



Detail of edge wear on a quartzite flake identified at the Project area (Kookaburra IF3).

ABORIGINAL CULTURAL HERITAGE ASSESSMENT REPORT

BURROWAY SOLAR POWER STATION

NARROMINE SHIRE LOCAL GOVERNMENT AREA, NSW

MAY 2025

Report prepared by
OzArk Environment & Heritage
for Edify Energy Pty Ltd

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ABORIGINAL CULTURAL HERITAGE ASSESSMENT REPORT COVER SHEET

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DOCUMENT CONTROLS

Proponent	Edify Energy Pty Ltd	
Document Description	Aboriginal Cultural & Historic Heritage Assessment Report: Burroway Solar Power Station	
File Location	OzArk Job No.	
Clients\Edify\Burroway Solar Power Heritage Jan 2023\ACHAR	3767	
Document Status: V3.3 Final		Date: May 2025
OzArk internal edits		V1.0 JH background 8/5/23 V1.1 HR author 20/6/23 V1.2 BC edit 10/7/23
OzArk and client edits		V2.0 BC prepares for client release 10/7/23 V2.1 client edits V2.2-3 for distribution to RAPs 18/07/2023
Final document		V3.0 Final 7/9/23 V3.1-3.3 OzArk footprint update 4/4/25-9/5/25
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Acknowledgement

OzArk acknowledge the traditional custodians 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

ACHMP	Aboriginal Cultural Heritage Management Plan
ACHAR	Aboriginal Cultural Heritage Assessment Report. As set out in the <i>Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales</i> , all developments where harm to Aboriginal objects is likely must be assessed in an ACHAR.
ACHCRs	<i>Aboriginal Cultural Heritage Consultation Requirements for Proponents</i> . Guidelines for conducting Aboriginal community consultation for developments where harm to Aboriginal objects is likely.
AHIMS	Aboriginal Heritage Information Management System. Administered by the DPHI, AHIMS is the central register of all Aboriginal sites within NSW.
AHIP	Aboriginal Heritage Impact Permit. Issued by Heritage NSW to allow harm to Aboriginal objects.
Assemblage:	All artefacts recorded at a location. In this report, assemblage refers to stone artefacts as this was the only artefact class recorded.
Code of Practice	<i>Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales</i> 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.
DCCEEW (Commonwealth)	Commonwealth Department of Climate Change, Energy, the Environment and Water. Department responsible for administering the EPBC Act
DCCEEW (state)	NSW Department of Climate Change, Energy, the Environment and Water. DCCEEW contains the Environment and Heritage Group which, in turn, contains Heritage NSW and AHIMS
DPHI	NSW Department of Planning, Housing and Infrastructure. DPHI contains the Planning agency.
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.
EP&A Act	<i>Environmental Planning and Assessment Act 1979</i>
GSE	Ground surface exposure. A measure of factors that may reveal surface artefacts such as erosion scalds.

GSV	Ground surface visibility. A measure of factors that may obscure the detection of surface artefacts such as leaf litter.
Heritage NSW	Government department tasked with ensuring compliance with the NPW Act. Heritage NSW is advised by the Aboriginal Cultural Heritage Advisory Committee (ACHAC).
LEP	Local Environmental Plan
LGA	Local government area
NPW Act	<i>National Parks and Wildlife Act 1974</i> . Primary legislation governing Aboriginal cultural heritage within NSW.
PAD	Potential archaeological deposit. Indicates that a particular location has potential to contain subsurface archaeological deposits, although no Aboriginal objects may be 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 DPHI.
SSD	State Significant Development.

EXECUTIVE SUMMARY

OzArk Environment & Heritage (OzArk) has been engaged by Edify Energy Pty Ltd (the proponent) to complete an Aboriginal Cultural Heritage Assessment Report (ACHAR) for the proposed Burroway Solar Power Station (the Project).

The purpose of the assessment is to form part of an *Environmental Impact Statement* (EIS) being developed to accompany an application for development consent under Division 4.1 and 4.7 of Part 4 of the *Environmental Planning and Assessment Act 1979* for the Project. The Project is in the locality of Burroway, near Narromine in central western NSW.

The Project area consists of approximately 495 hectares of flat or gently sloping paddocks which have been mostly cleared of vegetation and used for agricultural purposes. The Project involves the construction of a 100-megawatt (MW) solar photovoltaic generator with an estimated 100 MW / 400 MW per hour energy storage capacity.

The field survey was undertaken by OzArk on 15 and 16 May 2023. Fifteen Aboriginal sites, containing a total of 24 artefacts, were identified during the survey. The sites consist of four artefact scatters and 11 isolated finds.

The Project can avoid impact to 10 of the 15 Aboriginal sites identified during the survey and 10 sites will be conserved within the landscape. Five sites cannot be avoided by the proposal and it is recommended that these sites be salvaged through a collection of surface artefacts before Project works commence. The methodology for the salvage is presented in this report and will be incorporated into an Aboriginal Cultural Heritage Management Plan (ACHMP) that will be developed and approved prior to works commencing. The potentially impacted sites are a low-density artefact scatter consisting of two artefacts and four isolated finds.

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

1. Following granting of development consent for the Project, the proponent will develop an ACHMP in consultation with the Registered Aboriginal Parties and the Department of Planning and Environment (with input from Heritage NSW). The ACHMP would also include an unanticipated finds protocol, unanticipated skeletal remains protocol, and heritage inductions and long-term management of the Aboriginal site being impacted.
2. Five Aboriginal sites are located within the impact footprint of the Project and will be salvaged via a collection of surface artefacts following the management strategies set out in **Section 9.2**. These sites are 35-3-0353 (Kookaburra OS4), 35-3-0356 (Kookaburra IF3), 35-3-0357 (Kookaburra IF5), 35-5-0359 (Kookaburra IF6), and 35-5-0360 (Kookaburra IF7).
3. The salvage works will include the mapping, analysis, and collection of the surface artefact at the affected sites. Results will be included in a report to preserve the data in a useable

form and an Aboriginal Site Impact Recording Form will be submitted to the Aboriginal Heritage Information Management System.

4. The proponent will avoid harm to the remaining 10 Aboriginal sites through a considered design of the Project components. These sites will be protected during the construction of the Project through temporary fencing. The location of the sites will be shown on all appropriate plans to ensure that they are not inadvertently harmed.
5. All land-disturbing activities must be confined to within the Project area. Should the parameters of the proposed work extend beyond this, then further archaeological assessment will be required.

FOREWORD



Edify Energy wish to build a Solar Power Plant across four large paddocks in Burroway, 20 kilometres north of Narromine in NSW. This report summarises the assessment for the potential impacts of the Solar Power Plant (the Project) on Aboriginal cultural heritage.

This report also includes documentation of the consultation that has taken place to date with the Aboriginal stakeholders involved with the Project.

A survey across the Project area was completed over two days on 15 and 16 May 2023. During the survey, 15 Aboriginal sites were identified: four artefact scatters (containing up to five stone artefacts) and 11 isolated finds (single artefacts). All of the sites are located in ploughed or disturbed agricultural land. The artefacts were mostly small stone flakes, although a scraper and a hammerstone were also recorded.

The Project will not impact 10 of the 15 identified sites and measures will be put in place to ensure that they will be avoided. Five sites, known as Kookaburra OS4 (35-3-0353), Kookaburra IF3 (35-3-0356), Kookaburra IF5 (35-3-0357), Kookaburra IF6 (35-5-0359), and Kookaburra IF7 (35-5-0360), are located where solar panels will need to be installed for the Project.

Before the commencement of works, it has been recommended that a salvage program take place that will include the collection of surface artefacts identified at these five sites. The final location for the storage/reburial of the relocated artefacts will be decided by the Registered Aboriginal Parties (RAPs) for the Project. The storage/reburial location will be detailed in the Aboriginal Cultural Heritage Management Plan that will be developed in consultation with all RAPs following the Project's approval.

CONTENTS

ABBREVIATIONS AND GLOSSARY	V
EXECUTIVE SUMMARY	VII
FOREWORD	IX
1 INTRODUCTION	1
1.1 Description of the proposal	1
1.2 Project area	2
1.3 Proposed work	3
2 THE ABORIGINAL CULTURAL HERITAGE ASSESSMENT	5
2.1 Relevant legislation	5
2.1.1 Commonwealth legislation	5
2.1.1.1 Environment Protection and Biodiversity Conservation Act 1999	5
2.1.1.2 Aboriginal and Torres Strait Islander Heritage Protection Act 1984	5
2.1.2 State legislation	6
2.1.2.1 Environmental Planning and Assessment Act 1979	6
2.1.2.2 National Parks and Wildlife Act 1974	7
2.1.2.3 Secretary's Environmental Assessment Requirements	7
2.2 Assessment approach	8
2.3 Purpose and objectives	8
2.4 Report compliance with the Code of Practice	8
2.5 Date of archaeological assessment	9
2.6 OzArk involvement	10
2.6.1 Field survey	10
2.6.2 Reporting	10
3 ABORIGINAL COMMUNITY CONSULTATION	11
3.1 Introduction to cultural values	11
3.2 Aboriginal community consultation	11
3.2.1 ACHCRs Stage 1	12
3.2.2 ACHCRs Stage 2	12
3.2.3 ACHCRs Stage 3	13
3.2.4 ACHCRs Stage 4	13
4 LANDSCAPE CONTEXT	15
4.1 Topography	15
4.1.1 Survey units	15

4.2	Geology and soils	19
4.3	Hydrology	19
4.4	Vegetation	19
4.5	Land use history and existing levels of disturbance	20
4.6	Conclusion.....	22
5	ARCHAEOLOGICAL CONTEXT	23
5.1	Ethnohistoric context	23
5.2	Regional archaeological context.....	24
5.3	Local archaeological context	28
5.3.1	Desktop database searches conducted	28
5.4	Archaeological context: Conclusion.....	30
5.5	Predictive model for site location.....	30
5.5.1	Site types in the region of the Project area	31
5.5.2	Past land use.....	32
5.5.3	Conclusion.....	32
5.6	Research questions.....	33
6	RESULTS OF ABORIGINAL ARCHAEOLOGICAL ASSESSMENT	34
6.1	Sampling strategy and field methods	34
6.2	Project constraints	34
6.3	Effective survey coverage	34
6.4	Aboriginal sites recorded	36
	Kookaburra OS1.....	38
	Kookaburra OS2.....	39
	Kookaburra OS3.....	41
	Kookaburra OS4.....	43
	Kookaburra IF1.....	44
	Kookaburra IF2.....	45
	Kookaburra IF3.....	46
	Kookaburra IF4.....	47
	Kookaburra IF5.....	48
	Kookaburra IF6.....	49
	Kookaburra IF7.....	50
	Kookaburra IF8.....	51
	Kookaburra IF9.....	52

Kookaburra IF10.....	53
Kookaburra IF11.....	54
6.5 Aboriginal community comments on the survey	56
6.6 Test excavation	56
6.7 Summary of survey results	56
6.7.1 Discussion	56
6.7.1.1 Site characteristics	56
6.7.1.2 Site distribution	57
6.7.1.3 Aboriginal activity and habitation models	57
6.7.2 Responses to the research questions	58
7 SIGNIFICANCE ASSESSMENT.....	59
7.1 Introduction to significance assessment	59
7.1.1 Identifying cultural significance.....	59
7.1.1.1 Social or cultural value	59
7.1.1.2 Scientific (archaeological) value	60
7.1.1.3 Aesthetic value	60
7.1.1.4 Historic value	60
7.2 Assessed significance of the recorded sites.....	61
7.2.1 Statement of significance	62
8 ASSESSING HARM	65
8.1 Avoiding and minimising harm.....	65
8.1.1 Conserving significant Aboriginal cultural heritage.....	65
8.1.2 Opportunities to conserve Aboriginal cultural heritage values	65
8.2 Likely impacts to Aboriginal heritage from the Project.....	65
8.3 Ecologically sustainable development principles.....	68
8.3.1 Intergenerational equity.....	68
8.3.2 The precautionary principle	68
8.3.3 Principle of Integration.....	68
8.3.4 Applicability to the Project	69
9 MANAGEMENT OF ABORIGINAL CULTURAL HERITAGE SITES.....	70
9.1 General management principles.....	70
9.2 Management and mitigation of recorded Aboriginal sites.....	70
9.2.1 Surface collection	70
9.2.2 Long-term management of Aboriginal objects.....	71

9.2.3	Fencing.....	71
9.3	UNANTICIPATED FINDS PROTOCOL	73
9.3.1	Unanticipated finds protocol example	73
9.4	UNANTICIPATED SKELETAL REMAINS PROTOCOL	74
10	RECOMMENDATIONS.....	76
	REFERENCES	77
	APPENDIX 1: ABORIGINAL COMMUNITY CONSULTATION	79
	APPENDIX 2: ASSESSMENT METHODOLOGY.....	96
	APPENDIX 3: AHIMS SEARCH RESULTS	134

FIGURES

Figure 1-1:	Map showing the location of the Project area.....	1
Figure 1-2:	Aerial showing the Project area.	2
Figure 1-3:	Project area layout and impact footprint.	4
Figure 4-1:	Topography and hydrology surrounding the Project area.	16
Figure 4-2:	Topography of the Project area.	17
Figure 4-3:	Survey units within the Project area.	18
Figure 4-4:	1965 aerial of the Project area.	21
Figure 5-1:	Location of previously recorded AHIMS sites in relation to the Project area.	29
Figure 6-1:	Pedestrian coverage of the Project area.	35
Figure 6-2:	Aboriginal sites recorded in relation to survey units and the Project area.	37
Figure 6-3:	Kookaburra OS1. View of site and the recorded artefacts.	38
Figure 6-4:	Site extent of Kookaburra OS1.....	39
Figure 6-5:	Kookaburra OS2. View of site and selection of recorded artefacts.	40
Figure 6-6:	Site extent of Kookaburra OS2.....	41
Figure 6-7:	Kookaburra OS3. View of site and one of the recorded artefacts.	42
Figure 6-8:	Site extents of Kookaburra OS3 and Kookaburra OS4.	43
Figure 6-9:	Kookaburra OS4. View of site and the recorded artefacts.	44
Figure 6-10:	Kookaburra IF1. View of site and the recorded artefacts.	45
Figure 6-11:	Kookaburra IF2. View of site and the recorded artefacts.	46
Figure 6-12:	Kookaburra IF3. View of site and the recorded artefacts.	47
Figure 6-13:	Kookaburra IF4. View of site and the recorded artefacts.	48
Figure 6-14:	Kookaburra IF5. View of site and the recorded artefacts.	49
Figure 6-15:	Kookaburra IF6. View of site and the recorded artefacts.	50
Figure 6-16:	Kookaburra IF7. View of site and the recorded artefacts.	51
Figure 6-17:	Kookaburra IF8. View of site and the recorded artefacts.	52

Figure 6-18: Kookaburra IF9. View of site and the recorded artefacts.	53
Figure 6-19: Kookaburra IF10. View of site and the recorded artefacts.	54
Figure 6-20: Kookaburra IF11. View of site and the recorded artefacts.	55
Figure 8-1: Aboriginal sites in relation to the impact footprint.	67
Figure 9-1: Example of a human skeletal remains procedure.	75

TABLES

Table 2-1: Report compliance with the Code of Practice.	9
Table 3-1: Aboriginal community involvement in the fieldwork.	13
Table 3-2: Responses received to the draft ACHAR during Stage 4.	14
Table 5-1: Aboriginal cultural heritage: desktop-database search results.	28
Table 5-2: Site types and frequencies of AHIMS sites near the Project area.	28
Table 5-3: Site types recorded in the region of the Project area.	31
Table 5-4: Likelihood of landforms within the Project area to contain Aboriginal objects.	32
Table 5-5: Likelihood of certain site types being present in the Project area.	32
Table 6-1: Effective survey coverage within the Project area.	36
Table 6-2: Effective survey coverage and incidences of site recording.	36
Table 6-3: Aboriginal cultural heritage sites recorded during the survey.	36
Table 6-4: Kookaburra OS1 artefact attributes.	38
Table 6-5: Kookaburra OS2 artefact attributes.	40
Table 6-6: Kookaburra OS3 artefact attributes.	42
Table 6-7: Kookaburra OS4 artefact attributes.	44
Table 6-8: Kookaburra IF1 artefact attributes.	45
Table 6-9: Kookaburra IF2 artefact attributes.	45
Table 6-10: Kookaburra IF3 artefact attributes.	46
Table 6-11: Kookaburra IF4 artefact attributes.	48
Table 6-12: Kookaburra IF5 artefact attributes.	49
Table 6-13: Kookaburra IF6 artefact attributes.	50
Table 6-14: Kookaburra IF7 artefact attributes.	51
Table 6-15: Kookaburra IF8 artefact attributes.	52
Table 6-16: Kookaburra IF9 artefact attributes.	52
Table 6-17: Kookaburra IF10 artefact attributes.	53
Table 6-18: Kookaburra IF11 artefact attributes.	55
Table 7-1: Aboriginal cultural heritage: significance assessment.	62
Table 8-1: Aboriginal cultural heritage: impact assessment.	66
Table 8-2: Application of ESD principles to the proposal.	69

1 INTRODUCTION

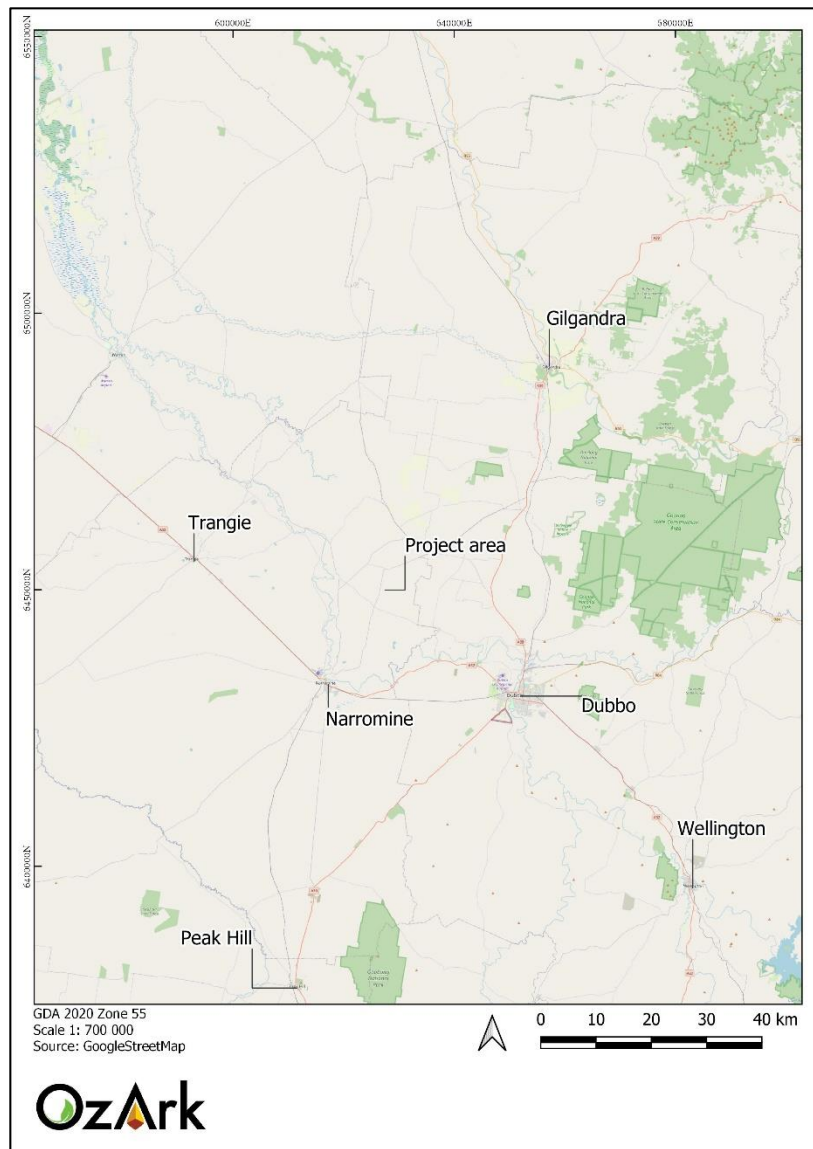
1.1 DESCRIPTION OF THE PROPOSAL

OzArk Environment & Heritage (OzArk) has been engaged by Edify Energy Pty Ltd (the Proponent) to complete an Aboriginal Cultural Heritage Assessment Report (ACHAR) for the proposed Burroway Solar Power Station (the Project).

The purpose of the assessment is to form part of an *Environmental Impact Statement* (EIS) being to accompany an application for development consent under Division 4.1 and 4.7 of Part 4 of the *Environmental Planning and Assessment Act 1979* (EP&A Act) for the Project.

The Project is in the locality of Burroway, near Narromine in central western NSW (**Figure 1-1**). The Project is located within the Narromine Shire Local Government Area (LGA) on land zoned RU1 – Primary Production under the *Narromine Local Environmental Plan 2013* (LEP).

Figure 1-1: Map showing the location of the Project area.



1.2 PROJECT AREA

The Project area is located approximately 18 kilometres (km) north of Narromine and 2 km east of Burroway, NSW (**Figure 1-1**) at Lot 70 DP1251856, 1955 Eumungerie Road. The Project area consists of approximately 495 hectares (ha) of flat or gently sloping paddocks which have been mostly cleared of vegetation and used for agricultural purposes.

Remnant vegetation appears to be largely clustered along the boundary of the Project area. There are two areas where vegetation remains at the centre and in the southeast of the Project area. Three dams have also been constructed within the Project area (**Figure 1-2**).

Figure 1-2: Aerial showing the Project area.



1.3 PROPOSED WORK

The Project involves the construction of a 100-megawatt (MW) solar photovoltaic (PV) generator with an estimated 100 MW / 400 MW per hour energy storage capacity. Solar panels will be mounted on frames which are able to track and absorb sunlight to generate energy which is increased to 33 kilovolt (kV) power by integrated transformers. An adjacent substation is proposed to then increase the 33kV electrical current to 132kV.

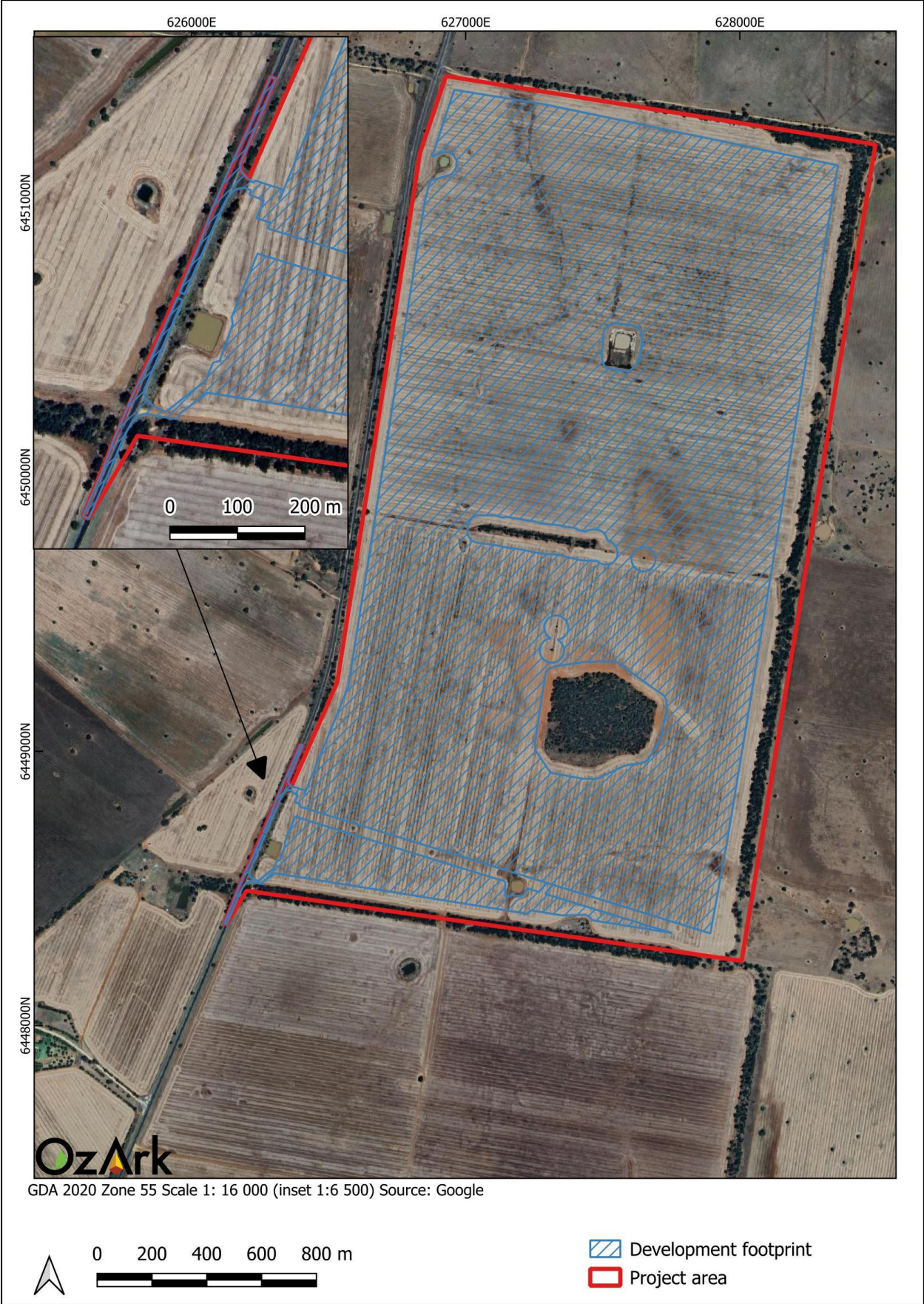
The Project will connect to an existing 132kV transmission line located at the south-western corner of the Project area.

The Project features an option to incorporate batteries into the facility to allow storage of power on site, which will likely store sufficient power to enable power to be distributed to the network outside of sunlight hours, likely during the evening and morning peak times. Exact detail on the size and volume of the battery enclosures are unknown at this time as battery technology is an evolving technology with the size and capacity of the batteries changing at rapid rate. The Project layout is shown on **Figure 1-3**.

The following infrastructure is required for the Project:

- photovoltaic solar panels
- battery energy storage system(s)
- tracking system
- piled foundations
- DC/AC Inverter stations
- internal access tracks
- underground medium voltage network
- administration and amenities building
- vehicle car park
- security fencing
- substation
- road upgrades along Eumungerie Road at the entrances to the site

Figure 1-3: Project area layout and impact footprint.



2 THE ABORIGINAL CULTURAL HERITAGE ASSESSMENT

2.1 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.

2.1.1 Commonwealth legislation

2.1.1.1 *Environment Protection and Biodiversity Conservation Act 1999*

The Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act), administered by the Commonwealth Department of Climate Change, Energy, the Environment and Water, 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 Projects involving significant impacts to national/commonwealth heritage places.

2.1.1.2 *Aboriginal and Torres Strait Islander Heritage Protection Act 1984*

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.

Applicability to the Project

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

2.1.2 State legislation

2.1.2.1 *Environmental Planning and Assessment Act 1979*

The *Environmental Planning and Assessment Act 1979* (EP&A Act) established requirements relating to land use and planning. The main parts of the EP&A Act that relate to development assessment and approval are Part 4 (development assessment) and Part 5 (environmental assessment). The purpose of the Part 5 assessment system is to ensure public authorities fully consider environmental issues before they undertake or approve activities that do not require development consent from a council or the Minister. The Minister responsible for the Act is the Minister for Planning.

The EP&A Act currently provides the primary legislative basis for planning and environmental assessment in NSW. The objects of the EP&A Act include encouragement of:

- The proper management, development, and conservation of natural resources
- The provision and coordination of the orderly and economic use and development of land
- Protection of the environment, including the protection and conservation of native animals and plants, including threatened species, populations and ecological communities, and their habitats
- Ecologically sustainable development.

The objects also provide for increased opportunity for public involvement and participation in environmental planning and assessment.

The EP&A Act includes provisions to ensure that the potential environmental impacts of a development or activity are rigorously assessed and considered in the decision-making process.

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.

Applicability to the Project

The current Project will be assessed under Part 4.7 of the EP&A Act.

As the Project is a SSD, if approved, Section 4.41 of the EP&A Act would apply and therefore an AHIP under section 90 of the *National Parks & Wildlife Act 1974* (NPW Act) to harm Aboriginal objects would not be required. Instead, all management related to Aboriginal cultural heritage within the Project area would be governed by the policies within an approved Aboriginal Cultural Heritage Management Plan (ACHMP).

2.1.2.2 *National Parks and Wildlife Act 1974*

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 Aboriginal 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.

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
- 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 NSW Department of Climate Change, Energy, the Environment and Water (DEECCW) 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.

Applicability to the Project

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

The Secretary of DEECCW will be notified of the location of an Aboriginal object recorded by sending the relevant details to the AHIMS register.

2.1.2.3 *Secretary’s Environmental Assessment Requirements*

The Secretary’s Environmental Assessment Requirements (SEARs) were issued by DPHI on 29 March 2023. In relation to Aboriginal cultural heritage, the SEARs state:

Heritage NSW requirement	Where addressed in the ACHAR
An assessment of the impact to Aboriginal cultural heritage items (cultural and archaeological) in accordance with the Guide to Investigating, Assessing and Reporting on Aboriginal Cultural Heritage in NSW (OEH, 2011) and the Code of Practice for the Archaeological Investigation of Aboriginal Objects in NSW (DECCW, 2010), including results of archaeological test excavations (if required)	This ACHAR contains the results of the Aboriginal archaeological survey undertaken for the Project. It also assesses the cultural, scientific, aesthetic, and historic values scientific present within the Project area.
Evidence of consultation with Aboriginal communities in determining and assessing impacts, developing options and selecting options and mitigation measures (including the final proposed measures), having regard to the Aboriginal Cultural Heritage Consultation Requirements for Proponents (DECCW, 2010)	This requirement has been followed by the Project and is documented in Section 3 of this ACHAR.
Assessment of the impact to historic heritage having regard to the NSW Heritage Manual.	This requirement is met by a separate Historic Heritage Assessment Report (HHIA) and is not addressed in this ACHAR.

2.2 ASSESSMENT APPROACH

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

The Aboriginal cultural heritage assessment followed the *Guide to investigating, assessing and reporting on Aboriginal cultural heritage in NSW* (the Guide; OEH 2011) and the *Aboriginal cultural heritage consultation requirements for proponents* (ACHCRs) (DECCW 2010b).

2.3 PURPOSE AND OBJECTIVES

The study will apply the Code of Practice, the Guide, and the ACHCRs in the completion of the Aboriginal cultural heritage assessment to meet the following objectives:

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

Objective Two: Identify and record tangible and intangible Aboriginal cultural heritage values within the Project area in consultation with Registered Aboriginal Parties (RAPs). This includes Aboriginal objects, and any landforms likely to contain further archaeological deposits.

Objective Three: Assess the likely impacts of the proposed work to Aboriginal cultural heritage and historic heritage values and provide management recommendations, in consultation with RAPs.

2.4 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 2-1** tabulates the compliance of this report with the requirements established by the Code of Practice.

Table 2-1: Report compliance with the Code of Practice.

Code of Practice Requirement	Context of the Requirement	Concordance in this report
Requirement 1a	Review previous archaeological work	Section 5
Requirement 1b	Review AHIMS searches	Section 5.3.1
Requirement 2	Review the landscape context	Section 4
Requirement 3	Summarise and discuss the local and regional character of Aboriginal land use and its material traces	Section 5
Requirement 4a	Develop predictive model	Section 5.5
Requirement 4b	Present predictive model results	Section 5.5.3
Requirement 5a	Archaeological survey sampling strategy	Section 6.1
Requirement 5b	Archaeological survey requirements	This Requirement was fulfilled during the undertaking of the survey
Requirement 5c	Archaeological survey units	Section 6.3
Requirement 6	Site definition	Section 5.5.3
Requirement 7a	Site recording information to be recorded	All recorded sites will be registered with AHIMS
Requirement 7b	Site recording: scales for photography	All artefact photographs employed a centimetre scale bar.
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 GDA 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 13a	Notifying Heritage NSW of breaches	Not applicable
Requirement 13b	Providing Heritage NSW with information	Not applicable
Requirement 14	Test excavation which is not excluded from the definition of harm	Not applicable as test excavation was assessed as unwarranted
Requirement 15a	Consultation regarding test excavation	Not applicable
Requirement 15b	Developing a test excavation sampling strategy	Not applicable
Requirement 15c	Providing Heritage NSW with notification of the test excavation	Not applicable
Requirement 16a	Test excavation that can be carried out in accordance with the Code of Practice	Not applicable
Requirement 16b	Objects recovered during test excavations	Not applicable
Requirement 17	When to stop test excavations	Not applicable
Requirement 18–20	Artefact recording	Standard procedures for artefact recording were adhered to during the investigation.

2.5 DATE OF ARCHAEOLOGICAL ASSESSMENT

The field survey was undertaken by OzArk on 15 and 16 May 2023.

2.6 OzARK INVOLVEMENT

2.6.1 Field survey

The fieldwork survey was undertaken by:

- Fieldwork Director: Harrison Rochford, B. Liberal Studies (Hons [Psychology and Ancient History]), M. Phil. (Arts and Social Science), University of Sydney)
- Archaeologist: Brendan Fisher (B. Arts [Archaeology], University of Sydney)
- Archaeologist: Jordan Henshaw (B. Ancient History, Macquarie University)
- Archaeologist Imogen Crome (B. Science, B. Arts [Archaeology], Australian National University)

2.6.2 Reporting

The reporting component of the assessment was undertaken by:

- Report author: Harrison Rochford
- Report contributor: Jordan Henshaw (Sections 1-5)
- Reviewer: Ben Churcher (OzArk Principal Archaeologist; BA [Hons], Dip Ed).

3 ABORIGINAL COMMUNITY CONSULTATION

3.1 INTRODUCTION TO CULTURAL VALUES

No matter who you are, we all have culture. Each person's culture is important; it's part of what makes us who we are.

australianstogether.org.au

Many Aboriginal people in Australia have a unique view of the world that's distinct from the mainstream. Land, family, law, ceremony, and language are five key interconnected elements of Aboriginal culture. For example, families are connected to the land through the kinship system, and this connection to land comes with specific roles and responsibilities which are enshrined in the law and observed through ceremony. In this way, the five elements combine to create a way of seeing and being in the world that is distinctly Aboriginal.

Aboriginal and Torres Strait Islander peoples are connected to Country through lines of descent (paternal and maternal), as well as clan and language groups. Territory is defined by spiritual as well as physical links. Landforms have deep meaning, recorded in art, stories, songs, and dance. Songlines or Dreaming Tracks as well as kinship structures link Aboriginal peoples to the territories of other groups. In the past, these links were also used for trade.

Living on this land for more than 50,000 years, Aboriginal and Torres Strait Islanders established effective ways to use and sustain resources. One important aspect is the right of certain people to control the use of resources in a particular area, as well as cultural and spiritual values like totemism that were fundamental in resource management. There was a wide range of traditional methods for gathering food including fish traps, subsistence agriculture, hunting and harvesting a wide range of natural fruits and vegetables. Some groups of people would stay in one place, while others moved around the land according to the seasons, to ensure sustainable and rich food supplies, and to fulfil their spiritual and cultural obligations.

In much of eastern Australia, Aboriginal communities live their lives like most Australians. However, in certain crucial areas, particularly associated with family, leadership roles and caring for Country, Aboriginal lore continues, even in the most urbanised communities.

3.2 ABORIGINAL COMMUNITY CONSULTATION

A major aim of this assessment is to identify any cultural values within the landscape in which the Project is located so that those values can be recognised and incorporated into the Project's management recommendations.

The Aboriginal cultural heritage assessment of the Project has followed the ACHCRs (DECCW 2010b). A log 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.

3.2.1 ACHCRs Stage 1

The aim of Stage 1 is to identify the RAPs who wish to be consulted about the Project.

On Thursday 16 February 2023, an advertisement was placed in the *Narromine Star* to solicit expressions of interest in being consulted about the Project (**Appendix 1 Figure 2**).

In addition, a letter seeking information from various agencies was sent on 15 February 2023 (**Appendix 1 Figure 3**). These agencies were: Office of the Registrar, Aboriginal Land Rights Act 1983; Heritage NSW; National Native Title Tribunal; National Native Title Services Corporation Ltd (NTSCORP); Trangie Local Aboriginal Land Council (LALC), Narromine LALC, Narromine Shire Council, and the Central West Local Land Services.

Letters were sent to individuals and groups whose contact details had been provided by the government agencies asking if they wished to be consulted about the Project (**Appendix 1 Figure 4**).

By the closing date for registration concerning the Project, twelve groups or individuals registered to be consulted as RAPs:

- Narromine LALC
- Gallanggabang Aboriginal Corporation
- Girragirra Murun Aboriginal Corporation
- Timothy Stubbs
- Nathan Toomey
- Wiradjuri Council of Elders
- Gomery Cultural Consultants
- Sonione Wakabut Rogers
- Paul Brydon
- Thomas Dahlstrom
- Stakeholder 1 (name withheld on request)
- Stakeholder 2 (name withheld on request)

3.2.2 ACHCRs Stage 2

The aim of Stage 2 is to provide information about the Project to the RAPs.

Detailed Project information was provided in the assessment methodology that was issued to all RAPs for their consideration on 3 March 2023. An example of the cover letter provided is shown in **Appendix 1 Figure 5** and the methodology is attached in full as **Appendix 2**.

3.2.3 ACHCRs Stage 3

The aim of Stage 3 is to acquire information regarding Aboriginal cultural values associated with the Project through RAP consultation and field work.

To inform the RAPs of the assessment, an assessment methodology was issued to all RAPs for their consideration on 3 March 2023. This document provided the archaeological context of the Project area, a description of the proposed survey, and asked whether there were any cultural values that should be considered in the assessment.

RAPs were provided the stipulated 28 days in which to review and comment on the assessment methodology as per Stage 3 of the ACHCRs. The closing date for comment was 2 May 2023.

A response was received from Timothy Stubbs, Rob Clegg representing Wiradjuri Council of Elders, and Gomery Cultural Consultants advising that they had reviewed and supported the methodology. The RAP responses are provided in **Appendix 1 Figure 6**.

The field survey as per Stage 3 of the ACHCRs was undertaken with the assistance of RAP representatives over two days from 15 to 16 May 2023.

Table 3-1 provides a log of the RAPS and their representatives who participated in fieldwork.

Table 3-1: Aboriginal community involvement in the fieldwork.

Individual/group	Name	Day of participation
Narromine LALC	Michael Clarke	15 and 16 May 2023
Thomas Dahlstrom	Thomas Dahlstrom	15 and 16 May 2023
Paul Brydon	Paul Brydon	15 and 16 May 2023
Nathan Toomey	Nathan Toomey	15 and 16 May 2023

3.2.4 ACHCRs Stage 4

Stage 4 involves the production of a draft ACHAR that is issued to all RAPs for their consideration. The ACHAR will document the results of the assessment, outline opportunities for the conservation of Aboriginal cultural values, and suggest recommendations for the management of Aboriginal objects should impacts to these objects be unavoidable.

A copy of the draft ACHAR was distributed to all RAPs for review on 27 July 2023 with a 28-day review period closing on 25 August 2023. An example of the cover letter provided is shown in **Appendix 1 Figure 7**.

Four responses were received on the draft ACHAR. The responses are summarised below in **Table 3-2** and provided in full in **Appendix 1 Figure 8**.

Table 3-2: Responses received to the draft ACHAR during Stage 4.

Individual/group	Date	Response
Gomery Cultural Consultants	28 July 2023	<i>How can I support, this project when I wasn't involved in surveys, I ring my mob up at narromine see what they say,thanks Dave Horton.</i>
Girragirra Murun	28 July 2023	<i>Hi Catherine this looks good to me. Regards, Diana.</i>
Nathan Toomey	28 July 2023	<i>Hi Catherine, I am happy with the final draft of the assessment report. I agree with all of the points in the report, particularly those in regards to salvaging artefacts. Regards Geoff Toomey</i>
Gallangabang Aboriginal Corporation	1 August 2023	<i>Hi Catherine, Gallangabang acknowledges these documents. Regards Melissa</i>

Following the completion of the Stage 4 review in August 2023, the ACHAR was updated with a footprint change for the Project. A letter was provided to the RAPs informing them of the change and the additional area was surveyed by OzArk Archaeologist Kelsey Bennett and Greg Kennedy (representing Thomas Dahlstrom) on 2 April 2025. The letter informing the RAPs of the update to the ACHAR is provided as **Appendix 1 Figure 9**. Responses from the RAPs are provided as **Appendix 1 Figure 10**.

4 LANDSCAPE CONTEXT

An understanding of the environmental context of a study area is requisite in any Aboriginal archaeological investigation (DECCW 2010). 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 human-activated landscape processes, influence the degree to which the remains of material culture are retained in the landscape as archaeological sites; and the degree to which they are preserved, revealed and/or conserved in present environmental settings.

4.1 TOPOGRAPHY

The Project area is situated at the south-eastern edge of the Brigalow Belt South bioregion, within the Pilliga subregion (NPWS 2003). The Brigalow Belt South bioregion extends from central Queensland to central western NSW. The Project area is situated within the Macquarie Alluvial Plains and Goonoo Slopes landscape units (Mitchell 2002).

The topography of the Project area is generally flat plains landforms at an elevation of 270–290 m above sea level. Two portions of marginally increased elevation exist at the centre and north-eastern boundary of the Project area. The general topography of the Project area and surrounds is shown on **Figure 4-1**.

4.1.1 Survey units

The Project area can be split into two sperate survey units based on landscape distinctions made by Mitchell (2002). Landforms situated within the Goonoo Slopes landscape unit have been categorised as gently sloping landforms (Survey Unit 1), whereas landforms expected to be flatter within the Macquarie Alluvial Plains landscape unit have been categorised as alluvial plains (Survey Unit 2). Examples of the survey units are shown on **Figure 4-2** and their layout is shown on **Figure 4-3**.

Figure 4-1: Topography and hydrology surrounding the Project area.



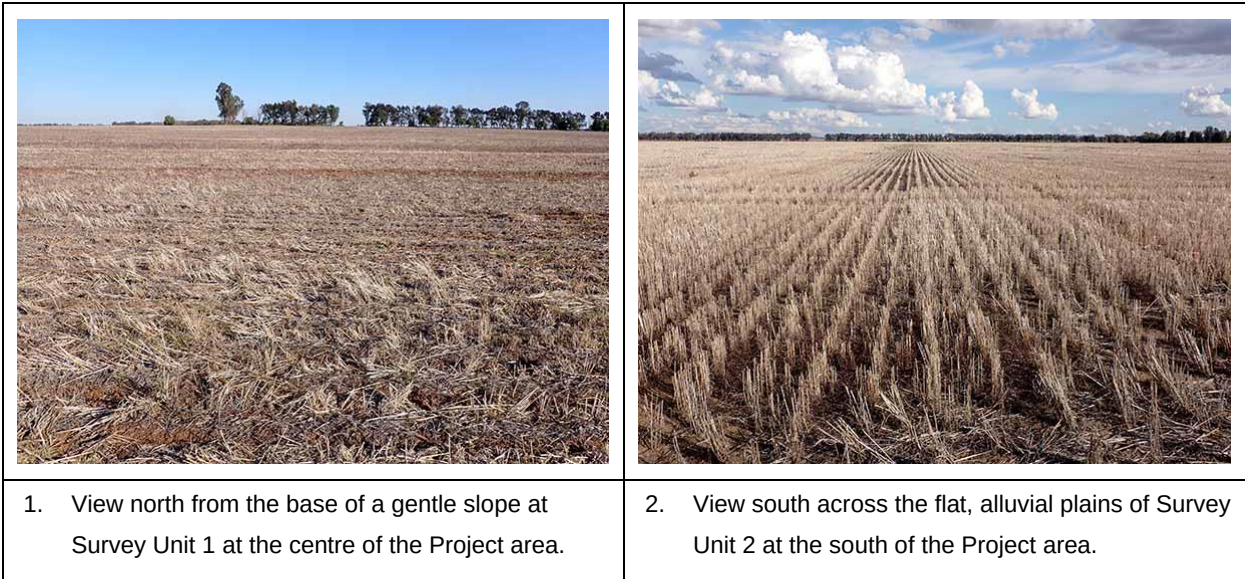
Figure 4-2: Topography of the Project area.

Figure 4-3: Survey units within the Project area.



4.2 GEOLOGY AND SOILS

Soil analysis has important ramifications for archaeological research through the potential impact of different soils on human activity (such as agricultural exploitation) and the impact of the soils on archaeological evidence (such as post-depositional movement).

All soils within the Project area are classified as Chromosols (ASC 2021). Chromosols have strong texture contrast between their A and B horizons and are among the most widespread soils used for agricultural purposes in Australia, particularly those with red subsoils.

The gently sloping landforms of Survey Unit 1 are expected to consist of poorly draining stony yellow earths. If outcropping rock is present, it is likely on the gently sloping landforms that may feature Triassic/Jurassic quartz sandstone.

Soils within alluvial plains landforms (Survey Unit 2) generally consist of dark yellow-brown silty clays with patches of sand and carbonate nodules deposited from suspended sediments in floodwater.

4.3 HYDROLOGY

The Project area is located within the Macquarie (Wambuul) River catchment. The Macquarie River catchment, also referred to as the Macquarie-Bogan catchment, covers more than 74,000 square kilometres and is located within the Murray-Darling Basin. The catchment contains the headwaters of the Macquarie River, which begins on the Great Dividing Range and flows northwest before hitting the Barwon River near Brewarrina (Green et al. 2011).

The Macquarie River is the largest named waterway in the region and is located approximately 8.3 km to the west of the study area (**Figure 4-1**). During periods of increased rainfall and flooding, rivers including the Macquarie River can increase in size and deposit layers of sedimentary material onto nearby landforms such as the alluvial plains which covers a large southern portion of the Project area (**Figure 4-3**).

Several named and unnamed tributary drainage lines associated with the Macquarie River including Coolbaggie, Ewenmar, and Kookaburra Creeks extend to within 1.5 km of the Project area, however, no permanent waterway is within the Project area.

4.4 VEGETATION

Originally, vegetation on the gently sloping landforms of Survey Unit 1 would have included broad-leaved, narrow-leaved or red ironbark as well as black cypress pine, fringe myrtle and spur-wing wattle with patches of green and Dwyer's mallee gum.

Vegetation with the alluvial plains of Survey Unit 2 would have once consisted of open grasslands with scattered black and bumble box, river cooba, belah, lignum, myall, or coolibah species.

Currently the entire Project area is cultivated and native mid and lower storey vegetation species are almost entirely absent.

There are rows of trees along the eastern and southern boundary of the Project area, and a stand of trees in the southeast that was present in 1965 (**Figure 4-4**). These trees are likely to be native although their age cannot be determined at a desktop level.

4.5 LAND USE HISTORY AND EXISTING LEVELS OF DISTURBANCE

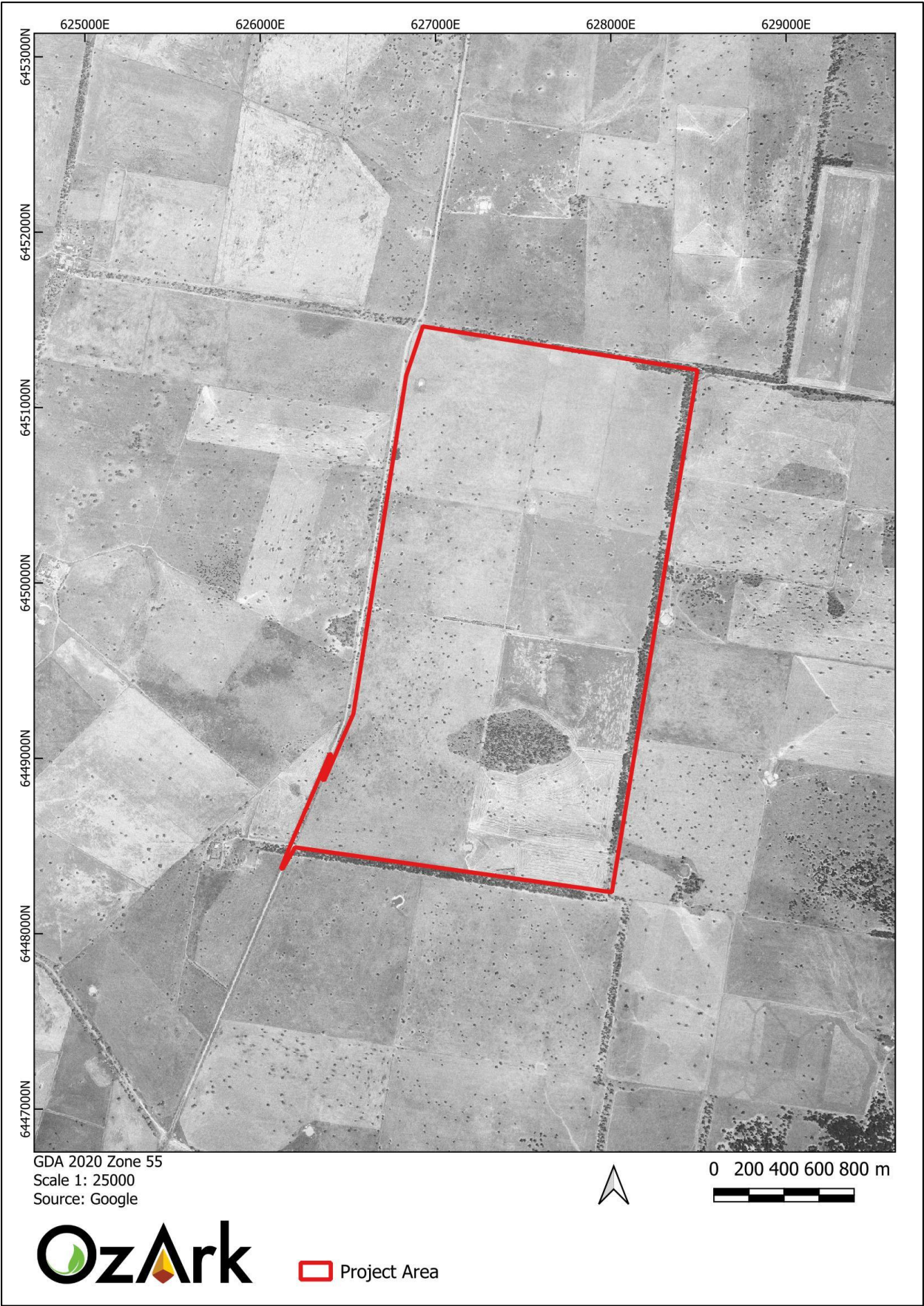
The study area is used for agricultural purposes, primarily grazing and cultivation. Cultivation acts to redistribute artefacts both horizontally and vertically within the soil profile and ultimately destroys the integrity of artefact assemblages within the top 20 to 50 centimetres (cm) of the soil profile.

Cultivated soil also erodes much faster than it forms. In NSW soil forms at a rate of 0.04 to 0.4 tonnes per hectare per year. In comparison, losses from grazed pastures can be around one tonne per hectare per year. Cultivated paddocks, however, commonly lose between 1 to 50 tonnes per hectare per year. These rates of soil loss may not be obvious, a one millimetre loss of topsoil per year represents a loss of around 14 tonnes per hectare per year (Alt et al. 2009). As such, if an average of 25 tonnes of soil is lost per hectare per year in cultivated landscapes, this equates to a loss of 20 cm of soil over a hundred years of cultivation. This has a significant impact on the most archaeologically important portion of the soil profile.

While hoofed livestock may not cause high soil loss, it can result in trampling, compaction of the ground surface, and potentially disturbance of Aboriginal sites, in specific areas.

Widespread vegetation clearing has taken place across the Project area, which has greatly reduced the likelihood of culturally modified trees being present.

Figure 4-4: 1965 aerial of the Project area.



4.6 CONCLUSION

The review of the environmental factors associated with the Project area allows the following conclusions to be drawn in terms of past Aboriginal occupation:

- Topography and hydrology: The flat to gently undulating landforms which dominate the Project area would have been hospitable to Aboriginal people, however, relative to surrounding landscapes, the Project area does not contain topographical or hydrological features likely to encourage long-term Aboriginal occupation of the Project area. As such, the size and density of sites located within the Project area is likely to be smaller and sparser than those in nearer prime occupation areas such as along the Macquarie River.
- Geology and soils: landforms which typically comprise outcropping rock are not expected to be present within the Project area, and therefore sources of stone procurement for tool manufacture will not be present. Soils present on the gentle slopes inside the Project area are likely to have been affected by water erosion and soil loss. The erosional qualities of the soils have been exacerbated by the widespread use of the Project area for cultivation that will have accelerated soil loss and disruption of the soil profile.
- Vegetation: the study area would have once supported an open woodland which would have provided some resources for Aboriginal subsistence in the past. However, resources likely to have supported a large population of people would have been present closer to the banks of more permanent water sources such as the Macquarie River. The broad-scale vegetation clearance which has taken place across the Project area for agricultural purposes reduces the likelihood that culturally modified trees will be recorded, however, should mature native vegetation remain, culturally modified trees may be present.
- Land use: ground surface disturbances such as vegetation clearance, cultivation, and grazing exist throughout the Project area. These activities may have displaced Aboriginal objects and are likely to have reduced the potential for subsurface archaeological material. However, disturbance at a given location does not necessarily mean that there will be no cultural material present, as often a disturbed context will reveal objects which may have previously been subsurface. As noted above, initial vegetation clearing would also have significantly reduced the likelihood of culturally modified trees remaining within the Project area.

5 ARCHAEOLOGICAL CONTEXT

5.1 ETHNOHISTORIC CONTEXT

The Project is located in the centre of land traditionally associated with the Wiradjuri people. The Wiradjuri area extends as far north as Gilgandra, as far east as Lithgow and as far west as Hay. It is the largest tribal and linguistic group in NSW by land size and incorporates a large portion of the central tablelands and central west regions of NSW (Horton 1996).

The Wiradjuri people were first encountered by colonial explorers such as Oxley and Cunningham in the early 1800s (Whitehead 2003). They found that Wiradjuri groups, such as the 'Bultje tribe' comprised of up to 120 individuals and hunted emus, kangaroo, and possum for food. Fishing was also utilised to sustain the population with both mussels and freshwater fish being caught by the women of the tribe who used moveable dams made of grass to direct fish, making them easier to catch (Kass 2003:6).

It is important to note here that the use and meaning of the term 'tribe' and the designation of lines on a map as 'tribal boundaries' has been a controversial issue (Bowdler 1983:22). There is no doubt that there were distinctive groups which can be defined by their linguistic traits, but the designation of lines on a map as boundaries, although useful, can be problematic.

Some records of colonial explorers such as Oxley and Cunningham record ethnographic details of the Wiradjuri people in the area of present-day Peak Hill, approximately 73 km south of the study area, in May 1817. Oxley (1817) writes:

About a mile from this place, we fell in with a small tribe of natives, consisting of eight men; their women we did not see. They did not appear any way alarmed at the sight of us but came boldly up: they were covered with cloaks made from opossum skins; their faces daubed with a red and yellow pigment, with neatly worked nets bound round their hair: the front tooth in the upper row was wanting in them all: they were unarmed, having nothing with them but their stone hatchets. It appeared from their conduct that they had either seen or heard of white people before, and were anxious to depart, accompanying the motion of going with a wave of their hand (Whitehead 2003:105).

Cunningham (1817) reported:

Calling to one another we were answered by strange voices, which left us in no doubt of natives being near us. It was a great point we should all join in again, which at length we did, after some time had passed over several miles on a cross-course, the labour of which might have been saved. Our people came up with seven or eight of the natives, who were clothed in mantles of skin reddened with a pigment from the river. There appeared not the most distant symptoms of hostility among them!

They evidently had seen a horse before, and could pronounce some words in English, such as bread, and they had every appearance of having been with those at the Lachlan depot, from which we are now 54 miles west. From the columns of smoke ascending from the trees to which these harmless beings were advancing there is no doubts of their encampment being there situated, and it might be inferred that their gins or wives were there, from their evident objection to our people attempting to accompany them to their fires. The delay and loss of time occasioned by the above adventure had allowed our boatmen to work themselves through all the numerous windings of the river and overtake us (Whitehead 2003:105).

5.2 REGIONAL ARCHAEOLOGICAL CONTEXT

Multiple research-orientated archaeological studies have covered the Dubbo and Narromine area (Koettig 1985, OzArk 2006, 2014, and 2016), providing good baseline data for the archaeological characteristics of the Project area. Large-scale development driven assessments have also been conducted near the Project area. A sample of these studies have been summarised below.

Koettig 1985

Koettig focussed more heavily on Aboriginal occupation around the town of Dubbo, however, the patterns and trends she recorded are still relevant to the Project area. She concluded that artefact scatters, scarred trees, and grinding grooves were the most frequently recorded site type in the region. The location and size of a particular site was determined to be dependent on both social and environmental factors including proximity to water, availability of food, and the presence of geological formations. Koettig's predictive model concluded that all site types were more likely to be recorded along waterways except scarred trees and 'small' campsites, which could occur anywhere. Koettig also found that grinding grooves could only occur where appropriate rock outcropping was present.

OzArk 2006

An assessment of Aboriginal heritage resources within the then Dubbo LGA to assist Dubbo City Council with planning was undertaken by OzArk. The 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 1,120 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 recorded than expected, likely due to intensive agricultural practices associated with vegetation clearance around the town of Dubbo compared to the broader Dubbo LGA. No new grinding groove sites were recorded, which was expected, given that this site type

comprised only 3.6% of previously located sites within the Dubbo LGA. Scarred tree distribution adhered to the predictive model, exclusively following waterways and fence-lines, although this almost definitely reflected land clearing practices more than Aboriginal site patterning.

Isolated finds and open sites followed a similar pattern, largely limited to watercourses 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.

OzArk 2011

The Aboriginal heritage assessment was completed for a proposed 66kV electrical transmission line (ETL) extending from the Dubbo Yarrandale substation to the Gilgandra substation. The survey focussed on archaeologically and culturally sensitive areas along the ETL route including creek lines and recently ploughed paddocks given they had increased visibility. A total of seven previously unrecorded Aboriginal sites were recorded during the survey which included four open camp sites (artefact scatters) with areas of potential archaeological deposit (PAD) (YG-OS1 with PAD, YG-OS2 with PAD, YG-OS3 with PAD, and YG-OS4 with PAD) and three scarred trees (Y-G ST1, Y-G ST2, and Y-G ST3). Two previously recorded sites (#36-1-0309 and #36-1-0310) were also visited during the survey.

YG-OS4 with PAD was located on the western bank of Marthaguy Creek and is 43 km north of the Project area. The artefact scatter contains two quartzite flakes identified in an erosion scald with 100% surface visibility.

OzArk 2014

The report is the result of the Dubbo LGA Aboriginal cultural heritage study which utilised GIS mapping, community consultation, and archaeological resources to gain a more comprehensive understanding of the Aboriginal heritage of the Dubbo area. A total area of 207 square kilometres was surveyed as part of the Project.

A total of 679 Aboriginal sites were recorded during the survey. Sites including artefact scatters, hearths, areas of PAD, and open camp sites, which comprised 57% of all sites located. Culturally modified trees comprised 39% of recorded sites throughout the LGA.

The results of the study determined that sites were located within 500 m of waterways, however, land within 200 m was likely to contain most sites in the area.

OzArk 2016

OzArk was engaged by the Central West Local Land Services (CWLLS) to formulate and test a predictive model for Aboriginal site location within Travelling Stock Reserves (TSRs) across the CWLLS area (OzArk 2016). The Project area is located in the southern portion of the CWLLS area.

In formulating a predictive model for site location, Mitchell (2002) landscapes were used by OzArk to understand the underlying landform type. Landscapes were divided into the following types, Channels and Floodplains, Alluvial Plains, Slopes, Plateaus, Uplands, and Downs.

Previously recorded AHIMS sites were plotted against these landscape types and the following observations made.

- The highest density of sites is within Channels and Floodplains landscapes (n=927)
- A high number of sites (n=876) were located within Slopes landscapes; however, this result could be due to the fact that Dubbo is located within a Slopes landscape and the highest number of sites in the CWLLS area is recorded in and around Dubbo
- Alluvial Plains landscapes have the third highest density of sites (n=770)
- A moderate number of sites are recorded in Downs landscapes (n=255). Three or four clusters of previously recorded sites exist in Downs landscapes, which may have skewed the number of recordings for this landscape. If the veracity of all site recordings in this category could be verified, it is suspected that the actual number of sites in Downs landscapes would be lower
- Relatively small numbers of sites are recorded in Uplands (n=5) and Plateau (n=34) landscapes.

OzArk (2016) also divided the CWLLS area into two stream orders — major watercourses (normally named rivers) and minor watercourses (normally named creeks and their larger tributaries) — and buffers were established for each watercourse type as follows.

- Drainage 1 buffer: 200 m either side of a major watercourse
- Drainage 2 buffer: 100 m either side of a minor watercourse.

In terms of drainage buffers, OzArk (2016) found that 27 sites (or 46% of all sites) were recorded with the Drainage 1 buffer and 10 sites (or 17% of all sites) were recorded within the Drainage 2 buffer. Therefore, more than 63% of all sites were recorded within the two drainage buffers, with a clear bias toward Drainage 1 buffers.

The results of OzArk 2016 suggest that sites at the Project area are most likely to be within the Survey Unit 1, as it is a Slopes landscape in which the second highest number of sites have been recorded. However, it should be noted that the Project area is further from water than both of the drainage buffers (Drainage 1 or Drainage 2), indicating a decreased likelihood of sites of all types being present.

OzArk 2021

An ACHAR was completed for the proposed Gin Gin Weir located approximately 33 km south of the Project area. The assessment identified five previously unrecorded Aboriginal sites (AHIMS #27-6-0051, 27-6-0052, 27-6-0053, 27-6-0054, and 27-6-0055) including two scarred trees and

three artefact scatters. In addition to these five sites, three PADs were identified during the survey (Gin Gin Weir PAD-01, Gin Gin Weir PAD-02, and Gin Gin Weir PAD-03).

Test excavation was undertaken at the three areas of PAD, resulting in a total assemblage of 14 artefacts. Most artefacts were flakes (n=13, 93%), although a single core was present. The most prevalent raw material was quartz (n=7), followed by silcrete (n=5), and chert (n=2). Most artefacts were at a secondary (n=6) or tertiary (n=7) stage of reduction.

ARTC 2021

An Aboriginal Cultural Heritage Assessment Report was completed for the development of the Narromine to Narrabri (N2N) section of Inland Rail. The Inland Rail Project area extends north from Narromine and partly overlaps with the western edge of the Project area.

The surveys for the Inland Rail N2N Project recorded a total of 152 previous unrecorded sites with an additional 13 areas of PAD. The dominant site type recorded was culturally modified trees, whilst lithic assemblages were found to be primarily manufactured from quartz.

A total of 60 scarred trees were recorded along the Macquarie River, indicating the frequent use of this landscape by Aboriginal people. In addition to the scarred trees, two artefact scatters were also recorded, with one site containing subsurface archaeological deposits.

Two scarred trees (AHIMS #27-6-0035 and #27-6-0050), one artefact scatter (#27-6-0048) and one PAD (#27-6-0036) were recorded along Ewenmar Creek located approximately 10 km north of the Project area.

Test excavations located an additional 39 sites and two areas of PAD along the Macquarie River at Narromine, approximately 69 km south of the Project area. The result of this assessment clearly indicates that the distribution of sites reflects the use of waterways as primary transit and camping areas within the lowland alluvial plains and river terraces. Surveyed locations near waterways such as the Macquarie River, Castlereagh River, and Ewenmar Creek contain scores of culturally modified trees along with artefact scatters, camping sites, and ochre quarries indicating the use of these areas was intensive (Jacobs & GHD 2020).

The assessment also captured several oral testimonies and statements from Aboriginal community members. The area surrounding Ewenmar Creek was reported to have been culturally significant to the Wiradjuri people and an important site due to the presence of standing water late in the season. The artefact types noted in a cache held by a local landowner and reported carved trees and scarred trees near the creek, as well as a recorded large artefact scatter, point to the area having been used as a significant camping site in the past. Tool types present in the cache include grinding stone manuports (mullers and stones), pounders, and cleavers pointing to the utilisation of grass seeds, trees, shrubs, succulents, and ferns to obtain starch for cooking.

5.3 LOCAL ARCHAEOLOGICAL CONTEXT

5.3.1 Desktop database searches conducted

A desktop search was conducted on the following databases to identify any previously recorded heritage within the Project area. The results of this search are summarised in **Table 5-1**.

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

Name of Database Searched	Date of Search	Type of Search	Comment
Commonwealth Heritage Listings	9/5/23	Narromine LGA	No places listed on either the National or Commonwealth heritage lists are located within the Project area
National Native Title Claims Search	9/5/23	NSW	No Native Title Claims cover the Project area.
AHIMS	9/3/23 10/3/25	15 x 15 km centred on the Project area	The search located 46 previously recorded sites; however, none are located within the Project area. A second search was completed in 2025 using the same parameters on 10 March 2025 and returned 66 Aboriginal sites.
Local Environmental Plan (LEP)	9/5/23	Narromine & Dubbo LEP 2011	No heritage items listed on the either LEP are located within the Project area.

A search of the Heritage NSW administered AHIMS database on 9 March 2023 returned 46 records for Aboriginal heritage sites within the 15 x 15 km search area centred on the Project area (GDA Zone 55 Eastings: 614615–640288 Northings: 6437338–6462260) (**Appendix 3 Figure 1**).

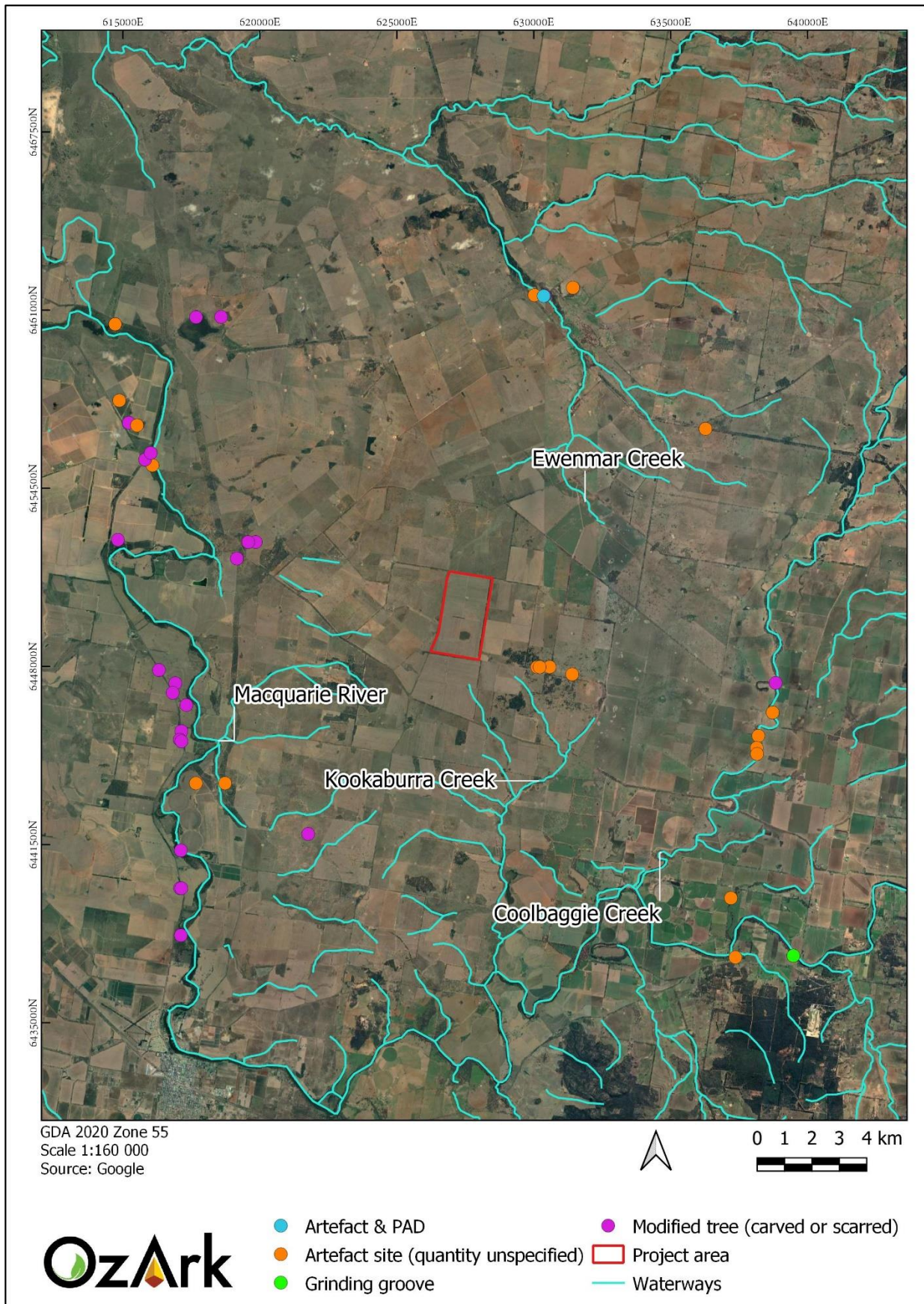
An updated search of the AHIMS database was conducted on 10 March 2025 and returned 66 records for Aboriginal heritage sites within the same 15 x 15 km search area (GDA Zone 55 Eastings: 614615–640288 Northings: 6437338–6462260) (**Appendix 3 Figure 2**). Fifteen of the additional Aboriginal sites recorded within the search area can be attributed to the results of this assessment (see **Section 6**). The remaining five records consist of one artefact site with a culturally modified tree (35-3-0346) and four artefact sites (27-6-0061, 35-3-0347, 35-3-0348, and 35-3-0349). These sites were recorded as part of the Narromine to Narrabri Inland Rail project and are distant to the current Project area.

Table 5-2 shows the site types and frequencies located by the AHIMS search while **Figure 5-1** shows the location of the AHIMS sites that have been recorded in relation to the Project area.

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

Site Type	Number	% Frequency
Modified tree (carved or scarred)	25	54.3
Artefact site (quantity unspecified)	19	41.3
Grinding groove	1	2.2
Potential archaeological deposit (PAD)	1	2.2
Total	46	100

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



5.4 ARCHAEOLOGICAL CONTEXT: CONCLUSION

Studies conducted throughout the region show that the most frequently recorded Aboriginal site type is culturally modified trees. While some studies (such as Koetting 1985) could not identify clear patterns in the distribution of modified trees, the conclusion is made that it remains possible for culturally modified trees to be recorded in many landscapes and at a distance from water. However, a general association between scarred trees and the Macquarie River is evident in the previously recorded site locations in the area (**Figure 5-1**). This distribution pattern is likely in part due to extensive vegetation clearing that has occurred to open land for agricultural use, meaning areas that have been left uncleared are the only areas recording this site type. However, based on the available evidence of more regional studies such as OzArk 2014 and OzArk 2016, it is likely that landforms closest to water were a focus for Aboriginal habitation and resource gathering, leading to site types, including culturally modified trees, being more common.

Artefact scatters and isolated finds are more likely to be located near permanent and semi-permanent watercourses, particularly on flat or gently sloping landforms such as those present at the Project area. Larger and more complex scatters are more likely to be recorded within 200 m of permanent water, whereas low-density scatters are more common further away from permanent water.

If present, artefact scatters are likely to be recorded in a secondary context as cultivation has disturbed the soil profile of the Project area, which would cause artefacts to be displaced from their original context. Although disturbance has occurred, this does not necessarily decrease the likelihood of recording archaeological material as artefact sites have frequently been recorded in disturbed landforms, albeit removed from their original location.

Quartz is the most frequently noted raw material for stone artefacts throughout the region, although quartzite, chert, mudstone, rhyolite, and silcrete stone artefacts may also be present.

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 Site types in the region of the Project area

The site types listed in **Table 5-3** are present in the region of the Project area. The likelihood of these sites being present in the Project area is discussed in **Section 5.5.3**.

Table 5-3: Site types recorded in the region of the Project area.

Site type	Site description
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 subsurface artefact scatter. They may occur anywhere within the landscape but are more likely to occur in topographies where open artefact scatters typically occur.
Open artefact scatters	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.
Culturally modified trees	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.
Bora/Ceremonial sites	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.
Grinding grooves	Grinding grooves are the remnants of ground edge hatchet manufacture and sometimes from food preparation. The site is most likely to occur on flat outcrops of coarse-grained sandstone in the vicinity of water sources, however, grinding grooves have also been recorded on fine-grained granite and quartzite outcrops.

5.5.2 Past land use

The preservation of archaeological sites and deposits is dependent on past land use. The Project area and adjacent land has been mainly used for agricultural purposes. These activities involve ploughing the ground surface, or the constant trampling of hooved livestock, which significantly shuffles or compacts the ground surface, ultimately accelerating soil loss.

Cropping and the use of ploughing affects 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 to 50 cm of topsoil, and so in relatively rare areas with deep soils, there is the potential for intact subsurface deposits below the plough-zone.

The clearing of vegetation inside the Project area is widespread, despite some remnant trees remaining. This removes the possibility of culturally modified trees being present across most of the Project area.

5.5.3 Conclusion

Based on knowledge of the environmental contexts of the Project area and a desktop review of the known local and regional archaeological record, the following predictions are made concerning the probability of landforms within the Project area to contain Aboriginal objects (**Table 5-4**), and what types of sites may be present within the Project area (**Table 5-5**).

Table 5-4: Likelihood of landforms within the Project area to contain Aboriginal objects.

Survey Unit	Landform type	Likelihood to contain Aboriginal objects
1	Gentle slopes	Slopes are a degrading landform, especially in the Project area where vegetation removal has accelerated soil loss. Although these gentle slopes are suitable for habitation and resource gathering, disturbances are expected to have displaced Aboriginal objects, if present. Regional modelling data suggest that this landscape is more likely to contain sites, of any type, than the alluvial plains of Survey Unit 2.
2	Alluvial plains	Alluvial plains are an aggrading environment that are impacted by flooding and channel migration. However, they can offer good preservation conditions for sites if relatively undisturbed. Disturbances at the Project area suggest that archaeological deposits and any objects in this landscape are likely to be in a secondary context.

Table 5-5: Likelihood of certain site types being present in the Project area.

Site type	Likelihood of being present in the Project area
Isolated finds	As isolated finds can occur anywhere, particularly within disturbed contexts, it is predicted that this site type could be recorded within the Project area.
Open artefact scatters	This site type can be present in sloping landforms with a gentle gradient, although the moderate degree of disturbance throughout the Project area will probably mean that the scatter has become displaced. It is likely that any sites associated with such landforms are likely to have a low artefact density and a low complexity of tool types as the sites are either one-off events or only infrequently used as the Project area is distant to permanent water.
Culturally modified trees	Due to the near-total clearance of trees from within the Project area, this site type is predicted to be unlikely. However, it is noted that windrows of mature vegetation are present at the edge of the Project area and at two locations within the centre of the Project area. Therefore, this site type is most likely to be present within these areas.
Bora/Ceremonial sites	This site type does not necessarily follow landform predictability and are, overall, a rare site type with a low likelihood of being present and remaining extant. These sites are generally identified through consultation with the RAPs.

Site type	Likelihood of being present in the Project area
Grinding grooves	Grinding grooves are more likely to be located in areas adjacent to waterways, but if suitable outcropping rock is present within Survey Unit 1 (slopes) then there is a low likelihood that this site type could be present. It is unlikely to be present within Survey Unit 2.

5.6 RESEARCH QUESTIONS

Several research questions can meaningfully be applied to the investigation of the Project area. These research questions include:

- What resources were available to the Aboriginal people using the land within the Project area (food, stone, and water) and what resources were transported to the area?
- Did the Aboriginal people use the land within the Project area at a particular time of the year?
- If present, are the outcropping rock materials present suitable for stone tool procurement, manufacture or processing (i.e. grinding grooves)?
- Establish how the findings within the Project area (if any) accord with the archaeological context examined in **Section 5.4**.

6 RESULTS OF ABORIGINAL ARCHAEOLOGICAL ASSESSMENT

6.1 SAMPLING STRATEGY AND FIELD METHODS

The methodology for the assessment stipulated that full pedestrian survey would be undertaken across both Survey Units 1 and 2. The survey component of the assessment was completed full pedestrian coverage of the survey units on 15 and 16 May 2023. Standard archaeological field survey and recording methods were employed (Burke & Smith 2004).

6.2 PROJECT CONSTRAINTS

There were no significant constraints to the effective assessment of the Project area.

6.3 EFFECTIVE SURVEY COVERAGE

Two of the key factors influencing the effectiveness of archaeological survey are ground surface visibility (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 2010:39).

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 2010:37).

Table 6-1 calculates the effective survey coverage within the Project area that quantifies the amount of ground surface able to be seen at any location within specific landform units at the time of the survey.

GSV was variable across the Project area, even within transects, due to changes in crop condition. As such, there was no meaningful difference in GSV between the survey units. However, there was high effective GSV across both survey units, averaging between 30% and 40%, due high GSE resulting from ploughing and the presence of very few areas with low GSV

and some areas with very high GSV (up to 80%). Pedestrian coverage across the Project area is shown on **Figure 6-1**.

Figure 6-1: Pedestrian coverage of the Project area.



Table 6-1: Effective survey coverage within the Project area.

Survey Unit	Landform	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)
Survey Unit 1	Gentle slopes	3 848 770	60	60	36	1 385 557.2
Survey Unit 2	Alluvial plains	1 101 876	60	60	36	396 675.36

Table 6-2 demonstrates that survey efficacy did not vary significantly between the survey units. **Table 6-2** also compares the number of sites identified between the survey units. The location of the newly recorded sites in relation to the survey units is shown on **Figure 6-2**.

Table 6-2: 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
Gentle slopes	3 848 770	1 385 557.2	36	4	4
Alluvial plains	1 101 876	396 675.36	36	11	20

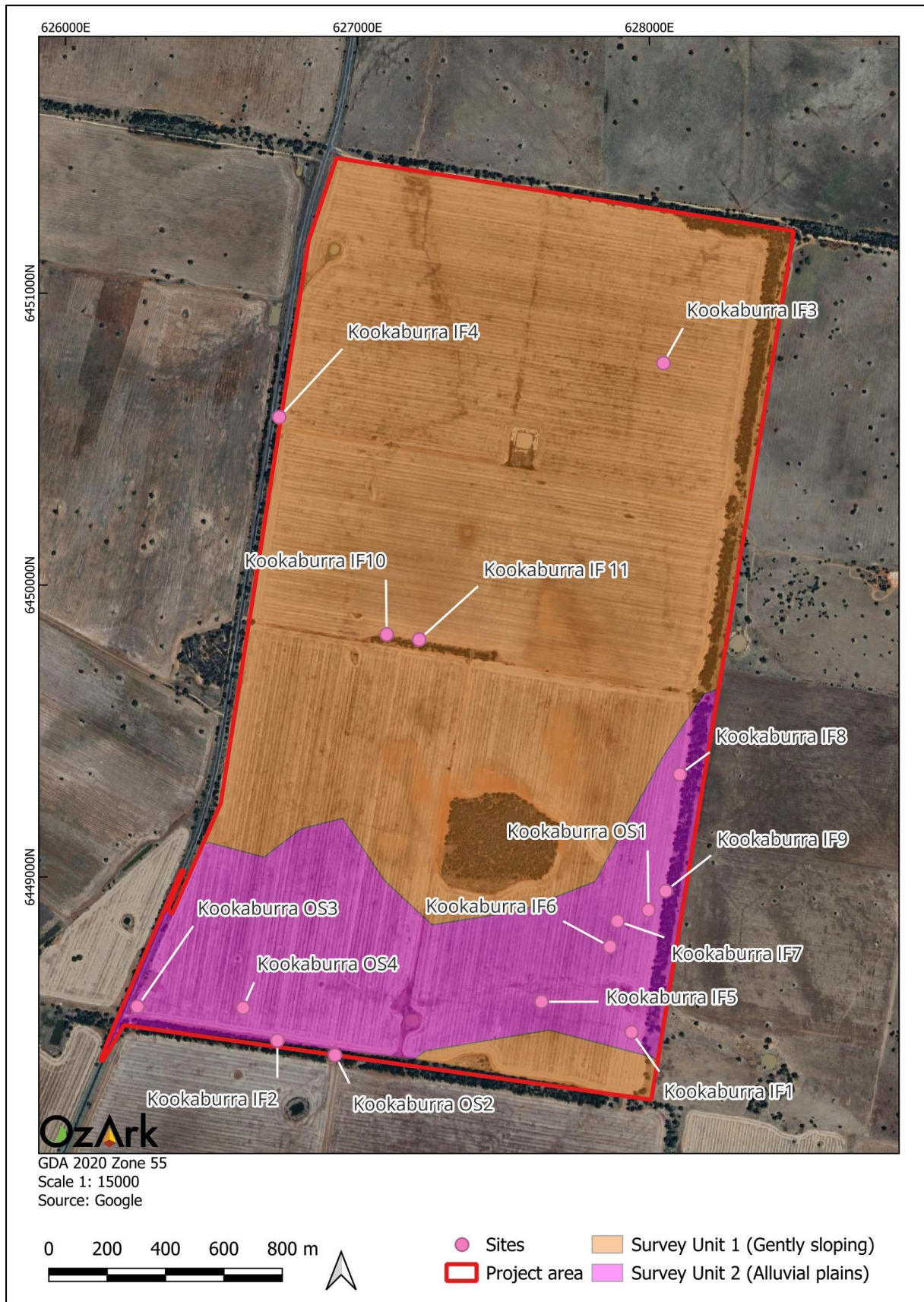
6.4 ABORIGINAL SITES RECORDED

Table 6-3 summarises the Aboriginal cultural heritage sites recorded during the survey of the Project area. Further details on each site follows.

Table 6-3: Aboriginal cultural heritage sites recorded during the survey.

AHIMS ID	Site name	Site type	Coordinates (GDA Zone 55) East	Coordinates (GDA Zone 55) North	Survey Unit
35-3-0350	Kookaburra OS1	Artefact scatter	627997	6448886	2
35-3-0351	Kookaburra OS2	Artefact scatter	626923	6448389	2
35-3-0352	Kookaburra OS3	Artefact scatter	626246	6448556	2
35-3-0353	Kookaburra OS4	Artefact scatter	626608	6448551	2
35-3-0354	Kookaburra IF1	Isolated find	627939	6448468	2
35-3-0355	Kookaburra IF2	Isolated find	626726	6448440	2
35-3-0356	Kookaburra IF3	Isolated find	628049	6450760	1
35-3-0358	Kookaburra IF4	Isolated find	626732	6450575	1
35-3-0357	Kookaburra IF5	Isolated find	627631	6448572	2
35-3-0359	Kookaburra IF6	Isolated find	627866	6448761	2
35-3-0360	Kookaburra IF7	Isolated find	627891	6448849	2
35-3-0364	Kookaburra IF8	Isolated find	628104	6449351	2
35-3-0363	Kookaburra IF9	Isolated find	628056	6448952	2
35-3-0362	Kookaburra IF10	Isolated find	627100	6449831	1
35-3-0361	Kookaburra IF11	Isolated find	627212	6449813	1

Figure 6-2: Aboriginal sites recorded in relation to survey units and the Project area.



Kookaburra OS1

Site type: Artefact scatter

GPS coordinates: GDA 2020 Zone 55 627997E 6448886N

Location of site: Kookaburra OS1 is located 3.2 km northeast of the intersection of Dubbo-Burroway Road and Eumungerie Road, 19 km north of Narromine. The site extent is shown on **Figure 6-4**.

Description of site: The site consists of three flakes, two manufactured of a fine grained material thought to be Rhyolite, and one of a clear, crystal quartz. The details of the artefacts are given in **Table 6-4**. The site is situated on a ploughed and cultivated paddock in a highly disturbed context. Although the objects have been displaced from their depositional context, it is worth noting that there were multiple water-holding depressions near the site, suggesting that an ephemeral watercourse or gilgai were present in the landscape prior to intensive agricultural impacts. A view of the site and artefacts is given on **Figure 6-3**.

GSV at the site was approximately 50% and the potential for associated subsurface deposits was assessed as low due the secondary context of the objects and the extensive disturbance to the soil profile from repeated ploughing and cultivation.

Table 6-4: Kookaburra OS1 artefact attributes.

Artefact type	Raw material	Artefact integrity	Stage of reduction	Size (LxWxD) mm
Flake	Quartz	Complete	Tertiary	16x12x5
Flake	Volcanic	Complete	Tertiary	15x12x8
Flake	Volcanic	Complete	Tertiary	25x19x10

Figure 6-3: Kookaburra OS1. View of site and the recorded artefacts.

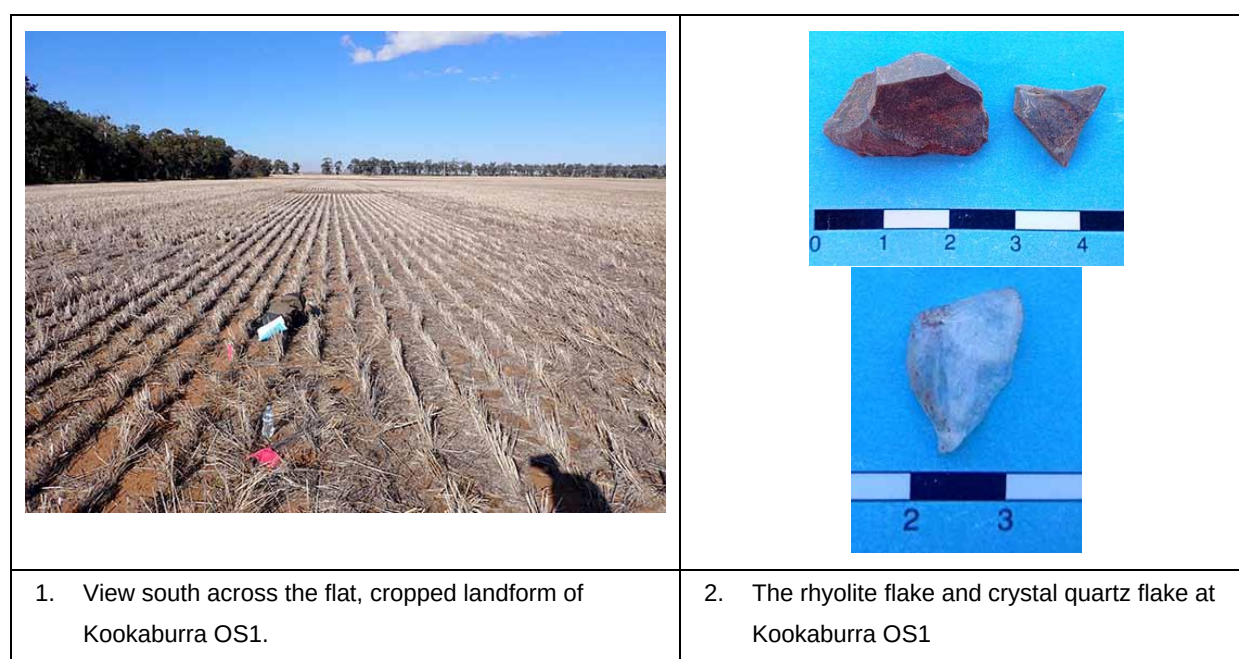


Figure 6-4: Site extent of Kookaburra OS1

Kookaburra OS2

Site type: Artefact scatter

GPS coordinates: GDA 2020 Zone 55 626923E 6448389N

Location of site: Kookaburra OS2 is located 2 km northeast of the intersection of Dubbo-Burroway Road and Eumungerie Road, 19 km north of Narromine.

Description of site: The site consists of five Aboriginal objects, including four flakes and a possible hammerstone. The hammerstone is quartzite, and the flakes are manufactured from quartz, volcanic and quartzite. The details of these objects are provided in **Table 6-5**.

The site is situated in a flat clearing measuring 40 x 25 m, between two treed windrows at the south of a large, cropped paddock. Although the site does not appear to have been ploughed but the ground surface has been impacted by moderate intensity agricultural activities (**Figure 6-5**). As such, all objects are located in a secondary context and the potential for associated subsurface deposits was assessed as low. Kookaburra OS2 is distant from a waterway (the site is approximately 5 km northwest of Kookaburra Creek). GSV at the site was approximately 80%.

The site extent is shown on **Figure 6-6**.

Table 6-5: Kookaburra OS2 artefact attributes.

Artefact type	Raw material	Artefact integrity	Stage of reduction	Size (LxWxD) mm
Flake	Quartz	Complete	Secondary	20x9x4
Flake	Quartzite	Complete	Secondary	21x16x5
Flake	Quartzite	Complete	Tertiary	23x12x5
Flake	Volcanic	Complete	Tertiary	23x20x10
Hammerstone	Quartzite			95x35x47

Figure 6-5: Kookaburra OS2. View of site and selection of recorded artefacts.

	
1. View south across the clearing at Kookaburra OS2 showing the modified landscape.	2. View of two quartzite flakes from Kookaburra OS2.
	
3. The quartzite hammerstone at Kookaburra OS2.	4. Detail of the pitting on the distal margin of the hammerstone.

Figure 6-6: Site extent of Kookaburra OS2

Kookaburra OS3

Site type: Artefact scatter

GPS coordinates: GDA 2020 Zone 55 626246E 6448555N

Location of site: Kookaburra OS3 is located 2 km north of the intersection of Dubbo-Burroway Road and Eumungerie Road, 19 km north of Narromine.

Description of site: The site consists of three Aboriginal objects manufactured from chert, quartzite, and silcrete. The details of these objects are given in **Table 6-6**. The three artefacts are located across a 50 x 25 m site extent.

The site is situated on a flat landform along a fence parallel to Eumungerie Road. Kookaburra OS3 is located along the edge of a cropped paddock in a disturbed context. A view of the site is shown in **Figure 6-7**. As such, all objects are located in a secondary context and the potential for associated subsurface deposits was assessed as low. Kookaburra OS3 appears to be distant from a waterway but is located 50 m south of a dam that may indicate the presence of an ephemeral drainage line nearby.

The site extent of Kookaburra OS3 is shown on **Figure 6-8**.

Table 6-6: Kookaburra OS3 artefact attributes.

Artefact type	Raw material	Artefact integrity	Stage of reduction	Size (LxWxD) mm
Flake	Chert	Proximal fragment	Tertiary	25x23x9
Flake	Quartzite	Complete	Secondary	29x75x4
Angular shatter	Silcrete		Tertiary	25

Figure 6-7: Kookaburra OS3. View of site and one of the recorded artefacts.

	
1. View north across Kookaburra OS3. The trees are parallel with the fence at the edge of the paddock.	2. Dorsal surface of the chert proximal fragment at Kookaburra OS3.

Figure 6-8: Site extents of Kookaburra OS3 and Kookaburra OS4.

Kookaburra OS4

Site type: Artefact scatter

GPS coordinates: GDA 2020 Zone 55 626608E 6448551N

Location of site: Kookaburra OS4 is located 2 km northeast of the intersection of Dubbo-Burroway Road and Eumungerie Road, 19 km north of Narromine.

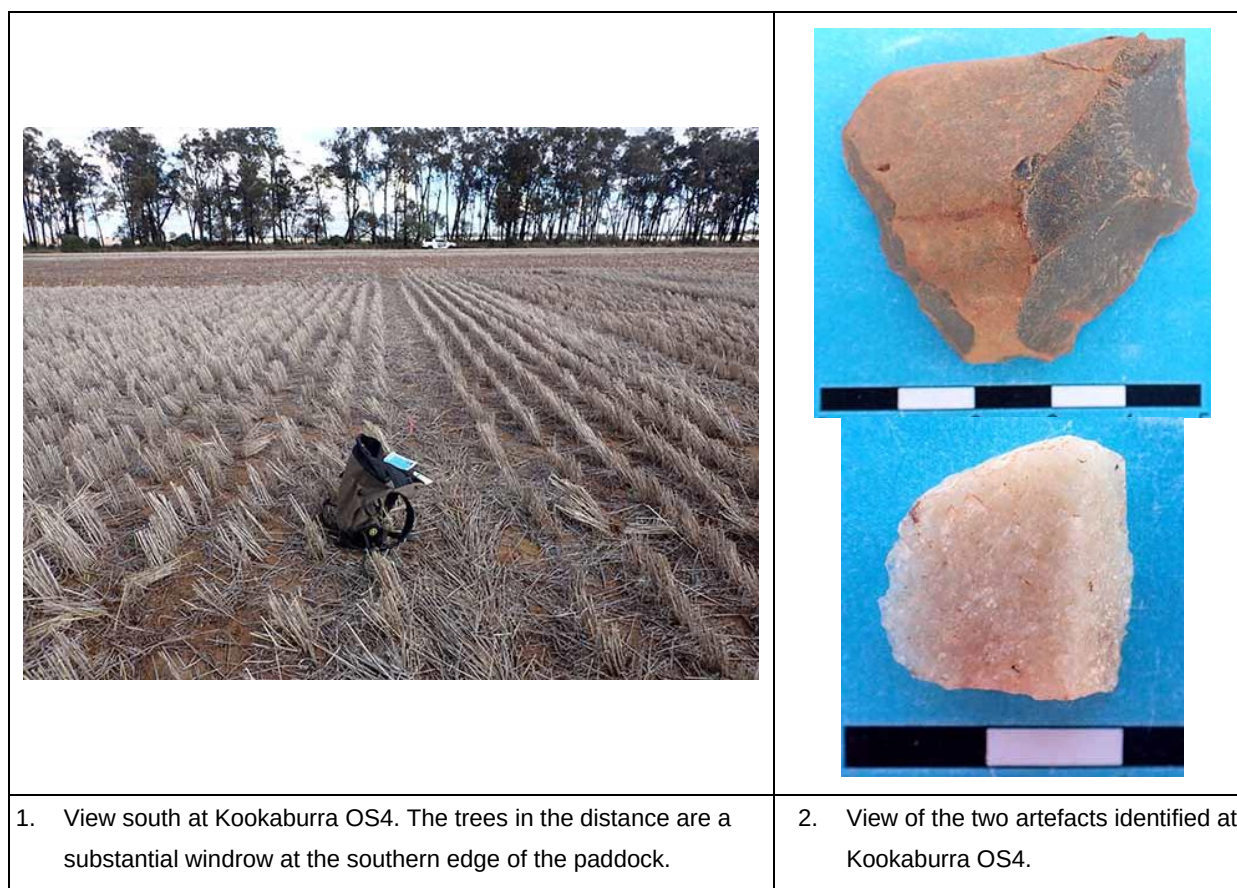
Description of site: The site consists of two Aboriginal objects manufactured from quartzite and volcanic raw materials. The details of these objects are given in **Table 6-7**. The site extent includes a small, sandy exposure and measures 30 x 10 m (**Figure 6-8**).

The site is situated on a flat landform under an ETL easement in a cropped paddock. A view of the site is shown on **Figure 6-9**. The two objects are located in a secondary context and the potential for associated subsurface deposits was assessed as low. Kookaburra OS4 is distant from a waterway and is over 1.5 km northwest of a tributary to Kookaburra Creek.

The site extent of Kookaburra OS4 is shown on **Figure 6-8**.

Table 6-7: Kookaburra OS4 artefact attributes.

Artefact type	Raw material	Artefact integrity	Stage of reduction	Size (LxWxD) mm
Flake	Volcanic	Complete	Secondary	45x38x16
Flake	Quartzite	Proximal fragment	Tertiary	14x16x3

Figure 6-9: Kookaburra OS4. View of site and the recorded artefacts.

1. View south at Kookaburra OS4. The trees in the distance are a substantial windrow at the southern edge of the paddock.

2. View of the two artefacts identified at Kookaburra OS4.

Kookaburra IF1

Site type: Isolated find

GPS coordinates: GDA 2020 Zone 55 627939E 6448467N

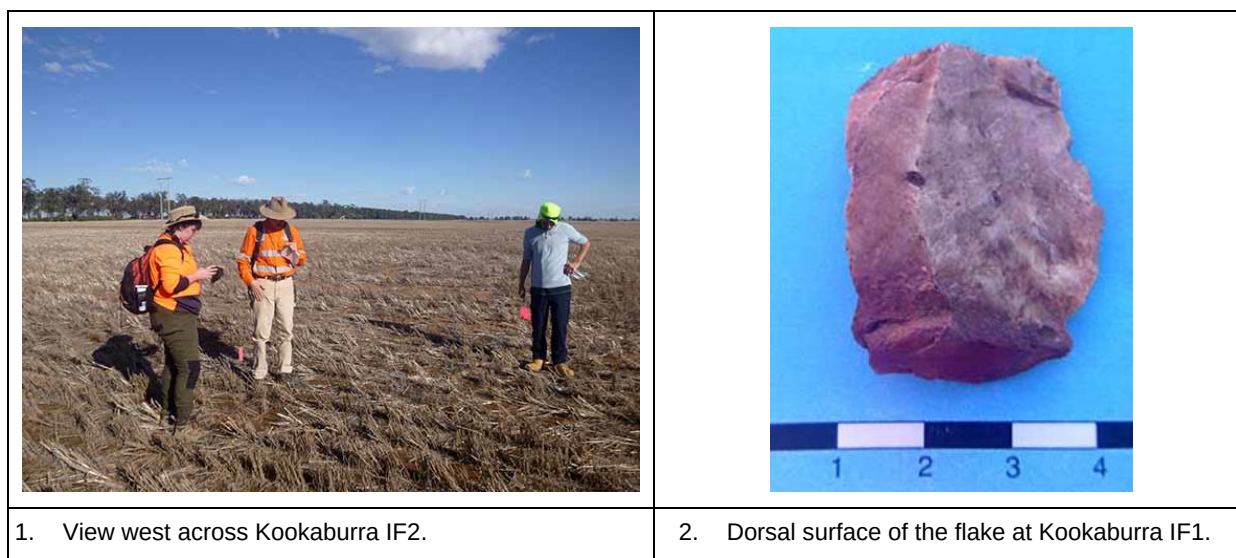
Location of site: Kookaburra IF1 is located 2 km northeast of the intersection of Dubbo-Burroway Road and Eumungerie Road, 19 km north of Narromine.

Description of site: The site consists of one Aboriginal object manufactured from dark quartzite. The details of the object are given in **Table 6-8**.

The site is situated on a flat landform in a cropped paddock. A view of the site is shown on **Figure 6-10**. The object is located in a secondary context and the potential for associated subsurface deposits was assessed as low. Kookaburra IF1 is distant from a waterway, over 2 km north of a tributary to Kookaburra Creek

Table 6-8: Kookaburra IF1 artefact attributes.

Artefact type	Raw material	Artefact integrity	Stage of reduction	Size (LxWxD) mm
Flake	Quartzite	Complete	Secondary	35x29x10

Figure 6-10: Kookaburra IF1. View of site and the recorded artefacts.

Kookaburra IF2

Site type: Isolated find

GPS coordinates: GDA 2020 Zone 55 626726E 6448440N

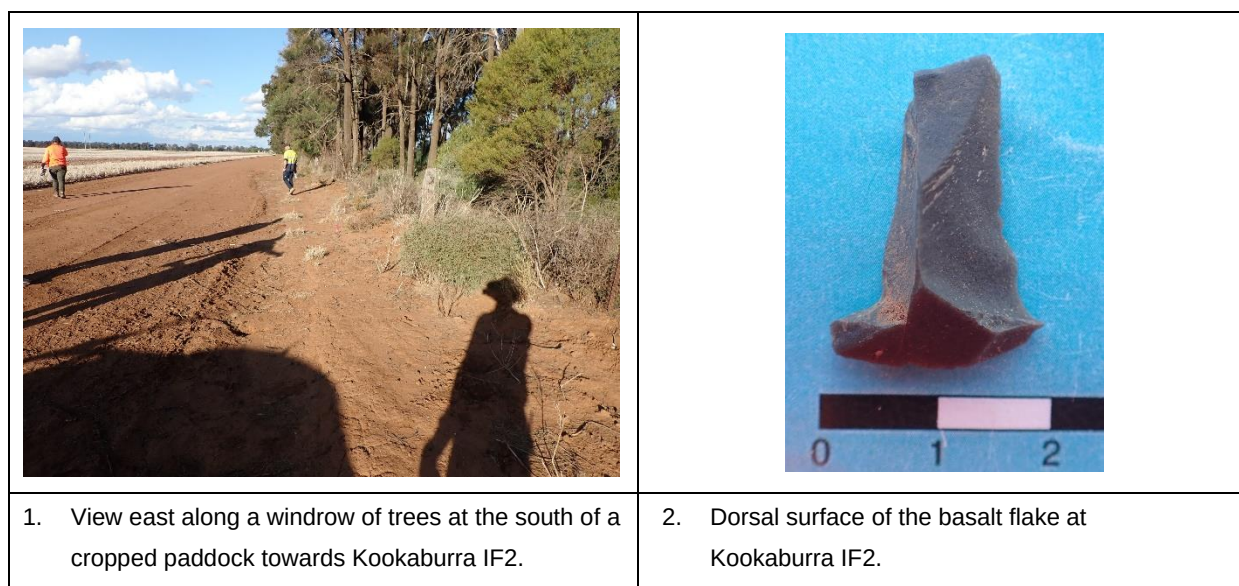
Location of site: Kookaburra IF2 is located 2 km northeast of the intersection of Dubbo-Burroway Road and Eumungerie Road, 19 km north of Narromine. The location of the site is shown on **Figure 6-2**.

Description of site: The site consists of one Aboriginal object manufactured from basalt. The details of the object are given in **Table 6-9**.

The site is situated on a flat landform on a track at the edge of a cropped paddock. A view of the site is shown on **Figure 6-11**. The object is located in a secondary context and the potential for associated subsurface deposits was assessed as low. Kookaburra IF2 is distant from a waterway and is over 1.5 km from a tributary to Kookaburra Creek.

Table 6-9: Kookaburra IF2 artefact attributes.

Artefact type	Raw material	Artefact integrity	Stage of reduction	Size (LxWxD) mm
Flake	Basalt	Complete	Tertiary	25x19x5

Figure 6-11: Kookaburra IF2. View of site and the recorded artefacts.

Kookaburra IF3

Site type: Isolated find

GPS coordinates: GDA 2020 Zone 55 628049E 6450760N

Location of site: Kookaburra IF3 is located 4.6 km northeast of the intersection of Dubbo-Burroway Road and Eumungerie Road, 19 km north of Narromine. The location of the site is shown on **Figure 6-2**.

Description of site: The site consists of one Aboriginal object manufactured from a very fine-grained quartzite material. The object has evidence of edge wear along one of its margins, possibly from use of the flake in the past. However, it is possible that the marks could have been caused by post-deposition disturbance. The details of the object are given in **Table 6-10**.

The site is situated on a flat landform in the centre of a cropped paddock. A view of the site is shown on **Figure 6-12**. The object is located in a secondary context and the potential for associated subsurface deposits was assessed as low. Kookaburra IF3 is distant from a waterway and is 3.3 km northwest of a tributary to Kookaburra Creek, although some small water-holding depressions that could be gilgai or related to agricultural disturbance were noted nearby.

Table 6-10: Kookaburra IF3 artefact attributes.

Artefact type	Raw material	Artefact integrity	Stage of reduction	Size (LxWxD) mm
Flake	Quartzite	Complete	Secondary	35x29x10

Figure 6-12: Kookaburra IF3. View of site and the recorded artefacts.

	
1. View west at the location of Kookaburra IF3.	2. Dorsal surface of the quartzite flake at Kookaburra IF3.
	
3. Detail of Kookaburra IF3.	4. Detail of the possible edge wear along the margin of the flake at Kookaburra IF3.

Kookaburra IF4

Site type: Isolated find

GPS coordinates: GDA 2020 Zone 55 626732E 6450575N

Location of site: Kookaburra IF4 is located 4 km north of the intersection of Dubbo-Burroway Road and Eumungerie Road, 21 km north of Narromine. The location of the site is shown on Figure 6-2.

Description of site: The site consists of one Aboriginal object manufactured from a coarse quartzite. The details of the object are given in **Table 6-11**.

The site is situated on a flat landform on a track at the edge of a cropped paddock. A view of the site is shown on **Figure 6-13**. The object is located in a secondary context and the potential for associated subsurface deposits was assessed as low. Kookaburra IF4 is distant from a waterway and is over 3.3 km from a tributary to Kookaburra Creek

Table 6-11: Kookaburra IF4 artefact attributes.

Artefact type	Raw material	Artefact integrity	Stage of reduction	Size (LxWxD) mm
Flake	Quartzite	Proximal fragment	Secondary	34x31x9

Figure 6-13: Kookaburra IF4. View of site and the recorded artefacts.

	
1. View west towards the small exposure on which Kookaburra IF4 is located. The fence at the edge of the paddock is in the midground and Eumungerie Road is in the background.	2. Dorsal surface of the quartzite flake at Kookaburra IF2.

Kookaburra IF5

Site type: Isolated find

GPS coordinates: GDA 2020 Zone 55 627631E 6448572N

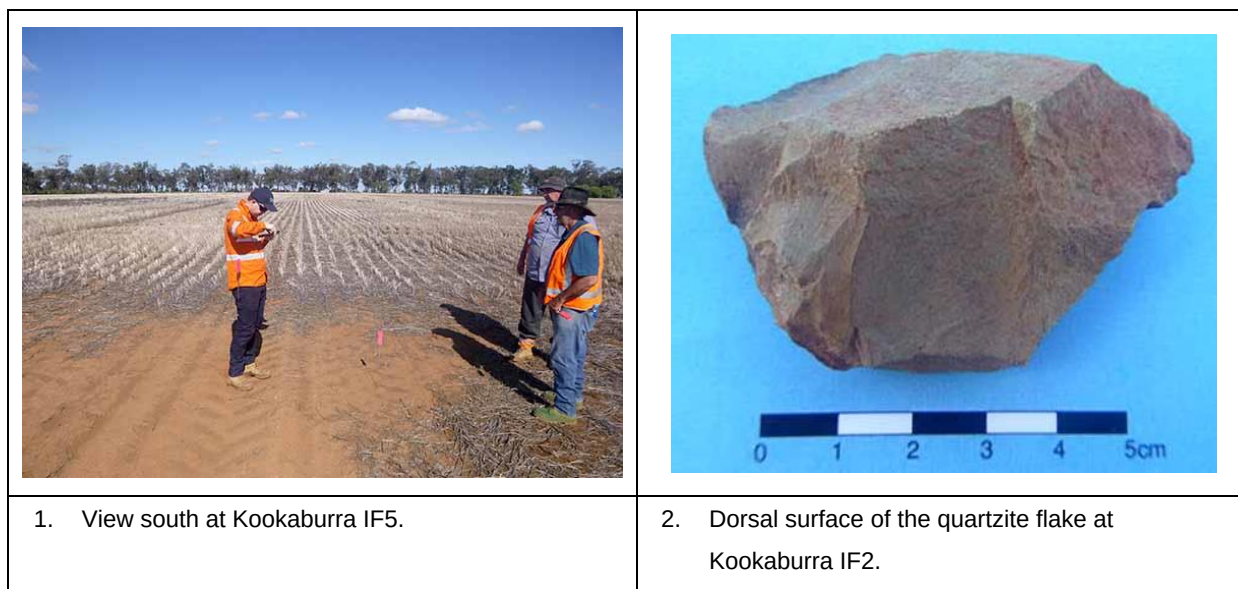
Location of site: Kookaburra IF5 is located 2.5 km northeast of the intersection of Dubbo-Burroway Road and Eumungerie Road, 19 km north of Narromine. The location of the site is shown on **Figure 6-2**.

Description of site: The site consists of one Aboriginal object manufactured from a fine-grained material thought to be rhyolite. The details of the object are given in **Table 6-12**.

The site is situated on a flat landform in the centre of a cropped paddock. A view of the site is shown on **Figure 6-14**. The object is located in a secondary context and the potential for associated subsurface deposits was assessed as low. Kookaburra IF5 is distant from a waterway and is over 3.3 km from a tributary to Kookaburra Creek.

Table 6-12: Kookaburra IF5 artefact attributes.

Artefact type	Raw material	Negative scars	Direction	Stage of reduction	Size (LxWxD) mm
Core	Rhyolite	Three	Multidirectional	Secondary (30%)	55x40x21

Figure 6-14: Kookaburra IF5. View of site and the recorded artefacts.

Kookaburra IF6

Site type: Isolated find

GPS coordinates: GDA 2020 Zone 55 627866E 6448761N

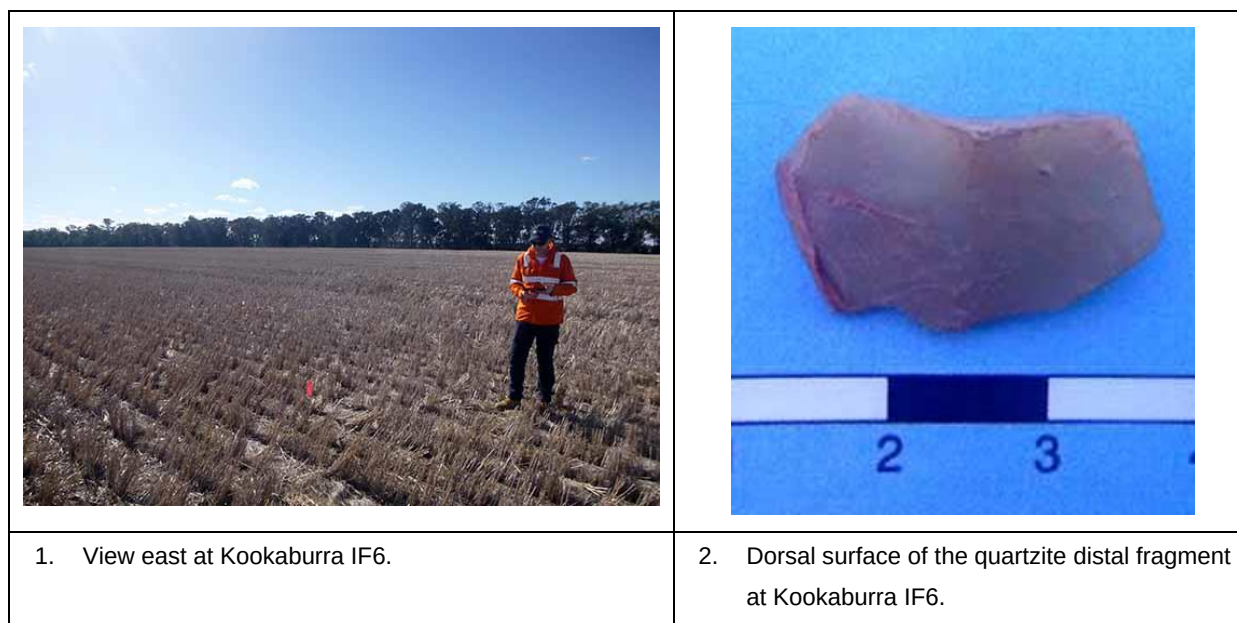
Location of site: Kookaburra IF6 is located 3 km northeast of the intersection of Dubbo-Burroway Road and Eumungerie Road, 20 km north of Narromine. The location of the site is shown on **Figure 6-2**.

Description of site: The site consists of one Aboriginal object manufactured from quartzite. The details of the object are given in **Table 6-13**.

The site is situated on a flat landform in a cropped paddock. A view of the site is shown on **Figure 6-15**. The object is located in a secondary context and the potential for associated subsurface deposits was assessed as low. Kookaburra IF6 is distant from a waterway and is over 3.3 km from a tributary to Kookaburra Creek.

Table 6-13: Kookaburra IF6 artefact attributes.

Artefact type	Raw material	Artefact integrity	Stage of reduction	Size (LxWxD) mm
Flake	Quartzite	Distal fragment	Secondary	19x12x5

Figure 6-15: Kookaburra IF6. View of site and the recorded artefacts.

Kookaburra IF7

Site type: Isolated find

GPS coordinates: GDA 2020 Zone 55 627891E 6448849N

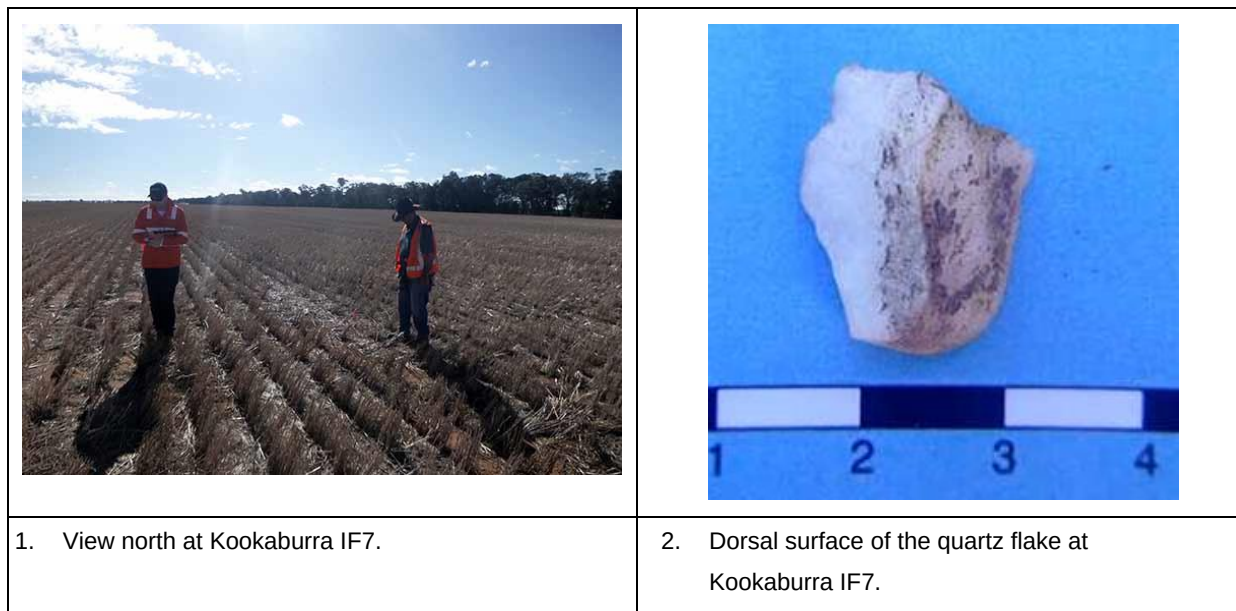
Location of site: Kookaburra IF7 is located 3 km northeast of the intersection of Dubbo-Burroway Road and Eumungerie Road, 20 km north of Narromine. The location of the site is shown on **Figure 6-2**.

Description of site: The site consists of one Aboriginal object manufactured from quartz. The details of the object are given in **Table 6-14**.

The site is situated on a flat landform in a cropped paddock. A view of the site is shown on **Figure 6-16**. The object is located in a secondary context and the potential for associated subsurface deposits was assessed as low. Kookaburra IF6 is distant from a waterway and is over 3.4 km from a tributary to Kookaburra Creek.

Table 6-14: Kookaburra IF7 artefact attributes.

Artefact type	Raw material	Artefact integrity	Stage of reduction	Size (LxWxD) mm
Flake	Quartz	Complete	Tertiary	15x12x7

Figure 6-16: Kookaburra IF7. View of site and the recorded artefacts.

Kookaburra IF8

Site type: Isolated find

GPS coordinates: GDA 2020 Zone 55 628104E 6449351N

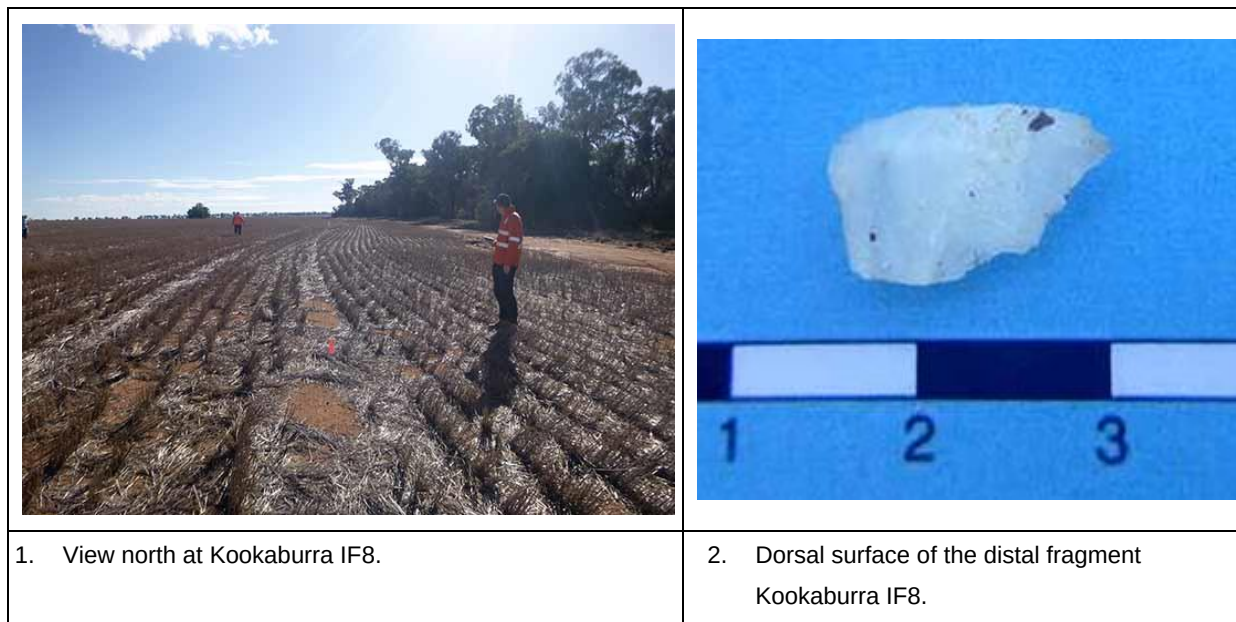
Location of site: Kookaburra IF8 is located 3.6 km northeast of the intersection of Dubbo-Burroway Road and Eumungerie Road, 22 km north of Narromine. The location of the site is shown on **Figure 6-2**.

Description of site: The site consists of one Aboriginal object manufactured from quartz. The details of the object are given in **Table 6-15**.

The site is situated on a flat landform in a cropped paddock. A view of the site is shown on **Figure 6-17**. The object is located in a secondary context and the potential for associated subsurface deposits was assessed as low. Kookaburra IF6 is distant from a waterway and is over 3.4 km from a tributary to Kookaburra Creek.

Table 6-15: Kookaburra IF8 artefact attributes.

Artefact type	Raw material	Artefact integrity	Stage of reduction	Size (LxWxD) mm
Flake	Quartz	Distal fragment	Tertiary	13x8x5

Figure 6-17: Kookaburra IF8. View of site and the recorded artefacts.

Kookaburra IF9

Site type: Isolated find

GPS coordinates: GDA 2020 Zone 55 628056E 6448952N

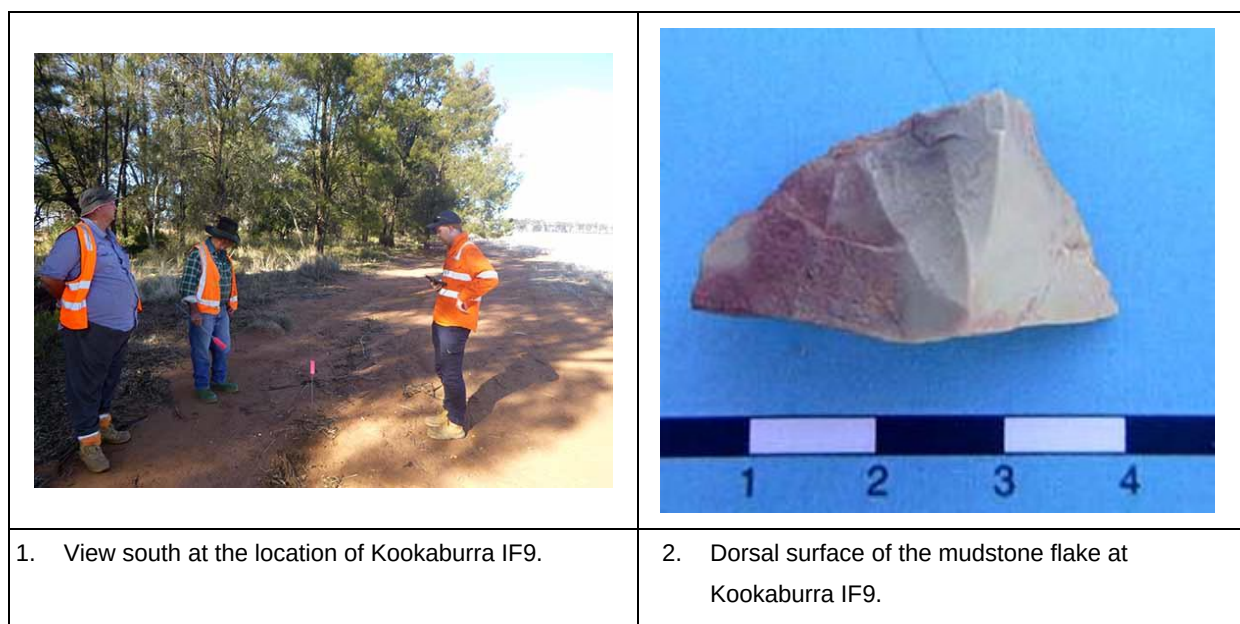
Location of site: Kookaburra IF9 is located 2.8 km northeast of the intersection of Dubbo-Burroway Road and Eumungerie Road, 19 km north of Narromine. The location of the site is shown on **Figure 6-2**.

Description of site: The site consists of one Aboriginal object manufactured from a pale coloured quartzite. The details of the object are given in **Table 6-16**.

The site is situated on a gently sloping hill on a track at the edge of a cropped paddock. A view of the site is shown on **Figure 6-18**. The object is located in a secondary context and the potential for associated subsurface deposits was assessed as low. Kookaburra IF9 is distant from a waterway, although some small water-holding depressions that could be gilgai or related to agricultural disturbance were noted nearby.

Table 6-16: Kookaburra IF9 artefact attributes.

Artefact type	Raw material	Artefact integrity	Stage of reduction	Size (LxWxD) mm
Flake	Mudstone	Proximal fragment	Tertiary	35x29x10

Figure 6-18: Kookaburra IF9. View of site and the recorded artefacts.

Kookaburra IF10

Site type: Isolated find

GPS coordinates: GDA 2020 Zone 55 627100E 6449831N

Location of site: Kookaburra IF10 is located 3.3 km northeast of the intersection of Dubbo-Burroway Road and Eumungerie Road, 21 km north of Narromine. The location of the site is shown on **Figure 6-2**.

Description of site: The site consists of a flaked piece manufactured from quartzite. The details of the object are given in **Table 6-18**. The artefact has at least three facets that appear to have been removed after the object was flaked from a core.

The site is situated on a track adjacent to a windrow at the edge of a cropped paddock, on a flat landform. A view of the site is shown on **Figure 6-20**. The object is in a secondary context and the potential for associated subsurface deposits was assessed as low. Kookaburra IF11 is distant from a waterway and is over 2.4 km north of a small tributary to Kookaburra Creek.

Table 6-17: Kookaburra IF10 artefact attributes.

Artefact type	Raw material	Integrity	Stage of reduction	Size (LxWxD) mm
Flaked piece	Quartzite	Complete	Tertiary	42x24x11

Figure 6-19: Kookaburra IF10. View of site and the recorded artefacts.

	
1. View west at the edge of the windrow near Kookaburra IF10.	2. Dorsal surface of the quartzite flaked piece at Kookaburra IF10.
	
3. Detail of the faceting along the margin of the flaked piece.	4. Kookaburra IF10.

Kookaburra IF11

Site type: Isolated find

GPS coordinates: GDA 2020 Zone 55 627212E 6449813N

Location of site: Kookaburra IF11 is located 3.3 km northeast of the intersection of Dubbo-Burroway Road and Eumungerie Road, 21 km north of Narromine. The location of the site is shown on **Figure 6-2**.

Description of site: The site consists of a core/scrapper manufactured from quartzite. The details of the object are given in **Table 6-18**. The artefact has at least six negative scars from either flake removal or shaping as a scrapper (or one then the other).

The site is situated on a track adjacent to a windrow at the edge of a cropped paddock, on a flat landform. A view of the site is shown on **Figure 6-20**. The object is located in a secondary context and the potential for associated subsurface deposits was assessed as low. Kookaburra IF11 is distant from a waterway and is over 2.4 km north of a small tributary to Kookaburra Creek.

Table 6-18: Kookaburra IF11 artefact attributes.

Artefact type	Raw material	Negative scars	Direction	Stage of reduction	Size (LxWxD) mm
Core/scrapper	Quartzite	Six	Multidirectional	Tertiary	75x72x46

Figure 6-20: Kookaburra IF11. View of site and the recorded artefacts.

	
1. View west along the windrow/track exposure at the location of Kookaburra IF11.	2. The quartzite core/scrapper at Kookaburra IF11.
	
3. Detail of the semi-steep faceting along the margin of the core/scrapper.	4. View of the multidirectional flaking angles on the core/scrapper.

6.5 ABORIGINAL COMMUNITY COMMENTS ON THE SURVEY

Thomas Dahlstrom, one of the RAP site officers, noted during the survey that the archaeological sites identified reflected use of the landscape as a resource gathering area, rather than a camping location. It was pointed out that one of the most sought-after resources in dry, open woodland landscapes such as the Project area were grubs (insect larvae), a number of which were identified during the survey.

It was noted by members of the survey that the landscape was similar to areas in which grinding groove sites had been identified, but no outcropping rock suitable for grinding was noted.

6.6 TEST EXCAVATION

The survey of the Project area considered the possibility of conducting further investigations in the form of subsurface test excavations. As the survey did not record any Aboriginal objects that were assessed to be in a primary depositional context, and because the Project area afforded no topographical features that would indicate archaeological sensitivity, such as elevated landforms near waterways, it was concluded that test excavation was not warranted. While there may be subsurface artefacts present in the Project area, they will be unlikely to be associated with intact archaeological deposits of conservation value and are more reflective of a background scatter of artefacts that could be found in many similar landscapes. Given the undifferentiated topography of the Project area, the lack of archaeologically sensitive landforms, the distance of the Project area from reliable water sources, and the long history of agricultural disturbances resulting in soil disruption and soil loss, the assessment is that subsurface archaeological deposits are not present in the Project area and that a test excavation program is not required to address any specific research questions.

6.7 SUMMARY OF SURVEY RESULTS

Fifteen Aboriginal sites, containing a total of 24 artefacts, were identified during the survey. The most prevalent raw material for stone tool manufacture across the Project area is quartzite, although it should be noted that there was high variation between the fineness and colouration of objects even within this category. Unmodified flakes are the most frequent artefact type at the Project area, although there is a relatively high proportion of cores/scrapers and a hammerstone for such a small sample.

6.7.1 Discussion

6.7.1.1 *Site characteristics*

The site types and characteristics identified at the Project area conform to the predictive model developed for the assessment. The high distance from reliable water sources suggested that large or high-density artefact scatters were unlikely, and the repeated ploughing and cultivation

of the Project area led to the expectation that sites would be highly disturbed. The 11 isolated artefacts and four low-density artefact scatters across the Project area reflect these factors. The absence of modified trees and grinding grooves was also predicted by the background modelling.

6.7.1.2 *Site distribution*

The distribution of the sites at the Project area did not conform to the expectation that the gentle slopes of Survey Unit 1 were more likely to contain sites of all kinds, than the alluvial plains of Survey Unit 2. Only 25% of sites at the Project area (n=4) are within Survey Unit 1, despite comprising 77% of the total area.

There are some likely explanations for this finding.

The OzArk (2016) study noted that the Slopes landscape category had the highest prevalence of site recordings in the Dubbo-Narromine area. However, it was noted that this finding could reflect the much higher rates of archaeological survey in the Slopes landscape (which includes Dubbo) rather than a higher density of sites. The results of this assessment would suggest that, in general, Slopes landscapes do not contain a large number of sites.

A further explanation for the unexpected higher density of sites in Survey Unit 2 is that the alluvial plains landscape mapping that underpins the survey unit indicates that a relict drainage feature (i.e. an ephemeral drainage feature associated with Kookaburra Creek) was present at the south of the Project area. The survey noted small areas of standing water within the cropped paddocks at Survey Unit 2, perhaps indicating that either agricultural modification has altered the landscape such that a minor drainage feature is no longer observable, or that a small stream at the site has dried up, leaving behind only small gilgai or depressions.

Finally, it is noted in **Table 5-4** that alluvial plains are an aggrading environment and the Aboriginal objects recorded in Survey Unit 2 may be an accumulation of artefacts washed into the area by water wash from the broader landscape.

In summary, as Survey Unit 1 is distant to permanent water, the low archaeological potential of this type of landform is reflected in the low density of Aboriginal objects in this landform unit. The relatively greater density of Aboriginal objects in Survey Unit 2 may either be reflective of colluvial wash from areas further north in the Project area or the presence of a former drainage line towards the south of the Project area.

6.7.1.3 *Aboriginal activity and habitation models*

While the archaeological evidence of Aboriginal activity at the Project area is highly disturbed, the low density of artefacts across the 495-ha Project area suggests that the activities being undertaken are more likely to be resource gathering and transit, rather than habitation. While the absence of a reliable water source indicates that conditions were not ideal for extended camping,

the mostly flat open woodland would have provided sought after-resources such as game, vegetable foods, and insect larvae.

6.7.2 Responses to the research questions

In **Section 5.6** several research questions were advanced to guide the assessment of the Project area. Following the survey, responses to these research questions are set out below.

- What resources were available to the Aboriginal people using the land within the Project area (food, stone, and water) and what resources were transported to the area?
 - The open woodland that would have been present at the Project area seems likely to have provided mostly food resources.
 - Little outcropping stone was noted across the Project area, so the stone materials used for manufacturing the Aboriginal objects identified would have been sourced elsewhere and transported to the area.
 - The Project area is distant from reliable water. However, an ephemeral drainage line at the south of the Project could have provided some water in certain conditions.
- Did the Aboriginal people use the land within the Project area at a particular time of the year?
 - While the nature of the available resources would vary through the year, there are no identifiable barriers to the use of the Project area for gathering and hunting year-round. However, the assumption is that the low water resource in this area probably indicates that the area was more used in the better watered season of early summer.
- If present, are the outcropping rock materials present suitable for stone tool procurement, manufacture, or processing (i.e. grinding grooves)?
 - No outcropping rock was identified during the survey.
- Establish how the findings within the Project area (if any) accord with the regional archaeological context examined in **Section 5.5**.
 - The results of the survey broadly conform with the characteristics recorded in the region. However, the distance of the identified sites from water is greater than one would expect from the findings of the larger regional studies (OzArk 2012, OzArk 2016). This could indicate that there was an ephemeral water source nearby that is no longer evident, or that sites of such low density can be present even in dry landscapes.

7 SIGNIFICANCE ASSESSMENT

7.1 INTRODUCTION TO SIGNIFICANCE ASSESSMENT

7.1.1 Identifying cultural significance

The concept of cultural significance is used in Australian heritage practice and legislation to encompass all the cultural values and meanings that might be recognised in a place. The *Burra Charter*'s definition of cultural significance is broad and encompasses places that are significant to Indigenous cultures (Burra Charter 2013).

The *Burra Charter* definition of 'place' is also broad and encompasses Indigenous places of cultural significance. 'Place' includes locations that embody spiritual value (such as Dreaming places, sacred landscapes, and stone arrangements), social and historical value (such as massacre sites), as well as scientific value (such as archaeological sites). In fact, one place may be all these things or may embody all these values at the same time.

In some cases, the find-spot of a single artefact may constitute a 'place'. Equally, a suite of related locations may together comprise a single 'place', such as the many individual elements that make up a Songline. These more complex places are sometimes called a cultural landscape or cultural route.

The Guide (OEH 2011:8–9) notes that cultural significance is comprised of an assessment of social values, scientific values, aesthetic values, and historic values. These values are described below.

7.1.1.1 *Social or cultural value*

Social or cultural value refers to the spiritual, traditional, historical, or contemporary associations and attachments the place or area has for Aboriginal people. Social or cultural value is how people express their connection with a place and the meaning that place has for them.

Places of social or cultural value have associations with contemporary community identity. These places can have associations with tragic or warmly remembered experiences, periods, or events. Communities can experience a sense of loss should a place of social or cultural value be damaged or destroyed.

There is not always consensus about a place's social or cultural value. Because people experience places and events differently, expressions of social or cultural value do vary and, in some instances, will be in direct conflict. When identifying values, it is not necessary to agree with or acknowledge the validity of each other's values, but it is necessary to document the range of values identified.

Social or cultural value can only be identified through consultation with Aboriginal people. This could involve a range of methodologies, such as cultural mapping, oral histories, archival

documentation, and specific information provided by Aboriginal people specifically for the investigation.

Cultural value 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.

7.1.1.2 *Scientific (archaeological) value*

This refers to the importance of a landscape, area, place or object because of its rarity, representativeness, and the extent to which it may contribute to further understanding and information (Burra Charter 2013).

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?

Information about scientific values will be gathered through any archaeological investigation undertaken. Archaeological investigations must be carried out according to Heritage NSW's Code of Practice (DECCW 2010).

Often scientific values are informed by social values that allow a contemporary understanding of the archaeological data to be understood.

7.1.1.3 *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).

7.1.1.4 *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.

7.2 ASSESSED SIGNIFICANCE OF THE RECORDED SITES

Table 7-1 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

Aboriginal people are the determinants of the social and cultural value of the identified sites at the Project area. In general, the Aboriginal community tend to regard all sites, even displaced objects, as having high cultural significance. All sites can offer a tangible connection to ancestors and their practices.

No specific comments regarding the cultural significance of the fifteen sites identified during the survey was provided at the time or during the Stage 4 review period (see **Section 3.2.4**).

Archaeological/Scientific Value

The archaeological and scientific value of all sites recorded during the survey have been assessed as low. The four artefact scatters (Kookaburra OS1, OS2, OS3, and OS4) and the isolated finds (Kookaburra IF1, IF2, IF3, IF4, IF5, IF6, IF7, IF8, IF9, IF10, and IF11) are assessed as having low archaeological significance for the following characteristics:

- All sites were recorded in disturbed, secondary contexts
- There is a low overall density of artefacts at the sites
- There are no uncommon or representative examples of artefact types
- There is a low likelihood for associated subsurface deposits.

Although there is a greater variety of artefacts at Kookaburra OS2 when compared to the other sites at the Project area, it is a low-density site in a regional context.

The poor condition and low artefact density at all sites indicates that there is little research value regarding the sites in the Project area and that the sites have a very limited ability to further the understanding of the Aboriginal archaeology of the region.

Aesthetic Value

All sites at the Project area have been assessed as having low aesthetic value. The sites are situated in a visual setting that has been drastically altered by intensive agricultural practices and it is difficult to appreciate the sites' relationship with the original landscape.

No individual objects within the sites have particular aesthetic qualities as fine examples of stone artefacts.

Historic Value

There are no known historic heritage values of significance associated with the Project area. There are no associations of the sites with important events or people. Therefore, the sites do not have significant historic values.

Table 7-1: Aboriginal cultural heritage: significance assessment.

AHIMS ID	Site Name	Social or Cultural Value	Archaeological / Scientific Value	Aesthetic Value	Historic Value
35-3-0350	Kookaburra OS1	High	Low	Low	None
35-3-0351	Kookaburra OS2	High	Low	Low	None
35-3-0352	Kookaburra OS3	High	Low	Low	None
35-3-0353	Kookaburra OS4	High	Low	Low	None
35-3-0354	Kookaburra IF1	High	Low	Low	None
35-3-0355	Kookaburra IF2	High	Low	Low	None
35-3-0356	Kookaburra IF3	High	Low	Low	None
35-3-0358	Kookaburra IF4	High	Low	Low	None
35-3-0357	Kookaburra IF5	High	Low	Low	None
35-3-0359	Kookaburra IF6	High	Low	Low	None
35-3-0360	Kookaburra IF7	High	Low	Low	None
35-3-0364	Kookaburra IF8	High	Low	Low	None
35-3-0363	Kookaburra IF9	High	Low	Low	None
35-3-0362	Kookaburra IF10	High	Low	Low	None
35-3-0361	Kookaburra IF11	High	Low	Low	None

7.2.1 Statement of significance

The intangible Aboriginal cultural values across the wider district relate to important places and themes associated with non-archaeological cultural values. These places mainly relate to spiritual and ceremonial connections across the broader landscape that may encompass areas of culturally significant geographical features, such as the Macquarie-Wambuul River.

There may be places with intangible cultural significance within the Project area, although no specific locations have so far been identified by the Aboriginal community. The cultural value of the 15 recorded sites at the Project area is understood to be high.

The scientific value of the 15 recorded sites within the Project area is assessed as low because the sites have limited potential to provide further information on the traditional Aboriginal use of the Central West region. The sites displays a low density of artefacts and are contained within a landform with widespread agricultural disturbances. These factors contribute to the overall low scientific value of the Project area.

The Project area is not associated with significant aesthetic or historic values.

8 ASSESSING HARM

8.1 AVOIDING AND MINIMISING HARM

8.1.1 Conserving significant Aboriginal cultural heritage

An objective 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, proposals should be amended to reduce the extent and severity of impacts to significant Aboriginal objects and places using reasonable and feasible measures.

8.1.2 Opportunities to conserve Aboriginal cultural heritage values

The Project can avoid impact to 10 of the 15 Aboriginal sites identified during the assessment. As such, 10 sites can be conserved at their current position in the landscape. The following sites will be outside the impact footprint for the solar panel array and will be avoided: Kookaburra OS1, Kookaburra OS2, Kookaburra OS3, Kookaburra IF1, Kookaburra IF2, Kookaburra IF4, Kookaburra IF8, Kookaburra IF9, Kookaburra IF10, and Kookaburra IF11.

Harm to these sites has been avoided through Project design or due to the fact that they fall within ecological exclusion zones and all 10 sites will be conserved in the landscape with appropriate management (**Section 9.2**). It is noted here that Kookaburra OS3 will be avoided and managed as per **Section 9.2** if access Option 2 (**Figure 1-3**) is selected in the detail design phase.

8.2 LIKELY IMPACTS TO ABORIGINAL HERITAGE FROM THE PROJECT

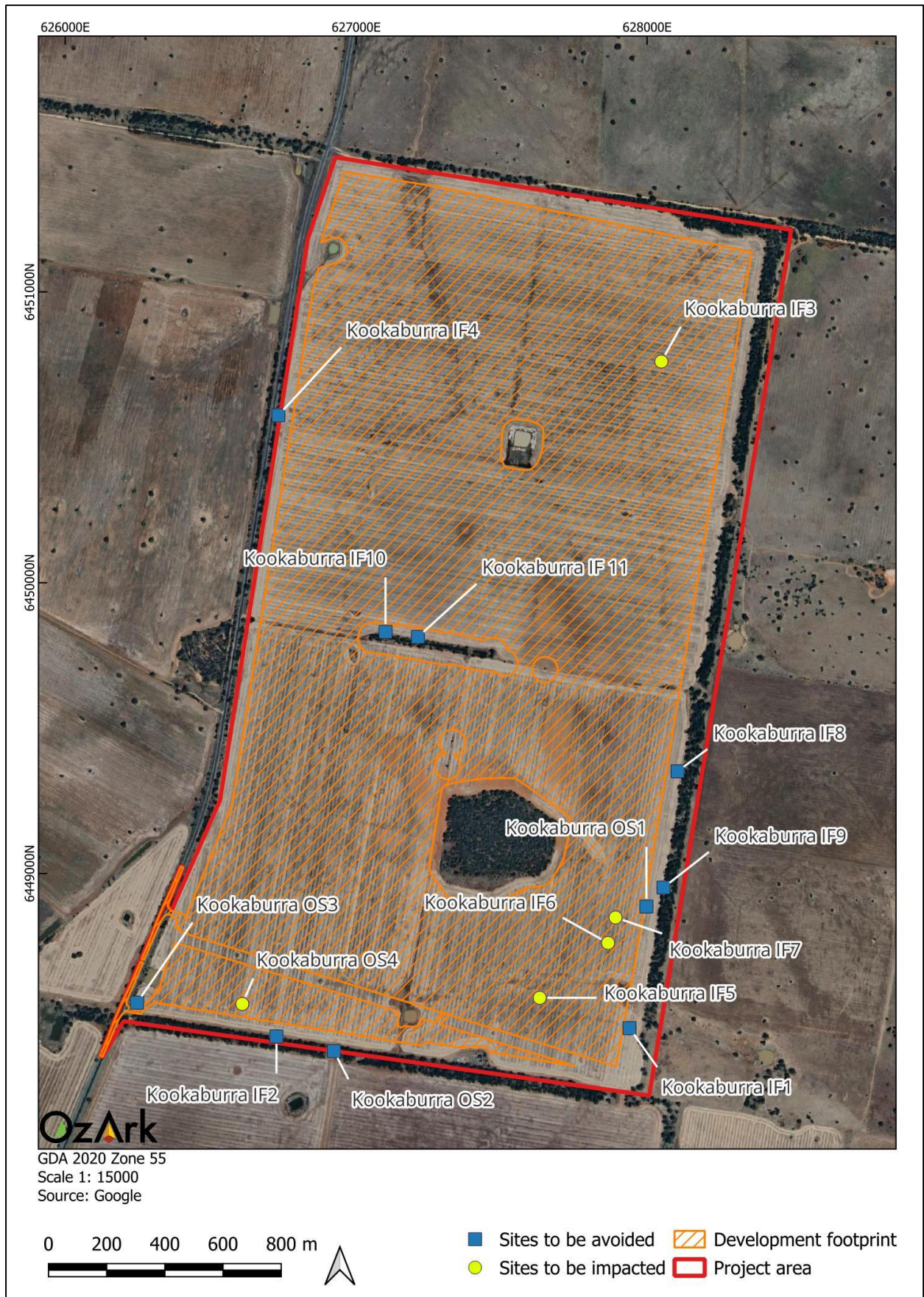
Table 8-1 presents a summary of the impacts to Aboriginal cultural heritage associated with the Project. The location of the sites in relation to the impact footprint is shown on **Figure 8-1**.

The potentially impacted sites are Kookaburra OS4, Kookaburra IF3, Kookaburra IF5, Kookaburra IF6, and Kookaburra IF7. These sites are a low-density artefact scatter (two artefacts) and four isolated finds.

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

Site ID	Site Name	Type of Harm (Direct/Indirect / None)	Degree of Harm (Total/Partial / None)	Consequence of Harm (Total/Partial/No Loss of Value)
35-3-0350	Kookaburra OS1	None	None	No loss of value
35-3-0351	Kookaburra OS2	None	None	No loss of value
35-3-0352	Kookaburra OS3	None	None	No loss of value
35-3-0353	Kookaburra OS4	Direct	Total	Total loss of value
35-3-0354	Kookaburra IF1	None	None	No loss of value
35-3-0355	Kookaburra IF2	None	None	No loss of value
35-3-0356	Kookaburra IF3	Direct	Total	Total loss of value
35-3-0358	Kookaburra IF4	None	None	No loss of value
35-3-0357	Kookaburra IF5	Direct	Total	Total loss of value
35-3-0359	Kookaburra IF6	Direct	Total	Total loss of value
35-3-0360	Kookaburra IF7	Direct	Total	Total loss of value
35-3-0364	Kookaburra IF8	None	None	No loss of value
35-3-0363	Kookaburra IF9	None	None	No loss of value
35-3-0362	Kookaburra IF10	None	None	No loss of value
35-3-0361	Kookaburra IF11	None	None	No loss of value

Figure 8-1: Aboriginal sites in relation to the impact footprint.



8.3 ECOLOGICALLY SUSTAINABLE DEVELOPMENT PRINCIPLES

Ecologically sustainable development (ESD) principles (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. Regarding Aboriginal cultural heritage, ESD can be achieved by applying the principle of intergenerational equity and the precautionary principle.

8.3.1 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.

8.3.2 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 heritage values, the precautionary principle should be applied if:

- The proposal 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 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 considered in applying environmental objectives.

8.3.4 Applicability to the Project

Five of the 15 identified Aboriginal sites within the Project area will be potentially harmed while a further 10 sites will be conserved within the landscape. While the Project will result in impacts to one third of the sites identified, the archaeological significance of the sites, and the Project area as a whole, has been assessed as low. This assessment is derived from the fact that the potentially harmed sites consist of a low-density artefact scatter (two artefacts) and four isolated finds all of which are assessed to be in a secondary context. Therefore, the impact to Aboriginal cultural heritage as a result of the Project can be characterised as low, as the removal of these five sites from the landscape is not considered to have a significant impact on the Aboriginal cultural heritage values of the wider area.

Table 8-2 examines the application of ESD principles to the proposal.

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

ESD principle	Response
Avoiding and minimising harm	Section 1 sets out mechanisms by which avoidance of 10 of the 15 sites at the Project area can be managed, and minimise harm. By avoiding 66% of the identified sites within the Project area, the Project has followed the minimisation of harm principle.
The intergenerational equity principle	It has been assessed that the proposal will have a low impact to significant Aboriginal cultural heritage values. The overall low impact and the avoidance of 10 Aboriginal sites indicates that there will be a manageable diminution of intergenerational equity resulting from the Project.
The precautionary principle	The Aboriginal cultural heritage investigation has followed the precautionary principle by undertaking a robust Aboriginal cultural heritage assessment to ensure that the Aboriginal objects and values at the Project area have been identified. The robust assessment has also allowed for practical measures to minimise or avoid impact to Aboriginal sites. The survey adopted a precautionary principle when it came to describing and assessing landforms within the survey area.
The integration principle	The location of the Project on previously disturbed agricultural land is an advantage from the perspective of integrating environmental (i.e. heritage) and development considerations. The five Aboriginal sites to be potentially harmed by the Project have been previously displaced from their original context and <i>in situ</i> Aboriginal sites and significant cultural landscapes will not be impacted. In terms of Aboriginal heritage, the Project integrates the management of Aboriginal cultural heritage and the development of an ecologically important Project.

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 Project. **Section 7.2** and **Section 8.2** describe, respectively, the significance / potential of the recorded sites and the likely impacts of the Project. 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 proposal to avoid 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 approval to disturb sites under the authority of an ACHMP must be sought from DPHI. Normally the management recommendations contained in the ACHAR become policies of the ACHMP. As the Aboriginal community have been provided the opportunity to view the draft ACHAR, the ACHAR must make it clear that a future ACHMP will manage Aboriginal cultural heritage within the Project area so that the Aboriginal community can assess the management recommendations with this knowledge. The ACHMP policies will often stipulate that the Aboriginal community should be involved in any salvage activities and will dictate what the fate of any salvaged Aboriginal objects will be.

9.2 MANAGEMENT AND MITIGATION OF RECORDED ABORIGINAL SITES

9.2.1 Surface collection

Five Aboriginal sites (35-3-0353 [Kookaburra OS4], 35-3-0356 [Kookaburra IF3], 35-3-0357 [Kookaburra IF5], 35-3-0359 [Kookaburra IF6], and 35-3-0360 [Kookaburra IF7]) are within the impact footprint of the Project and cannot be avoided. It is recommended that the sites be salvaged through the recording and collection of the surface artefacts, prior to construction works proceeding. This recommendation is made due to:

- The high cultural value of these sites and their importance to the Aboriginal community
- The nature of the impacted sites (one low-density artefact scatter and four isolated finds)
- The sites being in landforms with high levels of previous disturbance
- The low archaeological value assigned to the sites precludes 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:

1. The visible artefact will be flagged in the field
2. The site will be photographed after flagging and before recording
3. The following artefact information will be recorded for the artefact:
 - Location
 - Artefact class
 - Artefact type
 - Size
 - Reduction level
 - Raw material
 - Notes.
4. The artefact will be photographed
5. An Aboriginal Site Impact Recording Form (ASIRF) will be submitted by the archaeologist detailing the salvage process at the site.

9.2.2 Long-term management of Aboriginal objects

The ACHMP would include protocols for the long-term management of the Aboriginal site salvaged for the Project, as well as any additional artefacts discovered during construction and operation of the Project.

Regarding stone artefacts, suitable procedures for the long-term management could include the reburial of artefacts at a location outside of impacts that adheres to Requirement 26 of the Code of Practice, or the removal of artefacts to an agreed place of safe keeping.

No preferences for the long-term management of any salvaged objects were given by RAP representatives during the survey, but the final strategy will be developed in consultation with the RAPs.

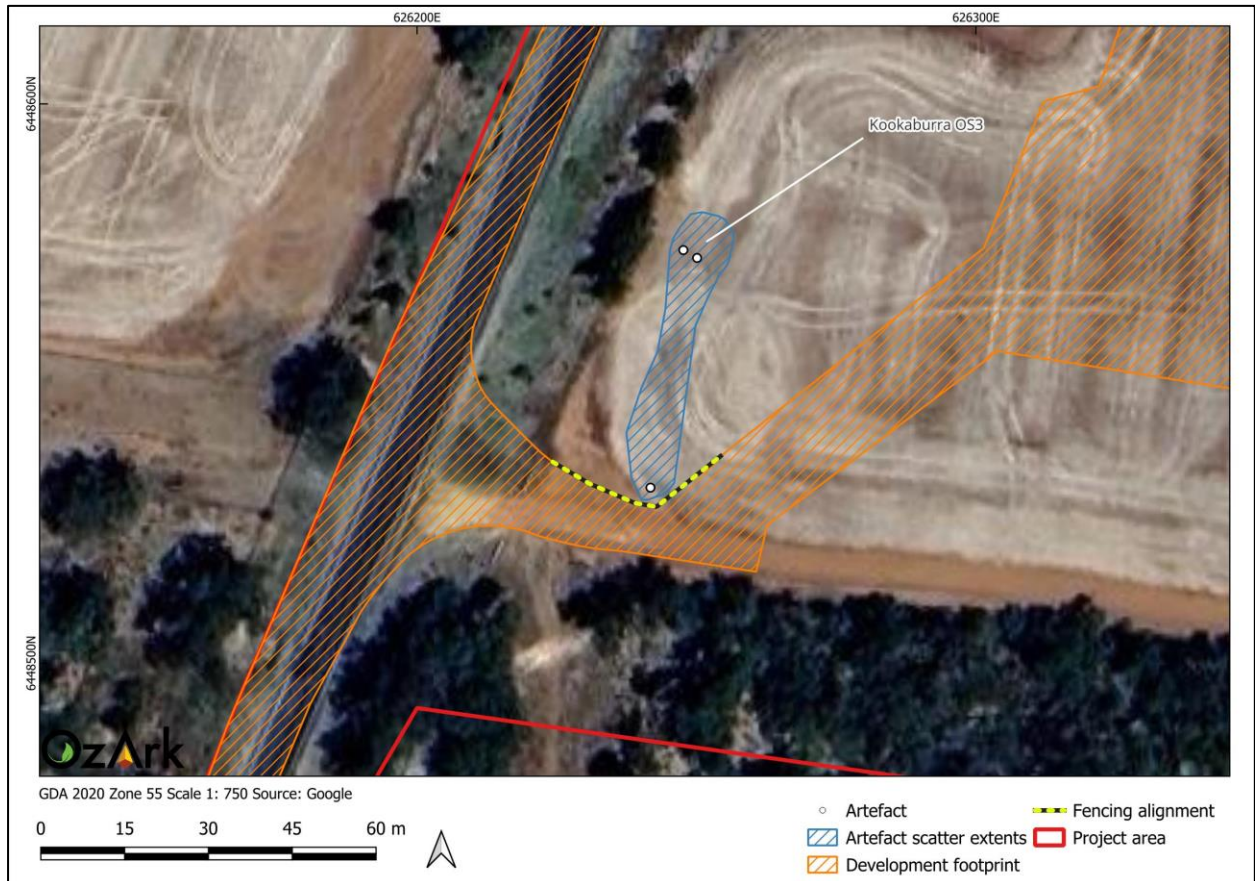
9.2.3 Fencing

The proponent has undertaken measures to avoid harm to 10 of the recorded sites through a considered design of the Project components. These sites should be protected during the construction of the Project through the use high-visibility temporary fencing. Permanent fencing

of sites may be warranted depending on the proximity of the sites to Project infrastructure. Kookaburra OS3 is within 5 m of the development footprint at the south of the Project area and the edge of the development footprint must be fenced at this location. A proposed alignment of the fence at Kookaburra OS3 is shown on **Figure 9-1**.

The location of all sites should be shown on all appropriate plans to ensure that they are not inadvertently harmed.

Figure 9-1: Proposed fencing location at Kookaburra OS3



9.3 UNANTICIPATED FINDS PROTOCOL

Should development consent for the Project be gained, an ACHMP would be developed in consultation with RAPs and DPHI with input from Heritage NSW. The ACHMP will contain procedures should a new discovery of Aboriginal artefacts be made during construction and/or operation of the Project. The procedure in **Section 9.3.1** is an example of an unanticipated finds protocol that could be incorporated into the ACHMP.

9.3.1 Unanticipated finds protocol example

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 consider scientific and educational value.

Protocol to be followed if previously unrecorded or unanticipated Aboriginal object(s) are encountered:

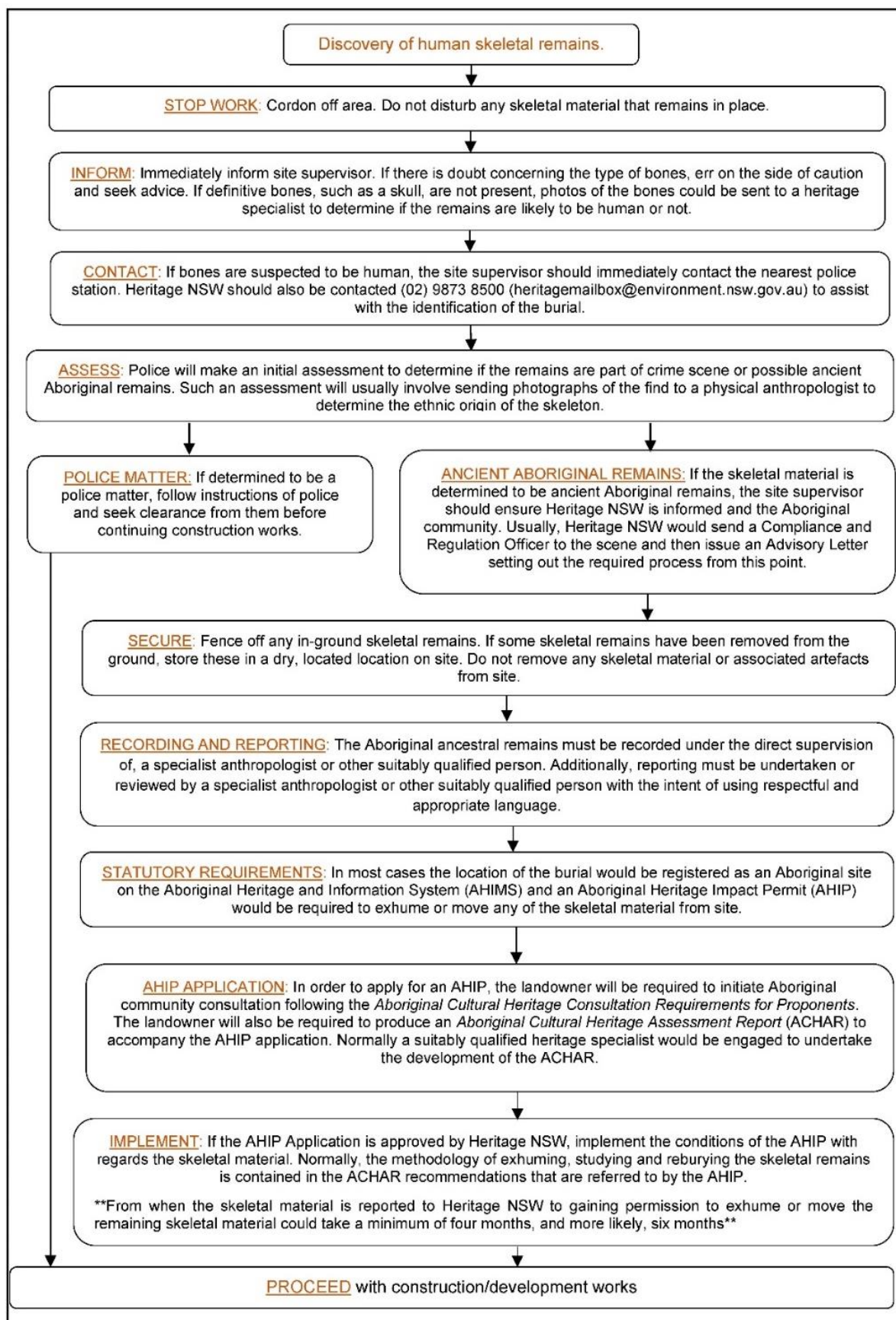
1. If any Aboriginal object is discovered and/or harmed in, or under the land, while undertaking the proposed development activities, the proponent must:
 - a. Not further harm the object
 - b. Immediately cease all work at the particular location
 - c. Secure the area to avoid further harm to the Aboriginal object
 - d. Notify Heritage NSW as soon as practical on 131 555 (info@environment.nsw.gov.au[mailto:](mailto:info@environment.nsw.gov.au)) and DPHI Compliance (compliance@planning.nsw.gov.au), 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. If 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

- 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 AHIP or through the procedures of an approved ACHMP).

9.4 UNANTICIPATED SKELETAL REMAINS PROTOCOL

Should development consent for the Project be gained, an ACHMP would be developed in consultation with RAPs and DPHI. The ACHMP would contain procedures should a new discovery of human skeletal remains be made during construction or operation of the Project. A potential flow-chart relating to the discovery of human skeletal remains is shown on **Figure 9-2**.

Figure 9-2: Example of a human skeletal remains procedure.



10 RECOMMENDATIONS

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 fifteen Aboriginal sites were recorded during the assessment.

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 an approved ACHMP
- The findings of the current investigations undertaken within the Project area
- The interests of the Aboriginal community.

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

1. Following granting of development consent for the Project, the proponent will develop an ACHMP in consultation with the RAPs and DPHI (with input from Heritage NSW). The ACHMP would also include an unanticipated finds protocol, unanticipated skeletal remains protocol, and heritage inductions and long-term management of the Aboriginal site being impacted.
2. Five Aboriginal sites are located within the impact footprint of the Project and will be salvaged via a collection of surface artefacts following the management strategies set out in **Section 9.2**. These sites are 35-3-0353 (Kookaburra OS4), 35-3-0356 (Kookaburra IF3), 35-3-0357 (Kookaburra IF5), 35-3-0359 (Kookaburra IF6), and 35-3-0360 (Kookaburra IF7).
3. The salvage works will include the mapping, analysis, and collection of the surface artefact at the affected sites. Results will be included in a report to preserve the data in a useable form and an ASIRF will be submitted to AHIMS.
4. The proponent will avoid harm to the remaining 10 Aboriginal sites through a considered design of the Project components. These sites will be protected during the construction of the Project through temporary fencing. The location of the sites will be shown on all appropriate plans to ensure that they are not inadvertently harmed.
5. All land-disturbing activities must be confined to within the Project area. Should the parameters of the proposed work extend beyond this, then further archaeological assessment will be required.

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OEH 2011	Office of Environment and Heritage 2011. <i>Guide to investigating, assessing and reporting on Aboriginal cultural heritage in NSW</i> .
OzArk 2006	OzArk Environment & Heritage. 2006. <i>Aboriginal Heritage Study: Dubbo Local Government Area</i> . Report to Dubbo City Council.
OzArk 2011	OzArk Environment & Heritage. 2011. <i>Aboriginal Heritage Assessment Proposed Yarrandale to Gilgandra 66kV Transmission Line</i> . Report to Essential Energy.
OzArk 2014	OzArk Environment & Heritage. 2014. <i>Aboriginal Heritage Management: GIS layers as planning tools</i> . Report to: Dubbo City Council.
OzArk 2016	OzArk Environment & Heritage. 2016. <i>Central West Local Land Services Travelling Stock Reserves Study</i> . Report to: Central West Local Land Services.
OzArk 2021	OzArk Environment & Heritage. 2021. <i>Aboriginal Cultural Heritage Assessment Report: Macquarie River Re-Regulating Storage</i> . Report to: GHD on behalf of Water NSW.
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APPENDIX 1: ABORIGINAL COMMUNITY CONSULTATION

Appendix 1 Figure 1: Aboriginal community consultation log

Consultation Log			
Date	Organisation	Comment	Method
10.2.23	Daily Liberal	Catherine Burrowes (CB) sent advertisement to publish 15.2.23 closing date 1.3.23	Email
10.2.23	Narromine Star	CB sent advertisement to publish 15.2.23 closing date 1.3.23	Email
15.2.23	Heritage NSW	CB sent Stage 1 agency letter requesting potential stakeholders. Closing date 1.3.23	Email
15.2.23	Narromine LALC	CB sent Stage 1 agency letter requesting potential stakeholders. Closing date 1.3.23	Email
15.2.23	Office of The Registrar, ALRA	CB sent Stage 1 agency letter requesting potential stakeholders. Closing date 1.3.23	Email
15.2.23	National Native Title Tribunal	CB sent Stage 1 agency letter requesting potential stakeholders. Closing date 1.3.23	Email
15.2.23	NTSCORP	CB sent Stage 1 agency letter requesting potential stakeholders. Closing date 1.3.23	Email
15.2.23	Narromine Council	CB sent Stage 1 agency letter requesting potential stakeholders. Closing date 1.3.23	Email
15.2.23	Central West Local Land Services	CB sent Stage 1 agency letter requesting potential stakeholders. Closing date 1.3.23	Email
16.2.23	Gallangabang Aboriginal Corporation	CB received email registered for the Project	Email
16.2.23	Gallangabang Aboriginal Corporation	CB replied with thanks	Email
20.2.23	Girragirra Murun Aboriginal Corporation	CB received email registered for the Project	Email
20.2.23	Girragirra Murun Aboriginal Corporation	CB replied with thanks	Email
21.2.23	Narromine LALC	CB received email registered for the Project	Email
21.2.23	Narromine LALC	CB replied with thanks	Email
28.2.23	Corroboree Aboriginal Corporation	CB sent Stage 1community letter. Closing date 14.3.23	Email
28.2.23	Gomery Cultural Consultants	CB sent Stage 1community letter. Closing date 14.3.23	Email
28.2.23	John Shipp	CB sent Stage 1community letter. Closing date 14.3.23	Post
28.2.23	Narromine LALC	CB sent Stage 1community letter. Closing date 14.3.23	Email
28.2.23	Paul Brydon	CB sent Stage 1community letter. Closing date 14.3.23	Email
28.2.23	Peter Peckham	CB sent Stage 1community letter. Closing date 14.3.23	Email
28.2.23	Timothy Stubbs	CB sent Stage 1community letter. Closing date 14.3.23	Email
28.2.23	Trangie LALC	CB sent Stage 1community letter. Closing date 14.3.23	Email
28.2.23	Trevor Robinson	CB sent Stage 1community letter. Closing date 14.3.23	Post
28.2.23	Warren Macquarie LALC	CB sent Stage 1community letter. Closing date 14.3.23	Email
28.2.23	Wiradjuri Council of Elders	CB sent Stage 1community letter. Closing date 14.3.23	Email
28.2.23	Wiradjuri Interim Working Party	CB sent Stage 1community letter. Closing date 14.3.23	Post
28.2.23	Sonione Wakabut Rogers	CB sent Stage 1community letter. Closing date 14.3.23	Email
28.2.23	Geoffrey Toomey	CB sent Stage 1community letter. Closing date 14.3.23	Email
28.2.23	Wiradjuri Council of Elders	CB received email from Robert Clegg thanking for the information	Email
28.2.23	Thomas Dahlstrom	CB sent Stage 1community letter. Closing date 14.3.23	Email
28.2.23	Timothy Stubbs	CB received email registered for the Project	Email

Consultation Log			
28.2.23	Timothy Stubbs	CB replied with thanks	Email
28.2.23	Nathan Toomey	CB received email registered for the Project	Email
28.2.23	Nathan Toomey	CB replied with thanks	Email
28.2.23	Gomery Cultural Consultants	CB received email registered for the Project	Email
28.2.23	Gomery Cultural Consultants	CB replied with thanks	Email
1.3.23	Paul Brydon	CB received call from Paul registering for the Project	Phone
28.2.23	Sonione Wakabut Rogers	CB received email registered for the Project	Email
28.2.23	Sonione Wakabut Rogers	CB replied with thanks	Email
3.3.23	Thomas Dahlstrom	CB received email registered for the Project	Email
3.3.23	Thomas Dahlstrom	CB replied with thanks	Email
9.3.23	Stakeholder 1	CB received email registered for the Project	Email
9.3.23	Stakeholder 1	CB replied with thanks	Email
9.3.23	Stakeholder 2	CB received email registered for the Project	Email
9.3.23	Stakeholder 2	CB replied with thanks	Email
16.3.23	John Shipp	RTS letter received	Post
30.3.23	Gallangabang Aboriginal Corporation	CB emailed Stage 2 Methodology & letter closing date 2.5.23	Email
30.3.23	Girragirra Murun Aboriginal Corporation	CB emailed Stage 2 Methodology & letter closing date 2.5.23	Email
30.3.23	Narromine LALC	CB emailed Stage 2 Methodology & letter closing date 2.5.23	Email
30.3.23	Tim Stubbs	CB emailed Stage 2 Methodology & letter closing date 2.5.23	Email
30.3.23	Nathan Toomey	CB emailed Stage 2 Methodology & letter closing date 2.5.23	Email
30.3.23	Wiradjuri Council of Elders	CB emailed Stage 2 Methodology & letter closing date 2.5.23	Email
30.3.23	Gomery Cultural Consultants	CB emailed Stage 2 Methodology & letter closing date 2.5.23	Email
30.3.23	Sonione Wakabut Rogers	CB emailed Stage 2 Methodology & letter closing date 2.5.23	Email
30.3.23	Paul Brydon	CB emailed Stage 2 Methodology & letter closing date 2.5.23	Email
30.3.23	Thomas Dahlstrom	CB emailed Stage 2 Methodology & letter closing date 2.5.23	Email
30.3.23	Corroboree Aboriginal Corporation	CB emailed Stage 2 Methodology & letter closing date 2.5.23	Email
30.3.23	Woka Aboriginal Corporation	CB emailed Stage 2 Methodology & letter closing date 2.5.23	Email
30.3.23	Wiradjuri Council of Elders	CB received email from Robert Clegg thanking for the information	Email
31.3.23	Gomery Cultural Consultants	CB received email <i>I agree with, methodology</i>	Email
31.3.23	Gomery Cultural Consultants	CB replied with thanks	Email
1.4.23	Tim Stubbs	CB received email <i>I agree to the points listed and am available for any further fieldwork in the future</i>	Email
1.4.23	Tim Stubbs	CB replied with thanks	Email
28.7.23	Gallangabang Aboriginal Corporation	CB emailed Stage 4 Methodology & letter closing date 25.8.23	Email
28.7.23	Girragirra Murun Aboriginal Corporation	CB emailed Stage 4 Methodology & letter closing date 25.8.23	Email
28.7.23	Narromine LALC	CB emailed Stage 4 Methodology & letter closing date 25.8.23	Email
28.7.23	Tim Stubbs	CB emailed Stage 4 Methodology & letter closing date 25.8.23	Email
28.7.23	Nathan Toomey	CB emailed Stage 4 Methodology & letter closing date 25.8.23	Email
28.7.23	Wiradjuri Council of Elders	CB emailed Stage 4 Methodology & letter closing date 25.8.23	Email
28.7.23	Gomery Cultural Consultants	CB emailed Stage 4 Methodology & letter closing date 25.8.23	Email
28.7.23	Sonione Wakabut Rogers	CB emailed Stage 4 Methodology & letter closing date 25.8.23	Email

Consultation Log			
28.7.23	Paul Brydon	CB emailed Stage 4 Methodology & letter closing date 25.8.23	Email
28.7.23	Thomas Dahlstrom	CB emailed Stage 4 Methodology & letter closing date 25.8.23	Email
28.7.23	Corroboree Aboriginal Corporation	CB emailed Stage 4 Methodology & letter closing date 25.8.23	Email
28.7.23	Woka Aboriginal Corporation	CB emailed Stage 4 Methodology & letter closing date 25.8.23	Email
28.7.23	Nathan Toomey	CB received email - <i>I am happy with the final draft of the assessment report.</i>	Email
2.8.23	Nathan Toomey	CB replied with thanks	Email
28.7.23	Girragirra Murun Aboriginal Corporation	CB received email - <i>This looks good to me</i>	Email
2.8.23	Girragirra Murun Aboriginal Corporation	CB replied with thanks	Email
28.7.23	Gomery Cultural Consultants	CB received email - comments in folder	Email
28.3.25	Gallangabang Aboriginal Corporation	HR emailed project update	Email
28.3.25	Girragirra Murun Aboriginal Corporation	HR emailed project update	Email
28.3.25	Narromine LALC	HR emailed project update	Email
28.3.25	Tim Stubbs	HR emailed project update	Email
28.3.25	Nathan Toomey	HR emailed project update	Email
28.3.25	Wiradjuri Council of Elders	HR emailed project update	Email
28.3.25	Gomery Cultural Consultants	HR emailed project update	Email
28.3.25	Sonione Wakabut Rogers	HR emailed project update	Email
28.3.25	Paul Brydon	HR emailed project update	Email
28.3.25	Thomas Dahlstrom	HR emailed project update	Email
28.3.25	Corroboree Aboriginal Corporation	HR emailed project update	Email
28.3.25	Woka Aboriginal Corporation	HR emailed project update	Email
28.3.25	Wiradjuri Council of Elders	Rob Clegg replied	Email
28.3.25	Thomas Dahlstrom	Thomas Dahlstrom replied	Email
1.4.25	Nathan Toomey	Geoff replied	Email

Appendix 1 Figure 2: Expression of Interest advertisement.

NARROMINE STAR Local News for the Narramine, Trangie & Tomingley region **Thursday, February 16, 2023**

3

Memorial Wall to honour aviation history



Member for Dubbo, Dugald Saunders with Narromine Aviation Museum Chairman Peter Kierath OAM, in the Narromine Aviation Museum. PHOTO: DUBBO ELECTORATE.



Member for Dubbo, Dugald Saunders with Narromine Shire Council deputy mayor Dawn Collins outside the Narromine Aviation Museum. PHOTO: DUBBO ELECTORATE.

LOCAL military history will be eternally memorialised due to a \$136,941 grant received by the Narromine Aviation Museum.

Member for Dubbo, Dugald Saunders recently announced the museum's successful grant application, under the Stronger Country Communities Fund, to build a World War II Air Force memorial wall at the Narromine Aerodrome.

"From May 1940 to May 1944, 2850 pilots went through the RAAF No.5 Elementary Flying Training School at the Narromine Aerodrome – over 20 per cent of all pilots trained in Australia during that period," Mr Saunders said.

"The region is still internationally renowned for its fantastic thermals and is widely considered one of the top three locations in the world for gliding.

"This memorial wall will be a great tribute to the region's military history, and I can't wait to see the finished product!"

Narromine Aviation Museum chairman Peter Kierath OAM is the nephew of flight lieutenant Reginald 'Rusty' Kierath, who was taken prisoner by German forces after an aerial battle over the Tunisian coast.

"My uncle was involved in the 'Great Escape', so that's why it means so much to me," Mr Kierath said.

"We get quite a few visitors who come in saying their uncle or grand-father or great-uncle trained here so, I have no doubt it's going to give us a big uplift in tourism.

"I'm just so pleased that the state government has seen the value in this project," said Mr Kierath.

The wall will be constructed using old English-style red bricks and, when complete, will stand one-metre high with a 30-degree slope.

Mounted along the top will be 38 plaques, honouring all 2850 pilots who trained at the Narromine-based flight training school, including about 16 who died during training, and about 780 pilots who served but never returned home.

CCTV reveals identity of alleged USMC thief

A THIRTY-ONE-YEAR-OLD Dubbo man has been charged with the alleged break-and-enter at Narromine's United Services Memorial Club (USMC).

Police had been called to the scene at USMC on Dandaloo Street at 11.45pm on Tuesday February 7 after security alarms were sounded.

Upon arrival, on-site security informed police that the alleged thief, was still in the building. A police chase then occurred when the suspect fled the scene before being apprehended.

CCTV footage taken from the USMC facilities, however, led police to a property on Temain Street on Wednesday afternoon.

While searching the property, police found a number of items relating to the USMC break-and-enter as well as other recent break-and-enters in the district.

A 31-year-old man was subsequently arrested on-site and taken to Narromine Police Station where he was charged with three offences before being refused bail to appear in Dubbo Court on Thursday.

NarromineStar FOUNDATION SUPPORTERS

A big thank-you to these businesses for their up-front support, helping to bring local news back to the Narromine Shire.





17 Algalah St, Narromine

Great Location - 1013.28 sqm block

- Three bedrooms two with robes
- Front glassed sunroom with tiled flooring
- Modernised bathroom with shower, toilet and vanity and a separate toilet
- Kitchen dining area with vinyl plank like flooring
- Laundry with second toilet
- Sitting room at the back of the home
- Two bay carport with stencil crete flooring and driveway, garage with roller door and work shed
- Small entertainment area

AUCTION: 8th March 11am On Site

Hartin Schute Bell

Jason Hartin 0429 894 334
www.schutebell.com.au/7403219

Kerry Klintworth
Mob: 0400 231 986
Ph: 02 6889 7688

Expression of Interest - Cultural Heritage Management

OzArk Environment and Heritage has been engaged by Edify Energy Pty Ltd (the proponent) to complete an Aboriginal cultural heritage assessment for the proposed 470- hectare Burroway Solar Power Station, located 17.5 kilometres (km) north of Narromine and 27km west of Dubbo, within the Narromine local government area. The project will involve the development of a hybrid solar plus battery energy storage system.

Report and to assist Heritage NSW and the Department of Planning 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 project area, please register your interest to be consulted.

Registrations can be made by post: OzArk PO Box 2069 Dubbo NSW 2830; email: catherine@ozarkehm.com.au or by phoning OzArk on 02 6882 0118. All submissions should be received no later than 2 March 2023.

OzArk is seeking persons or groups who wish to be consulted about the project and this consultation group will assist OzArk and the proponent in the preparation of an Aboriginal Cultural Heritage Assessment

Appendix 1 Figure 3: Stage 1 agency letter (sample)

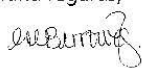
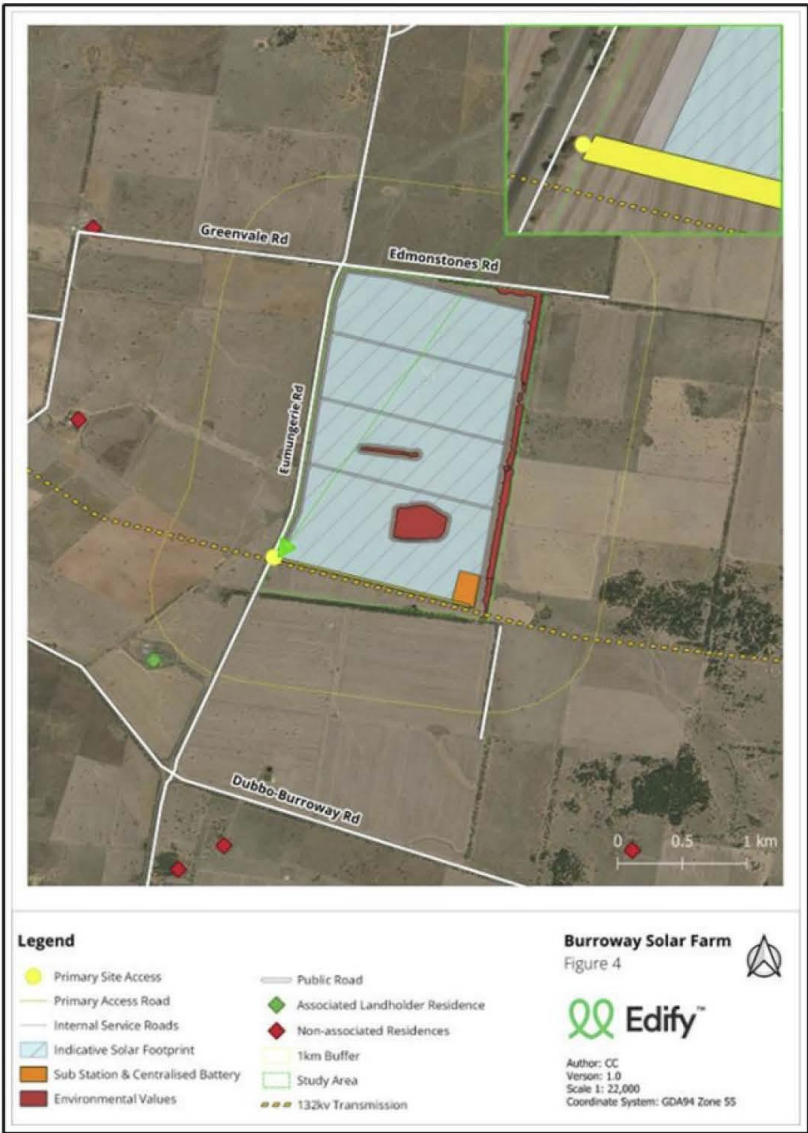
	OzArk Environment & Heritage <u>Head office:</u> Dubbo <u>Satellite offices:</u> Queanbeyan Wollongong Newcastle Brisbane T: 02 6882 0118 enquiry@ozarkehm.com.au www.ozarkehm.com.au	ABN 59 104 582 354 145 Wingewarra St PO Box 2069 DUBBO NSW 2830
15 February 2023 Heritage NSW Department of Premier and Cabinet heritagemailbox@environment.nsw.gov.au Locked Bag 5020, Parramatta NSW 2124		
ABORIGINAL CULTURAL HERITAGE ASSESSMENT BURROWAY SOLAR POWER STATION		
Dear Sir/Madam, OzArk Environment & Heritage (OzArk) has been engaged by Edify Pty Ltd (the proponent) to undertake Aboriginal community consultation as per the <i>Aboriginal cultural heritage consultation requirements for proponents 2010</i> (DECCW 2010). The proponent is proposing to develop a hybrid solar plus battery energy storage system ('solar power station') at Lot 70 DP 1251856, 1955 Eumungerie Road, Burroway located 17.5 kilometres (km) north of central Narromine and approximately 27 km west of Dubbo, within the Central West & Orana Renewable Energy Zone (Figure 1). The project will be located within the Narromine local government area. Site access is available via Eumungerie Road and the study area is approximately 470 hectares (ha). These activities may result in impacts to Aboriginal cultural heritage. We are therefore seeking Expressions of Interest from relevant Aboriginal stakeholder groups and individuals in the area who hold cultural knowledge relevant to determining the significance of Aboriginal objects or places within the Narromine area. This consultation group will assist OzArk in preparing the Aboriginal Cultural Heritage Assessment Report (ACHAR) and to assist Heritage NSW and the Department of Planning and Environment in their consideration and determination 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 above-mentioned project, please advise our office. We would appreciate it if you could provide any feedback, by responding to this email catherine@ozarkehm.com.au, regarding these Aboriginal stakeholder groups by 1 March 2023, or sooner if possible. Kind regards,  Catherine Burrowes Office Manager/ Community Liaison		

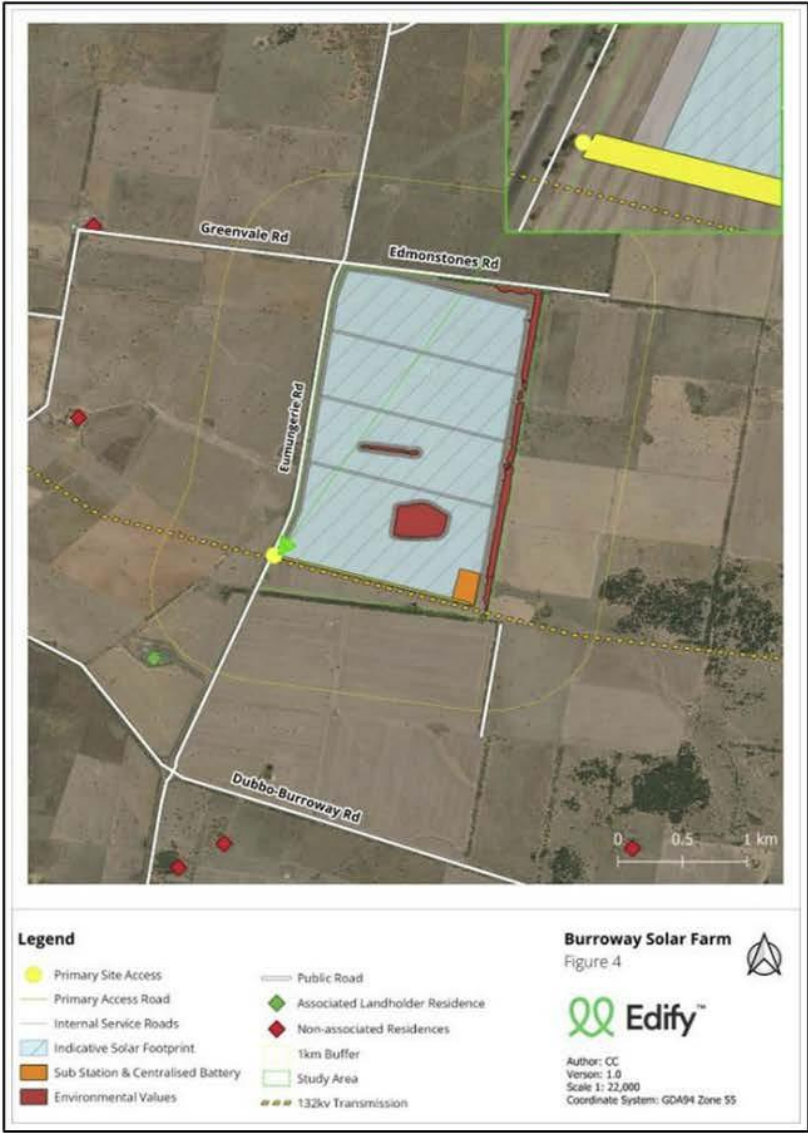
Figure 1: Location map.



Appendix 1 Figure 4: Stage 1 community letter (sample)

	OzArk Environment & Heritage Head office: Dubbo Satellite offices: Queanbeyan Wollongong Newcastle Brisbane 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
28 February 2023 Trangie LALC Chairperson Trangie.lalc@bigpond.com		
ABORIGINAL CULTURAL HERITAGE ASSESSMENT BURROWAY SOLAR POWER STATION		
Dear Sir/Madam, OzArk Environment & Heritage (OzArk) has been engaged by Edify Pty Ltd (the proponent) to undertake Aboriginal community consultation as per the <i>Aboriginal cultural heritage consultation requirements for proponents 2010</i> (DECCW 2010). The proponent is proposing to develop a hybrid solar plus battery energy storage system ('solar power station') at Lot 70 DP 1251856, 1955 Eumungerie Road, Burroway located 17.5 kilometres (km) north of central Narromine and approximately 27 km west of Dubbo, within the Central West & Orana Renewable Energy Zone (Error! Reference source not found.). The project will be located within the Narromine local government area. Site access is available via Eumungerie Road and the study area is approximately 470 hectares (ha). These activities may result in impacts to Aboriginal cultural heritage. We are therefore seeking Expressions of Interest from relevant Aboriginal stakeholder groups and individuals in the area who hold cultural knowledge relevant to determining the significance of Aboriginal objects or places within the Narromine area. This consultation group will assist OzArk in preparing the Aboriginal Cultural Heritage Assessment Report (ACHAR) and to assist Heritage NSW and the Department of Planning and Environment in their consideration and determination 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 on (02) 6882 0118 or responding to this email catherine@ozarkehm.com.au. The closing date for expressions of interest is 14th March 2023. If you wish to register interest it is noteworthy that as per the Heritage NSW guidelines, we are required to provide your details to Heritage NSW and the Local Aboriginal Lands Council unless we are advised that 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.  Catherine Burrowes Office Manager/ Community Liaison		

Figure 1: Location map.



Appendix 1 Figure 5: Stage 2/3 Survey Methodology cover letter (sample)

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

30 March 2023

ABORIGINAL CULTURAL HERITAGE ASSESSMENT
FOR THE PROPOSED BURROWAY SOLAR POWER STATION

Dear Members,

Thank-you for your registration of interest to become a Registered Aboriginal Party (RAP) to be consulted for the proposed Burroway Solar Power Station.

The purpose of this letter is to invite you to comment on the enclosed draft methodology for the Burroway Solar Power Station. The project site is in the Narromine Local Government area.

In addition to comments on the draft methodology, if you can share any Aboriginal cultural heritage knowledge relevant to the proposed project site, we welcome this input so as to improve our assessment outcomes and to ensure Aboriginal cultural values are considered.

OzArk Environment & Heritage is required to give you 28 days to supply feedback on the attached documents. This period closes **5pm on Tuesday 2 May 2023**.

If you need any help supplying feedback or have any queries in relation to the enclosed information, please do not hesitate to contact our office.

Kind regards,



Catherine Burrowes
Community Liaison

Appendix 1 Figure 6: RAP responses to the assessment methodology.

Tim Stubbs

Re: Stage 2- 3 methodology for the Aboriginal Cultural Heritage Assessment : Burroway Solar Power Station

 tim stubbs <tmsbrick@hotmail.com>
To: Catherine Burrowes

Sat 1/04/2023 8:11 AM

Yama Catherine

I agree to the points listed and am available for any further fieldwork in the future

Have a great day and hope to hear from you soon

Kind regards

Tim Stubbs

On 30 Mar 2023, at 4:42 pm, Catherine Burrowes <catherine@ozarkehm.com.au> wrote:

Hello Members,

Please find attached stage 2- 3 methodology for the Aboriginal Cultural Heritage Assessment : Burroway Solar Power Station.

Closing date for methodology feedback is Tuesday 2nd May 2023.

I look forward to hearing from you.

Gomery Cultural Consultants

Re: Stage 2- 3 methodology for the Aboriginal Cultural Heritage Assessment : Burroway Solar Power Station

 Leanne Kirkman <leannekirkman1964@gmail.com>
To: Catherine Burrowes

Thu 30/03/2023 6:43 PM

 image003.jpg
jpg File

I agree with, methodology and to support field surveys and follow-up with test excavation, across areas, to scope of works, find what else is there, thanks David horton gomery cultural consultants any questions ring number provided 0458532707

On Thu, 30 Mar 2023, 4:43 pm Catherine Burrowes, <catherine@ozarkehm.com.au> wrote:

Hello Members,

Please find attached stage 2- 3 methodology for the Aboriginal Cultural Heritage Assessment : Burroway Solar Power Station.

Closing date for methodology feedback is Tuesday 2nd May 2023.

I look forward to hearing from you.

Kind Regards,

Catherine

Wiradjuri Council of Elders

Re: Stage 2- 3 methodology for the Aboriginal Cultural Heritage Assessment : Burroway Solar Power Station

 Robert Clegg <rclegg55@gmail.com>
To: Catherine Burrowes

Thu 30/03/2023 4:45 PM

 image003.jpg
jpg File

Received, thank you.
Rob

On Thu, 30 Mar 2023, 4:43 pm Catherine Burrowes, <catherine@ozarkehm.com.au> wrote:

Hello Members,

Please find attached stage 2- 3 methodology for the Aboriginal Cultural Heritage Assessment : Burroway Solar Power Station.

Closing date for methodology feedback is Tuesday 2nd May 2023.

I look forward to hearing from you.

Kind Regards,

Catherine

Appendix 1 Figure 7: Stage 4 cover letter (sample)

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

28 July 2023

[Redacted Address]

**ABORIGINAL CULTURAL HERITAGE & HISTORIC HERITAGE ASSESSMENT REPORT
BURROWAY SOLAR POWER STATION**

Dear Members,

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

Edify Energy Pty Ltd (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 document. This period closes on the **Friday 25th August 2023**. 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.

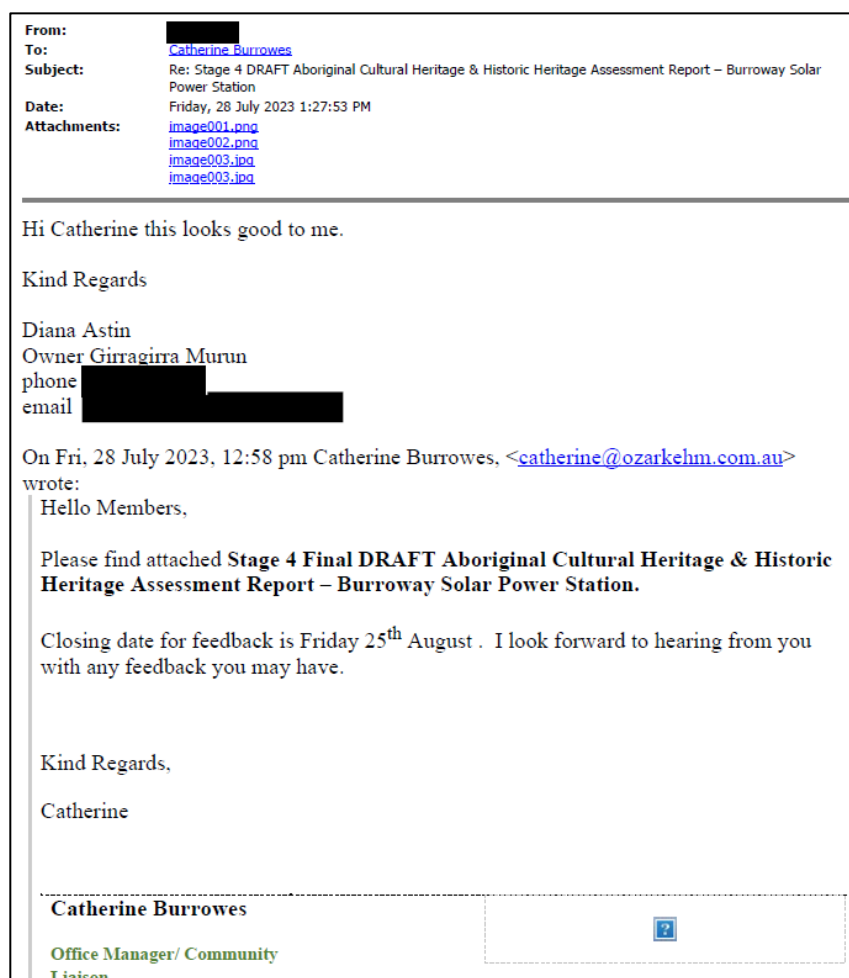
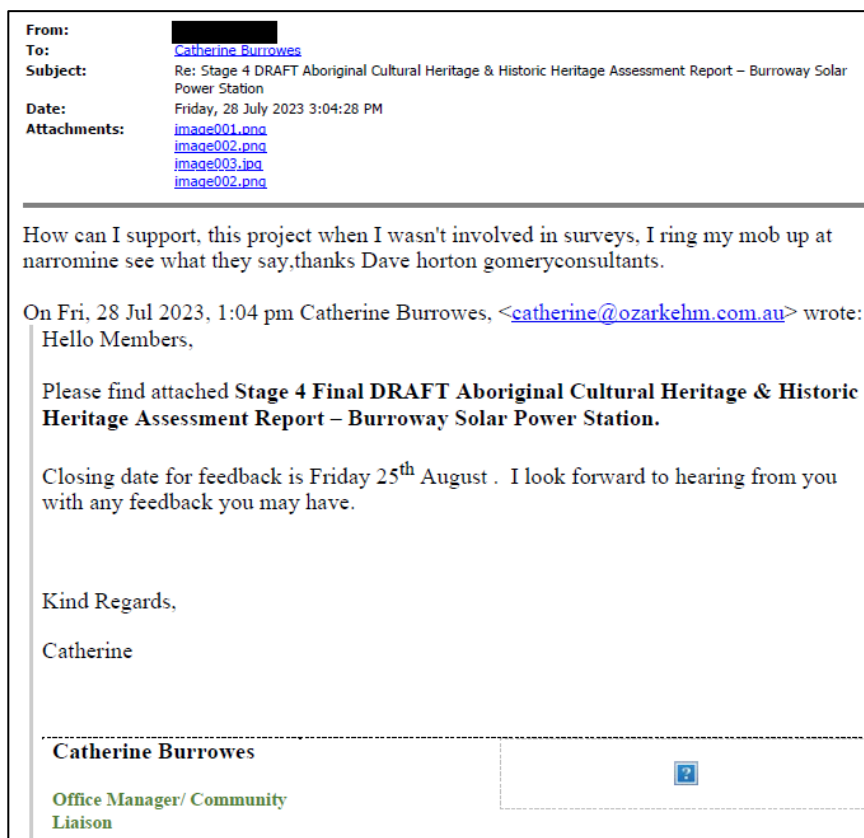
If you need any help supplying feedback or have any queries, please do not hesitate to contact our office.

Kind regards,



Catherine Burrowes
Office Manager/ Community Liaison

Appendix 1 Figure 8: Responses to the draft ACHAR received during Stage 4.



From: [Nathan Toomey](#)
To: [Catherine Burrowes](#)
Subject: Re: Stage 4 DRAFT Aboriginal Cultural Heritage & Historic Heritage Assessment Report – Burroway Solar Power Station
Date: Friday, 28 July 2023 9:15:15 PM
Attachments: [image001.png](#)
[image002.png](#)
[image003.jpg](#)

Hi Catherine,

I am happy with the final draft of the assessment report.

I agree with all of the points in the report, particularly those in regards to salvaging artefacts.

Regards Geoff Toomey

On Fri, 28 Jul 2023, 1:02 pm Catherine Burrowes, <catherine@ozarkehm.com.au> wrote:
Hello Members,

Please find attached **Stage 4 Final DRAFT Aboriginal Cultural Heritage & Historic Heritage Assessment Report – Burroway Solar Power Station**.

Closing date for feedback is Friday 25th August . I look forward to hearing from you with any feedback you may have.

Kind Regards,
Catherine

Catherine Burrowes

Office Manager/ Community
Liaison

From: [REDACTED]
To: [Catherine Burrowes](#)
Subject: Re: Stage 4 DRAFT Aboriginal Cultural Heritage & Historic Heritage Assessment Report – Burroway Solar Power Station
Date: Tuesday, 1 August 2023 6:36:15 PM
Attachments: [image001.png](#)
[image002.png](#)
[image003.jpg](#)

Hi Catherine,

Gallangabang acknowledges these documents.

Regards
Melissa

On ,Fri Jul 28 2023 12:57:47 GMT+1000 (GMT+10:00), Catherine Burrowes <catherine@ozarkehm.com.au> wrote:
----- Original Message -----
Hello Members,

Please find attached **Stage 4 Final DRAFT Aboriginal Cultural Heritage & Historic Heritage Assessment Report – Burroway Solar Power Station**.

Closing date for feedback is Friday 25th August . I look forward to hearing from you with any feedback you may have.

Kind Regards,
Catherine

Appendix 1 Figure 9: Email update to the RAPs May 2025

From: [Harrison Rochford](#)
Bcc: [REDACTED]
Subject: Project update: Burroway Solar Farm
Date: Friday, 28 March 2025 11:49:00 AM
Attachments: [image001.png](#)
[image002.png](#)
[Burroway Solar Farm - updated footprint March 2025.jpg](#)

Good morning all,

This is a brief update regarding Burroway Solar Farm, thank you again for your involvement as a Registered Aboriginal Party for the project. Since the finalisation of the Aboriginal Cultural Heritage Assessment Report (ACHAR) in September 2023, the proponent has made some minor revisions to the development footprint to address required access upgrades. The updated footprint is shown in the attached figure.

A small section (approximately 600 metres) of Burroway Road is now within the development footprint but was not part of the study area at the time of survey. The works at this location will comprise the widening of the road surface by a few metres and the upgrade of the existing track surface at the gates to the paddock. No clearing or undisturbed land is included in the expanded development footprint.

While we feel that the level of survey completed for the project was very high and the assessment has accurately covered the landforms of the study area and updated footprint, OzArk will survey the additional area at our earliest convenience. The ACHAR will be updated with the development footprint and a new version will be supplied to you next week.

Please contact me for any further information on this.

All best,
 Harrison

Harrison Rochford

Archaeologist

0414 997 400



OzArk Environment & Heritage
 PO Box 2069 DUBBO 2830
 02 6882 0118
harrison@ozarkehm.com.au
www.ozarkehm.com.au



OzArk and staff respectfully acknowledge the traditional custodians and Elders of the Country on which we work.

LEGAL DISCLAIMER. The contents of this electronic communication and any attached documents are strictly confidential and they may not be used or disclosed by someone who is not a named recipient. If you have received this electronic communication in error please notify the sender by replying to this electronic communication inserting the word "misdirected" as the subject and delete this communication from your system. The recipient agrees not to disclose the confidential information obtained from the discloser to anyone unless required to do so by law.

Appendix 1 Figure 10: RAP responses to update email April 2025

From: [Robert Clegg](#)
To: [Harrison Rochford](#)
Subject: Re: Project update: Burroway Solar Farm
Date: Friday, 28 March 2025 11:56:50 AM
Attachments: [image001.png](#)
[image002.png](#)
[image002.png](#)
[image001.png](#)

That's great, thanks for the update Harrison.
Rob

On Fri, Mar 28, 2025, 11:49 AM Harrison Rochford <harrison@ozarkehm.com.au> wrote:

Good morning all,

This is a brief update regarding Burroway Solar Farm, thank you again for your involvement as a Registered Aboriginal Party for the project. Since the finalisation of the Aboriginal Cultural Heritage Assessment Report (ACHAR) in September 2023, the proponent has made some minor revisions to the development footprint to address required access upgrades. The updated footprint is shown in the attached figure.

A small section (approximately 600 metres) of Burroway Road is now within the development footprint but was not part of the study area at the time of survey. The works at this location will comprise the widening of the road surface by a few metres and the upgrade of the existing track surface at the gates to the paddock. No clearing or undisturbed land is included in the expanded development footprint.

While we feel that the level of survey completed for the project was very high and the assessment has accurately covered the landforms of the study area and updated footprint, OzArk will survey the additional area at our earliest convenience. The ACHAR will be updated with the development footprint and a new version will be supplied to you next week.

Please contact me for any further information on this.

All best,

Harrison

Harrison Rochford

From: [Thomas Dahlstrom](#)
To: [Harrison Rochford](#)
Subject: Re: Project update: Burroway Solar Farm
Date: Friday, 28 March 2025 11:59:35 AM

No worries let me know when you are doing the extra survey as I would like to be apart of it.

Thank you

Sent from my iPhone

On 28 Mar 2025, at 11:50 am, Harrison Rochford <harrison@ozarkehm.com.au> wrote:

Good morning all,

This is a brief update regarding Burroway Solar Farm, thank you again for your involvement as a Registered Aboriginal Party for the project. Since the finalisation of the Aboriginal Cultural Heritage Assessment Report (ACHAR) in September 2023, the proponent has made some minor revisions to the development footprint to address required access upgrades. The updated footprint is shown in the attached figure.

A small section (approximately 600 metres) of Burroway Road is now within the development footprint but was not part of the study area at the time of survey. The works at this location will comprise the widening of the road surface by a few metres and the upgrade of the existing track surface at the gates to the paddock. No clearing or undisturbed land is included in the expanded development footprint.

While we feel that the level of survey completed for the project was very high and the assessment has accurately covered the landforms of the study area and updated footprint, OzArk will survey the additional area at our earliest convenience. The ACHAR will be updated with the development footprint and a new version will be supplied to you next week.

Please contact me for any further information on this.

All best,
Harrison

Harrison Rochford <[image001.png](#)>

Archaeologist

0414 997 400

<[image002.png](#)>

OzArk Environment & Heritage
PO Box 2069 DUBBO 2830

<[image003.jpg](#)>

From: [Nathan Toomey](#)
To: [Harrison Rochford](#)
Subject: Re: Project update: Burroway Solar Farm
Date: Tuesday, 1 April 2025 12:45:05 PM
Attachments: [image001.png](#)
[image002.png](#)

Hans Solo!!

Keep me updated bro.

Cheers,

Geoff.

On Fri, 28 Mar 2025 at 11:49 am, Harrison Rochford <harrison@ozarkehm.com.au> wrote:

Good morning all,

This is a brief update regarding Burroway Solar Farm, thank you again for your involvement as a Registered Aboriginal Party for the project. Since the finalisation of the Aboriginal Cultural Heritage Assessment Report (ACHAR) in September 2023, the proponent has made some minor revisions to the development footprint to address required access upgrades. The updated footprint is shown in the attached figure.

A small section (approximately 600 metres) of Burroway Road is now within the development footprint but was not part of the study area at the time of survey. The works at this location will comprise the widening of the road surface by a few metres and the upgrade of the existing track surface at the gates to the paddock. No clearing or undisturbed land is included in the expanded development footprint.

While we feel that the level of survey completed for the project was very high and the assessment has accurately covered the landforms of the study area and updated footprint, OzArk will survey the additional area at our earliest convenience. The ACHAR will be updated with the development footprint and a new version will be supplied to you next week.

Please contact me for any further information on this.

APPENDIX 2: ASSESSMENT METHODOLOGY



ABORIGINAL CULTURAL HERITAGE ASSESSMENT METHODOLOGY

BURROWAY SOLAR POWER STATION

NARROMINE LOCAL GOVERNMENT AREA, NSW

MARCH 2023

Report prepared by
OzArk Environment & Heritage
for Edify Energy Pty Ltd



OzArk Environment & Heritage

145 Wingewarra St
(PO Box 2069)
Dubbo NSW 2830

Phone: (02) 6882 0118
Fax: (02) 6882 0630
enquiry@ozarkehm.com.au
www.ozarkehm.com.au

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DOCUMENT CONTROLS

Proponent	Edify Energy Pty Ltd		
Document Description	Burroway Solar Power Station Aboriginal Cultural Heritage Assessment Methodology Report.		
File Location	OzArk Job No.		
Client\Edify\Burroway Solar Power Heritage Jan 2023\Assessment Methodology	3767		
Document Status: V2.0 DRAFT		Date: 16 March 2023	
Draft V1: OzArk internal edits		V1.0 EM author7/3/23 V1.1 BC edit 16/3/23 V1.2 EM edit 16/3/23	
Draft V2: OzArk and client edits		V2.0 OzArk to client 16/3/23	
Final V3: Final document			
Prepared for		Prepared by	
Alyx Vandermast Project Development Manager Edify Energy L 1 33-35 Palmer Street South Townsville QLD 4810 M: 0488 059 812 Alyx.Vandermast@edifyenergy.com		Eleanore Martin Archaeologist OzArk Environment & Heritage 145 Wingewarra Street (PO Box 2069) Dubbo NSW 2830 P: 02 6882 0118 Eleanore@ozarkehm.com.au	
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Enquiries should be addressed to OzArk Environment & Heritage.			

Acknowledgement

OzArk acknowledge the traditional custodians of the area on which this assessment will take 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.

CONTENTS

1	INTRODUCTION	5
1.1	Preamble	5
1.2	Project Area	5
1.3	Project overview	5
1.4	Consultation on this methodology	10
1.5	Landscape characteristics of the Project Area	10
2	CULTURAL VALUES.....	14
2.1	Introduction to cultural values	14
2.1.1	Connection to Country	14
2.1.2	Managing Country	15
2.1.3	Recognising lore	15
2.2	Identifying cultural values	15
2.2.1	Use of information collected.....	16
2.2.2	Public / confidential information	16
2.2.3	Copyright	16
3	ARCHAEOLOGICAL CONTEXT	17
3.1	Aboriginal people of the Project Area	17
3.2	Regional archaeological context	17
3.2.1	PhD thesis – changing land use and settlement patterns in the upper Macquarie River region of NSW from prehistoric times to 1860 (Pearson 1981)	17
3.2.2	Tomingley Gold Project (OzArk 2011).....	18
3.2.3	132kV powerline: West Dubbo Substation to Narromine Substation (OzArk 2012)	19
3.2.4	Central West Local Land Services Study (OzArk 2016)	19
3.2.5	Inland Rail Narromine to Narrabri (Jacobs 2020)	21
3.2.6	Regional archaeological context: summary	21
3.3	Local archaeological context.....	22
3.3.1	Archaeological investigations near the Project Area.....	25
3.3.1.1	Gilgandra CBD Project Stage II (OzArk 2018)	25
3.3.1.2	Proposed Poultry Farm and Processing Facilities, 1997 Backwater Road (OzArk 2007)	25
3.3.1.3	Lot 16, 17, 232 and 233 DP 755131 and Lot 1 DP1198931 Site Suitability Assessment (OzArk 2021)	25

3.3.1.4	Mitchell Highway – Dubbo to Narromine Curves 3 and 8 (OzArk 2022).....	26
3.3.1.5	Lot 21, DP1077442, 1225 Eumungerie Road, Burroway, NSW (OzArk 2014).....	26
3.4	Archaeological context: Conclusion	26
4	PREDICTIVE MODEL	27
4.1	Landform modelling	27
4.2	Predictive model for the Project Area	29
4.2.1	Site types in the region of the Project Area	29
4.2.2	Landform modelling of archaeological potential	30
4.2.3	Conclusion	30
4.3	Research questions	31
5	SURVEY METHODOLOGY	32
5.1	Assessment approach	32
5.2	Survey aims	32
5.3	Survey methodology	32
5.4	Test excavation.....	33
	REFERENCES	34

FIGURES

Figure 1-1: Location of the Project Area	7
Figure 1-2: Aerial of the Project Area	8
Figure 1-3: Aerial of the proposed Project components.....	9
Figure 1-4: Topography and drainage of the Project Area	12
Figure 1-5: 1972 aerial with overlay of Project Area (source: SS 2023).....	13
Figure 3-1: AHIMS sites in relation to the Project Area.....	24
Figure 4-1: Landforms within the Project Area.....	28

TABLES

Table 3-1: Association of all recorded sites to landscape units (OzArk 2016).....	21
Table 3-2: Frequency of site types in association with landscape types (OzArk 2016).	21
Table 3-3: AHIMS site types and frequencies	23
Table 4-1: Site types recorded in the region of the Project Area.....	29
Table 4-2: Likelihood of landforms within the Project Area to contain Aboriginal objects.	30
Table 4-3: Likelihood of certain site types being present in the Project Area.	31

1 INTRODUCTION

1.1 PREMABLE

OzArk Environment & Heritage (OzArk) has been engaged by Edify Energy Pty Ltd (the proponent) to prepare an assessment methodology for the proposed Burroway Solar Power Station (the Project).

The Project is located 17.5 kilometres (km) north of central Narromine and approximately 27 km west of Dubbo, within the Central West and Orana Renewable Energy Zone (**Figure 1-1**). The Project is within the Narromine Shire Council Local Government Area.

This methodology is in accordance with Stage 3 of the *Aboriginal Cultural Heritage Consultation Requirements for Proponents 2010* (ACHCRs; DECCW 2010b). The Project information provided here also complies with Stage 2 of the ACHCRs.

The investigation set out in this methodology aims to identify Aboriginal cultural values, both tangible and intangible, that exist in the Project Area. The results of this investigation will be presented in an *Aboriginal Cultural Heritage Assessment Report* (ACHAR).

1.2 PROJECT AREA

The Project Area describes the area in which all impacts associated with the Project will be located (**Figure 1-2**). The Project Area covers approximately 470 hectares (ha) at Lot 70 DP1251856, 1955 Eumungerie Road in Burroway NSW. The land is currently zoned RU1 – Primary Production and consists of flat, intermittently cropped terrain that has been mostly cleared of vegetation. The vegetation that remains appears to be clustered around boundaries of the Project Area and two moderately dense clusters remain in the centre and south-eastern corner of the Project Area. There are three dams, one in the centre towards the northern boundary, one in the north-western corner, and one in the south-western corner of the Project Area. In the south of the Project Area is an overhead 132 kilovolt (kV) transmission line owned by Essential Energy.

1.3 PROJECT OVERVIEW

The proposed solar power station has a projected capacity of 100 megawatts (MW) solar photovoltaic (PV) generation, with an estimated 100 MW / 400 MW per hour energy storage capacity. The proposed solar power station will consist of the following:

- PV solar panels
- Battery Energy Storage System/s (BESS)
- Tracking system
- Piled foundations

- DC/AC Inverter stations
- Internal access tracks
- Underground medium voltage network
- Administration and amenities building
- Vehicle car park
- Security fencing
- A high voltage substation.

Figure 1-3 shows the proposed components of the solar power station. Additionally, it is understood that the facility substation will connect to the existing transmission line which extends west to east through the south of the Project Area. The Project Area will be accessible via Eumungerie Road from near the south-western corner.

Figure 1-1: Location of the Project Area.

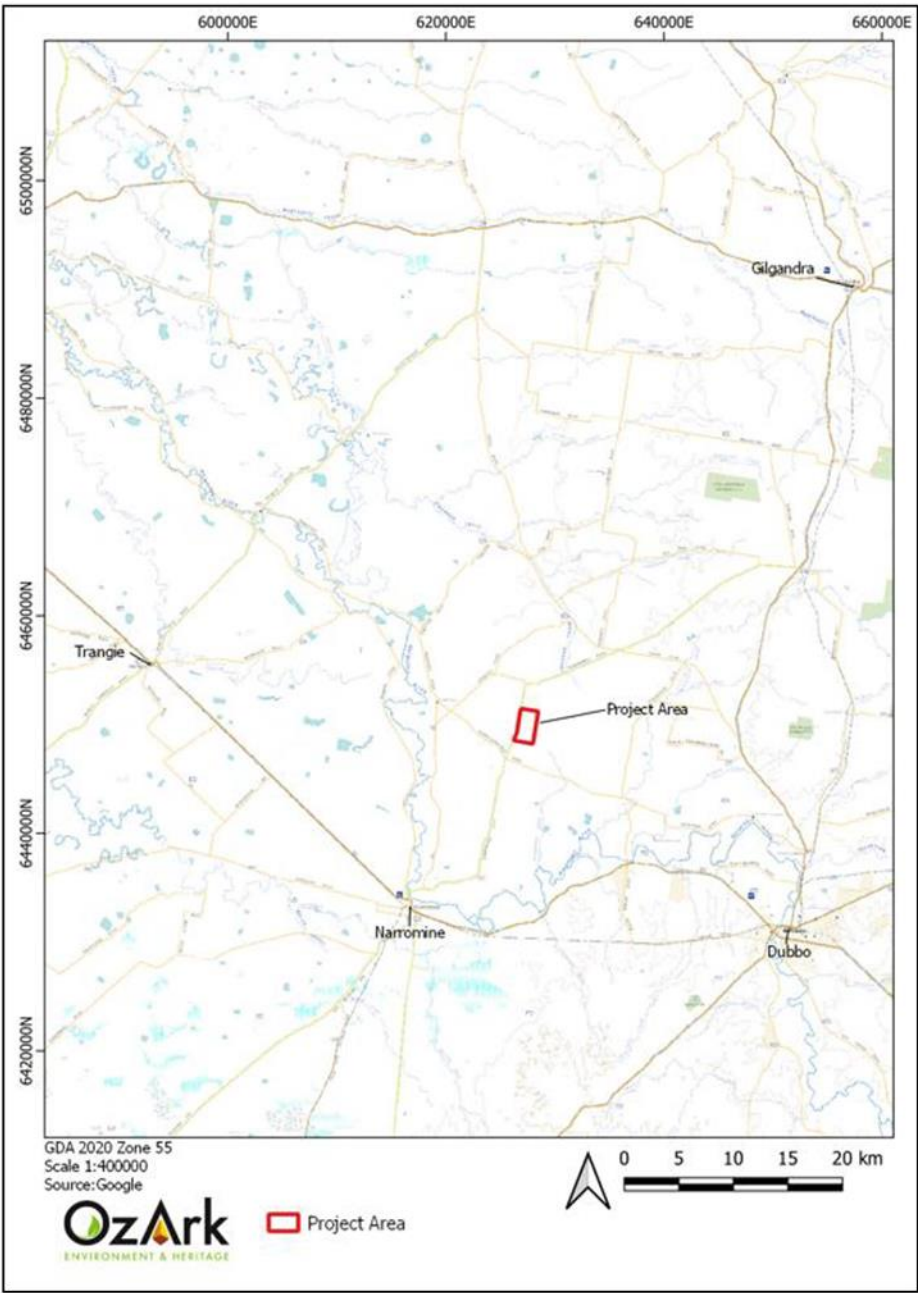


Figure 1-2: Aerial of the Project Area.

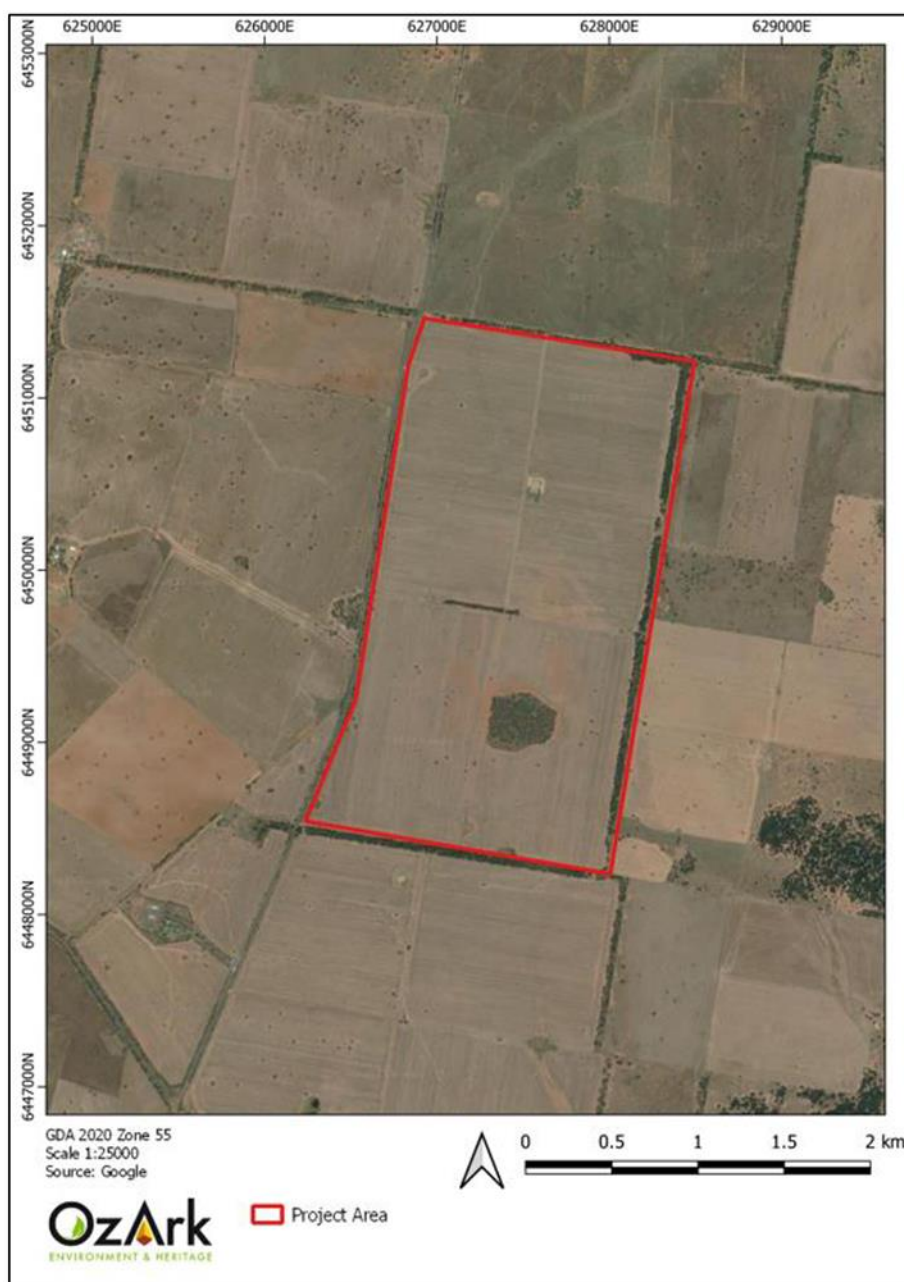
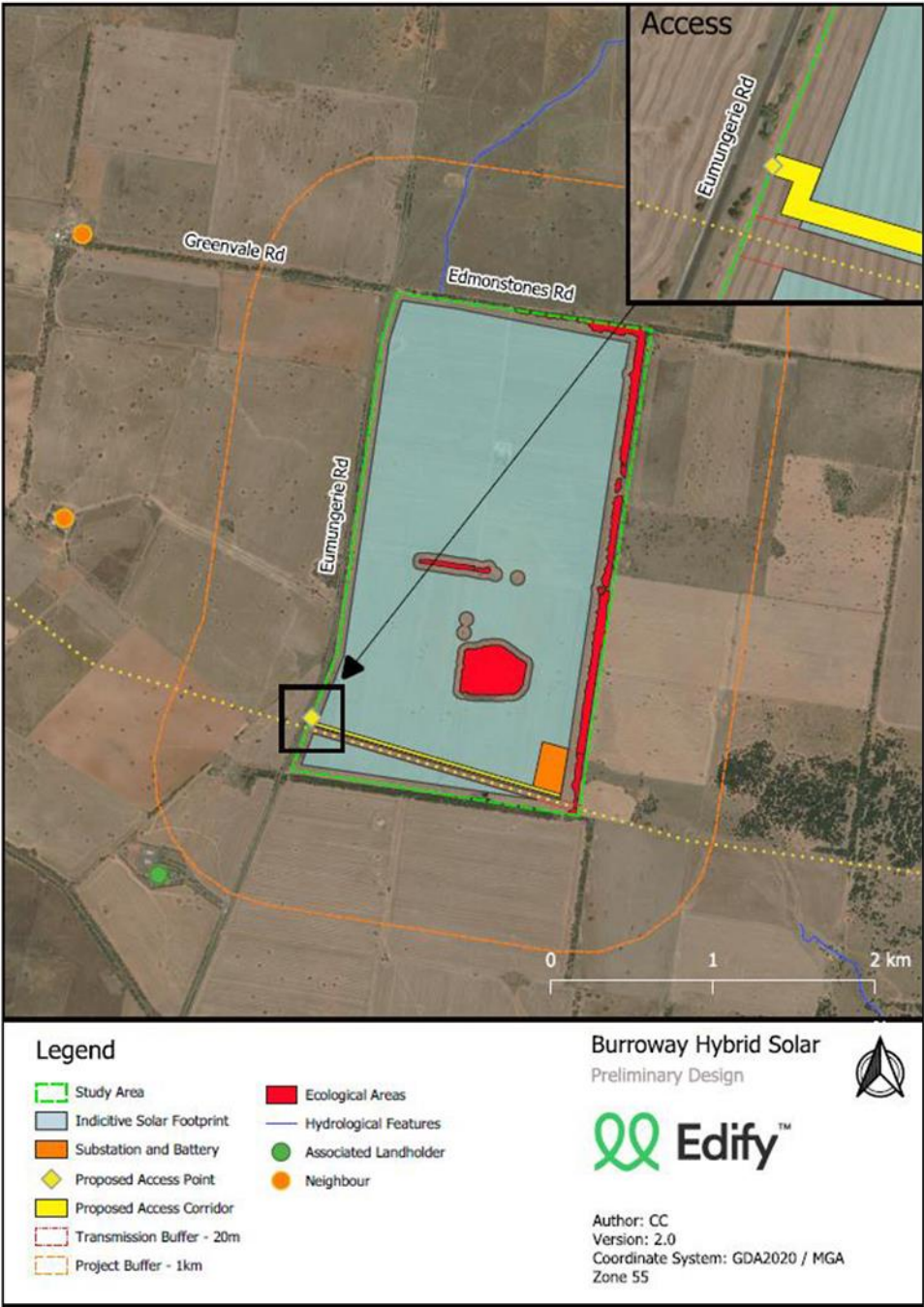


Figure 1-3: Aerial of the proposed Project components.



1.4 CONSULTATION ON THIS METHODOLOGY

Consultation for this Project has followed the guidelines established in the ACHCRs (DECCW 2010b) 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 16 February 2023 an advertisement was placed in the *Narromine Star* requesting expressions of interest in being consulted about the Project. In addition, the following agencies were contacted to identify potential stakeholders for the area: the Central West Local Land Services; Heritage NSW; the Narromine Council; the Narromine Local Aboriginal Land Council (LALC); Native Title Services Corporation Limited (NTSCORP); the Office of The Registrar, *Aboriginal Land Rights Act 1983*; the National Native Title Tribunal; and the Trangie Local Aboriginal Land Council.

As a result, the following individuals/groups registered to be consulted about the Project:

- Girragirra Murun Aboriginal Corporation
- Gallanggabang Aboriginal Corporation
- Gomery Cultural Consultants
- Narromine LALC
- Nathan Toomey
- Wiradjuri Council of Elders
- Sonione Wakabut Rogers
- Thomas Dahlstrom
- Tim Stubbs
- Paul Brydon
- Stakeholder 1
- Stakeholder 2

Individuals or groups who did not wish to be identified are listed as 'Stakeholder 1' etc.

1.5 LANDSCAPE CHARACTERISTICS OF THE PROJECT AREA

The Project Area is located at the south-eastern edge of the Brigalow Belt South, specifically, the Pilliga sub-region. The Brigalow Belt South bioregion extends from the mid-Queensland coast to South of Dubbo. Most of the Project Area is within the Pilliga Goonoo Slopes landscape, with a portion of the southern area situated within the Upper Darling Bogan – Macquarie, Macquarie Alluvial Plains landscape as characterised by Mitchell (2002).

The Pilliga Goonoo Slopes landscape type is characterised by extensive undulating to stepped low hills with long slopes (Mitchell 2002:13). This landscape type has a general elevation of 300 to 500 metres (m) (Mitchell 2002:13). Meanwhile, the Macquarie Alluvial Plains landscape type is characterised by fluvial sediments of backplain facies of the Marra Creek Formation associated with the Macquarie River (Mitchell 2002:51). The topography of the Project Area is primarily cleared, moderately flat terrain, with an elevation of approximately 250 m (Figure 1-4).

The soils within the Project Area consist primarily of chromosols, specifically red-brown chromosols. This particular red-brown variation of the chromosol soil type is found in well-drained areas and are characterised by a significant increase in clay content between the topsoil and subsoil. This soil type has a moderate water-retention capacity and is susceptible to erosion.

The Project Area contains two clusters of mature vegetation in the centre and around the perimeter. Although, it is noted that protective measures have been taken and these areas of mature vegetation have been excluded from the Project. Examination of the aerial imagery (see Figure 1-2) shows that the remainder of the Project Area has been cleared and consists primarily of ploughed soils, grasses, and scattered trees.

The Macquarie (*Wambuul*) River is the closest permanent named watercourse. The Macquarie (*Wambuul*) River is located approximately 8 km to the west of the Project Area and turns approximately 14 km south of the Project Area, heading east towards Terramungamine. Several non-perennial creeks and unnamed watercourses surround the Project Area; however, none are situated within or intersect the Project Area. The closest waters include a minor non-perennial watercourse situated approximately 250 m from the northern boundary of the Project Area (Figure 1-4).

The Project Area is used primarily for grazing and cropping purposes. Disturbances within the Project Area appear to be limited to ploughing and agriculture infrastructure, such as fence lines, dams, and unsealed tracks. An aerial from 1972 which covers most of the Project Area shows there has been little change in terms of land use over the past 51 years (Figure 1-5).

Figure 1-4: Topography and drainage of the Project Area.

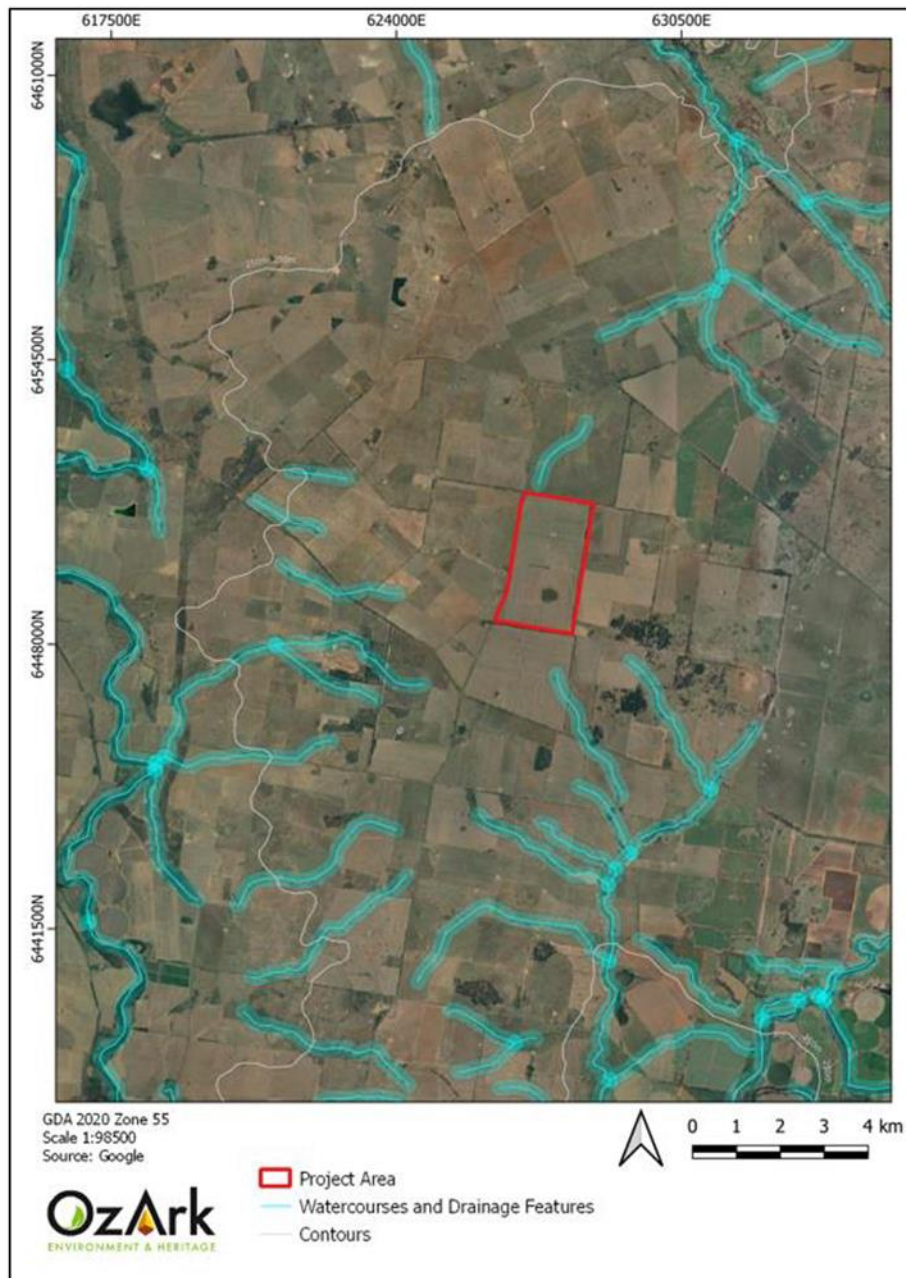


Figure 1-5: 1972 aerial with overlay of Project Area (source: SS 2023).



2 CULTURAL VALUES

2.1 INTRODUCTION TO CULTURAL VALUES

No matter who you are, we all have culture. Each person's culture is important; it's part of what makes us who we are.

australianstogether.org.au

Many Aboriginal people in Australia have a unique view of the world that's distinct from the mainstream. Land, family, law, ceremony, and language are five key interconnected elements of Aboriginal culture. For example, families are connected to the land through the kinship system, and this connection to land comes with specific roles and responsibilities which are enshrined in the law and observed through ceremony. In this way, the five elements combine to create a way of seeing and being in the world that is distinctly Aboriginal.

Fundamentally, culture is living and is not static:

- Culture is acquired - we learn about culture from others in our community, including our parents.
- Culture is shared - culture does not exist in a vacuum, it is shared amongst a group of people.
- Culture defines core values - because we have been taught our culture and share it with our cultural group, we tend to form the same core values.
- Cultures resist change but are not static - culture does and can change, but change is usually slow and gradual.

2.1.1 Connection to Country

Aboriginal and Torres Strait Islander peoples are connected to Country through lines of descent (paternal and maternal), as well as clan and language groups.

Although in the past (and sometimes into the present) there have been conflicts between different tribal groups, these were rarely over land. Aboriginal and Torres Strait Islander people have such a strong sense of belonging to country; they have no desire to own the land of others.

Territory is defined by spiritual as well as physical links. Landforms have deep meaning, recorded in art, stories, songs, and dance. Songlines or Dreaming Tracks as well as kinship structures link Aboriginal peoples to the territories of other groups. In the past, these links were also used for trade.

"When we say Country we might mean homeland, or tribal or clan area and in saying so we may mean something more than just a place; somewhere on the map. We are not necessarily referring to place in a geographical sense. But we are talking about the whole of the landscape, not just the places on it."

Professor Mick Dodson AM, August 2007

2.1.2 Managing Country

Living on this land for around 50,000 years, Aboriginal and Torres Strait Islanders established effective ways to use and sustain resources. One important aspect is the right of certain people to control the use of resources in a particular area. Aboriginal and Torres Strait Islander people don't see themselves as 'owning' land, animals, plants, or nature, but rather belonging with these things as equal parts of creation.

The rights of different groups to live in and manage certain areas of land are clear and recorded through art, stories, songs, and dance.

Deep cultural and spiritual values like totemism have also played an important part in Aboriginal and Torres Strait Islander resource management. Totemism is a belief and value system that connects human beings to other animals, plants, and aspects of nature. Groups and individuals are assigned a particular animal that they are related to and must care for. This gives them a profound sense of connection to and responsibility for the natural world.

Aboriginal and Torres Strait Islanders people have a wide range of traditional methods for gathering food including fish traps, subsistence agriculture, hunting and harvesting a wide range of natural fruits and vegetables. Some groups of people would stay in one place, while others moved around the land according to the seasons, to ensure sustainable and rich food supplies, and to fulfil their spiritual and cultural obligations.

Even before 1788 there were complex relationships for long distance trade between Aboriginal and Torres Strait Islander communities especially for coastal shells and stone hatchets. When people from different groups met socially to share resources, for ceremonies or to settle disputes, they brought items to exchange. Items included stones for hatchets, kangaroo skins, timber for spears, ochre or clay for paint and marine shells for decoration. The exchange of objects was not motivated by a desire for wealth accumulation but a social system to build connection between people and groups.

2.1.3 Recognising lore

In much of eastern Australia, Aboriginal communities live their lives like most Australians. However, in certain crucial areas, particularly associated with family, leadership roles, and caring for Country, Aboriginal lore continues, even in the most urbanised communities.

2.2 IDENTIFYING CULTURAL VALUES

A major aim of this assessment is to identify any cultural values within the landscape in which the Project is located so that those values can be recognised and incorporated into the ACHAR's management recommendations.

Any cultural values relating to the Project area will be captured by the OzArk archaeologists (if such information is provided by RAPs during the survey) and included in the ACHAR.

Understanding cultural landscapes can only come from the views of a particular community, in this case, the Aboriginal community. Unless informed, OzArk will not know of the community's feelings towards the cultural landscape in which the project will be located. Should any RAPs have knowledge of cultural values regarding the ProjectProject Area that they wish to share or that may affect the survey methodology set out in **Section 5**, OzArk invites them to contact us so that these values can be recorded and/or responded to in the methodology.

2.2.1 Use of information collected

An ACHAR will be prepared for the project which articulates Aboriginal cultural values and associated conservation methods across the Project area, as identified during the consultations. The ACHAR will be circulated to all RAPs for comment as is set out in the ACHCRs. The ACHAR will be available to Heritage NSW for their consideration of the Project and the report will be publicly available.

2.2.2 Public / confidential information

Information will be treated in accordance with instructions received by Aboriginal informants. Information described as confidential (culturally sensitive) will not be detailed in the publicly available report. Confidential information should be made available to the proponent, its heritage consultants, and Heritage NSW so that significant cultural values can be conserved. On advice from the provider of the information, a redacted ACHAR would be made available to the wider public where any sensitive cultural information is removed.

2.2.3 Copyright

Information collected for this assessment remains the property of the Aboriginal informants and the author. Without written permission from individual informants and the author information may not be used for purposes other than those outlined above.

3 ARCHAEOLOGICAL CONTEXT

3.1 ABORIGINAL PEOPLE OF THE PROJECT AREA

According to Horton (1994) and Tindale's (1974) mapping of linguistic groups, the Project Area is located within the central northern-most extent of Wiradjuri territory. 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; Horton 1996). While the area was noted to have a single basic language, various dialects could be found throughout the region (Tindale 2000). The Project Area is located within the central tablelands and on the eastern margin of the Wiradjuri territory.

In some portions of Wiradjuri Country, such as around Bathurst and Mudgee, clans were organised according to matrilineal descent (Navin Officer 2005:48). Clans were made up of several 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.

3.2 REGIONAL ARCHAEOLOGICAL CONTEXT

The Aboriginal occupation of Australia begins prior to 50,000 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 and poor preservation of archaeological materials (particularly dateable organic materials).

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

3.2.1 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 some topographic similarities to the Project 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.

3.2.2 Tomingley Gold Project (OzArk 2011)

OzArk completed an archaeological assessment for the Tomingley Gold Project in 2011. The assessment area encompassed 776 ha at Tomingley and a visual inspection of the area covered a further 46 km pipeline extending from the area and another 20 km electricity transmission line extending to Peak Hill. The landform covered in the assessment was flat and relatively low-lying. Similar to the Project Area, most of the nearby watercourses were temporary and some flowed into the Macquarie (*Wambuul*) River.

A visual inspection of the assessment area recorded 60 Aboriginal sites. These Aboriginal sites included the following:

- 54 of which were culturally modified trees (43 scarred, nine possibly scarred, one resource gathering, and one carved).
- Three artefact scatters (one with an associated potential archaeological deposit [PAD])
- Two isolated finds
- One ceremonial / dreaming site.

Targeted test excavations of specific locations within the assessment were completed following the visual inspection. Major findings of the test excavation included:

- The lithic assemblage of the excavation consists of a total of 121 artefacts. One hammer stone was recorded, along with several cores
- No archaeological stratification was noted in any of the excavation pits
- Artefact densities ranged from medium to very low across the excavation area with maximum densities of 27.2 artefacts per cubic metre of excavated material
- The excavation assemblage is dominated by quartz with 71.1% of all excavated artefacts of this material. The other dominant raw material used was chert with 14% of the artefacts

being from this material. The remaining 14.9% of material came from a mix of silcrete, rhyolite, mudstone, and other fine-grained siliceous materials

- In most cases, the artefacts recorded in the excavations came from Spit 1 (0–20 centimetres [cm]) with a few artefacts from spits 2 and 3. Therefore it is evident that most of the material was concentrated close to the surface
- None of the test excavation squares excavated at site TWNP-OS1 displayed evidence of a complex site features. No features were recorded from the excavations
- The test excavation program established that site NTWP-OS1 with PAD has, at its eastern margins, a low artefact density, shallow deposits and a high likelihood of prior disturbance.

The sites recorded during the survey were consistent with the predictive model. The largest open site (TNWP-OS1 with PAD), which displayed a diversity of raw material and artefact types, was identified close to the Macquarie (*Wambuu*) River, while smaller sites (TGP-OS1 and OS2) were identified adjacent to the area thought to have been a spring at Tomingley in prehistory. Aboriginal modified trees were most prevalent in locations close to drainage features, with between 60% and 63% recorded within 100 m of drainage features or water sources.

The high frequency of scarred trees was unexpected, comprising 90% of recorded sites. This predominance was thought to reflect the practise of maintaining remnant, almost unmodified, roadside vegetation corridors and wind breaks along property fence lines. The frequency of modified trees (scarred, carved, boundary markers, and women's birthing trees) indicates both significant use of the practice of scarring, as well as providing evidence of a densely occupied area, at least in the last 500 years.

3.2.3 132kV powerline: West Dubbo Substation to Narromine Substation (OzArk 2012)

OzArk (2012) undertook an Aboriginal cultural heritage assessment for a proposed 132kV powerline between West Dubbo substation and Narromine substation. Ten previously unrecorded sites were identified within or near the powerline easement. Three were artefact scatters containing quartz, quartzite, mudstone, rhyolite, and silcrete artefacts, as well as lithic debitage. Two of these sites were assessed as containing PAD. All three sites were located adjacent to waterways: one on the bank of the Macquarie (*Wambuu*) River and the other two on terraces adjacent to ephemeral drainage lines. Seven scarred trees were also recorded during the assessment, mostly on box trees located close to the Macquarie (*Wambuu*) River.

3.2.4 Central West Local Land Services Study (OzArk 2016)

In 2016, OzArk was engaged by the Central West Local Land Services (CWLLS) to formulate and test a predictive model for Aboriginal site location within Travelling Stock Reserves (TSRs) across the CWLLS area. In formulating a predictive model for site location, Mitchell (2002) landscapes were used to understand the underlying landform type. The resolution of the Mitchell

landscape units was too fine to be of use and OzArk (2016) used a higher-level classification within the Mitchell landscape units to describe the landscapes within the CWLLS area. Landscapes were divided into the following types:

- Channels and floodplains
- Alluvial plains
- Slopes
- Uplands
- Downs.

Previously recorded AHIMS sites were plotted against these landscape types and the following observations made:

- A high number of sites (n=876) were located within Slopes landscapes. However, this result could be because Dubbo is located within a Slopes landscape and the highest number of sites in the CWLLS area is recorded in and around Dubbo.
- The highest density of sites is within Channels and Floodplains landscapes (n=927).
- Alluvial Plains landscapes have the third highest density of sites (n=770).
- Relatively small numbers of sites are recorded in Uplands (n=5) and Plateau (n=34) landscapes.
- A moderate number of sites are recorded in Downs landscapes (n=255). Three or four clusters of sites exist in Downs landscapes, which may have skewed the data. If the veracity of all site recordings in this category could be verified, it is suspected that the actual number of sites in Downs landscapes would be lower.

OzArk (2016) divided the CWLLS area into two stream orders—major watercourses (normally named rivers) and minor watercourses (normally named creeks and their larger tributaries)—and buffers were established for each watercourse type as follows:

- Drainage 1 buffer: 200 m either side of a major watercourse
- Drainage 2 buffer: 100 m either side of a minor watercourse.

As such, the OzArk (2016) CWLLS predictive model was based on the landscape type and distance to watercourses. The predictive model was tested by assessing 32 TSRs within the CWLLS area located in a variety of landscape types with variable distances to water. As a result of the assessment, 59 sites were recorded. Twenty-six (44%) of the recorded sites were modified trees, 22 (37%) were artefact scatters and 11 (19%) were isolated finds. Most recorded sites were located in Channels and Floodplains landscapes (35 sites or 59% of all sites), followed by 10 in Slopes landscapes, four in Alluvial Plains landscapes and one in a Downs landscape. No sites were recorded in Uplands or Plateau landscapes.

Table 3-1 demonstrates that the most archaeologically sensitive landscape in the CWLLS area is Channels and Floodplains, followed by Slopes landscapes. Other landscape types have a low representation but demonstrate that low densities of sites exist in other landscape types.

Table 3-1: Association of all recorded sites to landscape units (OzArk 2016).

Landscape unit	Number of sites	Percentage of total (n=59)
Channels and Floodplains	36	61
Alluvial Plains	6	10
Slopes	14	23
Downs	1	2
Uplands	2	4
Plateau	0	0

Site types associated with the landscapes most-frequently recording sites (Channels and Floodplains, and Slopes) show that Channels and Floodplains landscapes are more likely to contain modified trees and that Slopes landscapes are more likely to contain artefact scatters and isolated finds (Table 3-2).

Table 3-2: Frequency of site types in association with landscape types (OzArk 2016).

Site type	Channels and floodplains	Slopes	Alluvial Plains
Artefact scatter	11 (30.5%)	7 (50%)	3 (50%)
Isolated finds	4 (11%)	3 (21%)	3 (50%)
Modified trees	21 (58.5%)	4 (29%)	0 (0%)

In terms of drainage buffers, OzArk (2016) found that 27 sites (or 46% of all sites) were recorded with the Drainage 1 buffer and 10 sites (or 17% of all sites) were recorded within the Drainage 2 buffer. Therefore, more than 63% of all sites were recorded within the two drainage buffers, with a clear bias toward Drainage 1 buffers.

3.2.5 Inland Rail Narromine to Narrabri (Jacobs 2020)

Jacobs (2020) completed an Aboriginal cultural heritage assessment for the Narromine to Narrabri inland rail project. Across the entire assessment from Narromine to Narrabri, a total of 152 Aboriginal heritage sites and 13 areas of PADs were identified. All the identified sites were identified as having high social/cultural significance.

3.2.6 Regional archaeological context: summary

Previous archaeological investigations in the local area have identified a rich archaeological record. These research and development driven studies show that the region's most frequently occurring evidence of Aboriginal activity are culturally modified trees, particularly scarred trees. The previous studies have shown in several cases that culturally modified trees are more likely to be located closer to substantial watercourses and drainage lines, however, as found by OzArk (2011), they can be found over almost all landform units, even those distant from water.

OzArk (2016) created an archaeological potential model for landscapes across the Central West of NSW, which includes the Project Area. This model suggested that there is increased archaeological potential in raised landscapes or depositional environments. Meanwhile, archaeological potential is lower in areas that Plateau, are over 100 m from a minor waterway or 200 m from a major waterway. This landscape model can be corroborated by the frequency of artefact type study conducted by OzArk (2011), discussed in the following paragraph.

Occupation sites such as artefact scatters, are more likely to be located near permanent and semi-permanent watercourses, particularly on flat or gently sloping landforms and terraces (OzArk 2011). Artefact scatters in the area range considerably in size and density from manifestations of several artefacts through to sites containing more than 50 artefacts. However, overall, they appear to be generally low-density with 10 or less artefacts and consist largely of unmodified flakes (OzArk 2011). Larger, more complex scatters are more common within 200 m of the Macquarie (*Wambuul*) River, while low-density sites are more common within 100 m of semi-permanent creeks. To date, the dominant raw lithic material at identified sites is quartz, quartzite, chert, mudstone, rhyolite, and silcrete.

3.3 LOCAL ARCHAEOLOGICAL CONTEXT

A search of the Heritage NSW administered Aboriginal Heritage Information Management System (AHIMS) database on 9 March 2023 returned 46 results for Aboriginal sites within a 15 km radius of the Project Area (GDA Zone 55 Eastings: 618865–636009; Northings: 6441559–6458155 with no buffer) (see **Table 3-3** for site types and frequencies). No previously recorded Aboriginal Heritage sites are located within the Project Area (**Figure 3-1**).

The most frequently recorded site types are modified trees (carved or scarred) which contribute 54.3% of the site types in the vicinity of the Project Area. This site type appears to predominantly occur close to named watercourses i.e. Macquarie (*Wambuul*) River and Coolbaggie Creek (**Figure 3-1**). The second most common site type includes artefact sites which contribute 41.3% of the site types within the vicinity of the Project Area (**Table 3-3**).

Artefact site types, similar to modified tree (carved or scarred) site types, mostly occur within proximity to watercourses. However, there seems to be a cluster of artefact site types approximately 2.3 km from the south-eastern corner of the Project Area, outside of an area with relatively dense vegetation (**Figure 3-1**).

Other site types common in the area but at a much lower frequency (2.2%) include PADs and grinding groove site types (**Table 3-3**). Both of these site types occur along the banks or within 200 m of a named watercourse, i.e. the Macquarie (*Wambuul*) River and Ewenmar Creek.

Table 3-3: AHIMS site types and frequencies

Site Type	Number	% Frequency
Potential Archaeological Deposit (PAD)	1	2.2
Artefact Site	19	41.3
Grinding Groove Site	1	2.2
Modified Tree (Carved or Scarred)	25	54.3
Total	46	100

Figure 3-1: AHIMS sites in relation to the Project Area.



3.3.1 Archaeological investigations near the Project Area

Previous archaeological surveys and development driven reports have been conducted in the Narromine, Dubbo and Gilgandra NSW areas and provide data which can be used to better understand the Aboriginal heritage and archaeology of the Project Area.

3.3.1.1 *Gilgandra CBD Project Stage II (OzArk 2018)*

OzArk completed an Aboriginal Due Diligence Assessment Report for the Gilgandra Shire Council in 2018. The assessment covered a relatively small stretch of bank along the Castlereagh River that had been highly disturbed through vegetation clearing and extensive landform modification. Due to the significant modifications and disturbance in the assessment area, no Aboriginal archaeological material was identified or recorded during the survey. However, the assessed area contained three previously recorded AHIMS sites which included a carved tree (28-4-0206), a burial/s with an identified carved tree (28-4-0007), and a restricted registered site (28-4-0236). Despite no further archaeological material being identified during the assessment, consideration was provided to an upper terrace landform which was identified close to Castlereagh River and presented potential for archaeological deposits.

3.3.1.2 *Proposed Poultry Farm and Processing Facilities, 1997 Backwater Road (OzArk 2007)*

OzArk completed an ACHAR for Laterals Planning in 2007. The assessment area was situated approximately 20 km southwest of the Project Area and west of Narromine. The assessment area was situated on a similar flat landform and elevation to the Project Area. However, one key difference is the assessment area in this report has lower levels of ground disturbance and a greater quantity of mature vegetation across the entire area. A visual inspection of the area identified and recorded three 'possible' modified trees (scarred), situated within approximately 50 m of each other.

3.3.1.3 *Lot 16, 17, 232 and 233 DP 755131 and Lot 1 DP1198931 Site Suitability Assessment (OzArk 2021)*

OzArk completed an Aboriginal and Historic Heritage Opportunities and Constraint Analysis Report for Barnson Pty Limited on behalf of Australian Rail Track Corporation in 2021. The assessment was south of Narromine and approximately 21 km south of the Project Area, and was being used for agricultural purposes including cropping and grazing. The initial desktop assessment determined the area would have moderate potential for culturally modified trees and isolated finds site types and some potential for low-density artefact scatters. A visual inspection of the assessment area recorded one artefact scatter that was at very low risk of being impacted by the Project. The visual inspection also identified several mounds adjacent to gilgai, a landform

characterised by circular or linear depressions, within the assessment area of heightened archaeological potential.

3.3.1.4 Mitchell Highway – Dubbo to Narromine Curves 3 and 8 (OzArk 2022)

OzArk completed an Aboriginal Archaeology Survey Report for Transport New South Wales in 2022. A portion, curve 8 of the project was located approximately 16 km southeast of the Project Area, between Narromine and Dubbo. Curve 8 of this assessment was similar to the Project Area as it was situated on a flat plain with significant land clearing, however, curve 8 was comparatively closer to permanent watercourses and landforms with heightened archaeological sensitivity. Despite the increased potential for archaeological material, no Aboriginal places were identified or recorded during the survey, possibly due to the degree of disturbance.

3.3.1.5 Lot 21, DP1077442, 1225 Eumungerie Road, Burroway, NSW (OzArk 2014)

OzArk completed a Desktop Due Diligence Report for Geolyse Pty Limited (now Premise) in 2014. The assessment area was situated approximately 6.6 km south of the Project Area on the opposite side of Eumungerie Road in Burroway, NSW. Due to proximity both areas share similar topographic, hydrological, and historic land uses. The assessment area was used extensively for agricultural purposes and had little to no mature vegetation remaining, unlike the Project Area. This desktop level assessment indicated that due to the lack of identifiable landforms combined with extensive land disturbance within the assessed area there was low to no archaeological potential.

3.4 ARCHAEOLOGICAL CONTEXT: CONCLUSION

The archaeological investigations surrounding the Project Area as summarised in **Sections 3.2** and **3.3** indicate that:

- There is very high potential for modified trees, particularly scarred trees, in areas where mature vegetation exists
- Stone artefact sites (isolated finds and artefact scatters) are also frequently recorded in the area, even in landforms distant to permanent water courses
- Quartz is the predominant material for stone artefacts in the area, although quartzite, chert, mudstone, rhyolite, and silcrete stone artefacts may also be present.

4 PREDICTIVE MODEL

4.1 LANDFORM MODELLING

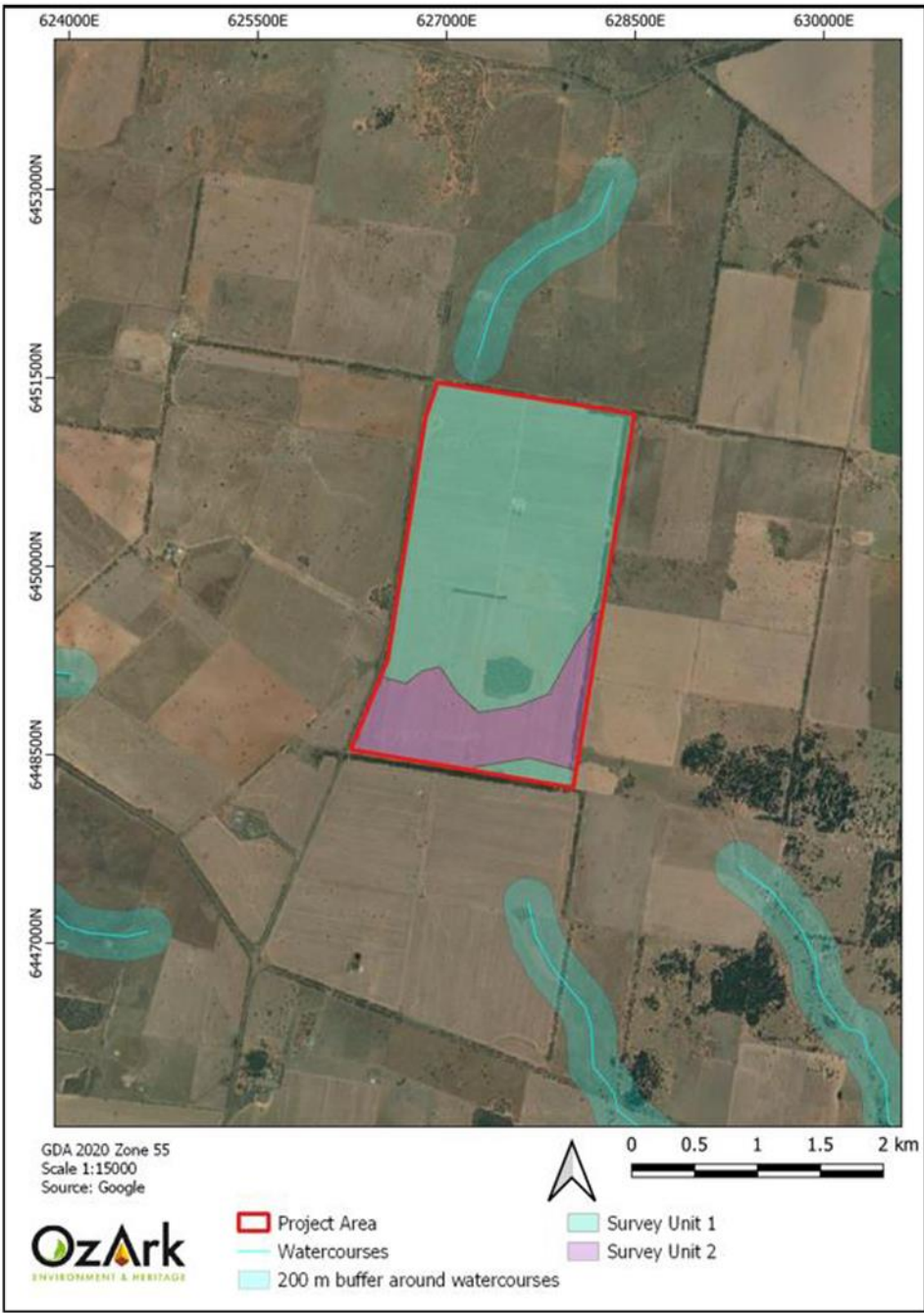
The topography of the Project Area is primarily slopes or flats (alluvial plains) with a general elevation of between 250 m to 300 m (**Figure 1-4**). Previous studies in the vicinity (OzArk 2016 and OzArk 2007) indicate that these alluvial plains or slopes are likely to contain intact sites. Preliminary landform mapping within the Project Area indicates that there are two main landform types (

Figure 4-1

- Survey Unit 1: gentle Slopes landscapes across most of the Project Area
- Survey Unit 2: Alluvial Plains landscapes across a small portion of the south of the Project Area

However, the Project Area and surrounding land is primarily zoned and used for farming, cropping, and grazing operations. The potential presence of hoofed livestock is likely to have resulted in trampling and compaction of the ground surface which accelerates soil loss. Recent, and potentially historic, ploughing of the ground surface has likely resulted in significant disturbance to any sites that may have been present. Additionally, erosion processes within the Project Area would be exacerbated by the types of landforms present which have mostly been cleared of vegetation.

Figure 4-1: Landforms within the Project Area.



4.2 PREDICTIVE MODEL FOR THE PROJECT 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 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.

4.2.1 Site types in the region of the Project Area

The site types listed in **Table 4-1** are present in the region of the Project Area. The likelihood of these sites being present in the Project Area is discussed in **Section 4.2.3**.

Table 4-1: Site types recorded in the region of the Project Area.

Site type	Site description
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 subsurface artefact scatter. They may occur anywhere within the landscape but are more likely to occur in topographies where open artefact scatters typically occur.
Open artefact scatters	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.

Site type	Site description
Culturally modified trees	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.
Grinding grooves	Grinding grooves are the remnants of ground edge hatchet manufacture and sometimes from food preparation. The site is most likely to occur on flat outcrops of coarse-grained sandstone in the vicinity of water sources, however, grinding grooves have also been recorded on fine-grained granite and quartzite outcrops.
PADs	PADs are generally recorded in association with permanent water sources in landforms that are level and elevated beyond flooding events.

4.2.2 Landform modelling of archaeological potential

The large number of archaeological studies undertaken within the vicinity of the Project Area provides information to obtain a sound understanding of the nature and distribution of archaeological sites within the area. Although there is some conjecture about the relationship between stream order, site numbers and densities, the general pattern is that most sites are present close to watercourses. The Project Area is distant from permanent watercourses and the closest watercourse is a non-perennial unnamed drainage feature situated approximately 250 m outside of the northern boundary (Figure 4-1).

Crucial for the preservation of archaeological deposits is the history of past land use in an area. Historically, the Project Area has been subjected to long-term farming and agricultural practices which may have significantly disturbed the ground surface and any archaeological deposits in the topmost levels of the soil profile. Some possibly mature vegetation exists within the Project Area, and this indicates that portions of the ground surface may remain relatively intact and that culturally modified trees may be identified.

4.2.3 Conclusion

Based on knowledge of the environmental contexts of the Project Area and a desktop review of the known local and regional archaeological record, the following predictions are made concerning the probability of landforms within the Project Area to contain Aboriginal objects (Table 4-2), and what types of sites may be present within the Project Area (Table 4-3).

Table 4-2: Likelihood of landforms within the Project Area to contain Aboriginal objects.

Survey Unit	Landform type	Likelihood to contain Aboriginal objects
1	Alluvial plains	Alluvial plains are an aggrading environment that are impacted by flooding and channel migration. While alluvial plains would have provided resources to encourage occupation and use in the past, their geomorphic nature makes them poor preservers of archaeological deposits and any objects in such landforms are likely to be in a secondary context.

Survey Unit	Landform type	Likelihood to contain Aboriginal objects
2	Slopes	Slopes are a degrading landform, especially where vegetation removal has accelerated soil loss. These landforms are unsuitable for occupation and Aboriginal objects recorded in such landforms are likely to be in a secondary context. The exception is in localised flat benches where occupation may have been possible.

Table 4-3: Likelihood of certain site types being present in the Project Area.

Site type	Likelihood of being present in the Project Area
Isolated finds	As isolated finds can occur anywhere, particularly within disturbed contexts, it is predicted that this site type could be recorded within the Project Area.
Open artefact scatters	As most of the Project Area is relatively flat this site type is possible, although the significant degree of disturbance from cropping, ploughing, and grazing will probably mean that the scatter has become displaced. Furthermore, the Project Area is distant from 'waters' and other landforms of heightened archaeological potential, which reduces the likelihood of this site type occurring. If this site type were to occur within the Project Area, it is likely to contain a low artefact density and a low complexity of tool types as the sites are either one-off events or only infrequently used.
Culturally modified trees	This site type has a high potential of occurring within the Project Area as there is a moderate quantity of scattered mature vegetation throughout the Project Area. These scatters are outside of the dense clusters, which have been protected by the proponent.
Grinding grooves	This site type is very unlikely to be recorded within the Project Area as there is no to low likelihood of suitable rock outcroppings associated with watercourses.
PADs	This site type is considered possible in areas where A-Horizon soils are relatively undisturbed. However, given the high levels of disturbance across the Project Area and the lack of permanent water sources, the likelihood of identifying PADs is significantly reduced.

Overall, at a desktop level the area has low archaeological potential due to distance to permanent water sources and significant land disturbance through long-term agricultural operations. However, there is heightened potential for culturally modified trees specifically, as it is the most common site type within the region and the Project Area contains some potentially mature vegetation.

4.3 RESEARCH QUESTIONS

Several research questions can meaningfully be applied to the investigation of the Project Area. These research questions include:

- What resources were available to the Aboriginal people using the land within the Project Area (food, stone, and water) and what resources were transported to the area?
- What tasks were Aboriginal people undertaking at the sites?
- Do the findings within the Project Area (if any) accord with the regional archaeological context examined in **Section 3.2**?
- Do the survey results support the predictive model set out in **Section 4.2.3**?

The survey methodology set out in **Section 5** will be framed to help answer these questions; should sites of sufficient significance be encountered. However, based on the results of previous assessments and past disturbances, it not expected that the land within the Project Area will contain sites of sufficient significance to help answer those research questions that require a robust data set.

5 SURVEY METHODOLOGY

5.1 ASSESSMENT APPROACH

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

Survey for Aboriginal cultural heritage values will concentrate on the Project Area where project impacts will be located.

5.2 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 the Project Area are known. Therefore, the aims of the survey will be to:

- Inspect all landform types in the Project Area so that their archaeological potential can be determined
- Evaluate whether the predictive model set out in **Section 4.2** is valid
- Determine if the research questions set out in **Section 4.2.1** can be answered
- Determine if any landforms of the Project Area require test excavation to understand the archaeological potential at a particular location
- Undertake sufficient assessment to satisfy Sections 2.2, 2.4, 2.5, 2.6, and 2.7 in the Guide
- Collect sufficient data so that the results can be presented in an ACHAR as set out in Section 3 in the Guide
- Undertake survey and record keeping satisfying Requirements 1–13 of the Code of Practice.

5.3 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 **Sections 3 and 4**, 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 landforms disturbed by erosion and historical impacts (e.g., farming and infrastructure installation). As such, during the field assessment, greater survey effort will be expended on landforms deemed to have greater Aboriginal archaeological potential.

'Full pedestrian survey' refers to systematic transects walked by surveyors spaced approximately 20 m apart throughout the landform or area being surveyed. 'Targeted pedestrian survey' refers to transects walked by surveyors spaced approximately 20 m apart that will not cover the entire area but instead will focus on understanding the archaeological potential of representative landforms within these areas.

As such, the field assessment will include:

- Full pedestrian survey will occur in areas with minimal disturbance and good ground surface visibility within landforms possessing Aboriginal archaeological potential, i.e., areas with remnant vegetation. Landforms within both Survey Units 1 and 2 that are within the Project footprint will be subjected to full survey
- Targeted pedestrian survey will occur in all other areas: i.e., areas with significant prior disturbance
- All trees deemed to be of sufficient maturity to contain cultural modification will be inspected.
- Some areas may not be physically surveyed if the RAPs and OzArk staff agree they are too disturbed or possess a very low likelihood of sites.

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). RAPs will participate in the survey, identifying Aboriginal objects, determining the cultural significance of Aboriginal objects, and identifying cultural places or non-physical site types within the Project Area. OzArk staff understand that cultural knowledge may not be provided in some instances due to cultural sensitivities (e.g., men's and/or women's places). Under these circumstances, to assess the potential impacts, OzArk staff will need to be told, only in general terms, why a particular place is important, and what the significance of the impact will be. OzArk staff will liaise with RAPs on a case-by-case basis to determine how to record the location in a culturally sensitive manner.

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

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APPENDIX 3: AHIMS SEARCH RESULTS

Appendix 3 Figure 1: Original AHIMS search conducted 9 March 2023.



AHIMS Web Services (AWS)

Extensive search - Site list report

Your Ref/PO Number : Burroway SF

Client Service ID : 761780

SiteID	SiteName	Datum	Zone	Easting	Northing	Context	Site Status **	SiteFeatures	SiteTypes	Reports
19-4-0017	Burroway Rd	AGD	55	618612	6443550	Open site	Valid	Artefact :-	Open Camp Site	
	Contact	Recorders	Permits							
09-4-0017	Burroway Rd;	AGD	55	617550	6443550	Open site	Valid	Artefact :-	Open Camp Site	
	Contact	Recorders	Permits							
35-3-0132	N-ST-8	AGD	55	616700	6446850	Open site	Valid	Modified Tree (Carved or Scarred) : 1	Scarred Tree	4340
	Contact	Recorders	Permits							
35-3-0133	N-ST-9	AGD	55	616200	6447680	Open site	Valid	Modified Tree (Carved or Scarred) : 1	Scarred Tree	4340
	Contact	Recorders	Permits							
35-3-0134	N-ST-7	AGD	55	617020	6445450	Open site	Valid	Modified Tree (Carved or Scarred) : -	Scarred Tree	4340
	Contact	Recorders	Permits							
35-3-0135	N-ST-6	AGD	55	616960	6445140	Open site	Valid	Modified Tree (Carved or Scarred) : 1	Scarred Tree	4340
	Contact	Recorders	Permits							
35-3-0136	N-ST-5	AGD	55	616960	6445140	Open site	Valid	Modified Tree (Carved or Scarred) : 1	Scarred Tree	4340
	Contact	Recorders	Permits							
35-3-0137	N-ST-4	AGD	55	617020	6445080	Open site	Valid	Modified Tree (Carved or Scarred) : -	Scarred Tree	4340
	Contact	Recorders	Permits							
35-3-0138	N-ST-3	AGD	55	617020	6439720	Open site	Valid	Modified Tree (Carved or Scarred) : 1	Scarred Tree	4340
	Contact	Recorders	Permits							
35-3-0139	N-ST-2	AGD	55	616970	6439720	Open site	Valid	Modified Tree (Carved or Scarred) : 1	Scarred Tree	4340
	Contact	Recorders	Permits							
35-3-0126	CR-OS-1;Collie Rd-Narromine to Eumungerie Rd;	AGD	55	636160	6456480	Open site	Valid	Artefact :-	Open Camp Site	
	Contact	Recorders	Permits							
36-1-0155	Yarraba Ck;	AGD	55	621650	6441700	Open site	Valid	Modified Tree (Carved or Scarred) : -	Scarred Tree	1333
	Contact	Recorders	Permits							

Report generated by AHIMS Web Service on 09/03/2023 for Eleanor Martin for the following area at Datum :GDA, Zone : 55, Eastings : 614615.0 - 640288.0, Northings : 6437338.0 - 6462260.0 with a Buffer of 0 meters. Number of Aboriginal sites and Aboriginal objects found is 46

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Page 1 of 4

AHIMS Web Services (AWS)

Extensive search - Site list report

Your Ref/PO Number : Burroway SF

Client Service ID : 761780

SiteID	SiteName	Datum	Zone	Easting	Northing	Context	Site Status **	SiteFeatures	SiteTypes	Reports
36-1-0237	Contact CK-ST-1;	Recorders AGD	55	Warren Bluff 638720	6447210	Open site	Valid	Permits Modified Tree (Carved or Scarred) : -	Scarred Tree	
35-3-0017	Contact Willandra Crossing;	Recorders AGD	55	C Wall 639368	6437257	Open site	Valid	Permits Grinding Groove : 150	Axe Grinding Groove	
27-6-0036	Contact Ewenmar Creek PAD1	Recorders GDA	55	G.W. Althofer, Michael Pearson 630365	6461514	Open site	Valid	Permits Artefact :-; Potential Archaeological Deposit (PAD) :-		
35-3-0121	Contact CC-OS-3 (Narromine)	Recorders AGD	55	Jacobs Group (Australia) Pty Ltd - Newcastle, Mr. Andy Roberts 638090	6445280	Open site	Valid	Permits Artefact :-	Open Camp Site	4125
35-3-0122	Contact CC-OS-2 (Narromine)	Recorders AGD	55	Central West Archaeological and Heritage Services Pty Ltd 638040	6444620	Open site	Valid	Permits Artefact :-	Open Camp Site	4125
35-3-0123	Contact CC-OS-1 (Narromine)	Recorders AGD	55	Central West Archaeological and Heritage Services Pty Ltd 638030	6444840	Open site	Valid	Permits Artefact :-	Open Camp Site	4125
35-3-0051	Contact Narromine 2	Recorders AGD	55	Central West Archaeological and Heritage Services Pty Ltd 617000	6438000	Open site	Valid	Permits Modified Tree (Carved or Scarred) : 1	Scarred Tree	1333
35-3-0052	Contact Narromine 3	Recorders AGD	55	Warren Bluff 617000	6441100	Open site	Valid	Permits Modified Tree (Carved or Scarred) : 1	Scarred Tree	1333
35-3-0053	Contact Timbreebongie 1	Recorders AGD	55	Warren Bluff 617200	6446400	Open site	Valid	Permits Modified Tree (Carved or Scarred) : 1	Scarred Tree	1333
35-3-0054	Contact Timbreebongie;	Recorders AGD	55	Warren Bluff 616800	6447200	Open site	Valid	Permits Modified Tree (Carved or Scarred) : 1	Scarred Tree	1333
35-3-0055	Contact Rocky Point 1	Recorders AGD	55	Warren Bluff 615900	6455600	Open site	Valid	Permits Modified Tree (Carved or Scarred) : 1	Scarred Tree	1333
35-3-0056	Contact Rocky Point 2	Recorders AGD	55	Warren Bluff 615100	6456700	Open site	Valid	Permits Modified Tree (Carved or Scarred) : 1	Scarred Tree	1333

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Page 2 of 4



AHIMS Web Services (AWS)

Extensive search - Site list report

Your Ref/PO Number : Burroway SF
Client Service ID : 761780

SiteID	SiteName	Datum	Zone	Easting	Northing	Context	Site Status **	SiteFeatures	SiteTypes	Reports
35-3-0036	DN 4;	AGD	55	631290	6447526	Open site	Valid	Artefact : -	Open Camp Site	1320
35-3-0037	DN 5;	AGD	55	630465	6447792	Open site	Valid	Artefact : -	Open Camp Site	1320
35-3-0038	DN 7;	AGD	55	630100	6447789	Open site	Valid	Artefact : -	Open Camp Site	1320
35-3-0039	DN 6;	AGD	55	630009	6447788	Open site	Valid	Artefact : -	Open Camp Site	1320
35-3-0040	DN 8;	AGD	55	615961	6455151	Open site	Valid	Artefact : -	Open Camp Site	1320
35-3-0041	DN 9;	AGD	55	615399	6456607	Open site	Valid	Artefact : -	Open Camp Site	1320
35-3-0042	DN 10;	AGD	55	614751	6457515	Open site	Valid	Artefact : -	Open Camp Site	1320
35-3-0044	DN 3;	AGD	55	638612	6446132	Open site	Valid	Artefact : -	Open Camp Site	1320
35-3-0045	Agriland Scarred Tree;	AGD	55	615693	6455360	Open site	Valid	Modified Tree (Carved or Scarred) : 1	Scarred Tree	1320
35-3-0005	Burroway;Narromine;	AGD	55	619044	6451747	Open site	Valid	Modified Tree (Carved or Scarred) : 2	Carved Tree	209
35-3-0006	Burroway;Stockyard Paddock;	AGD	55	619459	6452350	Open site	Valid	Modified Tree (Carved or Scarred) : 3	Carved Tree	65,1320
35-3-0008	Burroway;	AGD	55	619733	6452353	Open site	Valid	Modified Tree (Carved or Scarred) : -	Carved Tree	65
35-3-0010	Dickyundi 1 Dubbo	AGD	55	637250	6437200	Open site	Valid	Artefact : -	Open Camp Site	65,1065
27-6-0005	Buen Vista;Burroway;	AGD	55	617556	6460556	Open site	Valid	Artefact : -, Modified Tree (Carved or Scarred) : -	Open Camp Site, Scarred Tree	65

Report generated by AHIMS Web Service on 09/03/2023 for Eleanor Martin for the following area at Datum :GDA, Zone : 55, Eastings : 614615.0 - 640288.0, Northings : 6437338.0 - 6462260.0 with a Buffer of 0 meters. Number of Aboriginal sites and Aboriginal objects found is 46

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Page 3 of 4



AHIMS Web Services (AWS)

Extensive search - Site list report

Your Ref/PO Number : Burroway SF
Client Service ID : 761780

SiteID	SiteName	Datum	Zone	Easting	Northing	Context	Site Status **	SiteFeatures	SiteTypes	Reports
27-6-0007	NG-7 Bundemar	AGD	55	614600	6460300	Open site	Valid	Artefact : 13	Open Camp Site	65,1068
27-6-0048	Ewenmar Creek AS1	GDA	55	630028	6461546	Open site	Valid	Artefact : -		
35-3-0277	Rawsonville AS-1	GDA	55	637201	6439548	Open site	Valid	Artefact : -		104303
27-6-0016	Goonalara Narromine	AGD	55	618469	6460565	Open site	Valid	Modified Tree (Carved or Scarred) : -	Carved Tree	
35-3-0026	Buddah Canoe Tree	AGD	55	614700	6452434	Open site	Valid	Modified Tree (Carved or Scarred) : -	Scarred Tree	
27-6-0035	Ewenmar Creek ST1	GDA	55	630340	6461526	Open site	Valid	Modified Tree (Carved or Scarred) : -		
27-6-0049	EC(cache)	GDA	55	631432	6461818	Closed site	Valid	Artefact : -		
27-6-0050	Ewenmar Creek ST2	GDA	55	630394	6461521	Open site	Valid	Modified Tree (Carved or Scarred) : -		

** Site Status

Valid - The site has been recorded and accepted onto the system as valid

Destroyed - The site has been completely impacted or harmed usually as consequence of permit activity but sometimes also after natural events. There is nothing left of the site on the ground but proponents should proceed with caution.

Partially Destroyed - The site has been only partially impacted or harmed usually as consequence of permit activity but sometimes also after natural events. There might be parts or sections of the original site still present on the ground

Not a site - The site has been originally entered and accepted onto AHIMS as a valid site but after further investigations it was decided it is NOT an aboriginal site. Impact of this type of site does not require permit but Heritage NSW should be notified

Report generated by AHIMS Web Service on 09/03/2023 for Eleanor Martin for the following area at Datum :GDA, Zone : 55, Eastings : 614615.0 - 640288.0, Northings : 6437338.0 - 6462260.0 with a Buffer of 0 meters. Number of Aboriginal sites and Aboriginal objects found is 46

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Page 4 of 4

Appendix 3 Figure 2: Updated AHIMS search conducted on 10 March 2025.

 AHIMS Web Services (AWS) Extensive search - Site list report Your Ref/PO Number : Burroway SF #4794 Client Service ID : 982972										
SiteID	SiteName	Datum	Zone	Easting	Northing	Context	Site Status **	SiteFeatures	SiteTypes	Reports
35-3-0126	CR-OS-1;Collie Rd-Narromine to Eumungerie Rd;	AGD	55	636160	6456480	Open site	Valid	Artefact : -	Open Camp Site	
	Contact	Recorders						Permits		
35-3-0056	Rocky Point 2	AGD	55	615100	6456700	Open site	Valid	Modified Tree (Carved or Scarred) : 1	Scarred Tree	1333
	Contact	Recorders						Permits		
09-4-0017	Burraway Rd;	AGD	55	617550	6443550	Open site	Valid	Artefact : -	Open Camp Site	
	Contact	Recorders						Permits		
35-3-0356	Kookaburra IF3	GDA	55	628049	6450760	Open site	Valid	Artefact : -		
	Contact	Recorders						Permits		
35-3-0363	Kookaburra IF9	GDA	55	628056	6448952	Open site	Valid	Artefact : -		
	Contact	Recorders						Permits		
27-6-0061	N2N-24-AS4	GDA	55	631445	6459184	Open site	Valid	Artefact : -		
	Contact	Recorders						Permits		
35-3-0036	DN 4;	AGD	55	631290	6447526	Open site	Valid	Artefact : -	Open Camp Site	1320
	Contact	Recorders						Permits		
35-3-0040	DN 8;	AGD	55	615961	6455151	Open site	Valid	Artefact : -	Open Camp Site	1320
	Contact	Recorders						Permits		
35-3-0042	DN 10;	AGD	55	614751	6457515	Open site	Valid	Artefact : -	Open Camp Site	1320
	Contact	Recorders						Permits		
35-3-0044	DN 3;	AGD	55	638612	6446132	Open site	Valid	Artefact : -	Open Camp Site	1320
	Contact	Recorders						Permits		
35-3-0277	Rawsonville A5-1	GDA	55	637201	6439548	Open site	Valid	Artefact : -		104303
	Contact	Recorders						Permits		
35-3-0121	CC-OS-3 (Narromine)	AGD	55	638090	6445280	Open site	Valid	Artefact : -	Open Camp Site	4125
	Contact	Recorders						Permits		
27-6-0035	Ewenmar Creek ST1	GDA	55	630340	6461526	Open site	Valid	Modified Tree (Carved or Scarred) : -		
	Contact	Recorders						Permits		
35-3-0364	Kookaburra IF8	GDA	55	628104	6449351	Open site	Valid	Artefact : -		
	Contact	Recorders						Permits		
35-3-0017	Willandra Crossing;	AGD	55	639368	6437257	Open site	Valid	Grinding Groove : 150	Axe Grinding Groove	
	Contact	Recorders						Permits		
27-6-0005	Buen Vista;Burraway;	AGD	55	617556	6460556	Open site	Valid	Artefact : - Modified Tree (Carved or Scarred) : -	Open Camp Site, Scarred Tree	65
	Contact	Recorders						Permits		

Report generated by AHIMS Web Service on 10/03/2025 for Eleanore Martin for the following area at Datum :GDA, Zone : 55, Eastings : 614615.0 - 640288.0, Northings : 6437338.0 - 6462260.0 with a Buffer of 0 meters.. Number of Aboriginal sites and Aboriginal objects found is 66

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Page 1 of 5

 AHIMS Web Services (AWS) Extensive search - Site list report Your Ref/PO Number : Burroway SF #4794 Client Service ID : 982972										
SiteID	SiteName	Datum	Zone	Easting	Northing	Context	Site Status **	SiteFeatures	SiteTypes	Reports
35-3-0348	N2N-24-AS1	GDA	55	631473	6458256	Open site	Valid	Artefact : -		
	Contact	Recorders						Permits		
35-3-0350	Kookaburra OS1	GDA	55	627997	6448886	Open site	Valid	Artefact : -		
	Contact	Recorders						Permits		
35-3-0134	N-ST-7	AGD	55	617020	6445450	Open site	Valid	Modified Tree (Carved or Scarred) : -	Scarred Tree	4340
	Contact	Recorders						Permits		
35-3-0135	N-ST-6	AGD	55	616960	6445140	Open site	Valid	Modified Tree (Carved or Scarred) : 1	Scarred Tree	4340
	Contact	Recorders						Permits		
35-3-0041	DN 9;	AGD	55	615399	6456607	Open site	Valid	Artefact : -	Open Camp Site	1320
	Contact	Recorders						Permits		
35-3-0045	Agriland Scarred Tree;	AGD	55	615693	6455360	Open site	Valid	Modified Tree (Carved or Scarred) : 1	Scarred Tree	1320
	Contact	Recorders						Permits		
35-3-0008	Burraway;	AGD	55	619733	6452353	Open site	Valid	Modified Tree (Carved or Scarred) : -	Carved Tree	65
	Contact	Recorders						Permits		
36-1-0237	CK-ST-1;	AGD	55	638720	6447210	Open site	Valid	Modified Tree (Carved or Scarred) : -	Scarred Tree	
	Contact	Recorders						Permits		
35-3-0026	Buddah Canoe Tree	AGD	55	614700	6452434	Open site	Valid	Modified Tree (Carved or Scarred) : -	Scarred Tree	
	Contact	Recorders						Permits		
35-3-0353	Kookaburra OS4	GDA	55	626608	6448551	Open site	Valid	Artefact : -		
	Contact	Recorders						Permits		
35-3-0355	Kookaburra IF2	GDA	55	626726	6448440	Open site	Valid	Artefact : -		
	Contact	Recorders						Permits		
35-3-0133	N-ST-9	AGD	55	616200	6447680	Open site	Valid	Modified Tree (Carved or Scarred) : 1	Scarred Tree	4340
	Contact	Recorders						Permits		

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Page 2 of 5



AHIMS Web Services (AWS)

Extensive search - Site list report

Your Ref/PO Number : Burroway SF #4794
Client Service ID : 982972

SiteID	SiteName	Datum	Zone	Easting	Northing	Context	Site Status **	SiteFeatures	SiteTypes	Reports
35-3-0138	N-ST-3	AGD	55	617020	6439720	Open site	Valid	Modified Tree (Carved or Scarred) : 1	Scarred Tree	4340
Contact		Recorders		Permits						
35-3-0139	N-ST-2	AGD	55	616970	6439720	Open site	Valid	Modified Tree (Carved or Scarred) : 1	Scarred Tree	4340
Contact		Recorders		Permits						
35-3-0039	DN 6;	AGD	55	630009	6447788	Open site	Valid	Artefact : -	Open Camp Site	1320
Contact		Recorders		Permits						
35-3-0052	Narromine 3	AGD	55	617000	6441100	Open site	Valid	Modified Tree (Carved or Scarred) : 1	Scarred Tree	1333
Contact		Recorders		Permits						
35-3-0054	Timbregongie;	AGD	55	616800	6447200	Open site	Valid	Modified Tree (Carved or Scarred) : 1	Scarred Tree	1333
Contact		Recorders		Permits						
35-3-0349	N2N-24-AS2	GDA	55	631525	6458415	Open site	Valid	Artefact : -		
Contact		Recorders		Permits						
35-3-0361	Kookaburra IF11	GDA	55	627212	6449813	Open site	Valid	Artefact : -		
Contact		Recorders		Permits						
35-3-0362	Kookaburra IF10	GDA	55	627100	6449831	Open site	Valid	Artefact : -		
Contact		Recorders		Permits						
36-1-0155	Yarraba Ck	AGD	55	621650	6441700	Open site	Valid	Modified Tree (Carved or Scarred) : -	Scarred Tree	1333
Contact		Recorders		Permits						
35-3-0123	CC-05-1 (Narromine)	AGD	55	638030	6444840	Open site	Valid	Artefact : -	Open Camp Site	4125
Contact		Recorders		Permits						
35-3-0051	Narromine 2	AGD	55	617000	6438000	Open site	Valid	Modified Tree (Carved or Scarred) : 1	Scarred Tree	1333
Contact		Recorders		Permits						
35-3-0053	Timbregongie 1	AGD	55	617200	6446400	Open site	Valid	Modified Tree (Carved or Scarred) : 1	Scarred Tree	1333
Contact		Recorders		Permits						
27-6-0049	EC(cache)	GDA	55	631432	6461818	Closed site	Valid	Artefact : -		
Contact		Recorders		Permits						

Report generated by AHIMS Web Service on 10/03/2025 for Eleanore Martin for the following area at Datum :GDA, Zone : 55, Eastings : 614615.0 - 640288.0, Northings : 6437338.0 - 6462260.0 with a Buffer of 0 meters.. Number of Aboriginal sites and Aboriginal objects found is 66

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Page 3 of 5



AHIMS Web Services (AWS)

Extensive search - Site list report

Your Ref/PO Number : Burroway SF #4794
Client Service ID : 982972

SiteID	SiteName	Datum	Zone	Easting	Northing	Context	Site Status **	SiteFeatures	SiteTypes	Reports
35-3-0354	Kookaburra IF1	GDA	55	627939	6448467	Open site	Valid	Artefact : -		
Contact		Recorders		Permits						
35-3-0346	N2N-24-ST2	GDA	55	631756	6458460	Open site	Valid	Artefact : - Modified Tree (Carved or Scarred) : -		
Contact		Recorders		Permits						
35-3-0132	N-ST-8	AGD	55	616700	6446850	Open site	Valid	Modified Tree (Carved or Scarred) : 1	Scarred Tree	4340
Contact		Recorders		Permits						
35-3-0136	N-ST-5	AGD	55	616960	6445140	Open site	Valid	Modified Tree (Carved or Scarred) : 1	Scarred Tree	4340
Contact		Recorders		Permits						
35-3-0037	DN 5;	AGD	55	630465	6447792	Open site	Valid	Artefact : -	Open Camp Site	1320
Contact		Recorders		Permits						
35-3-0005	Burraway;Narromine;	AGD	55	619044	6451747	Open site	Valid	Modified Tree (Carved or Scarred) : 2	Carved Tree	65
Contact		Recorders		Permits						
35-3-0055	Rocky Point 1	AGD	55	615900	6455600	Open site	Valid	Modified Tree (Carved or Scarred) : 1	Scarred Tree	1333
Contact		Recorders		Permits						
19-4-0017	Burraway Rd	AGD	55	618612	6443550	Open site	Valid	Artefact : -	Open Camp Site	
Contact		Recorders		Permits						
27-6-0050	Ewenmar Creek ST2	GDA	55	630394	6461521	Open site	Valid	Modified Tree (Carved or Scarred) : -		
Contact		Recorders		Permits						
35-3-0358	Kookaburra IF4	GDA	55	626732	6450575	Open site	Valid	Artefact : -		
Contact		Recorders		Permits						
35-3-0359	Kookaburra IF6	GDA	55	627866	6448761	Open site	Valid	Artefact : -		
Contact		Recorders		Permits						
35-3-0347	N2N-24-AS3	GDA	55	630592	6458790	Open site	Valid	Artefact : -		
Contact		Recorders		Permits						
35-3-0137	N-ST-4	AGD	55	617020	6445080	Open site	Valid	Modified Tree (Carved or Scarred) : -	Scarred Tree	4340
Contact		Recorders		Permits						

Report generated by AHIMS Web Service on 10/03/2025 for Eleanore Martin for the following area at Datum :GDA, Zone : 55, Eastings : 614615.0 - 640288.0, Northings : 6437338.0 - 6462260.0 with a Buffer of 0 meters.. Number of Aboriginal sites and Aboriginal objects found is 66

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Page 4 of 5



AHIMS Web Services (AWS)

Extensive search - Site list report

Your Ref/PO Number : Burroway SF #4794
Client Service ID : 982972

SiteID	SiteName	Datum	Zone	Easting	Northing	Context	Site Status **	SiteFeatures	SiteTypes	Reports
35-3-0038	DN 7;	AGD	55	630100	6447789	Open site	Valid	Artefact : -	Open Camp Site	1320
	Contact	Recorders	Smith					Permits		
35-3-0006	Burroway;Stockyard Paddock	AGD	55	619459	6452350	Open site	Valid	Modified Tree (Carved or Scarred) : 3	Carved Tree	65,1320
	Contact	Recorders	David Bell,Liz Edmondson,B.J Fillery					Permits		
35-3-0010	Dickygundi 1 Dubbo	AGD	55	637250	6437200	Open site	Valid	Artefact : -	Open Camp Site	65,1065
	Contact	Recorders	N Franklin,Margrit Koettig,Rex Silcox					Permits		
27-6-0016	Goonalara Narromine	AGD	55	618469	6460565	Open site	Valid	Modified Tree (Carved or Scarred) : -	Carved Tree	
	Contact	Recorders	Sabu Dunn,Liz Edmondson					Permits		
27-6-0036	Ewenmar Creek PAD1	GDA	55	630365	6461514	Open site	Valid	Artefact : - , Potential Archaeological Deposit (PAD) : -		
	Contact	Recorders	Jacobs Group (Australia) Pty Ltd - Newcastle,Mr.Andy Roberts					Permits		
35-3-0122	CC-OS-2 (Narromine)	AGD	55	638040	6444620	Open site	Valid	Artefact : -	Open Camp Site	4125
	Contact	Recorders	Central West Archaeological and Heritage Services Pty Ltd					Permits		
27-6-0048	Ewenmar Creek AS1	GDA	55	630028	6461546	Open site	Valid	Artefact : -		
	Contact	Recorders	Jacobs Group (Australia) Pty Ltd - Newcastle,Mr.Andy Roberts					Permits		
27-6-0007	NG-7 Bundemar	AGD	55	614600	6460300	Open site	Valid	Artefact : 13	Open Camp Site	65,1068
	Contact	Recorders	Jane Balme,Dan Witter					Permits		
35-3-0351	Kookaburra OS2	GDA	55	626923	6448389	Open site	Valid	Artefact : -		
	Contact	Recorders	OzArk Environmental and Heritage Management - Dubbo,Mr.Harrison Rochford					Permits		
35-3-0352	Kookaburra OS3	GDA	55	626246	6448555	Open site	Valid	Artefact : -		
	Contact	Recorders	OzArk Environmental and Heritage Management - Dubbo,Mr.Harrison Rochford					Permits		
35-3-0357	Kookaburra IF5	GDA	55	627631	6448572	Open site	Valid	Artefact : -		
	Contact	Recorders	OzArk Environmental and Heritage Management - Dubbo,Mr.Harrison Rochford					Permits		
35-3-0360	Kookaburra IF7	GDA	55	627891	6448849	Open site	Valid	Artefact : -		
	Contact	Recorders	OzArk Environmental and Heritage Management - Dubbo,Mr.Harrison Rochford					Permits		

** Site Status

Valid - The site has been recorded and accepted onto the system as valid

Destroyed - The site has been completely impacted or harmed usually as consequence of permit activity but sometimes also after natural events. There is nothing left of the site on the ground but proponents should proceed with caution.

Partially Destroyed - The site has been only partially impacted or harmed usually as consequence of permit activity but sometimes also after natural events. There might be parts or sections of the original site still present on the ground

Not a site - The site has been originally entered and accepted onto AHIMS as a valid site but after further investigations it was decided it is NOT an aboriginal site. Impact of this type of site does not require permit but Heritage NSW should be notified

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Page 5 of 5