



View of the north-eastern portion of the Development Footprint near Redlynch Creek.

ABORIGINAL CULTURAL HERITAGE ASSESSMENT REPORT

GOULBURN RIVER SOLAR FARM

UPPER HUNTER LOCAL GOVERNMENT AREA, NSW

MAY 2023

Report prepared by
OzArk Environment & Heritage
for Umwelt (Australia) on behalf of
Lightsource bp

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ABORIGINAL CULTURAL HERITAGE ASSESSMENT REPORT COVER SHEET

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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.

CONTENTS

FOREWORD	X
ABBREVIATIONS AND GLOSSARY	XII
EXECUTIVE SUMMARY	XV
1 INTRODUCTION	1
1.1 Description of the Project	1
1.2 Proposed work	1
1.3 Development context	2
1.4 Project Area	3
1.5 Development Footprint	3
2 THE ABORIGINAL CULTURAL HERITAGE ASSESSMENT	8
2.1 Relevant legislation	8
2.1.1 Commonwealth legislation	8
2.1.1.1 Environment Protection and Biodiversity Conservation Act 1999	8
2.1.1.2 Aboriginal and Torres Strait Islander Heritage Protection Act 1984	8
2.1.2 State legislation	10
2.1.2.1 Environmental Planning and Assessment Act 1979	10
2.1.2.2 National Parks and Wildlife Act 1974	10
2.1.2.3 Secretary’s Environmental Assessment Requirements	11
2.1.3 Local legislation	13
2.2 Assessment approach	13
2.3 Purpose and objectives	13
2.4 Report compliance with the Code of Practice	13
2.5 Date of archaeological assessment	14
2.6 OzArk involvement	14
2.6.1 Field survey	14
2.6.2 Reporting	15
3 ABORIGINAL COMMUNITY CONSULTATION	16
3.1 Introduction to cultural values	16
3.2 Aboriginal community consultation	16
3.2.1 ACHCRs Stage 1	17
3.2.2 ACHCRs Stage 2	18
3.2.3 ACHCRs Stage 3	18
3.2.4 ACHCRs Stage 4	18

3.3	Cultural values identified throughout the ACHCR process	19
4	LANDSCAPE CONTEXT	20
4.1	Topography.....	20
4.1.1	Survey units.....	21
4.2	Geology and soils	24
4.3	Hydrology	24
4.4	Vegetation	24
4.5	Land use history and existing levels of disturbance.....	25
4.6	Conclusion.....	27
5	ARCHAEOLOGICAL CONTEXT.....	28
5.1	Ethno-historic sources of regional Aboriginal culture.....	28
5.2	Regional archaeological context	31
5.3	Local archaeological context.....	33
5.3.1	Desktop database searches conducted	33
5.3.2	Previous studies in or near the Project Area	36
5.4	Regional and local context: conclusion	38
5.5	Predictive model for site location.....	39
5.5.1	Site types in the region of the Development Footprint.....	39
5.5.2	Landform modelling of archaeological potential	40
5.5.3	Conclusion.....	41
5.6	Research questions	42
6	RESULTS OF ARCHAEOLOGICAL ASSESSMENT.....	43
6.1	Sampling strategy and field methods	43
6.2	Project constraints	43
6.3	Effective survey coverage.....	43
6.4	Aboriginal sites recorded.....	48
6.4.1	Grinding grooves	51
	37-1-1033 (Killoe Creek GG1).....	51
6.4.2	Artefact scatters.....	53
	37-1-1035 (Redlynch Creek OS1)	53
	37-1-1034 (Redlynch Creek OS2)	55
	37-1-1036 (Redlynch Creek OS3)	57
	37-1-1037 (Rocky Creek Gully OS4)	59
6.4.1	Isolated finds.....	61

37-1-1027 (Redlynch Creek IF1)	61
37-1-1028 (Rocky Creek Slope IF2)	62
37-1-1029 (Wollara Road IF3)	62
37-1-1030 (Monaghans Creek IF4).....	63
37-1-1031 (Rocky Creek Gully IF5)	64
37-1-1032 (Ringwood Gully IF6).....	65
6.5 Trees of community interest.....	67
6.6 Test excavation.....	71
6.7 Historical sites.....	71
6.8 Aboriginal community comments on the survey	75
6.9 Summary of survey results.....	75
6.9.1 Discussion	75
7 SIGNIFICANCE ASSESSMENT.....	79
7.1 Introduction to significance assessment.....	79
7.1.1 Identifying cultural significance	79
7.1.1.1 Social or cultural value.....	79
7.1.1.2 Scientific (archaeological) value.....	80
7.1.1.3 Aesthetic value	80
7.1.1.4 Historic value	80
7.2 Cultural significance of the Project Area.....	81
7.3 Assessed significance of the recorded sites.....	82
7.4 Statement of significance	84
8 ASSESSING HARM.....	86
8.1 Avoiding and minimising harm	86
8.1.1 Conserving significant Aboriginal cultural heritage	86
8.1.2 Opportunities to conserve Aboriginal cultural heritage values	86
8.2 Likely impacts to Aboriginal heritage from the Project	87
8.3 Ecologically sustainable development principles	89
8.3.1 Intergenerational equity	89
8.3.2 The precautionary principle.....	89
8.3.3 Principle of Integration	89
8.3.4 Applicability to the Project.....	90
9 MANAGEMENT OF ABORIGINAL CULTURAL HERITAGE SITES	92
9.1 General management principles	92

9.2	Management and mitigation of recorded Aboriginal sites	92
9.2.1	Salvage recommendation: surface artefact collection	93
9.2.2	Trees of community interest management	94
9.2.3	HS01	94
9.3	Other conservation measures	95
9.3.1	Additional protection for HS01	95
9.3.2	Long-term management of Aboriginal object.....	95
9.4	Protocols related to the discovery of new sites.....	95
9.4.1	Skeletal remains protocol.....	95
9.4.2	New sites within the Development Footprint	96
9.4.3	New sites outside the Development Footprint	96
10	RECOMMENDATIONS.....	98
	REFERENCES	100
	APPENDIX 1: ABORIGINAL COMMUNITY CONSULTATION	104
	Appendix 1 Figure 1: Aboriginal consultation log	104
	Appendix 1 Figure 2: Stage 1 Advertisement in the <i>Scone Advocate</i>	108
	Appendix 1 Figure 3: Stage 1 Letter sent to agencies (sample).....	109
	Appendix 1 Figure 4: Stage 1 Response from Heritage NSW.....	112
	Appendix 1 Figure 5: Stage 1 Letter sent to RAPs (sample).....	115
	Appendix 1 Figure 6: Stage 2/3 cover letter and assessment methodology (sample)	117
	Appendix 1 Figure 7: Methodology	118
	Appendix 1 Figure 8: Stage 4 cover letter (sample).	161
	APPENDIX 2: AHIMS EXTENSIVE SEARCH RESULT	163

FIGURES

Figure 1-1: Location of the Project Area.....	4
Figure 1-2: Proposed infrastructure layout for Goulburn River Solar Farm.	5
Figure 1-3: Aerial of the Development Footprint.....	6
Figure 1-4: Comparison between Option 1 and Option 2 of the Development Footprint.	7
Figure 2-1: Aerial showing the Greater Blue Mountains Area – Additional Values.....	9
Figure 4-1: Digital elevation model of the Project Area.....	21
Figure 4-2: Northeast–southwest profile through the central portion of the Project Area.	21
Figure 4-3: Survey units within the Development Footprint.....	22
Figure 4-4: Hydrology and topography of the Project Area.....	23
Figure 4-5: 1962 aerial with overlay of Project Area (source: SS 2022).....	26
Figure 5-1: Horton’s (1994) map of Aboriginal tribal boundaries.....	28
Figure 5-2: Occupational model for the lower Hunter Valley.....	32
Figure 5-3: Location of previously recorded AHIMS sites in relation to the Project Area.....	35
Figure 6-1: Photographs of landforms and visibility within the Development Footprint.....	45
Figure 6-2: Survey coverage within the Development Footprint.	47
Figure 6-3: Aboriginal sites identified during the survey.	49
Figure 6-4: Location of trees of community interest.....	50
Figure 6-5: Location of Killoe Creek GG1.....	51
Figure 6-6: Killoe Creek GG1. View of site and selection of grinding grooves.	52
Figure 6-7: Aerial showing the location of Redlynch Creek OS1.	54
Figure 6-8: Redlynch Creek OS1. View of site and selection of recorded artefacts.	54
Figure 6-9: Aerial showing the location of Redlynch Creek OS2.	56
Figure 6-10: Redlynch Creek OS2. View of site and selection of recorded artefacts.	56
Figure 6-11: Aerial showing the location of Redlynch Creek OS3.....	58
Figure 6-12: Redlynch Creek OS3. View of site and selection of recorded artefacts.	58
Figure 6-13: Aerial showing the location of Rocky Creek Gully OS4.	60
Figure 6-14: Rocky Creek North Gully OS4. View of site and selection of recorded artefacts... 60	
Figure 6-15: Redlynch Creek IF1. View of site and the recorded artefact.....	61
Figure 6-16: Rocky Creek Slope IF2. View of site and the recorded artefact.....	62
Figure 6-17: Wollara Road IF3. View of site and the recorded artefact.....	63
Figure 6-18: Monaghans Creek Drainage IF4. View of site and the recorded artefact.....	64
Figure 6-19: Rocky Creek South Gully IF5. View of the recorded artefact.....	65
Figure 6-20: Ringwood Gully IF6. View of site and the recorded artefact.	66
Figure 6-21: HS01 – the slab hut remains of the O’Brien homestead (Michelle Blakeney 2009 as cited in Britton 2013).	72
Figure 6-22: View of HS01 in 2022.....	73

Figure 6-23: Location of HS01.	74
Figure 6-24: Soil test pit locations.	77
Figure 8-1: Location of recorded sites likely to be harmed by the Project.	88

TABLES

Table 2-1: SEARs general requirements.	12
Table 2-2: Concordance between Heritage NSW input to the SEARs and this ACHAR.	12
Table 2-3: Report compliance with the Code of Practice.	14
Table 3-1: Aboriginal community involvement in the fieldwork.	18
Table 4-1: Survey units of the Development Footprint.	22
Table 5-1: Aboriginal cultural heritage: desktop-database search results.	33
Table 5-2: AHIMS site types and frequencies.	34
Table 5-3: Site types recorded in the region of the Development Footprint.	39
Table 5-4: Likelihood of landforms within the Development Footprint to contain Aboriginal objects.	41
Table 5-5: Likelihood of certain site types being present in the Development Footprint.	41
Table 6-1: Effective survey coverage within the Development Footprint.	44
Table 6-2: Effective survey coverage and incidences of site recording.	46
Table 6-3: Aboriginal cultural heritage sites recorded during the survey.	48
Table 6-4: Trees inspected during the survey.	48
Table 6-5: Redlynch Creek OS1 artefact attributes.	53
Table 6-6: Redlynch Creek OS2 artefact attributes.	55
Table 6-7: Redlynch Creek OS3 artefact attributes.	57
Table 6-8: Rocky Creek North Gully OS4 artefact attributes.	59
Table 6-9: Redlynch Creek IF1 artefact attributes.	61
Table 6-10: Rocky Creek Slope IF2 artefact attributes.	62
Table 6-11: Wollara Road IF3 artefact attributes.	63
Table 6-12: Monaghans Creek Drainage IF4 artefact attributes.	64
Table 6-13: Rocky Creek South Gully IF5 artefact attributes.	64
Table 6-14: Ringwood Gully IF6 artefact attributes.	65
Table 6-15: Trees inspected during the survey.	67
Table 6-16: Soil test pit data.	76
Table 7-1: Aboriginal cultural heritage: significance assessment.	83
Table 8-1: Aboriginal cultural heritage: impact assessment.	87
Table 8-2: Application of ESD principles to the Project.	90
Table 9-1: Management strategies for recorded sites.	92

FOREWORD



The proposed Project is a solar farm located on grazing land to the southwest of Merriwa in the upper Hunter Valley. The solar farm will involve installing approximately 1 million solar photovoltaic panels across the Development Footprint, along with support infrastructure and a battery energy storage system.

The Project Area is mostly confined to a broad plateau that overlooks the Goulburn River National Park. Landforms in the national park that surround the Project Area consist of steep V-shaped valleys, whereas the Project Area is mostly level to gently undulating.

As the Project Area is a basalt plateau, there are no permanent waterways in the Project Area and any waterways are limited to the headwaters of Redlynch Creek and some small gullies running to Rocky Creek. Before agricultural dams, water would have quickly shed off the plateau into waterways draining to the Bow River and the Goulburn River that are a few kilometres from the Project Area.

The lack of permanent water would have made the Project Area an unattractive location for long-term camping by Aboriginal groups. However, an account from a nineteenth-century settler who remembered the land changing once Aboriginal land management ceased in the mid-1800s, shows that Aboriginal people were using the Project Area and managing its environment. It is not known what form this management took, but it was most likely fire management to keep the plateau as open grasslands. The topography of the Project Area—a broad plateau surrounded by steep country—suggests that it would have been ideal hunting ground for attracting game and then corralling and trapping the game in the steep gullies at the edges of the plateau.

The results of the survey that took place over one week in August 2022 supported the view that the Development Footprint was not used for long-term camping as a low number of sites were recorded; and those that were recorded had a low artefact density. This demonstrates that camping activity was not common, and when it did occur, it was confined largely to Redlynch Creek and a tributary to Rocky Creek. There was a very low incidence of recordings across most of the Development Footprint which is on the plateau.

As the Development Footprint consists of a basalt plateau distant to permanent water, test excavation over most of the Development Footprint was not warranted as the landforms have a low archaeological potential and no areas of potential archaeological deposit (PAD) were identified. Those landforms that recorded sites near Redlynch Creek and a tributary to Rocky Creek, were either eroded and displaying thin soils (tributary to Rocky Creek) or in an area heavily modified by dam construction and erosion control works (Redlynch Creek). As such, test excavation was also not recommended for these areas.

This report recommends that any artefacts within the Development Footprint should be collected with the assistance of the RAPs before works for the Project commence.

A further recommendation is to exclude the ruins of the O'Brien homestead from development. Although there is little to see today, this house is associated with Joe and Jimmy Governor as the scene of one of their more gruesome crimes. The 'posts in the paddock', as the ruins are known, are therefore a very powerful reminder of the early history of the Merriwa area and the conflicts that arose between settlers and Aboriginal people.

In conclusion, the construction of the solar farm will impact three small artefact scatters and five isolated finds. In most cases, these sites are in disturbed contexts where ongoing impacts from erosion will continue regardless of the outcome of the Project. Therefore, on a regional level, the Project will have a low impact on Aboriginal cultural heritage. Further, carrying out a pre-construction salvage program will ensure that the artefacts in the Development Footprint are removed from harm and that they will be available either for being returned safely to Country or being used for educational purposes.



A view of the 'posts in the paddock': the remains of the old O'Brien homestead.

ABBREVIATIONS AND GLOSSARY

Access route	Areas along public roads and within the Project Area (but outside of the Development Footprint) where some road upgrades (levelling, vegetation removal) may be required to allow access of the Project components
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.
ACHMP	Aboriginal Cultural Heritage Management Plan
AHIMS	Aboriginal Heritage Information Management System. Administered by the DPE, 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.
ASIRF	Aboriginal Site Impact Recording Form
ATSHP	<i>Aboriginal and Torres Strait Islander Heritage Protection Act 1984</i>
BESS	Battery Energy Storage System
BP	Years before present
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.
Development Footprint	Area where all ground disturbing activity associated with the Project will be located.
DPE	NSW Department of Planning and Environment
EIS	Environmental Impact Statement. A required document for major projects documenting all potential impacts to the environment, including heritage, that may arise due to the development.

EPBC Act	Commonwealth <i>Environment Protection and Biodiversity Conservation Act 1999</i>
EP&A Act	NSW <i>Environmental Planning and Assessment Act 1979</i>
Exclusion zone	Areas within the Development Footprint where no development is proposed. Exclusion zones have been designed to exclude biodiversity and heritage constraints.
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.
ha	hectares
Heritage NSW	Government department tasked with ensuring compliance with the NPW Act. Heritage NSW is advised by the Aboriginal Cultural Heritage Advisory Committee (ACHAC).
Holocene	Geological epoch which lasted from around 12,000 years ago (10,000 BCE) to the present. This period is generally warmer and wetter than the preceding Pleistocene period.
kV	Kilovolt
km	kilometres
IMT	Indurated mudstone tuff. A term used to describe a fine-grained siliceous rock.
LALC	Local Aboriginal Land Council
LGA	Local Government Area
m	metres
MW	megawatts
MWh	megawatt hours
MWp	megawatt peak
NEM	National Electricity Market
NPW Act	<i>National Parks and Wildlife Act 1974</i> . Primary legislation governing Aboriginal cultural heritage within NSW.
NSW	New South Wales
OzArk	OzArk Environment & Heritage

PAD	Potential archaeological deposit. Indicates that a particular location has the potential to contain subsurface archaeological deposits, although no Aboriginal objects may be visible.
Pleistocene	Geological epoch which lasted from about 2.5 million years ago to 10,000 BCE. This period spans the world's recent period of repeated glaciations. Aboriginal occupation of Australia occurs during the upper Pleistocene.
Project Area	Area including the Development Footprint
PV	photovoltaic
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 DPE.
SU	survey units
SSD	State Significant Development

EXECUTIVE SUMMARY

OzArk Environment & Heritage (OzArk) has been engaged by Umwelt (Australia) Pty Ltd on behalf of Lightsource bp (the proponent) to complete an *Aboriginal Cultural Heritage Assessment Report* (ACHAR) for the proposed Goulburn River Solar Farm (the Project). The Project is located approximately 28 kilometres southwest of Merriwa in the Upper Hunter Local Government Area.

This ACHAR has been undertaken in accordance with the *Secretary's Environmental Assessment Requirements*, the *Guide to investigating, assessing and reporting on Aboriginal cultural heritage in NSW* and the *Code of Practice for the Investigation of Aboriginal Objects in New South Wales*. The Aboriginal cultural heritage assessment of the Project has followed the *Aboriginal Cultural Heritage Consultation Requirements for Proponents 2010*.

Background archaeological context

Desktop database searches completed prior to the survey showed that there is one previously recorded site near the Development Footprint, an artefact site (37-1-0053), listed on the Aboriginal Heritage Information Management System database.

It is also known that the Development Footprint contains the slab hut ruins of the O'Brien homestead (HS01) that was the scene of a crime by Jimmy and Joe Governor in 1900 which may have historic and cultural values. In addition, the Project Area is surrounded by an item nominated for National Heritage listing: The Greater Blue Mountains Area - Additional Values.

Results

The field survey was undertaken by OzArk over one week from the 15 August 2022 to 19 August 2022 with the assistance of four Registered Aboriginal Parties (RAPs) on each day of the survey.

The survey resulted in the identification of 11 previously unidentified sites consisting of a grinding groove site, four artefact scatters, and six isolated finds. Of these, eight sites are within the Development Footprint and will be impacted by the Project. The grinding grooves, an artefact scatter and an isolated artefact will be avoided by the Project. Most sites were identified within drainage landforms (SU1, n=7), followed by slope landforms (SU2, n=2), with two sites associated with the Access route survey unit (SU3).

In addition, seven trees with scars were inspected closely during the survey. In the opinion of OzArk, none of the seven trees displayed sufficient attributes to be considered as being culturally modified and OzArk will not register them with AHIMS. However, the RAPs present during the survey indicated that these trees were of cultural importance to the community and believed that the scarring was perhaps Aboriginal in origin.

One historical item, the slab hut ruins of the O'Brien homestead (HS01), includes tangible remains related to shared Aboriginal and European histories of the Merriwa area during the contact period.

Significance assessment

The Project Area holds cultural significance to the local Aboriginal community as Aboriginal people value their heritage as tangible links with the lifestyles and values of their ancestors (Perry 2001:13).

The region of the Project Area is identified by Victor Perry as being important: *'the land and water running through it are the lifeblood of their culture. The hills and plains, the forest and mountains provided people in past generations with the resources needed to survive.'*

No further feedback regarding cultural values was received from the RAPs during their review of this document.

The grinding grooves site (Killoe Creek GG1) is located outside the Access route and has limited scientific research potential and the significance of the grooves primarily relates to their educational and aesthetic values.

Of the 10 artefact sites recorded during the survey, eight sites (three artefact scatters and five isolated finds) are assessed as having low scientific significance based on the following attributes:

- Sites tend to represent artefacts in secondary contexts
- Low density of artefacts
- Common artefact types and materials in the region
- No associated archaeological deposits.

Formal tool types such as the 'axe blank' (Redlynch Creek OS1) and 'scraper' (Monaghan Creek IF4) are less common within the broader regional assemblage and are therefore assessed as having moderate scientific significance.

Aesthetic values within the Development Footprint are related to the association of recorded Aboriginal objects with the landscape, both in their physical association to features such as Redlynch Creek, Rocky Creek, and Ringwood Gully, but also the object's association with the smells and sounds of the current agricultural landscape. Killoe Creek GG1 also has aesthetic values as the visible grooves maintain their association with Killoe Creek.

The historical site HS01 has high scientific value. The site displays this value through its representativeness as an uncommon tangible remain related to shared Aboriginal and European histories of the Merriwa area during the contact period.

Impact assessment

The grinding groove site, 37-1-1033 (Killoe Creek GG1), was recorded 50 metres (m) east of the Killoe Creek crossing outside the Access route, 37-1-1037 (Rocky Creek Gully OS4) is located

30 m north of the Development Footprint, and 37-1-1032 (Ringwood Gully IF6) is located 20 m east of the Development Footprint. Therefore, these three sites will not be harmed by the Project.

Eight of the recorded sites (five isolated finds and three artefact scatters) are located within the Development Footprint and may be harmed by the Project, 37-1-1027 (Redlynch Creek IF1), 37-1-1028 (Rocky Creek Slope IF2), 37-1-1029 (Wollara Road IF3), 37-1-1030 (Monaghans Creek IF4), 37-1-1031 (Rocky Creek Gully IF5), 37-1-1034 (Redlynch Creek OS2), 37-1-1035 (Redlynch Creek OS1), and 37-1-1036 (Redlynch Creek OS3). It is recommended that these sites be salvaged by a surface collection of visible artefacts. The recommended methodology for the salvage will be set out in the ACHMP and will include the measures outlined in **Section 9.2.1**.

Most of the artefact sites are in a secondary context and therefore have low conservation value. No landforms in the Development Footprint were assessed as having archaeological deposits and therefore impact to subsurface archaeological deposits is unlikely.

The seven cultural trees noted in this report do not hold scientific value, however, the cultural value should be considered, and appropriate management for the three trees that are liable to be harmed has been recommended.

The historical site HS01 has archaeological, cultural, and historic values and will be avoided by the Project by a buffer of 20 metres.

No land associated with The Greater Blue Mountains Area – Additional Values will be impacted by the Project. There are no known Aboriginal sites or specific cultural values associated with this listing that are near the Development Footprint.

Recommendations

Recommendations concerning Aboriginal cultural values within the Development Footprint are as follows:

1. Following development consent of the Project, the proponent will develop an ACHMP which is to be agreed to by the RAPs and DPE (with input from Heritage NSW). The ACHMP will include an unanticipated finds protocol, unanticipated skeletal remains protocol, protocols related to heritage inductions for work crews, and long-term management of any Aboriginal sites being impacted.
2. 37-1-1032 (Ringwood Gully IF6), 37-1-1033 (Killoe Creek GG1), and 37-1-1037 (Rocky Creek Gully OS4) will not be harmed by the Project as they are located outside the Access route and the Development Footprint.
3. Eight Aboriginal sites, 37-1-1027 (Redlynch Creek IF1), 37-1-1028 (Rocky Creek Slope IF2), 37-1-1029 (Wollara Road IF3), 37-1-1030 (Monaghans Creek IF4), 37-1-1031 (Rocky Creek Gully IF5), 37-1-1034 (Redlynch Creek OS2), 37-1-1035 (Redlynch Creek OS1), and 37-1-1036 (Redlynch Creek OS3) will be salvaged by a surface collection of

visible artefacts. The recommended methodology for the salvage will be set out in the ACHMP and will include the measures outlined in **Section 9.2.1**.

4. It is recommended that the entire extent of 37-1-1035 (Redlynch Creek OS1) should be salvaged as the portion of the site outside the Development Footprint will continue to be harmed by ongoing erosion.
5. The three trees of community interest (CST1, and CST4–CST5) that are liable to be impacted must be included in a site visit and photographic recording with RAPs at the time of the surface artefact collection set out in **Section 9.2.1**. The results of the photographic recording and any comments from the RAPs about the trees will be included in the salvage report that will be produced following all salvage activities.
6. The location of HS01 will be included on all site construction plans and induction materials to ensure that the location is protected. The boundary of the Development Footprint around HS01 will be permanently flagged and signed to ensure that the place is not impacted.
7. All land-disturbing activities must be confined to within the Development Footprint. Should the parameters of the proposed work extend beyond this, then further archaeological assessment will be required.

1 INTRODUCTION

1.1 DESCRIPTION OF THE PROJECT

OzArk Environment & Heritage (OzArk) has been engaged by Umwelt (Australia) Pty Ltd on behalf of Lightsource bp (the proponent) to complete an *Aboriginal Cultural Heritage Assessment Report* (ACHAR) methodology for the proposed Goulburn River Solar Farm (the Project). The Project is located approximately 28 kilometres (km) southwest of Merriwa in the Upper Hunter Local Government Area (LGA) (**Figure 1-1**).

The Project has the potential to harm Aboriginal objects. Aboriginal objects and Aboriginal Places are protected under the NSW *National Parks and Wildlife Act 1974* (NPW Act). Therefore, this ACHAR is required to investigate the presence of Aboriginal objects within the Project Area, to determine with the Registered Aboriginal Parties (RAPs) whether there are intangible cultural values within the Project Area, to assess the potential harm to any identified heritage values, and to provide management measures to manage or prevent harm associated with the Project.

1.2 PROPOSED WORK

The Project will involve the construction, operation and decommissioning of approximately 550-megawatt peak (MWp) of solar photovoltaic (PV) generation as well as a Battery Energy Storage System (BESS) with 280 MWp / 570 megawatt hour (MWh) capacity. The Project will also include a substation and connection to an existing 500 kilovolt (kV) transmission line (**Figure 1-2**). The Project will include various associated infrastructure, including road repairs and upgrades to Ringwood Road, temporary construction facilities, operation and maintenance buildings, internal access roads, civil works, and electrical infrastructure to connect the Project to the existing transmission line which passes through the Project Area. The 'Access route' referred to in this report includes the Ringwood/Wollara Roads access, and two emergency access tracks to the Project.

Subject to the final design process, the key components of the Project include:

- Approximately 1 million bifacial solar PV modules in an east-west single-axis tracking arrangement with an approximate height of four metres (m) above ground level
- A BESS with an approximate 280 MWp and 570 MWh capacity, housed in a series of outdoor containers, aggregated in one central location adjacent to the substation and switchyard
- Onsite 550kV switchyard and substation, with underground electrical conduits and cabling leading into the yard and overhead lines reaching above to the existing transmission line
- Communications tower, up to 30 m high, providing communications, radio and cellular services to the site and the wider region
- Internal and perimeter gravel access roads allowing for site maintenance

- Temporary construction facilities
- Permanent site office and operations and maintenance building with parking for the operations team
- Primary access point from existing driveway off Wollara Road, with two additional emergency access points proposed along the north-western boundary of the Project Area
- Upgrades to culverts at Bow River and Killoe Creek located on Ringwood Road
- Widening and resealing of 1.8 km of Ringwood Road between Bow River and Killoe Creek. Repairs will include 8 m bitumen-sealed formation with a minimum of 500 millimetres (mm) unsealed shoulders
- Drainage line crossings, if and where required, to manage existing surface water flows
- Project Area perimeter security fencing, crossing gates, water tanks and/or dams, and internal access points around the Project Area.

The Project is expected to operate for 40 years or more. After the initial 40-year operating period, the solar farm would either be decommissioned, removing all above ground infrastructure, and returning the site to its existing land capability, or repurposed with new PV equipment subject to technical feasibility and planning consents.

1.3 DEVELOPMENT CONTEXT

The Project has been classified as a 'State Significant Development' (SSD-33951458) under Part 4 of the *Environmental Planning and Assessment Act 1979* (EP&A Act). Under the NSW planning legislation, an Aboriginal Heritage Impact Permit (AHIP) is not required for SSD projects, instead, the Minister for Planning issues consent where appropriate. This consent is informed by an adherence to the Secretary's Environmental Assessment Requirements (SEARs) issued by the Department of Planning and Environment (DPE).

The SEARs for the Project, issued on 1 February 2022, require the preparation of an Environmental Impact Statement (EIS). The SEARs' requirements relating to Aboriginal cultural heritage include:

- 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)
- 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).

1.4 PROJECT AREA

The Project Area describes the area in which all impacts associated with the Project will be located. The Project Area encompasses an area of approximately 2000 hectares (ha) and is situated 25 km southwest of the town of Merriwa and located approximately 4 km north and 2 km east of the Goulburn River.

The Project Area is located east of Wollara Road and intersects with several creek lines including Rocky Creek, Redlynch Creek, and Ringwood Gully.

1.5 DEVELOPMENT FOOTPRINT

The Development Footprint covers an area of approximately 799.5 ha within the Project Area, as well as 25 km of road corridor connecting the Project Area to the Golden Highway (the Access route) (**Figure 1-3**).

The Development Footprint includes land that is currently cropped and grazed. The landforms have been historically cleared and there are few areas of woodland remaining. Generally, the Development Footprint occupies a broad, gently undulating plateau, although landforms in the northeast and to the west are at a lower elevation.

Following the survey of the Development Footprint (Option 1), the layout of the Development footprint was altered (Option 2). As shown on **Figure 1-4**, the differences between Option 1 and Option 2 are minor and involved the reduction of the Development Footprint in some areas and the expansion of the Development Footprint in other areas. Option 2 includes approximately 799.5 ha, while Option 1 included approximately 882 ha. Option 2 of the Development Footprint did not include significantly different landforms from those surveyed for Option 1.

While outside of the Development Footprint, works will also impact the Access route consisting of Wollara Road and two emergency access roads linking Wollara Road to the Development Footprint. In all mapping provided in this report, a 20 m buffer has been applied to the Access route to capture all possible areas where impacts will be located, although, in most cases, impacts will be confined to existing roads/tracks and their immediate verges.

Figure 1-1: Location of the Project Area.

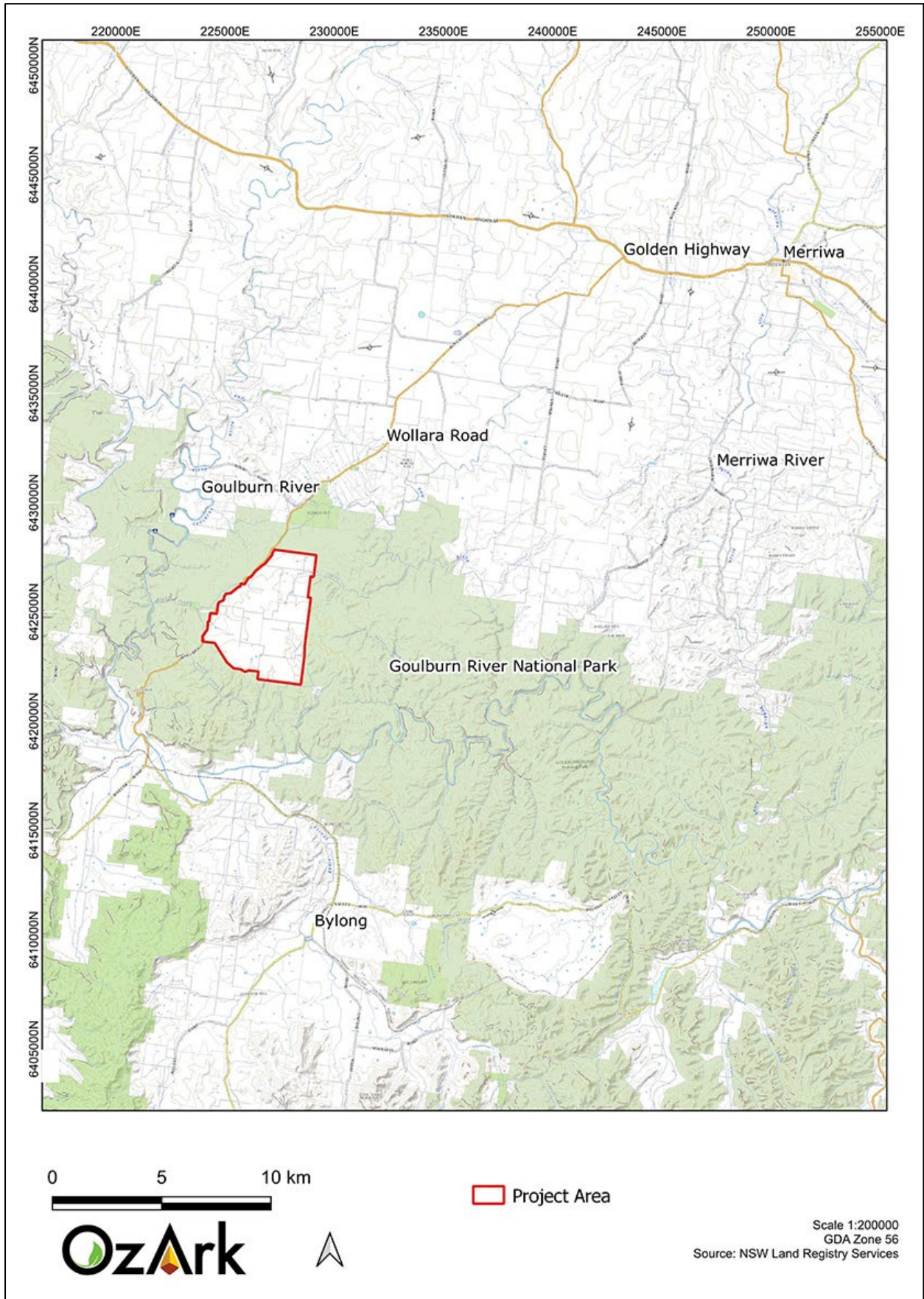


Figure 1-2: Proposed infrastructure layout for Goulburn River Solar Farm.

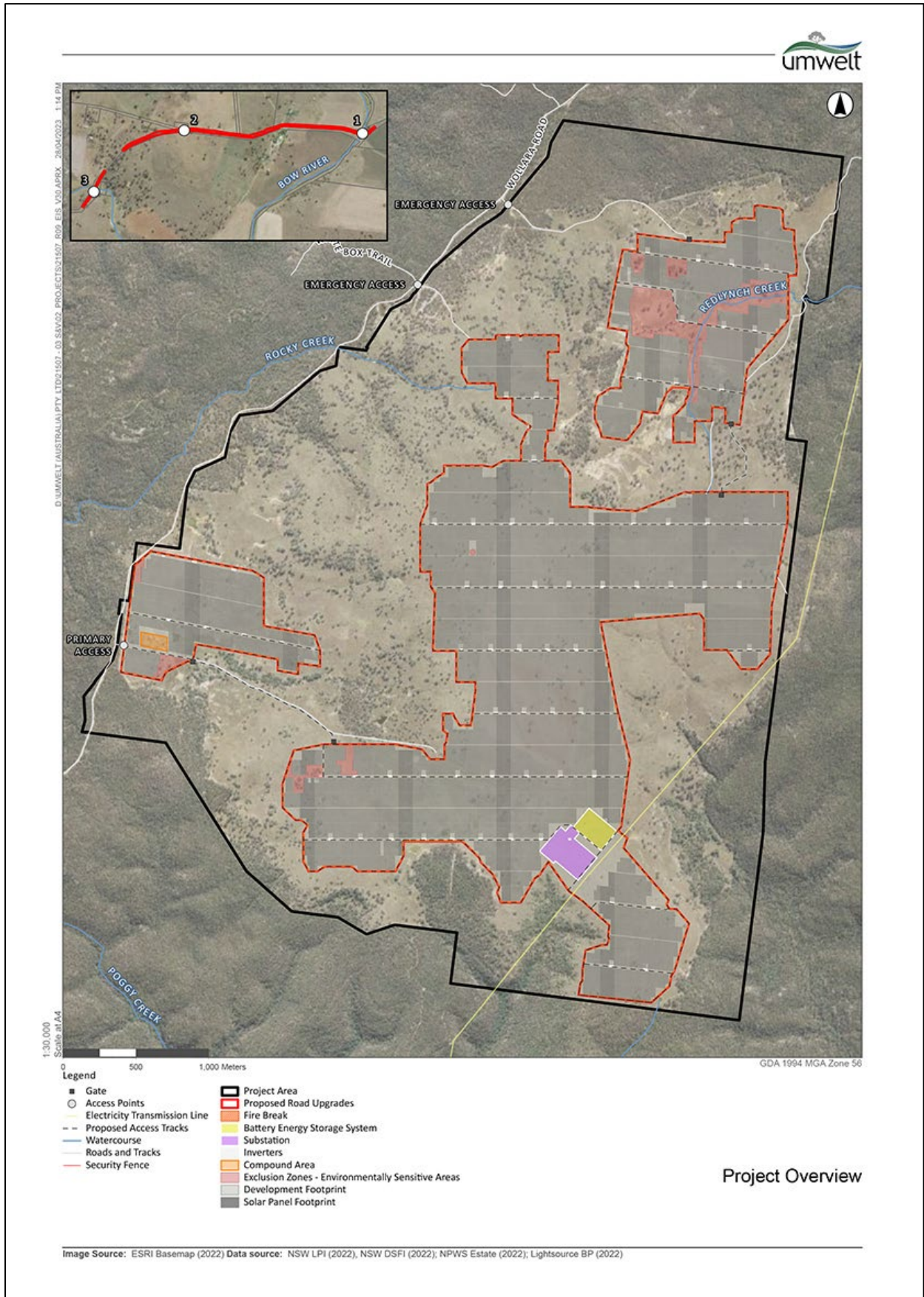


Figure 1-3: Aerial of the Development Footprint.

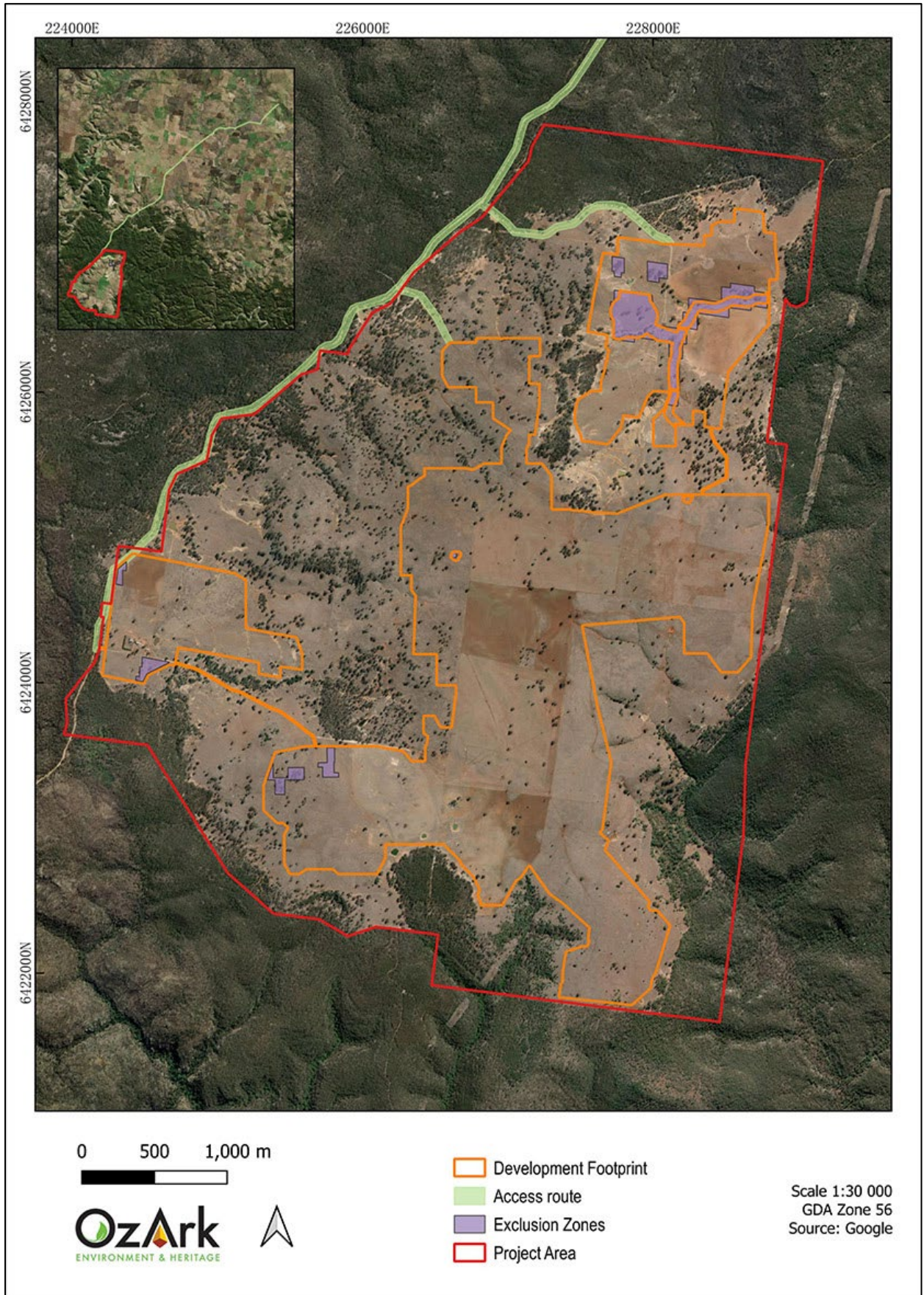
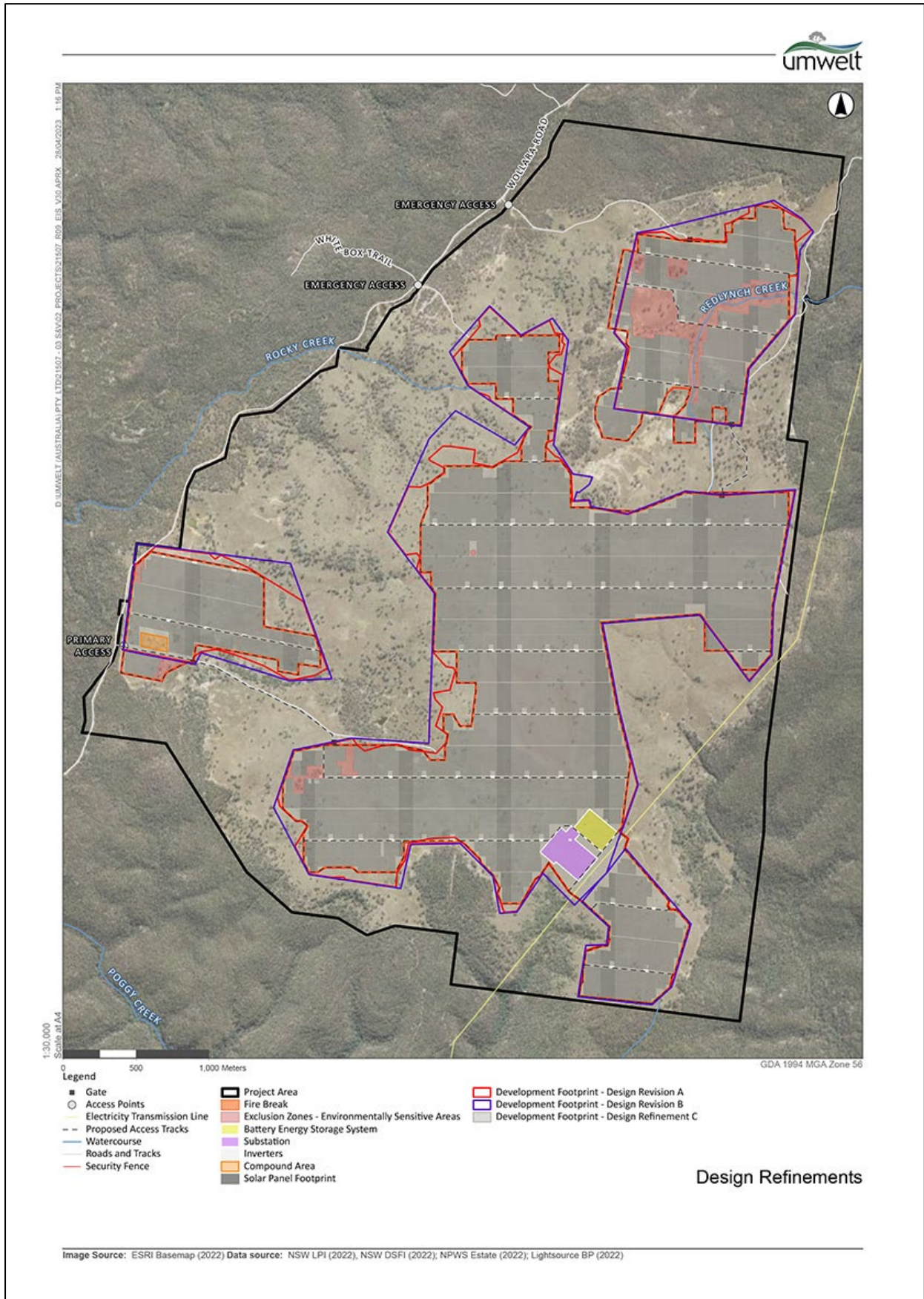


Figure 1-4: Comparison between Option 1 and Option 2 of the Development Footprint.



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 (DCCEEW), provides a framework to protect nationally significant flora, fauna, ecological communities, and heritage places. The EPBC Act establishes both a National Heritage List and Commonwealth Heritage List of protected places. These lists may include Aboriginal cultural sites or sites in which Aboriginal people have interests. The assessment and permitting processes of the EPBC Act are triggered when a proposed activity or development could potentially have an impact on one of the matters of national environment significance listed by the Act. Ministerial approval is required under the EPBC Act for proposals involving significant impacts to national/commonwealth heritage places.

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

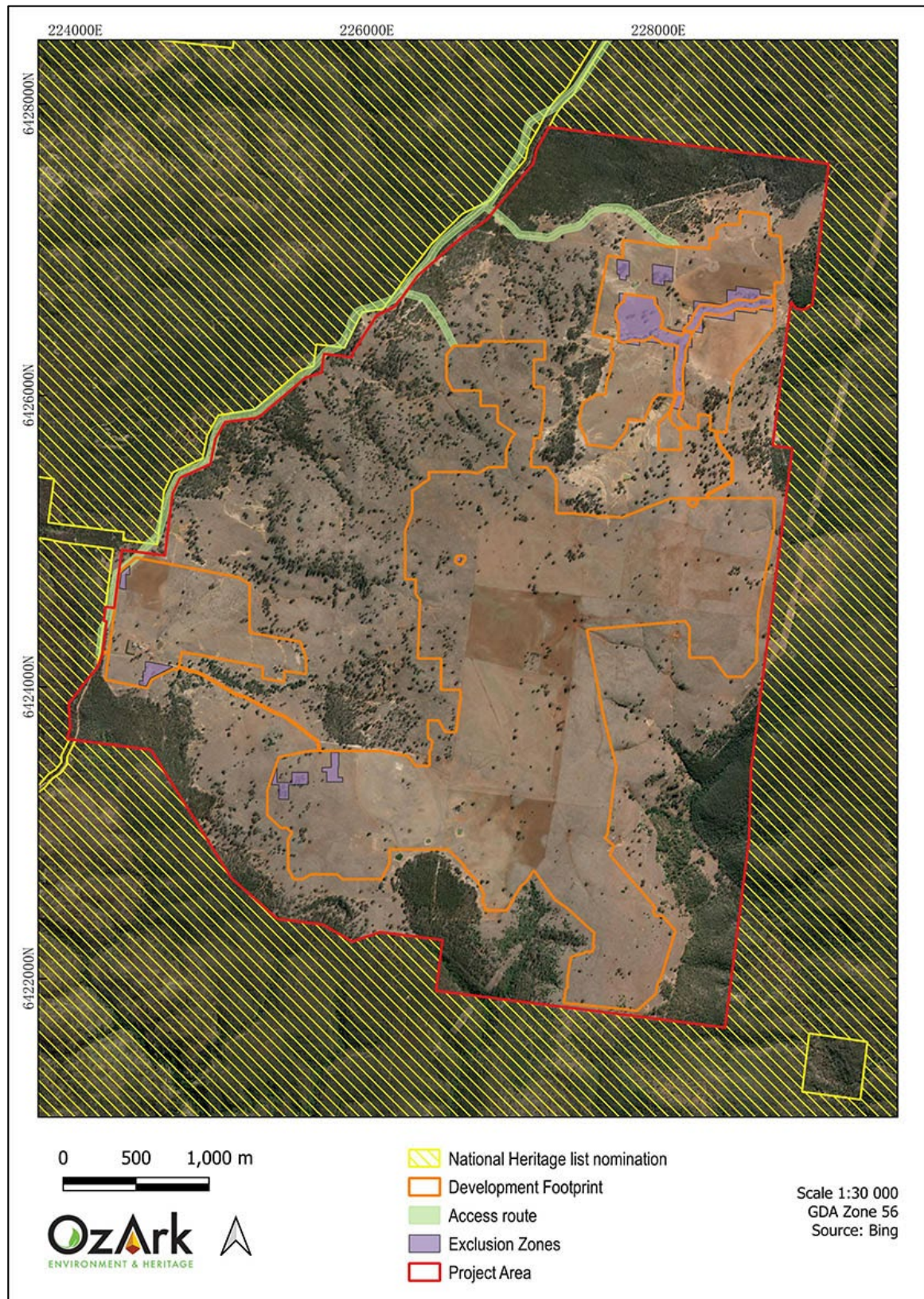
The *Aboriginal and Torres Strait Islander Heritage Protection Act 1984* (ATSHP Act) is aimed at the protection from injury and desecration of areas and objects that are of significance to Aboriginal Australians. This legislation has usually been invoked in emergency and conflicted situations.

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. However, it should be noted that entirety of the Project Area is surrounded by 'The Greater Blue Mountains Area - Additional Values' (105696) as an 'area under assessment' for National Heritage listing. The relationship of the nominated National Heritage place to the Project Area is

shown on **Figure 2-1**. It should be noted that the cadastral details of the national heritage listing do not exactly align with the actual location of Wollara Road, however, the Access Route along Wollara Road where any potential works will be located is excluded from the national heritage listing.

Figure 2-1: Aerial showing the Greater Blue Mountains Area – Additional Values.



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) establishes 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 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 Project will be assessed under Part 4 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 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 *National Parks and Wildlife Act 1974* (NPW Act) provides for the protection of Aboriginal objects (sites, objects, and cultural material) and Aboriginal places. Under the Act (Part 6), an Aboriginal object is defined as: any deposit, object, or material evidence (not being a handicraft

for sale) relating to indigenous and non-European habitation of the area that comprises NSW, being habitation both prior to and concurrent with the occupation of that area by persons of European extraction and includes Aboriginal remains.

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

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 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 DPE 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 DPE will be notified of the location of an Aboriginal object by submitting the relevant site information to the AHIMS register.

2.1.2.3 Secretary's Environmental Assessment Requirements

The SEARs were received by the Project on 1 February 2022. **Table 2-1** addresses the general requirements in the SEARs for SSD-33951458 relating to Aboriginal cultural heritage.

To inform the SEARs, Heritage NSW provided input regarding Aboriginal cultural heritage. This input is set out in **Table 2-2**, along with a concordance of where Heritage NSW's requirements are addressed in this ACHAR.

Table 2-1: SEARs general requirements.

General requirement	Where addressed in the ACHAR
An assessment of the impact to Aboriginal cultural heritage items (cultural and archaeological) in accordance with the <i>Guide to Investigating, Assessing and Reporting on Aboriginal Cultural Heritage in NSW</i> (OEH, 2011) and the <i>Code of Practice for Archaeological Investigation of Aboriginal Objects in NSW</i> (DECCW, 2010).	The Project has undertaken an extensive pedestrian survey across the Development Footprint as reported in this ACHAR. All assessment has followed the applicable codes and guidelines.
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 <i>Aboriginal Cultural Heritage Consultation Requirements for Proponents</i> (DECCW, 2010).	Section 3

Table 2-2: Concordance between Heritage NSW input to the SEARs and this ACHAR.

Heritage NSW requirement	Where addressed in the ACHAR
1. The EIS must identify and describe the Aboriginal cultural heritage values that exist across the whole area that will be affected by the development and document these in an Aboriginal Cultural Heritage Assessment Report (ACHAR). This may include the need for surface survey and test excavation. The identification of cultural heritage values must be conducted in accordance with the <i>Code of Practice for Archaeological Investigation in NSW</i> (DECCW 2010), and be guided by the <i>Guide to Investigating, Assessing and Reporting on Aboriginal Cultural Heritage in New South Wales</i> (OEH 2011).	The Project has undertaken an extensive pedestrian survey across the Development Footprint as reported in this ACHAR. Test excavation was not considered warranted based on the surface expression of artefacts and the types of landforms present. All assessment has followed the applicable codes and guidelines.
2. Consultation with Aboriginal people must be undertaken and documented in accordance with the Aboriginal Cultural Heritage Consultation Requirements for Proponents (DECCW 2010). The significance of cultural heritage values for Aboriginal people who have a cultural association with the land must be documented in the ACHAR.	This requirement has been followed for the Project and is documented in Section 3 and Appendix 1 of this ACHAR.
3. Impacts on Aboriginal cultural heritage values are to be assessed and documented in the ACHAR. The ACHAR must demonstrate attempts to avoid impact upon cultural heritage values and identify any conservation outcomes. Where impacts are unavoidable, the EIS must outline measures proposed to mitigate impacts. Any objects recorded as part of the assessment must be documented and notified to Heritage NSW.	Avoidance measures are discussed in Section 8.1 . Impacts on Aboriginal cultural heritage within the Development Footprint is discussed in Section 8 . Management of Aboriginal cultural heritage within the Development Footprint is discussed in Section 9 .
4. The assessment of Aboriginal cultural heritage values must include a surface survey undertaken by a qualified archaeologist. The result of the surface survey is to inform the need for targeted test excavation to better assess the integrity, extent, distribution, nature and overall significance of the archaeological record. The results of surface surveys and test excavations are to be documented in the ACHAR.	The results of the field survey are documented in Section 6 .
5. The ACHAR must outline procedures to be followed if Aboriginal objects are found at any stage of the life of the Project to formulate appropriate measures to manage unforeseen impacts.	Procedures related to any unanticipated Aboriginal objects encountered within the Development Footprint are outlined in Section 9.4.2 and 9.4.3 .
6. The ACHAR must outline procedures to be followed in the event Aboriginal burials or skeletal material is uncovered during construction to formulate appropriate measures to manage the impacts to this material.	A procedure for the discovery of skeletal material is outlined in Section 9.4.1 .

2.1.3 Local legislation

Section 5.10 of the Upper Hunter Local Environmental Plan (LEP) 2013 includes a schedule of heritage conservation areas and items that require either development consent or exemptions for projects that may impact conservation outcomes.

Applicability to the Project

There are no items listed on the Upper Hunter LEP 2013 within the Project Area.

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

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 within the Development Footprint

Objective Two: Identify and record Aboriginal cultural heritage values within the survey areas. This includes intangible cultural values, Aboriginal objects, and any landforms likely to contain further archaeological deposits

Objective Three: To assess the significance of any recorded Aboriginal cultural values, Aboriginal objects, or sites in consultation with RAPs

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

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 2-3** tabulates the compliance of this report with the requirements established by the Code of Practice.

Table 2-3: 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 5.2
Requirement 1b	Review AHIMS searches	Section 5.3
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 5.4
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 4.1.1
Requirement 6	Site definition	Section 5.5.1
Requirement 7a	Site recording information to be recorded	Not applicable to this report as no new sites were recorded.
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 56.
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
Requirements 14–17	Test excavation which is not excluded from the definition of harm	Not applicable as test excavation was not warranted.
Requirements 18–20	Artefact analysis	Analysis of all recorded artefacts adhered to these requirements

2.5 DATE OF ARCHAEOLOGICAL ASSESSMENT

The field survey was undertaken by OzArk over one week from 15 August 2022 to 19 August 2022.

2.6 OZARK INVOLVEMENT

2.6.1 Field survey

The fieldwork survey was undertaken by:

- Fieldwork Director: Chelsea Jones (OzArk Senior Archaeologist, BA [Hons] the University of Queensland)

- Principal Archaeologist: Ben Churcher (Principal Archaeologist, OzArk, BA[Hons], Dip Ed).
- Archaeologist: Dr Yekun Zhang (OzArk Archaeologist, B Arts Archaeology & Anthropology, M.Sc Archaeological Science, PhD Archaeology).
- Archaeologist: Harrison Rochford (OzArk Archaeologist, Masters Philosophy (Arts and Social Sciences), University of Sydney).

2.6.2 Reporting

The reporting component of the heritage assessment was undertaken by:

- Report author: Chelsea Jones and Dr Yekun Zhang
- Reviewer: Ben Churcher.

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 and are 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 and copies of correspondence with Aboriginal community stakeholders is presented in **Appendix 1 Figure 1**.

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

3.2.1 ACHCRs Stage 1

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

An advertisement was placed in the *Scone Advocate* on 26 May 2022 to solicit expressions of interest (**Appendix 1 Figure 2**).

A letter seeking information from various agencies was sent by Umwelt on 27 October 2021 (**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); the Wanaruah Local Aboriginal Land Council (LALC), the Upper Hunter Shire Council, and the Central West Local Land Services. Replies from government agencies are provided in **Appendix 1 Figure 4**.

Letters were sent to individuals and groups whose contact details had been provided by the government agencies (**Appendix 1 Figure 5**).

By the closing date for registration concerning this Project, 14 groups or individuals registered to be consulted as RAPs:

- A1 Indigenous group
- Didge Ngunawal Clan
- Gomeroi Native Title Applicant
- Hunter Traditional Owner
- Hunters & Collectors
- Junburra Aboriginal Consultancy Services
- Merrigarn
- Murra Bidgee Mullangari Aboriginal Corporation
- Rose Nean
- Stakeholder 1
- Ungoороo Aboriginal Corporation
- Walhallow Local Aboriginal Land Council (LALC)
- Wanaruah LALC
- Widescope Indigenous Group.

An individual/group who did not wish to be identified is referred to as 'Stakeholder 1'.

3.2.2 ACHCRs Stage 2

Consultation was continued by OzArk from 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 7 July 2022 (**Appendix 1 Figure 6**).

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 that was issued to all RAPs for their consideration on 7 July 2022 (**Appendix 1 Figure 6**). 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 5 August 2022.

One response was received from Widescope Indigenous Group on 2 August 2022 advising that they had reviewed and supported the methodology.

The field survey as per Stage 3 of the ACHCRs was undertaken with the assistance of RAP representatives over one week from 15 August 2022 to 19 August 2022.

Table 3-1 provides a log of the RAPS and their representatives who participated in fieldwork. One representative from Hunters & Collectors, Gomeroi Native Title Applicant, Rose Nean and A1 Indigenous Group were invited to participate each day in fieldwork. Other RAPs were invited to participate in the fieldwork, but they were unable to supply a site officer at the time of the survey.

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

Individual/group	Name	Day of participation
Hunters & Collectors	Tanya Matthews	15-19 August 2022
Gomeroi Native Title Applicant	Steve Talbott	15-19 August 2022
Individual	Rose Nean	15-19 August 2022
A1 Indigenous Group	Steven Hickey	15-19 August 2022

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 draft of this ACHAR was distributed to RAPs on 27 October 2022 with a closing date for the review of 24 November 2022 (**Appendix 1 Figure 8**).

During the review period, three RAPs contacted OzArk with two RAPs (Widescope Indigenous Group and Murra Bidgee Mullangari Aboriginal Corporation) supporting the recommendations of the ACHAR with one RAP (Hunter Traditional Owner) acknowledging receipt of the draft ACHAR (see **Appendix 1 Figure 1**).

As a result, no changes have been made to this ACHAR because of RAP feedback following their review of the draft ACHAR.

3.3 CULTURAL VALUES IDENTIFIED THROUGHOUT THE ACHCR PROCESS

No specific cultural values were identified by the RAPs regarding the Project Area, however, the strong cultural values of Aboriginal communities towards landscapes and cultural heritage sites are recognised.

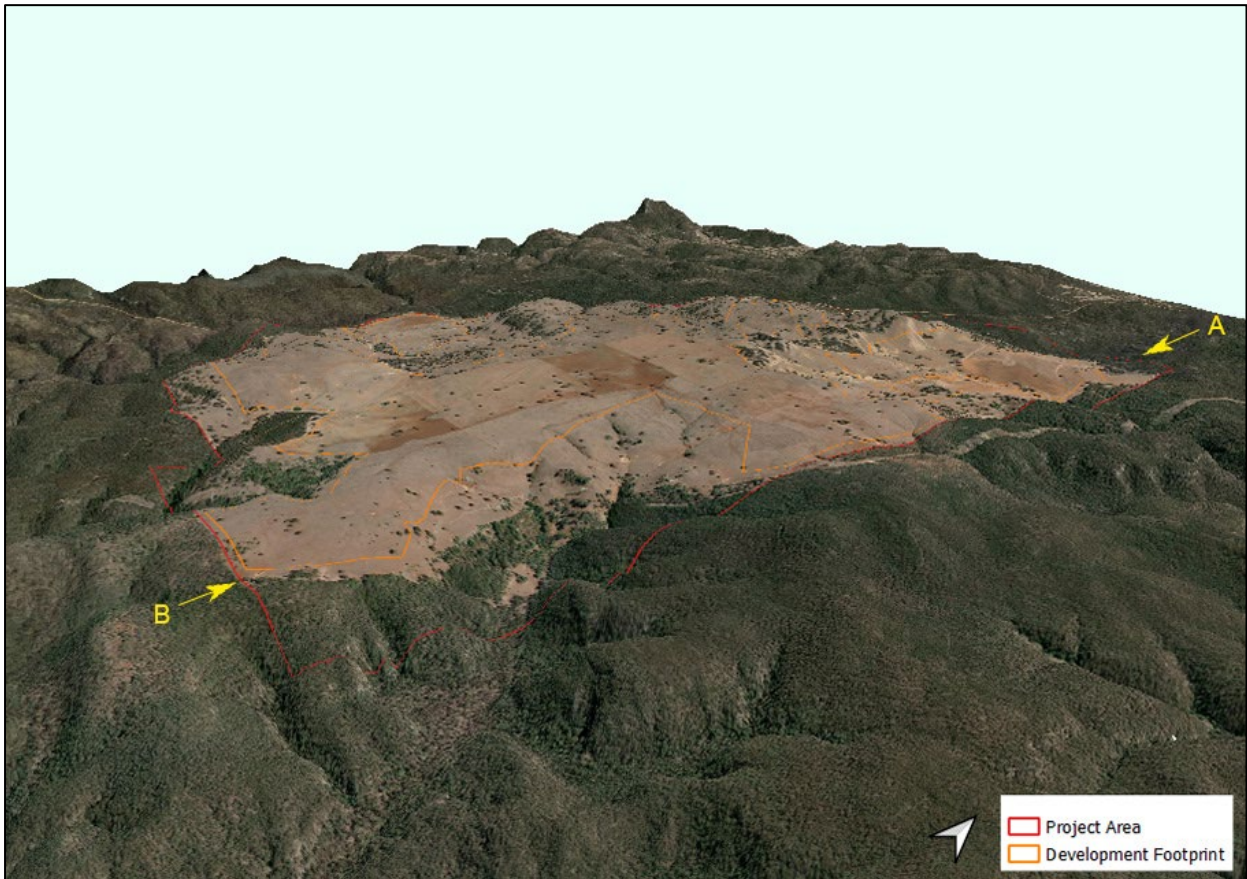
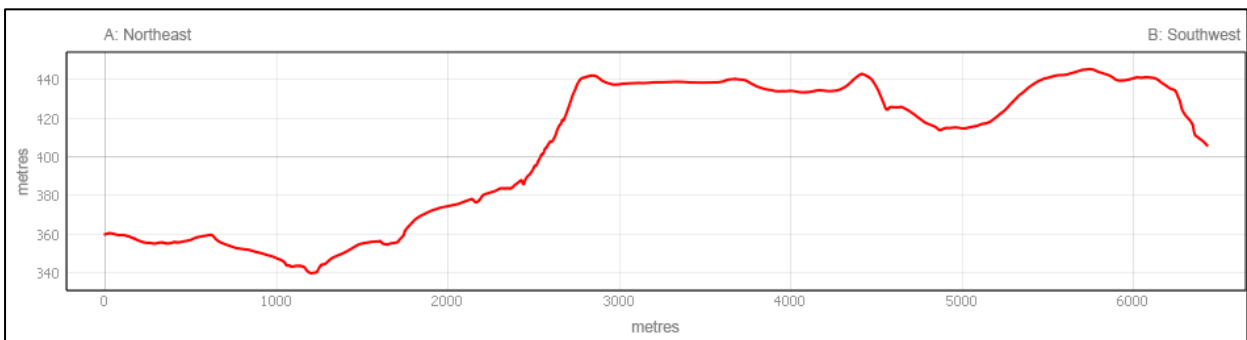
4 LANDSCAPE CONTEXT

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

Most of the Project Area is within the Liverpool Range Valleys and Foot slopes as characterised by Mitchell (2002). This landscape type is characterised by multiple Tertiary basalt flows with intervening sediments and ash fall material, overlying Jurassic quartz sandstones and shale, with a general elevation between 450–1000 m (Mitchell 2002:12).

The topography of the Project Area is generally flat with some minor drainage lines and creeks providing some undulation in the landscape. The Project Area ranges in elevation from approximately 325 to 450 m above sea level. The terrain is generally elevated and level in the centre of the Project Area, with a gradual slope down to its north-eastern and western boundaries (**Figure 4-1**). A north–south profile across the centre of the Project Area demonstrates the generally level, elevated landform comprising the bulk of the Project Area (**Figure 4-2**). The landscape drops away sharply into the surrounding Goulburn River National Park, particularly at its south-eastern boundary. The surrounding Goulburn River National Park consists of hills and ridgelines, and a number of ravines that lead down into creeks and rivers, notably the Goulburn River to the south and west of the Project Area and the Bow River to the east.

Figure 4-1: Digital elevation model of the Project Area.**Figure 4-2: Northeast–southwest profile through the central portion of the Project Area.**

4.1.1 Survey units

Based on the topography of the Development Footprint, survey units were identified to capture the major topographical features of the Development Footprint. The designation of survey units will allow a comparison of the archaeological potential of each major topographical feature within the Development Footprint to understand whether certain landform types are more likely to contain Aboriginal objects than others.

Overall, the Development Footprint can be characterised by three landform types: drainage lines (SU1), slopes (SU2), and the Access route that is within an existing road corridor (SU3) (**Figure 4-3**). **Table 4-1** shows that details of the three landform types.

Table 4-1: Survey units of the Development Footprint.

Survey unit (SU)	Landform	Survey Unit description	Survey unit area (ha)
1	Drainage	Drainage lines with a 200 m buffer around all types of waterways	351
2	Slopes	Gentle to moderate slopes	498
Total Development Footprint			849
3	Road and track corridors	Disturbed road corridor (Wollara Road) and proposed tracks within Project Area (generally existing tracks).	29
Total			878

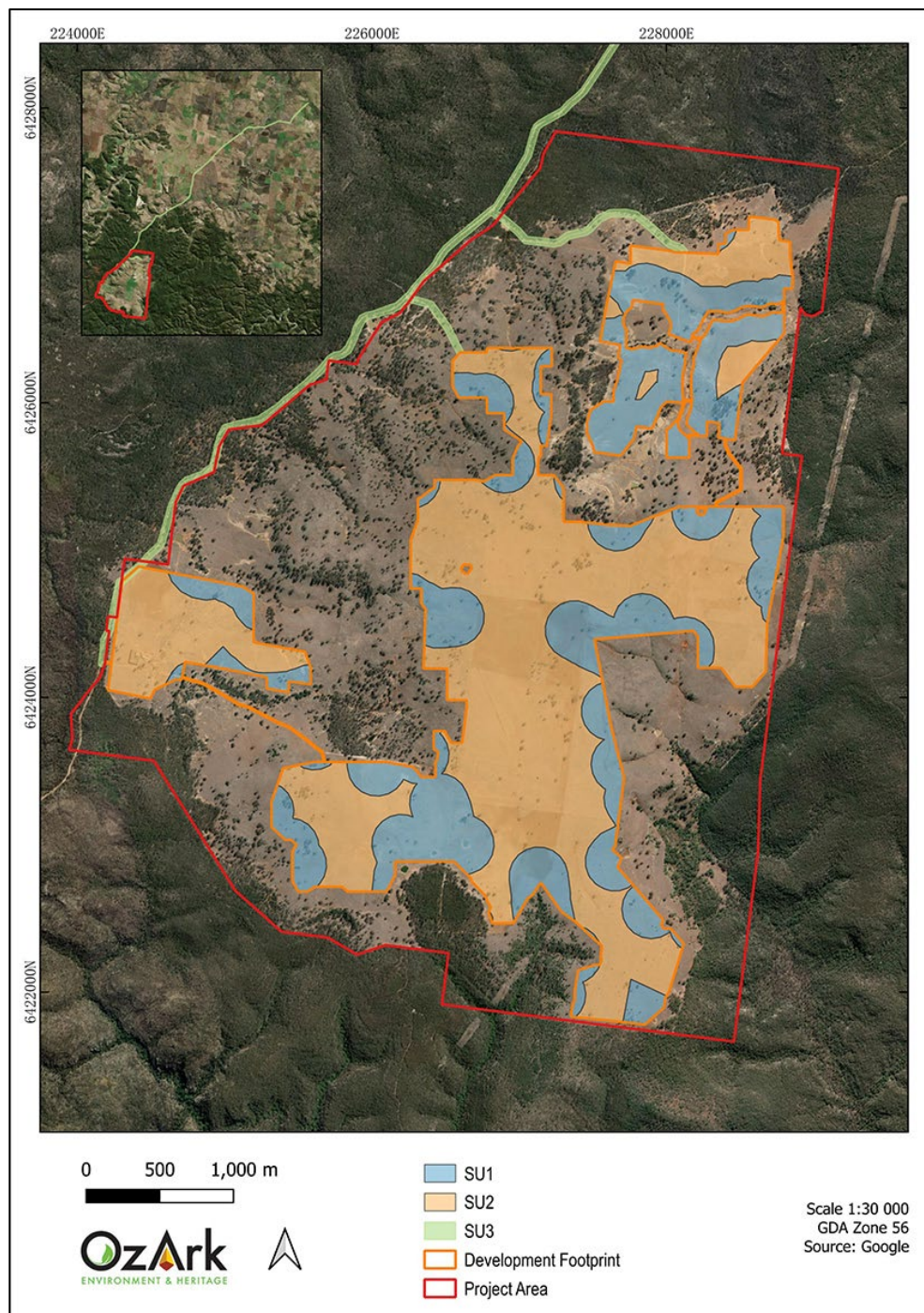
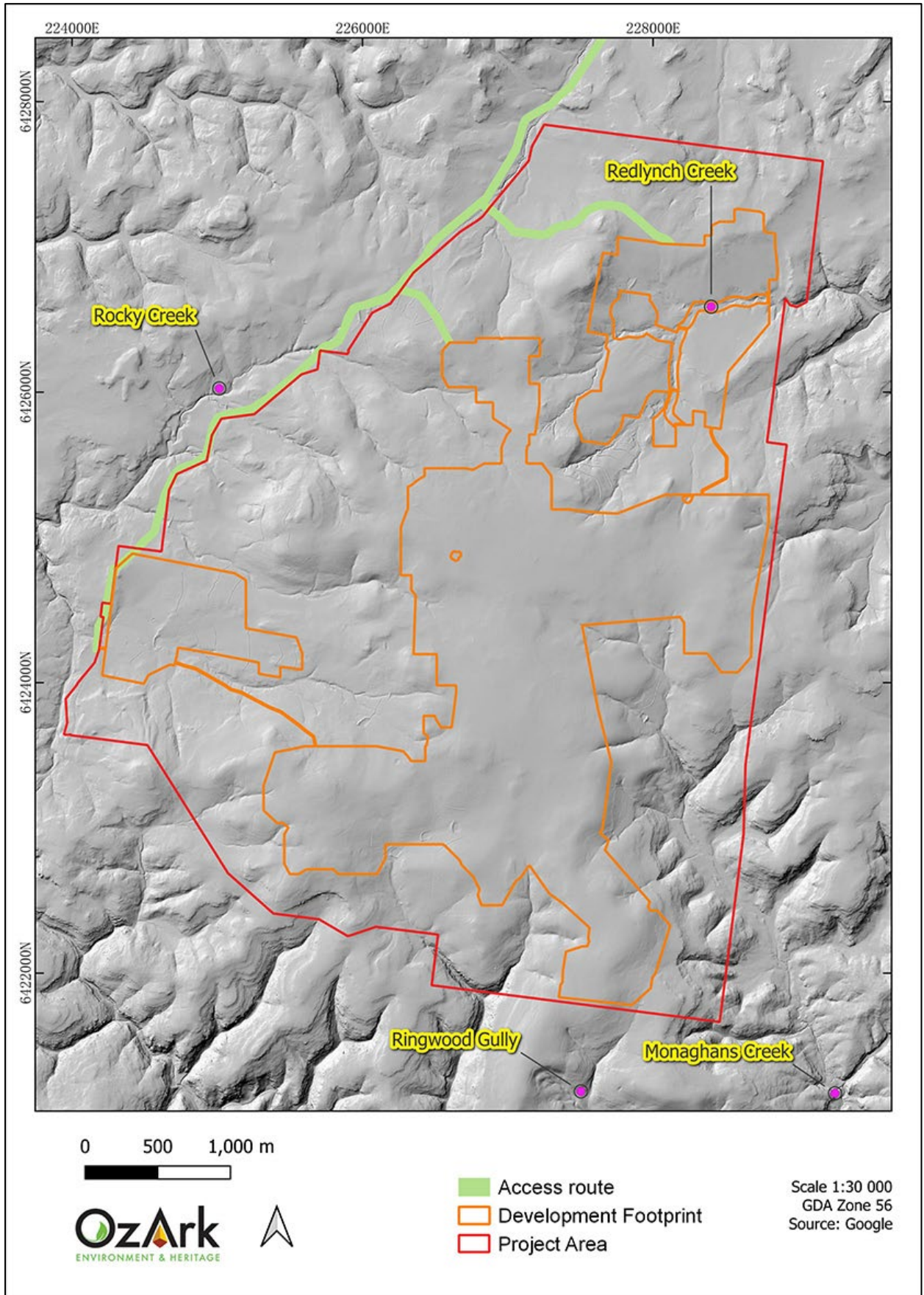
Figure 4-3: Survey units within the Development Footprint.

Figure 4-4: Hydrology and topography of 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).

The Project Area is located on a basalt cap which is remnant of volcanic events during the early Tertiary Period (65 to 54 million years ago). The soils inside the Project Area consist primarily of Chocolate Soil intergrades with shallow stony loams on crests and Chocolate Soils occur on the lower slopes (Kovac and Lawrie 1991), which are classified as kurosols under the Australian Soil Classification Soil Type map of NSW, with rudosols occurring in the surrounding national park (DPIE 2020). The Project Area is often associated with fertile, basalt derived soils and short gradual slopes and has the capability to support a wide range of land uses.

In general, the basaltic soils which are found in the Project Area are nutrient rich (NPWS 2003). However, the Project Area has been subject to sheet, rill, and gully erosion, as well as wind erosion, which has led to the depletion of topsoils (OEH 2012).

4.3 HYDROLOGY

The Goulburn River is located approximately 4 km south from the Project Area and runs through the Goulburn River National Park. Redlynch Creek is in the north-eastern section of the Project Area and flows into the Bow River. Only the headwaters of this creek are within the Project Area. To the west of the Project Area is Rocky Creek that flows into the Goulburn River and several ephemeral tributaries to Rocky Creek are within the Project Area (**Figure 4-4**). There are also several dams located across the Project Area which are associated with the minor drainage lines which flow through the Project Area. These artificial dams have modified the natural flow of the Redlynch Creek and are currently used to support the agricultural land use of the Project Area.

4.4 VEGETATION

The Project Area supports exotic and native vegetation, however, this has been heavily disturbed agricultural activity (Umwelt 2021). Prior to agricultural land clearing the Project Area would have supported a woodland of rough-barked apple (*Angophora floribunda*), Blakely's red gum (*Eucalyptus blakelyi*), narrow-leaved red ironbark (*Eucalyptus crebra*), grey box (*Eucalyptus microcarpa*), Yellow box (*Eucalyptus melliodora*), white box (*Eucalyptus albens*) and blackbutt (*Eucalyptus pilularis*). Sandstone gullies included narrow-leaved stringybark (*Eucalyptus sparsifolia*), broad-leaved ironbark (*Eucalyptus fibrosa* ssp. *fibrosa*), currawang (*Acacia doratoxylon*), forest phebalium (*Phebalium ambiens*), Australian boxthorn (*Bursaria spinosa*), hopbush (*Dodonaea* sp.), and River oak (*Casuarina cunninghamiana*). In the creeks on northern aspects Belah (*Casuarina cristata*) was also likely to be present with fern understorey along creek lines at the eastern end of the range (Kovac and Lawrie 1991 and Mitchell 2002).

Accounts from the O'Brien family in relation to the Project Area's history also references previous Aboriginal land management of the Project Area:

'...the land at Pogy changed when Aboriginal people no longer burned back the grass to attract new green growth and kangaroos. ...Aboriginal people hunted at Pogy, ...the land changed when they were no longer hunting...'

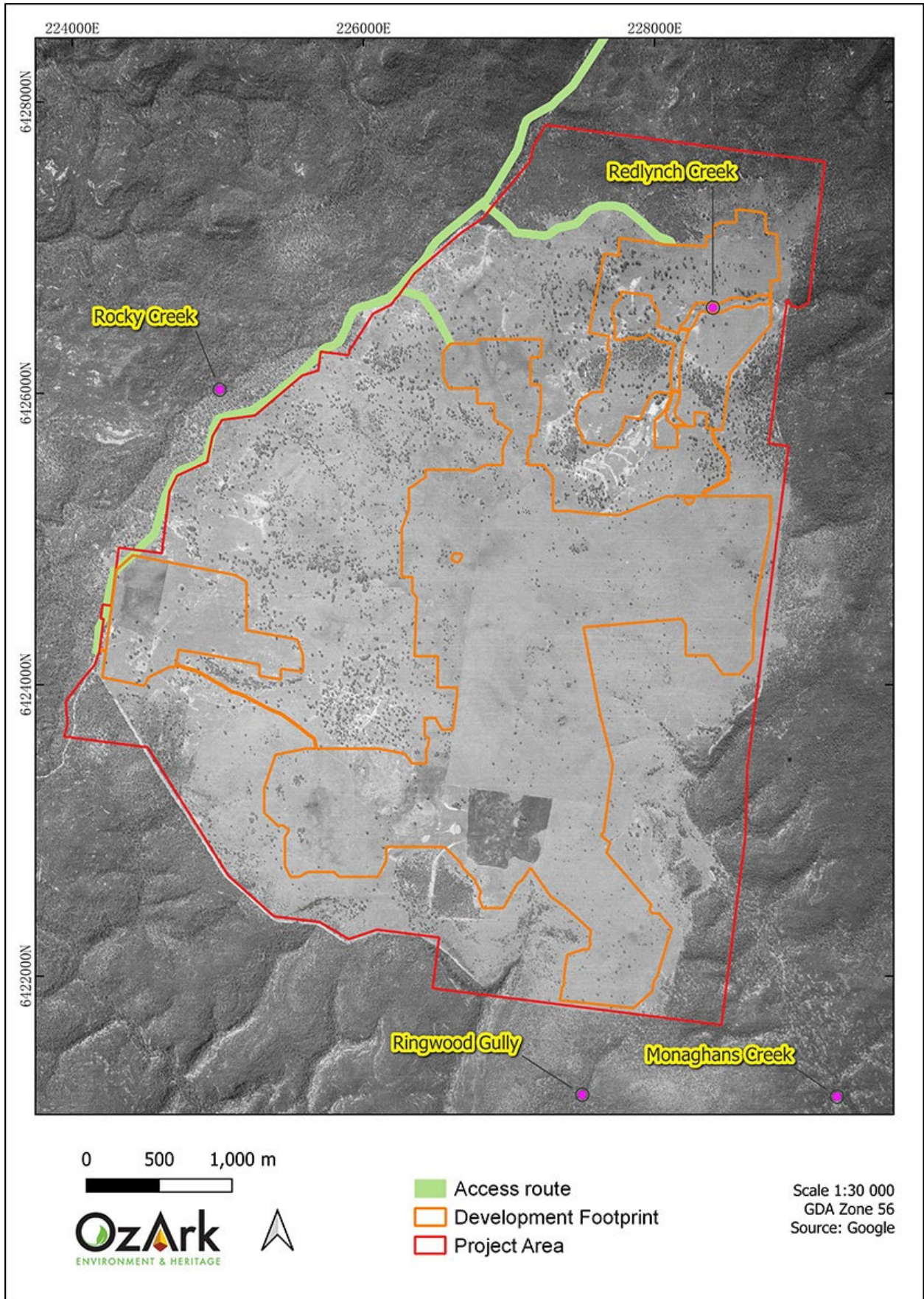
(Britton 2013:146).

This quote demonstrates that the Project Area was a managed landscape pre-1788 and that the vegetation mix has been altered by humans for a long period of time.

4.5 LAND USE HISTORY AND EXISTING LEVELS OF DISTURBANCE

The Project Area consists of grazing land, most of which has been subjected to extensive vegetation clearing associated with the long history of grazing starting in the late 1860s, with some instances of cropping, and pasture improvement. There is currently one occupied dwelling located within the Project Area which is used by the landholder. Prior to being cleared for agricultural use, the whole landscape would have supported open woodlands and forests; albeit probably kept open by Aboriginal fire management. Historical aerial imagery demonstrates the long history of pastoralism, along with a small area of cropping, in the Project Area (**Figure 4-5**). While the Project Area has generally the same appearance now as it appeared in 1962, there was more visible erosion and erosion remediation works in 1962 around Redlynch Creek than is currently the case. Additionally, there has also been a decrease in tree cover around Redlynch Creek over the past 60 years.

Figure 4-5: 1962 aerial with overlay of Project Area (source: SS 2022).



4.6 CONCLUSION

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

- Topography and hydrology: the Project Area primarily consists of gentle slopes, with the highest area being the southern portions of the Project Area with an elevation of 440 m which descends towards the north and the south. The Project Area would have been hospitable to Aboriginal people, however, there are few areas within the Project Area which would have encouraged long-term Aboriginal occupation of the landscape due to the lack of a permanent water source. The non-perennial watercourses within the Project Area, such as Redlynch Creek, would have provided limited freshwater and subsistence requirements to support occupation of the area but this occupation was probably short-term or sporadic.
- Geology and soils: the predominate geology of the Project Area is basalt, which was used as a raw material for manufacturing artefacts. Thus, areas with outcropping basalt could contain evidence of past Aboriginal quarrying activity. The fertile soils of the region would have supported various resources that attracted the traditional Aboriginal people to the area. However, colonial use of the fertile soil has resulted in long-term impacts to the environment, including the clearing of vegetation to provide open spaces for intensive grazing. These impacts could have removed certain site types (such as culturally modified trees) or the disturbed artefact sites through soil loss, ploughing, and stock trampling. Gully and sheetwash erosion, particularly along the drainage and gully landforms, indicate preservation of artefacts in their original depositional context is unlikely.
- Vegetation: the Project Area would have once supported an open woodland which would have provided some resources for Aboriginal subsistence in the past and the evidence suggests that this was a managed landscape, possibly to use the plateau as a hunting ground. These vegetation types had several utilitarian, medicinal, and subsistence uses. Wood from Eucalypts were used for dish and bowl manufacture, bark used to make shelters and canoes, oil to sooth colds, aches, and fevers and as a general antiseptic and honey, nectar, and manna from some species for food (Stewart & Percival 1997). However, resources likely to have supported a large population of people would have been present closer to the banks of more permanent water sources including the Bow and Goulburn Rivers. The broad-scale vegetation clearance which has taken place across the Project Area for agricultural purposes reduces the likelihood that any culturally modified trees remain present, however, should mature native vegetation remain, particularly along the ephemeral drainages, culturally modified trees may be present.
- Land use: activities such as vegetation clearance, grazing, and cultivation are the dominant types of disturbance to have taken place across the Project Area. These activities are likely to have displaced Aboriginal objects or sites or removed them entirely i.e. modified trees. Further, cultivation reduces the potential for intact subsurface archaeological material to remain. In areas where farming and agriculture is less intensive, Aboriginal objects are likely to be in a secondary context due to slope wash.

The Wiradjuri is one of the largest language groups within New South Wales extending across the much of central NSW (Tindale 1974). While the area was noted to have a single basic language, various dialects could be found throughout the region (Tindale 2000).

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

The presence of Aboriginal people in Wiradjuri Country has been dated to at least 30,000 BP (years before present) based on evidence from Cuddie Springs near the Macquarie Marshes (Field and Dodson 1999).

Gamilaraay people

The Gamilaraay (also spelt Gomeroi, Kamilaroi) country, as defined by the limits of the Gamilaraay language groups, refers to the language or dialect spoken around the Namoi, Gwydir, and Barwon Rivers in north to central NSW. The language was spoken over a large area from Walgett to Bingara, and from the upper Hunter Valley to beyond Mungindi (O'Rourke 1997). According to O'Rourke (1997) it is difficult to establish the total Aboriginal population who originally spoke this language.

The explorer and natural scientist Alfred William Howitt was an early pioneer authority on Aboriginal cultures. In *Native Tribes of South-East Australia*, Howitt discusses Gamilaraay social and political organisation, kinship, ritual practices, long distance trade and communication (see Fison and Howitt 1880). Presbyterian minister Reverend William Ridley (1875) and surveyor and amateur anthropologist Robert Hamilton Mathews (1903) provided early linguistic descriptions of the Gamilaraay language. More recently, Austin and Tindale (1985) provided a translation of the Gamilaraay Dreaming story of the Emu and the Brolga, as recorded by Austin (1993) produced a Gamilaraay reference dictionary.

The area of the Gamilaraay was rich in both flora and fauna resources. The Gamilaraay caught fish including eels, freshwater crayfish, yabbies, tortoises, and freshwater mussels in the rivers, creeks, and wetlands in the region (O'Rourke 1997). Watercraft were manufactured from large slabs of bark cut from river red gum trees. Fish were caught using fishing lines and nets made from reed fibre. Nets were used to catch waterbirds, whose eggs were also collected. Some of the other animals that Aboriginal people of the Northwest Slopes hunted include kangaroos, wallabies, koalas, possums, emus, echidnas, lizards, snakes, and frogs (Fison and Howitt 1880; O'Rourke 1997). Plant foods included grass seeds, wild orange, emu apple, melons, tubers, yams, and roots (O'Rourke 1997).

Balme (1986) compiled a list of objects that likely comprised the toolkit used by Aboriginal people in the region from reports by Mitchell (1839), Oxley (1820) and Sturt (1833). Based on this list,

the toolkit used by Gamilaraay people is likely to have included: bark containers for holding water and gathering food; throwing sticks for hunting; cloaks of kangaroo skin; wooden clubs for fighting; hafted stone axes; nets for catching fish and birds; spears and spear throwers; and fish traps constructed in major creeks and rivers.

Geawegal people

The Geawegal people occupied the northern tributaries of the Hunter River to Murrurundi including the modern towns of Muswellbrook, Aberdeen, Scone, and the Mount Royal Range. The Geawegal were affiliated with the coastal Worimi although they are thought to be a sub-group of the Gamilaraay. However, the tribal systems in the Hunter region have not been easy to elucidate since tribal organisation was devastated before any attempt was made to record it.

British surveyor, A. Cunningham, remarks in 1825 that the Geawegal people avoided the British explorers in the Merriwa district:

'In all our journey we have seen no natives, their late marks on the trees are proof of their existence in and having passed thro the forests of the neighbourhood, and it is more than probable they have seen us and have studiously avoided us' (Brayshaw 1986:54).

Wonnarua people

The Wonnarua people lived in an environment rich in food resources. Freshwater fish, shellfish, reptiles, mammals, birds, and plant food provide a diverse diet (see Brayshaw 1981). Brayshaw (1986:82) suggests that inland groups visited the coast during the summer when marine resources were plentiful, and coastal groups travelled inland to participate in the winter kangaroo hunts. Trade and/or exchange also occurred between the coastal and inland groups. Reed spears and shells were traded inland for possum skin rugs and fur cord (Brayshaw 1986:41). Social gatherings were a feature of Aboriginal life in this area.

Visiting by coastal and inland groups for initiations and ceremonies seemed to occur. These were conducted within earthen circles. Carved trees were associated with these sites (Brayshaw 1981:12).

Material culture items for this area included many items made of bark obtained from various trees. For example, tea tree bark (*Melaleuca quinquenervia*) was used for the construction of huts, and the bark of the cabbage-tree (*Livistona australis*) and Kurrajong (*Brachychiton eopulneus*) were used to make cord for the manufacture of fishing lines and nets, and for sewing up canoes (Brayshaw 1981). Baskets, shields, and canoes were also made from bark. Some shields, however, were also made from the wood of the nettle tree (*Urticaceae*) or fig (*Ficus* spp.). Boomerangs, clubs, spear throwers and hatchets were also manufactured. Spears were of composite manufacture, usually being lengths of grass tree (*Xanthorrhoea australis*) to which points of hard wood were attached. Maintenance tools included stone adzes and chisels, abrasive

stones, small fishhook files, bone awls and sharpened shell knives and scrapers (Brayshaw 1981:10). After 1788 glass and iron hatchets became sought after items.

5.2 REGIONAL ARCHAEOLOGICAL CONTEXT

The Aboriginal occupation of Australia begins prior to 40,000 BP and possibly earlier than 50,000 BP (O'Connell et al. 2018). Dates exceeding 20,000 BP occur in almost all parts of Australia resulting in the expectation that most areas should have a Pleistocene (>12,000 BP) occupational signature. However, such dates remain relatively rare due to a range of factors, both behavioural and post-depositional. These factors include a possible low density of occupation in the Pleistocene period, poor preservation of archaeological materials (particularly dateable organic materials), and significant coastline and hydrological changes over the past 18,000 years.

Two sites in the Hunter Valley have been recorded as Pleistocene in age, Glennies Creek in the central lowlands (Koettig 1987) and Moffat's Swamp on the coastal plain (Baker 1994). Given that there can be little doubt of occupation in the Hunter Valley during the Pleistocene, the paucity of archaeological material from this time represents a gap in the record.

Kuskie and Kamminga (2000) have established a general model of occupation strategies for the central lowlands and lower Hunter region primarily based upon ethnographic research (**Figure 5-2**). This model is useful as a starting point and makes a general set of predictions for the lower Hunter that can be applied further afield. Primarily, the Kuskie and Kamminga (2000) model distinguishes between short-term or extended occupation and makes some predictions about the likely location of different foraging and settlement activities.

Figure 5-2: Occupational model for the lower Hunter Valley.

Occupation pattern	Activity location	Proximity to water	Proximity to food resources	Archaeological expectations
Transitory movement	All landscape zones, but frequently on ridge and spur crests, watercourses and valley flats	Not important	Not important	Assemblages of low density and diversity Evidence of tool maintenance and repair Knapping
Hunting and/or gathering without camping	All landscape zones	Not important	Near food source	Assemblages of low density and diversity Evidence of tool maintenance and repair High frequency of used tools discarded Knapping
Camping by small parties	Frequently associated with permanent or temporary water	Nearby	Near food source	Assemblages of low-moderate density and diversity Evidence of tool maintenance and repair Hearths
Nuclear family base camp	Level or gently undulating ground	Nearby reliable source	Near food source	Assemblages of high density and diversity Evidence of tool manufacture and casual knapping Facilities such as heat treatment pits and stone lined ovens Grindstones present
Community base camp	Level or gently undulating ground	Nearby reliable source	Near food source	Assemblages of high density and diversity Evidence of tool manufacture and casual knapping Facilities such as hearths and stone lined ovens Grindstones and ochre present Evidence of heat treatment unlikely Large area >100 m ² with isolated campsites

Occupation Model for the Central Lowlands and Lower Hunter Valley from Kuskie, P. and Kamminga, J. 2000. *Salvage of Aboriginal archaeological sites in relation to the F3 Freeway near Lenegans Drive, Black Hill, New South Wales*. Report to the Roads & Traffic Authority,

A review of GHD (2005), HLA-Envirosciences (2005) and Umwelt (2007) provides the following regional synthesis:

- Archaeological sites, even where surface evidence is not present, occur on most landforms. This was confirmed by HLA-Envirosciences (2005) excavation program, in which Aboriginal sites were encountered on alluvial terraces, flats, slopes, bench areas, spurs and ridgelines. HLA-Envirosciences acknowledges that the sample areas were biased somewhat as they were all near creek lines
- Site frequency and density are dependent on their location in the landscape. This theme is consistent throughout NSW and is influenced by a range of factors, the most relevant of which the existing level of disturbance. More specifically, the potential for undisturbed in situ deposits remaining in the upper Hunter Valley is generally low
- The highest concentration of Aboriginal sites surrounds creeks and waterways
- Few scarred trees are recorded, reflecting the high degree of tree clearing in the region
- The most frequently recorded raw material is indurated mudstone/tuff (a fine-grained siliceous material). Other frequently recorded materials include locally sourced silcrete, quartz, and volcanic stones
- Assemblages recorded in the region consist largely of unmodified flakes with few formed tools. Backed blades comprise the characteristic diagnostic artefact in the region. The mid- to late-Holocene appears to have witnessed this move to smaller tools, perhaps as an impetus to conserve raw material during tool manufacture or due to new functionality requirements.

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** and presented in detail in **Appendix 2**.

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

Name of Database Searched	Date of Search	Type of Search	Comment
Commonwealth Heritage Listings	25/7/2022	Upper hunter LGA	No places listed on either the National or Commonwealth heritage lists are located within the Project Area
National Native Title Claims Search	25/7/2022	NSW	The Project Area includes land currently subject to Native Title Claim by the Gomerai People (Tribunal File No. NC2011/006, Federal Court No. NSD2308/2011)
AHIMS	1/6/2022	22 x 22 km region that covers the Project Area and the 25 km road corridor between the Project Area and Golden Highway	One AHIMS site is within the Project Area No AHIMS sites are within the Development Footprint.
LEP	25/7/2022	Upper Hunter LEP 2013	None of the Aboriginal places noted occur near the Project Area.

As per **Table 5-1**, it is noted that the Project Area includes land currently subject to a Native Title claim (NC2011/006, NSD37/2019, Gomeroi People).

A search of the AHIMS database returned 106 records for Aboriginal heritage sites within the designated search area. The most frequently recorded site types are shelters with artefacts which contribute 55.7% of the site types in the vicinity of the Project Area. Other frequent site types are artefact sites (33%) and grinding grooves (5.7%). Shelters with grinding groove and deposit (1.9%), shelter with art (1.9%), art (pigment or engraved) (0.9%), and shelter with midden and artefact (0.9%) are also present but only have one or two recordings in the vicinity of the Project Area (see **Table 5-2**).

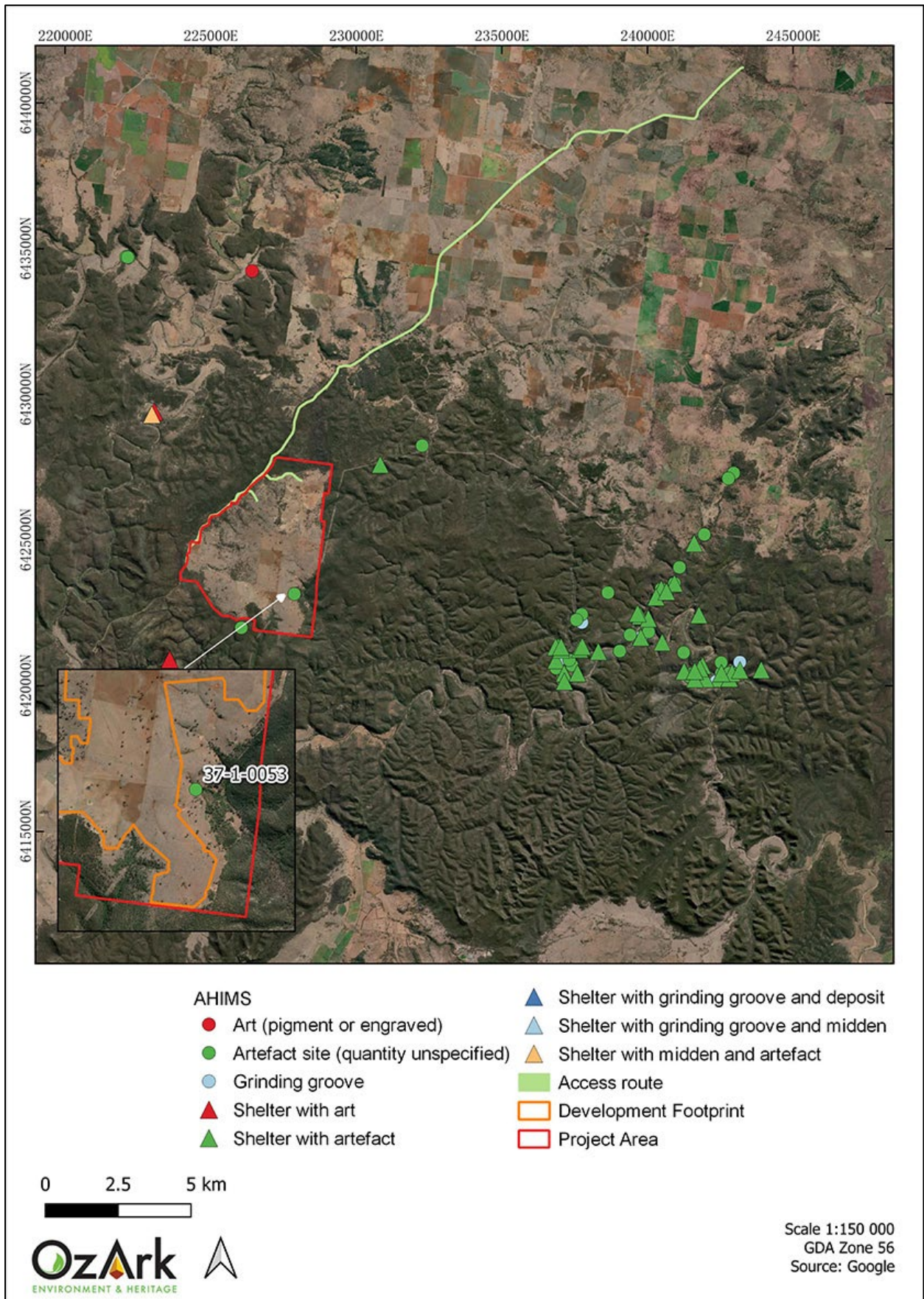
Site types which include shelters are in the mountainous ranges to the east of the Project Area. All types of Aboriginal sites tend to be located near watercourses. **Figure 5-3** shows the location of previously recorded sites in the vicinity of the Project Area. This data shows a notable cluster of site recordings associated with the Goulburn River to the east of the Project Area. This cluster includes landforms around the confluence of the Bow and Goulburn Rivers, as well as sites associated with Turnbridge Creek, a tributary to the Goulburn River. This cluster would probably not be so noticeable if further systematic survey was undertaken across the Goulburn River National Park as it is expected that further sites associated with the region's major waterways would be recorded providing a more widespread distribution of sites.

One artefact site (37-1-0053) with an unspecified number of artefacts was recorded by Margrit Koettig in the Project Area but outside of the Development Footprint. This site was recorded in 1985 during an archaeological survey of the Bayswater to Mt Piper transmission line. The transmission line spanned the site, and the site remains valid on the AHIMS register.

Table 5-2: AHIMS site types and frequencies

Site Type	Number	% Frequency
Shelter with artefact	59	55.7
Artefact site (quantity unspecified)	35	33.0
Grinding groove	6	5.7
Shelter with grinding groove and deposit	2	1.9
Shelter with art	2	1.9
Art (pigment or engraved)	1	0.9
Shelter with midden and artefact	1	0.9
Total	106	100

Figure 5-3: Location of previously recorded AHIMS sites in relation to the Project Area.



5.3.2 Previous studies in or near the Project Area

A large amount of archaeological work has been undertaken in the upper Hunter Valley. However, only a brief regional archaeological context is detailed below that focuses on work in similar landforms to the current Project Area including previous studies undertaken by Moore (1969 and 1970), Haglund (1980 and 1981), English and Gay (1993), Maynard (2000), RPS (2011, 2012 and 2013), ARA (2012) and OzArk (2022).

The results of these investigations provide an archaeological context for the current assessment and were used in the preparation of a predictive model of Aboriginal site location (**Section 5.5**).

Moore (1969 and 1970) excavated shelter Sandy Hollow 1 (37-2-0066) between November 1965 and March 1966. A total of 4790 flakes and cores were recorded as part of the shelter assemblage. Artefacts typologies included Bondi points, backed blades, eloueras, microliths and large quantity of waste flakes. (Moore 1969:168). Formal tool types were observed continuously until Level 4 (depth 2.5 centimetres [cm]) where waster flakes continued but only a few implement scrapers were observed. Material composition of the assemblage included yellow chert and red jasper. Both raw material types are available in the bed of the Goulburn River. Moore also recorded some white quartz, notably waste-flakes were present throughout the deposit (Moore 1970:35). Campfires, bone, and shell were also identified outside of the shelter's overhang. Charcoal from a depth of 60 cm was radiocarbon dated to between 600–700 Common Era (CE) while a sample from 10–15 cm depth was dated to 1,300 years ago. Artefacts and food remains were excavated to a total depth of approximately 106 cm at the site.

Haglund (1980 and 1981) conducted an assessment for the proposed Kerrabee Dam located approximately 3 km south and 8 km east of the Project Area. During the various assessments, 347 sites were recorded: 232 shelters with deposit, 103 open deposits, six art sites, 19 grinding groove sites, one quarry and one scarred tree (Haglund 1980, 1981). Haglund found that the open deposits/ artefact scatters were generally situated on high river flats, well above the flood zone and often at junctions of watercourses or within major meanders. They are also frequently backed by escarpments with shelters, although the number, size, and condition of these varied. Archaeological deposits recorded were present in shelters backing or close to the river flats. Shelters facing south appeared to have been avoided unless equipped with a natural screen. Most shelters recorded with deposit were facing north or somewhat west or east of north. Sizes varied from very small (i.e. suitable for one person) to larger (i.e. suitable for several families).

In 1993, English and Gay undertook a regional assessment of the Merriwa area. The survey focused on a sample of landform types with the intention of building information about the archaeological sensitivity of different areas of the Merriwa region, as well as Aboriginal occupation of the area. Over the course of the survey, 34 artefact scatters, 29 isolated finds, 15 shelters (one with art), two sets of grinding grooves and one scarred tree were recorded. The results of the

survey showed evidence that Aboriginal occupancy of the Merriwa region is prevalent across a range of different landforms. In particular, of the 34 artefact scatters recorded 18 were located along creek riverbanks or flats, eight along hill slopes, four along foot slopes and four along hilltops. Of the 29 isolated finds twelve, were identified along creek riverbanks or flats, eight along hill slopes, five along foot slopes and four along hill tops. The sample size of the recorded sites was not big enough to extrapolate for site distribution of sites across the landscape. However, preliminary results suggested that the north–south flowing watercourses offer a natural confluence for movement between Merriwa plateau, the Liverpool Range, the Goulburn River Valley, and the central lowlands, as well as out towards the west.

Maynard (2000) assessed the Wendouree property, approximately 18 km northeast of the Project Area. During the assessment one shelter with deposit (FSC 1), three open scatter sites located along a terraced exposed sandstone rock face (FSC 2 and 3) and an open camp site located along the creek banks and lower cultivation areas were recorded. Only FSC1-3 were identified within Maynard’s assessment area. The raw material of the artefacts is recorded as being quartzite, chert, quartz, mudstone, and chalcedony. All sites were recorded near Farm Springs Creek.

A series of archaeological due diligence assessments for a number of boreholes were conducted by RPS (2011, 2012 and 2013) in the Bylong Valley, approximately 4 km south of the Project Area. The proposed borehole locations were generally located in areas which exhibited high levels of prior disturbance from activities such as logging, farming, or clearing for easements and/or access tracks. In general, the proposed borehole locations were determined to have limited to no potential for Aboriginal cultural or archaeological significance.

The RPS study was undertaken for a proposed open cut mine and associated infrastructure including rail loop and power line easement, approximately 8 km south of the Project Area, that was undertaken by Archaeological Risk Assessment Services (ARAS 2012). The assessment area encompassed the Coggan Creek catchment which drains into the Goulburn River. During the survey, 215 Aboriginal sites were identified, most of which were surface artefacts. Of these, 24 sites were identified as being of high significance, which was defined as an:

‘Aboriginal site or Aboriginal object that is rare or unique contains archaeological data that is of high quality and can provide information that will contribute to new knowledge. High conservation value and is important in educating the general public about cultural heritage values’ (ARAS 2012:184).

Sites identified with high significance included sites containing the following feature/s: hearth, modified tree, grinding groove, potential archaeological deposit (PAD), and selected surface artefact/s. The remaining 191 sites were assessed to be of medium or low significance.

OzArk (2022) undertook an archaeological assessment for the proposed Merriwa Solar Farm, approximately 24 km northeast of the Project Area. During the survey, a total of seven previously unidentified isolated finds were recorded (Highfields IF-1 to Highfields IF-7). Artefact typologies includes flake and flaked pieces with one formal tool type identified as the Indurated Mudstone Tuff (IMT) blade identified as Highfields IF-1. All recorded artefacts were made of IMT. Inspection of the previously recorded sites, 37-1-0429, 37-1-0430 and Glenburnie 12, Glenburnie 13, Glenburnie 14, Glenburnie 15, Glenburnie 16, and Glenburnie 17 was undertaken, but no artefacts were identified at any of the previously recorded locations. Owing to the distance to permanent water sources and sloped landforms characteristic of the assessment area, no landforms were considered to have potential for subsurface archaeological deposits to occur.

An assessment by Victor Perry (Upper Hunter Wonnarua Council) has been previously undertaken near the Development Footprint (Perry 2001). This study, conducted in April 2001, was for a proposed sandstone quarry in Lot 58 DP750956. This lot includes the current O'Brien homestead in the southwest of the Project Area and is mostly located outside the Development Footprint. Aerial imagery of the lot does not show a sandstone quarry in this area, so it is possible the quarry never eventuated. Perry recorded no Aboriginal sites during this assessment.

Perry (2001:7) notes that the Project Area: *'is in the middle of the Mountain Range and would make very good look out sites for the travelling Wonnarua people.'*

5.4 REGIONAL AND LOCAL CONTEXT: CONCLUSION

A review of the studies conducted in the broader region of the Project Area provides the following regional synthesis:

- Archaeological sites, even where surface evidence is not present, occur on most landforms
- Site frequency and density are dependent on their location in the landscape. This theme is consistent throughout NSW and is influenced by a range of factors, the most relevant of which the existing level of disturbance. More specifically, the potential for undisturbed *in situ* deposits remaining in the upper Hunter Valley is generally low
- The highest concentration of Aboriginal sites on the valley floor surrounds creeks and waterways. Sites located away from water sources tend to have a low artefact density and site complexity
- Few scarred trees are recorded reflecting the high degree of tree clearing in the region
- The most frequently recorded raw material is indurated mudstone/tuff (a fine-grained siliceous material) associated with Hunter River gravels. Other frequently recorded materials include locally sourced silcrete, quartz, chert, and volcanic stone.

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 Development Footprint

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

Table 5-3: Site types recorded in the region of the Development Footprint.

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.

Site type	Site description
	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.
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.
Rockshelters and art sites	Utilised in the past for both habitation and ceremonial purposes. The term 'rock shelter site' refers to rock shelters/rock overhangs that contain evidence such as stone artefacts and/or bones and/or plant remains (from meals eaten at the site) and/or hearths (fireplaces). Most rock shelter sites are secular in nature, however, those that also contain rock art or engravings are often believed to be non-secular in nature. The term 'rock art site' generally refers to Aboriginal ochre paintings or ochre or charcoal drawings located on a rock slab (generally in a sheltered place like the floor of a cave or rock shelter), boulder, cliff-face, cave or rock shelter wall or roof, or wall of a rock overhang. Most rock art sites are found in locations that are sheltered from the elements. This observation, however, is probably biased to some extent, as rock art would not preserve well in open positions. Rock art sites are generally believed to be non-secular in nature.
Burials	Although none have been recorded in the AHIMS search area, burials are generally found in soft sediments such as aeolian sand, alluvial silts, and rock shelter deposits. In valley floor and plains contexts, burials may occur in locally elevated topographies rather than poorly drained sedimentary contexts. Burials are also known to have occurred on rocky hilltops in some limited areas. Burials are generally only visible where there has been some disturbance of sub-surface sediments or where some erosional process has exposed them.
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.

5.5.2 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 with a permanent water supply.

Rock shelters are the most likely site to be recorded on slopes greater than 10 degrees where sandstone escarpments are present, however, this type of landform is rare within the Project Area. As the large portions of the Development Footprint consist of gentle slopes distant to creeks and drainage lines, previous findings indicate that artefact sites will be the most likely site type to be present but that they will have a low artefact density.

According to the predictive modelling undertaken by Kuskie and Kamminga (2000) (**Section 5.2**), the lack of permanent waterways in the Development Footprint indicates that the occupation patterns in the Development Footprint will include transitory movement, hunting and gathering

(without camping), or camping by small parties. These occupation patterns will likely result in assemblages of low artefact density and diversity.

5.5.3 Conclusion

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

Table 5-4: Likelihood of landforms within the Development Footprint to contain Aboriginal objects.

Survey unit (SU)	Landform type	Likelihood to contain Aboriginal objects
1	Slopes	Slopes are a degrading landform, especially in the Development Footprint where vegetation removal has accelerated soil loss. When steep, 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 lower gradient slopes and localised flat benches, if they are present, where occupation may have been possible. As the slope landforms in the Project Area are generally of a low gradient, these would not impede Aboriginal occupation. However, as these landforms are elevated and generally distant to reliable water, the probability of recording past Aboriginal occupation is diminished.
2	Drainage	Archaeological studies in the region indicate that banks and elevated terraces adjacent to drainage lines or watercourses were favoured occupation locations and therefore have high potential for occupation sites to be present. However, except for Redlynch Creek, there is not an abundance of waterways in the Development Footprint and the likelihood of recording artefact sites is reduced across most of the Development Footprint. Drainage landforms are often in aggrading environments where sediment from surrounding hill slopes has accumulated. While this sediment may obscure artefacts, drainage landforms also have the potential to contain sheet wash or gully erosion that can reveal artefacts.
3	Road and track corridors	SU3 contains a number of landform elements and crosses a number of waterways such as the Bow River and Killoe Creek. While landforms associated with the waterways may contain Aboriginal objects, past disturbance from road/track construction and maintenance will mean that the objects are in a disturbed context.

Table 5-5: Likelihood of certain site types being present in the Development Footprint.

Site type	Likelihood of being present in the Development Footprint
Isolated finds	As isolated finds can occur anywhere, particularly within disturbed contexts, it is predicted that this site type could be recorded within the Development Footprint.
Open artefact scatters	As most of the Development Footprint is within sloping landforms distant to permanent water, this site type is not predicted to be common. However, in flat or ridge landforms this site type is possible although the moderate degree of disturbance in the Development Footprint 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.
Culturally modified trees	As most of the Development Footprint has been cleared for agricultural purposes, the opportunity to record culturally scarred trees is diminished. The Access route (SU3) is unlikely to contain scarred trees as the assessment is limited to the existing road corridor where larger trees have generally been removed. It is noted that scarred trees are not commonly recorded in the area with no recorded instances of scarred trees in the AHIMS search carried out for this assessment.
Grinding grooves	Where there is suitable outcropping sandstone rock, there is the possibility for there to be grinding grooves. However, this site type tends to be associated with more mountainous areas in the region, and it is assessed that this site type is unlikely to be recorded within the Development Footprint.
Rock shelters	Rock shelters have been recorded in the wider region. However, based on preliminary landform analysis of the Project Area it is unlikely suitable landforms for large rock outcrops or overhangs are present within the Project Area. Therefore, rock shelters are unlikely to be recorded within the Development Footprint.

Site type	Likelihood of being present in the Development Footprint
Burials	Although it is possible that this site type could be found within the Development Footprint, it is considered a rare site type especially given the disturbance that has occurred within the Development Footprint.
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.

5.6 RESEARCH QUESTIONS

Several research questions can meaningfully be applied to the investigation of the Development Footprint. These research questions include:

- What resources were available to the Aboriginal people using the land within the Development Footprint (food, stone, and water) and what resources were transported to the area?
- What tasks were Aboriginal people undertaking at the sites?
- Is there potential for burials to be present in the landscape?
- Are there outcropping rock materials present suitable for stone tool procurement and manufacture?
- Do the findings within the Development Footprint (if any) accord with the regional archaeological context examined in **Section 5.2**?

6 RESULTS OF ARCHAEOLOGICAL ASSESSMENT

6.1 SAMPLING STRATEGY AND FIELD METHODS

The archaeological methods utilised in the Aboriginal archaeological assessment followed the Code of Practice. Standard archaeological field survey and recording methods were employed in this study (Burke & Smith 2004).

The survey strategy involved a series of pedestrian transects (~25 m spacing). Each set of transects were orientated either north–south or east–west to achieve systematic coverage. Transects were overall spaced evenly between each of the survey participants. The survey participants were divided into two teams to maximise coverage of the Development Footprint with four participants included within each team.

Pedestrian coverage across the survey is shown on **Figure 6-2**. The figure only shows the tracks of one OzArk archaeologist per team and therefore the survey coverage was greater than indicated in this figure.

Landforms not surveyed as part of Option 1 of the Development Footprint that are included in Option 2 of the Development Footprint are contiguous and identical landforms to those already surveyed. As the archaeological characteristics of the additional areas are understood, and because no new landform types were included in Option 2 of the Development Footprint, the results of the Option 1 survey can be extrapolated to the landforms included in Option 2 of the Development Footprint. **Figure 1-4** shows a comparison between Option 1 and Option 2 of the Development Footprint and it is shown that only small areas of land have been added to Option 2 that were not assessed for Option 1.

6.2 PROJECT CONSTRAINTS

As most of the Access route along Wollara Road (SU3) has been previously disturbed, survey of SU3 involved only targeted pedestrian inspection of creek crossings and sections determined to have elevated archaeological potential or minimal evidence of previous disturbances. The remainder of the road corridor was inspected from a vehicle.

Access to all portions of the Development Footprint within the Project Area was possible.

Large portions of the Development Footprint exhibited very low ground surface visibility due to the thick grass cover. The constraint of low ground surface visibility was considered, but as most of the Development Footprint consists of landforms with a low archaeological sensitivity, the lack of ground visibility did not significantly impede the effectiveness of the survey.

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 Development Footprint. In general, **Table 6-1** presents an approximation of the amount of ground surface able to be seen at any location within specific landform units. Exposures in SU1 landforms were generally confined to the edges of drainage lines or gullies with high GSE afforded in the erosion scalds associated with the drainage landforms. Visibility along slopes (SU2) was hampered by increased grass cover and shrubs limiting the GSE exposures. GSE and GSV was variable in SU3 with the disturbed corridors being bitumen, gravel, or dirt but the road shoulders heavily vegetated by juvenile woodland, grass, or shrubs (**Figure 6-1**).

Table 6-1: Effective survey coverage within the Development Footprint.

Survey unit	Landform	Survey unit area (ha)	Visibility (%)	Exposure (%)	Effective coverage area (ha) (= survey unit area x visibility % x exposure %)	Effective coverage % (= effective coverage area / survey unit area x 100)
1	Drainage	306	70	30	64.26	21
2	Slopes	506	5	5	1.26	0.25
3	Road and track corridors	30	30	40	3.6	12

Figure 6-1: Photographs of landforms and visibility within the Development Footprint.

	
<p>1. Steep gradient slope (SU2) towards southern end of Development Footprint. 0–10% GSE.</p>	<p>2. Slope landform (SU2) transitioning to drainage landform (SU1), occasional shrubs and bordered by dense woodland.</p>
	
<p>3. Dam within the base of drainage landform (SU1), creating a broad erosion scald with 80–90% GSE.</p>	<p>4. View from lower slope (SU2) towards drainage landform (SU1). Distinct change in GSE and GSV between SU2 and SU1 showing an increase in exposures in SU1.</p>



	
<p>5. 20–60% GSE along the shoulder of a track (SU3). SU3 at this location afforded good GSE but less exposure in the adjacent woodland.</p>	<p>6. Creek crossing along Wollara Road (SU3). 100% GSE and disturbance within road corridor. 0–10% GSE along road shoulder.</p>

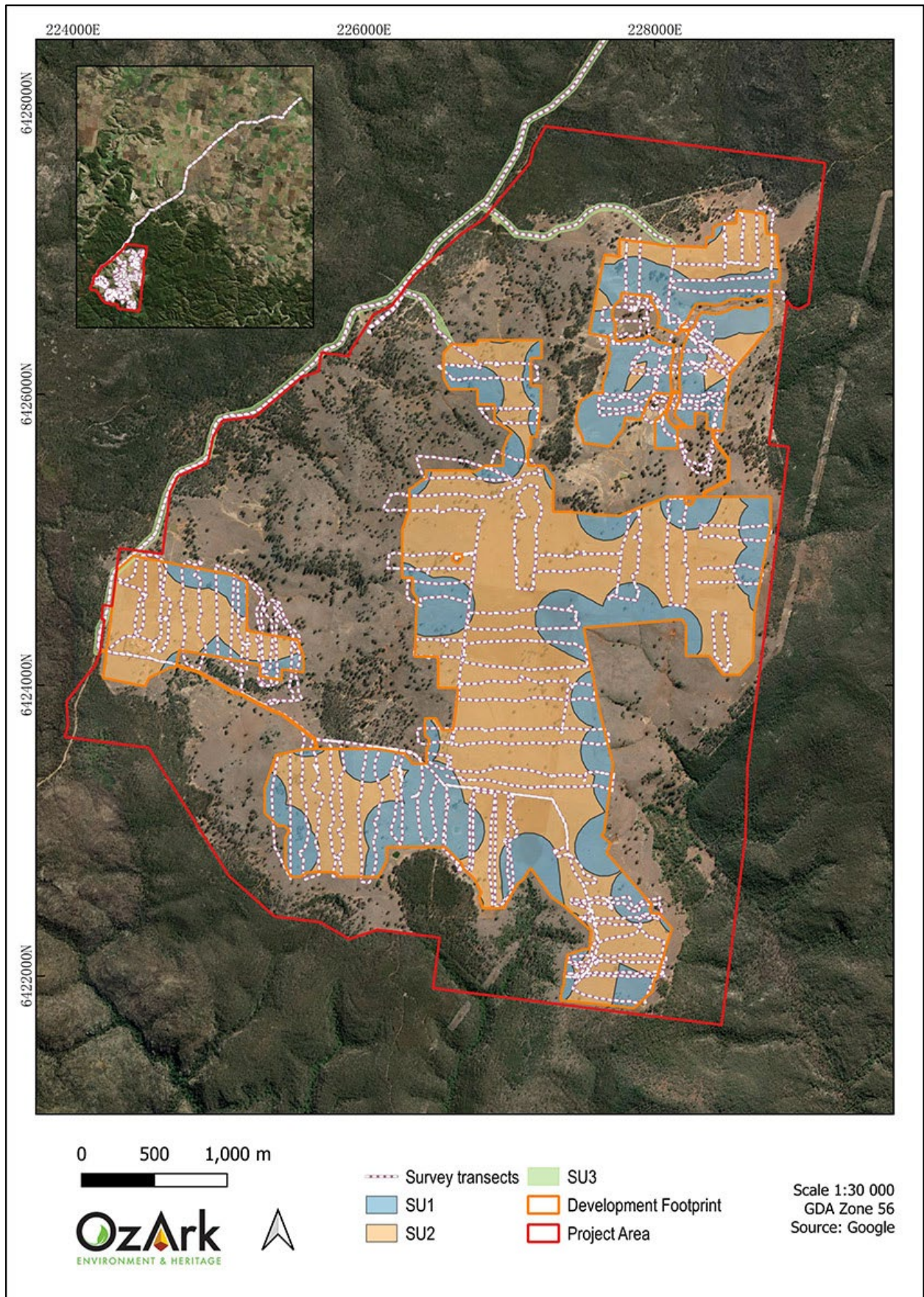
Table 6-2 demonstrates that the survey efficacy within drainage landforms (SU1) was highest at 21 per cent and lowest for slope landforms (SU2) at 0.25 per cent. Consistent with the predictive modelling, most sites were recorded in SU1, however, high GSV and GSE associated with SU1 likely aided the identification of artefacts.

The low survey efficacy in SU2 landforms may have hindered the detection of sites. Despite the SU2 landforms having a low archaeological potential being distant to water sources, they were extensively surveyed as shown on **Figure 6-2**. This survey effort included walking large areas of SU2 landform, still being able to see the ground surface here and there but not in contiguous areas of exposure. Therefore, the lack of recordings in SU2 landforms is more due to a lack of sites rather than the survey not recording concealed sites.

Table 6-2: Effective survey coverage and incidences of site recording.

Landform	Landform area (ha)	Area effectively surveyed (ha)	Percentage (%) of landform effectively surveyed	Number of sites
Drainage	306	64.26	21	7
Slopes	506	1.26	0.25	2
Road and track corridors	30	3.6	12	2

Figure 6-2: Survey coverage within the Development Footprint.



6.4 ABORIGINAL SITES RECORDED

Table 6-3 summarises the Aboriginal cultural heritage sites recorded during the survey of the Project Area and the Access route. The locations of these sites are shown on **Figure 6-3**. Further details on each site follows.

In addition, there were seven trees inspected during the survey that do not conform to the standard scarring morphology accepted for cultural modification and will not be registered by OzArk with AHIMS. However, the RAPs on the survey expressed an interest in these trees and they are discussed further below (**Section 6.5, Table 6-4, and Figure 6-4**).

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

AHIMS ID	Site name	Site type	Coordinates (GDA Zone 56) East	Coordinates (GDA Zone 56) North	Survey unit (SU)
37-1-1033	Killoe Creek GG1	Grinding Grooves	237357	6438576	3 (outside the Access route)
37-1-1035	Redlynch Creek OS1	Artefact Scatter	228219	6426563	1
37-1-1034	Redlynch Creek OS2	Artefact Scatter	228274	6426411	1
37-1-1036	Redlynch Creek OS3	Artefact Scatter	228272	6426217	1
37-1-1037	Rocky Creek Gully OS4	Artefact Scatter	224888	6424844	1 (outside the Development Footprint)
37-1-1027	Redlynch Creek IF1	Isolated Find	228173	6425902	1
37-1-1028	Rocky Creek Slope IF2	Isolated Find	226913	6426210	2
37-1-1029	Wollara Road IF3	Isolated Find	226394	6426654	3
37-1-1030	Monaghans Creek IF4	Isolated Find	227432	6424546	1
37-1-1031	Rocky Creek Gully IF5	Isolated Find	224916	6426210	1 (outside the Development Footprint)
37-1-1032	Ringwood Gully IF6	Isolated Find	228045	6422023	2 (outside the Development Footprint)

Table 6-4: Trees inspected during the survey.

Item name	Item type	Coordinates (GDA Zone 56) East	Coordinates (GDA Zone 56) North	Within Disturbance Footprint?
CST1	Tree of community interest	228056	6426189	Yes
CST2	Tree of community interest	228050	6425986	No
CST3	Tree of community interest	228388	6425647	No
CST4	Tree of community interest	228547	6424788	Yes
CST5	Tree of community interest	227007	6423181	Yes
CST6	Tree of community interest	225278	6423107	No
CST7	Tree of community interest	225304	6424587	No

Figure 6-3: Aboriginal sites identified during the survey.

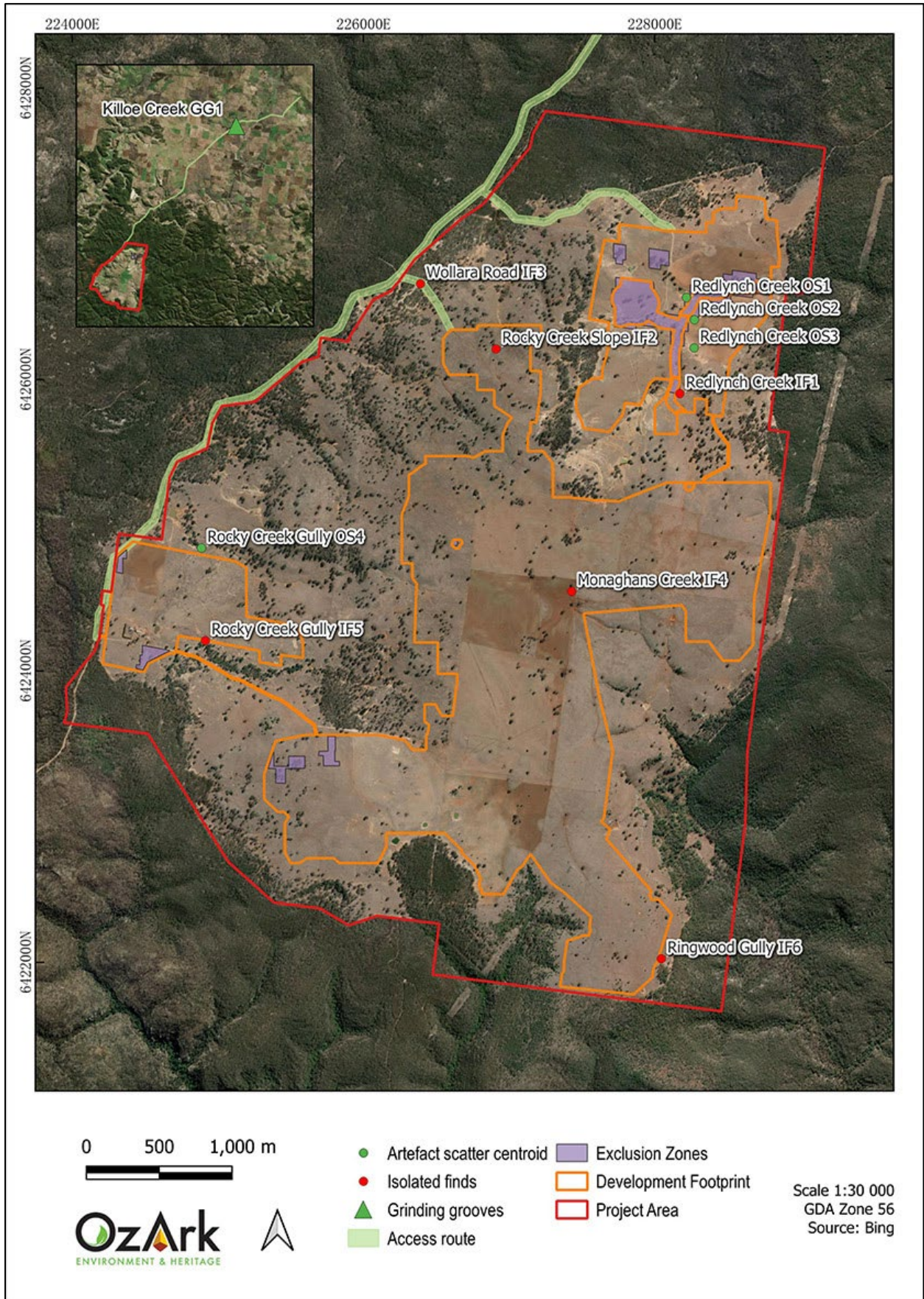
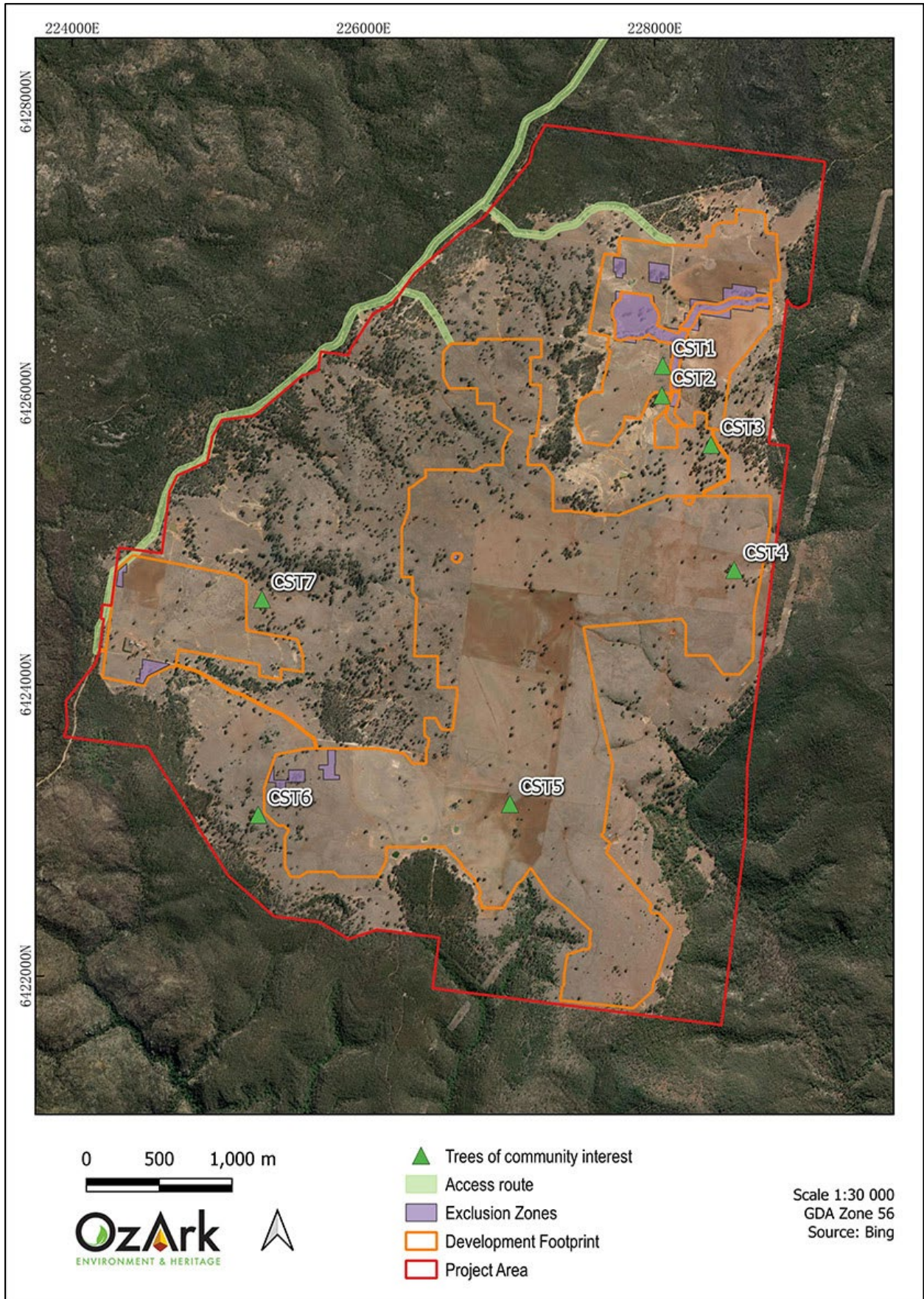


Figure 6-4: Location of trees of community interest.



6.4.1 Grinding grooves

One grinding groove site was identified outside the Access route but less than 50 m east of the Ringwood Road corridor. This site is outside the Access route. A summary of this site is provided below.

37-1-1033 (Killoe Creek GG1)

Site type: Grinding Grooves

GPS coordinates: GDA 2020 Zone 56 E 237357 N 6438576

Location of site: Located 7.1 km south along Ringwood Road from the intersection of the road and Golden Highway. Situated on the southern bank of Killoe Creek, 48 m east of Ringwood Road (**Figure 6-3**).

Description of site: The site is on the southern creek bank of Killoe Creek, 55 m east of the creek crossing on Ringwood Road (**Figure 6-5**). The site consists of at least 20 very weathered grooves on a flat sandstone slab next to the creek. Four of the better-preserved grooves measure 27 x 7 mm, 26 x 5 mm, 28 x 7 mm, and 21 x 5 mm (**Figure 6-6**).

Figure 6-5: Location of Killoe Creek GG1.



Figure 6-6: Killoe Creek GG1. View of site and selection of grinding grooves.

	
<p>1. View north of Killoe Creek GG1. Range pole marks recorded location of site.</p>	<p>2. View west from Killoe Creek GG1 towards Killoe Creek crossing on Ringwood Road.</p>
	
<p>3. View of some of the better preserved grooves at Killoe Creek GG1..</p>	<p>4. View of some of the better preserved grooves at Killoe Creek GG1.</p>
	
<p>5. Detail of a group of grooves at Killoe Creek GG1.</p>	<p>6. Detail of a worn groove at Killoe Creek GG1.</p>

6.4.2 Artefact scatters

A total of four artefact scatters were identified within the Project Area. Three of the artefact scatters are located within the Development Footprint. Details of these sites are provided below.

37-1-1035 (Redlynch Creek OS1)

Site type: Artefact scatter

GPS coordinates: GDA 2020 Zone 56 E 228219 N 6426563

Location of site: Located within Lot 6 DP750966 on the southern bank of Redlynch Creek (**Figure 6-3**). Located south of a large agricultural dam and 130 m northeast of some cattle yards.

Description of site: The site is a low-density artefact scatter located 40 m south of Redlynch Creek (**Figure 6-7**). The scatter covers an area of 90 x 32 m across an erosion scour with 90% GSE (**Figure 6-8**). The site includes at least 20 artefacts including 10 flaked pieces, five flakes, four cores, and one axe blank mainly composed of chert and volcanic materials, with one example of a quartz artefact (**Table 6-5**).

As the site is in an eroded area disturbed by dam construction, there is a low likelihood of there being archaeological deposits associated with the site.

Table 6-5: Redlynch Creek OS1 artefact attributes.

Artefact type	Raw material	Artefact integrity	Stage of reduction	Size (LxWxD) mm
Flake	Chert	Broken (conjoin)	Tertiary	25 x 11 x 3
Flaked piece	Chert	Proximal	Tertiary	12 x 20 x 5
Flake	Chert	Complete	Tertiary	44 x 23 x 2
Core	Chert	Complete	20% cortex.	39
Flaked piece	Chert	Proximal	Tertiary	21 x 33 x 9
Flaked piece	Chert	Distal	Tertiary	19 x 20 x 2
Flaked piece	Chert	Proximal	Tertiary	10 x 9 x 1
Flaked piece	Chert	Proximal	Tertiary	17 x 21 x 2
Core (multidirectional)	Chert	Complete (five flake scars)	0% cortex	83 x 72 x 3
Axe blank	Volcanic	Complete	30% cortex.	205 x 51 x 4
Core	Volcanic	Complete	20% cortex	21 x 22 x 3
Flaked piece	Quartz	Distal	Tertiary	12 x 15 x 2
Flaked piece	Chert	Distal	Tertiary	8 x 6 x 1
Flake	Chert	Complete	Tertiary	4 x 19 x 2
Flaked piece	Chert	Proximal	Tertiary	23 x 20 x 2
Flaked piece	Chert	Proximal	Tertiary	19 x 12 x 2
Flake	Chert	Complete	Secondary	41 x 32 x 3
Microcore (multidirectional)	Chert	Complete	20% cortex	22 x 6 x 2
Flake	Chert	Complete	Tertiary	22 x 6 x 2
Flaked piece	Chert	Distal	Tertiary	12 x 4 x 1

Figure 6-7: Aerial showing the location of Redlynch Creek OS1.

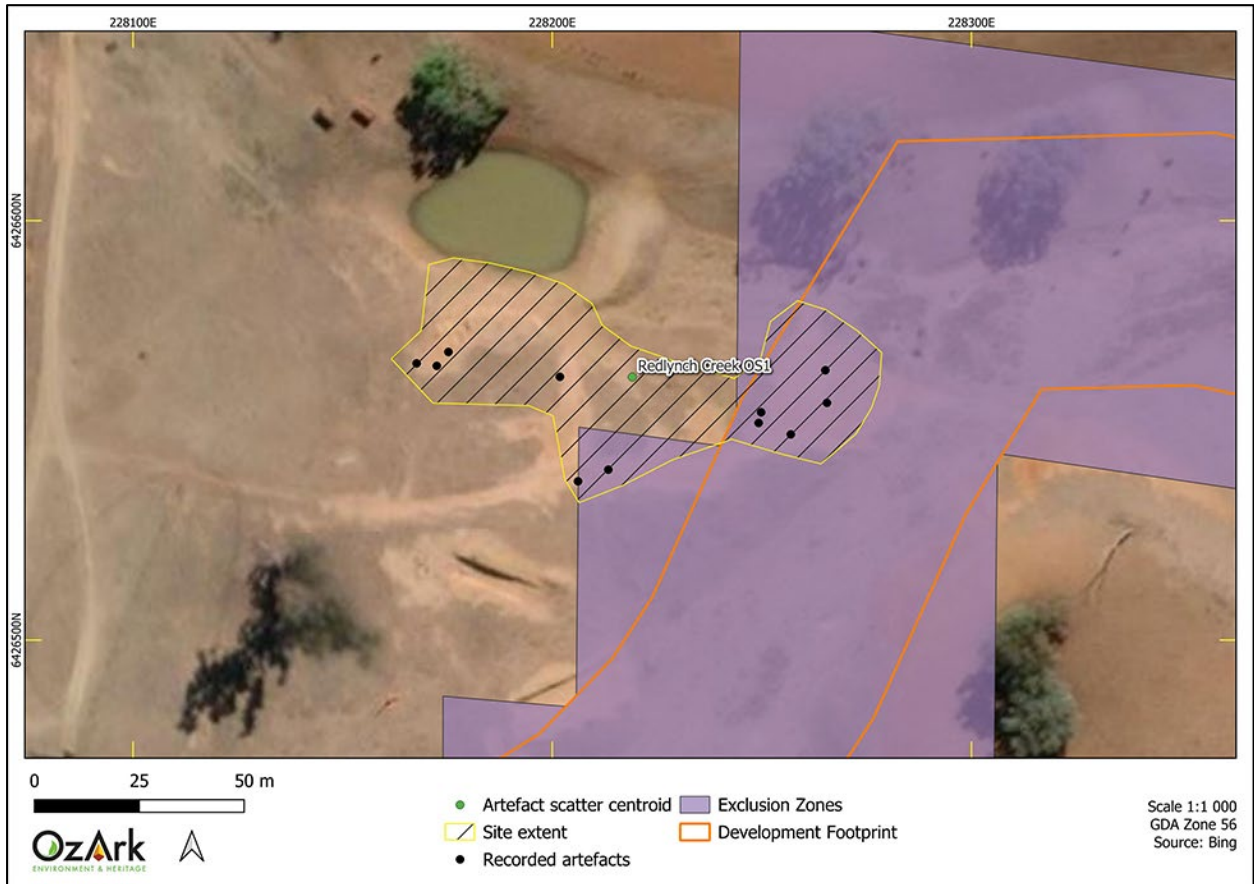
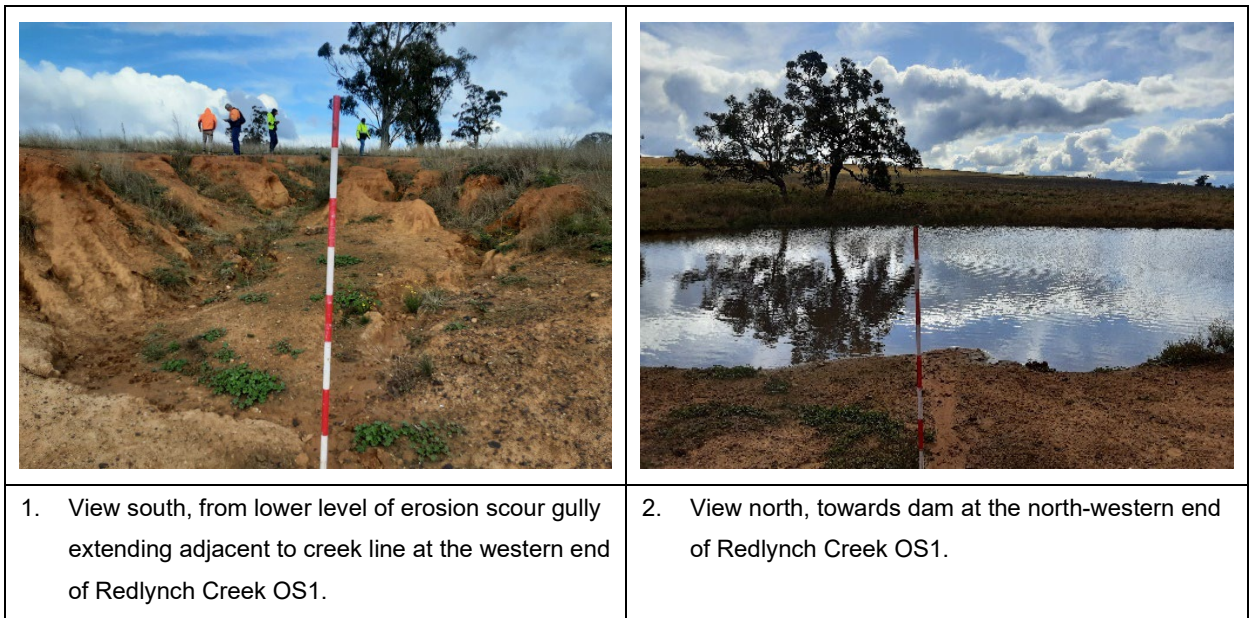
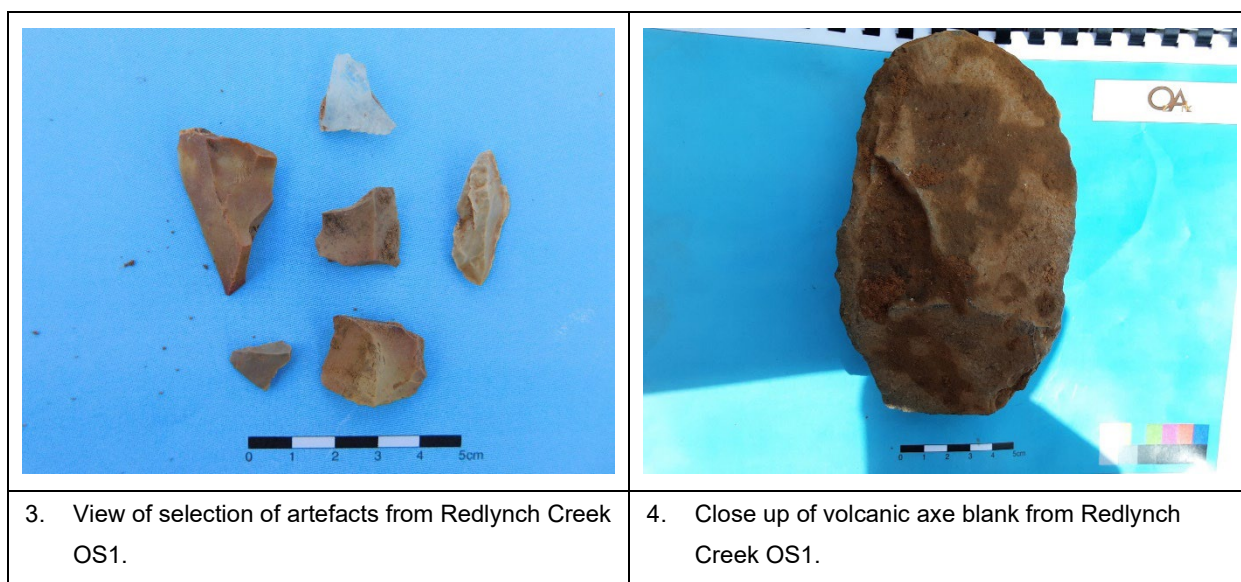


Figure 6-8: Redlynch Creek OS1. View of site and selection of recorded artefacts.





37-1-1034 (Redlynch Creek OS2)

Site type: Artefact Scatter

GPS coordinates: GDA 2020 Zone 56 E 228274 N 6426411

Location of site: Located within Lot 6 DP750966 on eastern bank of Redlynch Creek approximately 170 m east of some cattle yards (**Figure 6-3**).

Description of site: The site is a low-density artefact scatter consisting of three artefacts situated 22 m east of Redlynch Creek along a lower slope with 15% GSE (**Figure 6-9**). Redlynch Creek OS2 includes two flakes and one core all composed of a chert material (**Table 6-7**). The scatter covers an area of 75 x 40 m. The general landscape has been impacted by earthmoving.

As it is likely that the artefacts are in a secondary context and have been moved by water wash from their primary location, there is a low likelihood of there being archaeological deposits associated with the site.

Table 6-6: Redlynch Creek OS2 artefact attributes.

Artefact type	Raw material	Artefact integrity	Stage of reduction	Size (LxWxD) mm
Flake	Chert	Complete	Tertiary	14 x 6 x 2
Core	Chert	Complete	Tertiary	13 (maximum)
Flake	Chert	Proximal fragment	Tertiary	9 x 13 x 5

Figure 6-9: Aerial showing the location of Redlynch Creek OS2.

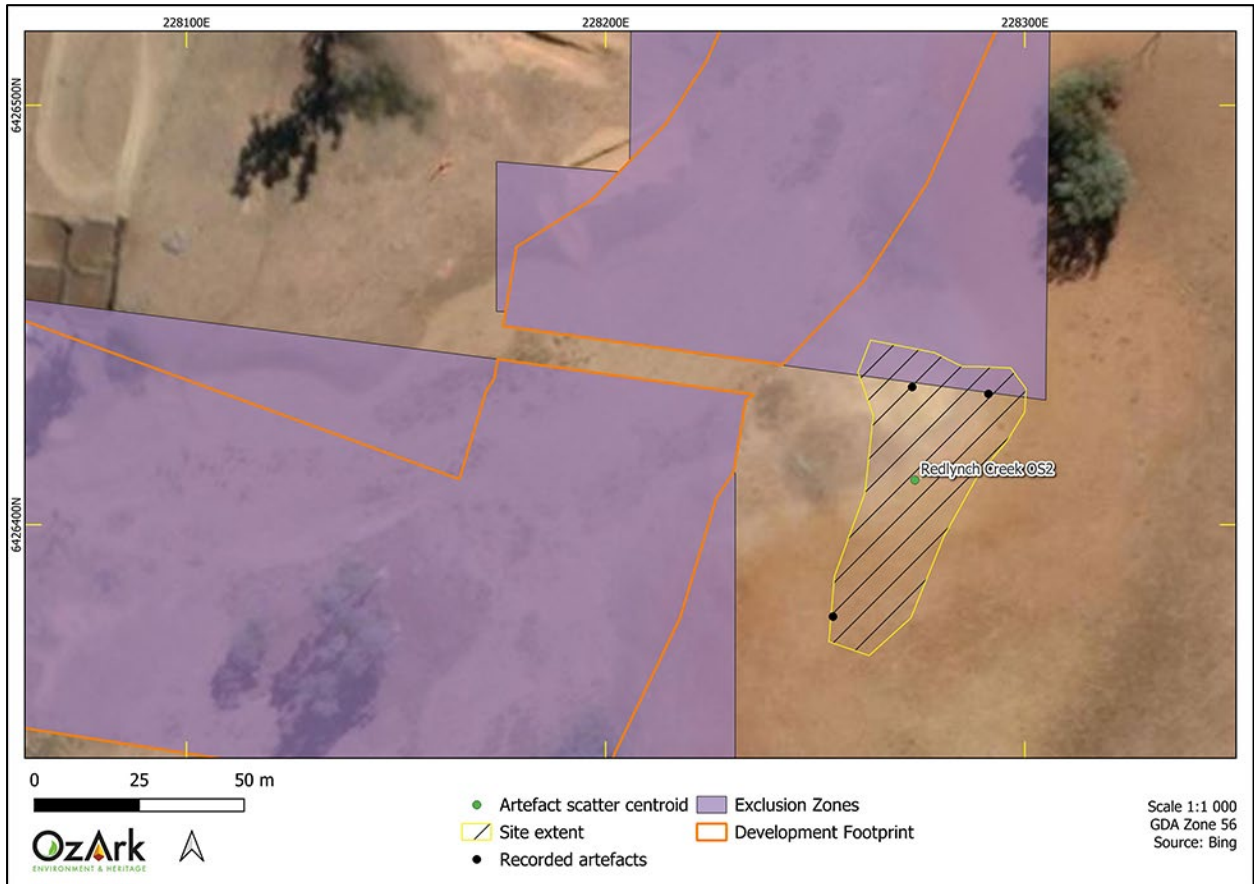
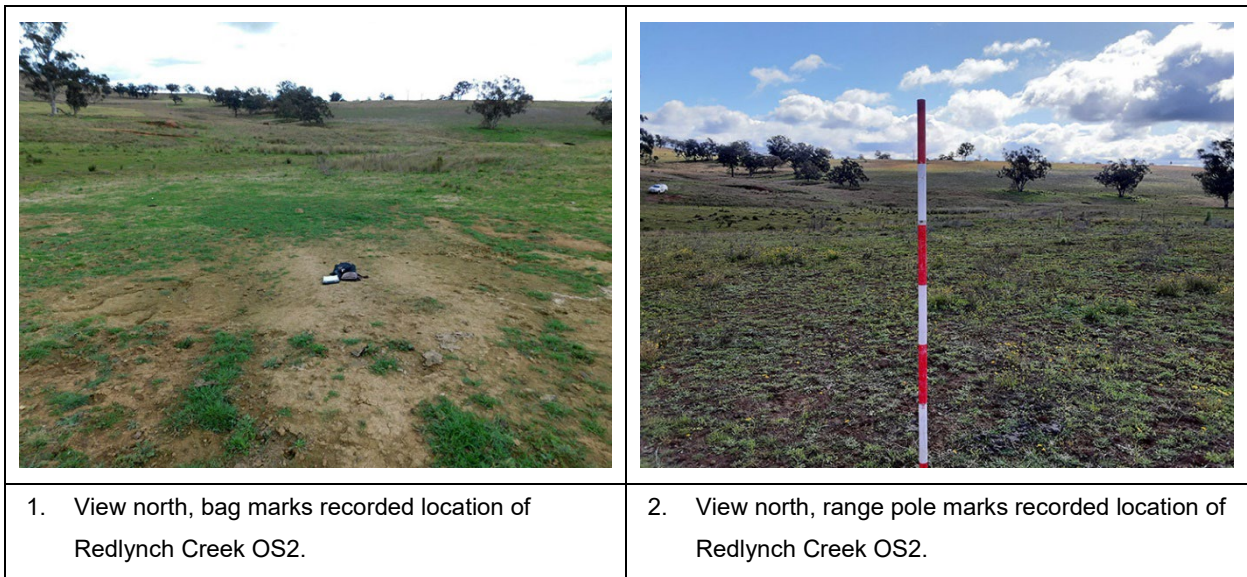
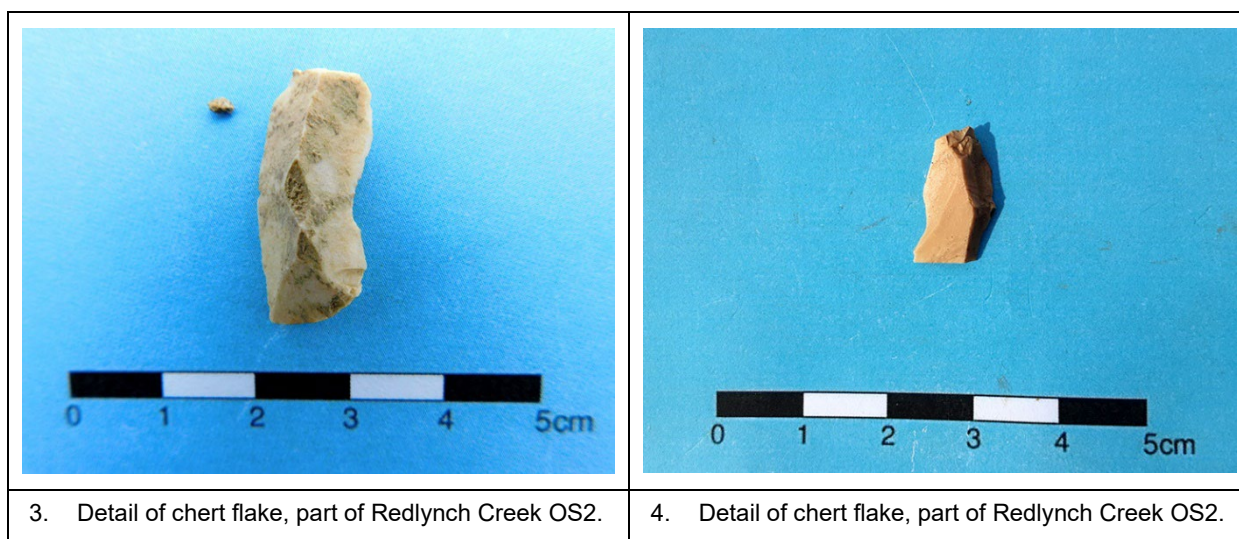


Figure 6-10: Redlynch Creek OS2. View of site and selection of recorded artefacts.





3. Detail of chert flake, part of Redlynch Creek OS2.

4. Detail of chert flake, part of Redlynch Creek OS2.

37-1-1036 (Redlynch Creek OS3)

Site type: Artefact Scatter

GPS coordinates: GDA 2020 Zone 56 E 228272 N 6426217

Location of site: Located within Lot 6 DP750966 on eastern bank of Redlynch Creek approximately 270 m southeast of some cattle yards (**Figure 6-3**).

Description of site: The site is a low-density artefact scatter consisting of seven artefacts situated 90 m east of Redlynch Creek along a mid-slope with 10% GSE (**Figure 6-11**). Redlynch Creek OS3 includes six flakes and one flaked piece all composed of a chert material (**Table 6-7**). The scatter covers an area of 58 x 30 m.

As it is likely that the artefacts are in a secondary context and have been moved by water wash from their primary location, there is a low likelihood of there being archaeological deposits associated with the site.

Table 6-7: Redlynch Creek OS3 artefact attributes.

Artefact type	Raw material	Artefact integrity	Stage of reduction	Size (LxWxD) mm
Flake	Chert	Complete	Tertiary	55 x 6 x 7
Flaked piece	Chert	Proximal	Tertiary	24 x 14 x 3
Flake	Chert	Complete	Tertiary	44 x 25 x 10
Flake	Chert	Complete	Tertiary	47 x 19 x 11
Flake	Chert	Complete	Tertiary	25 x 17 x 3
Flake	Chert	Complete	Tertiary	17 x 14 x 2
Flake	Chert	Complete	Tertiary	19 x 11 x 2

Figure 6-11: Aerial showing the location of Redlynch Creek OS3.

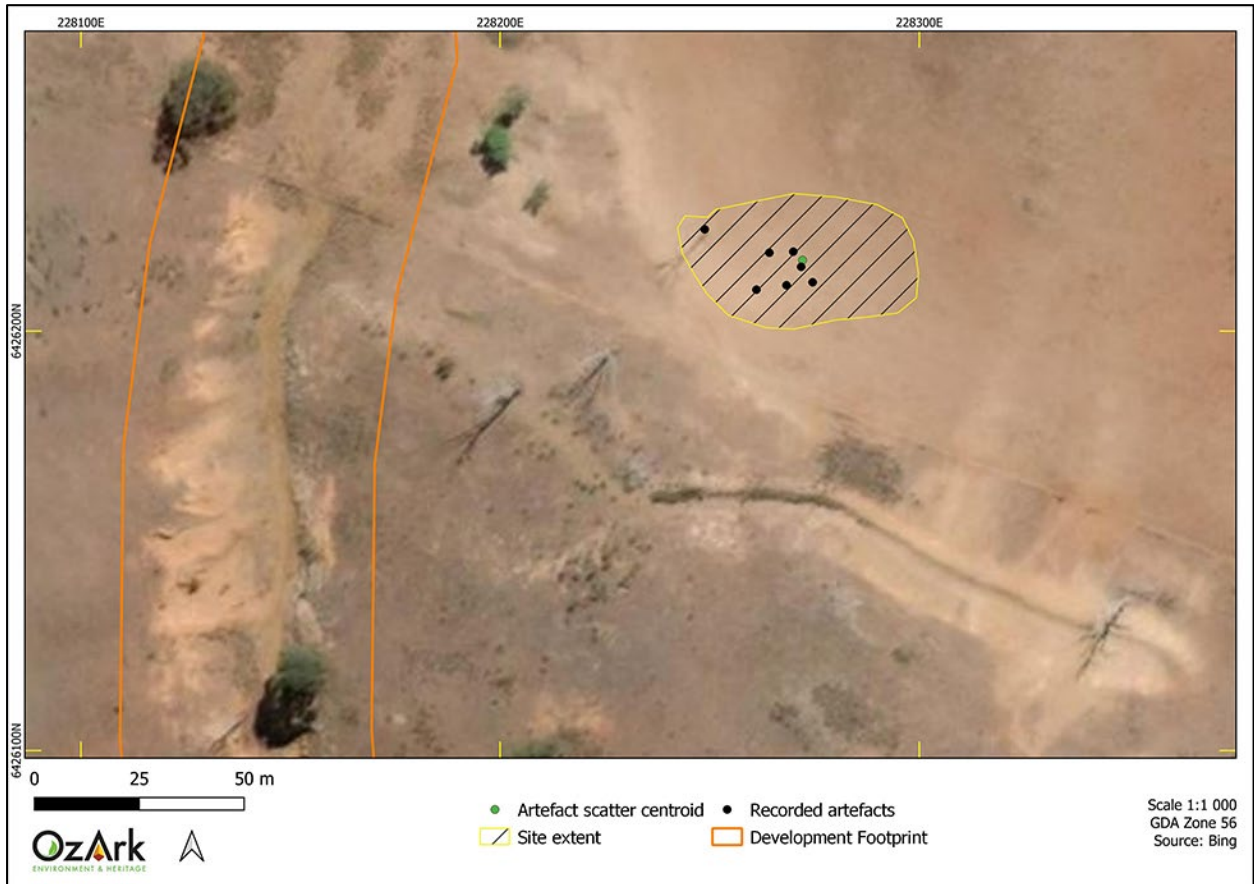
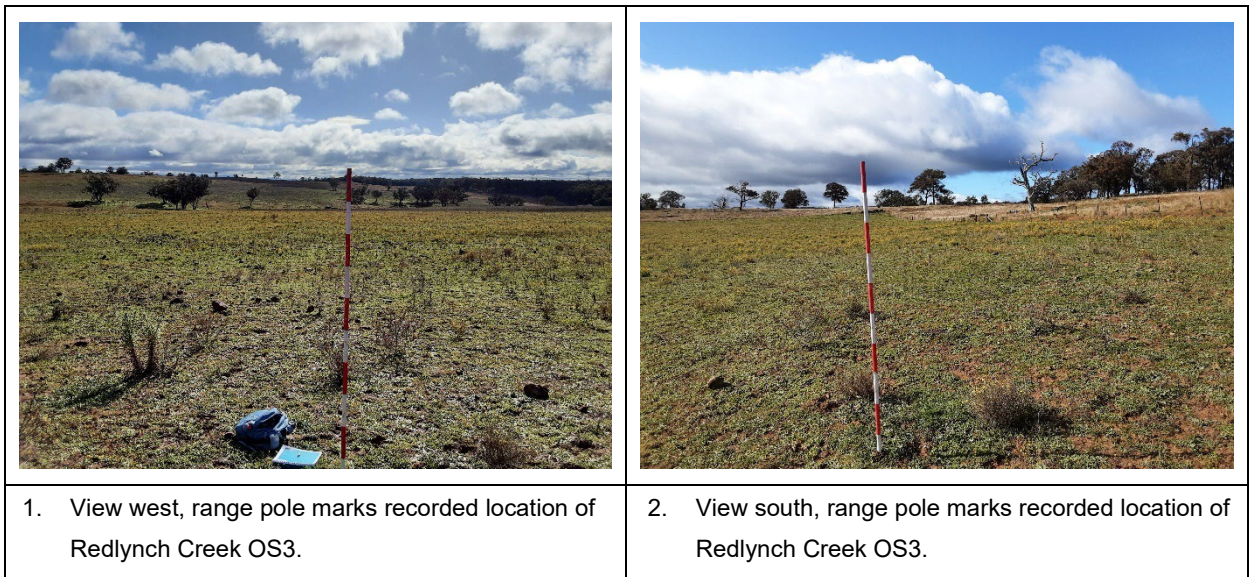
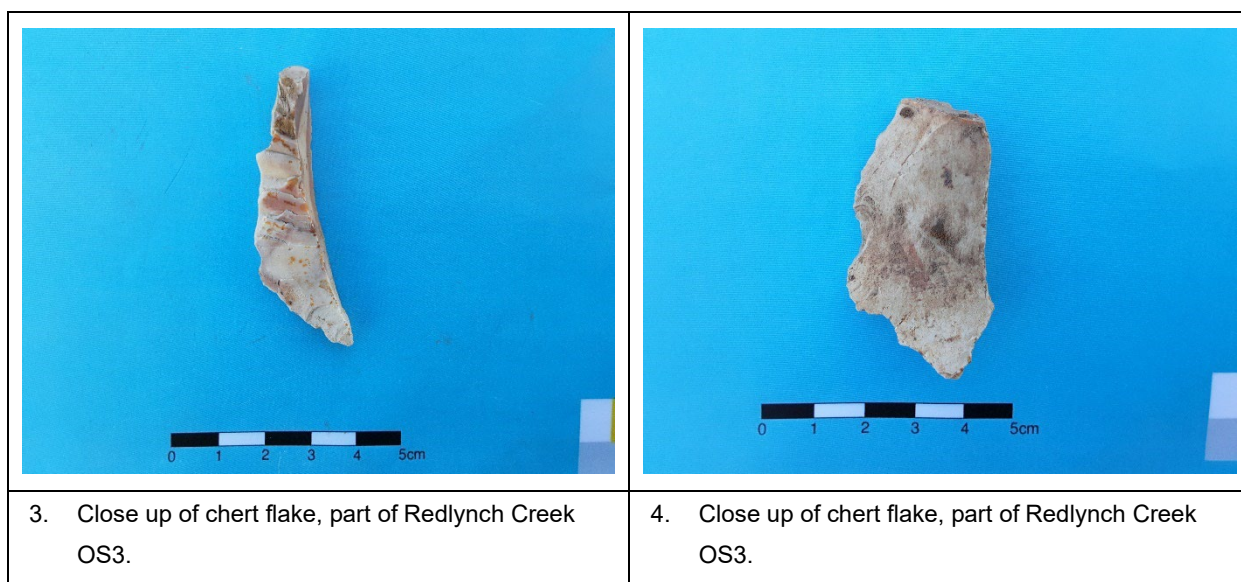


Figure 6-12: Redlynch Creek OS3. View of site and selection of recorded artefacts.





37-1-1037 (Rocky Creek Gully OS4)

Site type: Artefact scatter

GPS coordinates: GDA 2020 Zone 56 E 224888 N 6424844

Location of site: Located in Lot 57 DP750956 on the southern bank of a gully approximately 480 m east of Wollara Road (**Figure 6-3**).

Description of site: The site is a low-density artefact scatter consisting of five artefacts situated on the southern bank of a tributary gully of Rocky Creek with 80% GSE (**Figure 6-11**). Rocky Creek North Gully OS4 includes a two chert cores, one chert flake, a flaked piece, and a quartz flaked piece (**Figure 6-12, Table 6-8**). The scatter covers an area of 40 x 20 m.

As the site is in a heavily disturbed eroded area, there is a low likelihood of there being archaeological deposits associated with the site.

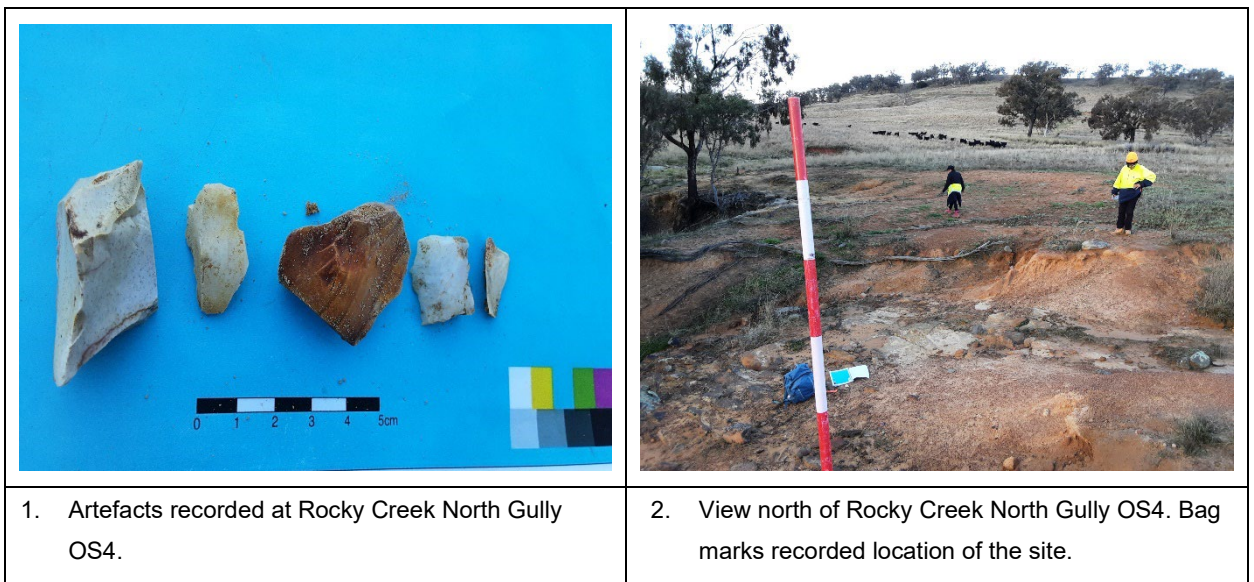
Table 6-8: Rocky Creek North Gully OS4 artefact attributes.

Artefact type	Raw material	Artefact integrity	Stage of reduction	Size (LxWxD) mm
Core (unidirectional)	Chert	Complete	0% cortex	40 x 26 x 20
Core (microcore)	Chert	Complete	10% cortex	25 x 29 x 3
Flaked piece	Chert	Proximal fragment	Tertiary	25 x 36 x 11
Flaked piece	Quartz	Proximal fragment	Tertiary	20 x 15 x 6
Flake	Chert	Complete	Tertiary	19 x 5 x 2

Figure 6-13: Aerial showing the location of Rocky Creek Gully OS4.



Figure 6-14: Rocky Creek North Gully OS4. View of site and selection of recorded artefacts.



6.4.1 Isolated finds

A total of six isolated finds were identified within the Project Area. Summaries of these sites are provided below.

37-1-1027 (Redlynch Creek IF1)

Site type: Isolated find

GPS coordinates: GDA 2020 Zone 56 E 228173 N 6425902

Location of site: Located in Lot 56 DP750956 on the eastern bank of Redlynch Creek (Figure 6-3).

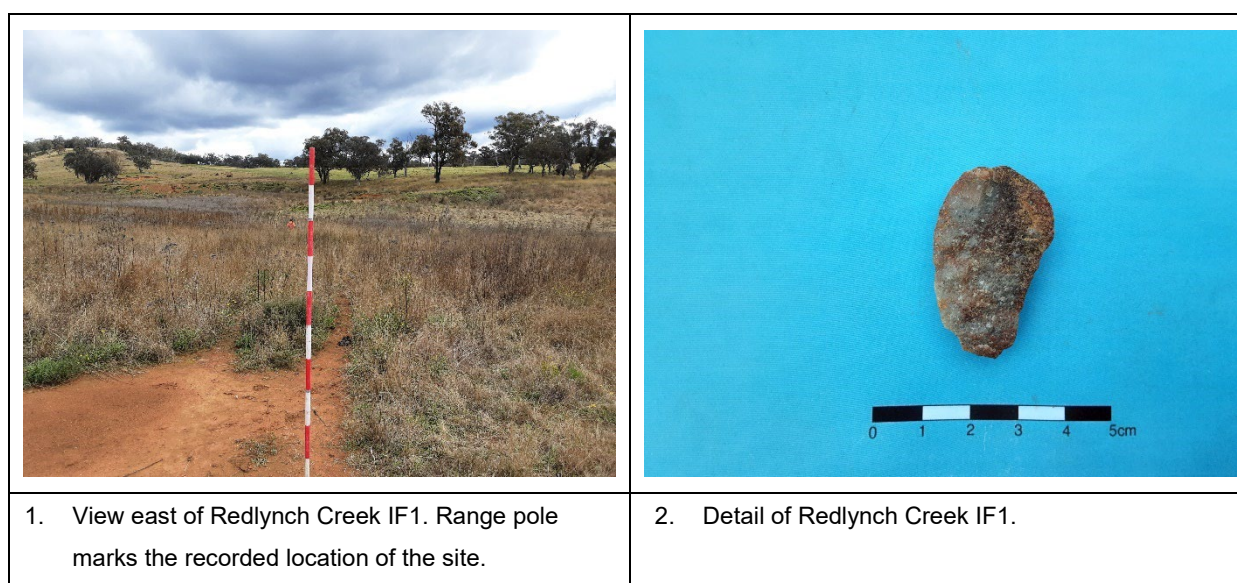
Description of site: Redlynch Creek IF1 is a silcrete flake located within a small erosion scour 60 m east of Redlynch Creek (Table 6-9). GSE was high at 90% with soils characterised by an orange, brown sediment along a broad undifferentiated landform (Figure 6-15). The site extent is 5 x 5 m.

As the site is likely to be in a secondary context and has been moved by water wash from its primary location, there is a low likelihood of there being archaeological deposits associated with the site.

Table 6-9: Redlynch Creek IF1 artefact attributes.

Artefact type	Raw material	Artefact integrity	Stage of reduction	Size (LxWxD) mm
Flake	Silcrete	Complete	Primary	36 x 23 x 7

Figure 6-15: Redlynch Creek IF1. View of site and the recorded artefact.

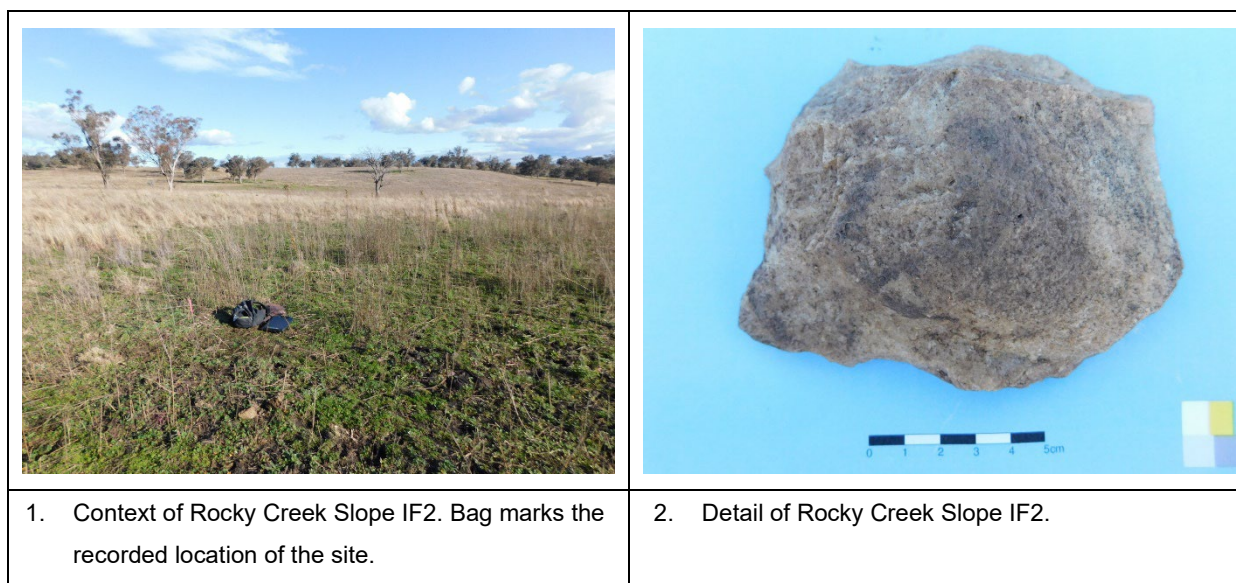


37-1-1028 (Rocky Creek Slope IF2)**Site type:** Isolated Find**GPS coordinates:** GDA 2020 Zone 56 E 226913 N 6426210**Location of site:** Located in Lot 56 DP750956 in an ephemeral tributary to the headwaters of Rocky Creek (**Figure 6-3**).**Description of site:** Rocky Creek Slope IF2 is a quartzite flaked piece (**Table 6-10**). The site is situated within a boggy, slightly sloping landform. GSE was low at 5% (**Figure 6-16**). The site extent is 5 x 5 m.

As the site is likely to be in a secondary context and has been moved by water wash from its primary location, there is a low likelihood of there being archaeological deposits associated with the site.

Table 6-10: Rocky Creek Slope IF2 artefact attributes.

Artefact type	Raw material	Artefact integrity	Stage of reduction	Size (LxWxD) mm
Flaked piece (scraper)	Quartzite	Complete	Secondary	115 x 85 x 27

Figure 6-16: Rocky Creek Slope IF2. View of site and the recorded artefact.**37-1-1029 (Wollara Road IF3)****Site type:** Isolated Find**GPS coordinates:** GDA 2020 Zone 56 E 226394 N 6426654**Location of site:** Located in Lot 56 DP750956 on the southern side of a track (**Figure 6-3**).**Description of site:** Wollara Road IF3 is a chert core located on the shoulder of a track approximately 950 m northeast of Rocky Creek (**Table 6-11**). GSE was high at 70% with soils

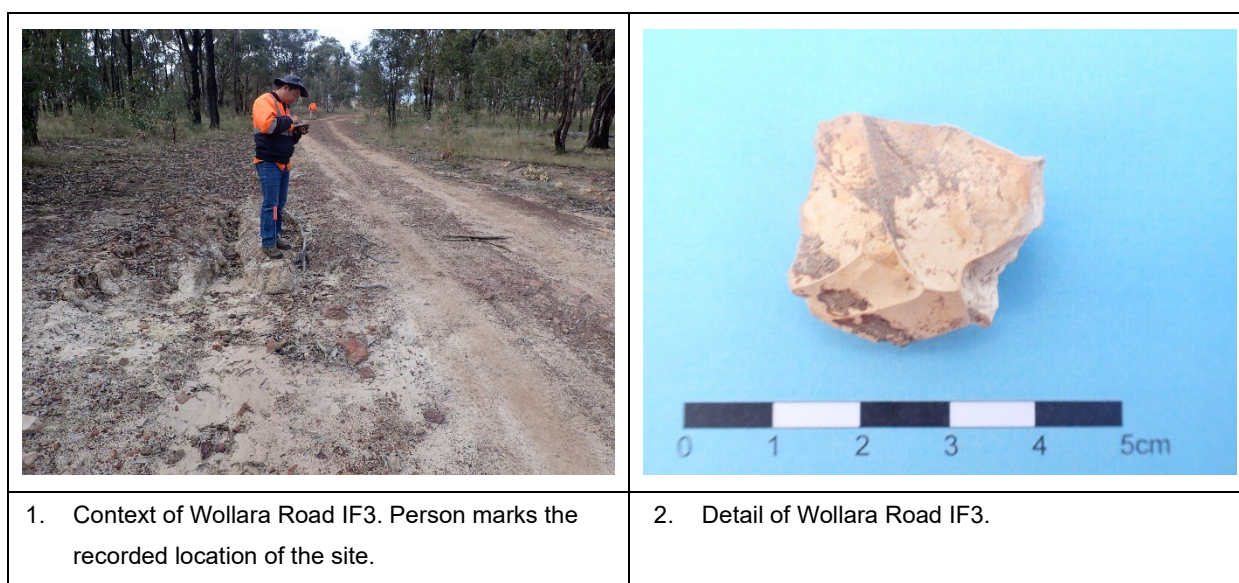
characterised by light brown, yellow sediment along a broad undifferentiated landform (**Figure 6-17**). The site extent is 5 x 5 m.

As the site is likely to be in a secondary context and has been moved by water wash or track construction from its primary location, there is a low likelihood of there being archaeological deposits associated with the site.

Table 6-11: Wollara Road IF3 artefact attributes.

Artefact type	Raw material	Artefact integrity	Stage of reduction	Size (LxWxD) mm
Core	Chert	Complete	Secondary	27 x 28 x 7

Figure 6-17: Wollara Road IF3. View of site and the recorded artefact.



37-1-1030 (Monaghans Creek IF4)

Site type: Isolated Find

GPS coordinates: GDA 2020 Zone 56 E 227432 N 6424546

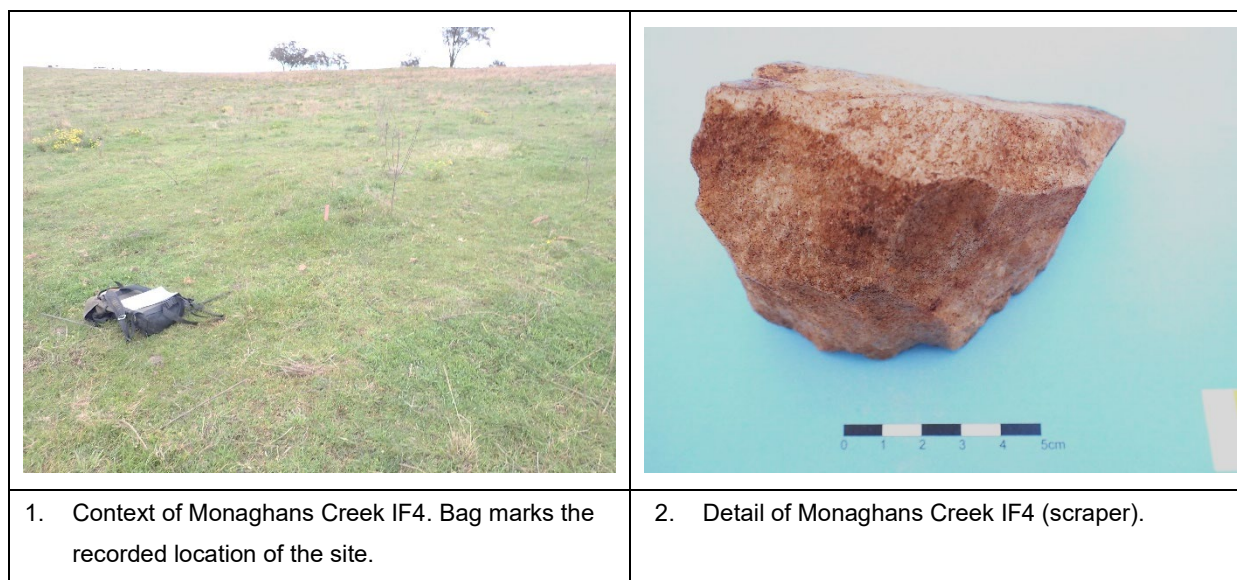
Location of site: Located in Lot 38 DP750966 in a field used for cultivation (**Figure 6-3**).

Description of site: Monaghans Creek IF4 is a quartzite scraper located 100 m north of an unnamed drainage line (**Table 6-12**). Some evidence of faceting along the lateral margins of the artefact was observed. GSV was low at 5% with continuous grass cover across a sloped landform (**Figure 6-18**). The site extent is 5 x 5 m.

As the site is likely to be in a secondary context and has been moved by water wash from its primary location, there is a low likelihood of there being archaeological deposits associated with the site.

Table 6-12: Monaghans Creek Drainage IF4 artefact attributes.

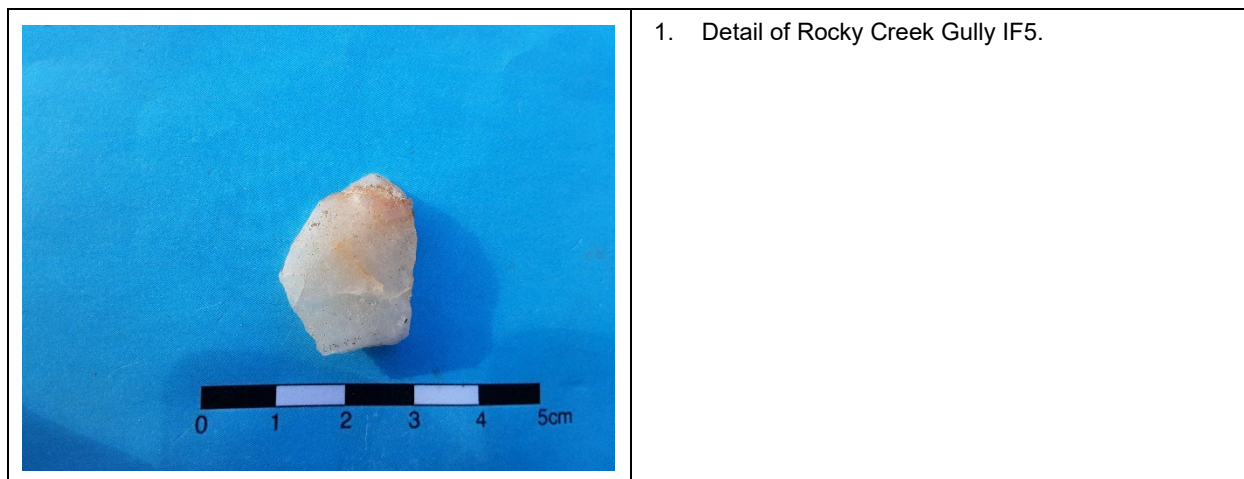
Artefact type	Raw material	Artefact integrity	Stage of reduction	Size (LxWxD) mm
Flaked piece (scraper)	Quartzite	Complete	Secondary	98 x 70 x 52

Figure 6-18: Monaghans Creek Drainage IF4. View of site and the recorded artefact.**37-1-1031 (Rocky Creek Gully IF5)****Site type:** Isolated Find**GPS coordinates:** GDA 2020 Zone 56 E 224916 N 6426210**Location of site:** Located in Lot 58 DP750956 on a well-used animal track (**Figure 6-3**).**Description of site:** Rocky Creek Gully IF5 is a quartz flake located 50 m north of an unnamed drainage line (**Table 6-13**). GSV was low at 20% with consistent shrub and grass coverage along the gullied section of the drainage landform (**Figure 6-19**). The site extent is 5 x 5 m.

As the site is likely to be in a secondary context and has been moved by water wash and/or erosion from its primary location, there is a low likelihood of there being archaeological deposits associated with the site.

Table 6-13: Rocky Creek South Gully IF5 artefact attributes.

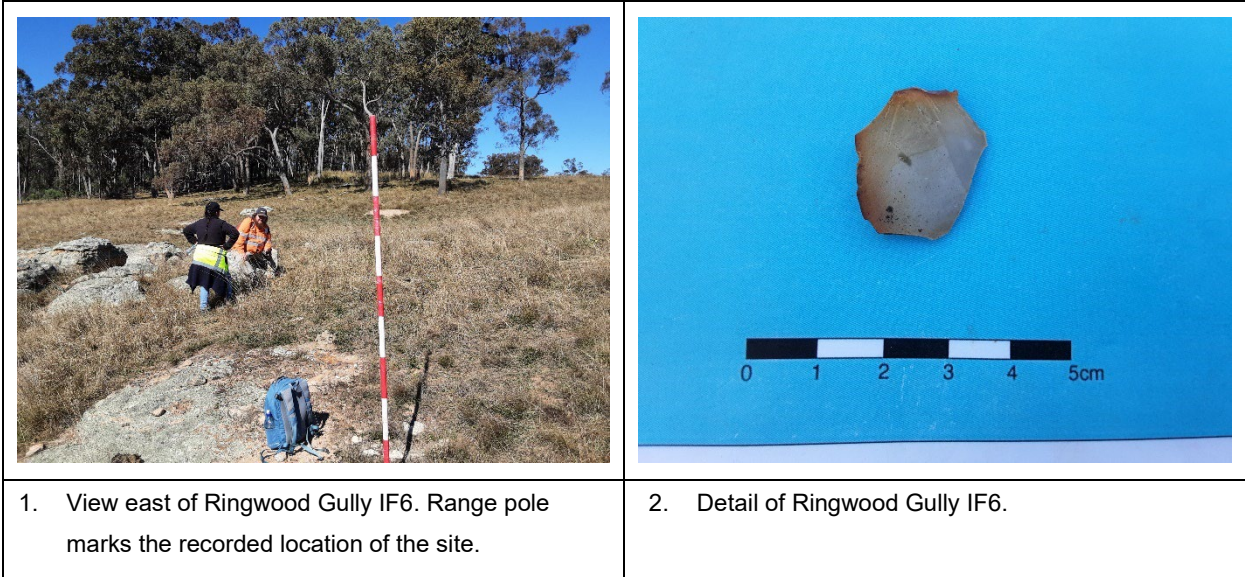
Artefact type	Raw material	Artefact integrity	Stage of reduction	Size (LxWxD) mm
Flake	Quartz	Complete	Tertiary	25 x 16 x 4

Figure 6-19: Rocky Creek South Gully IF5. View of the recorded artefact.**37-1-1032 (Ringwood Gully IF6)****Site type:** Isolated find**GPS coordinates:** GDA 2020 Zone 56 E 228045 N 6422023**Location of site:** Located in Lot 87 DP750966, 265 m north of the northern end of Ringwood Gully (**Figure 6-3**).**Description of site:** Ringwood Gully IF6 is a proximal chert fragment located within rock outcrops in a lower slope landform (**Table 6-14**). GSE was high at 70% (**Figure 6-20**). The site extent is 5 x 5 m.

As the site is in an area of thin soils as shown by the outcropping stone, there is a low likelihood of there being archaeological deposits associated with the site.

Table 6-14: Ringwood Gully IF6 artefact attributes.

Artefact type	Raw material	Artefact integrity	Stage of reduction	Size (LxWxD) mm
Flake	Chert	Proximal fragment	Tertiary	20 x 15 x 3



Figure 6-20: Ringwood Gully IF6. View of site and the recorded artefact.





6.5 TREES OF COMMUNITY INTEREST





Seven trees with scars were inspected during the survey (**Figure 6-4**). The scars on these trees do not display sufficient attributes to be considered to have a cultural origin and they have not been recorded as Aboriginal objects or registered with AHIMS. However, the RAPs present during the survey indicated that these trees were of cultural

importance and believe that the scarring was perhaps Aboriginal in origin. For this reason, these trees are recorded here and there will be management recommendations formulated in respect to the trees (**Section 9.2.2**). Summaries of these sites are provided in **Table 6-15**.

Table 6-15: Trees inspected during the survey.

Name	Type	Assessment	Photo	Photo
CST1	Tree with scar	<p>The scar on this tree did not conform to standard scarring morphology accepted for Aboriginal modification (cf. Long 2005) but rather natural scarring. Lack of utility based on the amorphous shape and size of the scar and lack of cultural procurement indicators such as axe marks render cultural scarring of this tree unlikely. Moreover, bark breakage of overgrowth is evident towards the top and bottom of the scar and limb fall surrounding the base of the tree indicates natural scarring related to limb fall trauma. However, the RAPs present during the survey indicated that this tree of cultural importance to the community and believe that the scarring was perhaps Aboriginal in origin.</p>	 <p>1. Close up of CST1 scar.</p>	 <p>2. Context of CST1.</p>

Name	Type	Assessment	Photo	Photo
CST2	Tree with scar	<p>The scar on this tree did not conform to standard scarring morphology accepted for Aboriginal modification (cf. Long 2005) but rather natural scarring. Lack of utility based on the amorphous shape and size of the scar and lack of cultural procurement indicators such as axe marks render cultural scarring of this tree unlikely. Moreover, bark breakage of overgrowth is evident towards the top of the scar, limb fall surrounding the base of the tree and the scar splits open towards the ground suggesting natural scarring related to limb fall trauma. However, the RAPs present during the survey indicated that this tree of cultural importance to the community and believe that the scarring was perhaps Aboriginal in origin.</p>	 <p>1. Close up of CST2 scar.</p>	 <p>2. Context of CST2.</p>
CST3	Tree with scar	<p>The scar on this tree did not conform to standard scarring morphology accepted for Aboriginal modification (cf. Long 2005) but rather natural scarring. The cambium and sapwood exhibited evidence of holes and galleries and bark breakage suggesting natural scarring through termite and larval activity. The circumference of the trunk indicates the tree is relatively young. However, the RAPs present during the survey indicated that this tree of cultural importance to the community and believe that the scarring was perhaps Aboriginal in origin.</p>	 <p>1. Close up of CST3 scar.</p>	 <p>2. Context of CST3.</p>

Name	Type	Assessment	Photo	Photo
CST4	Tree with scar	<p>The scar on this tree did not conform to standard scarring morphology accepted for Aboriginal modification (cf. Long 2005) but rather natural scarring. Although this scar does represent a continuous elongated oval shape, a tear towards the base of the scar and insect or larval activity towards the top and base of scar, as well as lack of depth and minimal overgrowth render natural scarring of the tree more likely. However, the RAPs present during the survey indicated that this tree of cultural importance to the community and believe that the scarring was perhaps Aboriginal in origin.</p>	 <p>1. Close up of CST4 scar.</p>	 <p>2. Context of CST4.</p>
CST5	Tree with scar	<p>The scar on this tree did not conform to standard scarring morphology accepted for Aboriginal modification (cf. Long 2005) but rather natural scarring. Although this scar does represent a continuous oval shape, some tears along the right perimeter of the scar are evident and limb fall adjacent to the tree was also observed indicating natural scarring. Depth of the scar and minimal overgrowth render cultural scarring less likely. However, the RAPs present during the survey indicated that this tree of cultural importance to the community and believe that the scarring was perhaps Aboriginal in origin.</p>	 <p>1. Close up of CST5 scar.</p>	 <p>2. Context of CST5.</p>

Name	Type	Assessment	Photo	Photo
CST6	Tree with scar	<p>The scar on this tree did not conform to standard scarring morphology accepted for Aboriginal modification (cf. Long 2005) but rather natural scarring. Lack of utility based on the amorphous shape and size of the scar and lack of cultural procurement indicators such as axe marks render cultural scarring of this tree unlikely. Moreover, the epicormic shoot extending from the base of the scar suggests natural tear scarring as the shoot grew from the base of the tree. However, the RAPs present during the survey indicated that this tree of cultural importance to the community and believe that the scarring was perhaps Aboriginal in origin.</p>	 <p>1. Close up of CST6 scar.</p>	 <p>2. Context of CST6.</p>
CST7	Tree with scar	<p>The scar on this tree did not conform to standard scarring morphology accepted for Aboriginal modification (cf. Long 2005) but rather natural scarring. Lack of utility based on the amorphous shape and size of the scar and lack of cultural procurement indicators such as axe marks render cultural scarring of this tree unlikely. This amorphous shaped scar may be a result of trauma associated branch deterioration evidenced by branches nearby or bird damage through strip barking of the tree. However, the Aboriginal community members present during the site survey indicated that this tree was determined to be of cultural importance to the community and believe that the scarring was perhaps Aboriginal in origin</p>	 <p>1. Close up of CST7 scar.</p>	 <p>2. Context of CST7.</p>

6.6 TEST EXCAVATION

As the Development Footprint consists of a basalt plateau distant to permanent water, test excavation over most of the Development Footprint was not warranted as the landforms have a low archaeological potential and no areas of PAD were identified. Those landforms that recorded sites near Redlynch Creek and a tributary to Rocky Creek, were either eroded and displaying thin soils (tributary to Rocky Creek) or in an area heavily modified by dam construction and erosion control works (Redlynch Creek). As such, test excavation was also not recommended for these areas.

6.7 HISTORICAL SITES

Several potential historical sites were identified during the survey but are outside the scope of this assessment and have been passed on for consideration in the historical heritage impact assessment being completed by Umwelt. However, one of these sites, the slab hut ruins of the O'Brien homestead (HS01), retains cultural value. The homestead is in the middle of the Development Footprint at GDA2020 226638E, 6424879 N in Lot 55 DP750956 (**Figure 6-23**).

The homestead relates to the story of Jimmy Governor, a 'bushranger' from the Hunter Valley. Born in 1875, Jimmy was an Aboriginal man of mixed race and the eldest of eight children to Tommy and Annie Governor. Jimmy worked a variety of jobs on properties around the Hunter Valley and for some time worked as a tracker for the Cassilis police. These jobs were paid with rations rather than money. He married a white woman, Ethel Page, and had two children, Sid Governor, and following his passing, Thelma Governor. The interracial relationship of Jimmy and Ethel was considered taboo and the couple were repudiated by the local community (Britton 2013, ANU 2022).

Ostracization, isolation, and pressures of supporting a young family without pay beyond rations compounded a disgruntled temperament following an argument with local landholder (Britton 2013, Indigenous Australia 2022). A recount of the argument told to Britton (2013) of the site's history by her family is included below:

'Jimmy, my great grandfather Terry O'Brien and his brother Mick went fishing together. No one could swim and a fight broke out about who was going to take the net across the river. The fight spilled over into a physical fight between Mick and Jimmy. Mick was losing. My great grandfather stepped in to fight in his brother's place. Terry was a considerably bigger man, and he won the fight. Adding insult to injury Mick yelled from the sidelines, "Kill the black bastard". Years later Jimmy returned. He murdered the pregnant Elizabeth and the toddler James. The attending midwife, Mrs Bennett, was so badly injured, she was believed to be dead. Jimmy wrote, "Kill the bastard" on the cheque book at the O'Brien's house. Mrs Bennett managed to crawl from the house to the road, where she met Mick O'Brien, told him that his family

was dead and not to go to the house, but to go for help. He did this and never returned to the house where his family had died.'

(Britton 2013:145)

In 1901, Jimmy was hung in Darlinghurst Gaol for the murder of the O'Brien family. All that remains of the homestead today are 'posts in the paddock' (**Figure 6-21, Figure 6-22**). These 'posts in the paddock' form the name of a theatre production and journal article focussed on reconciliation through participation in the development and performance of a play which portrays the anguished history of the site (Britton 2013).

The site includes tangible remains related to shared Aboriginal and European histories of the Merriwa area during the contact period.

Figure 6-21: HS01 – the slab hut remains of the O'Brien homestead (Michelle Blakeney 2009 as cited in Britton 2013).



Figure 6-22: View of HS01 in 2022.



1. View of HS01 in 2022.



2. View of HS01 in 2022.

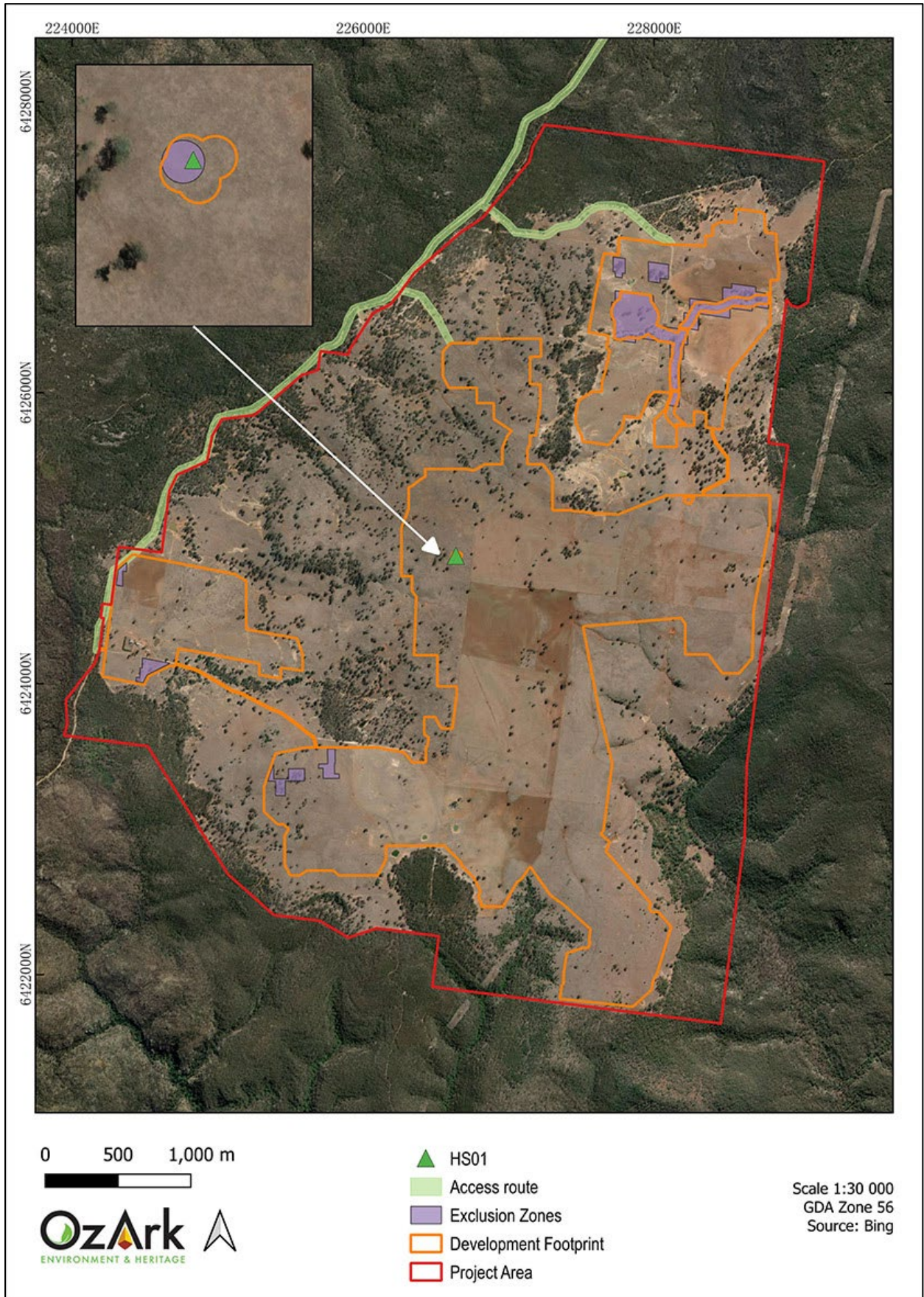


3. Detail of HS01 in 2022 showing loose fieldstones.



4. Detail of HS01 in 2022 showing loose fieldstones.

Figure 6-23: Location of HS01.



6.8 ABORIGINAL COMMUNITY COMMENTS ON THE SURVEY

As the two survey teams worked separately over the course of the survey, a debrief of findings was communicated at the end of each day's fieldwork. Team 2 inspected most 'trees of community interest' and participants of Team 1 were concerned that determination of cultural scarring was not thoroughly considered. Therefore, photographs of each of the trees were shown to all survey participants who agreed with the OzArk archaeologists that none showed sufficient attributes to be considered as having a cultural origin. However, the RAPs requested that each of the inspected tree sites be addressed in the report for further consideration while noting that not all scarred trees conform to the criteria.

6.9 SUMMARY OF SURVEY RESULTS

One grinding groove site, four previously unidentified artefact scatters, and six isolated finds were recorded during the survey (**Section 6.4**). Most sites were identified along the drainage landform (SU1, n=7), followed by the slope landforms (SU2, n=2), with only two sites identified within the Access route survey unit (SU3).

The grinding groove site, one artefact scatter, and two isolated artefacts are outside of the Access route and the Development Footprint and will not be harmed by the Project.

Seven trees with scars were inspected more closely during the survey (**Section 6.5**). In the opinion of OzArk, none of the seven trees displayed sufficient attributes to be considered as Aboriginal objects. However, the Aboriginal community members present during the site survey indicated that these trees were of cultural importance to the community and believed that the scarring was perhaps Aboriginal in origin. Three of these trees are inside the Development Footprint (CST1, and CST4–CST5).

One historical item, the slab hut ruins of the O'Brien homestead (HS01), includes tangible remains related to shared Aboriginal and European histories of the Merriwa area during the contact period (**Section 6.6**). HS01 has been excluded from the Development Footprint by a buffer of at least 20 m.

6.9.1 Discussion

Results from the soil test pit investigation

During the survey, OzArk was requested to inspect 28 locations where soil test pitting was required to ensure that Aboriginal objects would not be harmed by the proposed works (**Figure 6-24**). Following the inspection it was concluded that no Aboriginal objects or potential for subsurface archaeological deposits were identified within or near any of the 28 soil test pit locations.

However, as the 28 locations are randomly but consistently scattered across the Development Footprint, the locations therefore become an ideal spot check mechanism for landform type, GSE/GSV, land use and archaeological potential for the Development Footprint. These results are shown on **Table 6-16** and show that most locations are characterised as 'flat' with a minority of locations being recorded on slopes and crests. This characterisation supports the survey observation that most of the Development Footprint is gently undulating, although the entire landform is an elevated plateau.

The figures show that GSE across the Development Footprint was variable, but was generally low, and this was again noted during the survey as large areas were covered in thick grasses and exposures were rare. Similarly, the data shows that GSV within the few exposures that did exist was also low. During the survey it was noted that exposures were more commonly located in areas where vegetation growth was sparser but where leaf litter and dead ground covers obscured visibility of the ground surface. The impact of the agricultural land use of the Development Footprint was noted at many of the locations.

None of the locations were considered to have anything more than a low archaeological potential as the Development Footprint is generally distant to permanent water supplies and has been impacted by long-term tree clearing and stock damage.

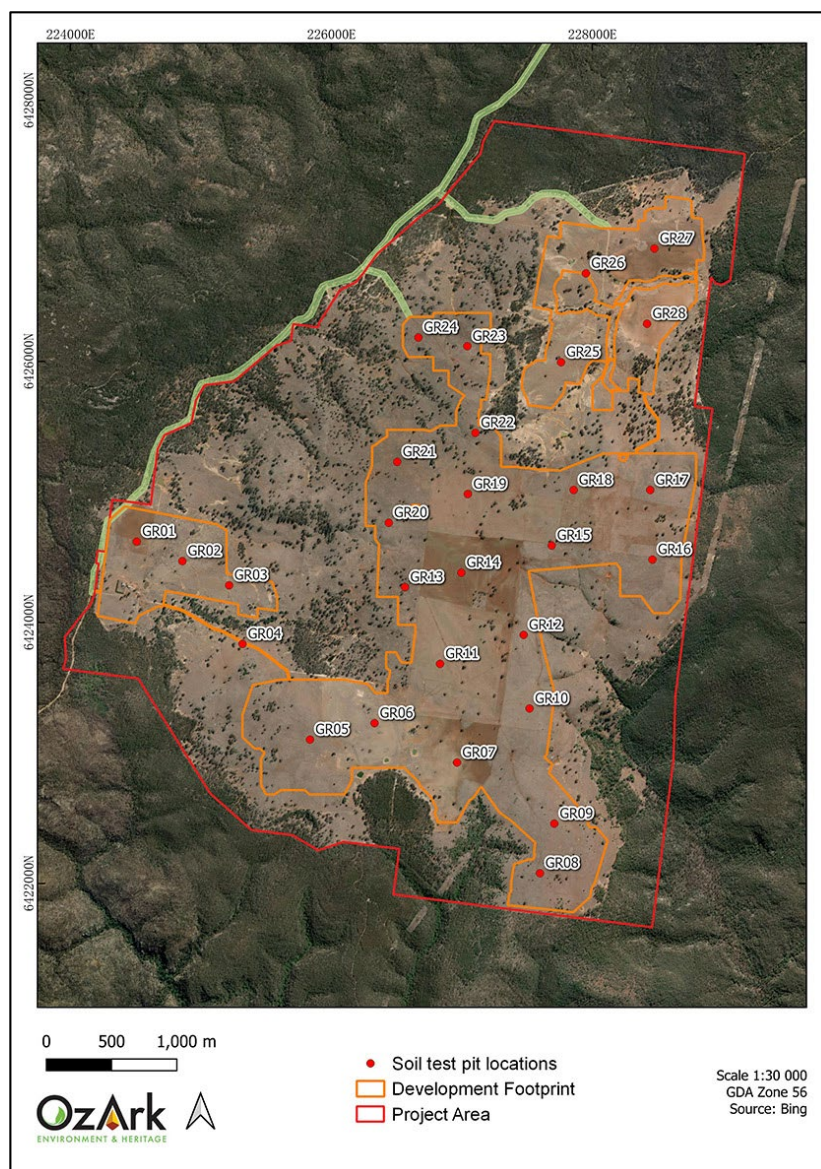
In conclusion, based on the soil test pit data, it could be summarised that an average location within the Development Footprint is likely to be flat (or at least gently sloping), in an area with low ground surface visibility, and with evidence of impact from past agricultural land use. Importantly, this random location would also be unlikely to record surface artefacts or have archaeological potential.

Table 6-16: Soil test pit data.

ID	Landform	Vegetation	GSE	GSV	Archaeological potential	Disturbance
GR01	Flat	Cleared	0%	0%	Low	Stock Damage
GR02	Slope	Scrub	0%	0%	Low	Agricultural
GR03	Slope	Scrub	90%	90%	Nil	Erosion
GR04	Slope	Cleared	0%	0%	Low	Agricultural
GR05	Slope	Scrub	10%	10%	Low	Stock Damage
GR06	Slope	Scrub	0%	0%	Low	Limb Fall
GR07	Flat	Scrub	0%	0%	Low	Stock Damage
GR08	Plain	Scrub	0%	0%	Low	Stock Damage
GR09	Crest	Scrub	0%	0%	Low	Stock Damage
GR10	Flat	cleared	5%	5%	Low	Agricultural
GR11	Flat	Cropped	50%	50%	Nil	Ploughed
GR12	Slope	Cleared	5%	5%	Low	Agricultural
GR13	Slop	Scattered trees	0%	0%	Low	Agricultural
GR14	Ridge	Cleared	10%	10%	Low	Agricultural

ID	Landform	Vegetation	GSE	GSV	Archaeological potential	Disturbance
GR15	Slope	Cleared	0%	0%	Low	Agricultural
GR16	Crest	Cleared	0%	0%	Low	Agricultural
GR17	Upper Slope	Cleared	0%	0%	Low	Agricultural
GR18	Upper Slope	Cleared	0%	0%	Low	Agricultural
GR19	Flat	Cleared	5%	5%	Low	Agricultural
GR20	Mid slope	Cleared	0%	0%	Low	Agricultural
GR21	Flat	Cleared	0%	0%	Low	Agricultural
GR22	Slope	Cleared	0%	0%	Low	Agricultural
GR23	Flat	Cleared	0%	0%	Low	Agricultural
GR24	Mid slope	Cleared	5%	10%	Low	Agricultural
GR25	Slope	Cleared	10%	0%	Low	Agricultural
GR26	Plain	Cleared	0%	0%	Low	Agricultural
GR27	Slope	Cleared	5%	70%	Low	Agricultural
GR28	Flat	Cleared	10%	10%	Low	Agricultural

Figure 6-24: Soil test pit locations.



Consistent with previous studies within the broader region, the frequency and density of Aboriginal heritage sites were more prevalent near waterways (seven of the 11 sites recorded). This is expected as these areas, near watercourses, are generally associated with increased levels of past resource and camping activities. Moreover, erosional processes in many of the gullies within these drainage landforms created exposures, thereby increasing the percentage of GSE and aiding the identification of Aboriginal objects.

Conversely, limited GSE associated with the consistent and sometimes thick grass cover within slope landforms likely hindered the identification of artefacts. However, the low number of sites identified in these landforms is more likely because these landforms, being generally distant to water, did not present ideal camping locations.

Artefact types were mostly characterised by flakes, several cores, an axe blank, and a scraper. Axes would likely have been utilised for the purpose of removing wood and bark from trees for the purposes of construction of shelters, shields, canoes, and coolamons. The grinding grooves recorded 15 km north of the Project Area (Killoe Creek GG1) indicate that axe manufacture/curation is occurring within the broader area, and this is supported by the recording of the axe blank at Redlynch Creek OS1 in the Development Footprint.

Despite several areas of basalt outcropping throughout the Development Footprint, no evidence of basalt quarrying was noted.

Raw materials mainly included chert with some examples of quartzite, quartz, and silcrete which are all common materials found in the broader area. However, the most common raw material previously recorded within the previous studies for the region, IMT, was not identified during the survey. Although, occurrences of the material were observed throughout the Development Footprint, they did not have clear artefact attributes.

According to the predictive modelling undertaken by Kuskie and Kamminga (2000) (**Section 5.2**), the site types recorded in the Development Footprint indicate transitory movement, hunting and gathering (without camping), or camping by small parties. These occupation patterns will result in assemblages of low artefact density and diversity as was recorded in the Development Footprint.

The seven trees inspected during the assessment do not conform to the standard scarring morphology accepted for cultural modification and are not considered to be Aboriginal objects. However, the Aboriginal community members present during the site survey indicated that these trees were of cultural importance to the community and believe that the scarring was perhaps Aboriginal in origin.

HS01 is a rare example of shared Aboriginal and European histories during the contact period, and an evocative reminder of the conflict between the two cultures.

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 CULTURAL SIGNIFICANCE OF THE PROJECT AREA

Perry 2001 assessed a central portion of the Project Area in April 2001 and presented the following value statement for the Project Area:

The study area is in the middle of the Mountain Range and would make very good look out sites for the travelling Wonnarua people. There was only one registered Camping Site¹ and that is situated over the hill and away from the proposed Sandstone Quarry Site² and will not be disturbed in any way at all.

The Wonnarua people consider that all Sites within their traditional homeland are of high importance and are in need of proper care and protection.

The land and water running through it are the lifeblood of their culture. The hills and plains, the forest and mountains provided people in past generations with the resources needed to survive.

Camping and tool making sites found today remind people of their forefathers, the original inhabitants of the land.

The Wonnarua wish to protect their history and culture wherever possible, and maintain a connection with the land by providing recommendations in regards to Wonnarua Koori Heritage. The land and its stories were passed down from father to son over 200 generations before the arrival of Cook from England.

According to Tribal Law the local family group of Wonnarua people were obligated to care, maintain and protect this part of the Country. The Wonnarua people of today are still obligated to care for the environment as their ancestors did in the past, although they can no longer enforce traditional law for its protection.

Aboriginal Cultural Assessments can look at many things. Local Aboriginal people are attached to the land through physical, spiritual and visual connections.

¹ Recorded by Margrit Koettig in 1985: 37-1-0053.

² The project Perry 2001 was assessing.

7.3 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

Cultural and social values can only be determined by the local Aboriginal people.

Generally, however, all sites hold cultural value to the Aboriginal community. Perry 2001 notes that: *'the Wonnarua people consider that all sites within their traditional homeland (to be) of high importance and ...in need of proper care and protection'*. Further, Perry 2001 notes: *'the Wonnarua wish to protect their history and culture wherever possible, and maintain a connection with the land by providing recommendations in regards to Wonnarua Koori Heritage. The land and its stories were passed down from father to son over 200 generations before the arrival of Cook from England.'*

For these reasons, the Aboriginal objects recorded during the survey have high cultural value and that the conservation of these objects is a central aspect of Aboriginal tribal lore.

The seven trees of community interest have not been recorded as Aboriginal objects and OzArk will not be registering them on the AHIMS register. However, the RAPs present during the survey indicated that these trees were of cultural importance to the community and that the scaring was perhaps of Aboriginal origin. The RAPs requested for them to be noted in the report.

The ruins at HS01 represent a rare tangible remain related to shared Aboriginal and European histories of the Merriwa area during the contact period. Therefore, HS01 has cultural significance for both Aboriginal and non-Aboriginal members of the community.

No further cultural values were identified following the RAP review of this report.

Archaeological/scientific value

The grinding grooves site (Killoe Creek GG1) located outside the Access route has limited scientific research potential and the significance of the grooves primarily relates to their educational value. The grinding groove site type is less common in the local and regional areas in terms of representativeness, and this raises its scientific significance.

The recording of the four artefact scatters and six isolated finds contributes to the broader site modelling for the region, however, the site types recorded, and the types of artefacts contained within them, are largely consistent with the local and broader archaeological record. Formal tool types such as the 'axe blank' (Redlynch Creek OS1) and 'scraper' (Monaghan Creek IF4) are less common within the broader regional assemblage and have a raised scientific significance.

The surface artefacts recorded were generally in secondary contexts, with low–moderate artefact densities, and no evidence of associated subsurface deposits. These factors lower the scientific significance of the sites.

The historical site HS01 has high scientific value as there is potential for archaeological remains that may shed further light on the lives of both Aboriginal and non-Aboriginal people in the district.

Aesthetic value

Killoe Creek GG1, located outside the Access route, has moderate aesthetic values as the site remains interpretable by the layperson and the grooves maintain their association with the flowing waters of Killoe Creek.

The other sites recorded have a low aesthetic significance as they are unremarkable and are not obvious in the landscape.

Other aesthetic values within the Development Footprint are related to the association of recorded Aboriginal objects with the landscape, both in their physical association to features such as Redlynch Creek, Rocky Creek, and Ringwood Gully, but also the object's association with the smells and sounds of the current agricultural landscape.

HS01 commands sweeping views to the south across what is now the Goulburn River National Park. The aesthetic quality of this location is strong, and it evokes an emotional response associated with the remoteness of the location and the events that took place there.

Historic value

None of the archaeological sites recorded during the survey have historic values associated with important persons, places, or events.

HS01 represents high historic and cultural values through its representativeness as uncommon tangible remain related to shared Aboriginal and European histories of the Merriwa area during the contact period.

Itemised heritage significance assessment

The significance assessment pertaining to each individual Aboriginal heritage site recorded is included in **Table 7-1**.

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

AHIMS ID	Site name	Social or cultural value	Archaeologica l / scientific value	Aesthetic value	Historic value
37-1-1033	Killoe Creek GG1	High	Moderate	Moderate	Nil
37-1-1035	Redlynch Creek OS1	High	Moderate	Low	Nil
37-1-1034	Redlynch Creek OS2	High	Low	Low	Nil
37-1-1036	Redlynch Creek OS3	High	Low	Low	Nil
37-1-1037	Rocky Creek Gully OS4	High	Low	Low	Nil

AHIMS ID	Site name	Social or cultural value	Archaeologica l / scientific value	Aesthetic value	Historic value
37-1-1027	Redlynch Creek IF1	High	Low	Low	Nil
37-1-1028	Rocky Creek Slope IF2	High	Low	Low	Nil
37-1-1029	Wollara Road IF3	High	Low	Low	Nil
37-1-1030	Monaghans Creek IF4	High	Moderate	Low	Nil
37-1-1031	Rocky Creek Gully IF5	High	Low	Low	Nil
37-1-1032	Ringwood Gully IF6	High	Low	Low	Nil

7.4 STATEMENT OF SIGNIFICANCE

The Project Area holds cultural significance to the local Aboriginal community as Aboriginal people value their heritage as tangible links with the lifestyles and values of their ancestors (Perry 2001:13).

Perry 2001 notes that the landforms of the Project Area were possibly a look-out location for Aboriginal people and that the Aboriginal sites in the area are of high importance as a reminder of the current community's ancestors as the original occupiers of the land.

The sites recorded during the survey generally have a low scientific significance as they are either isolated finds or low-density artefact scatters, often in disturbed contexts. The recordings illustrate that the elevated plateau which comprises the Project Area was used and visited by Aboriginal groups in the past but that the Project Area did not afford good camping locations. The exception to this is the few creek systems in the Project Area such as Redlynch Creek and a tributary to Rocky Creek where occupation was more frequent but still at a low density. The survey confirmed that the plateau of the Project Area is exposed and generally distant to reliable water supplies and this prohibited the area from being intensively used for camping activity. However, it is noted that the Project Area was formerly managed by Aboriginal people through the use of fire (see **Section 4.4**) and it is suggestive to imagine the elevated plateau being especially good hunting territory whereby game on the open plateau could be herded and trapped in one of the gullies descending from the plateau. While camping was not frequently occurring, it may be that the Project Area was used frequently for hunting, an activity that leaves a sparse archaeological signature.

Perry 2001 notes that the land and the water running through it are the 'lifeblood' of Aboriginal culture and that the forest and mountains of the region provided the resources needed to survive. Perry 2001 notes that tribal lore requires that Aboriginal people are obliged to care for the environment and that this includes the aesthetic values of the land. Therefore, the land itself has aesthetic significance and its care and maintenance are core aspects of Aboriginal culture.

The only recorded archaeological site with aesthetic significance is 37-1-1033 (Killoe Creek GG1) as the grinding grooves are visible to the layperson and the grooves maintain their association with Killoe Creek. Thus, the association of running water and visible grooves have a strong

aesthetic significance. The other sites recorded have a low aesthetic significance as they are unremarkable and are not obvious in the landscape.

HS01 has archaeological potential, cultural value for both Indigenous and non-Indigenous people, and strong historic values. This relic of a violent period in rural race relations can also signify a reconciliation with these events as is typified by the theatrical presentation inspired by the 'posts in the paddock' (**Section 6.6**). This provides this site with exceptional heritage values.

8 ASSESSING HARM

8.1 AVOIDING AND MINIMISING HARM

8.1.1 Conserving significant Aboriginal cultural heritage

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

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

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

- Impacts to significant Aboriginal objects and places should always be avoided wherever possible
- Where impacts to Aboriginal objects and places cannot be avoided, projects should be amended 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

One grinding groove site, 37-1-1033 (Killoe Creek GG1), was recorded 50 m east of the Killoe Creek crossing outside the Access route, 37-1-1037 (Rocky Creek Gully OS4) is located 30 m north of the Development Footprint and 37-1-1032 (Ringwood Gully IF6) is located 20 m east of the Development Footprint. Therefore, these three sites will not be harmed by the Project.

Eight recorded sites 37-1-1027 (Redlynch Creek IF1), 37-1-1028 (Rocky Creek Slope IF2), 37-1-1029 (Wollara Road IF3), 37-1-1030 (Monaghans Creek IF4), 37-1-1031 (Rocky Creek Gully IF5), 37-1-1034 (Redlynch Creek OS2), 37-1-1035 (Redlynch Creek OS1), and 37-1-1036 (Redlynch Creek OS3) are located within the Development Footprint and are likely to be harmed by the Project.

Most of the artefact sites within the Development Footprint are in a secondary context and therefore have a low conservation value. Project design changes to avoid harm to these sites is not warranted.

It is recommended that efforts be made in the Project design to avoid (CST1, and CST4–CST5) that are in the Development Footprint. While not listed with the AHIMS register, these trees are of importance to the local community and their conservation must be considered.

HS01 has archaeological, cultural, and high historic values and will be avoided by the Project.

No land associated with The Greater Blue Mountains Area will be impacted by the Project. There are no known Aboriginal sites or cultural values associated with this listing that are known to extend into the Development Footprint and the cultural heritage values of the nomination will not be harmed.

8.2 LIKELY IMPACTS TO ABORIGINAL HERITAGE FROM THE PROJECT

Table 8-1 presents a summary of potential impacts to Aboriginal cultural heritage associated with the Project. These sites in relation to the indicative layout for the Project are shown on **Figure 8-1** and include three low-density artefact scatters in disturbed contexts and five isolated finds.

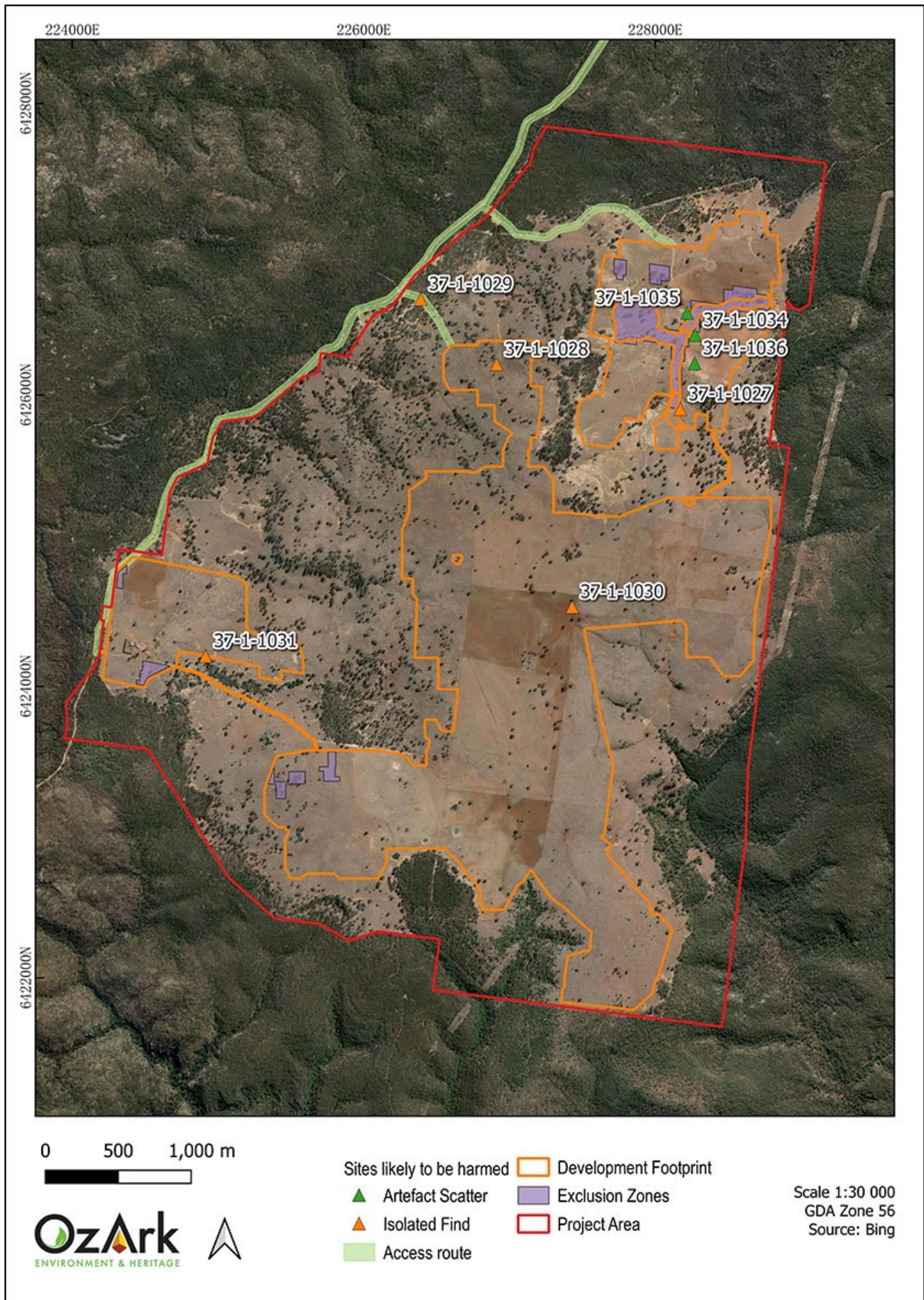
The Project Area is surrounded by the 'Greater Blue Mountains Area - Additional Values (105696)' curtilage as an 'area under assessment' for listing on the National Heritage List. No land associated with Item 105696 will be impacted by the Project. During the survey, no Aboriginal sites were identified in adjacent landforms within the Project Area and no cultural values have been disclosed by the RAPs that extend into the Project Area from the area covered by Item 105696.

Seven trees were of interest to the Aboriginal community as being potentially culturally scarred. Three of these trees are within the Development Footprint (CST1, and CST4–CST5) and may potentially require removal for the Project.

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

AHIMS ID	Site name	Type of harm (direct/indirect /none)	Degree of harm (total/partial /none)	Consequence of harm (total/partial/no loss of value)
37-1-1033	Killoe Creek GG1	None	None	None
37-1-1035	Redlynch Creek OS1	Direct	Total	Total
37-1-1034	Redlynch Creek OS2	Direct	Total	Total
37-1-1036	Redlynch Creek OS3	Direct	Total	Total
37-1-1037	Rocky Creek Gully OS4	None	None	None
37-1-1027	Redlynch Creek IF1	Direct	Total	Total
37-1-1028	Rocky Creek Slope IF2	Direct	Total	Total
37-1-1029	Wollara Road IF3	Direct	Total	Total
37-1-1030	Monaghans Creek IF4	Direct	Total	Total
37-1-1031	Rocky Creek Gully IF5	Direct	Total	Total
37-1-1032	Ringwood Gully IF6	None	None	None

Figure 8-1: Location of recorded sites likely to be harmed by the Project.



8.3 ECOLOGICALLY SUSTAINABLE DEVELOPMENT PRINCIPLES

Ecologically sustainable development principles (ESD) (defined in s.6 of the *Protection of the Environment Administration Act 1991*) requires the integration of economic and environmental considerations (including cultural heritage) in the decision-making process. 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:

- There is 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

Perry 2001:14 notes that: *'Aboriginal Sites and Places are still important to today's generation of people, therefore these areas still need protection'*. The intergenerational value of Aboriginal cultural heritage sites and places is acknowledged, and it is understood that from an Aboriginal perspective: *the main aim of Cultural Heritage Management should be the Conservation and Protection of Aboriginal Heritage Sites which include the Landscape within the area'* (Perry 2001:13).

This report notes that the Project will add to the cumulative impact on the region's Aboriginal cultural heritage as eight Aboriginal sites may be harmed and the landscape within the Development Footprint will be modified.

The loss of eight Aboriginal sites cannot be summarily dismissed and needs to be acknowledged. While the sites themselves have been assessed as having low to moderate scientific values, as they are unremarkable in their manifestation and are site types which is commonly represented in the region, their loss is a further diminution of the district's archaeological resource.

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

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

ESD principle	Response
Avoiding and minimising harm	<p>Three of the sites recorded during the survey will not be harmed by the Project: 37-1-1033 (Killoe Creek GG1), 37-1-1037 (Rocky Creek Gully OS4), and 37-1-1032 (Ringwood Gully IF6) as they are located outside of the Access route and the Development Footprint.</p> <p>Eight Aboriginal sites located within the Development Footprint may be harmed by the Project. Of the eight Aboriginal sites, five sites are isolated finds consisting of a single artefact and the remainder are low-density artefact scatters. Due to the recorded disturbances and the secondary contexts of the artefacts recorded, these sites have low potential for in situ subsurface archaeological deposits. As such, although it is recognised that these objects have cultural value, they are not of such significance to warrant a change in Project design to avoid harm to the sites.</p> <p>Conversely, HS01 holds archaeological, cultural, and historic values and will not be harmed.</p> <p>Management measures are outlined in Section 9.2 to minimise harm to the cultural value of the sites that will be harmed.</p>
The integration principle	The Project presents a strong case for the broader environmental benefits arising from environmentally responsible development. The environmental consequences of the Project have been carefully considered and assessed.
The precautionary principle	The Aboriginal cultural heritage investigation has followed the precautionary principle though undertaking a robust Aboriginal cultural heritage assessment to ensure that harm to Aboriginal objects and values is minimised. The survey adopted a precautionary principle when it came to describing and assessing landforms within the survey units.

ESD principle	Response
The intergenerational equity principle	<p>The Aboriginal community feel very strongly that the conservation of Aboriginal cultural heritage sites and places is an important aspect of being able to pass on intergenerational knowledge and stories.</p> <p>While it is acknowledged that the loss of eight sites will result in a diminution of inter-generational equity, the management measures contained in this ACHAR are designed to mitigate, as much as is possible, this potential loss of inter-generational equity.</p> <p>It is assessed that the Project will not harm significant Aboriginal cultural heritage values and that there will be a manageable diminution of intergenerational equity should the sites recorded here be harmed.</p>

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 Project 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 DPE. Normally the management recommendations contained in the ACHAR become policies of the ACHMP. As RAPs 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 RAPs 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

Management strategies recommended for each of the recorded sites are included in **Table 9-1**.

Table 9-1: Management strategies for recorded sites.

AHIMS ID	Site name	Site type	Degree of harm	Management strategy
37-1-1033	Killoe Creek GG1	Grinding Grooves	Will not be harmed	Outside of the Access route. Should works need to take place at the Killoe Creek crossing on Ringwood Road, the site should be included on all applicable construction plans and the location made known to all work crews working in the vicinity of the site to ensure the site is not inadvertently harmed.
37-1-1035	Redlynch Creek OS1	Artefact Scatter	Total	Mapping, description, and collection of surface artefacts prior to commencement of construction as per the methodology in Section 9.2.1 .
37-1-1034	Redlynch Creek OS2	Artefact Scatter	Total	Mapping, description, and collection of surface artefacts prior to commencement of construction as per the methodology in Section 9.2.1 .
37-1-1036	Redlynch Creek OS3	Artefact Scatter	Total	Mapping, description, and collection of surface artefacts prior to commencement of construction as per the methodology in Section 9.2.1 .
37-1-1037	Rocky Creek Gully OS4	Artefact Scatter	Will not be harmed	Outside of the Development Footprint. To be included on all applicable construction plans and the location made known to all work crews working in

AHIMS ID	Site name	Site type	Degree of harm	Management strategy
				the vicinity of the site to ensure the site is not inadvertently harmed.
37-1-1027	Redlynch Creek IF1	Isolated Find	Total	Mapping, description, and collection of the surface artefact prior to commencement of construction as per the methodology in Section 9.2.1 .
37-1-1028	Rocky Creek Slope IF2	Isolated Find	Total	Mapping, description, and collection of the surface artefact prior to commencement of construction as per the methodology in Section 9.2.1 .
37-1-1029	Wollara Road IF3	Isolated Find	Total	Mapping, description, and collection of the surface artefact prior to commencement of construction as per the methodology in Section 9.2.1 .
37-1-1030	Monaghans Creek IF4	Isolated Find	Total	Mapping, description, and collection of the surface artefact prior to commencement of construction as per the methodology in Section 9.2.1 .
37-1-1031	Rocky Creek Gully IF5	Isolated Find	Total	Mapping, description, and collection of the surface artefact prior to commencement of construction as per the methodology in Section 9.2.1 .
37-1-1032	Ringwood Gully IF6	Isolated Find	Will not be harmed	Outside of the Development Footprint. To be included on all applicable construction plans and the location made known to all work crews working in the vicinity of the site to ensure the site is not inadvertently harmed.

9.2.1 Salvage recommendation: surface artefact collection

Eight Aboriginal heritage artefact sites are located within the Development Footprint and are likely to be harmed by the Project. It is recommended that these sites are salvaged through the recording and collection of the surface artefacts prior to construction works proceeding. This recommendation is made because of:

- The cultural value of the sites and their importance to the Aboriginal community
- The nature of these sites (isolated finds or surface artefact objects without associated subsurface archaeological deposits)
- The fact that they are in landforms with high previous disturbance from a range of factors including erosion, earthmoving, and long-term grazing
- The low to moderate archaeological value assigned to the sites that precludes more intensive archaeological investigations
- The fact that sites such as these have a limited ability to add further information about the distribution of past Aboriginal occupation or the use of the Development Footprint.

The sites to be salvaged are: 37-1-1027 (Redlynch Creek IF1), 37-1-1028 (Rocky Creek Slope IF2), 37-1-1029 (Wollara Road IF3), 37-1-1030 (Monaghans Creek IF4), 37-1-1031 (Rocky Creek Gully IF5), 37-1-1034 (Redlynch Creek OS2), 37-1-1035 (Redlynch Creek OS1), and 37-1-1036 (Redlynch Creek OS3).

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

- All visible surface artefacts will be flagged in the field

- The sites will be photographed after flagging and before recording
- All artefacts will have the following artefact information recorded:
 - Location
 - Artefact class
 - Artefact type
 - Size
 - Reduction level
 - Raw material
 - Notes.
- A selection of indicative and / or unusual artefacts from each site will be photographed
- Once all recording is complete, the artefacts will be collected according to site with artefacts from each site being kept separate
- The recording of the artefacts recovered will be completed in the field and this data would be incorporated into a report
- An Aboriginal Site Impact Recording Form (ASIRF) will be submitted by the archaeologist detailing the collection process and results at the sites.

9.2.2 Trees of community interest management

The trees noted by the RAPs were considered by OzArk, but all failed to display sufficient attributes to conclude that the scar's origin was cultural (**Section 6.5**). As such, OzArk will not be registering these items as Aboriginal objects on the AHIMS register. However, this determination was not agreed to by all RAPs and the trees will be subject to specific management with respect to the views of some of the RAPs.

Three of the seven trees (CST1, 4, and 5) are likely to be impacted by the Project. The remaining four trees (CST2, 3, 6, and 7) are outside of the Development Footprint and will not be impacted by the Project.

With respect to the three trees that are liable for impact, the trees will be included in a site visit and photographic recording with RAPs at the time of the surface artefact collection set out in **Section 9.2.1**. The results of the photographic recording and any comments from the RAPs about the trees will be included in the salvage report that will be produced following all salvage activities.

9.2.3 HS01

The slab hut ruins of the O'Brien homestead (HS01) (**Section 6.6**) has strong historic values and strong cultural values both for the current descendants who own the land, and for the Aboriginal

community due to the site's role in illustrating Aboriginal relations and issues at the turn of the nineteenth century. HS01 is also likely to have archaeological values.

To conserve these important values, the visible standing posts will be avoided by all works associated with the Project by instigating a minimum 20 m no-go buffer around the visible remains of the ruins.

9.3 OTHER CONSERVATION MEASURES

9.3.1 Additional protection for HS01

HS01 will be included on all site construction plans and induction materials to ensure that the location is protected. The boundary of the Development Footprint around HS01 will be permanently flagged and signed to ensure that the place is not impacted.

9.3.2 Long-term management of Aboriginal object

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

Regarding the stone artefacts, suitable procedures for the long-term management could include:

- The reburial of artefacts at a location outside of the development footprint but within the Project Area
- A RAP group nominating themselves to apply for a Care Agreement to retain the artefacts. Any Care Agreement will require the approval of Heritage NSW.

Any long-term management of Aboriginal objects will be done in consultation with the RAPs.

9.4 PROTOCOLS RELATED TO THE DISCOVERY OF NEW SITES

9.4.1 Skeletal remains protocol

Protocols related to the discovery of suspected human skeletal material will follow Requirement 25 of the Code of Practice and be set out in the ACHMP which would be developed in consultation with RAPs, Heritage NSW and DPE.

The protocol will include:

1. Cordon off area with a minimum buffer of 10 m in all directions from the visible remains. Do not disturb any skeletal material that remains in place. If some skeletal remains have been removed from the ground, store these in a dry location on site. Do not remove any skeletal material or associated artefacts from site
2. If bones are suspected to be human, the site supervisor should immediately contact the nearest police station. Heritage NSW should also be contacted (02 9873 8500) to assist

with the identification of the burial. Police will make an initial assessment to determine if the remains are part of crime scene or possible ancient Aboriginal remains. Such an assessment will usually involve sending photographs of the find to a physical anthropologist to determine the ethnic origin of the skeleton

3. If the skeletal material is determined to be ancestral Aboriginal remains, Heritage NSW would send a Compliance and Regulation Officer to the scene and then issue an Advisory Letter setting out the required process from that point
4. The proponent will notify the Aboriginal community of the find
5. The Aboriginal ancestral remains must be recorded under the direct supervision of a specialist anthropologist or other suitably qualified person
6. The location of the burial must be registered as an Aboriginal site on the AHIMS database
7. Work cannot recommence in the cordoned off area until authorised in writing by Heritage NSW.

9.4.2 New sites within the Development Footprint

The following procedure will be implemented for any newly identified Aboriginal objects within the development footprint in the ACHMP:

- The site will be temporarily fenced with an exclusion buffer of at least 5 m
- The site will be assessed by a qualified archaeologist and a RAP
- If found to be of cultural significance, the site location will be registered with AHIMS
- Depending on the Aboriginal cultural heritage values at the site and the degree of immediate threat to the site, the site will be salvaged according to the appropriate management process in the ACHMP
- A brief report of the salvage will be produced to record the findings
- On the completion of salvage at such sites, an ASIRF will be completed soon after completion of salvage fieldwork and certainly within four months. Copies of the forms will be archived
- All artefacts salvaged will be subject to the approved long-term management process set out in the ACHMP.

9.4.3 New sites outside the Development Footprint

Any new Aboriginal site identified outside the approved impact footprint will be managed in accordance with the following procedure in the ACHMP:

- The site will be assessed by a qualified archaeologist and a RAP
- The site will be considered for fencing depending on its proximity to the impact footprint

- If found to be of cultural significance, the site location will be registered with AHIMS, and a site card submitted

The site will not be able to be harmed without an AHIP.

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 11 sites were recorded during the assessment and all sites have been registered with AHIMS.

The following recommendations are made based on these impacts and regarding:

- 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 Development Footprint
- The interests of the Aboriginal community.

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

1. Following development consent of the Project, the proponent will develop an ACHMP which is to be agreed to by the RAPs and DPE (with input from Heritage NSW). The ACHMP will include an unanticipated finds protocol, unanticipated skeletal remains protocol, protocols related to heritage inductions for work crews, and long-term management of any Aboriginal sites being impacted.
2. 37-1-1032 (Ringwood Gully IF6), 37-1-1033 (Killoe Creek GG1), and 37-1-1037 (Rocky Creek Gully OS4) will not be harmed by the Project as they are located outside the Access route and the Development Footprint.
3. Eight Aboriginal sites, 37-1-1027 (Redlynch Creek IF1), 37-1-1028 (Rocky Creek Slope IF2), 37-1-1029 (Wollara Road IF3), 37-1-1030 (Monaghans Creek IF4), 37-1-1031 (Rocky Creek Gully IF5), 37-1-1034 (Redlynch Creek OS2), 37-1-1035 (Redlynch Creek OS1), and 37-1-1036 (Redlynch Creek OS3) will be salvaged by a surface collection of visible artefacts. The recommended methodology for the salvage will be set out in the ACHMP and will include the measures outlined in **Section 9.2.1**.
4. It is recommended that the entire extent of 37-1-1035 (Redlynch Creek OS1) should be salvaged as the portion of the site outside the Development Footprint will continue to be harmed by ongoing erosion.
5. The three trees of community interest (CST1, and CST4–CST5) that are liable to be impacted must be included in a site visit and photographic recording with RAPs at the time of the surface artefact collection set out in **Section 9.2.1**. The results of the

photographic recording and any comments from the RAPs about the trees will be included in the salvage report that will be produced following all salvage activities.

6. The location of HS01 will be included on all site construction plans and induction materials to ensure that the location is protected. The boundary of the Development Footprint around HS01 will be permanently flagged and signed to ensure that the place is not impacted.
7. All land-disturbing activities must be confined to within the Development Footprint. Should the parameters of the proposed work extend beyond this, then further archaeological assessment will be required.

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APPENDIX 1: ABORIGINAL COMMUNITY CONSULTATION

Appendix 1 Figure 1: Aboriginal consultation log

Date	Organisation	Comment	Method
27.10.21	Heritage NSW, Department of Planning, Infrastructure and Environment	Andrew Crisp (AC; Umwelt) provision of letter requesting identification of Aboriginal parties with cultural knowledge/interest in the Project area	Email
27.10.21	Wanaruah Local Aboriginal Land Council	AC (Umwelt) provision of letter requesting identification of Aboriginal parties with cultural knowledge/interest in the Project area	Email
27.10.21	National Native Title Tribunal	AC (Umwelt) provision of letter requesting identification of Aboriginal parties with cultural knowledge/interest in the Project area	Email
27.10.21	NSW Native Title Services/NTS Corp	AC (Umwelt) provision of letter requesting identification of Aboriginal parties with cultural knowledge/interest in the Project area	Email
27.10.21	Office of the Registrar: Aboriginal Land Rights Act 1983 (NSW)	AC (Umwelt) provision of letter requesting identification of Aboriginal parties with cultural knowledge/interest in the Project area	Email
27.10.21	Upper Hunter Council	AC (Umwelt) provision of letter requesting identification of Aboriginal parties with cultural knowledge/interest in the Project area	Email
27.10.21	Hunter Local Land Services	AC (Umwelt) provision of letter requesting identification of Aboriginal parties with cultural knowledge/interest in the Project area	Email
27.10.21	Heritage NSW, Department of Planning, Infrastructure and Environment	AC (Umwelt) provision of letter requesting identification of Aboriginal parties with cultural knowledge/interest in the Project area	Email
27.10.21	Wanaruah Local Aboriginal Land Council	AC (Umwelt) provision of letter requesting identification of Aboriginal parties with cultural knowledge/interest in the Project area	Email
27.10.21	National Native Title Tribunal	AC (Umwelt) provision of letter requesting identification of Aboriginal parties with cultural knowledge/interest in the Project area	Email
27.10.21	NSW Native Title Services/NTS Corp	AC (Umwelt) provision of letter requesting identification of Aboriginal parties with cultural knowledge/interest in the Project area	Email
27.10.21	Office of the Registrar: Aboriginal Land Rights Act 1983 (NSW)	AC (Umwelt) provision of letter requesting identification of Aboriginal parties with cultural knowledge/interest in the Project area	Email
27.10.21	Upper Hunter Council	AC (Umwelt) provision of letter requesting identification of Aboriginal parties with cultural knowledge/interest in the Project area	Email
27.10.21	Hunter Local Land Services	AC (Umwelt) provision of letter requesting identification of Aboriginal parties with cultural knowledge/interest in the Project area	Email
28.10.21	NSW Native Title Services/NTS Corp	AC received first response for registration via email	Email
28.10.21	Hunter Local Land Services	AC received response for registration via email	Email
29.10.21	NSW Native Title Services/NTS Corp	AC received second response for registration via email	Email
29.10.21	Upper Hunter Council	AC received response for registration via email	Email
8.11.21	Hunters & Collectors – Tania Matthews	AC received email registering for the Project	Email
12.11.21	National Native Title Tribunal	AC sent email for Geospatial Search for Native title	Email
15.11.21	National Native Title Tribunal	AC received email that <i>Project Area falls inside Gomerioi People (NC2011/006)</i>	Email
16.11.21	Heritage NSW, Department of Planning, Infrastructure and Environment	AC received response via email from Paul Houston with extensive contact list.	Email

Date	Organisation	Comment	Method
26.5.22	Scone Advocate	Public advertisement providing notification of assessment and opportunity to register interest for consultation. Close of Registration 9th June 2022	Email
21.6.22	A1 Indigenous Services	Catherine Burrowes (CB) sent Stage 1 community letter - closing date 5.7.22	Email
21.6.22	Corroboree Aboriginal Corporation	CB sent Stage 1 community letter - closing date 5.7.22	Email
21.6.22	Kawul Pty Ltd trading as Wonn1 Sites	CB sent Stage 1 community letter - closing date 5.7.22	Email
21.6.22	Lower Hunter Aboriginal Incorporated	CB sent Stage 1 community letter - closing date 5.7.22	Email
21.6.22	Michael Green Cultural Heritage Consultant	CB sent Stage 1 community letter - closing date 5.7.22	Email
21.6.22	Wattaka Wonnarua CC Service	CB sent Stage 1 community letter - closing date 5.7.22	Email
21.6.22	Widescope Indigenous Group	CB sent Stage 1 community letter - closing date 5.7.22	Email
21.6.22	Murra Bidgee Mullangari Aboriginal Corporation	CB sent Stage 1 community letter - closing date 5.7.22	Email
21.6.22	Didge Ngunawal Clan	CB sent Stage 1 community letter - closing date 5.7.22	Email
21.6.22	Lower Hunter Wonnarua Cultural Services	CB sent Stage 1 community letter - closing date 5.7.22	Email
21.6.22	Wonnarua Elders Council	CB sent Stage 1 community letter - closing date 5.7.22	Email
21.6.22	Wonnarua Culture Heritage	CB sent Stage 1 community letter - closing date 5.7.22	Email
21.6.22	Kauma Pondee Inc.	CB sent Stage 1 community letter - closing date 5.7.22	Email
21.6.22	Hunter Valley Cultural Surveying	CB sent Stage 1 community letter - closing date 5.7.22	Email
21.6.22	Ungooroo Aboriginal Corporation	CB sent Stage 1 community letter - closing date 5.7.22	Email
21.6.22	Wonnarua Nation Aboriginal Corporation	CB sent Stage 1 community letter - closing date 5.7.22	Email
21.6.22	Culturally Aware	CB sent Stage 1 community letter - closing date 5.7.22	Email
21.6.22	Hunter Traditional Owner	CB sent Stage 1 community letter - closing date 5.7.22	Email
21.6.22	Lower Wonnaruah Tribal Consultancy Pty Ltd	CB sent Stage 1 community letter - closing date 5.7.22	Email
21.6.22	Wallagan Cultural Services	CB sent Stage 1 community letter - closing date 5.7.22	Email
21.6.22	Wanaruah Local Aboriginal Land Council	CB sent Stage 1 community letter - closing date 5.7.22	Email
21.6.22	Nunawanna Aboriginal Corporation	CB sent Stage 1 community letter - closing date 5.7.22	Email
21.6.22	Hunter Valley Aboriginal Corporation	CB sent Stage 1 community letter - closing date 5.7.22	Email
21.6.22	Upper Hunter Wonnarua Council Inc	CB sent Stage 1 community letter - closing date 5.7.22	Email
21.6.22	Forster Local Aboriginal Land Council	CB sent Stage 1 community letter - closing date 5.7.22	Email
21.6.22	Purfleet/Taree Local Aboriginal Land Council	CB sent Stage 1 community letter - closing date 5.7.22	Email
21.6.22	Mudgee Local Aboriginal Land Council	CB sent Stage 1 community letter - closing date 5.7.22	Email
21.6.22	Nungaroo Local Aboriginal Land Council	CB sent Stage 1 community letter - closing date 5.7.22	Email
21.6.22	Walhallow Local Aboriginal Land Council	CB sent Stage 1 community letter - closing date 5.7.22	Email
21.6.22	Warragil Cultural Services	CB sent Stage 1 community letter - closing date 5.7.22	Email
21.6.22	Michelle Saunders	CB sent Stage 1 community letter - closing date 5.7.22	Email
21.6.22	Aboriginal Native Title Consultants	CB sent Stage 1 community letter - closing date 5.7.22	Email
21.6.22	Gilay Consultants	CB sent Stage 1 community letter - closing date 5.7.22	Email
21.6.22	Gomeri Native Title Applicant	CB sent Stage 1 community letter - closing date 5.7.22	Email
21.6.22	Rose Nean	CB sent Stage 1 community letter - closing date 5.7.22	Email
21.6.22	Hunters and Collectors	CB sent Stage 1 community letter - closing date 5.7.22	Email

Date	Organisation	Comment	Method
21.6.22	Didge Ngunawal Clan	CB received email registering for the Project CB returned with thanks	Email
21.6.22	Corroboree Aboriginal Corporation	CB received email registering for the Project CB returned with thanks	Email
21.6.22	Widescope Indigenous Group	CB received email registering for the Project CB returned with thanks	Email
22.6.22	Walhallow Local Aboriginal Land Council	CB received email registering for the Project CB returned with thanks	Email
22.6.22	Rose Nean	CB received email registering for the Project CB returned with thanks	Email
24.6.22	Gomeri Native Title Applicant	CB received email registering for the Project CB returned with thanks	Email
24.6.22	Ungooroo Aboriginal Corporation	CB received email registering for the Project CB returned with thanks	Email
3.7.22	Murra Bidgee Mullangari Aboriginal Corporation	CB received email registering for the Project CB returned with thanks	Email
3.7.22	Merrigarn	CB received email registering for the Project CB returned with thanks	Email
7.7.22	Didge Ngunawal Clan	CB sent Stage 2/3 Methodology closing date 5.8.22	Email
7.7.22	Corroboree Aboriginal Corporation	CB sent Stage 2/3 Methodology closing date 5.8.22	Email
7.7.22	Widescope Indigenous Group	CB sent Stage 2/3 Methodology closing date 5.8.22	Email
7.7.22	Walhallow Local Aboriginal Land Council	CB sent Stage 2/3 Methodology closing date 5.8.22	Email
7.7.22	Rose Nean	CB sent Stage 2/3 Methodology closing date 5.8.22	Email
7.7.22	Gomeri Native Title Applicant	CB sent Stage 2/3 Methodology closing date 5.8.22	Email
7.7.22	Ungooroo Aboriginal Corporation	CB sent Stage 2/3 Methodology closing date 5.8.22	Email
7.7.22	Murra Bidgee Mullangari Aboriginal Corporation	CB sent Stage 2/3 Methodology closing date 5.8.22	Email
7.7.22	Merrigarn	CB sent Stage 2/3 Methodology closing date 5.8.22	Email
7.7.22	Wanaruah Local Aboriginal Land Council	CB sent Stage 2/3 Methodology closing date 5.8.22	Email
7.7.22	Hunters and Collectors	CB sent Stage 2/3 Methodology closing date 5.8.22	Email
11.7.22	Hunter Traditional Owner	CB received email registering for the Project CB returned with thanks	email
14.7.22	A1 Indigenous Services	CB received email registering for the Project CB returned with thanks	Email
14.7.22	Junburra Aboriginal Consultancy Services	CB received email registering for the Project CB returned with thanks	Email
29.7.22	Heritage NSW	CB sent email advising of those who have registered for the Project	Email
29.7.22	Wanaruah Local Aboriginal Land Council	CB sent email advising of those who have registered for the Project	Email
1.8.22	Wanaruah Local Aboriginal Land Council	CB sent FW invitation closing date 4.8.22	Email
1.8.22	Rose Nean	CB sent FW invitation closing date 4.8.22	Email
1.8.22	Gomeri Native Title Applicant	CB sent FW invitation closing date 4.8.22	Email
1.8.22	Ungooroo Aboriginal Corporation	CB sent FW invitation closing date 4.8.22	Email
1.8.22	Hunters and Collectors	CB sent FW invitation closing date 4.8.22	Email
1.8.22	A1 Indigenous Services	CB sent FW invitation closing date 4.8.22	Email
1.8.22	Junburra Aboriginal Consultancy Services	CB sent FW invitation closing date 4.8.22	Email

Date	Organisation	Comment	Method
2.8.22	Widescope Indigenous Group	CB received email from Steve Hickey - Thank you for the Project information. I have reviewed and support the Methodology. CB replied with thanks	Email
2.8.22	Gomeri Native Title Applicant	CB sent methodology and FW invite to Steve Talbott asked for feedback asap Closing date 4.8.22 for FW invite.	Email
27.10.22	Didge Ngunawal Clan	CB sent Stage 4 ACHAR closing date 24.11.22	Email
27.10.22	Corroboree Aboriginal Corporation	CB sent Stage 4 ACHAR closing date 24.11.22	Email
27.10.22	Widescope Indigenous Group	CB sent Stage 4 ACHAR closing date 24.11.22	Email
27.10.22	Walhallow Local Aboriginal Land Council	CB sent Stage 4 ACHAR closing date 24.11.22	Email
27.10.22	Rose Nean	CB sent Stage 4 ACHAR closing date 24.11.22	Email
27.10.22	Gomeri Native Title Applicant	CB sent Stage 4 ACHAR closing date 24.11.22	Email
27.10.22	Ungooroo Aboriginal Corporation	CB sent Stage 4 ACHAR closing date 24.11.22	Email
27.10.22	Murra Bidgee Mullangari Aboriginal Corporation	CB sent Stage 4 ACHAR closing date 24.11.22	Email
27.10.22	Merrigarn	CB sent Stage 4 ACHAR closing date 24.11.22	Email
27.10.22	Wanaruah Local Aboriginal Land Council	CB sent Stage 4 ACHAR closing date 24.11.22	Email
27.10.22	Hunters and Collectors	CB sent Stage 4 ACHAR closing date 24.11.22	Email
27.10.22	Hunter Traditional Owner	CB sent Stage 4 ACHAR closing date 24.11.22	Email
27.10.22	A1 Indigenous group	CB sent Stage 4 ACHAR closing date 24.11.22	Email
27.10.22	Junburra Aboriginal Consultancy Services	CB sent Stage 4 ACHAR closing date 24.11.22	Email
31.10.22	Widescope Indigenous Group	CB received email - Hi Catherine, Steven Hickey has reviewed and supports the recommendations outline in the daft ACHAR.Regards Donna Hickey	Email
31.10.22	Murra Bidgee Mullangari Aboriginal Corporation	CB received email -Hi Catherine, I have read the project information and methodology for the above project, I endorse the recommendations made.Kind regards Ryan Johnson	Email
1.11.22	Hunter Traditional Owner	CB received email from Paulette, Hi well keep in touch, Kind regards Paulette Ryan.	Email

Appendix 1 Figure 2: Stage 1 Advertisement in the *Scone Advocate***Notification of commencement of Aboriginal party consultation for proposed Goulburn River Solar Farm, 28 km south of Merriwa, NSW.**

Lightsource bp proposes to develop a solar farm encompassing one freehold property and sections of Crown Land which occur along Wollara Road, approximately 28 km south of the township of Merriwa within the Upper Hunter LGA (Project area). The proposed Goulburn River Solar Farm (the Project) will include a solar farm as well as supporting infrastructure, such as a substation and connection to an existing transmission line. The Project is considered a State Significant Development (SSD), and so will require an Environmental Impact Statement (EIS), for which an Aboriginal Cultural Heritage Assessment (ACHA) will be prepared. Lightsource bp has commissioned Umwelt to assist in the preparation of assessment documents, as required.

Umwelt invite Aboriginal people or groups who hold cultural knowledge relevant to determining the significance of Aboriginal objects and/or places within the Project area to register an interest in being consulted regarding the Project. If your organisation is aware of any such Aboriginal people or groups who you think may want to be involved in the Project, registrations should be submitted by **9th June 2022** to:

Andrew Crisp
75 York Street
Teralba NSW 2284
P: 0431 874 011
E: acrisp@umwelt.com.au

The name and contact details of the proponent's Project Manager:

Stephen Archer
P: 1300 873 575
E: goulburnriversolar@lightsourcebp.com

Appendix 1 Figure 3: Stage 1 Letter sent to agencies (sample)



Our Ref: 21507/AC/20211027

25 July 2022

«Organisation_1»
 «Organisation_2»
 «Address_1»
 «Address_2»
 «Suburb» «State» «Postcode»

E| «Contact_Email»

Dear Sir/Madam

Re: Notification of commencement of Aboriginal party consultation for an Aboriginal Cultural Heritage Assessment for the proposed Goulburn River Solar Farm, 28 km south of Merriwa, NSW.

Lightsource bp proposes to develop a solar farm at a rural property in the Upper Hunter Region of New South Wales (NSW), approximately 28 km south of the township of Merriwa within the Upper Hunter LGA (Project area). Street addresses of the Project area include:

- 2429 Ringwood Road, Merriwa, 2329
- 2335 Wollara Road, Merriwa, 2329
- 2771 Wollara Road, Merriwa 2329

The proposed Goulburn River Solar Farm (the Project) will include up to 520 megawatt peak (MWp) of solar electricity generation with a Battery Energy Storage System (BESS). The Project will also include supporting infrastructure, such as a substation and connection to an existing 500 Kilovolt (kV) transmission line which intersects the property. The Project is considered a State Significant Development (SSD), and so will require an Environmental Impact Statement (EIS), for which an Aboriginal Cultural Heritage Assessment (ACHA) will be prepared. Lightsource bp has commissioned Umwelt to assist in the preparation of assessment documents, as required. The location of the proposed Project is shown in **Figure 1**.

The Aboriginal Cultural Heritage Assessment will address the requirements of the *Aboriginal Cultural Heritage Consultation Requirements for Proponents 2010* (DECCW 2010a), *Code of Practice for Archaeological Investigation of Aboriginal Objects in NSW* (DECCW 2010c) and *Guide to Investigating, Assessing and Reporting on Aboriginal Cultural Heritage in NSW* (OEH 2011). Consultation with Aboriginal parties will be undertaken to inform the Aboriginal Cultural Heritage Assessment and will assist the Secretary of the Department of Planning, Industry and Environment (DPIE) in consideration and determination of the Project.

21507_Agency_notification_20211026_ltr_FINAL-sample



In accordance with Section 4.1.2 of the *Aboriginal Cultural Heritage Consultation Requirements for Proponents* (2010), Umwelt are seeking to identify Aboriginal people or groups who may hold cultural knowledge relevant to determining the significance of Aboriginal objects and/or places within the Project area. If your organisation is aware of Aboriginal people or groups who may hold such cultural knowledge, please forward the relevant contact details by no later than **14 days from date of letter** to:

Nicola Roche
Umwelt Environmental and Social Consultants
75 York Street
Teralba NSW 2284
E: nroche@umwelt.com.au

In compliance with the *Aboriginal Cultural Heritage Consultation Requirements for Proponents* (2010) the contact details for the proponent are as follows:

Stephen Archer
Lightsource bp
P: 1300 873 575
E: goulburnriversolar@lightsourcebp.com

If you have any questions regarding this correspondence or wish to discuss the proposed Project further, please do not hesitate to contact myself via email or on 02 4950 5322.

Yours sincerely

A handwritten signature in black ink, appearing to read "Nicola Roche".

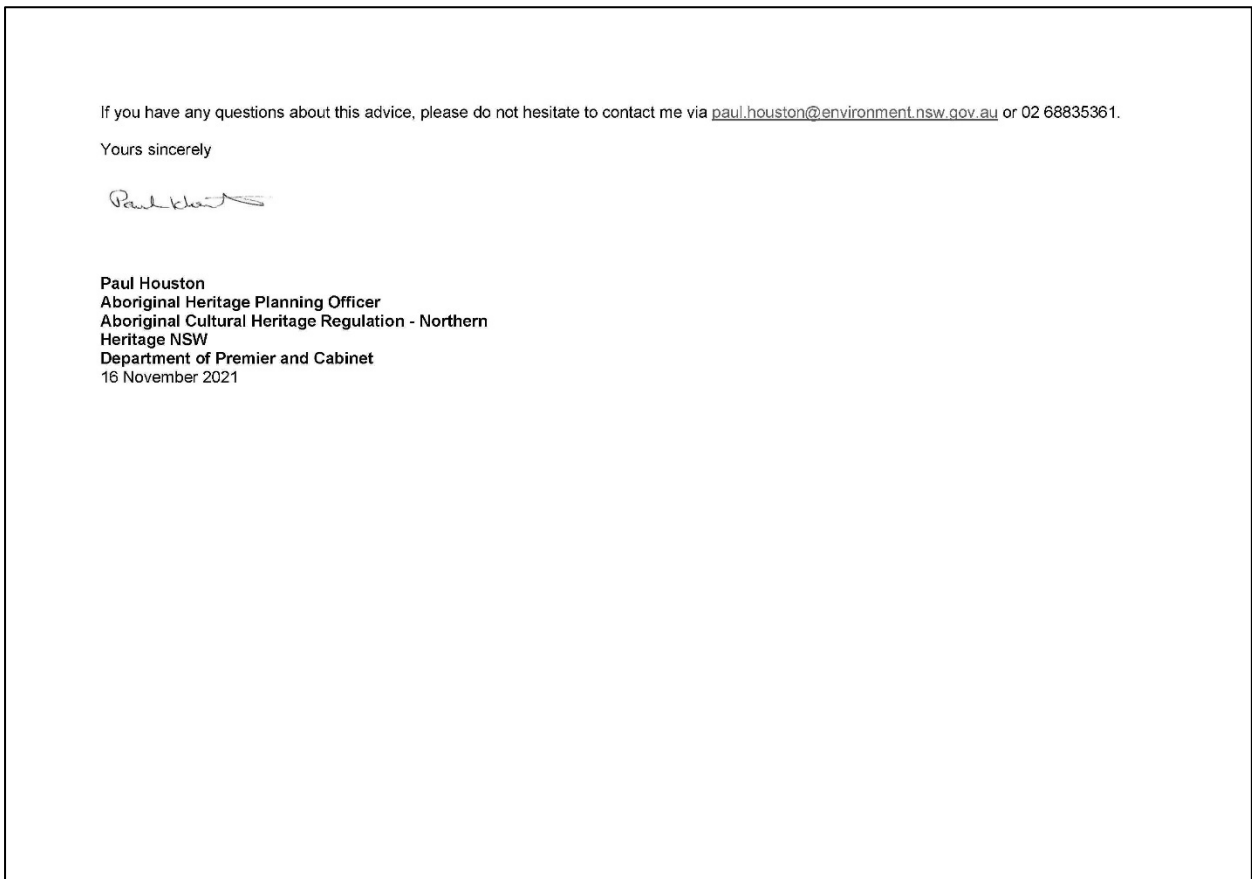
Nicola Roche
Manager, Cultural Heritage



Figure 1 – Location of Project

21507_Agency_notification_20211026_lr_FINAL-sample

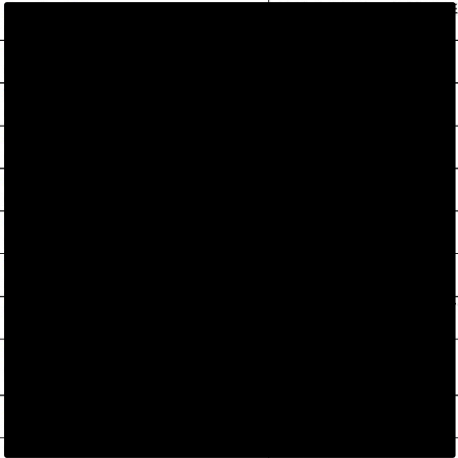
Appendix 1 Figure 4: Stage 1 Response from Heritage NSW



ATTACHMENT A

Table 1: List of Aboriginal stakeholder groups within the Upper Hunter LGA - that may have an interest in the project; provided as per the "OEH Aboriginal cultural heritage requirement for proponents 2010".

Upper Hunter Local Government Area


Organisation/ Individual	Contact Name	Email Address/ Fax / Phone	Postal Address	Additional information
A1 Indigenous Services	Carolyn Hickey			
Corroboree Aboriginal Corporation	Carroll-Johnson Marilyn			
Kawul Pty Ltd trading as Wonn1 Sites	Arthur Fletcher			
Lower Hunter Aboriginal Incorporated	David Ahoy			
Michael Green Cultural Heritage Consultant	Michael Green			
Wattaka Wonnarua CC Service	Des Hickey			
Widescope Indigenous Group	Steven Hickey			
Murra Bidgee Mullangari Aboriginal Corporation	Ryan Johnson & Darleen Johnson-Carroll			
Didge Ngunawal Clan	Paul Boyd & Lilly Carroll			
Lower Hunter Wonnarua Cultural Services	Lea-Anne Ball			
Wonnarua Elders Council	Richard Edwards			

Crimson-Rosie	Jeffery Matthews			
Steve Talbott	Steve Talbott			
AGA Services	Ashley, Gregory & Adam Sampson			
Cacatua Culture Consultants	Donna & George Sampson			
Hunters & Collectors	Tania Matthews			
Yinarr Cultural Services	Kathleen Steward Kinchela			
Myland Cultural & Heritage Group	Warren Schillings			
Deslee Talbott Consultants	Deslee Matthews			
Gidawaa Walang & Barkuma Neighbourhood Centre Inc.	Craig Horne Debbie Dacey-Sullivan			
Tocomwall Pty Ltd	Scott Franks			
Allera French Trading	Allera French			
Indigenous Learning	Craig Archibald			
Jumbunna Traffic Management Group Pty Ltd	Norm Archibald			
DFTV Enterprises	Derrick Vale Snr			
Jarban & Mugrebea	Les Atkinson			

Crimson-Rosie	Jeffery Matthews		
Steve Talbott	Steve Talbott		
AGA Services	Ashley, Gregory & Adam Sampson		
Cacatua Culture Consultants	Donna & George Sampson		
Hunters & Collectors	Tania Matthews		
Yinarr Cultural Services	Kathleen Steward Kinchela		
Myland Cultural & Heritage Group	Warren Schillings		
Deslee Talbott Consultants	Deslee Matthews		
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Jarban & Mugrebea	Les Atkinson		

Mudgee Local Aboriginal Land Council	CEO		
Nungaroo Local Aboriginal Land Council	CEO		
Walhallow Local Aboriginal Land Council	CEO		
Warragil Cultural Services	Aaron Slater		
Michelle Saunders	Michelle Saunders		
Aboriginal Native Title Consultants	Christine Paul		
Gilay Consultants	Carol Slater		

Appendix 1 Figure 5: Stage 1 Letter sent to RAPs (sample)

	OzArk Environment & Heritage	ABN 59 104 582 354
	<u>Head office:</u> Dubbo Satellite offices: Queanbeyan Wollongong Newcastle Brisbane	T: 02 6882 0118 enquiry@ozarkehm.com.au www.ozarkehm.com.au
		145 Wingewarra St PO Box 2069 DUBBO NSW 2830

21 June 2022

[REDACTED]

Aboriginal Community Consultation, Goulburn Solar Farm

Dear [REDACTED],

OzArk Environment & Heritage (OzArk) has been engaged by Umwelt Australia on behalf of Lightsource bp. Lightsource bp propose to develop a solar farm at a rural property in the Upper Hunter Region of NSW, approximately 28 km south of the township of Merriwa within the Upper Hunter LGA (the Project). Street addresses of the Project area include:

- 2429 Ringwood Road, Merriwa, 2329
- 2335 Wollara Road, Merriwa, 2329
- 2771 Wollara Road, Merriwa 2329

The Project will include up to 520 megawatt peak of solar electricity generation with a Battery Energy Storage System. The Project will also include supporting infrastructure, such as a substation and connection to an existing 500 Kilovolt transmission line which intersects the property. The Project is considered a State Significant Development (SSD) and so will require an Environmental Impact Statement (EIS) for which an Aboriginal Cultural Heritage Assessment Report (ACHAR) will be prepared by OzArk. The location of the proposed Project is shown on **Figure 1**.

The Aboriginal cultural heritage assessment will address the requirements of the *Aboriginal Cultural Heritage Consultation Requirements for Proponents 2010* (DECCW 2010), *Code of Practice for Archaeological Investigation of Aboriginal Objects in NSW* (DECCW 2010), and *Guide to Investigating, Assessing and Reporting on Aboriginal Cultural Heritage in NSW* (OEH 2011). Consultation with Aboriginal parties will be undertaken to inform the Aboriginal cultural heritage assessment and will assist the Secretary of the Department of Planning and Environment in consideration and determination of the Project.

In accordance with Section 4.1.2 of the *Aboriginal Cultural Heritage Consultation Requirements for Proponents (2010)*, OzArk are seeking to identify Aboriginal people or groups who may hold cultural knowledge relevant to determining the significance of Aboriginal objects and/or places within the Project area. If your organisation is aware of Aboriginal people or groups who may hold such cultural knowledge, please forward the relevant contact details by no later than **5 July 2022** to the contacts below:

OzArk Environment & Heritage

- Telephone: 02 6882 0118
- E-mail: catherine@ozarkehm.com.au
- Mail: PO Box 2069 Dubbo NSW 2830

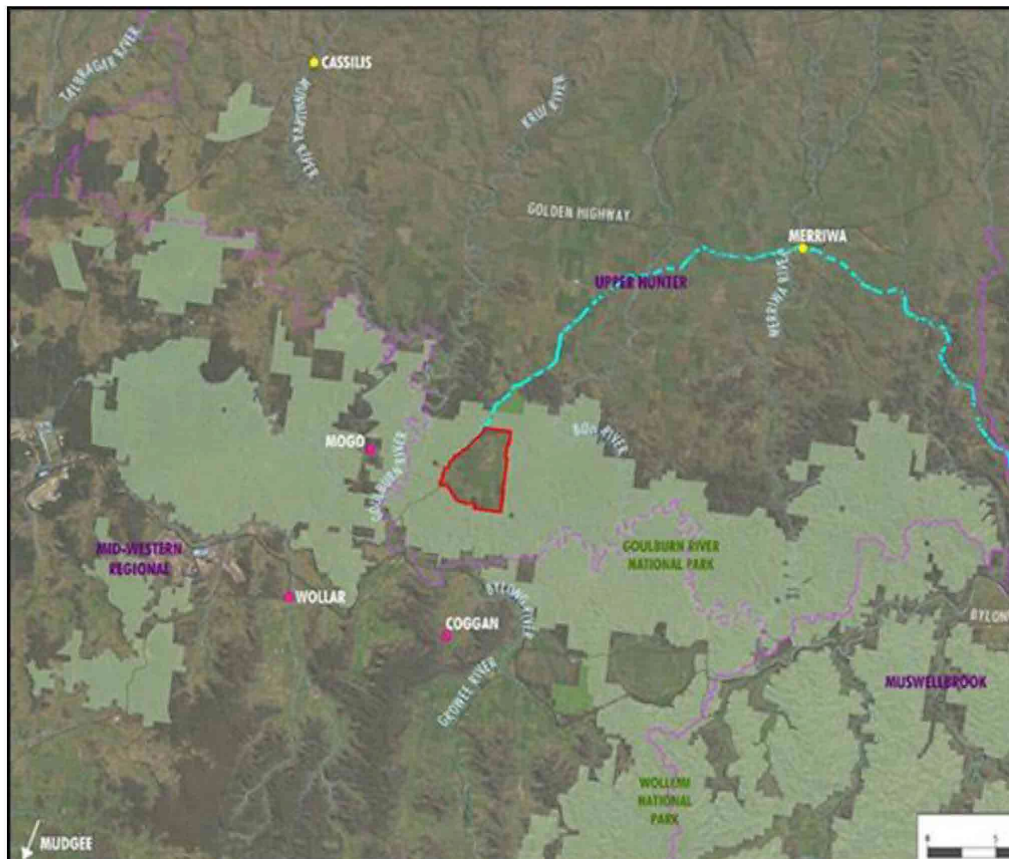
Individuals or groups who register interest to be consulted regarding the Project will be regarded as a Registered Aboriginal Party (RAP) for the Project and will be consulted throughout the assessment period.

Kind regards,



Catherine Burrowes
Community Liaison

Figure 1: Proposed location of the Project.



Appendix 1 Figure 6: Stage 2/3 cover letter and assessment methodology (sample)

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

7 July 2022

[REDACTED]

***Aboriginal Cultural Heritage Assessment Methodology:
Proposed Goulburn River Solar Farm***

Dear [REDACTED],

Thank-you for your registration of interest to become a Registered Aboriginal Party (RAP) to be consulted regarding the proposed construction of a 520-megawatt solar farm approximately 28 kilometres (km) southwest of Merriwa.

The purpose of this letter is to invite you to comment on the enclosed draft methodology for the Aboriginal Cultural heritage assessment. This assessment will support a potential Aboriginal Heritage Impact Permit (AHIP) application when lodged with the Secretary of the Department of Planning and Environment in consideration and determination of the Project.

In addition to comments on the draft report, if you can share any Aboriginal cultural heritage knowledge relevant to the proposed study area, we welcome this input so as to improve our assessment outcomes and to ensure Aboriginal cultural values are considered. OzArk Environment & Heritage is required to give you 28 days to supply feedback on the attached documents. This period closes 5pm **on Friday 5th August 2022.**

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
Customer Liaison

Appendix 1 Figure 7: Methodology



ABORIGINAL CULTURAL HERITAGE ASSESSMENT METHODOLOGY

GOULBURN RIVER SOLAR FARM

UPPER HUNTER LOCAL GOVERNMENT AREA, NSW

AUGUST 2022

Report prepared by
OzArk Environment & Heritage
for Umwelt (Australia) on behalf of
Lightsource bp



OzArk Environment & Heritage

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DOCUMENT CONTROLS

Proponent	Lightsource bp	
Client	Umwelt (Australia)	
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<p>COPYRIGHT</p> <p>© OzArk Environment & Heritage 2022 and © Umwelt on behalf of Lightsource bp 2022</p> <p>All intellectual property and copyright reserved.</p> <p>Apart from any fair dealing for private study, research, criticism, or review, as permitted under the Copyright Act, 1968, no part of this report may be reproduced, transmitted, stored in a retrieval system, or adapted in any form or by any means (electronic, mechanical, photocopying, recording, or otherwise) without written permission.</p> <p>Enquiries should be addressed to OzArk Environment & Heritage.</p>		

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	Project area and the study area	5
1.2	Project overview	5
1.3	Consultation on this methodology	11
1.4	Landscape characteristics of the project area	12
2	CULTURAL VALUES.....	16
2.1	Introduction to cultural values	16
2.1.1	Connection to Country	16
2.1.2	Managing Country	17
2.1.3	Recognising lore	17
2.2	Identifying cultural values.....	17
2.2.1	Use of information collected.....	18
2.2.2	Public / confidential information	18
2.2.3	Copyright	18
3	ARCHAEOLOGICAL CONTEXT	19
3.1	Aboriginal people of the study area.....	19
3.2	Regional archaeological context	22
3.2.1	Introduction.....	22
3.2.2	Previous assessment near the project site.....	24
3.3	Local archaeological context.....	26
3.4	Archaeological context: Conclusion	29
4	PREDICTIVE MODEL	30
4.1	Landform modelling	30
4.2	Predictive model for the study area.....	32
4.2.1	Site types in the region of the project area	32
4.2.2	Landform modelling of archaeological potential	33
4.2.3	Conclusion.....	34
4.3	Research questions	35
5	SURVEY METHODOLOGY	36
5.1	Assessment approach	36
5.2	Survey aims.....	36
5.3	Survey methodology	36
5.4	Test excavation.....	37
	REFERENCES	38

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 project area and the study area.....	9
Figure 1-4: Aerial showing the main project components.....	10
Figure 1-5: Digital elevation model of the project area.....	12
Figure 1-6: Northeast–southwest profile through the central portion of the project area.....	13
Figure 1-7: Hydrology of the project area.....	14
Figure 1-8: 1962 aerial with overlay of project area (source: SS 2022).	15
Figure 3-1: Horton's (1994) map of Aboriginal tribal boundaries.....	19
Figure 3-2: Occupational model for the lower Hunter Valley.....	23
Figure 3-3. AHIMS sites in relation to the study area.....	28
Figure 4-1: Landforms within the study area.....	31

TABLES

Table 3-1: AHIMS site types and frequencies	27
Table 4-1: Site types recorded in the region of the project area.....	32
Table 4-2: Likelihood of landforms within the study area to contain Aboriginal objects.....	34
Table 4-3: Likelihood of certain site types being present in the study area.....	34

1 INTRODUCTION

OzArk Environment & Heritage (OzArk) has been engaged by Umwelt (Australia) Pty Ltd on behalf of Lightsource bp (the proponent) to prepare an assessment methodology for the proposed Goulburn River Solar Farm (the proposal).

The proposal is located approximately 28 kilometres (km) southwest of Merriwa in the Upper Hunter Local Government Area (**Figure 1-1**).

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.

In compliance with the ACHCRs the contact details for the proponent are as follows:

Stephen Archer
Lightsource bp
P: 1300 873 575
E: goulburnriversolar@lightsourcebp.com

1.1 PROJECT AREA AND THE STUDY AREA

The project area describes the area in which all impacts associated with the proposal will be located. The project area covers an area of approximately 2000 hectares (ha). The development footprint (here termed the study area) is approximately 880 ha. Also included in the area that will be assessed by survey is the approximate 25 km of road corridor connecting the project area to the Golden Highway (**Figure 1-2**). The project area encompasses two freehold properties and sections of Crown Land which occur along Wollara Road.

The survey will be carried out over the approximate 880 ha development footprint (the study area) that includes the main development footprint and the 25 km of road corridor (**Figure 1-3**). Remaining areas outside of the development footprint but within the project area will not be subject to survey.

1.2 PROJECT OVERVIEW

The project will include an approximate 550 MWp (Megawatt peak) of solar electricity generation with a Battery Energy Storage System (BESS) of approximately 570 MWh (Megawatt hour) (**Figure 1-4**). The project will connect to an existing 500 kilovolt (kV) transmission line via a proposed substation to be in the south-eastern section of the project area. The project will include the construction, operation, civil works, maintenance, and decommissioning of the proposed photovoltaic (PV) solar farm and BESS, as well as associated infrastructure. As a part of the project, upgrades to the primary access roads, Wollara Road and Ringwood Road, may be required to facilitate over-dimensional and heavy vehicles to access the project area. This work

will be minimised by using all-weather seal where possible and avoiding unnecessary road works to minimise impacts to roadside vegetation.

Subject to the final design process, the key components of the project include:

- Approximately 1,000,000 bifacial solar PV modules in an east-west single-axis tracking arrangement with an approximate height of five metres (m) above ground level
- A battery energy storage system (BESS) with an approximate 280 MWp and 570 MWh capacity. The BESS will be housed in a series of outdoor containers, either distributed across the site or aggregated in one central location adherent to the substation.
- Onsite 500 kV switchyard and substation, with underground electrical conduits and cabling leading into the yard and overhead lines reaching above to the existing transmission line. An additional tower may be erected on the current line to accommodate the grid connection
- Onsite power line connection via underground electrical conduits and cabling.
- Communications tower, up to 30 m high, providing communications between the site and the Wollar and Bayswater substations.
- Internal access roads with all weather seal allowing for site maintenance and emergency access
- Site office and operations and maintenance building with parking for the operations team.
- Primary solar farm site access point from existing driveway from Wollara Road, with additional access points proposed along the north-western boundary of the project area to retain access for the Volunteer Fire Rescue, Rural Fire Service, National Parks and Wildlife Service, and TransGrid.
- Drainage line crossings if and where required to manage existing surface water flows (to be determined during further design development) and access points for construction purposes
- Perimeter security fencing, access gates, crossing gates, water tanks or dams, and internal livestock fences to facilitate sheep grazing.

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

Figure 1-1: Location of the project area.

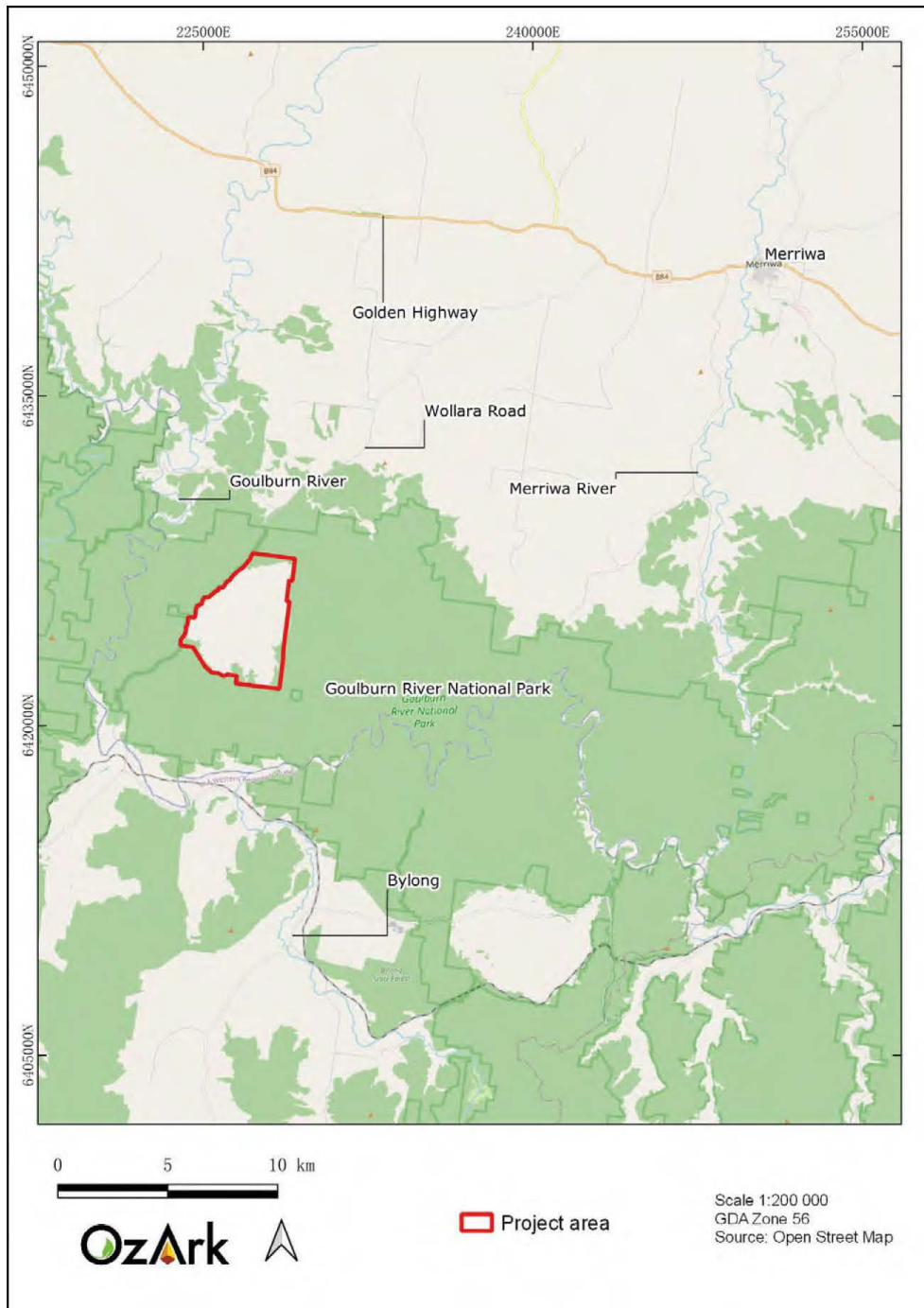


Figure 1-2. Aerial of the project area.

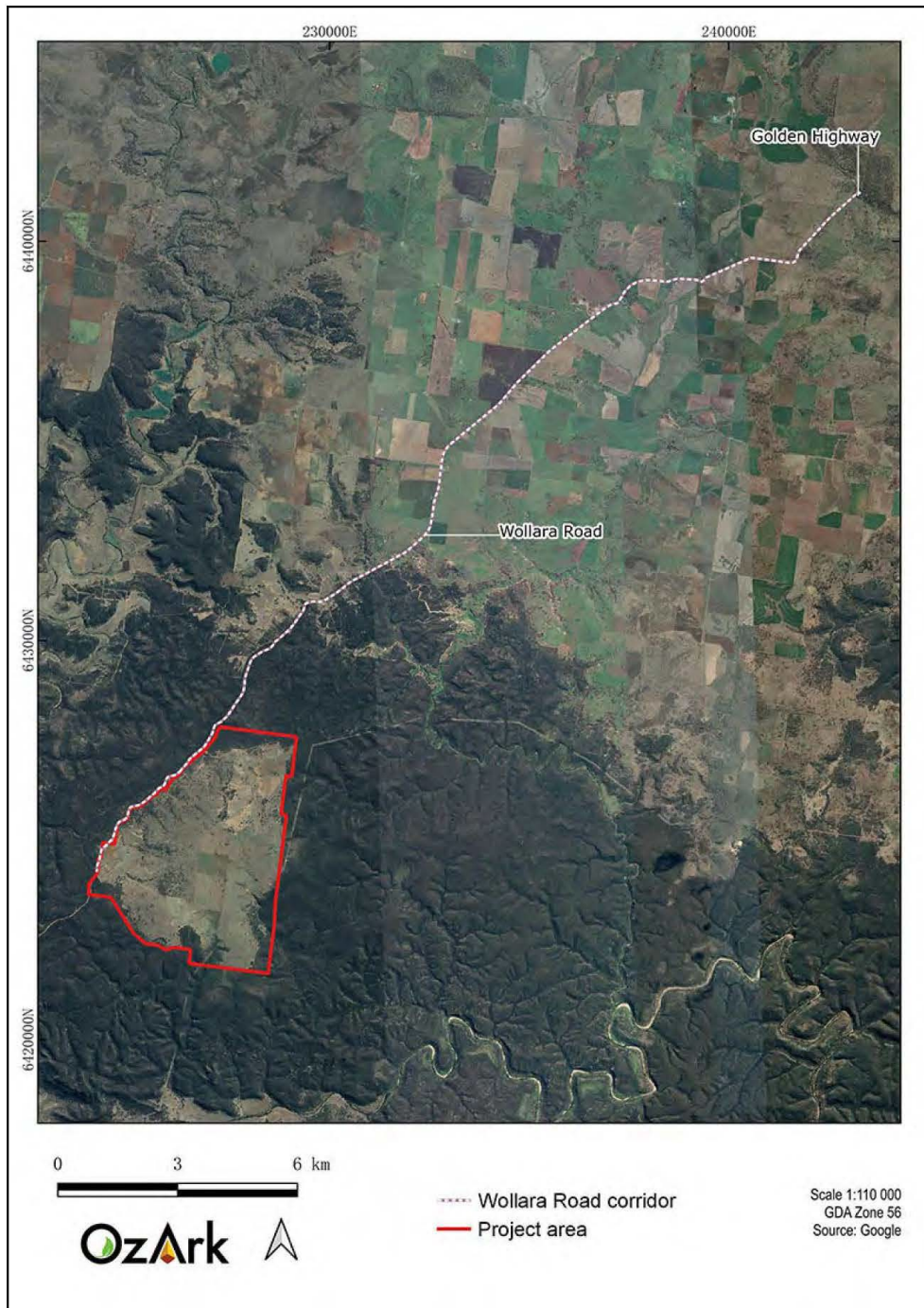


Figure 1-3. Aerial of the project area and the study area.

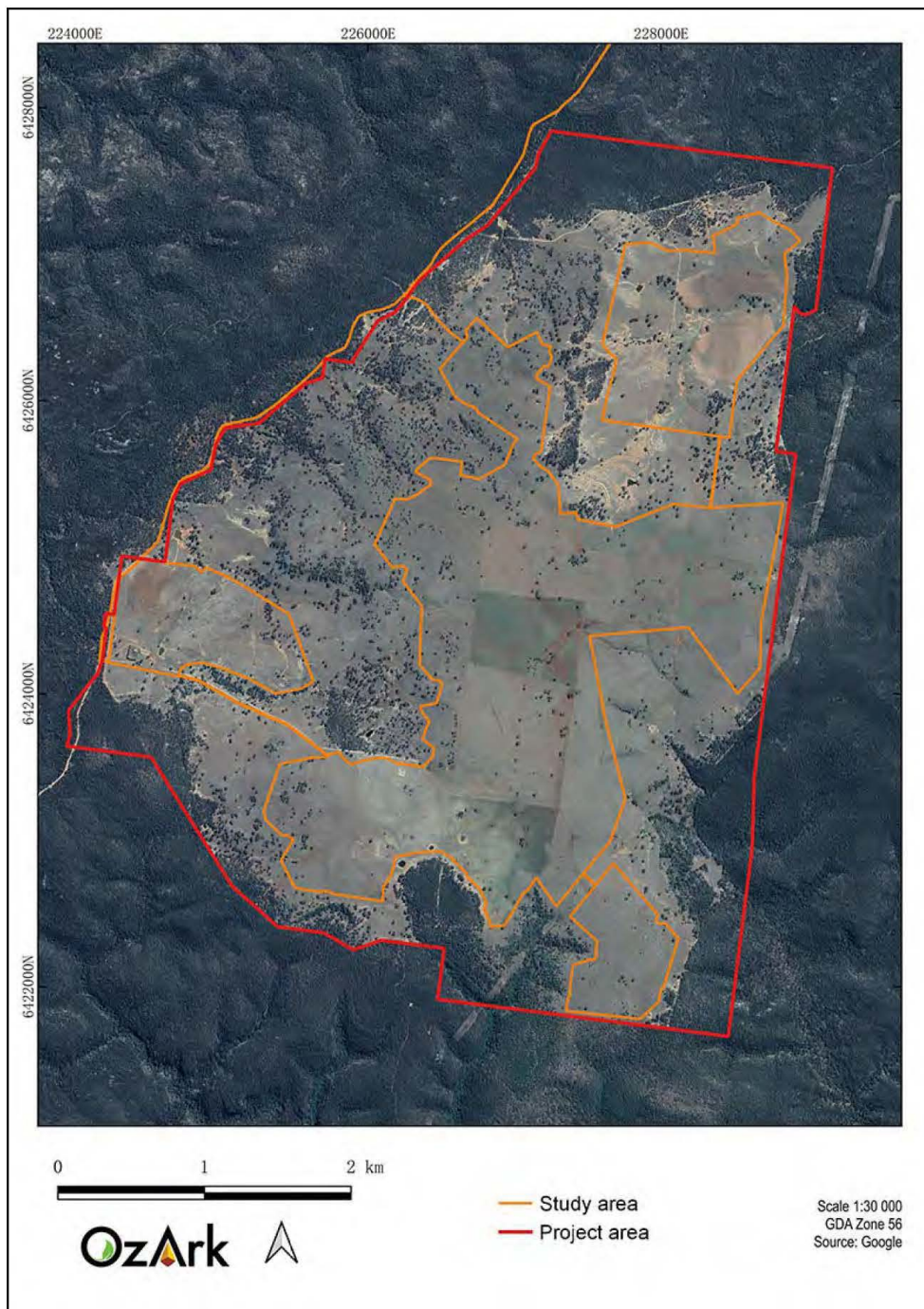
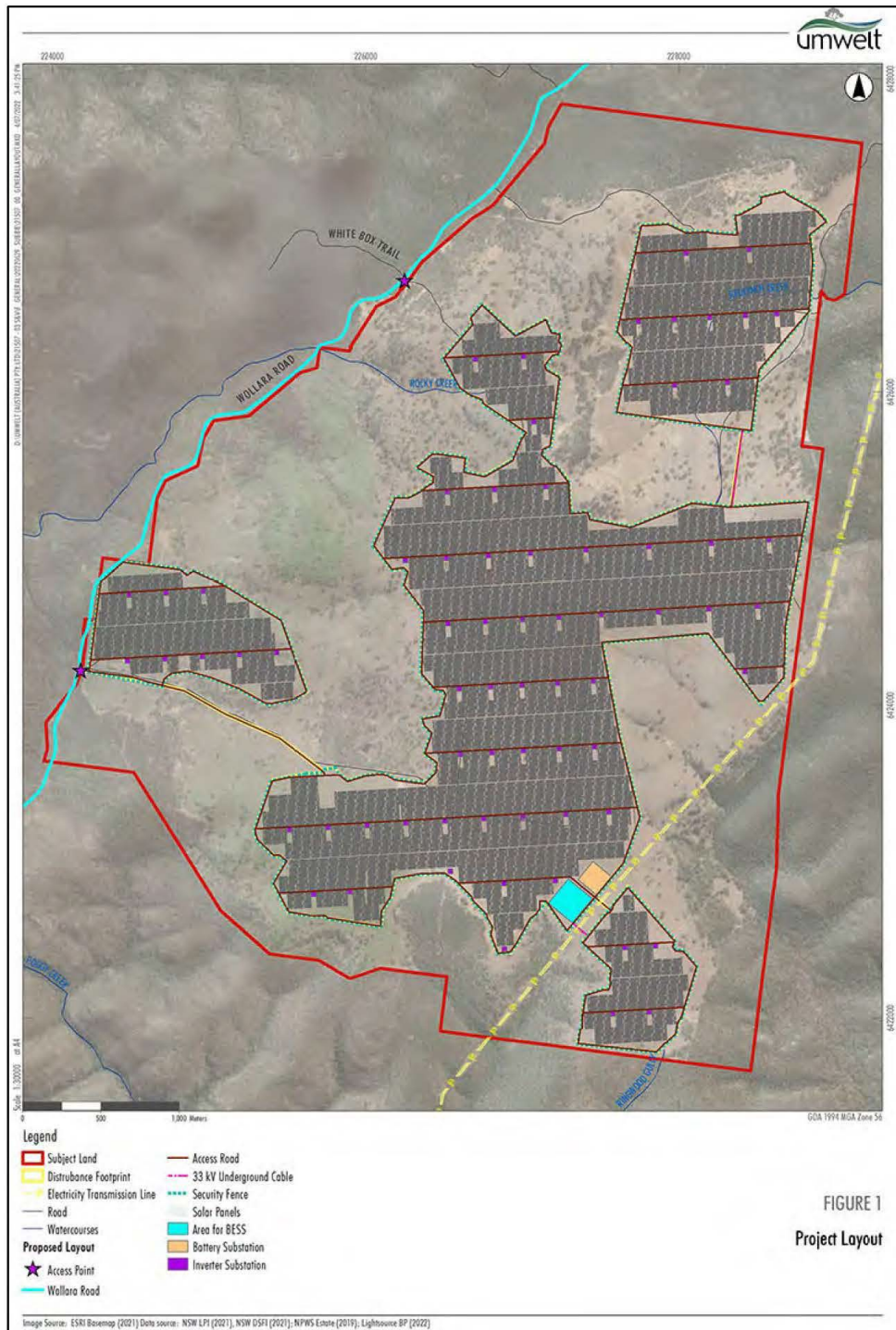


Figure 1-4: Aerial showing the main project components.



1.3 CONSULTATION ON THIS METHODOLOGY

Consultation for this proposal 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 26 May 2022, an advertisement was placed in the *Scone Advocate* requesting expressions of interest in being consulted about the project. In addition, the following agencies were contacted to identify potential stakeholders for the area: Heritage NSW; the Wanaruah Local Aboriginal Land Council (LALC); the Office of The Registrar, *Aboriginal Land Rights Act 1983*; the National Native Title Tribunal; Native Title Services Corporation Limited (NTSCORP); the Upper Hunter Shire Council; and the Hunter Local Land Services.

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

- Didge Ngunawal Clan
- Gomeroi Native Title Applicant
- Hunters & Collectors
- Merrigarn
- Murra Bidgee Mullangari Aboriginal Corporation
- Rose Nean
- Stakeholder 1
- Ungooroo Aboriginal Corporation
- Walhallow Local Aboriginal Land Council (LALC)
- Wanaruah LALC
- Widescope Indigenous Group.

An individual/group who did not wish to be identified is referred to as 'Stakeholder 1'.

These individuals/groups constitute the Registered Aboriginal Parties (RAPs) for the project.

On 7 July 2022, all RAPs were sent a draft of this methodology with a request for any comments to be received by 5 August 2022. Only one response was received from Widescope Indigenous Group on 2 August 2022 stating, '*Thank you for the project information. I have reviewed and support the Methodology*'. As a result, no amendments were made to this methodology based on RAP feedback.

1.4 LANDSCAPE CHARACTERISTICS OF THE PROJECT AREA

Most of the project area is within the Liverpool Range Valleys and Foothills as characterised by Mitchell (2002). This landscape type is characterised by multiple Tertiary basalt flows with intervening sediments and ash fall material, overlying Jurassic quartz sandstones and shale, with a general elevation between 450–1000 m (Mitchell 2002: 12).

The topography of the project area is generally flat in terrain with some drainage lines and creeks providing some minor undulation in the landscape. The project area ranges in elevation from approximately 325 to 450 m above sea level. The terrain is generally elevated and level in the centre of the project area, with a gradual slope down to its north-eastern and western boundaries (Figure 1-5). A north–south profile across the centre of the project area demonstrates the generally level, elevated landform comprising the bulk of the project area (Figure 1-6). The landscape drops away sharply into the surrounding Goulburn River National Park, particularly at its south-eastern boundary. The surrounding Goulburn River National Park consists of hills and ridgelines, and a number of ravines that lead down into creeks and rivers, notably the Goulburn River to the south of the project area.

Figure 1-5: Digital elevation model of the project area.

