set out in **Section 9.3.1**.
4) The location and manner of reburial will be detailed in the ACHMP following RAP consultation and will be undertaken in accordance with Requirement 26 of the Code of Practice. A site card will be submitted to AHIMS to register the location of any reburied artefacts.
5) An ASIRF will be completed by the archaeologist and submitted to AHIMS recording the salvage results of the sites associated with the project, within four months of the salvage being completed.

HISTORIC HERITAGE ASSESSMENT

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10 HISTORIC HERITAGE ASSESSMENT: INTRODUCTION

10.1 BRIEF DESCRIPTION OF THE PROJECT

Please refer to **Sections 1** and **2** for a description of the project and the environmental context of the study area.

10.2 RELEVANT LEGISLATION

10.2.1 State legislation

Environmental Planning and Assessment Act 1979 (EP&A Act)

Please refer to **Section 3.3.1** for a description of the EP&A Act.

Heritage Act 1977 (Heritage Act)

The *Heritage Act 1977* (Heritage Act) is applicable to the current assessment. This Act established the Heritage Council of NSW. The Heritage Council's role is to advise the government on the protection of heritage assets, make listing recommendations to the Minister in relation to the State Heritage Register (SHR), and assess/approve/decline proposals involving modification to heritage items or places listed on the SHR. Most proposals involving modification are assessed under Section 60 of the Heritage Act.

Automatic protection is afforded to 'relics', defined as 'any deposit or material evidence relating to the settlement of the area that comprised New South Wales, not being Aboriginal settlement, and which holds state or local significance' (note: formerly the Act protected any 'relic' that was more than 50 years old. Now the age determination has been dropped from the Act and relics are protected according to their heritage significance assessment rather than purely on their age). Excavation of land on which it is known or where there is reasonable cause to suspect that 'relics' will be exposed, moved, destroyed, discovered or damaged is prohibited unless ordered under an excavation permit.

10.2.2 Commonwealth legislation

Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act)

Please refer to **Section 3.3.2** for a description of the EPBC Act.

10.2.3 Applicability to the project

The current project will be assessed under Division 4.7 of the EP&A Act as a State Significant Development (SSD).

Any items of local or state historical heritage significance within the study area are afforded legislative protection under the Heritage Act.

It is noted there are no Commonwealth or National heritage listed places within the study area, and as such, the heritage provisions of the EPBC Act do not apply.

10.3 HISTORIC HERITAGE ASSESSMENT OBJECTIVES

The current assessment will apply the Heritage Council's *Historical Archaeology Code of Practice* (Heritage Council 2006) in the completion of a historical heritage assessment, including field investigations, to meet the following objectives:

Objective One: To identify whether historical heritage items or areas are, or are likely to be, present within the study area

Objective Two: To assess the significance of any recorded historical heritage items or areas

Objective Three: Determine whether the project is likely to cause harm to recorded historical heritage items or areas

Objective Four: Provide management recommendations and options for mitigating impacts.

10.4 DATE OF HISTORIC HERITAGE ASSESSMENT

The historic heritage assessment took place at the same time as the Aboriginal heritage assessment. Please refer to **Section 3.2** for the dates of the fieldwork.

10.5 OZARK INVOLVEMENT

The fieldwork and reporting of the historic heritage assessment are the same personnel involved with the Aboriginal heritage assessment. Please see **Section 3.2** for details.

11 HISTORIC HERITAGE ASSESSMENT: BACKGROUND

11.1 BRIEF HISTORY OF GULGONG

Early European exploration of the region occurred in the 1820s. One of the first land holders and cattle runs in the area was owned by the sons and grandsons of William Cox, who had built the road across the Blue Mountains (ABD 2020). Their cattle run was called 'Guntawang' and was established 1822, 8 km south-west of the present town site of Gulgong.

Conflict with the local Wiradjuri groups, however, soon caused the withdrawal of these early settlers (OzArk 2005). The homestead is still occupied and registered as a Commonwealth and State heritage item. The Rouse brothers took over Guntawang and brought cattle to the property in 1825 and the area eventually became the village of Guntawang.

The Gulgong goldfield was gazetted in 1866 but initial finds were negligible. One of Rouse's shepherds, Tom Saunders, uncovered a large find on the future town site (at Red Hill) on April 14, 1870, thereby sparking a major goldrush.

There was spectacular growth in Gulgong during the 1870s, with the mines around Gulgong producing twice as much gold as the Meroo field produced over half a century in 1872 (DUAP 1996: 92). When the town was gazetted in 1872 there were reputedly 20,000 people in the area.

Gulgong became a municipality in 1876 although the gold had already begun to dwindle. By 1881 the population was 1,212 and the boom years were over. From that point, wheat and wool production, boosted by the arrival of the railway in 1909, sustained the town.

The 1886 parish maps of Stubbo (**Figure 11-1**) and Narragamba (**Figure 11-2**) show that J.W. Lee, J.R. Lee and C.W. Lee, V.J. Dowling, and J.L Tayler owned much of the land the study area is located on. The very southern extent of the study area extends into the northern extension of the Gulgong gold field.

The current day township of Gulgong is well known for its historic streetscape and association with gold mining. The township has approximately 130 National Trust listed buildings, as well as Australia's oldest operating opera house (the Prince of Wales Opera House), and many museums relating to the gold rush and pioneer history of the town. For further information see the 'social impact section' in the main EIS report.

Figure 11-1: Stubbo Parish Map 1886 with study area overlayed in red.

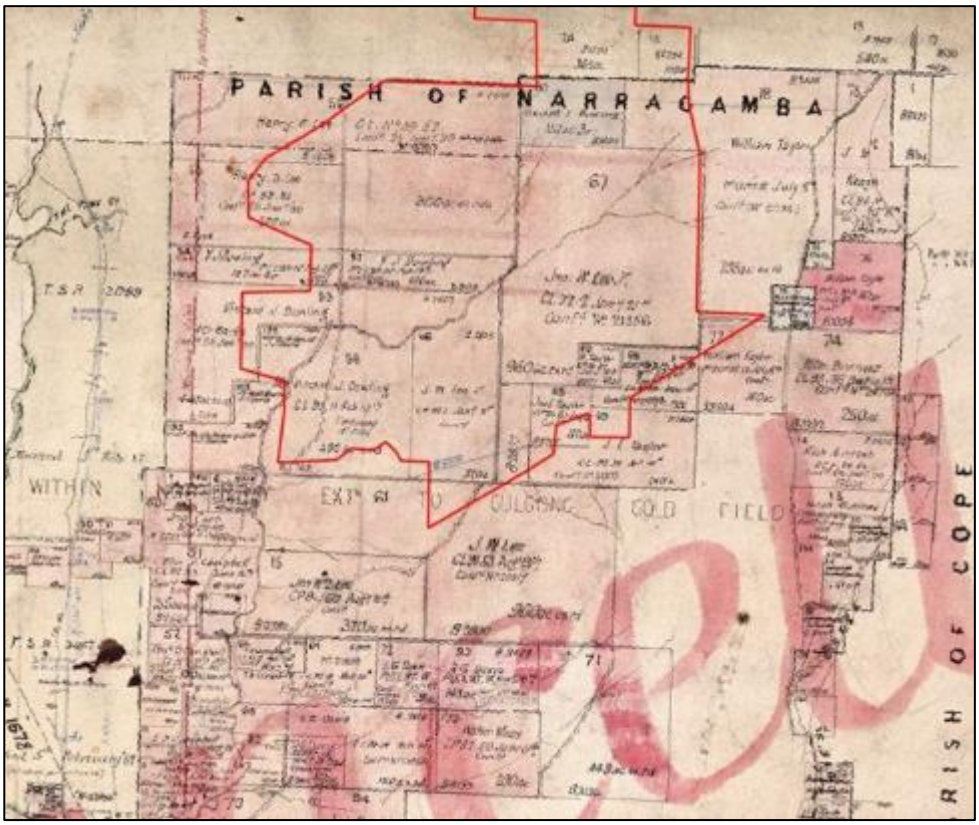
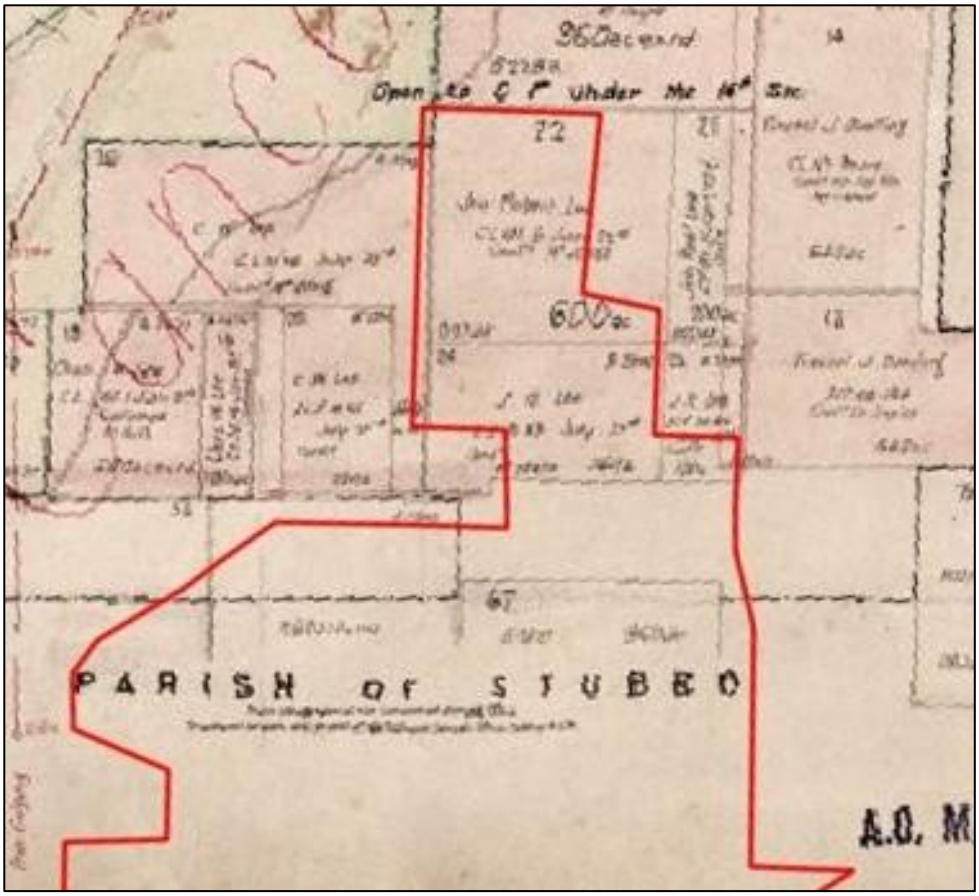


Figure 11-2: Narragamba Parish Map 1886 with study area overlayed in red.



11.2 LOCAL CONTEXT

11.2.1 Desktop database searches conducted

A desktop search was conducted on the following databases to identify any potential previously recorded heritage within the study area. The results of this search are summarised in **Table 11-1**.

Table 11-1: Historic heritage: desktop-database search results.

Name of Database Searched	Date of Search	Type of Search	Comment
National and Commonwealth Heritage Listings	12 June 2020	World Heritage List Commonwealth Heritage List National Heritage List	No items within 10 km of the study area.
State Heritage Register (SHR)	12 June 2020	NSW	No items within 5 km of the study area. The closest listing 8.3 km southwest is the Gulgong Railway Bridge over Wialdra Creek
Historic Heritage Information Management System (HHIMS)	12 June 2020	NSW	No items within 10 km of the study area.
Local Environmental Plan (LEP)	12 June 2020	Mid-Western LEP of 2012	No items within 10 km of the study area.

A search of the Heritage Council of NSW administered heritage databases and the Mid-Western LEP 2012 returned no records for historical heritage sites within the designated search areas.

The closest item listed on the SHR is the Gulgong Railway Bridge over Wialdra Creek located 8.3 km southwest of the study area. The closest LEP historic item is The Lagoon Homestead located 10.3 km southwest of the study area.

11.3 SURVEY METHODOLOGY

Standard archaeological field survey and recording methods were employed in this study (Burke & Smith 2004). The historic heritage assessment of the study area was completed concurrently with the Aboriginal cultural heritage assessment (see **Section 6**).

11.4 PROJECT CONSTRAINTS

There were no significant constraints in completing the archaeological assessment of the study area. GSV posed the greatest constraint during field inspection (see **Section 6.3**), however, not to the extent that the efficacy of the survey was unduly diminished.

12 RESULTS OF HISTORIC HERITAGE ASSESSMENT

12.1 HISTORIC HERITAGE SITES

There are no historic sites recorded within the study area. As such, there will be no impact to any historic sites during the proposed works.

12.2 DISCUSSION

Overall, there was limited potential for historic heritage to be present inside the study area. The heritage values associated with the study area are derived from practices which are unlikely to have physical remains such as grazing. As such, potential remaining physical fabric such as cattle yards, fencing, etc. have been upgraded throughout the use of the study area and no historic remnants were recorded during the survey. In addition, no areas of potential historical deposits were identified during the survey. The structures which make up The Pinnacle homestead are also not of historic heritage significance.

12.3 LIKELY IMPACTS TO HISTORIC HERITAGE FROM THE PROJECT

The project will not impact any historic heritage.

13 MANAGEMENT AND MITIGATION: HISTORIC HERITAGE

13.1 GENERAL PRINCIPLES FOR THE MANAGEMENT OF HISTORIC SITES

Appropriate management of heritage items is primarily determined based on their assessed significance as well as the likely impacts of the proposed development.

In terms of best practice and desired outcomes, avoiding impact to any historical item is a preferred outcome, however, where a historical site has been assessed as having no heritage value, impacts to these items does not require any legislated mitigation.

13.2 MANAGEMENT AND MITIGATION OF RECORDED HISTORIC SITES

No items or sites of historic heritage significance were identified in the study area.

As such, if items of historic heritage significance are uncovered during the project, then the *Unanticipated Finds Protocol for Historic Heritage* (**Appendix 5**) must be enacted.

14 RECOMMENDATIONS

14.1 ABORIGINAL CULTURAL HERITAGE

Under Section 89A of the NPW Act it is mandatory that all newly-recorded Aboriginal sites be registered with AHIMS. As a professional in the field of cultural heritage management it is the responsibility of OzArk to ensure this process is undertaken.

To this end it is noted that 23 Aboriginal sites were recorded during the assessment and two previously recorded Aboriginal sites located.

The following recommendations are made based on these impacts and with regard to:

- Legal requirements under the terms of the NPW Act whereby it is illegal to damage, deface or destroy an Aboriginal place or object without the prior written consent of HNSW
- The findings of the current investigations undertaken within the study area
- The interests of the Aboriginal community.

Recommendations concerning Aboriginal cultural values within the study area are as follows:

1. Following development consent of the project, the proponent will develop an *Aboriginal Cultural Heritage Management Plan* (ACHMP) which is to be agreed to by the RAPs and Department of Planning, Industry and the Environment (DPIE). The ACHMP will also include an unanticipated finds protocol, unanticipated skeletal remains protocol and long-term management of any artefacts.
2. Should development consent for the project be granted, archaeological management strategies to manage and mitigate the impact of the solar farm are set out in **Section 9.3**. The Aboriginal site (Rosevale IF-01) within the development footprint for the project will be salvaged by a surface collection of visible artefacts.
    a. The recommended methodology for the salvage will be finalised after the approvals process has been completed in the ACHMP, but will include the measures outlined in **Section 9.3.1**.
    b. The salvage works will include the mapping, analysis and collection of the surface artefact at the affected site. Results will be included in a brief report to preserve the data in a useable form and an Aboriginal Site Impact Recording Form (ASIRF) will be submitted to AHIMS.
3. All land-disturbing activities must be confined to within the development footprint and associated tracks and/or cable crossings. Should the parameters of the proposed work extend beyond this, then further archaeological assessment may be required.

4. Of the three potential access track options, Option Two is the preferred alignment based on the heritage assessment (see **Section 7.1.2.1**). If Option One is chosen, then further archaeological assessment will be necessary due to its proximity and intersection with an archaeologically sensitive landform.

14.2 HISTORIC HERITAGE

The following recommendations are made based on the impacts associated with the solar farm development and with regard to:

- Legal requirements under the terms of the Heritage Act
- Guidelines presented in the *Burra Charter* (Australia ICOMOS 2013)
- The findings of the current assessment
- The interests of the local community.

No historic heritage items are located inside the study area.

Recommendations concerning the historic values within the study area are as follows:

1. Should development consent for the project be granted, archaeological management strategies to manage and mitigate the impact of the solar farm development are set out in **Section 13.2**.
2. Following development consent of the project, an unanticipated finds protocol for historic heritage must be developed and then used during the construction and ongoing use of the project. If items of historic heritage significance are uncovered during the project, then the Unanticipated Finds Protocol for Historic Heritage will be enacted.
3. To avoid the potential for harm to historic objects on unassessed adjacent landforms, all ground surface disturbing activities must be confined to the development footprint and associated tracks and/or cable crossings.

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APPENDIX 1: ABORIGINAL COMMUNITY CONSULTATION LOG

Appendix 1 Figure 1: Aboriginal Consultation Log – Stubbo Solar Farm.

Date	Organisation	Comment	Method
23.4.20	Mudgee Guardian	Rebecca Hardman (RH) rang - newspaper is printed on a Tuesday and Friday The cut off is Thursday prior for Tuesday and Wednesday Prior for Friday	Phone
23.4.20	Dunedoo District Diary	RH phoned - N/A	Phone
23.4.20	Dunedoo District Diary	RH sent email enquiring if still printing in hard copy	Email
19.5.20	Mudgee Guardian	RH sent for proof and quote to Tammy	Email
19.5.20	Mudgee Guardian	RH received proof	Email
19.5.20	Mudgee Guardian	RH phoned and approved advert, Tammy will email invoice	Phone
19.5.20	Mudgee Guardian	RH received invoice	Email
19.5.20	Dunedoo District Diary	RH sent for proof and quote	Email
19.5.20	Dunedoo District Diary	RH received proof	Email
19.5.20	Dunedoo District Diary	RH approved proof, invoice will be sent when printed	Email
19.5.20	BCD (now HNSW)	RH sent stage1 agency letter requesting potential stakeholders. Closing date 2.6.20	Email
19.5.20	Mudgee Local Aboriginal Land Council	RH sent stage1 agency letter requesting potential stakeholders. Closing date 2.6.20	Email
19.5.20	Office of The Registrar, ALRA	RH sent stage1 agency letter requesting potential stakeholders. Closing date 2.6.20	Email
19.5.20	National Native Title Tribunal	RH sent stage1 agency letter requesting potential stakeholders. Closing date 2.6.20	Email
19.5.20	NTSCORP	RH sent stage1 agency letter requesting potential stakeholders. Closing date 2.6.20	Email
19.5.20	Mid-Western Regional Council	RH sent stage1 agency letter requesting potential stakeholders. Closing date 2.6.20	Email
19.5.20	Central Tablelands Local Land Services	RH sent stage1 agency letter requesting potential stakeholders. Closing date 2.6.20	Email
19.5.20	Central Tablelands Local Land Services	RH received confirmation and advise has passed on	Email
19.5.20	Central Tablelands Local Land Services	RH thanked Mary	Email
20.5.20	National Native Title Tribunal	RH received notification *Records held by the National Native Title Tribunal as of 20 May 2020 indicate that the identified parcels appear to be freehold, and freehold tenure extinguishes native title.*	Email
22.5.20	Mudgee Guardian	RH received Tear sheet	Email
22.5.20	BCD (now HNSW)	RH received stakeholders list	Email
25.5.20	Muronggialinga	RH received phone call registering as a RAP	Phone
25.5.20	Wellington Valley Wiradjuri Aboriginal Corporation	RH received call from Brad registering WVWAC and GAC	Phone
25.5.20	Gallanggabang Aboriginal Corporation	RH received call from Brad registering WVWAC and GAC	Phone
2.6.20	Bill Allen	RH sent EOI community letter. RSVP 18.6.20	Post
2.6.20	Binjang Wellington Wiradjuri heritage Survey	RH sent EOI community letter. RSVP 18.6.20	Email

Date	Organisation	Comment	Method
2.6.20	Corroboree Aboriginal Corporation	RH sent EOI community letter. RSVP 18.6.20	Email
2.6.20	Darlina Verrills	RH sent EOI community letter. RSVP 18.6.20	Post
2.6.20	David Maynard	RH sent EOI community letter. RSVP 18.6.20	Post
2.6.20	Dhuuluu-Yala Aboriginal Corporation	RH sent EOI community letter. RSVP 18.6.20	Email
2.6.20	Jean Thornton	RH sent EOI community letter. RSVP 18.6.20	Post
2.6.20	Jodie Mckinnon	RH sent EOI community letter. RSVP 18.6.20	Post
2.6.20	Katrina Mckinnon	RH sent EOI community letter. RSVP 18.6.20	Email
2.6.20	Buubang	RH sent EOI community letter. RSVP 18.6.20	Email
2.6.20	Mingaan Aboriginal Corporation	RH sent EOI community letter. RSVP 18.6.20	Email
2.6.20	Mooka	RH sent EOI community letter. RSVP 18.6.20	Email
2.6.20	Mudgee Local Aboriginal Land Council	RH sent EOI community letter. RSVP 18.6.20	Email
2.6.20	Natasha Rodgers	RH sent EOI community letter. RSVP 18.6.20	Email
2.6.20	North-Eastern Wiradjuri	RH sent EOI community letter. RSVP 18.6.20	Email
2.6.20	Paul Brydon	RH sent EOI community letter. RSVP 18.6.20	Email
2.6.20	Trevor Robinson	RH sent EOI community letter. RSVP 18.6.20	post
2.6.20	Wamarr Cutural Consultants	RH sent EOI community letter. RSVP 18.6.20	Email
2.6.20	Warrabinga Native Title Claimants Aboriginal Corporation	RH sent EOI community letter. RSVP 18.6.20	Email
2.6.20	Wiradjuri Council of Elders	RH sent EOI community letter. RSVP 18.6.20	Email
2.6.20	Wiradjuri Interim Working Party	RH sent EOI community letter. RSVP 18.6.20	Post
2.6.20	Wiradjuri traditional Owners Central West Aboriginal Corporation	RH sent EOI community letter. RSVP 18.6.20	Email
2.6.20	Wurrumay Consultants	RH sent EOI community letter. RSVP 18.6.20	Email
3.6.20	Paul Brydon	HR received call registering as a RAP	Phone
3.6.20	Dunedoo District Diary	RH received invoice	Email
3.6.20	Mudgee Local Aboriginal Land Council	RH received email registering as a RAP	Email
4.6.20	Corroboree Aboriginal Corporation	RH received registration as a RAP	Email
4.6.20	Gunjeewong Cultural Heritage Corporation Heritage Preservation	RH received registration as a RAP	Email
23.6.20	Mudgee Local Aboriginal Land Council	RH sent notification of RAPs	Email
23.6.20	BCD (now HNSW)	RH sent notification of RAPs	Email
2.7.20	Mooka	RTS	RTS
2.7.20	Wamarr Cutural Consultants	RTS	RTS
7.7.20	Muronggialinga	RH sent stage 2. Feedback ends 4.8.20	Email
7.7.20	Wellington Valley Wiradjuri Aboriginal Corporation	RH sent stage 2. Feedback ends 4.8.20	Email
7.7.20	Gallanggabang Aboriginal Corporation	RH sent stage 2. Feedback ends 4.8.20	Email
7.7.20	Mudgee Local Aboriginal Land Council	RH sent stage 2. Feedback ends 4.8.20	Email
7.7.20	Paul Brydon	RH sent stage 2. Feedback ends 4.8.20	Email
7.7.20	Corroboree Aboriginal Corporation	RH sent stage 2. Feedback ends 4.8.20	Email

Date	Organisation	Comment	Method
7.7.20	Gunjeewong Cultural Heritage Aboriginal Corporation	RH sent stage 2. Feedback ends 4.8.20	Email
7.7.20	Warrabinga Native Title Claimants Aboriginal Corporation	RH sent stage 2. Feedback ends 4.8.20	Email
9.7.20	Paul Brydon	RH received call from Paul, he is happy with the methodology	Phone
13.7.20	North-Eastern Wiradjuri	Sheridan Baker (SB) received phone call from Emily requesting call back	Phone
13.7.20	North-Eastern Wiradjuri	RH phoned back and left message for Emily	Phone
13.7.20	North-Eastern Wiradjuri	RH phoned and spoke to Emily, updated contact details and registered as a RAP, RH to send stage 2 out	Email
13.7.20	North-Eastern Wiradjuri	RH sent stage 2. Feedback ends 4.8.20	Email
27.7.20	Wellington Valley Wiradjuri Aboriginal Corporation	RH received feedback	Email
27.7.20	Gallanggabang Aboriginal Corporation	RH received feedback	Email
29.7.20	Muronggialinga	RH sent invite to fieldwork	Email
29.7.20	Wellington Valley Wiradjuri Aboriginal Corporation	RH sent invite to fieldwork	Email
29.7.20	Gallanggabang Aboriginal Corporation	RH sent invite to fieldwork	Email
29.7.20	Mudgee Local Aboriginal Land Council	RH sent invite to fieldwork	Email
29.7.20	Warrabinga Native Title Claimants Aboriginal Corporation	RH sent invite to fieldwork	Email
29.7.20	North-Eastern Wiradjuri	RH sent invite to fieldwork	Email
29.7.20	Mudgee Local Aboriginal Land Council	RH received copy of workers comp	Email
29.7.20	Mudgee Local Aboriginal Land Council	RH emailed asking if confirming attendance and for name and contact number of site officer	Email
29.7.20	Wellington Valley Wiradjuri Aboriginal Corporation	RH receive phone call, Brad confirmed GAC & WVWAC will attend, unsure of site officer as of yet	Email
29.7.20	Mudgee Local Aboriginal Land Council	RH received name and contact number of site officer	Email
29.7.20	Mudgee Local Aboriginal Land Council	RH thanked Tony	Email
29.7.20	Warrabinga Native Title Claimants Aboriginal Corporation	RH received email updating contact details and a copy of workers comp. and confirmed will send site officer	Email
29.7.20	Warrabinga Native Title Claimants Aboriginal Corporation	RH thanked Jack and requested name and contact number	Email
31.7.20	North-Eastern Wiradjuri	RH received workers compensation certificate. Virginia to send site officer name and contact details asap	Email
4.8.20	North-Eastern Wiradjuri	RH thanked Virginia	Email
30.7.20	Muronggialinga	RH received workers comp	Email
30.7.20	Muronggialinga	RH received email asking if can share days between site officers	Email
30.7.20	Warrabinga Native Title Claimants Aboriginal Corporation	RH received email: *We will have two or three site officers depending on their availability for different days but I will ensure that they fill the covid 19 forms out and either take it with them on the days they work or email it to you*	Email

Date	Organisation	Comment	Method
4.8.20	Muronggialinga	RH thanked Debbie and confirmed can shared days	Email
4.8.20	Muronggialinga	RH received phone call, will send Larry only and possibly not available last day	Email
4.8.20	Warrabinga Native Title Claimants Aboriginal Corporation	RH thanked Jack and requested name and contact number. Clarified how Covid forms work	Email
5.8.20	Warrabinga Native Title Claimants Aboriginal Corporation	RH received roster and contact numbers	Email
7.8.20	Warrabinga Native Title Claimants Aboriginal Corporation	Alyce Cameron (AC) received phone call from Jack confirming start time on Monday 10 August. AC confirmed on Monday it was 9 am, and then will arrange with site officers for slightly earlier other days as FW progresses.	Phone
7.8.20	Muronggialinga	Emma Grey (EG) took phone message from Steph. Will get someone to ring back when available.	Phone
7.8.20	Muronggialinga	AC rang Steph back. Wanted to check whether fieldwork was proceeding next week due to the weather. AC said are checking on the weather but at the moment, still proceeding as planned. If that changes will let everybody know.	Phone
7.8.20	North-Eastern Wiradjuri	RH received site officer contact details	Email
7.8.20	Muronggialinga	RH received an email: Hi all I do apologise but there is a change to our rap it will be Steven (George) Flick for Monday and Tuesday we might not have a rap for Wednesday but will advise you	Email
12.8.20	Muronggialinga	AC received phone call regarding FW allocation in the late evening.	Phone
12.8.20	Muronggialinga	AC received email: *sorry for the late night phone call to ask if work was on tomorrow and Friday but i had to know in case a rap had to be arranged for Murong Gialinga as our email stated Six days and i was told others were work on tomorrow and Friday and you said only Mudgee Land Council and the Native Title Claimants were working the full Eight days as there were to many groups and other groups getting six days after talking to some of our community about this we feel this is unfair and it makes the other Two groups to be held in a higher regards than the other groups which can cause a few upsets we feel it should of been transparent in an email stating this so we could respond and have a fair say. Also in an email it should of said in the Methodology that the groups would be split up into threes to cover different areas as we would like everyone together staying the distance for the Virus but knowing what is happening in all areas so they can bring all the information to their communities and write the information on their task sheets. I apologise again for the late call*	Email
13.8.20	Muronggialinga	RH responded: *Just wanted to touch base with you and let you know that your email has been received, however Alyce is in the field and Sheridan/Jodie is not in the office until tomorrow, however I have spoken to them on your behalf. Unfortunately, at this stage of the project, fieldwork has already been allocated, however we will take your points into consideration for future projects.*	Email
7.9.20	North-Eastern Wiradjuri	Emma rang. AC took phone call since RH not in office. Emma was enquiring as to how to	Phone

Date	Organisation	Comment	Method
		invoice for fieldwork and the rate agreed. AC said RH would ring back tomorrow.	
8.9.20	North-Eastern Wiradjuri	RH returned Emma's call, clarified amount to INV and days Terri attended	Phone
9.9.20	North-Eastern Wiradjuri	RH spoke to Virginia re pay for Terri and invoicing	Phone
10.9.20	North-Eastern Wiradjuri	RH received invoice	Email
15.9.20	Mudgee Local Aboriginal Land Council	Invoice sent to ex staff (Pip). Was found and sent to RH	Email
16.9.20	Mudgee Local Aboriginal Land Council	RH asked for invoice to be amended to correct times worked	Email
22.9.20	Mudgee Local Aboriginal Land Council	RH received amended invoice	Email
26.9.20	Muronggialinga	RH received invoice	Email
27.10.20	Muronggialinga	Brendan Fisher (BF) sent stage 4 letter and report	Email
27.10.20	Wellington Valley Wiradjuri Aboriginal Corporation	BF sent stage 4 letter and report	Email
27.10.20	Gallanggabang Aboriginal Corporation	BF sent stage 4 letter and report	Email
27.10.20	Mudgee Local Aboriginal Land Council	BF sent stage 4 letter and report	Email
27.10.20	Paul Brydon	BF sent stage 4 letter and report	Email
27.10.20	Corroboree Aboriginal Corporation	BF sent stage 4 letter and report	Email
27.10.20	Gunjeewong Cultural Heritage Aboriginal Corporation	BF sent stage 4 letter and report	Email
27.10.20	Warrabinga Native Title Claimants Aboriginal Corporation	BF sent stage 4 letter and report	Email
27.10.20	North-Eastern Wiradjuri	BF sent stage 4 letter and report	Email
23.11.20	Wellington Valley Wiradjuri Aboriginal Corporation	RH received feedback	Email
26.11.20	Wellington Valley Wiradjuri Aboriginal Corporation	RH thanked Brad	Email
9.12.20	Wellington Valley Wiradjuri Aboriginal Corporation	AC responded to WVWAC stage 4 comments: *Good morning Brad,* *Thank you for providing feedback regarding the draft ACHAR for the Stubbo Solar Farm.* *Please find attached OzArk's responses to your comments.* *I hope you have a fun and relaxing holiday season.* *Sincerely,* *Alyce*	Email

Appendix 1 Figure 2: ACHCRs – Stage 1 Advertisements.

Public Notices

Expression of Interest
Cultural Heritage Management

On behalf of UPC\AC Renewables Australia (UPC), OzArk Environment & Heritage has been engaged to seek registration of Aboriginal groups or individuals who are interested in being consulted with regard to an Aboriginal cultural heritage assessment for the proposed Stubbo Solar Farm within a 1,100-hectare (ha) area 10km north of Gulgong in Central Western NSW.

This consultation will form part of an Aboriginal Cultural Heritage Assessment Report and will assist the Secretary of the Department of Planning, Industry and Environment in their consideration and determination of the Project.

If you hold cultural knowledge relevant to determining the cultural significance of Aboriginal objects or places in the proposed study area, please register your interest. Registrations can be made by post: OzArk EHM PO Box 2069 Dubbo NSW 2830; email: rebecca@ozarkehm.com.au; or by phoning OzArk on 02 6882 0118. All submissions should be received no later than **Friday 5th June 2020.**

Wednesday 3rd June, 2020 - The Dunedoo District Diary 17

Expression of Interest
Cultural Heritage Management

On behalf of UPC\AC Renewables Australia (UPC), OzArk Environment & Heritage has been engaged to seek registration of Aboriginal groups or individuals who are interested in being consulted with regard to an Aboriginal cultural heritage assessment for the proposed Stubbo Solar Farm within a 1,100-hectare (ha) area 10km north of Gulgong in Central Western NSW.

This consultation will form part of an Aboriginal Cultural Heritage Assessment Report and will assist the Secretary of the Department of Planning, Industry and Environment in their consideration and determination of the Project.

If you hold cultural knowledge relevant to determining the cultural significance of Aboriginal objects or places in the proposed study area, please register your interest.

Registrations can be made by post:

OzArk EHM, PO Box 2069, Dubbo NSW 2830;
email: rebecca@ozarkehm.com.au;
or by phoning: OzArk on 02 6882 0118.

All submissions should be received no later than **Wednesday 17th June 2020**.

Appendix 1 Figure 3: ACHCRs – Stage 1 Example of letter sent to agencies

OzArk Environment & Heritage
Dubbo
Queanbeyan
Newcastle
T: 02 6882 0118
enquiry@ozarkehm.com.au
www.ozarkehm.com.au
ABN 59 104 582 354
145 Wingewarra St
PO Box 2069
DUBBO NSW 2830

19 May 2020

Department of Planning, Industry and Environment
Biodiversity and Conservation Division - North West Region
Senior Team Leader, Planning
C: Samantha Wynn
PO Box 2111
Dubbo NSW 2830
Samantha.Wynn@environment.nsw.gov.au

ABORIGINAL CULTURAL HERITAGE ASSESSMENT FOR THE PROPOSED STUBBO SOLAR FARM

Dear Samantha,

OzArk Environment & Heritage (OzArk) has been engaged on behalf of UPC\AC Renewables Australia (UPC), to undertake Aboriginal community consultation as per the *'Aboriginal cultural heritage consultation requirements for proponents 2010' (the Guidelines)* to inform an *Aboriginal Cultural Heritage Assessment Report* (ACHAR) which will form part of an *Environmental Impact Statement*.

UPC intends to seek development consent under Division 4.7 of the *Environmental Planning and Assessment Act 1979* (EP&A Act) to construct and operate the Stubbo Solar Farm and its associated infrastructure including potential for battery storage within a 1,100-hectare (ha) area approximately 10km north of Gulgong in central-western NSW. The proposed project location is approximately 85 km east of Dubbo, NSW in the Mid-Western Regional Council Local Government Area (LGA) (**Figure 1**).

Consistent with Section 4.1 of the Guidelines, we are seeking Expressions of Interest from relevant Aboriginal groups and individuals in the local area who wish to be consulted in relation to the Project. This consultation is to assist OzArk and the proponent in preparing the ACHAR, and to assist the Secretary of the Department of Planning, Industry and Environment (DPIE) in its assessment of the Project.

If your organisation can recommend and provide contact details for any known Aboriginal groups or individuals with cultural knowledge relevant to determining the impacts to the cultural significance of the Project, please advise our office. We would appreciate it if you could provide any feedback regarding these Aboriginal stakeholder groups to the contact details provided at the top of the page within **Tuesday 2nd June 2020**, or sooner if possible.

OzArk Environment & Heritage

Once relevant groups and individuals have been identified, they will form part of the formal consultation process for the Project.

Kind regards,

Rebecca Hardman
Community Liaison & Administration

Appendix 1 Figure 4: ACHCRs – Stage 1 Example of letter sent to Aboriginal community groups.

OzArk Environment & Heritage
Dubbo
Queanbeyan
Newcastle
T: 02 6882 0118
enquiry@ozarkehm.com.au
www.ozarkehm.com.au
ABN 59 104 582 354
145 Wingewarra St
PO Box 2069
DUBBO NSW 2830

2 June 2020

Members
Mudgee Local Aboriginal Land Council
PO Box 1098
MUDGEE NSW 2850
mudgeelalc@bigpond.com

ABORIGINAL CULTURAL HERITAGE ASSESSMENT FOR THE PROPOSED STUBBO SOLAR FARM

Dear Members,

OzArk Environment & Heritage is undertaking Aboriginal community consultation as per the *"Aboriginal cultural heritage consultation requirements for proponents 2010"*, on behalf of the proponent; UPC\AC Renewables Australia (UPC).

UPC intends to seek development consent under Division 4.7 of the *Environmental Planning and Assessment Act 1979* (EP&A Act) to construct and operate the Stubbo Solar Farm and its associated infrastructure including potential for battery storage within a 1,100-hectare (ha) area approximately 10km north of Gulgong in central-western NSW. The proposed project location is approximately 85 km east of Dubbo, NSW in the Mid-Western Regional Council Local Government Area (LGA) (**Figure 1**).

Accordingly, we are seeking Expressions of Interest from relevant Aboriginal groups and individuals in the area, to form a consultation group. This consultation is to assist OzArk and the proponent in preparing the ACHAR, and to assist the Secretary of the Department of Planning, Industry and Environment (DPIE) in its assessment of the Project.

If you hold cultural knowledge relevant to determining the impacts to the cultural significance of this project area, please register your interest by contacting our office. The closing date for expressions of interest is **COB Thursday 18th June 2020.**

If you wish to register interest it is noteworthy that as per the DPIE guidelines we are required to provide your details to the DPIE unless advised, you do not wish your details to be released.

Once relevant groups and individuals have been identified, they will form part of the formal consultation process for the project.

Kind regards,

Rebecca Hardman
Consultation Officer

OzArk Environment & Heritage ABN 59 104 582 354
Dubbo T: 02 6882 0118 145 Wingewarra St
Queanbeyan enquiry@ozarkehm.com.au PO Box 2089
Newcastle www.ozarkehm.com.au DUBBO NSW 2830

Figure 1: Proposed site Location.

Appendix 1 Figure 5: ACHCRs – Stage 2/3 Example of letter and information package sent to Aboriginal community groups.

OzArk Environment & Heritage
Dubbo
Queanbeyan
Newcastle
T: 02 6882 0118
enquiry@ozarkehm.com.au
www.ozarkehm.com.au
ABN 59 104 582 354
145 Wingewarra St
PO Box 2069
DUBBO NSW 2830

7 July 2020

Members
Mudgee Local Aboriginal Land Council
c/- Tony Lonsdale
PO Box 1098
MUDGEE NSW 2850
mudgeelalc@bigpond.com

ABORIGINAL CULTURAL HERITAGE ASSESSMENT FOR THE PROPOSED STUBBO SOLAR FARM

Dear Members,

Thank-you for your registration of interest to become a Registered Aboriginal Party (RAP) to be consulted for the proposed construction and operation of the Stubbo Solar Farm and its associated infrastructure, including potential for battery storage within a 1,100-hectare (ha) area approximately 10km north of Gulgong in Central-Western NSW.

The purpose of this letter is to invite you to comment on the enclosed draft methodology for the ABORIGINAL CULTURAL HERITAGE SURVEY METHODOLOGY, STUBBO SOLAR FARM, MID-WESTERN LOCAL GOVERNMENT AREA, NSW, JULY 2020. This assessment will assist The Heritage Council of NSW in their consideration and determination of any subsequent permit applications (if required).

In addition to comments on the draft report, if you can share any Aboriginal cultural heritage knowledge relevant to the proposed study area, we welcome this input so as to improve our assessment outcomes and to ensure Aboriginal cultural values are considered. OzArk is required to give you 28 days to supply feedback on the attached documents. This period closes **Tuesday 4th August 2020.** If you need any help supplying feedback, please do not hesitate to contact our office.

Should you have any queries in relation to the enclosed information please do not hesitate to contact our office.

Kind regards,

Rebecca Hardman
Community Liaison & Administration

ABORIGINAL CULTURAL HERITAGE SURVEY METHODOLOGY

STUBBO SOLAR FARM

MID-WESTERN LOCAL GOVERNMENT AREA, NSW

JULY 2020

Report prepared by

OzArk Environment & Heritage

for UPC\AC Renewables Australia

OzArk
Environment & Heritage

145 Wingewarra St
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DOCUMENT CONTROLS

Proponent	UPC\AC Renewables Australia
Client	
Document Description	*Aboriginal Cultural Heritage Survey Methodology. Stubbo Solar Farm, Mid-Western Local Government Area, NSW.*
File Location	OzArk Job No.
S:\OzArk EHM Data\Clients\UPC Renewables\Stubbo Solar Farm July 2019\Survey methodology	2391

Document Status **V3.0 FINAL**	Date 3 July 2020
Draft V1.0 Author to editor OzArk 1st internal (Series V1 = OzArk internal edits)	V1.0 AC author 17/6/20 V1.1 BC edit 19/6/20 V1.2 AC edit 19/6/20
Draft V2.0 Report Draft for release to client (Series V2 = OzArk and client edits)	V2.0 OzArk to client 19/6/20 V2.1 AC client edits 24/6/20
FINAL V3.0 = Final report	V3.0 OzArk finalise 26/6/20 V3.1 AC edit study area 3/7/20
Prepared For	Prepared By
Cédric Bergé Project Development Manager UPC\AC Renewables Australia	Dr Alyce Cameron Senior Archaeologist OzArk Environment & Heritage 145 Wingewarra Street (PO Box 2069) Dubbo NSW 2830 P: 02 6882 0118 F: 02 6882 6030 alyce@ozarkehm.com.au

OzArk Environment & Heritage

Acknowledgement

OzArk acknowledge Traditional Owners of the area on which this assessment took place and pay respect to their beliefs, cultural heritage and continuing connection with the land. We also acknowledge and pay respect to the post-contact experiences of Aboriginal people with attachment to the area and to the elders, past and present, as the next generation of role models and vessels for memories, traditions, culture and hopes of local Aboriginal people.

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CONTENTS

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FIGURES

TABLES

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1 INTRODUCTION

OzArk Environment & Heritage (OzArk) has been engaged by UPC\AC Renewables Australia (UPC, the proponent) to prepare a survey methodology for the proposed Stubbo Solar Farm north of Gulgong, NSW (the Project). This methodology is in accordance with Stage 3 of the *Aboriginal Cultural Heritage Consultation Requirements for Proponents 2010* (ACHCRs). The Project information provided here also complies with Stage 2 of the ACHCRs.

1.1 PROJECT OVERVIEW

The proposed development includes the construction and operation of a solar farm and its ancillary infrastructure of approximately 400MW. The exact layout for the solar farm is still under consideration, and it is understood that not all of 1743 hectare (ha) study area would be impacted. UPC proposes to exclude some areas of higher environmental value (e.g. patches of vegetation and waterway buffers) from the development footprint as much as is feasible.

The heritage assessment for Stubbo Solar Farm will help support the Environmental Impact Statement (EIS) for the proposal. The proposal will be assessed as a State Significant Development (SSD) under Division 4.7 of the NSW *Environmental Planning & Assessment Act 1979* (EP&A Act).

1.2 THE STUDY AREA

The study area is located approximately 10 kilometres (km) northeast of Gulgong, NSW and is within the Mid-Western Regional Council Local Government Area (LGA) (**Figure 1-1**).

Figure 1-2 shows an aerial of the study area including the proposed development footprint and the environmental exclusion zone. The proposed development footprint and the environmental exclusion zone may be refined during the EIS stage. The study area is used for agricultural practices, particularly grazing of native or modified pastures.

1.3 BACKGROUND

In May 2019, the consultancy company RPS drafted a *Preliminary Environmental Assessment* (PEA) for the proposed Stubbo Solar Farm. Part of the report included preliminary assessments for Aboriginal and Historical heritage. A preliminary targeted inspection was undertaken regarding heritage. The results of this inspection were that the study area is across an undulating terrain and that disturbance in select areas inspected was low. RPS (2019: 30) also notes there were areas with either moderate or high levels of disturbance associated with erosion or agricultural activity. No Aboriginal sites were recorded during the preliminary inspection, though the previously recorded site, AHIMS #36-3-2515, was located.

In April 2020, RPS refined the heritage information contained in the original report to match the extent of the current study area. The results were included in the Scoping Report to support the

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request to the Department of Planning, Industry and Environment (DPIE) for the Secretary's Environmental Assessment Requirements (SEARs) for the proposal. The Scoping Report was lodged on 15 April 2020 and the SEARs were issued on 5 May 2020. The SEARs included requirements and recommendations regarding the heritage assessment within the study area.

Figure 1-1. Location of the Project.

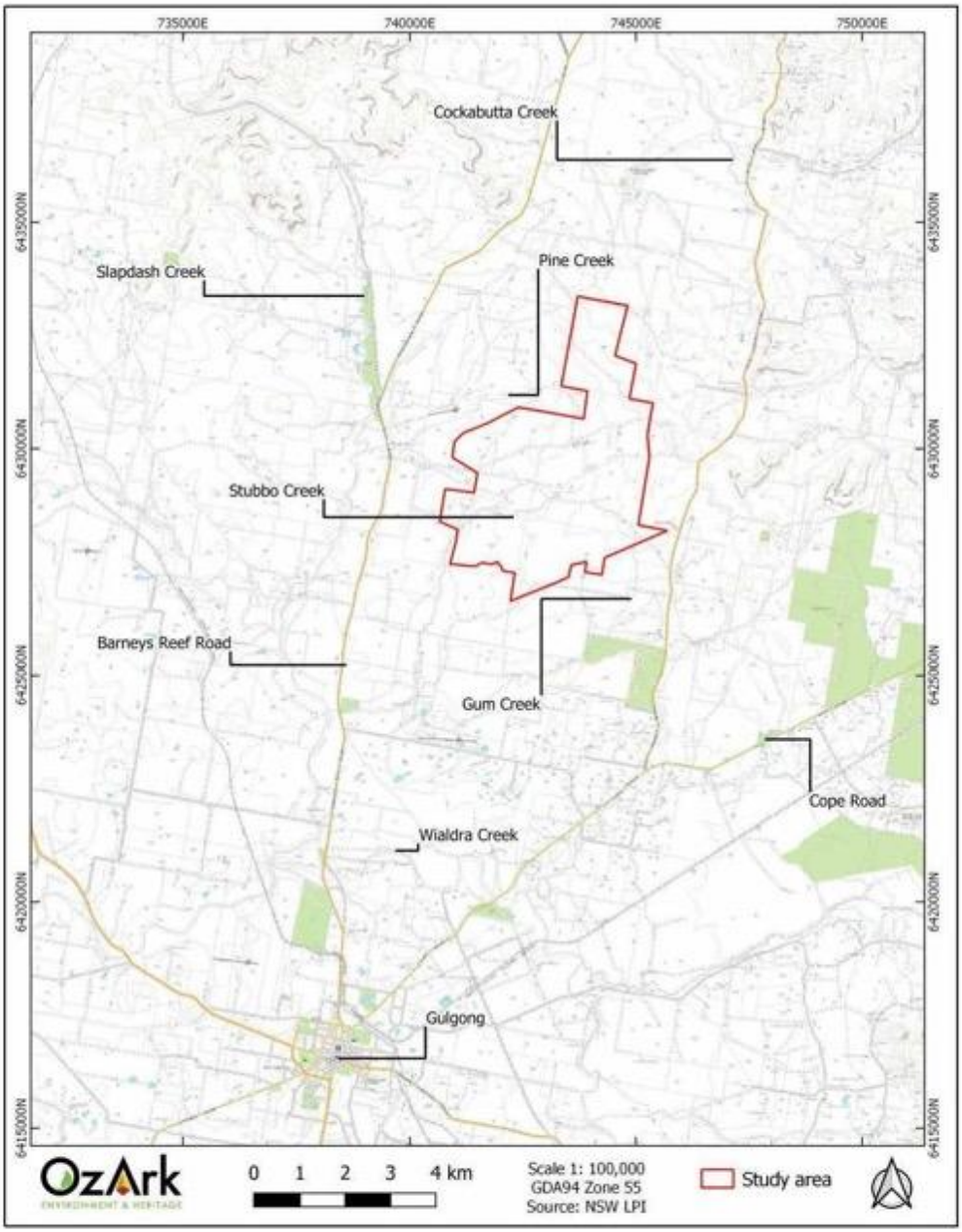

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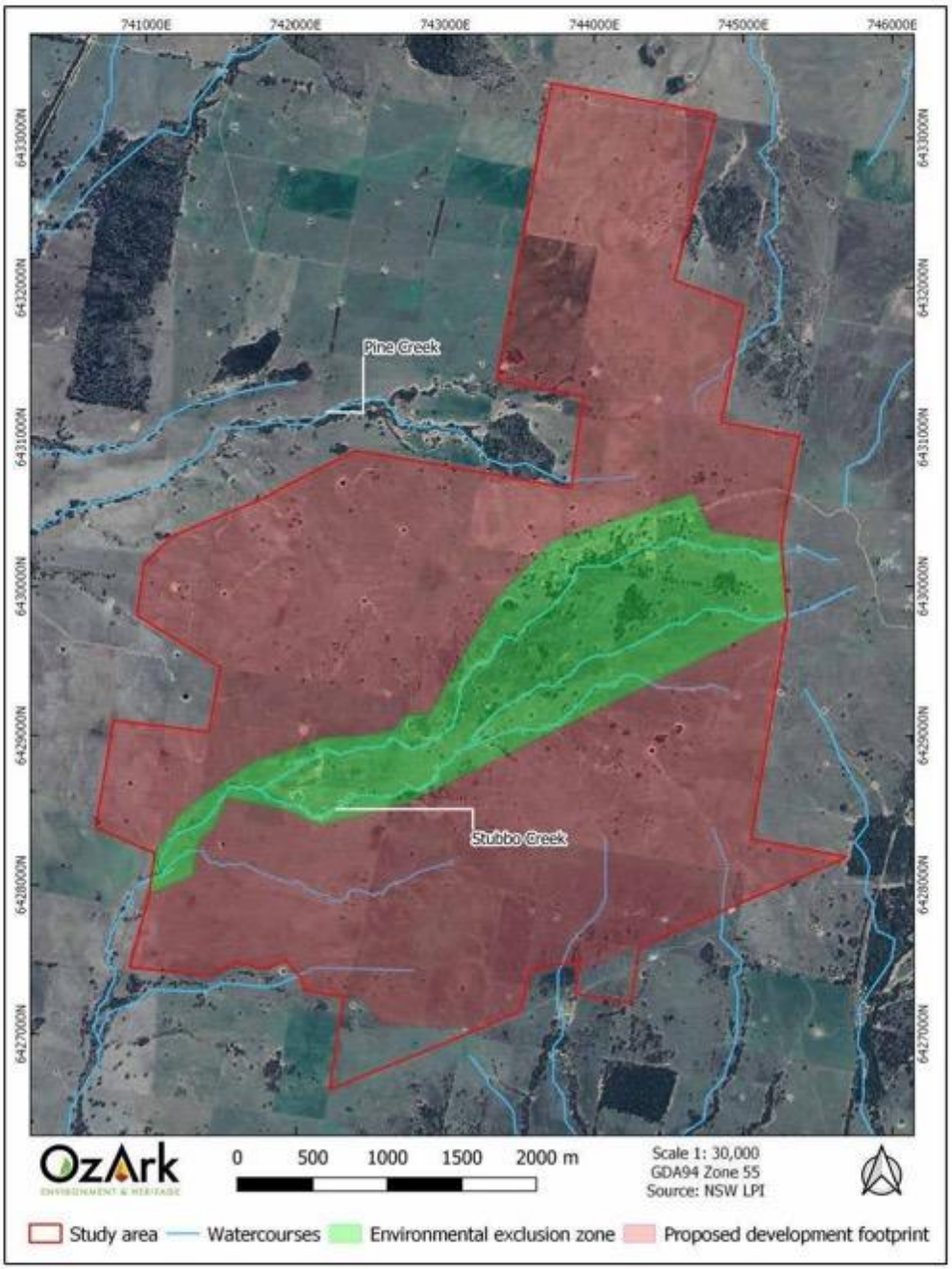
Figure 1-2. Aerial of the study area.



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1.4 CONSULTATION ON THIS METHODOLOGY

Consultation for this proposal has followed the guidelines established in the *Aboriginal cultural heritage consultation requirements for proponents* (ACHCRs, DECCW 2010) whereby an advertisement was placed in the local press and relevant agencies were contacted to ascertain if they were aware of groups or individuals who may have cultural knowledge of the region containing the Project.

On 22 May 2020, an advertisement was placed in the '*Mudgee Guardian*' requesting expressions of interest in being consulted about the Project. An advertisement was also placed in the '*Dunedoo District Diary*' on 3 June 2020. In addition, the following agencies were contacted to identify potential stakeholders for the area: Biodiversity and Conservation Division (BCD) of the DPIE; Mudgee Local Aboriginal Land Council; Office of The Registrar: Aboriginal Land Rights Act; National Native Title Tribunal; Native Title Service Corporation (NTSCORP); Mid-Western Regional Council; and Central Tablelands Local Land Services.

As a result, the groups or individuals listed in **Table 1-1** registered to be consulted about the Project. These groups or individuals constitute the Registered Aboriginal Parties (RAPs) for the Project.

Table 1-1: Registered Aboriginal Parties.

RAPs	
Muronggialinga	Paul Brydon
Wellington Valley Wiradjuri Aboriginal Corporation	Corroboree Aboriginal Corporation
Gellanggabang Aboriginal Corporation	Gunjeewong Cultural Heritage Aboriginal Corporation
Mudgee Local Aboriginal Land Council	Warrabinga-Wiradjuri #7 Native Title Claim

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2 ARCHAEOLOGICAL CONTEXT

2.1 REGIONAL ARCHAEOLOGICAL CONTEXT

The Aboriginal occupation of Australia begins prior to 40,000 BP (years before present) and possibly earlier than 50,000 BP. Dates exceeding 20,000 years occur in almost all parts of Australia resulting in the expectation that most areas should have a Pleistocene (>12,000 BP) occupational signature. However, such dates remain relatively rare due to a range of factors, both behavioural and post-depositional. These factors include a possible low density of occupation in the Pleistocene period, poor preservation of archaeological materials (particularly dateable organic materials) and significant coastline change over the past 18,000 years.

There are a number of broad scale regional archaeological studies which either cover the study area itself or are in general proximity to it. These studies have been summarised below.

2.1.1 PhD thesis – changing land use and settlement patterns in the upper Macquarie River region of NSW from prehistoric times to 1860 (Pearson 1981)

Pearson's work was primarily in the Upper Macquarie region, which reflects topographic similarities to the current study area. Pearson divided the archaeological sites he recorded into two main categories: occupation sites and non-occupation sites (including grinding grooves, scarred or carved trees, ceremonial and burial sites). Analysis of site locations produced a site prediction model with occupation occurring in areas with access to water, good drainage, level ground, adequate fuel and appropriate localised weather patterns for summer or winter occupation. Occupation sites were most frequently found on low ridge tops, creek banks, gently undulating hills and river flats and usually in open woodland vegetation (Pearson 1981: 101). The location of non-occupation sites was dependent upon a variety of factors relating to site function. For instance, grinding grooves were found where appropriate sandstone outcropping occurred, as close to occupation sites as possible. The location of scarred trees displayed no obvious patterning, other than proximity to watercourses where camps were more frequently located. Pearson suggested that these patterns would differ on the drier plains to the west, towards Dubbo and beyond, where dependence upon larger, more permanent water supplies was greater.

2.1.2 An assessment of Aboriginal sites in the Dubbo City Area (Koettig 1985)

In 1985, the survey by Koettig investigated the evidence of Aboriginal occupation within 5 km of Dubbo's city limits. The investigation concluded that sites exist throughout all environmental landscapes surveyed. Artefact scatters, scarred trees and grinding grooves were the most frequently occurring site types; and site location and size were determined by various environmental and social factors. Of the environmental factors, proximity to water, geological formation and availability of food resources were the most important. As such, Koettig's site prediction model suggested that: all site types would occur along watercourses; stone

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arrangements would occur most frequently on knolls or prominent landscape features; larger campsites would occur most frequently along permanent watercourses, near springs or wetlands; small campsites could occur anywhere; scarred trees could occur anywhere, but particularly in remnant native woodland communities; campsites would be smaller and more sporadic near the headwaters of creeks; grinding grooves could occur where appropriate sandstone existed; quarries could occur wherever there were suitable stone sources; and shell middens could occur only along the Macquarie River.

2.1.3 Assessment of the prehistoric heritage in the Mudgee Shire (Haglund 1985)

Haglund (1985) conducted a study into the prehistoric heritage in the Mudgee Shire and noted that prior to European settlement small groups of approximately twenty Aborigines acted independently, but engaged in friendly contact. These groups moved after short intervals, often over a short distance or within the same area, to obtain and use different resources.

Early explorers and settlers noted considerable variation in the numbers of Aborigines that would gather for food procurement activities during different seasons of the year. This seasonality was most obvious in the case of gatherings along major rivers, and it has been suggested that during dry periods the water holes remaining in the major rivers would become focal points for the usually scattered groups (Haglund 1985: 5).

Concerning the Mudgee/Gulgong area, Haglund (1985: 3) notes that the distribution of known sites cannot be seen as accurately reflecting past Indigenous land use or site location patterns because of site loss since European settlement. Those sites known to exist, however, do fit within the general pattern for the various resource zones discerned by Koettig (1985) and Pearson (1981).

2.1.4 Aboriginal heritage study: Dubbo local government area (OzArk 2006)

An assessment of Aboriginal heritage resources within the then Dubbo LGA to assist Dubbo City Council (now amalgamated into the Dubbo Regional Council) with planning was undertaken by OzArk (2006). This study aimed to consolidate previous surveys and assessments of Aboriginal heritage; set a baseline for further study; and survey areas zoned for future expansion. Approximately 1120 ha of land was surveyed within five study areas surrounding the city of Dubbo. During the survey, 26 new Aboriginal sites were recorded, and eight out of 12 previously recorded sites were relocated. A number of the newly recorded site types were similar to those found in previous studies. Fewer scarred trees were found than expected, likely due to intensive agricultural practices and associated tree clearance around Dubbo city compared to the broader former Dubbo LGA. No new grinding groove sites were recorded, which was understandable given that this site type comprised only 3.6% of previously located sites within the former Dubbo LGA. Scarred tree distribution adhered to the predictive model, exclusively following waterways

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and fence-lines, although this probably reflected land clearing practices more than Aboriginal site patterning. Isolated finds and open sites followed a similar pattern, largely limited to watercourse edges and elevated terraces within 500 metres (m) of the Macquarie River and other permanent to semi-permanent waterways. No significant patterning emerged in terms of site size or quality, perhaps because surface manifestations often do not adequately reflect site size or complexity.

2.2 DEVELOPMENT DRIVEN ARCHAEOLOGICAL ASSESSMENTS

2.2.1 Archaeological survey of the Proposed Beryl to Ulan 132kV electricity transmission line (Cubis 1981)

Cubis (1981) recorded two open sites, two isolated artefacts, a shelter and a possible stone arrangement during his 35 km transmission line survey between Beryl and Ulan. These sites, recorded south of the study area, included open site #36-3-0048 that contained artefacts of chert and quartzite and site #36-3-0047 containing quartzite, chert, basalt, siltstone and greywacke artefacts. During this survey Cubis (1981: 11) also recorded two isolated finds on Stubbo Creek and Sportsmans Hollow Creek.

2.2.2 Ulan Coal Mine (Kuskie and Webster 2002; Corkill 1991; Haglund 1981, 1996, 1999)

Numerous studies undertaken over the past twenty-five years for the Ulan Coal Mine over all portions of their lease areas have recorded hundreds of Aboriginal sites. Surveys carried out through the 1980s and 1990s by Haglund have been summarised by Kuskie (2000). As expected, the variety of landforms present within the Ulan project area resulted in all site types being recorded as a result of these studies (including more unusual sites such as ochre quarries and a utilised rock pool), although it was noted that in general, the landscapes were highly disturbed as a result of agricultural activities (clearing, ploughing, grazing) and erosional processes. Overall quartz appears to be the predominant raw material recorded at Ulan, although significant quantities of chert are also present (Kuskie and Webster 2002; Corkill 1991; Haglund 1996).

2.2.3 Indigenous and non-Indigenous Heritage Assessment: Wollar – Wellington 330kV Electricity Transmission Line (OzArk 2005)

OzArk (2005) undertook an assessment of a proposed 330kV electricity transmission line (ETL) between Wollar and Wellington. The area assessed for the ETL is adjacent to the southeast boundary of the solar farm study area and intersects a small area of it. During the assessment 28 Aboriginal sites were recorded, three of which are in the general vicinity to the study area: #36-3-0670, #36-3-0669, and #36-3-0671 (see **Section 2.3** for further details).

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2.2.4 Cobbora Coal Project (EMM 2012)

In 2012, EMM conducted an Aboriginal cultural heritage assessment for the Cobbora Coal Project. The original assessment area for the Cobbora Coal Project included an approximate 35 km corridor for a pipeline between Tallawang and Ulan, which crossed the northern half of the Stubbo Solar Farm study area. The survey of the pipeline corridor was conducted in 2009–2010 by ERM, though the results of this survey is included in EMM 2012.

Overall, within the Cobbora Coal Project area, artefact scatters was the most frequent site type recorded, followed by scarred trees, grinding grooves, hearths and rock shelters with either potential archaeological deposit (PAD) or artefacts. Quartz was the predominant material recorded for stone artefacts. To a much lesser degree, stone artefacts manufactured from volcanic materials, silcrete, quartzite, chert, calcedony, mudstone and sandstone were also recorded.

A series of 1 m by 2 m test pits were mechanically excavated in the 2009–2010 survey. Artefacts were recovered from three pits within recorded site boundaries. The results of the subsurface testing demonstrated that artefacts are present in the topsoil in association with a minor tributary watercourse inside the Cobbora Coal Project area, as well as near the confluence of Sandy Creek and Laheys Creek.

The assessment concluded that Aboriginal sites, especially artefact scatters, were predominately associated with major watercourses such as Sandy Creek and Laheys Creek and commonly occurred within 200 m of such watercourses. Artefact scatters along minor watercourses and drainage lines tended to be within 30 m of the watercourse.

2.3 Local Archaeological Context

A search of the Aboriginal Heritage Information Management System (AHIMS) database on 12 June 2020 returned 63 records for Aboriginal heritage sites within a 6 km radius search area around the study area (GDA Zone 55 Eastings: 734662–751633; Northings: 6420682–6437259 with no buffer) (see **Table 2-1** for the site types and frequencies; results mapped in **Figure 2-1**).

The most frequent site type in the vicinity of the study area is artefact scatters (49%), isolated finds (17%), and isolated finds with PAD (11%). Axe grinding grooves and / or waterholes and wells (3%), burial/s (3%) and shelters with deposit (3%) are slightly more frequently recorded the remaining site types. Aboriginal resource and gathering with PAD, art sites with either an artefact scatter or grinding grooves, modified trees, PADs and stone arrangements, only occur once each.

Table 2-1: AHIMS site types and frequencies.

Site Type	Number	% Frequency
Artefact scatter	31	49
Isolated find	11	17

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Site Type	Number	% Frequency
Isolated find & PAD	7	11
Axe grinding groove	2	3
Axe grinding groove &/or waterhole/well	2	3
Burial/s	2	3
Shelter with deposit	2	3
Aboriginal resource and gathering & PAD	1	2
Art (pigment / engraving) & artefact scatter	1	2
Art (pigment / engraving) & grinding groove	1	2
Modified tree	1	2
PAD	1	2
Stone arrangement	1	2
Total	**63**	**100**

There are two previously recorded sites within the study area: #36-3-2515 (TRE 21) and #36-3-1423 (IF23). Both sites are recorded on the landform between Stubbo Creek and a minor drainage line (see **Figure 2-2**), and were recorded during the 2009–2010 heritage survey for the Cobbora Coal Project (see **Section 2.2.4** and EMM 2012). Although site #36-3-2515 is recorded as an isolated find with PAD on the AHIMS register, the site card records the site as a scarred tree with three scars. As the site card description agrees with the nomenclature of the site name, this site is regarded as a culturally modified tree, not an artefact scatter. Site #36-5-1423 is an isolated quartz core with one negative flake scar.

Several other sites are also within the general vicinity of the study area:

- 36-3-1422, an isolated find located 100 m northwest of the study area
- 36-3-1421, an isolated find located 68 m northwest of the study area
- 36-3-2511, an isolated find with PAD located 170 m northwest of the study area, adjacent to a tributary of Pine Creek.
- 36-3-0671, a low density artefact scatter located 490 m southeast of the study area, adjacent to Copes Creek
- 36-3-0669, a low density artefact scatter located 2.1 km southeast of the study area, adjacent to Stubbo Creek
- 36-3-0670, a low density artefact scatter located 4.6 km southeast of the study area, adjacent to Slapdash Creek.

2.4 ARCHAEOLOGICAL CONTEXT: CONCLUSION

The archaeological investigations and previously recorded sites in the vicinity of the study area (**Sections 2.1** to **2.3**) indicate that:

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- Stone artefact sites (isolated finds and artefact scatters) are the most commonly recorded site types in the area. Other site types, such as grinding grooves, modified trees and rock shelters are very rare or non-existent
- Sites tend to be associated with elevated level ground associated with water sources
- Quartz is the predominant material for stone artefacts in the area, though volcanic materials, silcrete, quartzite, mudstone, chert and chalcedony could also be present.

Figure 2-1. AHIMS sites in relation to the study area.

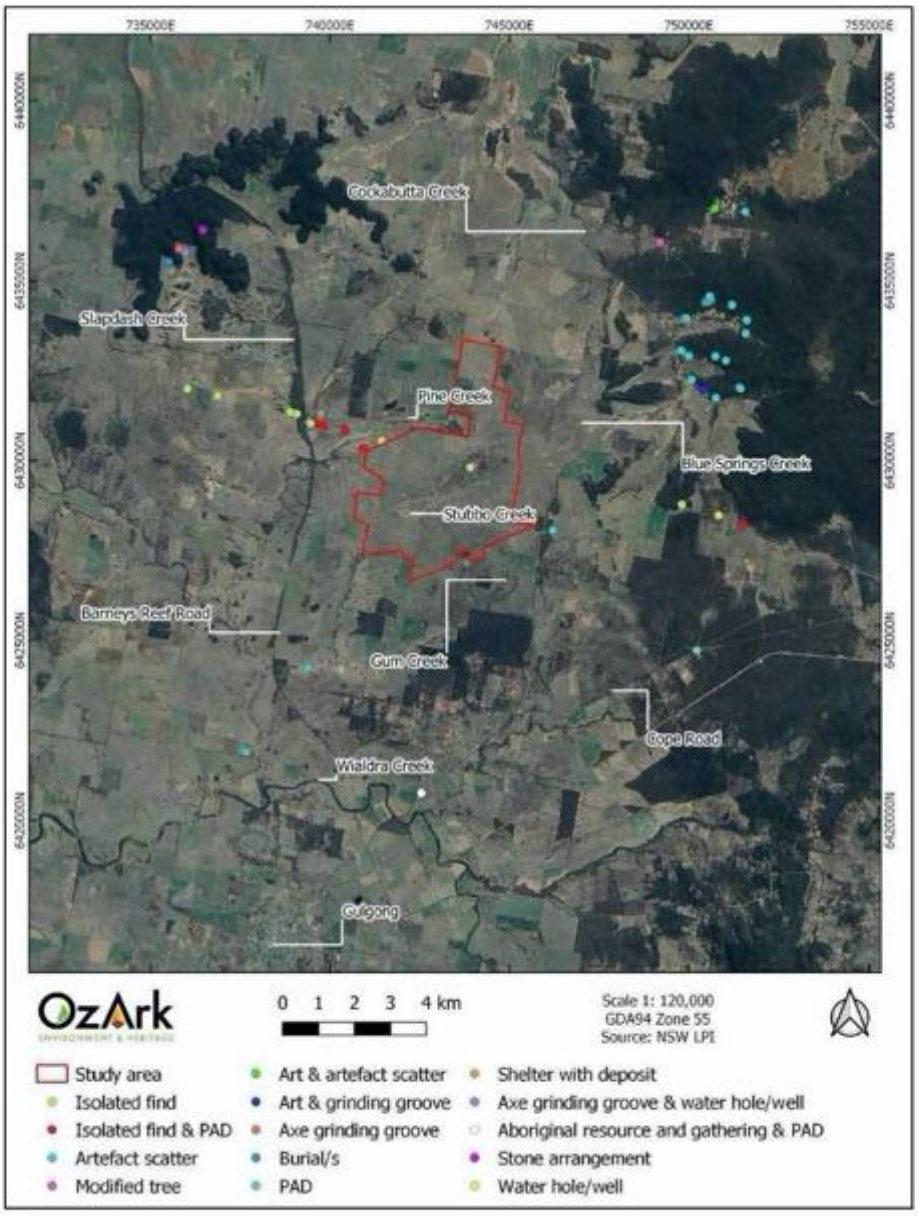

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Figure 2-2. AHIMS sites inside the study area.

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3 PREDICTIVE MODEL

3.1 LANDFORM MODELLING

The study area is located at the eastern edge of the NSW South Western Slopes bioregion. Specifically, the study area is in the Inland Slopes sub-bioregion. The South Western Slopes Bioregion is a large area of foothills and ranges comprising the western fall of the Great Dividing Range to the edge of the Riverina Bioregion (NPWS 2003).

Preliminary landform mapping shows that the study area is intersected with several drainage lines, including Stubbo Creek. The topography of the study area appears to be primarily gentle slopes, with the highest point being in the northeast corner of the study area. There also appears to be at least one rock outcrop visible on the aerial imagery. There are scattered remnant trees throughout the study area, mostly concentrated around the existing homestead, 'The Pinnacle', as well as the creek and drainage lines (**Figure 1-2**).

Such an environment is unlikely to have a favoured area for Aboriginal occupation for extended periods of time, and is more likely to have been utilised as an access route between the hills and the river. The study area has been used historically and is currently used for low-intensity livestock grazing.

Figure 3-1 shows the characterisation of the landforms within the study area, consisting of either drainage areas (including Stubbo Creek and the minor drainage lines as well as any associated banks or possible terraces) or gentle slopes. Refinement of the landforms will be undertaken during the field survey.

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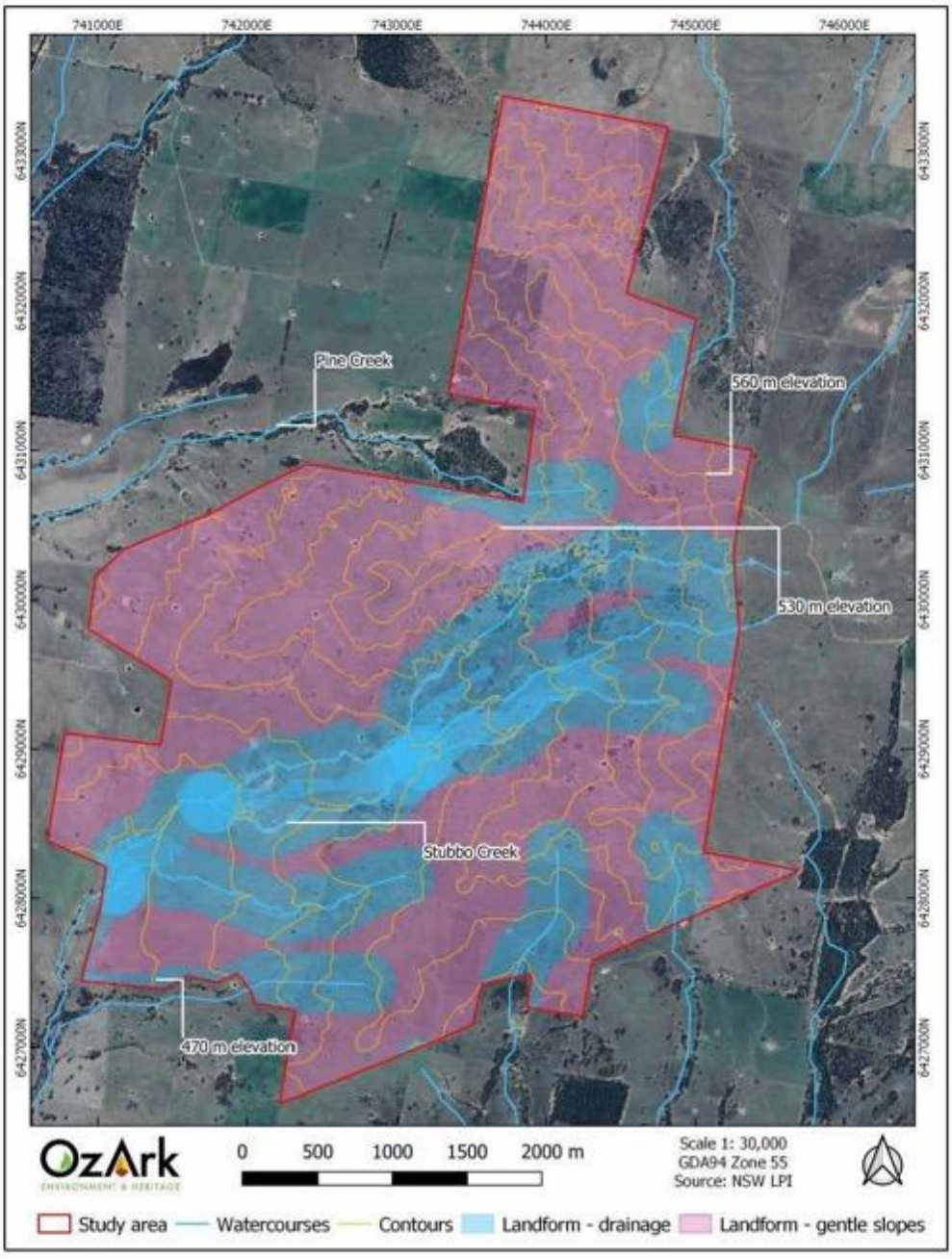
Figure 3-1. Aerial of the study area showing terrain.



3.2 PREDICTIVE MODEL FOR THE SURVEY AREA

Across Australia, numerous archaeological studies in widely varying environmental zones and contexts have demonstrated a high correlation between the permanence of a water source and

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the permanence and/or complexity of Aboriginal occupation. Site location is also affected by the availability of and/or accessibility to a range of other natural resources including: plant and animal foods; stone and ochre resources and rock shelters; as well as by their general proximity to other sites/places of cultural/mythological significance. Consequently, sites tend to be found along permanent and ephemeral water sources, along access or trade routes or in areas that have good flora/fauna resources and appropriate shelter.

In formulating a predictive model for Aboriginal archaeological site location within any landscape it is also necessary to consider post-depositional influences on Aboriginal material culture. In all but the best preservation conditions very little of the organic material culture remains of ancestral Aboriginal communities survives to the present. Generally, it is the more durable materials such as stone artefacts, stone hearths, shell, and some bones that remain preserved in the current landscape. Even these however may not be found in their original depositional context since these may be subject to either (a) the effects of wind and water erosion/transport—both over short- and long-time scales—or (b) the historical impacts associated with the introduction of colonial farming practices. Scarred trees, by their nature, may survive for up to several hundred years but rarely beyond.

The archaeological studies undertaken in the vicinity of study area provide an insight into the nature and distribution of archaeological sites within the area. However, the location of sites can only reflect what has been identified, usually as a result of infrastructure/development-driven projects, thus presenting the site data as clustered or on linear alignments. Generally, sites have been recorded in proximity to a recognised water source, in locations that have been subject to reduced landform disturbance, and on gentle, elevated landforms. However, landform disturbance may also explain why Aboriginal objects become revealed on the ground surface, such as within modified and disturbed landforms.

Based on knowledge of the environmental contexts of the study area and a desktop review of the known local and regional archaeological record, the following predictions are made concerning the probability of those site types being recorded:

- Isolated finds may be indicative of: random loss or deliberate discard of a single artefact, the remnant of a now dispersed and disturbed artefact scatter, or an otherwise obscured or sub-surface artefact scatter. They may occur anywhere within the landscape but are more likely to occur in topographies where open artefact scatters typically occur.
    - As isolated finds can occur anywhere, particularly within disturbed contexts, it is predicted that this site type could be recorded within the study area. It is noted in **Section 2** that isolated finds have been recorded in the region. One isolated find has been recorded within the study area.
- Open artefact scatters are here defined as two or more artefacts, not located within a rock shelter, and located no more than 50 m away from any other constituent artefact. This site type may occur almost anywhere that Aboriginal people have travelled and may be

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associated with hunting and gathering activities, short- or long-term camps, and the manufacture and maintenance of stone tools. Artefact scatters typically consist of surface scatters or sub-surface distributions of flaked stone discarded during the manufacture of tools but may also include other artefactual rock types such as hearth and anvil stones. Less commonly, artefact scatters may include archaeological stratigraphic features such as hearths and artefact concentrations which relate to activity areas. Artefact density can vary considerably between and across individual sites. Small ground exposures revealing low density scatters may be indicative of background scatter rather than a spatially or temporally distinct artefact assemblage. These sites are classed as 'open', that is, occurring on the land surface unprotected by rock overhangs, and are sometimes referred to as 'open camp sites'.

Artefact scatters are most likely to occur on level or low gradient contexts, along the crests of ridgelines and spurs, and elevated areas fringing watercourses or wetlands. Larger sites may be expected in association with permanent water sources.

Topographies which afford effective through-access across, and relative to, the surrounding landscape, such as the open basal valley slopes and the valleys of creeks, will tend to contain more and larger sites, mostly camp sites evidenced by open artefact scatters.

- Stone artefact distributions of variable artefact densities are the most common Aboriginal object found within the region (see **Section 2.2**). A general correlation between different types of watercourses and the nature of the evidence of past Aboriginal occupation is evident. Higher artefact density sites are located near to permanent water sources and low-density artefact distributions are found elsewhere. It is possible that artefact scatters of varying densities will be present within the study area, especially in relation to Stubbo Creek.

- Aboriginal scarred trees contain evidence of the removal of bark (and sometimes wood) in the past by Aboriginal people, in the form of a scar. Bark was removed from trees for a wide range of reasons. It was a raw material used in the manufacture of various tools, vessels and commodities such as string, water containers, roofing for shelters, shields and canoes. Bark was also removed as a consequence of gathering food, such as collecting wood boring grubs or creating footholds to climb a tree for possum hunting. Due to the multiplicity of uses and the continuous process of occlusion (or healing) following removal, it is difficult to accurately determine the intended purpose for any particular example of bark removal. Scarred trees may occur anywhere old growth trees survive. The identification of scars as Aboriginal cultural heritage items can be problematical because some forms of natural trauma and European bark extraction create similar scars. Many remaining scarred trees probably date to the historic period when bark was removed by Aboriginal people for both their own purposes and for roofing on early European houses. Consequently, the distinction between European and Aboriginal scarred trees may not be clear.

  - The study area is mostly cleared of vegetation; therefore, this site type is not predicted likely to occur. However, it is possible that culturally modified trees may be present in stands of remnant native vegetation if any remains and it is noted that a scarred tree has been previously recorded within the study area.

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- Quarry sites and stone procurement sites typically consist of exposures of stone material where evidence for human collection, extraction and/or preliminary processing has survived. Typically, these involve the extraction of siliceous or fine grained igneous and meta-sedimentary rock types for the manufacture of artefacts. The presence of quarry/extraction sites is dependent on the availability of suitable rock formations.
    - This site type could be recorded within the study area should suitable rock outcroppings be available. A small area of rock outcropping is mapped within the study area (**Figure 3-1**).
- Grinding grooves are most likely to occur on flat outcrops of coarse-grained sandstone in the vicinity of water sources, however, grinding grooves have been recorded on fine-grained granite outcrops.
    - Given the low prospect of suitable rock exposures being present in the study area, grinding groove sites are unlikely to be present.
- Rock shelters were utilised in the past for both habitation and ceremonial purposes. The term 'rock shelter site' refers to rock shelters/rock overhangs that contain evidence such as stone artefacts and/or bones and/or plant remains (from meals eaten at the site) and/or hearths (fireplaces). Most rock shelter sites are secular in nature, however, those that also contain rock art or engravings are often believed to be non-secular in nature. The term 'rock art site' generally refers to Aboriginal ochre paintings or ochre or charcoal drawings located on a rock slab (generally in a sheltered place like the floor of a cave or rock shelter), boulder, cliff-face, cave or rock shelter wall or roof, or wall of a rock overhang. The majority of rock art sites are found in positions that are sheltered from the elements. This observation, however, is probably biased to some extent, as rock art would not preserve well in open positions. Rock art sites are generally believed to be non-secular in nature.
    - Based on the topography of the study area, rock shelters are not predicted to be present.
- Burials are generally found in soft sediments such as aeolian sand, alluvial silts and rock shelter deposits. In valley floor and plains contexts, burials may occur in locally elevated topographies rather than poorly drained sedimentary contexts. Burials are also known to have occurred on rocky hilltops in some limited areas. Burials are generally only visible where there has been some disturbance of sub-surface sediments or where some erosional process has exposed them.
    - Given the topography, nature of the soils and geology, burials are not predicted to be present in the study area.
- Bora/Ceremonial sites are places which have ceremonial or spiritual connections. Ceremonial sites may comprise of natural landscapes or have archaeological material. Bora sites are ceremonial sites which consist of a cleared area and earthen rings.
    - This site type does not necessarily follow landform predictability and are more likely to be identified by local Aboriginal people, rather than through archaeological evidence. These sites are generally identified through consultation with the Aboriginal community.

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4 SURVEY METHODOLOGY

4.1 ASSESSMENT APPROACH

The Aboriginal cultural heritage assessment of the study area will follow the *Code of Practice for the Investigation of Aboriginal Objects in New South Wales* (Code of Practice; DECCW 2010b). The field inspection will follow the *Guide to Investigating, Assessing and Reporting on Aboriginal Cultural Heritage in New South Wales* (OEH 2011).

4.2 SURVEY AIMS

The aim of any archaeological survey is not to locate each artefact in a landscape but to undertake investigations so that the archaeological potential and archaeological characteristics of all landforms within a study area are known. Therefore, the aims of the survey will be to:

- Conduct pedestrian transects across the survey areas, so that the archaeological potential of each landform can be determined
- Evaluate whether the predictive model set out in **Section 3.2** is valid
- Determine if any landforms of the study area require test excavation to understand the archaeological potential at a particular location
- Undertake sufficient assessment in order to satisfy Sections 2.2, 2.4, 2.5, 2.6, and 2.7 in the *Guide to Investigating, Assessing and Reporting on Aboriginal Cultural Heritage in New South Wales* (OEH 2011)
- Collecting sufficient data so that the results can be presented in an ACHAR as set out in Section 3 in the *Guide to Investigating, Assessing and Reporting on Aboriginal Cultural Heritage in New South Wales* (OEH 2011)
- Undertaking survey and record keeping satisfying Requirements 1–13 of the Code of Practice.

4.3 SURVEY METHODOLOGY

Standard archaeological field survey and recording methods will be employed in this assessment (Burke & Smith 2004) and will follow the Code of Practice.

As highlighted in **Section 2**, greater Aboriginal archaeological potential tends to exist on landforms within 200 m of permanent and ephemeral water sources, along access or trade routes, and areas with suitable flora/fauna and shelter. Archaeological potential is generally reduced on steep landforms unsuitable for camping, and landforms disturbed by erosion and historical impacts (e.g. farming and infrastructure installation).

The study area will be assessed by sampling the different landforms as outlined in **Section 3.1** using pedestrian survey. The landforms will be refined as necessary during the survey. Survey transects will be approximately 100 m wide, with surveyors spaced approximately 30 m apart.

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The proposed areas to be sampled using pedestrian transects are shown in **Figure 4-1**. These have been chosen based on covering a range of landforms and locations across the study area. **Table 4-1** outlines the details of each survey area.

Table 4-1: Survey areas and landforms.

Survey Area	Hectares	Landforms
1	65	Drainage & flat/gentle slopes
2	181	Predominately drainage
3	223	Predominately drainage
4	67	Flat/gentle slopes
5	37	Drainage & flat/gentle slopes
6	94	Drainage & flat/gentle slopes
7	128	Predominately flat/gentle slopes
8	57	Gentle slopes
9	54	Drainage & flat/gentle slopes
10	36	Drainage & flat/gentle slopes
11	104	Flat/gentle slopes

The two previously recorded AHIMS sites, #36-3-1423 and #36-3-2515, will also be ground truthed during the field survey to assess their current condition.

In the field, OzArk staff will identify, record and evaluate physical (i.e. archaeological) evidence. Site recording will capture all the information required to complete current AHIMS site recording forms (e.g. site location, site boundary, site plan, representative photographs, artefact recording and feature recording).

All survey will be undertaken with the assistance of RAP representatives. Apart from their valuable experience in recognising and recording archaeological sites, the RAP representatives will be able to acquaint themselves with the study area in order to inform the cultural values assessment.

The study area is 1743 ha. The proposed sampling will cover approximately 1046 ha, meaning that approximately 60% of the overall study area will be surveyed. It is estimated that survey of the sample areas will be undertaken in eight days by two archaeologists and up to four RAP representatives. As per the Code of Practice, all landform types within the study area will be sampled. Survey areas within the proposed impact area will be prioritised, though areas of the environmental exclusion zone will be included in the survey. This is so areas around the main watercourses, Stubbo Creek and its tributaries, are also sampled to help gain a holistic archaeological understanding of the study area as a whole.

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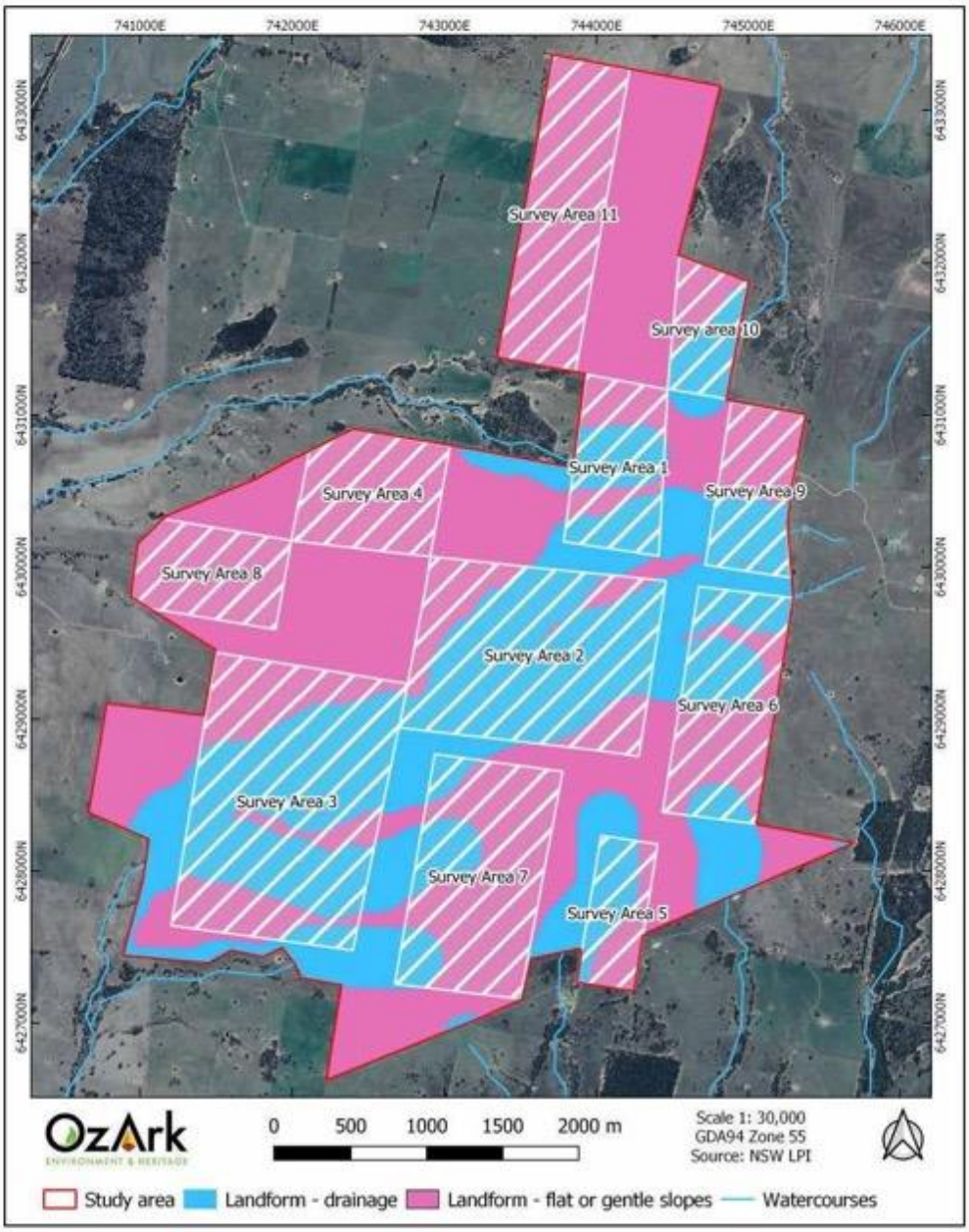
Figure 4-1: Proposed survey areas and landforms.



4.4 TEST EXCAVATION

It is possible that the survey may identify landforms where test excavation under the Code of Practice (Requirements 14–17) is required. Should such landforms be identified during the

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survey, the test excavation methodology will be prepared as a separate document that will be circulated to all RAPs for review and comment.

4.5 CULTURAL VALUES

Any cultural values relating to the study area will be captured by the OzArk archaeologist (if such information is provided by a RAP during the survey) and included in the *Aboriginal Cultural Heritage Assessment Report* (ACHAR).

In addition, should any RAPs have knowledge of cultural values regarding the study area that they wish to share or that may affect this survey methodology, OzArk invites them to contact us so that these values can be recorded and / or responded to in this methodology.

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Appendix 1 Figure 6: Responses from RAPs in regard to Stage 2/3.

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27 July 2020

Dr Alyce Cameron
Senior Archaeologist
OzArk Environment & Heritage
PO Box 2069
Dubbo NSW 2830

RE: Aboriginal Cultural Heritage Survey Methodology. Stubbo Solar Farm, Mid-Western Local Government Area, NSW. Dated 3 July 2020

Dear Alyce,

Gallanggabang Aboriginal Corporation (GAC) would like to thank you for your invitation to provide a response for This Aboriginal Cultural Heritage issue relevant to obligations to protect our Heritage within our Traditional Lands. Gallanngabang represent the fourteen traditional families with identified apical ancestry pre European occupation with our known Traditional Lands. We know our culture, country and continue with our association with our traditional lands.

GAC object to any other non-traditional aboriginal organizations or people taking part in site surveys, consultation and assessments within our defined Traditional Lands. These non-traditional people and groups are outsiders under Traditional Lore and have no right to advise on or to be present during consultation or site visits as they do not possess the specific traditional knowledge in relation to these lands or sites. These participants may be indigenous and may live locally within the region however, this still does not give them the right to disregard Traditional Lore and values.

Gallanggabang Aboriginal Corporation (GAC) have through consultation with Elders and Traditional Community with cultural knowledge have the following comments and or recommendations:

Section 4.3 **SURVEY METHODOLOGY**

- Page 17 states the following: *"Archaeological potential is generally reduced on steep landforms unsuitable for camping, and landforms disturbed by erosion and historical impacts (e.g. farming and infrastructure installation)".*
    - GAC **Object** to this as our Cultural heritage sites and artefacts are often found on landforms disturbed by erosion and historical impacts e.g. farming and infrastructure installation.
- Page 17 states the following: *"The study area will be assessed by sampling the different landforms as outlined in **Section 3.1** using pedestrian survey. The landforms will be refined as necessary during the survey. Survey transects will be approximately 100 m wide, with surveyors spaced approximately 30 m apart".*
    - GAC **Object** to the 30m spacing as due to experience on other Solar Farms within the Region at Wollar, First Solar Wellington North, AGL Wellington North and Beryl Solar Farm, the 30m spacing has been to greater gap and on revisiting these other projects to collect artefacts or do sub-surface testing a multitude of additional sites and artefacts were required to be recorded.
    - We as RAP's then have been questioned by Archaeologists who were not present during the initial survey as to why these sites were not found which causes issues around salvage of sites.

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- We will concede to an absolute maximum of 20m to assist Field Officers during the survey.

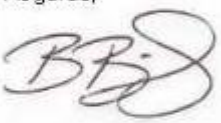
- Page 18 states the following: "*The study area is 1743 ha. The proposed sampling will cover approximately 1046 ha, meaning that approximately 60% of the overall study area will be surveyed. It is estimated that survey of the sample areas will be undertaken in eight days by two archaeologists and up to four RAP representatives*".

  - GAC **Object** to the 60% survey coverage of the overall study area, as too many cultural and or artefact sites will be missed and cause later issues and potential loss by site destruction by the development as we have seen at the Wellington North Solar Farm.

Additionally GAC would like to indicate that areas close by to this development area have known Cultural Heritage sites and that this Development area is a known to be in our traditional information relating back to the Mudige or Mudigee Clan as the clan boundary is very close by.

Gallanggabang Aboriginal Corporation (GAC) look forward to further participating in the above project, sharing our knowledge of county and to ensure our Heritage is protected. We trust our response meets your requirements. Please contact GAC Directors should you require our assistance to address any Aboriginal issues to support your future plans.

Regards,



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Gallanggabang Aboriginal Corporation Director
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27 July 2020

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RE: Aboriginal Cultural Heritage Survey Methodology. Stubbo Solar Farm, Mid-Western Local Government Area, NSW. Dated 3 July 2020

Dear Alyce,

Wellington Valley Wiradjuri Aboriginal Corporation (WVWAC) would like to thank you for your invitation to provide a response for This Aboriginal Cultural Heritage issue relevant to obligations to protect our Heritage within our Traditional Lands. Wellington Valley Wiradjuri represent the fourteen traditional families with identified apical ancestry pre European occupation with our known Traditional Lands. We know our culture, country and continue with our association with our traditional lands (Ngurangbang).

WVWAC object to any other non-traditional aboriginal organizations or people taking part in site surveys, consultation and assessments within our defined Traditional Lands. These non-traditional people and groups are outsiders under Traditional Lore and have no right to advise on or to be present during consultation or site visits as they do not possess the specific traditional knowledge in relation to these lands or sites. These participants may be indigenous and may live locally within the region however, this still does not give them the right to disregard Traditional Lore and values.

Wellington Valley Wiradjuri Aboriginal Corporation (WVWAC) have through consultation with other Traditional Elders and Traditional Community with cultural knowledge have the following comments and or recommendations:

Section **4.3 SURVEY METHODOLOGY**

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- Page 17 states the following: *"The study area will be assessed by sampling the different landforms as outlined in **Section 3.1** using pedestrian survey. The landforms will be refined as*

necessary during the survey. Survey transects will be approximately 100 m wide, with surveyors spaced approximately 30 m apart".

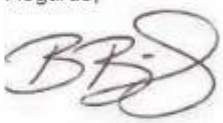
- WWWAC **Object** to the 30m spacing as due to experience on other Solar Farms within the Region at Wollar, First Solar Wellington North, AGL Wellington North and Beryl Solar Farm, the 30m spacing has been to greater gap and on revisiting these other projects to collect artefacts or do sub-surface testing a multitude of additional sites and artefacts were required to be recorded.
- We as RAP's then have been questioned by Archaeologists who were not present during the initial survey as to why these sites were not found which causes issues around salvage of sites.
- We will concede to an absolute maximum of 20m to assist Field Officers during the survey.

- Page 18 states the following: *"The study area is 1743 ha. The proposed sampling will cover approximately 1046 ha, meaning that approximately 60% of the overall study area will be surveyed. It is estimated that survey of the sample areas will be undertaken in eight days by two archaeologists and up to four RAP representatives".*
  - WWWAC **Object** to the 60% survey coverage of the overall study area, as too many cultural and or artefact sites will be missed and cause later issues and potential loss by site destruction by the development as we have seen at the Wellington North Solar Farm.

Additionally WWWAC would like to indicate that areas close by to this development area have known Cultural Heritage sites and that this Development area is a known to be in our traditional information relating back to the Mudige or Mudigee Clan as the clan boundary is very close by.

WWWAC look forward to further participating in the above project, sharing our knowledge of county and to ensure our Heritage is protected. We trust our response meets your requirements. Please contact WWWAC Directors should you require our assistance to address any Aboriginal issues to support your future plans.

Regards,



Bradley R. Bliss J.P.
WWWAC CEO and Contact Officer
Gallanggabang Aboriginal Corporation Director
Senior Aboriginal Cultural Heritage Field Officer
Senior Aboriginal Cultural Mentor and Educator
Traditional Owner Clan Descendant
Mobile: 0427321016

Appendix 1 Figure 7: Updated assessment methodology used for fieldwork.

ABORIGINAL CULTURAL HERITAGE SURVEY METHODOLOGY

STUBBO SOLAR FARM

MID-WESTERN LOCAL GOVERNMENT AREA, NSW

AUGUST 2020

Report prepared by

OzArk Environment & Heritage

for UPC\AC Renewables Australia

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DOCUMENT CONTROLS

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Acknowledgement

OzArk acknowledge Traditional Owners of the area on which this assessment took place and pay respect to their beliefs, cultural heritage and continuing connection with the land. We also acknowledge and pay respect to the post-contact experiences of Aboriginal people with attachment to the area and to the elders, past and present, as the next generation of role models and vessels for memories, traditions, culture and hopes of local Aboriginal people.

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1 INTRODUCTION

OzArk Environment & Heritage (OzArk) has been engaged by UPC\AC Renewables Australia (UPC, the proponent) to prepare a survey methodology for the proposed Stubbo Solar Farm north of Gulgong, NSW (the Project). This methodology is in accordance with Stage 3 of the *Aboriginal Cultural Heritage Consultation Requirements for Proponents 2010* (ACHCRs). The Project information provided here also complies with Stage 2 of the ACHCRs.

1.1 PROJECT OVERVIEW

The proposed development includes the construction and operation of a solar farm and its ancillary infrastructure of approximately 400MW. The exact layout for the solar farm is still under consideration, and it is understood that not all of 1743 hectare (ha) study area would be impacted. UPC proposes to exclude some areas of higher environmental value (e.g. patches of vegetation and waterway buffers) from the development footprint as much as is feasible.

The heritage assessment for Stubbo Solar Farm will help support the Environmental Impact Statement (EIS) for the proposal. The proposal will be assessed as a State Significant Development (SSD) under Division 4.7 of the NSW *Environmental Planning & Assessment Act 1979* (EP&A Act).

1.2 THE STUDY AREA

The study area is located approximately 10 kilometres (km) northeast of Gulgong, NSW and is within the Mid-Western Regional Council Local Government Area (LGA) (**Figure 1-1**).

Figure 1-2 shows an aerial of the study area including the proposed development footprint and the environmental exclusion zone. The proposed development footprint and the environmental exclusion zone may be refined during the EIS stage. The study area is used for agricultural practices, particularly grazing of native or modified pastures.

1.3 BACKGROUND

In May 2019, the consultancy company RPS drafted a *Preliminary Environmental Assessment* (PEA) for the proposed Stubbo Solar Farm. Part of the report included preliminary assessments for Aboriginal and Historical heritage. A preliminary targeted inspection was undertaken regarding heritage. The results of this inspection were that the study area is across an undulating terrain and that disturbance in select areas inspected was low. RPS (2019: 30) also notes there were areas with either moderate or high levels of disturbance associated with erosion or agricultural activity. No Aboriginal sites were recorded during the preliminary inspection, though the previously recorded site, AHIMS #36-3-2515, was located.

In April 2020, RPS refined the heritage information contained in the original report to match the extent of the current study area. The results were included in the Scoping Report to support the

request to the Department of Planning, Industry and Environment (DPIE) for the Secretary's Environmental Assessment Requirements (SEARs) for the proposal. The Scoping Report was lodged on 15 April 2020 and the SEARs were issued on 5 May 2020. The SEARs included requirements and recommendations regarding the heritage assessment within the study area.

Figure 1-1. Location of the Project.

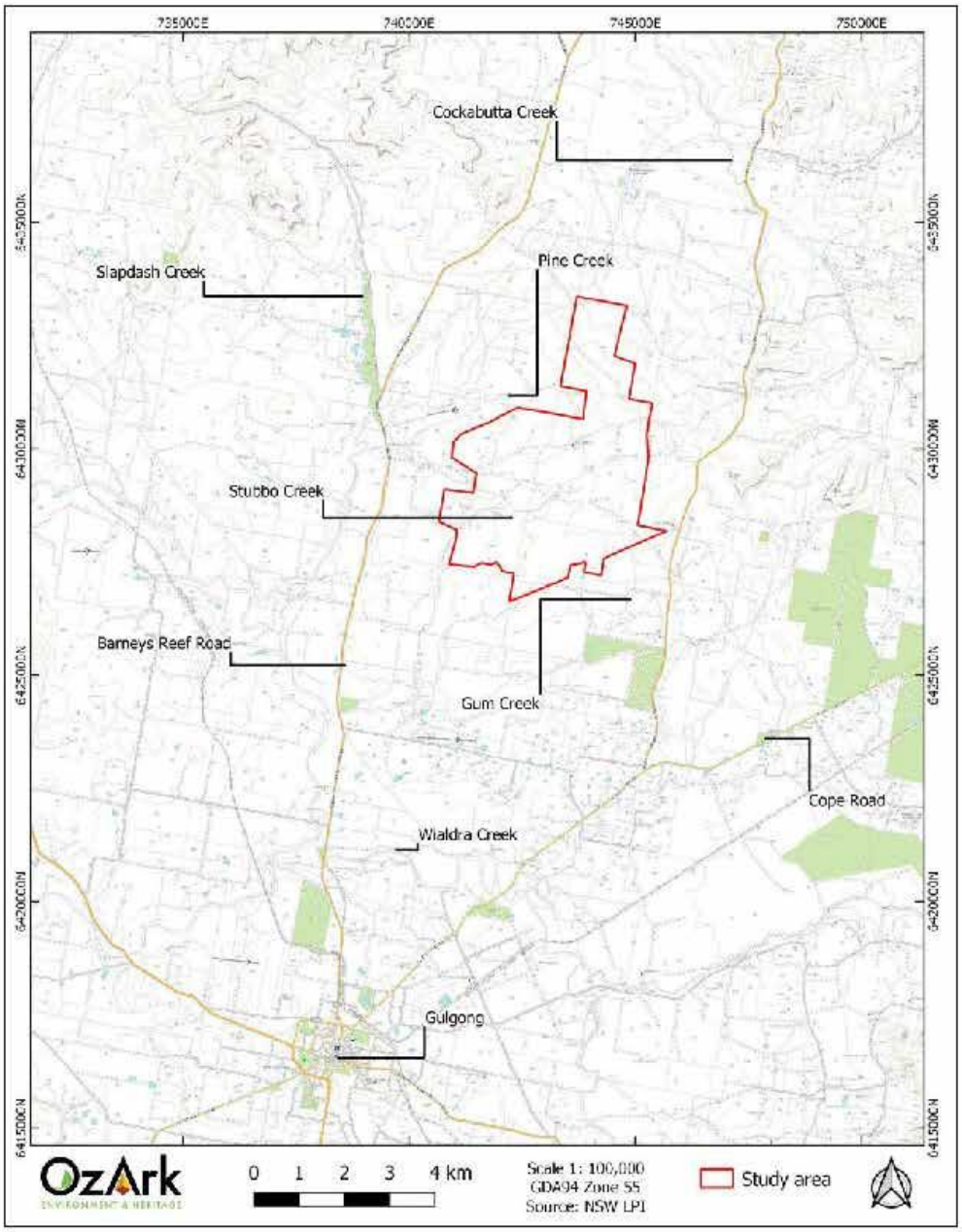

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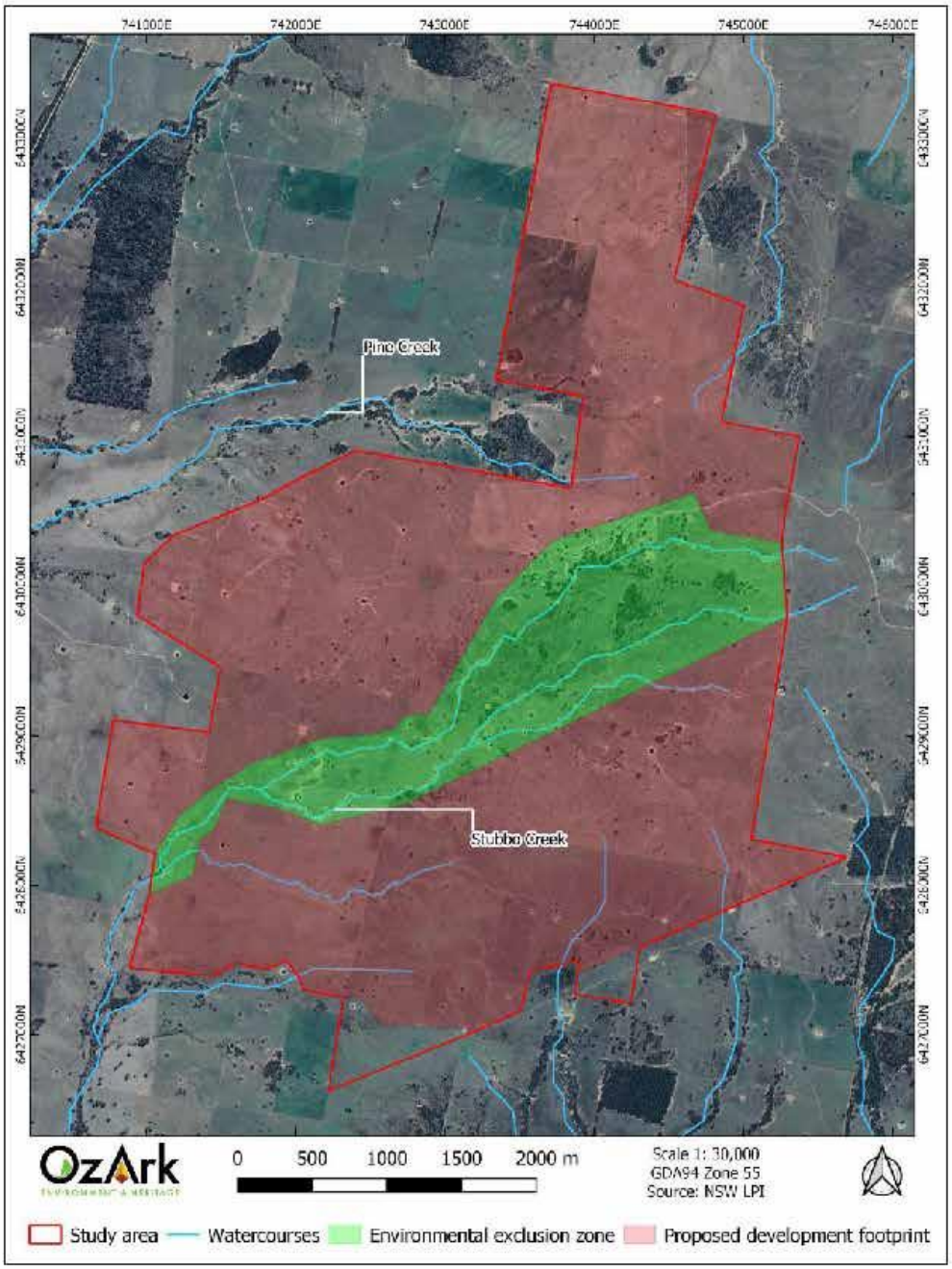
Figure 1-2. Aerial of the study area.



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1.4 CONSULTATION ON THIS METHODOLOGY

Consultation for this proposal has followed the guidelines established in the *Aboriginal cultural heritage consultation requirements for proponents* (ACHCRs, DECCW 2010) whereby an advertisement was placed in the local press and relevant agencies were contacted to ascertain if they were aware of groups or individuals who may have cultural knowledge of the region containing the Project.

On 22 May 2020, an advertisement was placed in the '*Mudgee Guardian*' requesting expressions of interest in being consulted about the Project. An advertisement was also placed in the *'Dunedoo District Diary'* on 3 June 2020. In addition, the following agencies were contacted to identify potential stakeholders for the area: Biodiversity and Conservation Division (BCD) of the DPIE; Mudgee Local Aboriginal Land Council; Office of The Registrar: Aboriginal Land Rights Act; National Native Title Tribunal; Native Title Service Corporation (NTSCORP); Mid-Western Regional Council; and Central Tablelands Local Land Services.

As a result, the groups or individuals listed in **Table 1-1** registered to be consulted about the Project. These groups or individuals constitute the Registered Aboriginal Parties (RAPs) for the Project.

Table 1-1: Registered Aboriginal Parties.

RAPs	
Muronggialinga	Paul Brydon
Wellington Valley Wiradjuri Aboriginal Corporation	Corroboree Aboriginal Corporation
Gallanggabang Aboriginal Corporation	Gunjeevwong Cultural Heritage Aboriginal Corporation
Mudgee Local Aboriginal Land Council	Warrabinga-Wiradjuri #7 Native Title Claim

On 7 July 2020 RAPs were sent information about the project and a copy of this assessment methodology. RAPs were provided the stipulated 28 days in which to review and comment on these documents as per Stage 3 of the ACHCRs. The closing date for comment was 4 August 2020.

OzArk received several comments from RAPs regarding this assessment methodology. These comments are summarised in **Table 1-2**. The feedback has been incorporated into this assessment methodology prior to the fieldwork occurring.

Table 1-2: RAP comments on the draft assessment methodology.

RAP	Comment	OzArk response
Gallanggabang Aboriginal Corporation and Wellington Valley Wiradjuri Aboriginal Corporation	Page 17 states the following: "Archaeological potential is generally reduced on steep landforms unsuitable for camping, and landforms disturbed by erosion and historical impacts (e.g. farming and infrastructure installation)". GAC Object to this as our Cultural heritage sites and artefacts are often found on landforms disturbed by erosion and historical impacts e.g. farming and infrastructure installation.	The assessment methodology has been adjusted and the survey will include disturbed landforms (including but not limited to areas of erosion, ploughing, dams, farming infrastructure and vehicle tracks). See **Section 4.3**.

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Gallanggabang Aboriginal Corporation and Wellington Valley Wiradjuri Aboriginal Corporation	Page 17 states the following: "The study area will be assessed by sampling the different landforms as outlined in Section 3.1 using pedestrian survey. The landforms will be refined as necessary during the survey. Survey transects will be approximately 100 m wide, with surveyors spaced approximately 30 m apart". GAC Object to the 30m spacing as due to experience on other Solar Farms within the Region at Wollar, First Solar Wellington North, AGL Wellington North and Beryl Solar Farm, the 30m spacing has been to greater gap and on revisiting these other projects to collect artefacts or do sub-surface testing a multitude of additional sites and artefacts were required to be recorded. We as RAP's then have been questioned by Archaeologists who were not present during the initial survey as to why these sites were not found which causes issues around salvage of sites. We will concede to an absolute maximum of 20m to assist Field Officers during the survey.	The assessment methodology was adjusted, and surveyors were spaced approximately 20 m apart instead of 30 m. See **Section 4.3**.
Gallanggabang Aboriginal Corporation and Wellington Valley Wiradjuri Aboriginal Corporation	Page 18 states the following: "The study area is 1743 ha. The proposed sampling will cover approximately 1046 ha, meaning that approximately 60% of the overall study area will be surveyed. It is estimated that survey of the sample areas will be undertaken in eight days by two archaeologists and up to four RAP representatives". GAC Object to the 60% survey coverage of the overall study area, as too many cultural and or artefact sites will be missed and cause later issues and potential loss by site destruction by the development as we have seen at the Wellington North Solar Farm	The sampling strategy will cover all landform types within the study area as per the requirements of the code. See **Section 4.3**.

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2 ARCHAEOLOGICAL CONTEXT

2.1 REGIONAL ARCHAEOLOGICAL CONTEXT

The Aboriginal occupation of Australia begins prior to 40,000 BP (years before present) and possibly earlier than 50,000 BP. Dates exceeding 20,000 years occur in almost all parts of Australia resulting in the expectation that most areas should have a Pleistocene (>12,000 BP) occupational signature. However, such dates remain relatively rare due to a range of factors, both behavioural and post-depositional. These factors include a possible low density of occupation in the Pleistocene period, poor preservation of archaeological materials (particularly dateable organic materials) and significant coastline change over the past 18,000 years.

There are a number of broad scale regional archaeological studies which either cover the study area itself or are in general proximity to it. These studies have been summarised below.

2.1.1 PhD thesis – changing land use and settlement patterns in the upper Macquarie River region of NSW from prehistoric times to 1860 (Pearson 1981)

Pearson's work was primarily in the Upper Macquarie region, which reflects topographic similarities to the current study area. Pearson divided the archaeological sites he recorded into two main categories: occupation sites and non-occupation sites (including grinding grooves, scarred or carved trees, ceremonial and burial sites). Analysis of site locations produced a site prediction model with occupation occurring in areas with access to water, good drainage, level ground, adequate fuel and appropriate localised weather patterns for summer or winter occupation. Occupation sites were most frequently found on low ridge tops, creek banks, gently undulating hills and river flats and usually in open woodland vegetation (Pearson 1981: 101). The location of non-occupation sites was dependent upon a variety of factors relating to site function. For instance, grinding grooves were found where appropriate sandstone outcropping occurred, as close to occupation sites as possible. The location of scarred trees displayed no obvious patterning, other than proximity to watercourses where camps were more frequently located. Pearson suggested that these patterns would differ on the drier plains to the west, towards Dubbo and beyond, where dependence upon larger, more permanent water supplies was greater.

2.1.2 An assessment of Aboriginal sites in the Dubbo City Area (Koettig 1985)

In 1985, the survey by Koettig investigated the evidence of Aboriginal occupation within 5 km of Dubbo's city limits. The investigation concluded that sites exist throughout all environmental landscapes surveyed. Artefact scatters, scarred trees and grinding grooves were the most frequently occurring site types; and site location and size were determined by various environmental and social factors. Of the environmental factors, proximity to water, geological formation and availability of food resources were the most important. As such, Koettig's site prediction model suggested that: all site types would occur along watercourses; stone

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arrangements would occur most frequently on knolls or prominent landscape features; larger campsites would occur most frequently along permanent watercourses, near springs or wetlands; small campsites could occur anywhere; scarred trees could occur anywhere, but particularly in remnant native woodland communities; campsites would be smaller and more sporadic near the headwaters of creeks; grinding grooves could occur where appropriate sandstone existed; quarries could occur wherever there were suitable stone sources; and shell middens could occur only along the Macquarie River.

2.1.3 Assessment of the prehistoric heritage in the Mudgee Shire (Haglund 1985)

Haglund (1985) conducted a study into the prehistoric heritage in the Mudgee Shire and noted that prior to European settlement small groups of approximately twenty Aborigines acted independently, but engaged in friendly contact. These groups moved after short intervals, often over a short distance or within the same area, to obtain and use different resources.

Early explorers and settlers noted considerable variation in the numbers of Aborigines that would gather for food procurement activities during different seasons of the year. This seasonality was most obvious in the case of gatherings along major rivers, and it has been suggested that during dry periods the water holes remaining in the major rivers would become focal points for the usually scattered groups (Haglund 1985: 5).

Concerning the Mudgee/Gulgong area, Haglund (1985: 3) notes that the distribution of known sites cannot be seen as accurately reflecting past Indigenous land use or site location patterns because of site loss since European settlement. Those sites known to exist, however, do fit within the general pattern for the various resource zones discerned by Koettig (1985) and Pearson (1981).

2.1.4 Aboriginal heritage study: Dubbo local government area (OzArk 2006)

An assessment of Aboriginal heritage resources within the then Dubbo LGA to assist Dubbo City Council (now amalgamated into the Dubbo Regional Council) with planning was undertaken by OzArk (2006). This study aimed to consolidate previous surveys and assessments of Aboriginal heritage; set a baseline for further study; and survey areas zoned for future expansion. Approximately 1120 ha of land was surveyed within five study areas surrounding the city of Dubbo. During the survey, 26 new Aboriginal sites were recorded, and eight out of 12 previously recorded sites were relocated. A number of the newly recorded site types were similar to those found in previous studies. Fewer scarred trees were found than expected, likely due to intensive agricultural practices and associated tree clearance around Dubbo city compared to the broader former Dubbo LGA. No new grinding groove sites were recorded, which was understandable given that this site type comprised only 3.6% of previously located sites within the former Dubbo LGA. Scarred tree distribution adhered to the predictive model, exclusively following waterways

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and fence-lines, although this probably reflected land clearing practices more than Aboriginal site patterning. Isolated finds and open sites followed a similar pattern, largely limited to watercourse edges and elevated terraces within 500 metres (m) of the Macquarie River and other permanent to semi-permanent waterways. No significant patterning emerged in terms of site size or quality, perhaps because surface manifestations often do not adequately reflect site size or complexity.

2.2 DEVELOPMENT DRIVEN ARCHAEOLOGICAL ASSESSMENTS

2.2.1 Archaeological survey of the Proposed Beryl to Ulan 132kV electricity transmission line (Cubis 1981)

Cubis (1981) recorded two open sites, two isolated artefacts, a shelter and a possible stone arrangement during his 35 km transmission line survey between Beryl and Ulan. These sites, recorded south of the study area, included open site #36-3-0048 that contained artefacts of chert and quartzite and site #36-3-0047 containing quartzite, chert, basalt, siltstone and greywacke artefacts. During this survey Cubis (1981: 11) also recorded two isolated finds on Stubbo Creek and Sportsmans Hollow Creek.

2.2.2 Ulan Coal Mine (Kuskie and Webster 2002; Corkill 1991; Haglund 1981, 1996, 1999)

Numerous studies undertaken over the past twenty-five years for the Ulan Coal Mine over all portions of their lease areas have recorded hundreds of Aboriginal sites. Surveys carried out through the 1980s and 1990s by Haglund have been summarised by Kuskie (2000). As expected, the variety of landforms present within the Ulan project area resulted in all site types being recorded as a result of these studies (including more unusual sites such as ochre quarries and a utilised rock pool), although it was noted that in general, the landscapes were highly disturbed as a result of agricultural activities (clearing, ploughing, grazing) and erosional processes. Overall quartz appears to be the predominant raw material recorded at Ulan, although significant quantities of chert are also present (Kuskie and Webster 2002; Corkill 1991; Haglund 1996).

2.2.3 Indigenous and non-Indigenous Heritage Assessment: Wollar – Wellington 330kV Electricity Transmission Line (OzArk 2005)

OzArk (2005) undertook an assessment of a proposed 330kV electricity transmission line (ETL) between Wollar and Wellington. The area assessed for the ETL is adjacent to the southeast boundary of the solar farm study area and intersects a small area of it. During the assessment 28 Aboriginal sites were recorded, three of which are in the general vicinity to the study area: #36-3-0670, #36-3-0669, and #36-3-0671 (see **Section 2.3** for further details).

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2.2.4 Cobbora Coal Project (EMM 2012)

In 2012, EMM conducted an Aboriginal cultural heritage assessment for the Cobbora Coal Project. The original assessment area for the Cobbora Coal Project included an approximate 35 km corridor for a pipeline between Tallawang and Ulan, which crossed the northern half of the Stubbo Solar Farm study area. The survey of the pipeline corridor was conducted in 2009–2010 by ERM, though the results of this survey is included in EMM 2012.

Overall, within the Cobbora Coal Project area, artefact scatters was the most frequent site type recorded, followed by scarred trees, grinding grooves, hearths and rock shelters with either potential archaeological deposit (PAD) or artefacts. Quartz was the predominant material recorded for stone artefacts. To a much lesser degree, stone artefacts manufactured from volcanic materials, silcrete, quartzite, chert, calcedony, mudstone and sandstone were also recorded.

A series of 1 m by 2 m test pits were mechanically excavated in the 2009–2010 survey. Artefacts were recovered from three pits within recorded site boundaries. The results of the subsurface testing demonstrated that artefacts are present in the topsoil in association with a minor tributary watercourse inside the Cobbora Coal Project area, as well as near the confluence of Sandy Creek and Laheys Creek.

The assessment concluded that Aboriginal sites, especially artefact scatters, were predominately associated with major watercourses such as Sandy Creek and Laheys Creek and commonly occurred within 200 m of such watercourses. Artefact scatters along minor watercourses and drainage lines tended to be within 30 m of the watercourse.

2.3 LOCAL ARCHAEOLOGICAL CONTEXT

A search of the Aboriginal Heritage Information Management System (AHIMS) database on 12 June 2020 returned 63 records for Aboriginal heritage sites within a 6 km radius search area around the study area (GDA Zone 55 Eastings: 734662–751633; Northings: 6420682–6437259 with no buffer) (see **Table 2-1** for the site types and frequencies; results mapped in **Figure 2-1**).

The most frequent site type in the vicinity of the study area is artefact scatters (49%), isolated finds (17%), and isolated finds with PAD (11%). Axe grinding grooves and / or waterholes and wells (3%), burial/s (3%) and shelters with deposit (3%) are slightly more frequently recorded the remaining site types. Aboriginal resource and gathering with PAD, art sites with either an artefact scatter or grinding grooves, modified trees, PADs and stone arrangements, only occur once each.

Table 2-1: AHIMS site types and frequencies.

Site Type	Number	% Frequency
Artefact scatter	31	49
Isolated find	11	17

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Site Type	Number	% Frequency
Isolated find & PAD	7	11
Axe grinding groove	2	3
Axe grinding groove &/or waterhole/well	2	3
Burial/s	2	3
Shelter with deposit	2	3
Aboriginal resource and gathering & PAD	1	2
Art (pigment / engraving) & artefact scatter	1	2
Art (pigment / engraving) & grinding groove	1	2
Modified tree	1	2
PAD	1	2
Stone arrangement	1	2
Total	**63**	**100**

There are two previously recorded sites within the study area: #36-3-2515 (TRE 21) and #36-3-1423 (IF23). Both sites are recorded on the landform between Stubbo Creek and a minor drainage line (see **Figure 2-2**), and were recorded during the 2009–2010 heritage survey for the Cobbora Coal Project (see **Section 2.2.4** and EMM 2012). Although site #36-3-2515 is recorded as an isolated find with PAD on the AHIMS register, the site card records the site as a scarred tree with three scars. As the site card description agrees with the nomenclature of the site name, this site is regarded as a culturally modified tree, not an artefact scatter. Site #36-5-1423 is an isolated quartz core with one negative flake scar.

Several other sites are also within the general vicinity of the study area:

- 36-3-1422, an isolated find located 100 m northwest of the study area
- 36-3-1421, an isolated find located 68 m northwest of the study area
- 36-3-2511, an isolated find with PAD located 170 m northwest of the study area, adjacent to a tributary of Pine Creek.
- 36-3-0671, a low density artefact scatter located 490 m southeast of the study area, adjacent to Copes Creek
- 36-3-0669, a low density artefact scatter located 2.1 km southeast of the study area, adjacent to Stubbo Creek
- 36-3-0670, a low density artefact scatter located 4.6 km southeast of the study area, adjacent to Slapdash Creek.

2.4 ARCHAEOLOGICAL CONTEXT: CONCLUSION

The archaeological investigations and previously recorded sites in the vicinity of the study area (**Sections 2.1** to **2.3**) indicate that:

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- Stone artefact sites (isolated finds and artefact scatters) are the most commonly recorded site types in the area. Other site types, such as grinding grooves, modified trees and rock shelters are very rare or non-existent
- Sites tend to be associated with elevated level ground associated with water sources
- Quartz is the predominant material for stone artefacts in the area, though volcanic materials, silcrete, quartzite, mudstone, chert and chalcedony could also be present.

Figure 2-1. AHIMS sites in relation to the study area.

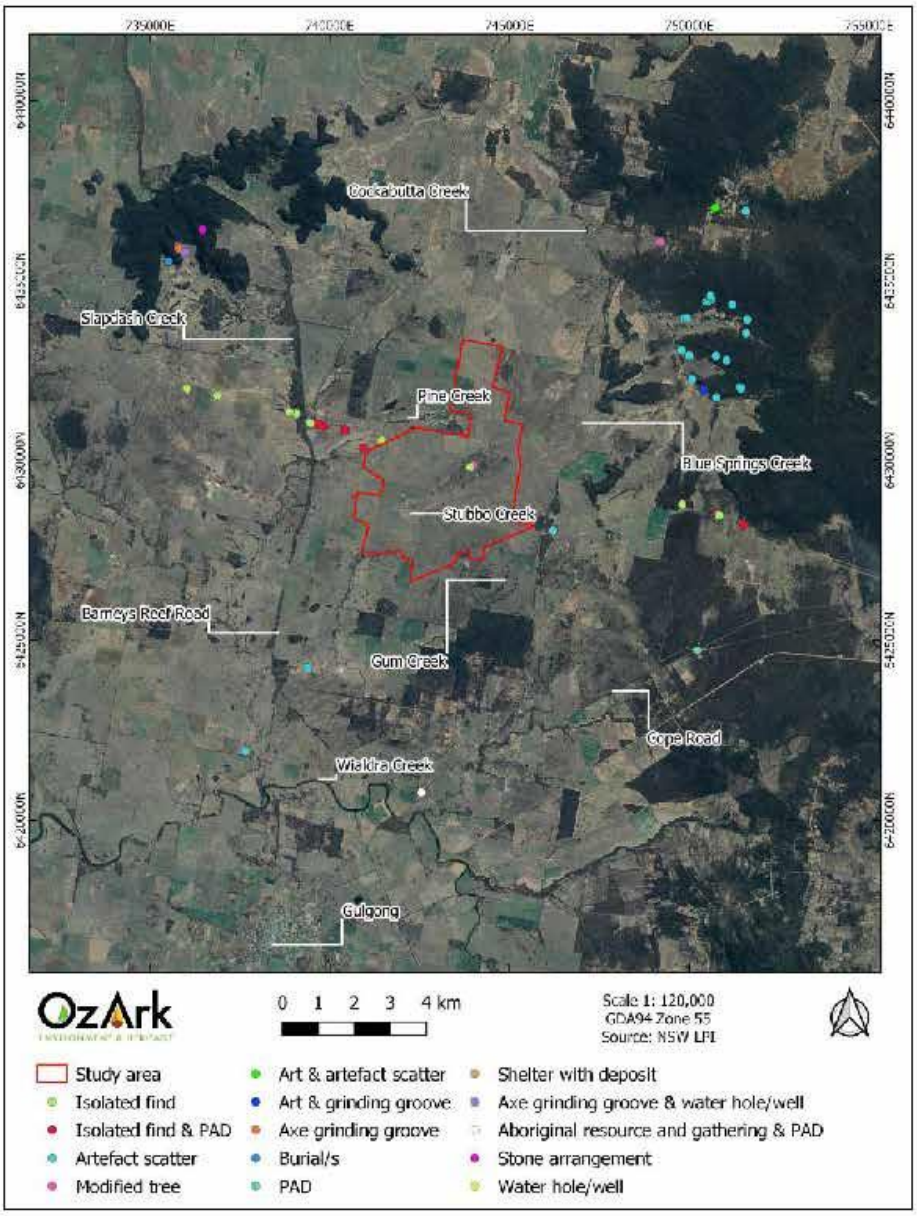

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Figure 2-2. AHIMS sites inside the study area.

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3 PREDICTIVE MODEL

3.1 LANDFORM MODELLING

The study area is located at the eastern edge of the NSW South Western Slopes bioregion. Specifically, the study area is in the Inland Slopes sub-bioregion. The South Western Slopes Bioregion is a large area of foothills and ranges comprising the western fall of the Great Dividing Range to the edge of the Riverina Bioregion (NPWS 2003).

Preliminary landform mapping shows that the study area is intersected with several drainage lines, including Stubbo Creek. The topography of the study area appears to be primarily gentle slopes, with the highest point being in the northeast corner of the study area. There also appears to be at least one rock outcrop visible on the aerial imagery. There are scattered remnant trees throughout the study area, mostly concentrated around the existing homestead, 'The Pinnacle', as well as the creek and drainage lines (**Figure 1-2**).

Such an environment is unlikely to have a favoured area for Aboriginal occupation for extended periods of time, and is more likely to have been utilised as an access route between the hills and the river. The study area has been used historically and is currently used for low-intensity livestock grazing.

Figure 3-1 shows the characterisation of the landforms within the study area, consisting of either drainage areas (including Stubbo Creek and the minor drainage lines as well as any associated banks or possible terraces) or gentle slopes. Refinement of the landforms will be undertaken during the field survey.

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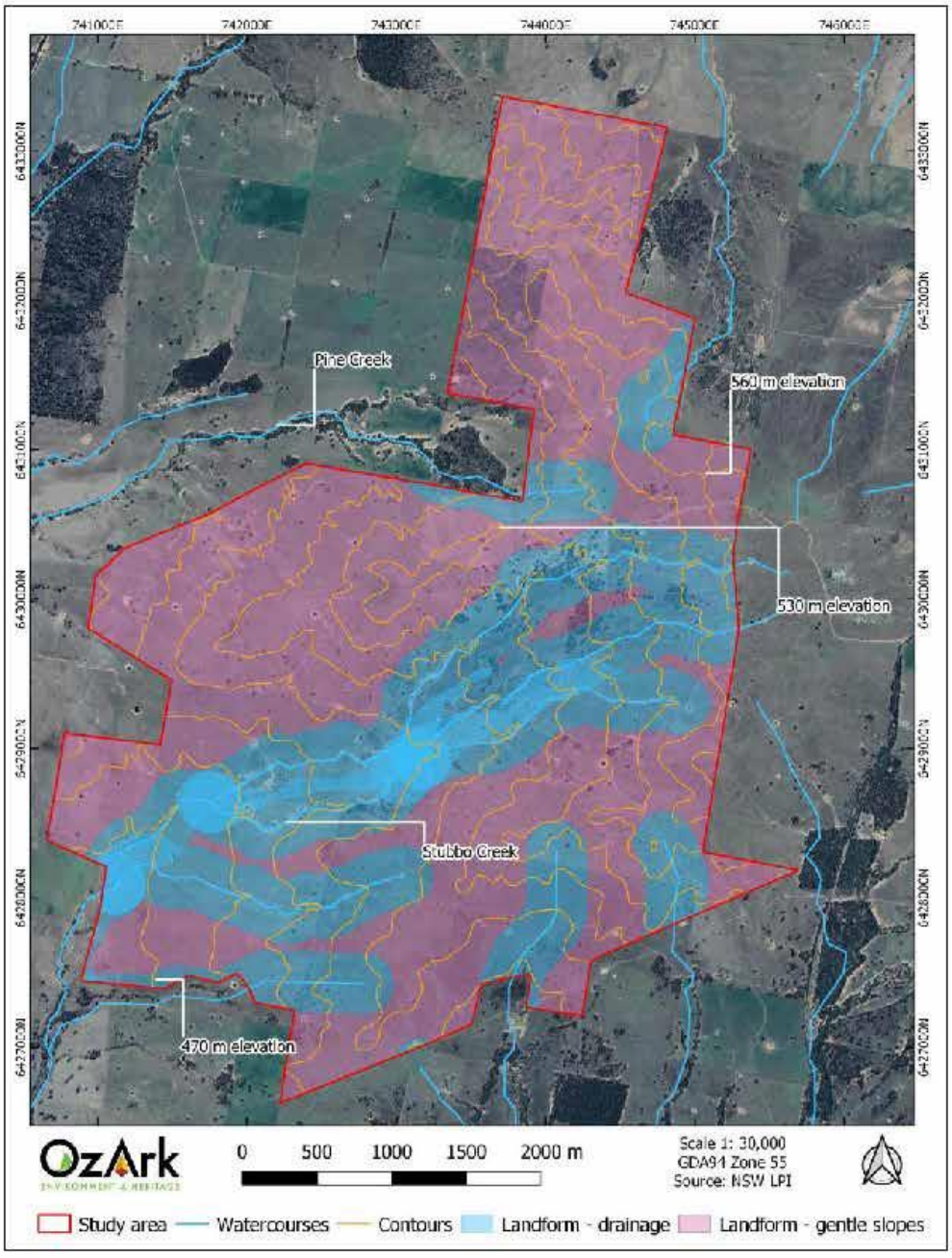
Figure 3-1. Aerial of the study area showing terrain.



3.2 PREDICTIVE MODEL FOR THE SURVEY AREA

Across Australia, numerous archaeological studies in widely varying environmental zones and contexts have demonstrated a high correlation between the permanence of a water source and

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the permanence and/or complexity of Aboriginal occupation. Site location is also affected by the availability of and/or accessibility to a range of other natural resources including: plant and animal foods; stone and ochre resources and rock shelters; as well as by their general proximity to other sites/places of cultural/mythological significance. Consequently, sites tend to be found along permanent and ephemeral water sources, along access or trade routes or in areas that have good flora/fauna resources and appropriate shelter.

In formulating a predictive model for Aboriginal archaeological site location within any landscape it is also necessary to consider post-depositional influences on Aboriginal material culture. In all but the best preservation conditions very little of the organic material culture remains of ancestral Aboriginal communities survives to the present. Generally, it is the more durable materials such as stone artefacts, stone hearths, shell, and some bones that remain preserved in the current landscape. Even these however may not be found in their original depositional context since these may be subject to either (a) the effects of wind and water erosion/transport—both over short- and long-time scales—or (b) the historical impacts associated with the introduction of colonial farming practices. Scarred trees, by their nature, may survive for up to several hundred years but rarely beyond.

The archaeological studies undertaken in the vicinity of study area provide an insight into the nature and distribution of archaeological sites within the area. However, the location of sites can only reflect what has been identified, usually as a result of infrastructure/development-driven projects, thus presenting the site data as clustered or on linear alignments. Generally, sites have been recorded in proximity to a recognised water source, in locations that have been subject to reduced landform disturbance, and on gentle, elevated landforms. However, landform disturbance may also explain why Aboriginal objects become revealed on the ground surface, such as within modified and disturbed landforms.

Based on knowledge of the environmental contexts of the study area and a desktop review of the known local and regional archaeological record, the following predictions are made concerning the probability of those site types being recorded:

- Isolated finds may be indicative of: random loss or deliberate discard of a single artefact, the remnant of a now dispersed and disturbed artefact scatter, or an otherwise obscured or sub-surface artefact scatter. They may occur anywhere within the landscape but are more likely to occur in topographies where open artefact scatters typically occur.
    - As isolated finds can occur anywhere, particularly within disturbed contexts, it is predicted that this site type could be recorded within the study area. It is noted in **Section 2** that isolated finds have been recorded in the region. One isolated find has been recorded within the study area.
- Open artefact scatters are here defined as two or more artefacts, not located within a rock shelter, and located no more than 50 m away from any other constituent artefact. This site type may occur almost anywhere that Aboriginal people have travelled and may be

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associated with hunting and gathering activities, short- or long-term camps, and the manufacture and maintenance of stone tools. Artefact scatters typically consist of surface scatters or sub-surface distributions of flaked stone discarded during the manufacture of tools but may also include other artefactual rock types such as hearth and anvil stones. Less commonly, artefact scatters may include archaeological stratigraphic features such as hearths and artefact concentrations which relate to activity areas. Artefact density can vary considerably between and across individual sites. Small ground exposures revealing low density scatters may be indicative of background scatter rather than a spatially or temporally distinct artefact assemblage. These sites are classed as 'open', that is, occurring on the land surface unprotected by rock overhangs, and are sometimes referred to as 'open camp sites'.

Artefact scatters are most likely to occur on level or low gradient contexts, along the crests of ridgelines and spurs, and elevated areas fringing watercourses or wetlands. Larger sites may be expected in association with permanent water sources.

Topographies which afford effective through-access across, and relative to, the surrounding landscape, such as the open basal valley slopes and the valleys of creeks, will tend to contain more and larger sites, mostly camp sites evidenced by open artefact scatters.

  - Stone artefact distributions of variable artefact densities are the most common Aboriginal object found within the region (see **Section 2.2**). A general correlation between different types of watercourses and the nature of the evidence of past Aboriginal occupation is evident. Higher artefact density sites are located near to permanent water sources and low-density artefact distributions are found elsewhere. It is possible that artefact scatters of varying densities will be present within the study area, especially in relation to Stubbo Creek.

- Aboriginal scarred trees contain evidence of the removal of bark (and sometimes wood) in the past by Aboriginal people, in the form of a scar. Bark was removed from trees for a wide range of reasons. It was a raw material used in the manufacture of various tools, vessels and commodities such as string, water containers, roofing for shelters, shields and canoes. Bark was also removed as a consequence of gathering food, such as collecting wood boring grubs or creating footholds to climb a tree for possum hunting. Due to the multiplicity of uses and the continuous process of occlusion (or healing) following removal, it is difficult to accurately determine the intended purpose for any particular example of bark removal. Scarred trees may occur anywhere old growth trees survive. The identification of scars as Aboriginal cultural heritage items can be problematical because some forms of natural trauma and European bark extraction create similar scars. Many remaining scarred trees probably date to the historic period when bark was removed by Aboriginal people for both their own purposes and for roofing on early European houses. Consequently, the distinction between European and Aboriginal scarred trees may not be clear.

  - The study area is mostly cleared of vegetation; therefore, this site type is not predicted likely to occur. However, it is possible that culturally modified trees may be present in stands of remnant native vegetation if any remains and it is noted that a scarred tree has been previously recorded within the study area.

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- Quarry sites and stone procurement sites typically consist of exposures of stone material where evidence for human collection, extraction and/or preliminary processing has survived. Typically, these involve the extraction of siliceous or fine grained igneous and meta-sedimentary rock types for the manufacture of artefacts. The presence of quarry/extraction sites is dependent on the availability of suitable rock formations.
    - This site type could be recorded within the study area should suitable rock outcroppings be available. A small area of rock outcropping is mapped within the study area (**Figure 3-1**).
- Grinding grooves are most likely to occur on flat outcrops of coarse-grained sandstone in the vicinity of water sources, however, grinding grooves have been recorded on fine-grained granite outcrops.
    - Given the low prospect of suitable rock exposures being present in the study area, grinding groove sites are unlikely to be present.
- Rock shelters were utilised in the past for both habitation and ceremonial purposes. The term 'rock shelter site' refers to rock shelters/rock overhangs that contain evidence such as stone artefacts and/or bones and/or plant remains (from meals eaten at the site) and/or hearths (fireplaces). Most rock shelter sites are secular in nature, however, those that also contain rock art or engravings are often believed to be non-secular in nature. The term 'rock art site' generally refers to Aboriginal ochre paintings or ochre or charcoal drawings located on a rock slab (generally in a sheltered place like the floor of a cave or rock shelter), boulder, cliff-face, cave or rock shelter wall or roof, or wall of a rock overhang. The majority of rock art sites are found in positions that are sheltered from the elements. This observation, however, is probably biased to some extent, as rock art would not preserve well in open positions. Rock art sites are generally believed to be non-secular in nature.
    - Based on the topography of the study area, rock shelters are not predicted to be present.
- Burials are generally found in soft sediments such as aeolian sand, alluvial silts and rock shelter deposits. In valley floor and plains contexts, burials may occur in locally elevated topographies rather than poorly drained sedimentary contexts. Burials are also known to have occurred on rocky hilltops in some limited areas. Burials are generally only visible where there has been some disturbance of sub-surface sediments or where some erosional process has exposed them.
    - Given the topography, nature of the soils and geology, burials are not predicted to be present in the study area.
- Bora/Ceremonial sites are places which have ceremonial or spiritual connections. Ceremonial sites may comprise of natural landscapes or have archaeological material. Bora sites are ceremonial sites which consist of a cleared area and earthen rings.
    - This site type does not necessarily follow landform predictability and are more likely to be identified by local Aboriginal people, rather than through archaeological evidence. These sites are generally identified through consultation with the Aboriginal community.

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4 SURVEY METHODOLOGY

4.1 ASSESSMENT APPROACH

The Aboriginal cultural heritage assessment of the study area will follow the *Code of Practice for the Investigation of Aboriginal Objects in New South Wales* (Code of Practice; DECCW 2010b). The field inspection will follow the *Guide to Investigating, Assessing and Reporting on Aboriginal Cultural Heritage in New South Wales* (OEH 2011).

4.2 SURVEY AIMS

The aim of any archaeological survey is not to locate each artefact in a landscape but to undertake investigations so that the archaeological potential and archaeological characteristics of all landforms within a study area are known. Therefore, the aims of the survey will be to:

- Conduct pedestrian transects across the survey areas, so that the archaeological potential of each landform can be determined
- Evaluate whether the predictive model set out in **Section 3.2** is valid
- Determine if any landforms of the study area require test excavation to understand the archaeological potential at a particular location
- Undertake sufficient assessment in order to satisfy Sections 2.2, 2.4, 2.5, 2.6, and 2.7 in the *Guide to Investigating, Assessing and Reporting on Aboriginal Cultural Heritage in New South Wales* (OEH 2011)
- Collecting sufficient data so that the results can be presented in an ACHAR as set out in Section 3 in the *Guide to Investigating, Assessing and Reporting on Aboriginal Cultural Heritage in New South Wales* (OEH 2011)
- Undertaking survey and record keeping satisfying Requirements 1–13 of the Code of Practice.

4.3 SURVEY METHODOLOGY

Standard archaeological field survey and recording methods will be employed in this assessment (Burke & Smith 2004) and will follow the Code of Practice.

As highlighted in **Section 2**, greater Aboriginal archaeological potential tends to exist on landforms within 200 m of permanent and ephemeral water sources, along access or trade routes, and areas with suitable flora/fauna and shelter. Archaeological potential is generally reduced on steep landforms unsuitable for camping.

The study area will be assessed by sampling the different landforms as outlined in **Section 3.1** using pedestrian survey. The landforms will be refined as necessary during the survey. Survey transects will be approximately 60–80 m wide, with surveyors spaced approximately 20 m apart.

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The proposed areas to be sampled using pedestrian transects are shown in **Figure 4-1**. These have been chosen based on covering a range of landforms and locations across the study area. **Table 4-1** outlines the details of each survey area.

Table 4-1: Survey areas and landforms.

Survey Area	Hectares	Landforms
1	65	Drainage & flat/gentle slopes
2	181	Predominately drainage
3	223	Predominately drainage
4	67	Flat/gentle slopes
5	37	Drainage & flat/gentle slopes
6	94	Drainage & flat/gentle slopes
7	128	Predominately flat/gentle slopes
8	57	Gentle slopes
9	54	Drainage & flat/gentle slopes
10	36	Drainage & flat/gentle slopes
11	104	Flat/gentle slopes

The two previously recorded AHIMS sites, #36-3-1423 and #36-3-2515, will also be ground truthed during the field survey to assess their current condition.

In the field, OzArk staff will identify, record and evaluate physical (i.e. archaeological) evidence. Site recording will capture all the information required to complete current AHIMS site recording forms (e.g. site location, site boundary, site plan, representative photographs, artefact recording and feature recording).

All survey will be undertaken with the assistance of RAP representatives. Apart from their valuable experience in recognising and recording archaeological sites, the RAP representatives will be able to acquaint themselves with the study area in order to inform the cultural values assessment.

The study area is 1743 ha. The proposed sampling will cover approximately 1046 ha, meaning that approximately 60% of the overall study area will be surveyed. It is estimated that survey of the sample areas will be undertaken in eight days by two archaeologists and up to four RAP representatives. As per the Code of Practice, all landform types within the study area will be sampled. Survey areas within the proposed impact area will be prioritised, though areas of the environmental exclusion zone will be included in the survey. This is so areas around the main watercourses, Stubbo Creek and its tributaries, are also sampled to help gain a holistic archaeological understanding of the study area as a whole.

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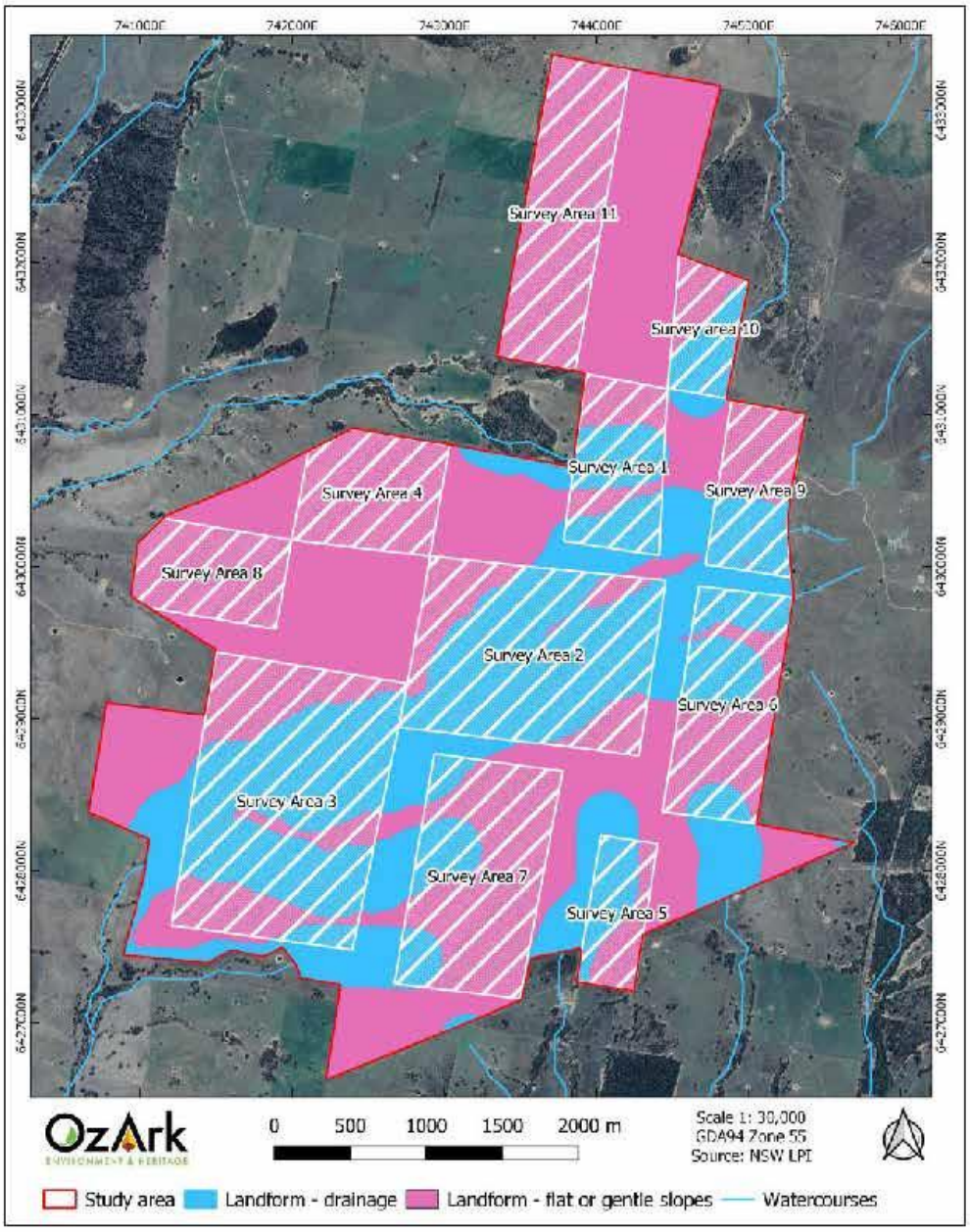
Figure 4-1: Proposed survey areas and landforms.



4.4 TEST EXCAVATION

It is possible that the survey may identify landforms where test excavation under the Code of Practice (Requirements 14–17) is required. Should such landforms be identified during the

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survey, the test excavation methodology will be prepared as a separate document that will be circulated to all RAPs for review and comment.

4.5 CULTURAL VALUES

Any cultural values relating to the study area will be captured by the OzArk archaeologist (if such information is provided by a RAP during the survey) and included in the *Aboriginal Cultural Heritage Assessment Report* (ACHAR).

In addition, should any RAPs have knowledge of cultural values regarding the study area that they wish to share or that may affect this survey methodology, OzArk invites them to contact us so that these values can be recorded and / or responded to in this methodology.

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Appendix 1 Figure 8: Stage 4 example letter sent to Aboriginal community.

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Newcastle www.ozarkehm.com.au DUBBO NSW 2830

27th October 2020

Mudgee Local Aboriginal Land Council
c/- Tony Lonsdale
PO Box 1098
MUDGEE NSW 2850
mudgeelalc@bigpond.com

ABORIGINAL HERITAGE ASSESSMENT FOR THE PROPOSED STUBBO SOLAR FARM.

Dear Members,

Thank-you for your continued participation as a Registered Aboriginal Party (RAP) and involvement in the above-mentioned project.

UPC Renewables (the Proponent) would like to offer you the opportunity to provide feedback on the draft report that has been undertaken in accordance with stage four (4) of the Aboriginal Cultural Heritage Consultation Requirements for Proponents 2010 (ACHCR).

As per the ACHCRs we are required to give you twenty-eight (28) days to supply feedback on the attached documents. This period closes on the **Tuesday 24th November 2020**. Should our office not be contacted within this time frame, we will presume that you are satisfied with the contents of the report as it stands.

Should you need any help supplying feedback or have any queries, please do not hesitate to contact our office.

Kind regards,

Brendan Fisher
Project Archaeologist

Appendix 1 Figure 9: Stage 4 responses from RAPs.

P.O. Box 1583
Orange NSW 2800
ABN: 77 548 143 187
ICN: 7398
WVWAC@hotmail.com

23 November 2020

Dr Alyce Cameron
Senior Archaeologist
OzArk Environment & Heritage
PO Box 2069
Dubbo NSW 2830

Re: V2.3 DRAFT Aboriginal Cultural Heritage Assessment Report Stubbo Solar Farm. Dated 26 October 2020

Dear Alyce,

Wellington Valley Wiradjuri Aboriginal Corporation (WVWAC) would like to thank you for your invitation to provide a response for This Aboriginal Cultural Heritage issue relevant to obligations to protect our Heritage within our Traditional Lands. Wellington Valley Wiradjuri represent the fourteen traditional families with identified apical ancestry pre European occupation with our known Traditional Lands. We know our culture, country and continue with our association with our traditional lands (Ngurangbang).

WVWAC object to any other non-traditional aboriginal organizations or people taking part in site surveys, consultation and assessments within our defined Traditional Lands. These non-traditional people and groups are outsiders under Traditional Lore and have no right to advise on or to be present during consultation or site visits as they do not possess the specific traditional knowledge in relation to these lands or sites. These participants may be indigenous and may live locally within the region however, this still does not give them the right to disregard Traditional Lore and values.

Wellington Valley Wiradjuri Aboriginal Corporation (WVWAC) have through consultation with other Traditional Elders and Traditional Community with cultural knowledge have the following comments and or recommendations:

Recommendation Section 14.1 Aboriginal Cultural Heritage pp118-119

- WVWAC have concerns over the actual spacing of Cultural Heritage Field Officers, as discussions with various Field Officers present including those from other RAP's indicate that the spacing was far greater than the reported 20m.
- WVWAC have concerns over the splitting of RAP's Cultural Heritage Field Officers into two groups in an attempt to cover more area within a short time period. The Cultural Heritage Field Officers should have operated as one group as to mutually verify what is found in the area covered and to ensure adequate survey coverage of the project area.
- WVWAC have concerns around missed artefact sites that may have been present between the Cultural Heritage Field Officers and that fact that the project area was sampled in an almost Du Diligence manner rather than a more comprehensive field survey.
- WVWAC cite issues with the current Wellington Solar Farm where the spacing between Cultural Heritage Field Officers was too great and ground cover impeded the Field Officers from properly

identifying cultural artefact sites, which were later found during collection and sub-surface testing phases which prolonged the project by an additional 3 weeks due to the location within the approved area and RAP's forcing the issue that these areas be Recorded, Salvaged and sub surface tested correctly. It is due to this and other projects in recent times where initial surveys were rushed or conducted in a sample methodology to have a 100% project area approved, that WVWAC raise serious concerns of unrecorded sites future loss through this development without being properly identified, recorded and salvaged.

- WVWAC again would like to indicate that areas close by to this development area have known Cultural Heritage sites and that this Development area is a known to be in our traditional information relating back to the Mudigee Clan as the clan boundary is very close by. This is a boundary of three Clan areas and is highly culturally significant as meetings took place in and around this project development site.

- WVWAC recommend that all remaining areas of this project development area be surveyed comprehensively with ALL RAP's Field Officers present as 1 large group to ensure adequate survey coverage of the project area. Further archaeological assessment would be required if the proposal activity extends beyond the sampled area assessed in this report. This would include full consultation and involvement with the Registered Aboriginal Parties.

- The Proponent should prepare a Cultural Heritage Management Plan (CHMP) to address the potential for finding additional Aboriginal artefacts during the construction of the Proposed Solar Farm and for the management of known sites and artefacts within the proposal area. The Plan should include the unexpected finds procedure to deal with construction activity which includes the written notification of ALL RAP's within 24hrs of the Unexpected Find. Preparation of the CHMP should be undertaken in consultation with the registered Aboriginal parties.

- In the unlikely event that human remains are discovered during the construction of the Proposed Solar Farm, all work must cease in the immediate vicinity. The appropriate heritage team within the Department of Planning, Industry and Environment (DPIE) and the local police should be notified. Further assessment would be undertaken to determine if the remains were Aboriginal or non-Aboriginal. If the remains are deemed to be Aboriginal in origin the Registered Aboriginal Parties should be advised of the find as directed by the appropriate heritage team within DPIE.

- WVWAC have been in this situation previously and require that ALL RAP's be notified immediately upon discovery, site inspection be arranged and be involved in all meetings and discussions with Forensics Officers, DPIE, Archaeologists and Project Managers before any decision is made in regards to the origins of the burial or bone deposit.

WVWAC look forward to further participating in the above project, sharing our knowledge of county and to ensure our Heritage is protected. We trust our response meets your requirements. Please contact WVWAC Directors should you require our assistance to address any Aboriginal issues to support your future plans.

Regards,

Bradley R. Bliss J.P.
WVWAC CEO and Contact Officer
Senior Aboriginal Cultural Heritage Field Officer
Senior Aboriginal Cultural Mentor and Educator
Traditional Owner Clan Descendant
Mobile: 0427321016

Appendix 1 Figure 10: OzArk response to WVWAC Stage 4 comments.

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DUBBO NSW 2830

9 December 2020

Wellington Valley Wiradjuri Aboriginal Corporation
c/- Brad Bliss
PO Box 1583
Orange NSW 2800
wvwac@hotmail.com

STUBBO SOLAR FARM: DRAFT ACHAR
RESPONSE TO STAGE 4 ACHCR COMMENTS

Dear Bradley,

Thank you for taking the time to review the provided *Aboriginal Cultural Heritage Assessment Report* (ACHAR) and providing your feedback dated 23 November 2020.

Please see below response to your comments.

- The survey spacing was amended to having surveyors approximately 20 metres (m) apart at the recommendation of WVWAC's review of the assessment methodology. The 20 m spacing was used during the field survey, with some deviations in spacing due to physical constraints such as fences, dams, and swampy ground. In order to be clearer on this point, Section 6.1 of the ACHAR will be revised with additional information.
- For a large project it is reasonable to have two separate teams working apart from each other and OzArk has used this method successfully for other projects. In addition, there were difficulties related to vehicular movements through the study area (access, boggy conditions). Having two separate teams therefore made the survey more efficient and increased our survey coverage.
- The survey was conducted following the guidelines outlined in Requirement 5 of the Code of Practice; particularly Requirement 5a which states that the survey must:
    - include all landforms that will potentially be impacted. Where there is more than one instance of similar or the same landforms that have the potential to be impacted each individual landform must be sampled.
    - place a proportional emphasis on those landforms deemed to have archaeological potential, clearly describing, and justifying the reasons for their selection

  Therefore, the assessment methodology was to conduct pedestrian survey through all survey areas (as defined in Section 6.1 of the ACHAR) which were designed around sampling the various types of landforms present in the study area (as outlined in Section 2.1, Section 6.1, and Section 6.3 of the ACHAR). At no time, was a due diligence approach used during the survey.
- OzArk notes the concerns WVWAC raise concerning the unsurveyed areas. However, the higher potential sections of the study area have been surveyed comprehensively (as noted above in connection to Requirement 5a). The unsurveyed areas of the study area have low potential for

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archaeological deposits or Aboriginal sites to be present. This was confirmed by sample survey of these landform types in other parts of the study area.

In relation to the conservation and management of Aboriginal cultural values in the study area, we note:

- The areas and sites which are associated with potential archaeological deposits (PAD) have been excluded from the impact footprint of the proposal including buffers around any site or PAD extent (see Section 8.3 of the ACHAR).
- The Aboriginal Cultural Heritage Management Plan (ACHMP) which will be prepared for the ongoing management of Aboriginal heritage sites inside the study area will include procedures for unanticipated finds; particularly in those landforms of low potential that were not surveyed to the same extent as other areas.

- OzArk thanks WWAC for the information surrounding cultural values and the cultural significance of the project area which will be incorporated into Section 8.2 of the ACHAR.
- The ACHAR already recommends that all land-disturbing activities must be confined to within the development footprint and associated tracks and/or cable crossings, and if the proposed work extends beyond these areas, then further archaeological assessment will be required.
  - As the survey has followed Requirement 5 of the Code of Practice, further survey is not necessary, provided the development footprint and associated tracks and/or cable crossings do not change.
- The necessity of the proponent preparing an ACHMP has already been addressed in the ACHAR (see Section 9.1, Section 9.3, and Section 14.1). This includes an unanticipated finds protocol and inclusion of RAPs in the ACHMP preparation process.
- A protocol regarding human skeletal remains will be included in the ACHMP as outlined in Section 9.3.2. OzArk will supply the proponent with the recommended procedures by WWAC, so these recommendations can be taken into account when the ACHMP is being prepared.

If you have any further questions relating to the information provided above, please feel free to contact myself or our office on (02) 6882 0118.

Kind regards,

Dr Alyce Cameron
OzArk Senior Archaeologist

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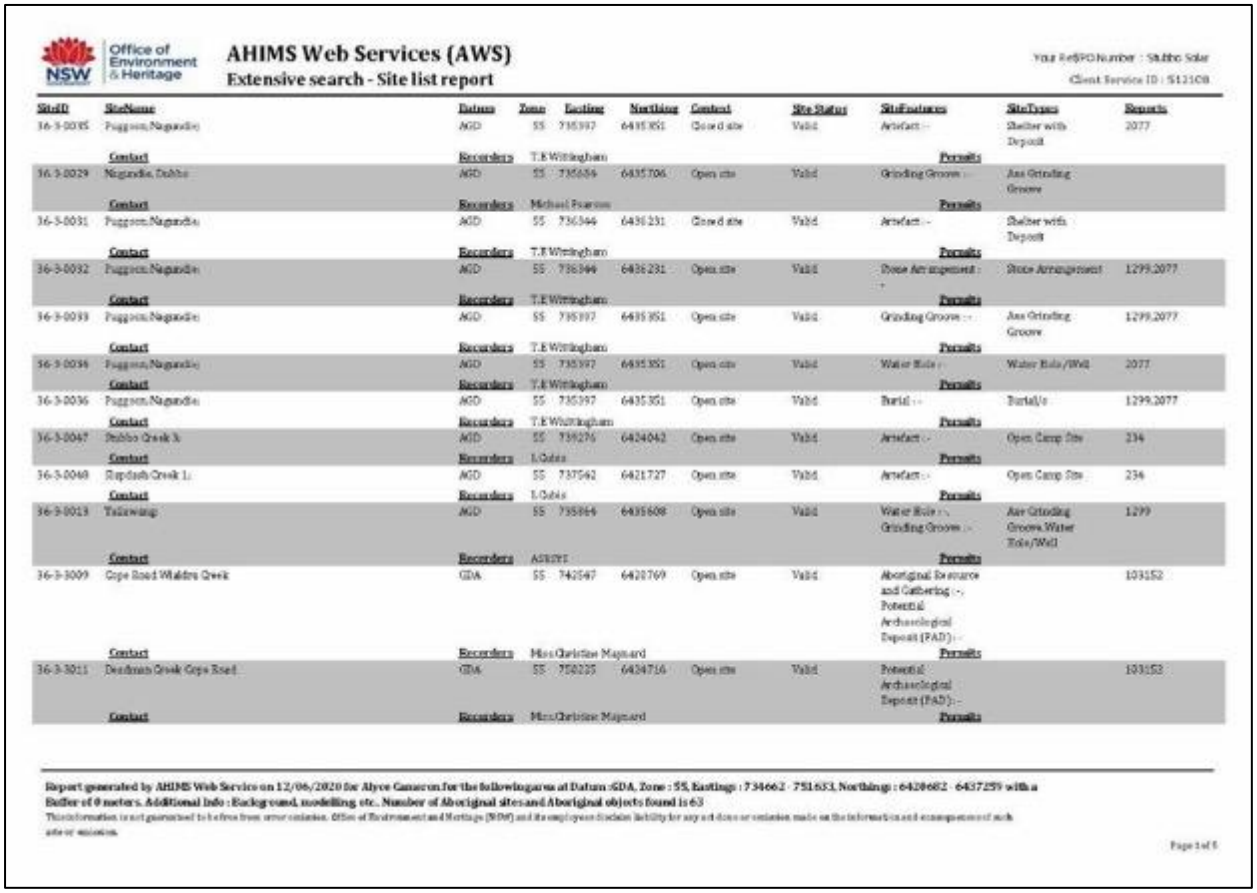
APPENDIX 2: EXTENSIVE SEARCH RESULT



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AHIMS Web Services (AWS)
Extensive search - Site list report

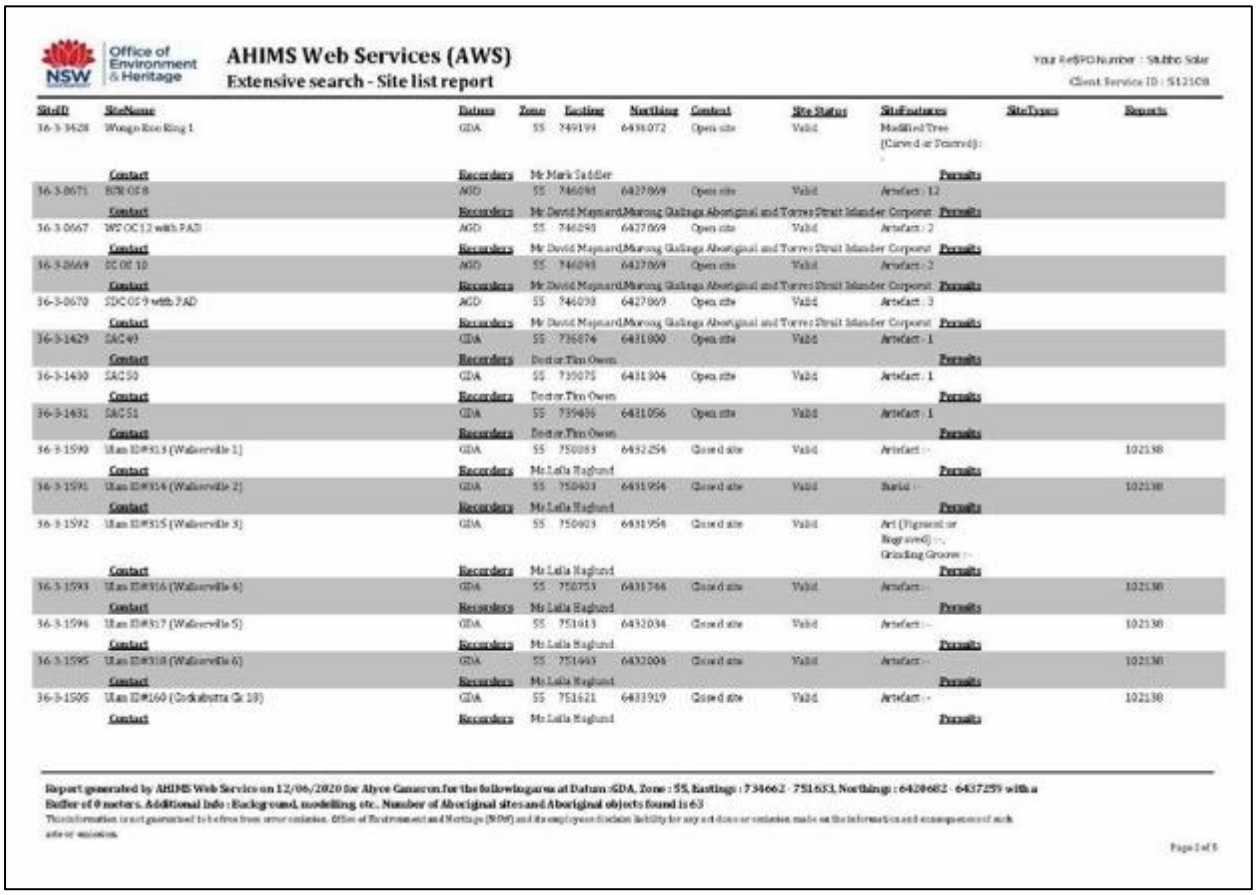
Your Ref/PO Number : Stubbo Solar
Client Service ID : 512108

SiteID	SiteName	Datum	Zone	Easting	Northing	Context	Site Status	SiteFeatures	SiteTypes	Reports
16-3-0035	Puggoon,Nagandie	AGD	55	736397	6435351	Closed site	Valid	Artefact : -	Shelter with Deposit	2077
	Contact	Recorders	T.E Withingham					Permits		
16-3-0029	Nagandie, Dubbo	AGD	55	736586	6435706	Open site	Valid	Grinding Groove : -	Axe Grinding Groove	
	Contact	Recorders	Michael Pearson					Permits		
16-3-0031	Puggoon,Nagandie	AGD	55	736344	6436231	Closed site	Valid	Artefact : -	Shelter with Deposit	
	Contact	Recorders	T.E Withingham					Permits		
16-3-0032	Puggoon,Nagandie	AGD	55	736344	6436231	Open site	Valid	Stone Arrangement : -	Stone Arrangement	1299,2077
	Contact	Recorders	T.E Withingham					Permits		
16-3-0033	Puggoon,Nagandie	AGD	55	736397	6435351	Open site	Valid	Grinding Groove : -	Axe Grinding Groove	1299,2077
	Contact	Recorders	T.E Withingham					Permits		
16-3-0034	Puggoon,Nagandie	AGD	55	736397	6435351	Open site	Valid	Water Hole : -	Water Hole/Well	2077
	Contact	Recorders	T.E Withingham					Permits		
16-3-0036	Puggoon,Nagandie	AGD	55	736397	6435351	Open site	Valid	Burial : -	Burial/s	1299,2077
	Contact	Recorders	T.E Withingham					Permits		
16-3-0047	Bubbo Creek 3;	AGD	55	739276	6424042	Open site	Valid	Artefact : -	Open Camp Site	234
	Contact	Recorders	L Gibbs					Permits		
16-3-0048	Bapdash Creek 1;	AGD	55	737562	6421727	Open site	Valid	Artefact : -	Open Camp Site	234
	Contact	Recorders	L Gibbs					Permits		
16-3-0013	Tallawang;	AGD	55	735864	6435608	Open site	Valid	Water Hole : -, Grinding Groove : -	Axe Grinding Groove,Water Hole/Well	1299
	Contact	Recorders	ASHPI					Permits		
16-3-3009	Cope Road Waldra Creek	GDA	55	742547	6420769	Open site	Valid	Aboriginal Resource and Gathering : -, Potential Archaeological Deposit (PAD) : -		103152
	Contact	Recorders	Miss Christine Maynard					Permits		
16-3-3011	Deedmans Creek Cope Road	GDA	55	750225	6424716	Open site	Valid	Potential Archaeological Deposit (PAD) : -		103152
	Contact	Recorders	Miss Christine Maynard					Permits		

Report generated by AHIMS Web Service on 12/06/2020 for Alyce Cameron for the following area at Datum :GDA, Zone : 55, Eastings : 734662 - 751653, Northings : 6420682 - 6437259 with a Buffer of 0 meters. Additional Info : Background, modelling etc.. Number of Aboriginal sites and Aboriginal objects found is 63

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

Page 1 of 5



Office of Environment & Heritage NSW

AHIMS Web Services (AWS)
Extensive search - Site list report

Your Ref/PO Number : Stubbo Solar
Client Service ID : 512108

SiteID	SiteName	Datum	Zone	Easting	Northing	Context	Site Status	SiteFeatures	SiteTypes	Reports
16-3-3428	Wongo Rise Ring 1	GDA	55	749199	6436072	Open site	Valid	Modified Tree (Carved or Scarred) : -		
	Contact	Recorders	Mr Mark Saddler					Permits		
16-3-0671	BSR 05 8	AGD	55	746098	6427069	Open site	Valid	Artefact : 12		
	Contact	Recorders	Mr David Maynard,Murrong Gulinga Aboriginal and Torres Strait Islander Corporat					Permits		
16-3-0667	WS OC 12 with PAD	AGD	55	746098	6427069	Open site	Valid	Artefact : 2		
	Contact	Recorders	Mr David Maynard,Murrong Gulinga Aboriginal and Torres Strait Islander Corporat					Permits		
16-3-0669	SC OC 10	AGD	55	746098	6427069	Open site	Valid	Artefact : 2		
	Contact	Recorders	Mr David Maynard,Murrong Gulinga Aboriginal and Torres Strait Islander Corporat					Permits		
16-3-0670	SDC 05 9 with PAD	AGD	55	746098	6427069	Open site	Valid	Artefact : 3		
	Contact	Recorders	Mr David Maynard,Murrong Gulinga Aboriginal and Torres Strait Islander Corporat					Permits		
16-3-1429	SAC49	GDA	55	736074	6431000	Open site	Valid	Artefact : 1		
	Contact	Recorders	Doctor Tim Owen					Permits		
16-3-1430	SAC50	GDA	55	736075	6431004	Open site	Valid	Artefact : 1		
	Contact	Recorders	Doctor Tim Owen					Permits		
16-3-1431	SAC51	GDA	55	736086	6431056	Open site	Valid	Artefact : 1		
	Contact	Recorders	Doctor Tim Owen					Permits		
16-3-1590	Ulan ID#513 (Wallerville 1)	GDA	55	750083	6432256	Closed site	Valid	Artefact : -		102130
	Contact	Recorders	Ms Lalla Haglund					Permits		
16-3-1591	Ulan ID#514 (Wallerville 2)	GDA	55	750903	6431956	Closed site	Valid	Burial : -		102130
	Contact	Recorders	Ms Lalla Haglund					Permits		
16-3-1592	Ulan ID#515 (Wallerville 3)	GDA	55	750903	6431956	Closed site	Valid	Art (Pigment or Engraved) : -, Grinding Groove : -		
	Contact	Recorders	Ms Lalla Haglund					Permits		
16-3-1593	Ulan ID#516 (Wallerville 4)	GDA	55	750753	6431744	Closed site	Valid	Artefact : -		102130
	Contact	Recorders	Ms Lalla Haglund					Permits		
16-3-1594	Ulan ID#517 (Wallerville 5)	GDA	55	751613	6432036	Closed site	Valid	Artefact : -		102130
	Contact	Recorders	Ms Lalla Haglund					Permits		
16-3-1595	Ulan ID#518 (Wallerville 6)	GDA	55	751693	6432004	Closed site	Valid	Artefact : -		102130
	Contact	Recorders	Ms Lalla Haglund					Permits		
16-3-1505	Ulan ID#160 (Godolphin Gr 18)	GDA	55	751621	6433919	Closed site	Valid	Artefact : -		102130
	Contact	Recorders	Ms Lalla Haglund					Permits		

Report generated by AHIMS Web Service on 12/06/2020 for Alyce Cameron for the following area at Datum :GDA, Zone : 55, Eastings : 734662 - 751653, Northings : 6420682 - 6437259 with a Buffer of 0 meters. Additional Info : Background, modelling etc.. Number of Aboriginal sites and Aboriginal objects found is 63

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Office of Environment & Heritage NSW

AHIMS Web Services (AWS)

Extensive search - Site list report

Your Ref/PO Number : Stubbo Solar
Client Service ID : 513108

SiteID	SiteName	Datum	Zone	Easting	Northing	Context	Site Status	SiteFeatures	SiteTypes	Reports
36-3-2508	SAC52	GDA	55	739849	6431018	Open site	Valid	Artefact : 1, Potential Archaeological Deposit (PAD) : -		
	Contact	Recorders	Dodtor Tim Owen					Permits		
36-3-2509	SAC53	GDA	55	739835	6430951	Open site	Valid	Artefact : 1, Potential Archaeological Deposit (PAD) : -		
	Contact	Recorders	Dodtor Tim Owen					Permits		
36-3-2510	SAC54	GDA	55	740431	6430030	Open site	Valid	Artefact : 1, Potential Archaeological Deposit (PAD) : -		
	Contact	Recorders	Dodtor Tim Owen					Permits		
36-3-2511	SAC55	GDA	55	740929	6430339	Open site	Valid	Artefact : 1, Potential Archaeological Deposit (PAD) : -		
	Contact	Recorders	Dodtor Tim Owen					Permits		
36-3-2513	SAC57	GDA	55	751511	6428210	Open site	Valid	Artefact : 1, Potential Archaeological Deposit (PAD) : -		
	Contact	Recorders	Dodtor Tim Owen					Permits		
36-3-2514	SAC58	GDA	55	750781	6428514	Open site	Valid	Artefact : 1, Potential Archaeological Deposit (PAD) : -		
	Contact	Recorders	Dodtor Tim Owen					Permits		
36-3-2515	TRE 21	GDA	55	743985	6429061	Open site	Valid	Artefact : 1, Potential Archaeological Deposit (PAD) : -		
	Contact	Recorders	Dodtor Tim Owen					Permits		
36-3-1551	Ulan ID#272 (Brokenback 12)	GDA	55	751573	6436934	Closed site	Valid	Artefact : -		102130
	Contact	Recorders	Ms Laila Haglund					Permits		
36-3-1552	Ulan ID#273 (Brokenback 13)	GDA	55	750733	6437024	Closed site	Valid	Art (Pigment or Engraved) : -, Artefact : -		102130
	Contact	Recorders	Ms Laila Haglund					Permits		
36-3-1553	Ulan ID#274 (Cockabutta Creek 1)	GDA	55	751033	6432704	Closed site	Valid	Artefact : -		102130
	Contact	Recorders	Ms Laila Haglund					Permits		
36-3-1554	Ulan ID#275 (Cockabutta Creek 10)	GDA	55	750983	6434424	Closed site	Valid	Artefact : -		102130
	Contact	Recorders	Ms Laila Haglund					Permits		
36-3-1555	Ulan ID#276 (Cockabutta Creek 11)	GDA	55	750523	6434424	Closed site	Valid	Artefact : -		102130

Report generated by AHIMS Web Service on 12/06/2020 for Alyce Cameron for the following area at Datum :GDA, Zone : 55, Eastings : 734662 - 751653, Northings : 6420682 - 6437259 with a Buffer of 0 meters. Additional Info : Background, modelling, etc.. Number of Aboriginal sites and Aboriginal objects found is 63

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Office of Environment & Heritage NSW

AHIMS Web Services (AWS)

Extensive search - Site list report

Your Ref/PO Number : Stubbo Solar
Client Service ID : 513108

SiteID	SiteName	Datum	Zone	Easting	Northing	Context	Site Status	SiteFeatures	SiteTypes	Reports
	Contact	Recorders	Ms Laila Haglund					Permits		
36-3-1556	Ulan ID#277 (Cockabutta Creek 12)	GDA	55	750563	6434424	Closed site	Valid	Artefact : -		102130
	Contact	Recorders	Ms Laila Haglund					Permits		
36-3-1557	Ulan ID#278 (Cockabutta Creek 13)	GDA	55	750613	6434464	Closed site	Valid	Artefact : -		102130
	Contact	Recorders	Ms Laila Haglund					Permits		
36-3-1419	IF 19	GDA	55	738889	6431346	Open site	Valid	Artefact : 1		
	Contact	Recorders	Dodtor Tim Owen					Permits		
36-3-1420	IF 20	GDA	55	739964	6431029	Open site	Valid	Artefact : 1		
	Contact	Recorders	Dodtor Tim Owen					Permits		
36-3-1421	IF 21	GDA	55	741493	6430529	Open site	Valid	Artefact : 1		
	Contact	Recorders	Dodtor Tim Owen					Permits		
36-3-1422	IF 22	GDA	55	741493	6430556	Open site	Valid	Artefact : 1		
	Contact	Recorders	Dodtor Tim Owen					Permits		
36-3-1423	IF 23	GDA	55	743912	6429809	Open site	Valid	Artefact : 1		
	Contact	Recorders	Dodtor Tim Owen					Permits		
36-3-1424	IF 24	GDA	55	749506	6428777	Open site	Valid	Artefact : 1		
	Contact	Recorders	Dodtor Tim Owen					Permits		
36-3-1427	IF 27	GDA	55	736030	6432000	Open site	Valid	Artefact : 1		
	Contact	Recorders	Dodtor Tim Owen					Permits		
36-3-1428	IF 28	GDA	55	750020	6428475	Open site	Valid	Artefact : 1		
	Contact	Recorders	Dodtor Tim Owen					Permits		
36-3-1558	Ulan ID#279 (Cockabutta Creek 14)	GDA	55	750583	6434484	Closed site	Valid	Artefact : -		102130
	Contact	Recorders	Ms Laila Haglund					Permits		
36-3-1559	Ulan ID#280 (Cockabutta Creek 15)	GDA	55	750603	6434534	Closed site	Valid	Artefact : -		102130
	Contact	Recorders	Ms Laila Haglund					Permits		
36-3-1560	Ulan ID#281 (Cockabutta Creek 16)	GDA	55	750583	6434574	Closed site	Valid	Artefact : -		102130
	Contact	Recorders	Ms Laila Haglund					Permits		
36-3-1561	Ulan ID#282 (Cockabutta Creek 17)	GDA	55	751203	6434534	Closed site	Valid	Artefact : -		102130
	Contact	Recorders	Ms Laila Haglund					Permits		
36-3-1562	Ulan ID#283 (Cockabutta Creek 2)	GDA	55	750743	6432904	Closed site	Valid	Artefact : -		102130
	Contact	Recorders	Ms Laila Haglund					Permits		
36-3-1564	Ulan ID#285 (Cockabutta Creek 3)	GDA	55	750003	6432914	Closed site	Valid	Artefact : -		102130
	Contact	Recorders	Ms Laila Haglund					Permits		
36-3-1565	Ulan ID#286 (Cockabutta Creek 4)	GDA	55	749513	6433044	Closed site	Valid	Artefact : -		102130

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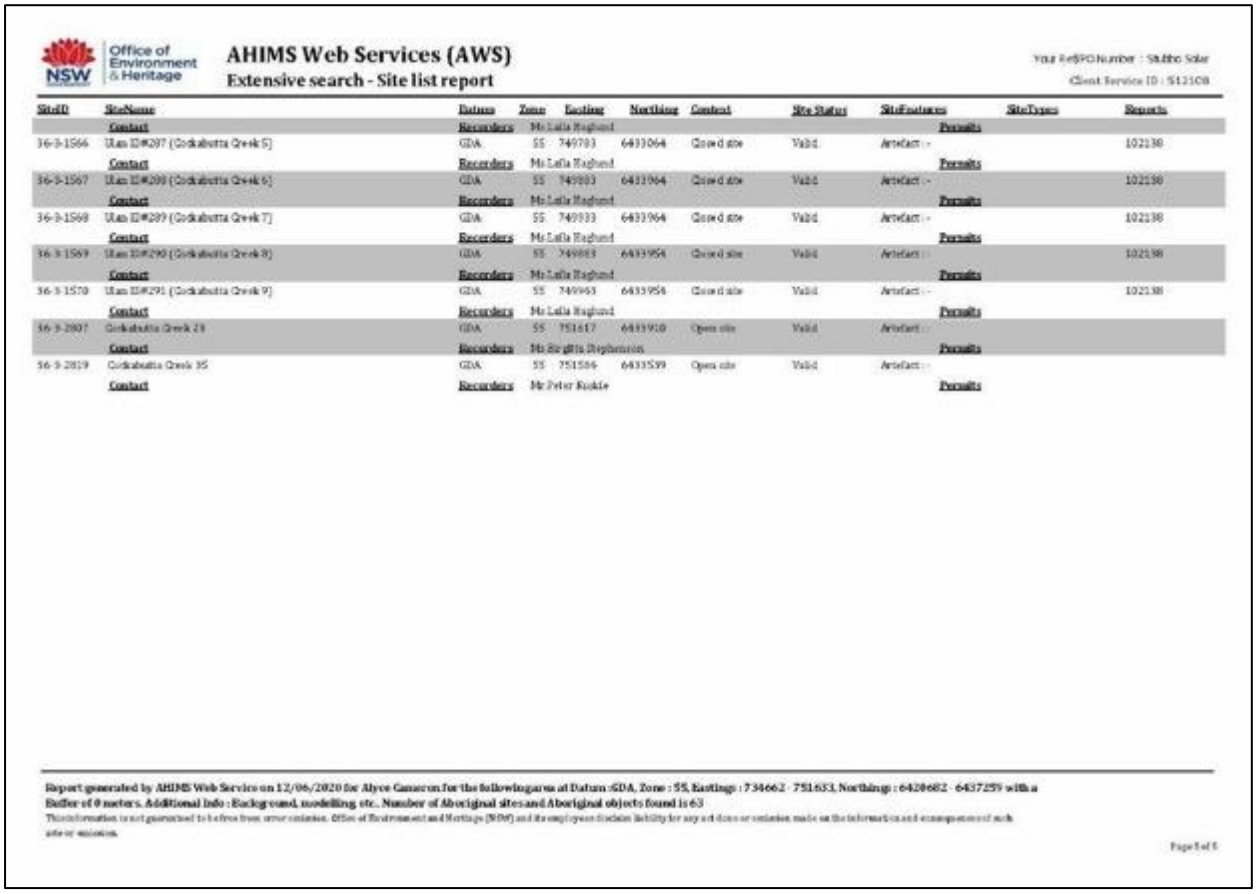

Office of Environment & Heritage

AHIMS Web Services (AWS)

Extensive search - Site list report

Your Ref/PO Number : Stubbo Solar

Client Service ID : 512108

SiteID	SiteName	Datum	Zone	Easting	Northing	Context	Site Status	SiteFeatures	SiteTypes	Reports
	Contact	Recorders	Ms Laila Haglund					Permits		
56-3-1566	Ulan ID#287 (Cockabutta Creek 5)	GDA	55	749703	6433064	Closed site	Valid	Artefact : -		102138
	Contact	Recorders	Ms Laila Haglund					Permits		
56-3-1567	Ulan ID#288 (Cockabutta Creek 6)	GDA	55	749803	6433064	Closed site	Valid	Artefact : -		102138
	Contact	Recorders	Ms Laila Haglund					Permits		
56-3-1568	Ulan ID#289 (Cockabutta Creek 7)	GDA	55	749933	6433964	Closed site	Valid	Artefact : -		102138
	Contact	Recorders	Ms Laila Haglund					Permits		
56-3-1569	Ulan ID#290 (Cockabutta Creek 8)	GDA	55	749883	6433958	Closed site	Valid	Artefact : -		102138
	Contact	Recorders	Ms Laila Haglund					Permits		
56-3-1570	Ulan ID#291 (Cockabutta Creek 9)	GDA	55	749963	6433958	Closed site	Valid	Artefact : -		102138
	Contact	Recorders	Ms Laila Haglund					Permits		
56-3-2807	Cockabutta Creek 29	GDA	55	751617	6433910	Open site	Valid	Artefact : -		
	Contact	Recorders	Ms Birgitta Stephenson					Permits		
56-3-2819	Cockabutta Creek 35	GDA	55	751504	6433539	Open site	Valid	Artefact : -		
	Contact	Recorders	Mr Peter Ruckle					Permits		

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APPENDIX 3: ABORIGINAL HERITAGE: UNANTICIPATED FINDS PROTOCOL

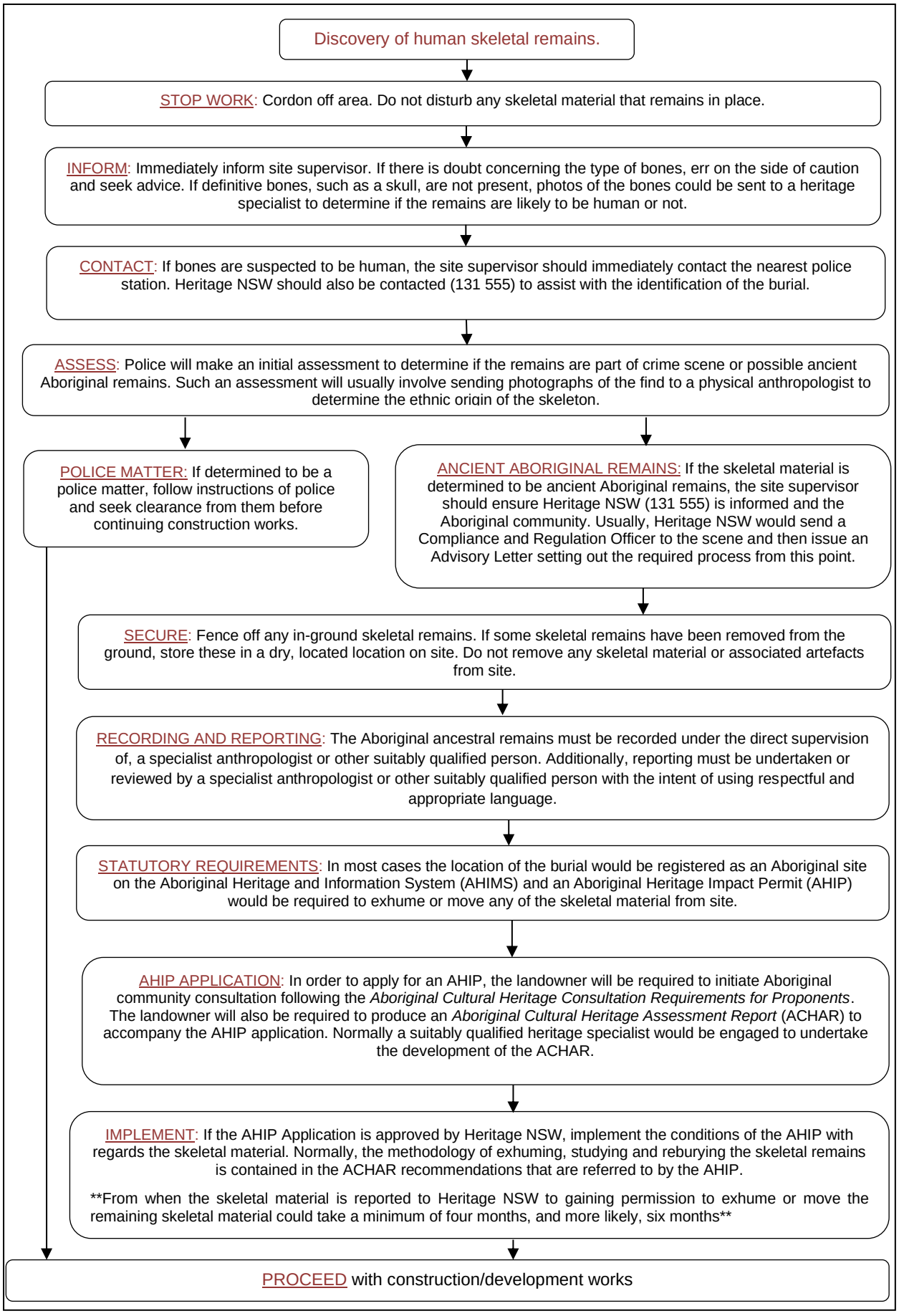
An Aboriginal artefact is anything which is the result of past Aboriginal activity. This includes stone (artefacts, rock engravings etc.), plant (culturally scarred trees) and animal (if showing signs of modification; i.e. smoothing, use). Human bone (skeletal) remains may also be uncovered while onsite.

Cultural heritage significance is assessed by the Aboriginal community and is typically based on traditional and contemporary lore, spiritual values, and oral history, and may also take into account scientific and educational value.

Protocol to be followed in the event that previously unrecorded or unanticipated Aboriginal object(s) are encountered:

1. If any Aboriginal object is discovered and/or harmed in, or under the land, while undertaking the proposed development activities, the proponent must:
    a. Not further harm the object;
    b. Immediately cease all work at the particular location;
    c. Secure the area so as to avoid further harm to the Aboriginal object;
    d. Notify Heritage NSW as soon as practical on 131 555, providing any details of the Aboriginal object and its location; and
    e. Not recommence any work at the particular location unless authorised in writing by Heritage NSW.
2. In the event that Aboriginal burials are unexpectedly encountered during the activity, work must stop immediately, the area secured to prevent unauthorised access and NSW Police and Heritage NSW contacted.
3. Cooperate with the appropriate authorities and relevant Aboriginal community representatives to facilitate:
    a. The recording and assessment of the find(s);
    b. The fulfilment of any legal constraints arising from the find(s), including complying with Heritage NSW directions; and
    c. The development and implementation of appropriate management strategies, including consultation with stakeholders and the assessment of the significance of the find(s).
4. Where the find(s) are determined to be Aboriginal object(s), recommencement of work in the area of the find(s) can only occur in accordance with any consequential legal requirements and after gaining written approval from Heritage NSW (normally an Aboriginal Heritage Impact Permit).

APPENDIX 4: HUMAN SKELETAL REMAINS PROTOCOL



APPENDIX 5: HISTORIC HERITAGE: UNANTICIPATED FINDS PROTOCOL

A historic artefact is anything which is the result of past activity not related to the Aboriginal occupation of the area. This includes pottery, wood, glass and metal objects as well as the built remains of structures, sometimes heavily ruined.

Heritage significance of historic items is assessed by suitably qualified specialists who place the item or site in context and determine its role in aiding the community's understanding of the local area, or their wider role in being an exemplar of state or even national historic themes.

The following protocol should be followed if previously unrecorded or unanticipated historic objects are encountered:

1. All ground surface disturbance in the area of the finds should cease immediately, then:
    a) The discoverer of the find(s) will notify machinery operators in the immediate vicinity of the find(s) so that work can be halted
    b) The site supervisor will be informed of the find(s).
2. If finds are suspected to be human skeletal remains, then NSW Police must be contacted as a matter of priority.
3. If there is substantial doubt regarding the historic significance for the finds, then gain a qualified opinion from an archaeologist as soon as possible. This can circumvent proceeding further along the protocol for items which turn out not to be significant. If a quick opinion cannot be gained, or the identification is that the item is likely to be significant, then proceed to the next step.
4. Notify Heritage NSW as soon as practical on 131 555 providing any details of the historic find and its location.
5. If in the view of the heritage specialist or Heritage NSW that the finds appear not to be significant, work may recommence without further investigation. Keep a copy of all correspondence for future reference.
6. If in the view of the heritage specialist or Heritage NSW that the finds appear to be significant, facilitate the recording and assessment of the finds by a suitably qualified heritage specialist. Such a study should include the development of appropriate management strategies.
7. If the find(s) are determined to be significant historic items (i.e. of local or state significance), any re-commencement of ground surface disturbance may only resume following compliance with any legal requirements and gaining written approval from Heritage NSW.