



NGH

ABORIGINAL CULTURAL HERITAGE ASSESSMENT

DUNEDOO SOLAR FARM

September 2020

Project Number: SSD-8847



DOCUMENT VERIFICATION

Project Title:	Dunedoo Solar Farm
Project Number:	SSD-8847
Project File Name:	Dunedoo Solar Farm ACHA_Draft_v1.0_21072020

Revision	Date	Prepared by	Reviewed by	Approved by
Draft v1.0	30/06/2020	Kirsten Bradley, Emily Dillon and Ingrid Cook	Matthew Barber	Matthew Barber
Draft v1.1	21/07/2020	Kirsten Bradley, Emily Dillon and Ingrid Cook	Minor comments from ib vogt	Matthew Barber
FINAL	11/09/2020	Kirsten Bradley, Emily Dillon, Ingrid Cook, Bronwyn Partell	Updating RAP Comments	Jakob Ruhl

NGH Consulting prints all documents on environmentally sustainable paper including paper made from bagasse (a by-product of sugar production) or recycled paper.



W. www.nghconsulting.com.au

BEGA - ACT & SOUTH EAST NSW

Suite 11, 89-91 Auckland Street (PO Box 470) Bega NSW 2550 **T.** (02) 6492 8333

BRISBANE

Suite 4, Level 5, 87 Wickham Terrace
Spring Hill QLD 4000 **T.** (07) 3129 7633

CANBERRA - NSW SE & ACT

8/27 Yallourn Street (PO Box 62)
Fyshwick ACT 2609 **T.** (02) 6280 5053

GOLD COAST

PO Box 466
Tugun QLD 4224 **T.** (07) 3129 7633

E. ngh@nghconsulting.com.au

NEWCASTLE - HUNTER & NORTH COAST

Unit 2, 54 Hudson Street
Hamilton NSW 2303 **T.** (02) 4929 2301

SYDNEY REGION

Unit 18, Level 3, 21 Mary Street
Surry Hills NSW 2010 **T.** (02) 8202 8333

WAGGA WAGGA - RIVERINA & WESTERN NSW

Suite 1, 39 Fitzmaurice Street (PO Box 5464)
Wagga Wagga NSW 2650 **T.** (02) 6971 9696

BEGA • BRISBANE • CANBERRA • GOLD COAST • NEWCASTLE • SYDNEY • WAGGA WAGGA

W. www.nghconsulting.com.au

ABN 31 124 444 622 ACN 124 444 622

TABLE OF CONTENTS

1. Introduction.....	12
1.1. Development Context.....	16
1.2. Project Proposal	16
1.1. Project Personal	17
1.2. Report Format	18
2. Aboriginal Consultation Process.....	18
2.1. Aboriginal Community Feedback	20
3. Background Information.....	24
3.1. Review of Landscape Context.....	24
3.1.1. Geology and Topography	24
3.1.2. Hydrology	26
3.1.3. Flora and Fauna.....	26
3.1.4. Land Disturbances	27
3.1.5. Historic Land Use.....	27
3.1.6. Landscape Context	27
3.2. Review of Aboriginal Archaeological Context	28
3.2.1. Ethnohistoric Setting	28
3.2.2. AHIMS Search	31
3.2.3. Other Heritage Register Searches.....	35
3.2.4. Regional archaeological studies	35
3.2.5. Previous archaeological studies	37
3.2.6. Summary of Aboriginal land use.....	39
3.2.7. Archaeological Site Location Model.....	41
3.2.8. Comment on Existing Information.....	42
4. Archaeological Investigation Results	43
4.1. Survey Strategy	43
4.2. Survey Coverage.....	44
4.2.1. Consideration of potential for subsurface material	46
4.3. Survey Results	50
4.4. Excavation Methodology	53
4.5. Excavation Results.....	56
4.5.1. Testing Results	56
4.5.2. Deposit Characteristics	58
4.6. Discussion	62

5. Cultural heritage values and statement of significance.....	63
5.1. Social or cultural value	64
5.2. Scientific (archaeological) value.....	64
5.3. Aesthetic value	65
5.4. Historic Value	65
5.5. Other Values.....	65
6. Proposed Activity	65
6.1. History and Landuse.....	65
6.2. Proposed Development Activity	65
6.3. Assessment of Harm	66
6.4. Impacts to Values	68
7. Avoiding or Mitigating Harm	75
7.1. Consideration of ESD principles.....	75
7.2. Consideration and Mitigation of Harm	76
8. Legislative Context.....	77
9. Recommendations	78
10. References	80
Appendix A Aboriginal Consultation	82
Appendix B Site Descriptions.....	85
Appendix C Surface Artefact Data	100
Appendix D Subsurface Artefact Data	114
Appendix E Soil Profiles	122
Appendix F Site Cards	132
Appendix G Unexpected Finds Protocol	134

FIGURES

Figure 1-1 General project area.	13
Figure 1-2 Subject Land.	14
Figure 1-3 Areas assessed during archaeological fieldwork for the Dunedoo Solar Farm project.	15
Figure 3-1. AHIMS Sites surrounding the Subject Land.....	33
Figure 3-2. AHIMS Sites in close proximity to the Subject Land.....	34
Figure 3-3. Previous heritage surveys located near the Subject Land.....	40
Figure 4-1. Areas of archaeologically sensitivity identified during fieldwork.	47
Figure 4-2. Overview of survey results.	52
Figure 4-3. Overview of test pits locations.....	55

Figure 4-4. Overview of artefacts recovered from the subsurface testing programme of works.....	60
Figure 4-5. Overview of artefacts recovered from the subsurface testing programme of works at the Substation area.....	61
Figure 6-1. Overview of Aboriginal sites recorded during archaeological investigations for the Dunedoo Solar Farm.....	69
Figure 6-2. Aboriginal sites within the solar farm area of the proposed development footprint.	70
Figure 6-3. Aboriginal sites near the existing Substation portion of the proposed development footprint.	71

TABLE

Table 3-1 South Western Slopes - Upper Slopes sub bioregion (DE&E 2016).	25
Table 3-2 Talbragar Soil Landscape Description (State of NSW and Department of Planning 2020).....	26
Table 3-3 Breakdown of previously recorded Aboriginal sites in the region.	32
Table 3-4 Breakdown of landforms mapped by Purcell (2002) in the Brigalow Belt South Bioregion.	36
Table 4-1 Transect information.....	48
Table 4-2 Summary of Aboriginal sites recorded during surveys for this project.....	50
Table 4-3. Distribution of artefacts recovered during the testing programme by test pit and spit.	58
Table 4-4. Distribution of material recovered during the testing programme.	58
Table 4-5. Distribution of artefact types recovered during the testing programme.	58
Table 4-6 Sediment units at Dunedoo Solar Farm	59
Table 6-1. Summary of the degree of harm and the consequence of that harm upon site types	66
Table 6-2 Summary of sites to be impacted and avoided by the proposed development.	67
Table 6-3. Identified risk to known Aboriginal sites recorded during archaeological investigations for the Dunedoo Solar Farm.	72

PLATES

Plate 1. View south-east from the northern portion of the Subject Land.....	45
Plate 2. View east along the southern boundary of the Subject Land.....	45
Plate 3. View south along the row of trees planted in the eastern portion of the Subject Land.	45
Plate 4. View south from the central portion of the Subject Land.	45
Plate 5. View north from the central portion of the Subject Land.	45
Plate 6. View west of road intersection upgrade area.	45
Plate 7. View south-east from the additional transmission line area on the northern side of Talbragar River towards the existing substation.	46
Plate 8. View south-east from the southern side of Talbragar River towards the existing substation.	46
Plate 9. View north from Western Paddock Pit 1 along the transect.....	54
Plate 10. View north from Western Paddock Pit 24.	54

Plate 11. View east from Eastern Paddock Pits 12-15.....	54
Plate 12. View east of Substation.....	54
Plate 13. Western Paddock Pit 12, Spit 1, quartz flake (Artefact 84).....	57
Plate 14. Eastern Paddock Pit 4, Spit 2, glass flake (Artefact 48).	57
Plate 15. Eastern Paddock Pit 19c, Spit 2, silcrete flake (Artefact 64).....	57
Plate 16. Substation Pit 3, Spit 2, basalt core (Artefact 37).	57
Plate 17. Substation Pit 1, Spit 2, basalt proximal fragment (Artefact 13).	57
Plate 18. Substation Pit 3, Spit 3, quartz flake (Artefact 41).	57

ACRONYMS AND ABBREVIATIONS

ACHA	Aboriginal Cultural Heritage Assessment
ACHCRP	<i>Aboriginal cultural heritage consultation requirements for proponents 2010</i>
AFT	Artefact
AHIMS	Aboriginal heritage information management system
AHIP	Aboriginal Heritage Impact Permit
BBS	Brigalow Belt South
BCD	Biodiversity and Conservation Division team within the Department of Planning, Industry and Environment (DPIE)
CHMP	Cultural Heritage Management Plan
Development footprint	<p>Surface area of land that would be impacted by the operations of the proposal upon subdivision of lots. The Development Footprint encompasses approximately 79 ha, comprising parts of the following lots:</p> <p>For the PV Field: Lot 137 DP 754309, Lot 140 DP 754309, Lot 1 DP 854326, Lot 1 DP 1260716, and the portion of Lot 80 DP 754309 north of All Weather Road.</p> <p>For the Castlereagh Highway / All Weather Road intersection upgrade: Lot 1 DP 535659 and All Weather Road's road reserve.</p> <p>For the 66-kV TL and associated infrastructure: Lot 80 DP 754309, Lot 7012 DP 93290, Lot 37 DP 754309, Talbragar River Reserve 56146 and All Weather Road's road reserve.</p> <p>For the extension of the existing Essential Energy Dunedoo substation: Lots 181-186 and 196-201 DP 754291</p>
Development site	<p>The Development Site is the immediate boundary and a buffer around the of the Development Footprint, that includes immediate and adjacent land and areas of land that are subject to direct activities from the proposal, of up to 10 metres from the Development Footprint.</p> <p>The Development Site encompasses approximately 112 ha.</p>
DPIE	(NSW) Department of Planning, Infrastructure and Environment
EIS	Environmental impact statement
EP&A Act	<i>Environmental Planning and Assessment Act 1979 (NSW)</i>
ESD	Ecologically Sustainable Development
ha	Hectares
Heritage Act	<i>Heritage Act 1977 (NSW)</i>
IBRA	Interim Biogeographic Regionalisation for Australia
Ib vogt	Ib vogt GmbH
km	Kilometres
LALC	Local Aboriginal Land Council

LGA	Local Government Area
m	Metres
n	Number
MW	Mega Watt
NEM	National Electricity Market
NGH	NGH Pty Ltd
NPW Act	<i>National Parks And Wildlife Act 1974</i> (NSW)
NSS	NSW South Western Slopes
NSW	New South Wales
OEH	(NSW) Office of Environment and Heritage, formerly Department of Environment, Climate Change and Water currently referred to as DPIE
Osv	Ordovician sedimentary & volcanic rocks
PAD	Potential archaeological deposit
Subject Land	<p>The Subject Land is a terminology used in the Environmental Impact Statement and Biodiversity Assessment, which includes land of the Development Site and Development Footprint combined, and land where the Biodiversity Assessment Methodology (BAM) has been applied. A buffer of up to 5 metres has been applied for the Subject Land on the northern boundary of the Development Footprint</p> <p>The 'proposal area' within this report is to be taken also as Subject Land.</p> <p>The Subject Land encompasses a total approximately area of 158 ha.</p>
Qa	Quaternary alluvial deposits
RAPs	Registered Aboriginal Parties
SEARs	Secretary's Environmental Assessment Requirements
SHI	State Heritage Inventory
SSD	State Significant Development

From 1st of July 2020, Heritage NSW will have the responsibility for the management of Aboriginal Cultural Heritage regulation functions under the NSW *National Parks and Wildlife Act 1974*. This will consequently affect any reference to the Biodiversity Conservation Division (BCD) team within the Department of Planning, Industry and Environment (DPIE) referred to in in this report. Therefore, from the 1 July 2020 any reference in this report to BCD will instead be referring to Heritage NSW to account for this upcoming departmental change.

EXECUTIVE SUMMARY

INTRODUCTION

Ib vogt GmbH (ib vogt) on behalf of Sun Spot 4 Pty Ltd, proposes the development of a commercial scale solar farm approximately 2 kilometres (km) north of the township of Dunedoo in New South Wales (NSW). The proposed solar farm would produce up to 66 Mega Watts (MW) DC of electricity and be located on Lot 137 DP 754309, Lot 140 DP754309, Lot 1 DP 854326, Lot 80 DP754309 and Lot 1 DP1260716 in the Warrumbungle Local Government Area (LGA). There are currently two options for a 66 kV transmission line to connect the proposed Dunedoo Solar Farm to the Essential Energy Dunedoo Substation, which traverse Lot 80 DP754309, Lot 37 DP754309, Lot 11 DP 130889, Lot 7012 DP93290, Lots 181-185 DP754291, Lots 200-201 DP754291 and Crown Land for the Talbragar River Reserve ref. 56146. The intersection of Castlereagh Highway and All Weather Road would also need intersection upgrade works prior to construction works for the solar farm commencing.

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

Throughout the project, the following codes and guidelines were followed in relation to this Aboriginal heritage assessment.

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

ABORIGINAL CONSULTATION

The consultation with Aboriginal stakeholders was undertaken in accordance with Section 60 of the *National Parks and Wildlife Amendment (Aboriginal Objects and Aboriginal Places) Regulation 2019* following the consultation steps outlined in the guidelines.

The full list of consultation steps, including those groups and individuals that were contacted and a consultation log is provided in Appendix A.

As a result of this process, seven Aboriginal groups registered their interest in the project. No other party registered their interest, including the entities and individuals recommended by statutory bodies and government heritage departments. The fieldwork components of this assessment included the participation of Aboriginal community representatives.

A copy of the draft report was provided to all the registered parties for comment.

ARCHAEOLOGICAL CONTEXT

This assessment included a review of relevant information relating to the landscapes within the Dunedoo Solar Farm Subject Land. Included in this was an extensive search of the AHIMS database. A single previously recorded site AHIMS# 36-20049 (DTG/OC27 - Dunedoo 1) was noted to be located near the Essential Energy Dunedoo Substation within the Subject Land suggested for a transmission line route. No other Aboriginal sites have previously been recorded within the Dunedoo Solar Farm Subject Land.

The results of previous archaeological surveys in the Dunedoo region demonstrated that there is a strong and varied pattern of human use and movement throughout the surrounding landscape. This behaviour is recorded as a range of artefact and site types distributed and concentrated in specific landforms across the region.

There appears to be a strong association between the presence of potential resources for Aboriginal use and the presence of archaeological sites. Areas directly associated with water and or elevated ground appear to have the greatest potential for identification of Aboriginal cultural material. Based on previous archaeological investigations in the region and knowledge of Wiradjuri cultural practices and traditional activities it was determined that the Subject Land has a possibility of containing archaeological sites, especially given that Aboriginal people have lived in the region for tens of thousands of years. This would most likely be in the form of quartz lithic scatters, isolated artefacts and scarred trees in remnant old growth vegetation areas bordering the Subject Land and/or as isolated paddock trees.

As part of the consultation process an Aboriginal community member provided culturally sensitive information that was relevant to the project. This information related to the location of a historic event where it is believed Aboriginal people were shot and killed near Dunedoo. This site is located outside the Subject Land however due to its close proximity it was noted to be relevant to the project. The location of this site is noted to be culturally sensitive and further information regarding the possible location is treated in this report as confidential. The Aboriginal community have however confirmed that the site is located outside the Subject Land and have not raised any issues about the proximity of the site to the Dunedoo Solar Farm.

SURVEY AND SUBSURFACE TESTING RESULTS

The initial archaeological investigation area for this project was significantly larger than the Subject Land assessed in this report. Consequently, a larger area than that proposed for development in this report was initially investigated for the presence of any Aboriginal sites. Following the initial survey undertaken for this project in January 2018 additional areas were identified for possible impacts for the intersection upgrade and transmission line options which were also surveyed. The survey strategy objective during all survey works undertaken for this project was to cover as much of the ground surface within the proposed development area as possible.

Despite the variable visibility encountered during the surveys undertaken for the Dunedoo Solar Farm a total of nine isolated finds and 14 artefact scatters were recorded (Dunedoo Solar AFT1 to Dunedoo Solar AFT 23). Three archaeologically sensitive areas were also identified. The GPS location of the previously recorded site AHIMS#36-2-0049 (DTG/OC27 - Dunedoo 1) was also thoroughly inspected during the survey fieldwork however no artefacts were able to be identified and the RAPs commented that the site had previously been significantly impacted and destroyed.

Based on the results of the survey undertaken for the Dunedoo Solar Farm it was determined that subsurface testing was required to investigate the presence and extent of archaeological material within the archaeologically sensitive areas which were considered to have potential for *in situ* subsurface deposits. Of the 75 test pits excavated across the archaeologically sensitive areas investigated only 13 contained stone artefacts. In total 85 artefacts were recorded from the subsurface testing program. The subsurface artefacts recovered were generally able to be incorporated into the assemblages of previously identified sites with surface artefacts. The material recovered adjacent to the existing Essential Energy Dunedoo Substation was however recorded as a new site, Dunedoo Solar AFT 24. The highest artefact density recovered during the subsurface testing programme was identified adjacent to the existing Essential Energy Dunedoo Substation. Following the completion of the subsurface testing program in May 2018 the Subject Land was significantly reduced in size and redesigned.

The results of the survey and subsurface testing programme indicate that low to moderate density artefact scatters and isolated Aboriginal objects can occur throughout the landscape, even in areas of highly disturbed farming activities. The results of the survey and subsurface testing programme of works undertaken for the Dunedoo Solar Farm substantially increased the number of stone artefact sites recorded in the local area.

POTENTIAL IMPACTS

A total of nine isolated finds and 15 artefact scatters (with surface and/or subsurface artefacts) were recorded during archaeological investigations undertaken for the Dunedoo Solar Farm. A single previously recorded AHIMS site is also located within the Subject Land. The table below provides a summary of site types that will be impacted and avoided by the proposed Dunedoo Solar Farm development footprint.

Site Type	Type of Harm	Degree of Harm	Consequence of harm	No. of Sites	% of site type identified in surveys for the project	% of site type within Subject Land
Isolated Finds	Direct	Complete	Total loss of value	6	66.7	100
	Nil	Nil	Not Applicable	3	33.3	N/A
Artefact Scatters	Direct	Complete	Total loss of value	10	62.5	100
	Nil	Nil	Not Applicable	6	37.5	N/A
Previously recorded site	Direct	Complete	Total loss of value	1	NA	100

A total of six isolated finds, nine artefact scatters (with surface and/or subsurface artefacts) and the single previously recorded AHIMS site will be impacted by works proposed for the construction of the Dunedoo Solar Farm. The impact to these 16 sites with stone artefacts is likely to be most extensive where earthworks occur which is considered a direct impact on the Aboriginal sites. The Aboriginal sites recorded during archaeological investigations for the Dunedoo Solar Farm which will be impacted and avoided by the development are listed below.

Sites impacted within Subject Land	Sites avoided as outside Subject Land
<ul style="list-style-type: none"> DTG/OC27 - Dunedoo 1 (Artefact Scatter) Dunedoo Solar AFT 1 (Artefact Scatter) Dunedoo Solar AFT 2 (Artefact Scatter) Dunedoo Solar AFT 3 (Artefact Scatter) Dunedoo Solar AFT 4 (Artefact Scatter) Dunedoo Solar AFT 5 (Artefact Scatter) Dunedoo Solar AFT 6 (Artefact Scatter) Dunedoo Solar AFT 7 (Artefact Scatter) Dunedoo Solar AFT 8 (Artefact Scatter) Dunedoo Solar AFT 9 (Isolated Find) Dunedoo Solar AFT 10 (Isolated Find) Dunedoo Solar AFT 11 (Isolated Find) Dunedoo Solar AFT 12 (Isolated Find) Dunedoo Solar AFT 13 (Isolated Find) Dunedoo Solar AFT 14 (Isolated Find) Dunedoo Solar AFT 24 (Artefact Scatter) 	<ul style="list-style-type: none"> Dunedoo Solar AFT 15 (Artefact Scatter) Dunedoo Solar AFT 16 (Artefact Scatter) Dunedoo Solar AFT 17 (Artefact Scatter) Dunedoo Solar AFT 18 (Artefact Scatter) Dunedoo Solar AFT 19 (Artefact Scatter) Dunedoo Solar AFT 20 (Artefact Scatter) Dunedoo Solar AFT 21 (Isolated Find) Dunedoo Solar AFT 22 (Isolated Find) Dunedoo Solar AFT 23 (Isolated Find)

While all the stone artefact sites within the Subject Land are rated as having total loss of scientific value it is argued that there are likely to be a number of similar sites in the local area and therefore the impact to the overall local archaeological record is considered to be low. Given that the development footprint for the Dunedoo Solar Farm has been reduced, eight sites with stone artefact which were recorded during archaeological investigations for this project will be avoided. Therefore, the assessment of harm overall for the Dunedoo Solar Farm is therefore assessed as low.

Given the low density of the subsurface material recovered from the testing program undertaken across the solar array area mitigation in the form of salvage excavation is deemed not be feasible or warranted in this instance. However, the high density subsurface material recovered from the substation area suggests that further mitigation measures such as an excavation salvage programme is warranted. An excavation salvage programme at the substation works area was also requested by the Aboriginal representatives.

RECOMMENDATIONS

It is recommended that:

1. The sites Dunedoo Solar AFT 1 to Dunedoo Solar AFT 14 which are located within the development footprint for the Dunedoo Solar Farm must be salvaged via surface collection prior to construction works commencing for the Dunedoo Solar Farm. Until surface collection salvage has occurred at the sites a minimum 5 m buffer must be observed to ensure no inadvertent impacts occur.
2. The collection and relocation of the surface artefacts within the Dunedoo Solar Farm Subject Land should be undertaken by an archaeologist with representatives of the registered Aboriginal parties and be consistent with Requirement 26 of the *Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales*. The salvage of Aboriginal objects can only occur following development consent that is issued for State Significant Developments and must occur prior to any construction works commencing.
3. No mitigation is required prior to impacts to the previously recorded site AHIMS# 36-2-0049/ DTG/OC27 - Dunedoo 1. Following development consent that is issued for State Significant Development to allow impacts to the Aboriginal site AHIMS# 36-2-0049 an *Aboriginal Site Impact Recording Form* must be completed to list the site as destroyed.
4. The sites Dunedoo Solar AFT 15 to Dunedoo Solar AFT 23 which are located outside the Dunedoo Solar Farm Subject Land must not be impacted. Any future impacts to these sites by this project would need to be assessed by an archaeologist and additional consultation with the registered Aboriginal parties would be required.
5. Prior to works commencing adjacent to the existing Essential Energy Dunedoo Substation an excavation salvage programme must be undertaken for the site Dunedoo Solar AFT 24. The areas surrounding the locations of Pit 1 and Pit 3 which had high densities of subsurface artefacts recovered during the testing programme should be focus areas for the excavation salvage programme.
6. All objects salvaged, following development consent that is issued for State Significant Developments, including those recovered from the subsurface testing and salvage excavation programmes, must be buried in line with Requirement 26 of the *Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales* and at an appropriate location within the Subject Land that will not be subject to any ground disturbance. The burial location/s must be submitted to the AHIMS database.
7. An *Aboriginal Site Impact Recording Form* must be completed and submitted to AHIMS following harm for each site collected or destroyed from salvage and/or construction works as approved for impacts in line the development consent for this State Significant Development .
8. For any additional impacts to sites and areas outside the surveyed extent of the development footprint, as assessed in this report, a modification application would need to be submitted to the to the Department of Planning, Industry and Environment (DPIE) for this State Significant Development which includes consideration of impacts on Aboriginal Heritage as determined by an archaeologist, additional Aboriginal consultation and survey may be required.

9. The Proponent should prepare a Cultural Heritage Management Plan (CHMP) to address the potential for finding additional Aboriginal artefacts during the construction of the Dunedoo Solar Farm and for the management of known sites and artefacts within the Subject Land. The Plan should include the unexpected finds procedure to deal with construction activity. Preparation of the CHMP should be undertaken in consultation with the registered Aboriginal parties.
10. In the unlikely event that human remains are discovered during the construction of the Dunedoo Solar Farm, all work must cease in the immediate vicinity. The appropriate heritage team within the Department of Planning, Industry and Environment (DPIE) and the local police should be notified. Further assessment would be undertaken to determine if the remains were Aboriginal or non-Aboriginal. If the remains are deemed to be Aboriginal in origin the Registered Aboriginal Parties should be advised of the find as directed by the appropriate heritage team within DPIE.
11. Further archaeological assessment would be required if the proposal activity extends beyond the area assessed in this report. This would include consultation with the registered Aboriginal parties and may include further field survey.

1. INTRODUCTION

Ib vogt GmbH (ib vogt) proposes the development of a commercial scale solar farm approximately 2 kilometres (km) north of the township of Dunedoo in New South Wales (NSW) (see Figure 1-1). The proposed solar farm would produce up to 66 Mega Watts (MW) DC of electricity and be located on Lot 137 DP 754309, Lot 140 DP754309, Lot 1 DP 854326, Lot 80 DP754309 and Lot 1 DP1260716 in the Warrumbungle Local Government Area (LGA). There are currently two options for a 66 kV transmission line to connect the proposed Dunedoo Solar Farm to the Essential Energy Dunedoo Substation, which traverse Lot 80 DP754309, Lot 37 DP754309, Lot 11 DP 130889 Lot 7012 DP93290, Lots 181-185 DP754291, Lots 200-201 DP754291 and Crown Land for the Talbragar River Reserve ref. 56146. The intersection of Castlereagh Highway and All Weather Road would also need intersection upgrade works prior to construction works for the solar farm commencing.

Given that the Dunedoo Solar Farm proposal (see Figure 1-2) would involve ground disturbance that has the potential to impact on Aboriginal heritage sites and objects, which are protected under the NSW *National Parks and Wildlife Act 1974* (NPW Act), NGH Pty Ltd (NGH) has been contracted by ib vogt to prepare an Aboriginal Cultural Heritage Assessment (ACHA) report. The purpose of this report is therefore to investigate the presence of any Aboriginal sites within the Subject Land, assess the impacts to Aboriginal site within the Subject Land and provide management strategies that may mitigate any impacts.

The proposed Dunedoo Solar Farm is a State Significant Development (SSD) and the Secretary's Environmental Assessment Requirements (SEARs) for the project also identified Aboriginal heritage as a specific issue to be addressed in the Environmental Impact Statement (EIS).

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

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

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

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

It should also be noted that the initial archaeological investigation area for the Dunedoo Solar Farm project was significantly larger than the Subject Land assessed in this report. The proposed works area was reduced so that impacts on heritage sites could be avoided and minimised. Consequently, a larger area than that proposed for development in this report was initially investigated for the presence of any Aboriginal sites as shown in Figure 1-3.

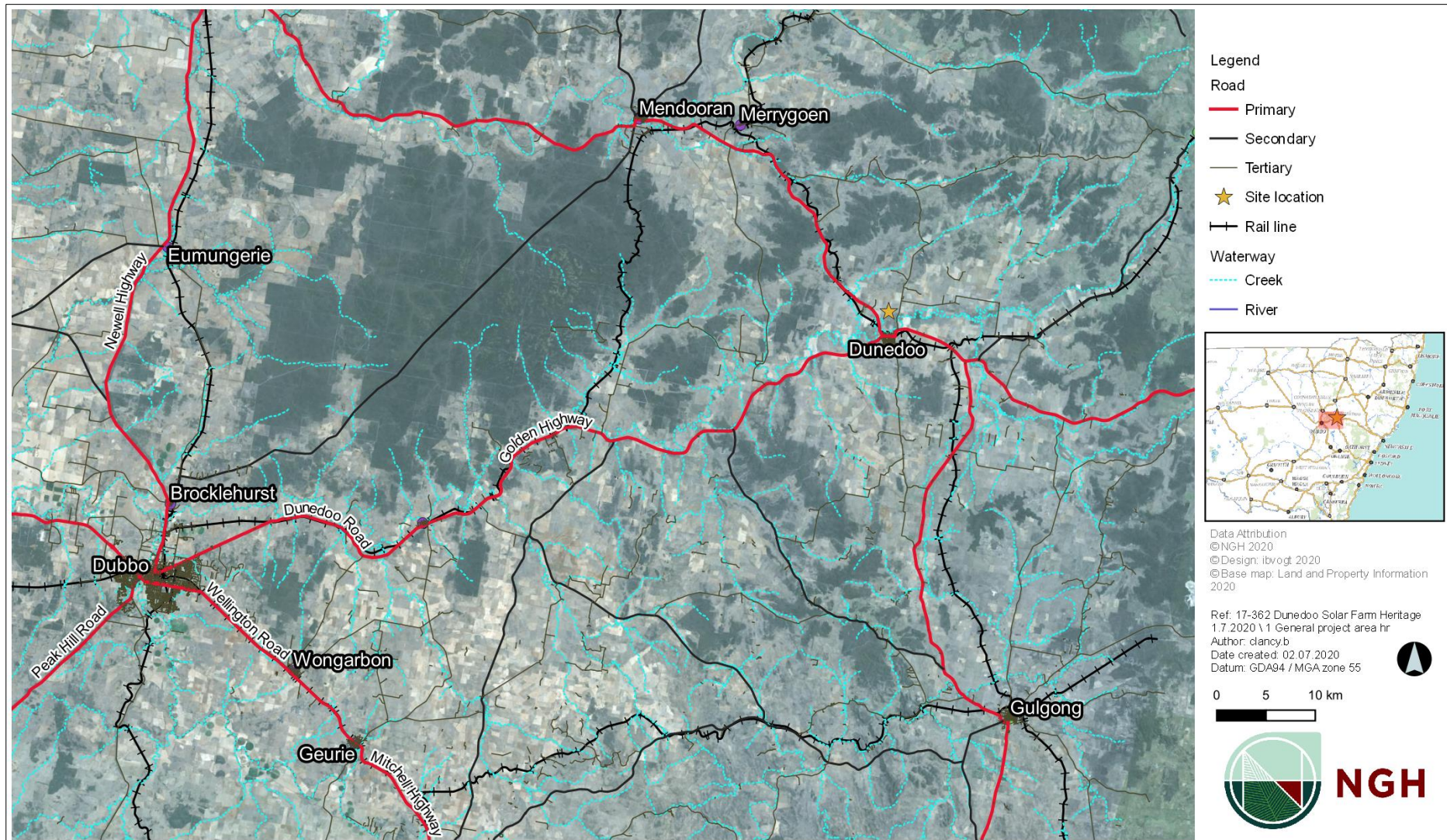


Figure 1-1 General project area.

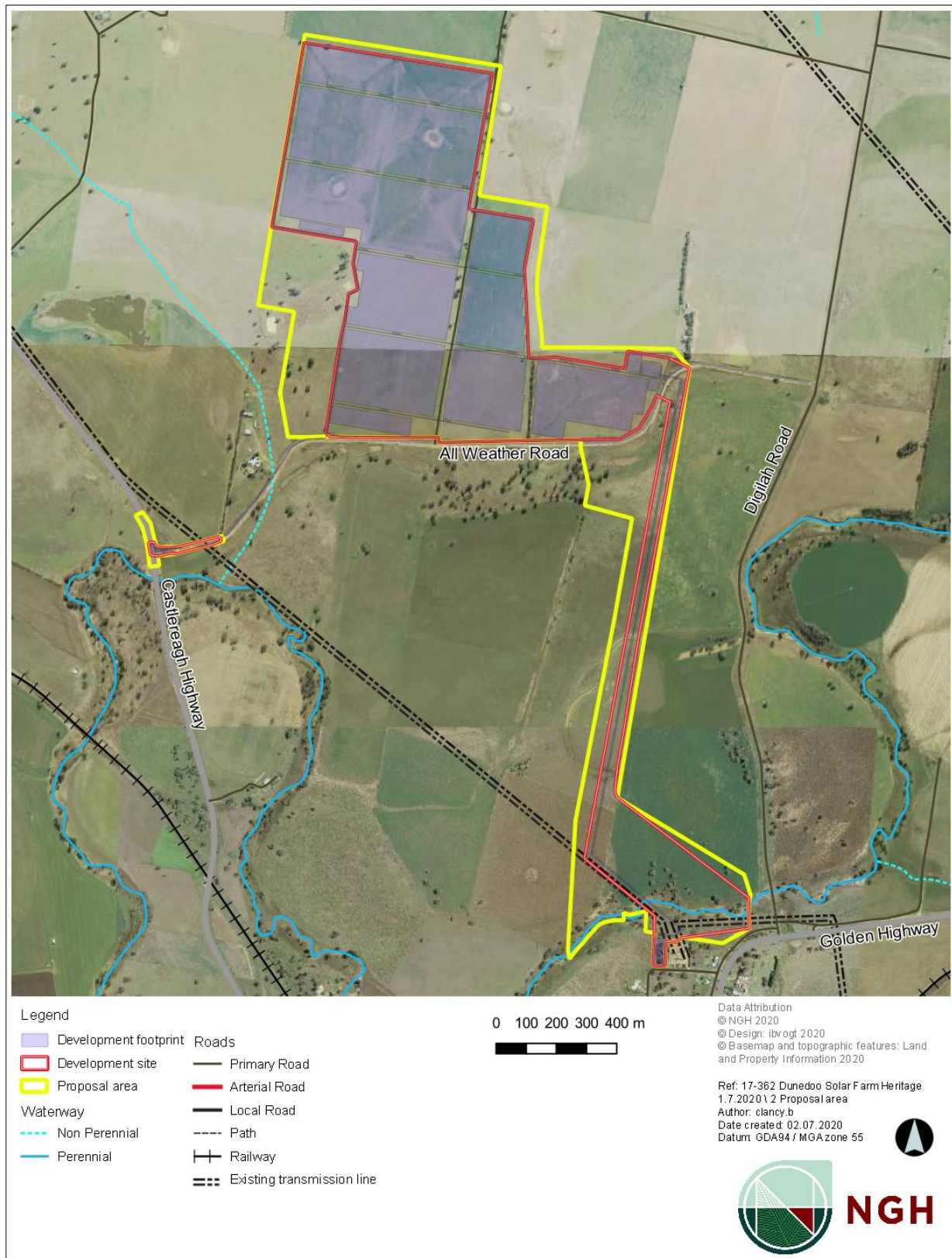


Figure 1-2 Subject Land.

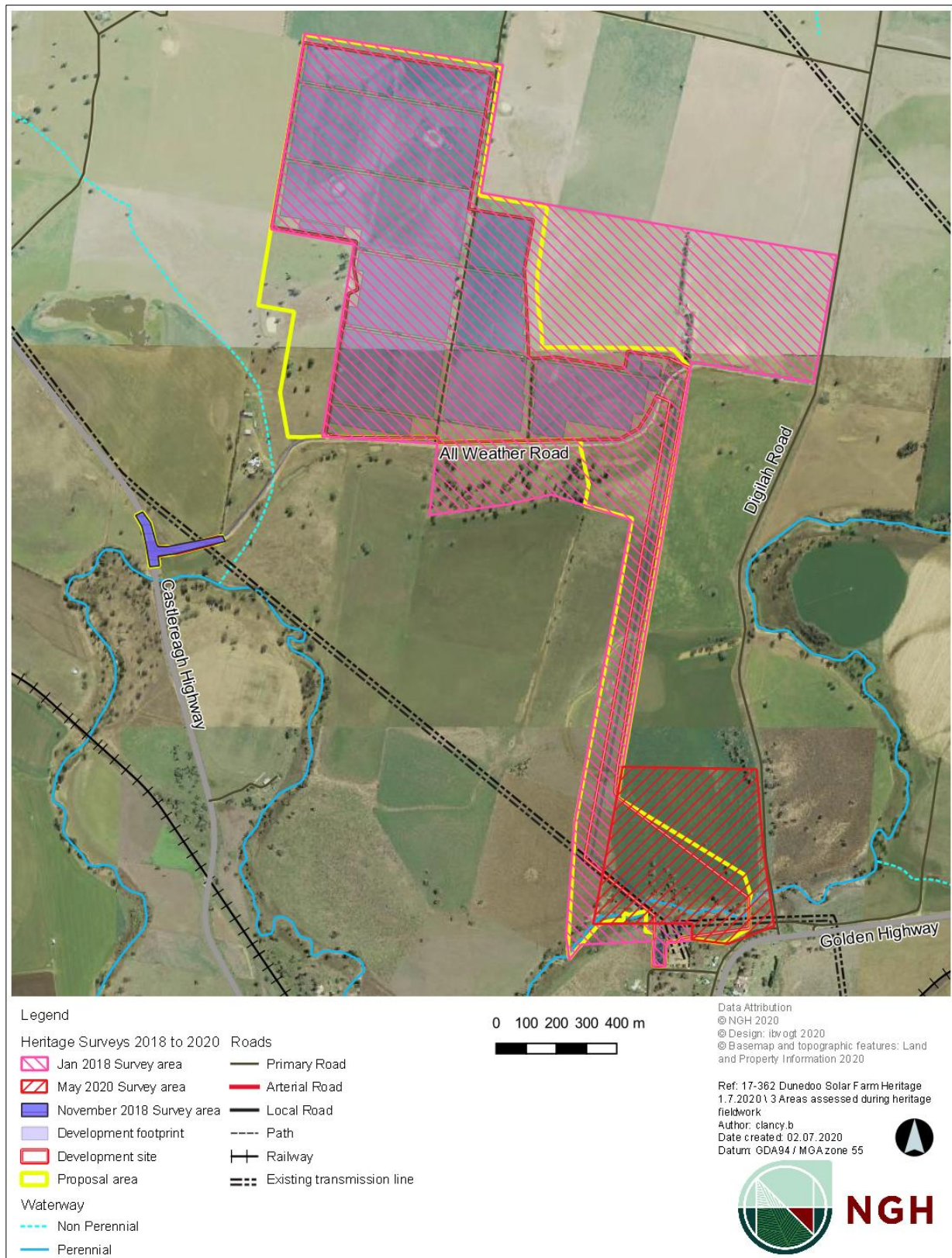


Figure 1-3 Areas assessed during archaeological fieldwork for the Dunedoo Solar Farm project.

1.1. DEVELOPMENT CONTEXT

The development of renewable energy projects is one of the most effective ways to achieve the commitments of Australia and a large number of other nations under the Paris Agreement to reduce greenhouse gas emissions. The Dunedoo Solar Farm would provide the following benefits:

- Reduction in greenhouse gas emissions from energy generation (when compared with fossil fuel generating sources).
- Provision of embedded electricity generation to supply into the Australian grid close to a main consumption centre.
- Provision of social and economic benefits through the provision of direct employment opportunities.

The establishment of the Dunedoo Solar Farm would therefore have both local, National and International benefits.

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

Include an assessment of the likely Aboriginal and historic heritage (cultural and archaeological) impacts of the development, including adequate consultation with the local Aboriginal community (SEARS for the Dunedoo Solar Farm 04/11/2017).

For the purposes of this assessment the entire development footprint area as shown in Figure 1-2 was assessed.

It should also be noted that the initial archaeological investigation area for the Dunedoo Solar Farm project was significantly larger than the Subject Land assessed in this report. Consequently, a larger area than that proposed for development in this report was initially investigated for the presence of any Aboriginal sites as shown in Figure 1-3.

1.2. PROJECT PROPOSAL

The Dunedoo Solar Farm development area comprises of approximately 112 hectares (ha) located approximately 2 km north of Dunedoo (see Figure 1-2). The assessment area is primarily agricultural and pastoral land. The proposed solar farm would produce up to 66 Mega Watts (MW) DC of electricity and be located on Lot 137 DP 754309, Lot 140 DP754309, Lot 1 DP 854326, Lot 80 DP754309 and Lot 1 DP1260716 in the Warrumbungle Local Government Area (LGA). There are currently two options for a 66 kV transmission line to connect the proposed Dunedoo Solar Farm to the Essential Energy Dunedoo Substation which traverse Lot 80 DP754309, Lot 37 DP754309, Lot 11 DP 130889, Lot 7012 DP93290, Lots 181-185 DP754291, Lots 200-201 DP754291 and Crown Land for the Talbragar River Reserve ref. 56146. The intersection of Castlereagh Highway and All Weather Road would also need intersection upgrade works prior to construction works for the solar farm commencing.

The Dunedoo Solar Farm proposal would comprise of the installation of solar panels, which would produce electricity that would supply the national electricity grid. It is anticipated that the proposed solar farm would include development of the following infrastructure:

- Approximately 173,000 PV solar panels, measuring approximately 2 m x 1 m mounted on single axis tracking systems, powered by 2,850 tracker motors over most of the site;
- Electrical cables and conduits.
- Inverter/transformer units, containerised, distributed across the site.
- Battery storage units, containerised, distributed across the site.

- On site substation containing transformer, synchronous condenser, associated HV switchgear and control room and lightning protection masts.
- Communications tower (up to 25 metres high), within the facility connection substation fenced area.
- Site office, compounds, parking, access tracks and perimeter fencing.
- Operations and maintenance buildings with associated car parking.
- Two access points via All Weather road.
- Internal access tracks.
- Lighting, CCTV system, security fencing.
- Vegetative screening.
- A new overhead transmission line to connect the solar farm into the Essential Energy transmission network. Two options are currently being considered.

The panels will be arranged in rows in a portrait orientation and will comprise of steel frames mounting system with a maximum height not exceeding three metres above the natural ground level. Row lengths would depend on the detailed design but could be up to 100 metres (m). Spaces between rows (edges of panel) may vary between three metres and nine metres.

The mounting systems will require approximately 30,000 piles that would be driven or screwed into the ground on a depth up to approximately 2.5 m. Depth will be defined following detail geotechnical investigations. Pile heights would vary according to topography and expected flood level.

In order to accommodate the power output and connection from the new transmission line, the existing Essential Energy 85A 66-kV transmission line would require augmentation works to facilitate the required generation that would include re-stringing of the transmission line conductors as well as potential pole replacement. There are currently two options for the 66-kV transmission line corridor both proposed in this assessment with an approximately 40 m clearing easement.

The development site would be accessed through two access points via All Weather Road, which runs adjacent to the solar array area and provides access to Castlereagh Highway.

The Dunedoo Solar Farm is expected to operate for 30 years and construction is expected to take 10-12 months. After the operating phase, the Dunedoo Solar Farm would either be decommissioned, returning the site to its existing land capability; or upgraded with new photovoltaic equipment.

1.1. PROJECT PERSONAL

This ACHA report was completed by archaeologist Kirsten Bradley, Emily Dillon and Ingrid Cook of NGH, including research, artefact analysis and report preparation. Jakob Ruhl completed the Aboriginal community consultation and project management.

Kirsten Bradley and Jakob Ruhl participated in the initial survey fieldwork over two days from the 16th to the 17th of January 2018. Jakob Ruhl, Ingrid Cook and Tanya Erofeev participated in the subsurface testing fieldwork over four days from the 8th to the 11th May 2018. Jakob Ruhl and Ingrid Cook participated in the additional survey of the intersection upgrade area on the 29th of November 2018. Kirsten Bradley and Jasmine Tearle participated in additional survey for the transmission line options on the 22nd of May 2020.

NGH Principal archaeologist Matthew Barber reviewed this report for quality assurance purposes.

Consultation with the Aboriginal community was undertaken following the process outlined the *Aboriginal cultural heritage consultation requirements for proponents 2010*. Seven Aboriginal groups registered their interest in the proposal. Further details of Aboriginal participation and an outline of the consultation process is provided in Section 2.

1.2. REPORT FORMAT

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

- *Guide to Investigating, Assessing and Reporting on Aboriginal Cultural Heritage in NSW* (OEH 2011),
- *Code of Practice for the Archaeological Investigation of Aboriginal Objects in New South Wales* (OEH 2010a), and
- *Aboriginal cultural heritage consultation requirements for proponents 2010* (ACHCRP) (OEH 2010b).

The purpose of this ACHA report is therefore to provide an assessment of the Aboriginal cultural values associated with the Subject Land and to assess the cultural and scientific significance of any Aboriginal heritage sites identified. This conforms to the intention of the SEARs.

The objectives of the assessment were to:

- Conduct Aboriginal consultation as specified in Section 60 of the *National Parks and Wildlife Regulation 2019*, using the consultation process outlined in the ACHCRP;
- Undertake a field survey of the Subject Land to identify and record any Aboriginal heritage objects and/or areas of potential significant archaeological deposits ;
- Undertake subsurface testing of any areas with potential archaeological deposits to identify the nature of archaeological material;
- Undertake an assessment of the archaeological and cultural values of the Subject Land and any Aboriginal sites therein;
- Assess the cultural and scientific significance of any archaeological material, and
- Provide management recommendations for any objects found.

2. ABORIGINAL CONSULTATION PROCESS

The consultation with Aboriginal stakeholders was undertaken in accordance with Section 60 of the *National Parks and Wildlife Amendment (Aboriginal Objects and Aboriginal Places) Regulation 2019* following the consultation steps outlined in the (ACHCRP) guide. The guide outlines a four stage process of consultation as follows:

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

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

Stage 1. Letters outlining the development proposal and the need to carry out an ACHA were sent to the Dubbo Local Aboriginal Lands Council (Dubbo LALC) and various statutory authorities including the former Office of Environment and Heritage (now referred to as the Biodiversity and Conservation team within the Department of Planning, Industry and Environment), as identified under the ACHCRP guidelines. An advertisement was placed in the local newspapers, the *Mudgee Guardian* on the 17th of October 2017 seeking registrations of interest from Aboriginal people and organisations. A further series of letters was sent to other organisations identified by the former Office of Environment and Heritage in correspondence to NGH. In each instance, the closing date for submission was 14 days from receipt of the letter.

As a result of this process, seven Aboriginal groups registered their interest in the proposal.

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

- Binjang Wellington Wiradjuri heritage Survey
- Buudang
- Dubbo Local Aboriginal Land Council
- Gallangabang Aboriginal Corporation
- Murong Gialinga
- Wellington Valley Wiradjuri Aboriginal Corporation
- Diram Ngurumbang Consulting

No other party registered their interest.

As a courtesy to all the registered parties we have only included brief summaries of correspondence for this project. The Consultation Log in Appendix A will be redacted in all public versions of this report.

Stage 2. On the 16th of November 2017, an Assessment Methodology document for the Dunedoo Solar Farm was sent to the registered Aboriginal parties as listed above. This document provided details of the background to the proposal, a summary of previous archaeological surveys and the proposed heritage assessment methodology for the proposal. The document invited comments regarding the proposed methodology and sought any information regarding known Aboriginal cultural significance values associated with the Subject Land and/or any Aboriginal objects contained therein. A minimum of 28 days was allowed for a response to the document. Comments were provided by the Wellington Valley Wiradjuri Aboriginal Corporation and Gallangabang Aboriginal Corporation who noted that while they agreed with the methodology in principle it was requested that spacing during the survey be no more than 40 m apart and ideally be 20 m spacing. It was also requested that information given by RAP's also be taken into account in relation to PADs or identified sites during the survey. These comments were incorporated into the methodology and no other comments were received from the other registered parties. However, all registered parties expressed an interest in participating in fieldwork.

The field survey conducted for the Dunedoo Solar Farm in January 2018 in conjunction with an assessment of archaeological modelling and consideration of the comments from the Registered Aboriginal Parties who participated in the fieldwork resulted in the identification of several areas considered to have potential for *in situ* subsurface deposits that required further assessment if they could not be avoided. At the time it was determined that the areas considered to have potential for *in situ* subsurface deposits were unable to be avoided by the proposed development of the Dunedoo Solar Farm. Subsequently, a Subsurface Testing Methodology document for the Dunedoo Solar Farm was sent to the registered Aboriginal parties on the 23rd of March 2018. This document provided details of the proposed subsurface testing methodology and invited comments regarding the proposed methodology. A minimum of 28 days was allowed for a response to the document.

Stage 3. The *Assessment Methodology* outlined in Stage 2 included a written request to provide any information that may be relevant to the cultural heritage assessment of the study area. It was noted that sensitive information would be treated as confidential.

As part of the consultation process an Aboriginal community member provided culturally sensitive information that was relevant to the study area. This information related to the location of an historic event where it is believed Aboriginal people were shot and killed near Dunedoo. This site is located outside the Subject Land however due to its close proximity it was noted to be relevant and information was shared with the NGH archaeologists. The location of this site is noted to be culturally sensitive and further information regarding the possible location is treated in this report as confidential. The Aboriginal community have confirmed that the site is located outside the Subject Land and have not raised any issues about the proximity of the site to the Dunedoo Solar Farm.

Additionally, it was noted by an Aboriginal community member that the Talbragar River was an important resource in the area and an old billabong site which is located in close proximity to the solar farm was also a known resource area which was utilised by Aboriginal people in the past.

Aboriginal Community participation in the fieldwork. The survey fieldwork was organised, and the registered groups as selected by the proponent were asked to participate in the fieldwork. The survey fieldwork throughout the project was carried out by archaeologists from NGH with local Aboriginal representatives.

The Aboriginal community representatives who participated in the initial survey fieldwork in January 2018 were:

- Jamie Gray (representing Binjang Wellington Wiradjuri heritage Survey);
- Paul Barton (representing Diram Ngurumbang Consulting);
- Larry Foley (representing Buudang and Muronggialing);
- Bradley Bliss (representing Wellington Valley Wiradjuri Aboriginal Corporation and Gallangabang Aboriginal Corporation).

The Aboriginal community representatives who participated in the subsurface testing fieldwork in May 2018 were:

- Jamie Gray (representing Binjang Wellington Wiradjuri heritage Survey);
- Paul Barton (representing Diram Ngurumbang Consulting);
- Larry Foley (representing Buudang and Muronggialinga);
- Deborah Foley (representing Muronggialinga); and
- Bradley Bliss (representing Wellington Valley Wiradjuri Aboriginal Corporation and Gallangabang Aboriginal Corporation).

The Aboriginal community representatives who participated in the additional intersection upgrade works in November 2018 were:

- Jamie Gray (representing Binjang Wellington Wiradjuri heritage Survey); and
- Larry Foley (representing Buudang and Muronggialinga).

The Aboriginal community representatives who participated in the additional transmission line survey in May 2020 were:

- Jamie Gray (representing Binjang Wellington Wiradjuri heritage Survey);
- Paul Barton (representing Diram Ngurumbang Consulting);
- Larry Foley (representing Buudang and Muronggialinga);
- Bradley Bliss (representing Wellington Valley Wiradjuri Aboriginal Corporation); and
- Brenda Waters (representing Gallangabang)

Stage 4 In early July 2020 a draft version of this *Aboriginal Cultural Heritage Assessment Report* for the proposal (this document) was forwarded to the RAPs inviting comment on the results, the significance assessment and the recommendations. A minimum of 28 days was allowed for responses to the document. Responses were received from some RAP groups, as outlined below in Section 2.1.

2.1. ABORIGINAL COMMUNITY FEEDBACK

Community consultation occurred throughout the project. The draft report was provided to each of the Registered Aboriginal Parties (RAPs) and feedback was sought on the recommendations, the assessment and any other issues that may have been important.

The following comments were received from Registered Aboriginal Parties in response to this ACHA report:

RAP Group:	Comment:	Addressed by:
Muronggialinga	We have only one recommendation and that is we would like to see test pitting and all artefacts collected in the area where the power station is.	The current recommendations are in line with this request, this is the area where Test Pit 1 and Test Pit 3 were excavated bearing higher densities of artefacts, and the recommended focus of the salvage excavations (refer to Figure 4-4).
Gallanggabang Aboriginal Corporation (GAC)	<p>Recommendations 1-4: GAC agree.</p> <p>Recommendation 5: GAC Agree to an excavation salvage programme, however, are of the opinion that it should be wider than the areas around Pit 1 and Pit 3. All RAPs and an Archaeologist must be present during ground disturbance at this site location to identify and salvage any artefacts that may be identified.</p> <p>Recommendation 6: GAC agree, however request the artefacts be reburied in hessian not in plastic and after the artefacts and reburial location site has been culturally cleansed through a cultural smoking ceremony.</p> <p>Recommendations 7 – 9: GAC agree.</p> <p>Recommendation 10: GAC have been in this situation previously and require that ALL RAPs be notified immediately upon discovery, site inspection be arranged and be involved in all meetings and discussions with Forensics Officers, DPIE, Archaeologists and Project Managers before any decision is made in regards to the origins of the burial or bone deposit.</p> <p>Recommendation 11: GAC agree.</p> <p>One further comment was also made: “GAC request that the un-surveyed area to the west of the project area as displayed in the following image be surveyed prior to any works being conducted in this project area section.”</p>	<p>Recommendation 5: As outlined in Sections 4.5.1 and 7.2 of this report, the results of the archaeological test excavations within the western paddock yielded low density results, and as such, salvage excavations were not recommended for this section of the project area. Instead, the recommendation is to focus these salvage excavations at the locations where higher densities of artefacts were recorded.</p> <p>Recommendation 6: The request has been noted, however in accordance with the <i>Code of Practice for Archaeological Investigation of Aboriginal Objects in NSW</i> (OEH, 2010) Requirement 26 “stone artefacts must be stored in good quality, double-bagged plastic zip-lock bags”. The request to perform a smoking ceremony has also been noted.</p> <p>Recommendation 10: The unexpected finds protocol has been updated to specifically require the all RAPs are notified if suspected human remains were located.</p> <p>Further comment: There is no current plans for development in the unsurveyed section of the Subject Land, however</p>



**Wellington
Valley Wiradjuri
Aboriginal
Corporation
(WVWAC)**

Recommendations 1-4: WVWAC agree.

Recommendation 5: WVWAC Agree to an excavation salvage programme, however, are of the opinion that it should be wider than the areas around Pit 1 and Pit 3. All RAPs and an Archaeologist must be present during ground disturbance at this site location to identify and salvage any artefacts that may be identified.

Recommendation 6: WVWAC agree, however request the artefacts be reburied in hessian not in plastic and after the artefacts and reburial location site has been culturally cleansed through a cultural smoking ceremony.

Recommendations 7 – 9: WVWAC agree.

Recommendation 10: WVWAC have been in this situation previously and require that ALL RAP's be notified immediately upon discovery, site inspection be arranged and be involved in all meetings and discussions with Forensics Officers, DPIE, Archaeologists and Project Managers before any decision is made in regards to the origins of the burial or bone deposit.

Recommendation 11: WVWAC agree.

One further comment was also made: "WVWAC request that the un-surveyed area to the west of the

Recommendation 5: As outlined in Section 7.2 of this report, the results of the archaeological test excavations within the western paddock yielded low density results, and as such, salvage excavations were not recommended for this section of the project area. Instead, the recommendation is to focus these salvage excavations at the locations where higher densities of artefacts were recorded.

Recommendation 6: The request has been noted, however in accordance with the *Code of Practice for Archaeological Investigation of Aboriginal Objects in NSW* (OEH, 2010) Requirement 26 "stone artefacts must be stored in good quality, double-bagged plastic zip-lock bags". The request to perform a smoking ceremony has also been noted.

Recommendation 10: The unexpected finds protocol has been updated to specifically require the all

project area as displayed in the following image be surveyed prior to any works being conducted in this project area section."

RAPs are notified if suspected human remains were located.



**Diram
Ngurumbang
Consulting**

Diram Ngurumbang Consulting replied with no negative comments, stating that they believe the proposed works will be good for the area.

Comments have been noted.

3. BACKGROUND INFORMATION

3.1. REVIEW OF LANDSCAPE CONTEXT

Understanding the landscape context of the Subject Land may assist us to better understand the archaeological modelling of the area and assist to identify local resources which may have been utilised by Aboriginal people. This information can then potentially be used in predicting the nature of Aboriginal occupation across the landscapes present within the Subject Land. Factors that are typically used to inform the archaeological potential of landscapes include the presence or absence of resources that would have been utilised by Aboriginal people including water, animal and plant foods, stone and other resources. The landscape context assessment for the Subject Land is based on a number of classifications that have been made at national, regional and local levels to better understand the archaeological modelling of the area.

3.1.1. Geology and Topography

The landscape context for the Subject Land is based on a number of classifications which include the national Interim Biogeographic Regionalisation for Australia (IBRA) system, Mitchell landscapes, NSW soil landscapes and geological maps. The combination of these differing resolutions of landform data provides a comprehensive and multi scaled understanding of the landscape within the Subject Land and its immediate surroundings.

Dubbo 1:250,000 Gilgandra 1:250,000 geological sheet map

The Dubbo 1:250,000 geological sheet map and Gilgandra 1:250,000 geological sheet map intersect over the Subject Land and indicate that the surface geology across the majority of the Subject Land comprises of Quaternary alluvial deposits (Qa) which consists of current and recent mud, silt, sand and gravel deposited by river (alluvial) systems. The north-western portion of the Subject Land is noted to be within Tucklan Beds of quartzite, phyllite, andesite, dacite, tuff.

NSW 1500K Simplified Surface Geology

The NSW 1:1,500,000 simplified surface geology shows that the majority of the Subject Land consists of Ordovician sedimentary & volcanic rocks (Osv), these rocks host significant gold and copper deposits, a variety of mafic (magnesium and iron rich) rocks, including basalt, basaltic andesite and latite lavas and intrusions. Associated sedimentary rocks include volcanoclastic breccia and conglomerate, and minor limestone and calcareous sandstone. The south-eastern portion of the Subject Land and the entirety of the transmission line corridor to the Essential Energy Dunedoo Substation is mapped as being within Quaternary alluvial deposits (Qa) which contain alluvial deposits of current and recent mud, silt, sand and gravel deposited by river systems (Department of Regional New South Wales 2009).

Interim Biogeographic Regionalisation for Australia

The national Interim Biogeographic Regionalisation for Australia (IBRA) system identifies the Subject Land as located within the northern boundary of the NSW Southwestern Slopes (NSS) Bioregion (DE&E 2016). Dunedoo generally experiences sub-humid climate characterised by hot summers and no dry season (DE&E 2016).

The NSS Bioregion is an extensive area of foothills and isolated ranges comprising the lower inland slopes of the Great Dividing Range extending from north of Cowra through southern NSW into western Victoria with an area of 8,657,426 hectares. About 8,070,608 hectares or 93.22 per cent of this bioregion occurs in NSW, with the remainder in Vic. The NSW portion of the bioregion occupies about 10.1 per cent of the state. The bioregion is bounded by six other bioregions: the Riverina and Cobar Peneplain bioregions to the west, Darling Riverine Plains and Brigalow Belt South bioregions to the north, Sydney

Basin to the northeast and the South Eastern Highlands Bioregion running along much of the eastern boundary. The bioregion extends from Albury in the south to Dunedoo in the northeast. Towns located in the bioregion include Wagga Wagga, Mudgee, Cootamundra, Narrandera, Parkes, Gundagai and Young. Griffith lies just outside the western boundary and Crookwell lies just outside the eastern boundary of the bioregion. The bioregion includes parts of the Murray, Murrumbidgee, Lachlan and Macquarie River catchments (DE&E 2016).

The NSS Bioregion comprises of two subregions, Upper Slopes and Lower Slopes. The Subject Land is located within the Upper Slopes subregion. A description of the Upper Slopes subregion is provided in Table 3-1.

Table 3-1 South Western Slopes - Upper Slopes sub bioregion (DE&E 2016).

Geology	Landforms	Soils	Vegetation
Ordovician to Devonian folded and faulted sedimentary sequences with inter-bedded volcanic rocks and large areas of intrusive granites.	Steep, hilly and undulating ranges and granite basins. Occasional basalt caps, confined river valleys with terrace remnants.	Shallow stony soils on steep slopes, texture contrast soils grading from red subsoils on upper slopes to yellow subsoils on lower slopes. Alluvial sands, loams and clays.	Open forests and woodlands. Red stringybark on upper slopes with black cypress pine, kurrajong, red ironbark, white gum, white box, yellow box and Blakely's red gum on lower slopes. Merging west to yellow box, grey box and white cypress pine. Rough-barked apple on flats with river oak on upper tributaries and river red gum on lower and larger streams.

Mitchell Landscapes

Further landscape mapping as part of the Mitchell landscapes system (DECC 2002) shows a single landscape, the *Talbragar - Upper Macquarie Terrace Sands and Gravels*, within the Subject Land. The Mitchell Landscape general characteristic description for the *Talbragar - Upper Macquarie Terrace Sands and Gravels* is provided below.

"Sandy Quaternary alluvial sediments on the floodplains and terraces of the Talbragar River, general elevation 350 to 500m, local relief 30 to 40m. Red-brown and red-yellow earthy sands with some yellow texture-contrast soils on the valley margins. River red gum (*Eucalyptus camaldulensis*) along the channels, yellow box (*Eucalyptus melliodora*) and rough-barked apple (*Angophora floribunda*) with white cypress pine (*Callitris glaucophylla*) on the plain."

Soil Landscapes

While no soil landscape mapping has occurred to date within the solar farm portion of the Subject Land soil landscape mapping has been undertaken just south of it along the transmission line corridor which is considered likely to extended into solar farm area. The Talbragar soil landscape is mapped as occurring within the transmission line area and likely extends into the solar farm area (Profile tb Talbragar – eSpade v2.1). The Talbragar soil landscape is noted to contain alluvial plains and terraces located in the immediate vicinity of the upper Talbragar River, in the vicinity of Dunedoo. The soil variation for the Talbragar soil landscape is provided in Table 3-2.

Table 3-2 Talbragar Soil Landscape Description (State of NSW and Department of Planning 2020)

Soil Variation	Description
Black Earths (topsoil)	Black swill structured light to medium clay 10-15 cm deep
Black Earths (subsoil)	Black will structured medium to heavy clays, shiny ped faces
Non-Calcic Brown Soils (topsoil)	Dark reddish brown sand; weak structure; bleached fine sand A horizon; 40 cm depth.
Non-Calcic Brown Soils (subsoil)	Reddish brown well-structured medium clay, to 100 cm deep overlying a yellowish brown medium clay with grey mottles.

As part of the studies undertake for the Dunedoo Solar Farm a soil report was undertaken by Soil Management Designs (2018) to provide an assessment of the existing landforms, soil types and characteristics of the proposed development area. Two soil landscapes were identified to occur within the 'Talbragar' alluvial deposits within the Subject Land. The soils were classified as Chromosols and Vertosols. Chromosols were noted in the northern and southern portions of the solar farm area which have little or no expansive clays, are generally non-dispersive, can be salty, and have low to moderate fertility. Vertosols were recorded in the middle section of the solar farm area as Brown, Grey and Black Vertosols. Vertosols are often very fertile but have shrink-swell properties that exhibit strong cracking upon wetting and drying cycles, often have dispersive subsoils, and can have high salt levels.

Based on observations from the site visit Soil Management Designs (2018) noted that the site have been extensively disturbed by paddock levelling, repeated cultivation and stock grazing.

3.1.2. Hydrology

The proposed location for the Dunedoo Solar Farm is approximately 2 km north of the Talbragar River which is a perennial stream that is part of the Macquarie catchment within the Murray-Darling basin. The river is noted to flood and to have a particular capacity for rapid rise and fall which is due to the wide catchment. In specific regards to the Talbragar River, flooding is known to occur on a periodic basis, however the severity of the floods is too low to cause any damage to buildings and infrastructure. In Dunedoo, flooding can occur in the north portion of the town and across the low flats, but not within the town itself.

The Essential Energy Dunedoo Substation is located on the southern raised terrace banks adjacent to the Talbragar River and the proposed transmission line corridor between the substation and the solar farm would cross the Talbragar River. A number of depressions are scattered across the Subject Land which may retain water following rain and an unnamed drainage line occurs within the western periphery of the site. Two small dams and three bores are also noted to be located within the Subject Land.

3.1.3. Flora and Fauna

The Subject Land comprises of several large flat paddocks which have been largely cleared for cropping and mixed farming purposes. Cleared areas are commonly cropped with improved pasture species such as Lucerne, Forage Oats and sub-tropical grasses and legumes that have been fertilised accordingly. Remnant vegetation is heavily modified throughout the Subject Land and includes small remnants of scattered Fuzzy box (*Eucalyptus conica*). The remnant areas have been highly disturbed and lack native understory due to grazing and pasture improvement practices.

Prior to the European modification of the landscape the Subject Land would have likely consisted of the Rough-Barked Apple - red gum - Yellow Box woodland, Fuzzy Box Woodland and River Red Gum riparian tall woodland / open forest wetland. Dominant species onsite would have included Yellow Box (*Eucalyptus melliodora*), River Red Gum (*Eucalyptus camaldulensis*), Blakely's Red Gum (*Eucalyptus blakelyi*), Fuzzy box (*Eucalyptus conica*) and Grey Box (*Eucalyptus microcarpa*) with native shrubs and grasses.

No occurrences of karsts, caves, crevices, cliffs nor surface rock are located within the Subject Land. The remanent woodland can provide numerous habitat types for fauna. No hollows were identified in any of the trees within the Subject Land. These trees would provide foraging habitat for bird and mammal species. The Talbragar River intersects the proposed transmission line easement, it can provide habitat for amphibians and reptiles.

Given that the Subject Land is located near to the confluence of a variety of resources, the area would have been targeted for the exploitation of aquatic and terrestrial resources by Aboriginal people.

3.1.4. Land Disturbances

Land disturbances within the Subject Land are largely those commonly associated with farming practices. There is a history of both low and high intensity farming practices across the landscape with soils at the site extensively disturbed by repeated cultivation and stock grazing. High intensity farming practices include the ploughing of fields and the initial creation of dams and paddocked areas, while lower intensity practices include pastoral activities and the grazing of stock.

3.1.5. Historic Land Use

When part of the Talbragar River was surveyed by Mortimer William Lewis in 1832 the only farms on the river were Robert Martin's 'Cobbora', James Willard Lowe's 'Bolaro', William Bowman's 'Merotherie' and upstream, Richard Fitzgerald's 'Tongay' (Cameron 1993, p.247).

The present site of Dunedoo was on the 'Bolaro' Run held in the 1840's by brothers Robert Lowe Jnr and William Willard Lowe. As with most runs, its area was 16,000 acres (i.e. 25 square miles).

As the number of settlers increased, the settlement at Dunedoo, then called 'Redbank', grew. In 1867 local representations were made to the State Government for an official township at Dunedoo. Surveyor William Jacomb Conder completed the survey for the town of Dunedoo in October 1868, siting it closer to the river than the present.

The first allotments in the town plan were put up for auction at Dubbo on 30th May 1870. No bids were received. A second sale of the town lands was held at Cobbora on 30th March 1875 and 10 lots were sold ranging in price from 4-5 pounds. However, the town made little progress until it was officially announced that the railway would pass through Dunedoo, which was completed in 1910.

To avoid the railway line running through the middle of the settlement the town area was redesigned and moved further away from the river in 1908. Several owners of lots in the path of the railway had to surrender this land. The first sale of new blocks was held at Cobbora on 4th August 1909 (Cameron 1993, p.258).

The northern area surrounding the Talbragar River at Dunedoo (including the Subject Land) consists of low lying alluvial paddocks which have been subject to historical flooding, with historic floods recorded in both 1920 and 1955.

The Subject Land has been cleared and utilised for grazing since European settlement in the mid 1800's. It has therefore been subject to impacts from farming for many decades. Overall, the project area would be categorised as disturbed through consistent farming practices over many decades through ploughing and tree clearing.

3.1.6. Landscape Context

Most archaeological surveys are conducted in a situation where there is topographic variation, and this can lead to differences in the assessment of archaeological potential and site modelling for the location of Aboriginal archaeological sites. The Subject Land is located across a relatively flat alluvial plain and therefore the only area noted to have higher sensitivity are the elevated southern banks of the Talbragar

River near the Essential Energy Dunedoo Substation. Given this the areas surrounding the Talbragar River is likely to have been a major focus for Aboriginal people in the area. Given the proximity of the Subject Land to the Talbragar River it is considered that prior to European land modifications, this area as a whole may have provided resources, shelter, water and food for Aboriginal people.

3.2. REVIEW OF ABORIGINAL ARCHAEOLOGICAL CONTEXT

3.2.1. Ethnohistoric Setting

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

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

Tribal Boundaries

Cultural areas are difficult to define and “must encompass an area in which the inhabitants have cultural ties, that is, closely related ways of life as reflected in shared meanings, social practices and interactions” (Egloff, Peterson & Wesson 2005, p.8). Depending on the culture defining criteria chosen - i.e. which cultural traits and the temporal context (historical or contemporary) - the definition of the spatial boundary may vary. In Australia, Aboriginal “marriage networks, ceremonial interaction and language have been central to the constitution of regional cultural groupings” with the distribution of language speakers being the main determinate of groupings larger than a foraging band (Egloff, Peterson & Wesson 2005, pp.8 & 16).

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

The Wiradjuri language group was the largest in NSW prior to European settlement extending from the east side of the Riverine plain to the Great Dividing Range and extended from the Murray River at Corowa/Albury north to Dubbo. The Gamilaroi people however extended further north in NSW and into Southern Queensland through the Warrumbungle Ranges.

There has been relatively little written on the Aboriginal people of the Dunedoo area with much of the focus being around the Warrumbungle's National Park to the north and Wiradjuri occupation along the Riverine Plain to the south. The town name, Dunedoo, is however, noted to be derived from the Aboriginal word for Swan based upon accounts taken by McCarthy (1963).

Social Structures and Colonisation

It was the small family group that was at the core of Aboriginal society and the basis for their hunting and gathering life. The immediate family camped, sourced food, made shelter and performed daily rituals together. The archaeological manifestations of these activities are likely to be small campsites, characterised by small artefact scatters and hearths across the landscape. Places that were visited more frequently would develop into larger site complexes with higher numbers of artefacts and possibly more diverse archaeological evidence.

These small family units were part of a larger band which comprised a number of families. They moved within an area defined by their particular religious sites (MacDonald 1983). Such groups might come together on special occasions such as pre-ordained times for ceremonies, rituals or simply if their paths happened to cross. They may also have joined together at particular times of the year and at certain places where resources were known to be abundant. The archaeological legacy of these gatherings would be larger sites rather than small family camps. They may include large hearth or oven complexes, contain a number of grinding implements and a larger range of stone tools and raw materials.

Identification and differentiation of such sites are difficult in the field. A family group and their antecedents and descendants occupying a particular campsite repeatedly over a long period of time may leave a similar pattern of archaeological signatures as a large group camped over a shorter period of time.

Accounts have also been made of Aboriginal burial practices in the Coolah region, just north east of Dunedoo. Roy Cameron (as cited in Monitor Heritage Consultants 2019, p 36) notes that after burying the dead, Aboriginal people would abandon the area for a certain amount of time, depending on the individuals ranks, as it was thought that the spirit of the deceased would haunt them.

There are accounts of this mourning process being undertaken by Aboriginal people working on Stations following European Settlement. One account states that one of the local landholders died suddenly while returning to his station and the Aboriginal people working on the station went into mourning, painted their faces and bodies with pipe clay and left the area, not returning to the station for three years (Cameron 2004 as cited in Monitor Heritage Consultants 2019, p 36). The same practice was later observed when a conflict occurred between two Aboriginal men of neighbouring tribes, Togee and Cuttabush where Togee was fatally speared. Following his death, the tribe left the area, and was thought to have not returned (Monitor Heritage Consultants 2019, p 38)

Aboriginal population declined due to disease such as smallpox and influenza as well as dispossession from traditional lands and acts of violence against the Aboriginal people which meant that there was great social upheaval and partial disintegration of the traditional way of life. This meant that access to traditional resource gathering and hunting areas, religious life and marriage links and access to sacred ceremonial sites were disrupted or destroyed.

However, despite these disruptions, Aboriginal people continued to maintain their connections to sites and the land in the early days of European settlement. One example of this is the gathering of over 1200 Aboriginal people in 1848 at Nandi Hill, near Coonabarabran, north of Dunedoo for a Corrobboree (Monitor Heritage Consultants 2019, p.36).

The Commissioner of Lands, Graham D. Hunter, recorded accounts of the impact of white settlement on Aboriginal people of the region and notes that there tended to be increased hostility from Aboriginal people towards white settlers in the first year of white occupation of new areas, however the following year would generally return to peace (Monitor Heritage Consultants 2019, p 37). Additionally, he noted the reduction of Aboriginal population and an almost complete reduction in fertility in the 1840s. In addition to this an increasing number of Aboriginal people were working on stations in the region, however the conditions that these people worked under are presently unknown (Monitor Heritage Consultants 2019, p 37).

There are several accounts of the mistreatment of Aboriginal people in the broader region and historical accounts of an Aboriginal massacre around Dunedoo. A written account of a letter between brothers from the Cassilis district, to the east of Dunedoo notes the killing of Aboriginal people by whites and is as follows.

There was too much leniency towards the whites and their wanton murder of Aborigines. Often they did not take the time to let the blacks know in what they had offended, even if they had offended at all; and little trouble was taken should reprisals be really justified (as they sometimes were) to find out if the right culprit was the one to be punished. Hundreds of Aborigines were slaughtered by merely trying to exist on what was after all their own land. (in Monitor Heritage Consultants 2019, p 40)

From 1883 the Aboriginal Protection Board established supervised estate or “Aboriginal stations” at Walhallow (Caroona), Burra Dee Dee near Coonabarabran, Sevington near Inverell, Terri Hie Hie near Moree, and Angledool (Boileau 2007). A number of other mission sites were also established in the region in the first half of the twentieth century including Minnom Mission, in the Pilliga and Bungabah or Yarrawin near Binnaway, north of Dunedoo. Both mission sites continued to operate until the 1950’s (Monitor Heritage Consultants 2019) after which Aboriginal people were dispersed throughout the region and Aboriginal housing was established from the 1940s onwards.

Through all the hardships endured the Gamilaroi and Wiradjuri people continue to have a strong connection to their land and in recent years’ online dictionaries and learning resources have been created to ensure the traditional language is passed onto the next generation.

Material Culture, Food and Resources

As stated above there are relatively few accounts of Aboriginal cultural activities within the Dunedoo area, there have however been a series of accounts by local residents and their memories of Aboriginal people and activities. These types of accounts must be considered within a context of historic account and the potential to amalgamate accounts from a range of areas into a single account.

One of the key accounts come from James Patrick Tuckey who worked around the Coolah Area, to the north east of Dunedoo (Monitor Heritage Consultants 2019). It is noted that:

Prior to white settlement the natives existed on fish in the Coolaburragundy River, fauna and bird life from the valleys and the seeds of the Coolah grass which grew on the flats. These seeds were ground into a powder by a kind of stone and mortar mill.

Grinding beds where the warriors made and sharpened their tomahawks may still be seen on sandstone in several streams that lead into the Coolaburragundy River. Hands on rocks, within the Coolah area, are few and few between. An interesting native made water trap in a small sandstone cliff exists north of Coolah, no doubt once used by members of the Butheroe tribe. A well preserved ‘native hide’ exists in the Uarby area. (in Monitor Heritage Consultants 2019, p. 35).

More broadly in the region early settlers and others who wrote about the Wiradjuri people and customs differentiated between the origin of some groups, referring to people as the Lachlan or Murrumbidgee tribes, or the Levels tribe for those between the two major rivers (Woolrych 1890). Pearson (Pearson 1981, p.81) inferred that the Wiradjuri in the Upper Macquarie River region were subdivided into three groups, one centred in the general Mudgee-Rylstone area and the others in the general areas of Bathurst and Wellington. The extent of the Wiradjuri group means that there were many different environments that were exploited for natural resources and food. Like everywhere in Australia, Wiradjuri people were adept at identifying and utilising resources either on a seasonal basis or all year round.

Terrestrial animals such as the possum was noted by many early observers as a prime food source and the skins were made into fine cloaks that evidently were very warm (Evans 1815; Oxley 1820; Mitchell 1839). Possums appear to have been a common part of the diet, weighing generally 3kg, they would be slowly roasted before eating (Kabaila 1999, p.126; Gammage 2012, p.226). Kangaroos were also eaten and their skins made into cloaks. A range of reptiles, other mammals and insects were also a common

food type, in particular grubs and ants and ant eggs (Pearson 1981; Fraser 1892). Birds were also common as a food source, often being caught in nets made from fibres of various plants such as flax, rushes and kurrajong trees. Bird hunts were also often undertaken as group activities, with emus, ducks and other birds targeted through groups of people flushing them out and driving them into pre-arranged nets (Ramson 1983).

Plant foods were equally as important and mostly consisted of roots and tubers, such as *Typha* or Cumbungi whose tubers were eaten in late summer and shoots in early spring. Other edible plants from the Wiradjuri region include the Yam Daisy or *Murnong*, eaten in summer and autumn, the Kurrajong seeds and roots, Acacia seeds, Coolah grass and other rushes too (Gott 1982).

In an archaeological context, few of these items would survive, particularly in an open site context. Anything made from bark and timber and animal skins would decay quickly in an open environment. However, other items, in particular those made of stone would survive where they were made, placed or dropped. Shell material may also survive in an archaeological context. Sources of raw materials, such as the extraction of wood or bark would leave scars on the trees that are archaeologically visible, although few trees of sufficient age survive in the modern context.

3.2.2. AHIMS Search

The Aboriginal Heritage Information Management System (AHIMS) provides a database of previously recorded Aboriginal heritage sites in NSW. A search provides basic information about any sites previously identified within a search area. However, a register search is not conclusive evidence of the presence or absence of Aboriginal heritage sites, as it requires that an area has been inspected and details of any sites located have been provided to the register to be added. As a starting point, the search will indicate whether any sites are known within or adjacent to the investigation area.

A search of the AHIMS database was conducted over an area approximately 8 km east-west x 8 km north-south centred on the Subject Land on the 25th of January 2018. The AHIMS Client Service Number was: 324297. There was a single Aboriginal site and no declared Aboriginal Places recorded in the search area. A subsequent search of the AHIMS database was conducted over an area approximately 16 km east-west x 16 km north-south centred on the Subject Land, was undertaken on the 24th of May 2018 to provide a more detailed understanding of the archaeological setting of the surrounding area. The AHIMS Client Service Number was: 347074. There were 94 Aboriginal sites and no declared Aboriginal Places recorded in the search area. None of the sites were located within the project area at the time of the initial search with the closest site an open artefact site (AHIMS # 36-2-0049) located approximately 150 m east of the Essential Energy Dunedoo Substation. Another open artefact site (AHIMS # 36-2-0048) was also recorded approximately 350 m east of the Essential Energy Dunedoo Substation near the intersection of the Golden Highway and Diglah Road.

The Subject Land for the transmission line to the Essential Energy Dunedoo Substation has however been modified since the initial AHIMS search was undertaken and the site AHIMS # 36-2-0049 is now located within the Subject Land. The site AHIMS#36-20049 was initially recorded during an assessment for the Tamworth to Dubbo Gas Pipeline in 1998 with six stone artefacts located on the high bank of the Talbragar River, in a cleared and graded area. It was suspected as possible that the artefacts had been brought in with stockpiled material. The location was described as highly disturbed and with low potential for the presence of intact sub-surface deposits. While the site AHIMS # 36-2-0049 is listed on AHIMS as valid a recent survey by OzArk in 2012 for the proposed Beryl to Dunedoo 66kV Transmission Line noted that the site has been previously legally impacted under two permits issued under the NPW Act and that their field survey confirmed that this site no longer exists.

Given the extended timeframe between the initial AHIMS search and the completion of the ACHA a new AHIMS search was undertaken on the 25th of June 2020 which was centred on the Subject Land over an 18 km east-west x 18 km north-south area. The AHIMS Client Service Number was: 515668. There were 95 Aboriginal sites and no declared Aboriginal Places recorded in the search area. Only a single new site

was recorded in the AHIMS search area compared to the previous search undertaken which is not located within or adjacent to the Subject Land.

Figure 3-1 shows the locations of the AHIMS sites in relation to the Subject Land based on the most recent AHIMS search and Figure 3-2 shows those sites in close proximity to the Subject Land.

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

Site Type	Number
Modified Tree (Carved or Scarred)	36
Artefact (1 or more)	31
Art (Pigment or Engraved)	6
Grinding Groove	6
Artefact (1 or more) and Potential Archaeological Deposit (PAD)	5
Hearth	3
Artefact, (1 or more) Hearth and Potential Archaeological Deposit (PAD)	2
Fish Trap	1
Stone arrangements	1
Artefact (1 or more) and Shell	1
Artefact (1 or more) and modified tree	1
Aboriginal Resource and Gathering and Grinding Groove	1
Grinding Groove and Potential Archaeological Deposit (PAD)	1
TOTAL	95

There is a dominance of scarred trees noted in the area surrounding the Subject Land (n=36; 37.9%) especially where there are remnant stands of native trees. Scarred trees provide a tangible link to the past and provide evidence of Aboriginal subsistence activities through the deliberate removal of bark or wood. It is likely that the low number of other site types in the area surrounding the Subject Land is related to the lack of surveys in the area and the more obtrusive nature of scarred trees when compared to small artefact scatters and isolated stone artefacts.

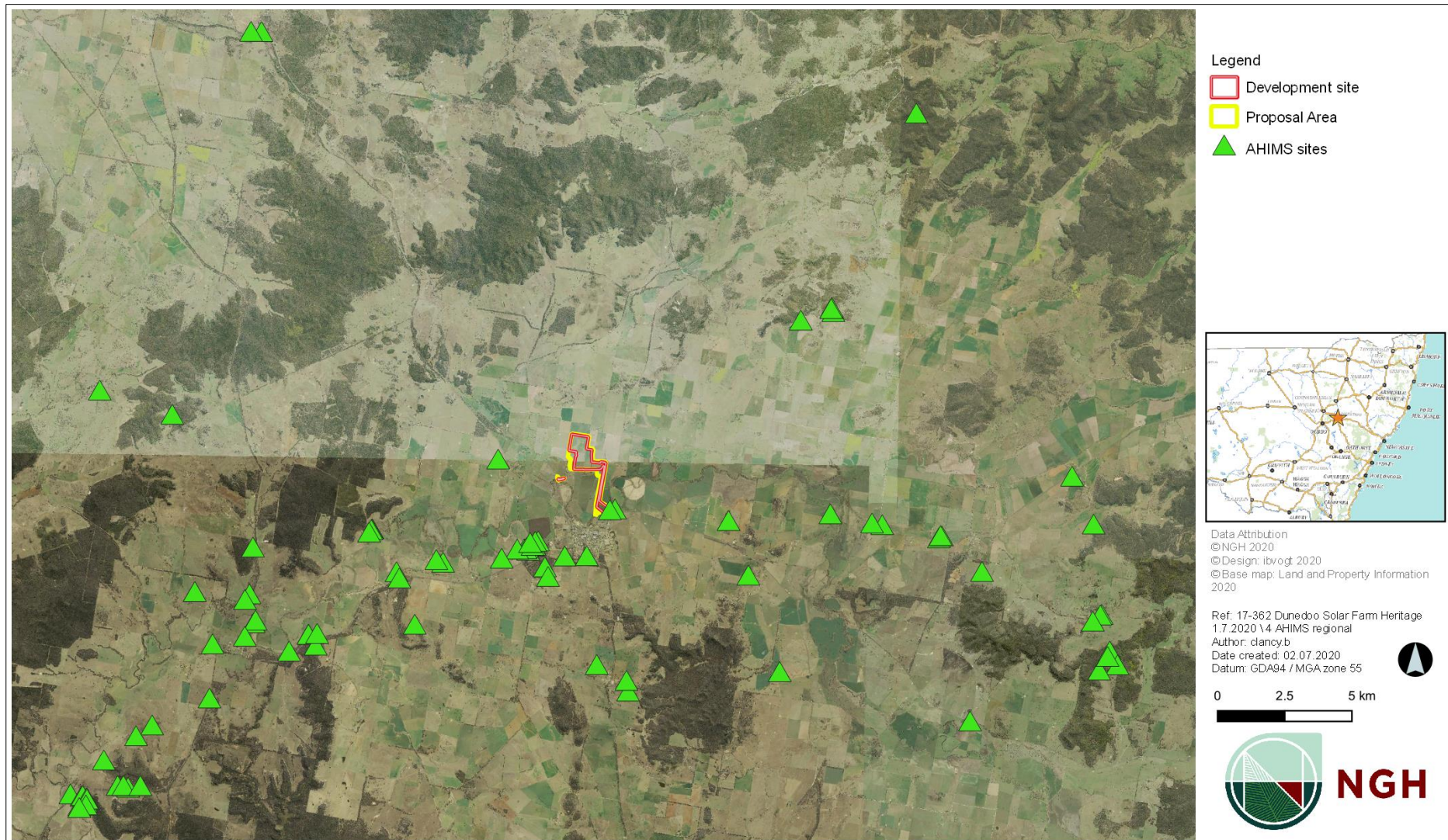


Figure 3-1. AHIMS Sites surrounding the Subject Land.

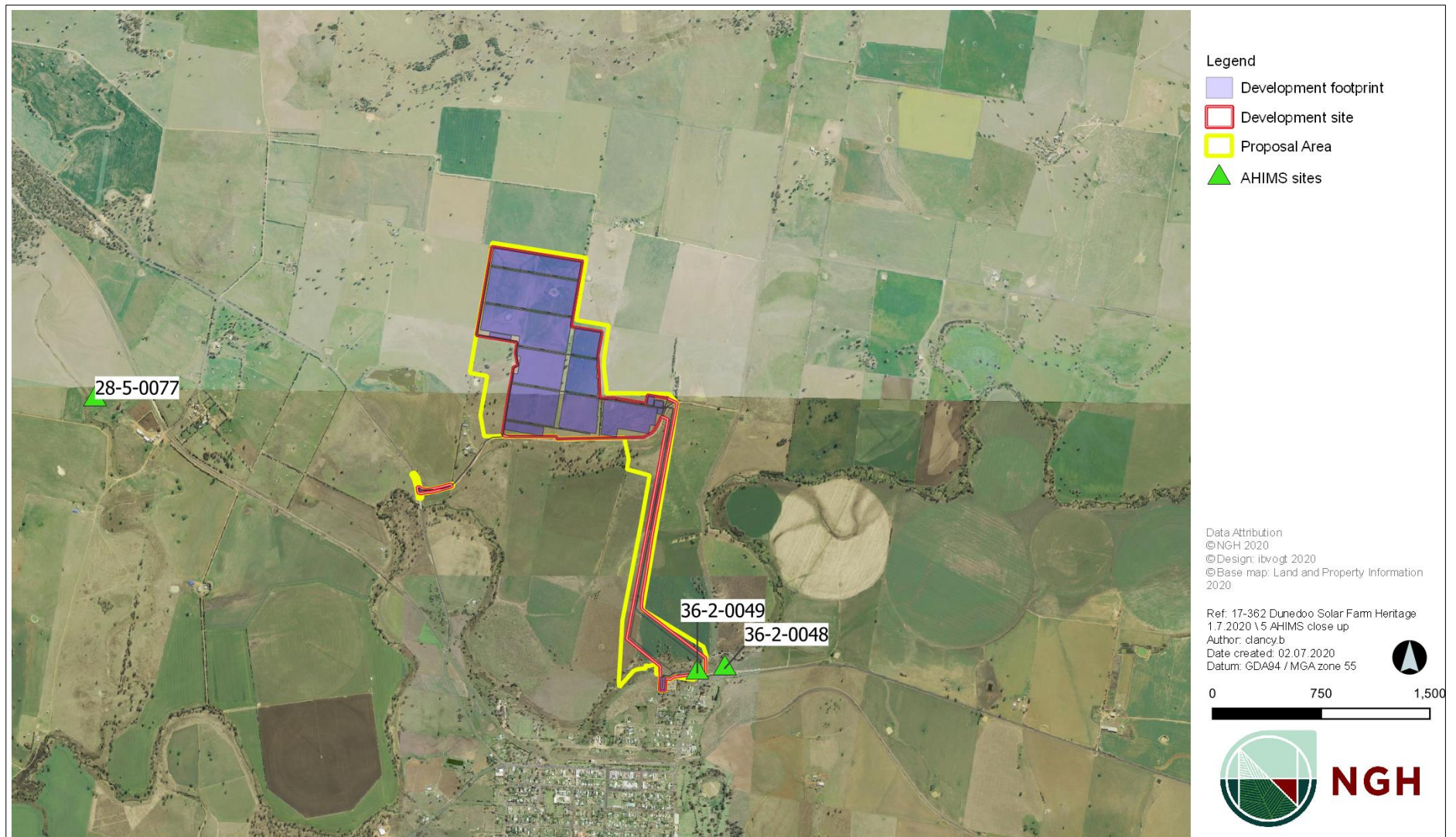


Figure 3-2. AHIMS Sites in close proximity to the Subject Land.

3.2.3. Other Heritage Register Searches

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

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

The results of the NSW SHI database search indicated that there is three previously recorded Aboriginal Places listed under the *National Parks and Wildlife Act* within the Warrumbungle LGA. None of these recorded Aboriginal Place are within Dunedoo or in close proximity to the Subject Land.

The results of the NSW SHI database search indicated that one previously recorded heritage site, the Dunedoo Railway Station and yard group, is listed under the *NSW Heritage Act* within Dunedoo in the Warrumbungle LGA. This site is not located within the Subject Land and will not be impacted by the Dunedoo Solar Farm.

The results of the NSW SHI database search indicated that four previously recorded heritage sites are listed by the Local and State Agencies within Dunedoo in Warrumbungle LGA however none are located within or in close proximity to the Subject Land.

The results of the Australian Heritage Database search indicated that two sites are located within the within Dunedoo in Warrumbungle LGA which include the Dunedoo Railway Station and Yard Group and an Indigenous Place in Dunedoo. No other information is provided about the Indigenous Place in Dunedoo so its location to the Subject Land is unable to be ascertained.

No other known previously recorded heritage sites are located within or adjacent to the Subject Land.

3.2.4. Regional archaeological studies

Aboriginal people have occupied what we now know as the Australian continent for at least 40,000 years and perhaps 60,000 years and beyond. While no regional synthesis of the archaeology has been completed for the Dunedoo area, research studies have been undertaken in the Upper Macquarie River region by Pearson (1981) and Koettig (1985). Purcell (2002) also conducted a study of the Brigalow Belt South Bioregion. OzArk (2016) also established a predictive model for Aboriginal site locations within Travelling Stock Reserves across the Central West Local Land Services area. The following is a summary of the findings from these broader regional studies.

Pearson (1981) analysed a series of sites which tended to be biased towards larger and more noticeable sites identified by local residents. During this study he excavated three rockshelters (Botobolar 5, Granites 1 and Granites 2) which provided a record of regional Aboriginal occupation in the area to 5,000 years before present. Based on his finding Pearson categorised these sites as either occupation sites or non-occupation sites (sites that are generally for a single purpose i.e. scarred trees, grinding grooves and burial sites) and built an archaeological model based on location. The model developed by Pearson (1981) is summarised below.

- Distance to water from sites varied from 10 to 500 m, with larger sites found closer to a water source.
- Good soil drainage and an outlook over a water source were important to location.
- Ceremonial and stone arrangement sites were located away from campsites.

- Quarry sites were located in areas with desirable stone source qualities and reasonably accessible.

Koettig (1985) continued to build on the archaeological understanding of this region by conducting a comprehensive and systematic study of the Dubbo region, which although over 70 km to the west, is relevant as one of only a few site-ranging archaeological studies. Koettig (1985) investigated all topographic landform units and creek orders through sample survey to clarify locations and site types. The study arrived at the following conclusions:

- Aboriginal sites may be expected throughout all landscapes.
- Artefact scatters, scar trees and grinding grooves are the most frequently occurring site types.
- The location and size of sites were determined by various factors; predominately environmental and social factors around the proximity to water, geological formations and the availability of food resources.

Koettig (1985) suggested that larger and constantly occupied sites are likely to occur along permanent watercourses, while more sporadic occupation would have occurred along ridge tops or temporary water courses.

Purcell (2002) conducted a broad regional cultural heritage study of the Brigalow Belt South Bioregion in NSW. This bioregion extends from Dubbo north to Moree. Over the course of the study Purcell recorded 110 oral history interviews, located 1,110 Aboriginal sites, documented 60 traditionally used plant species and mapped landforms that have Aboriginal cultural heritage values. Of the 1,110 Aboriginal sites recorded during this assessment 893 existed on the site register prior to the study.

The field survey portion of Purcell's study primarily targeted government owned land such as state forests and a landform mapping project was undertaken to assist with the development of a predictive model for Aboriginal site distribution across the bioregion. Water localities were noted to be the major contributing element influencing the distribution of sites among landforms with sites expected to be concentrated near water localities. The landform types were classified into four key groups as shown in Table 3-4 Breakdown of landforms mapped by Purcell (2002) in the Brigalow Belt South Bioregion. Table 3-4 below. The study indicated that Aboriginal sites have been recorded more frequently on high contour and alluvial landforms. The majority of the sites recorded were within 100-400 m of water.

Table 3-4 Breakdown of landforms mapped by Purcell (2002) in the Brigalow Belt South Bioregion.

Landforms	Description	Likelihood of Aboriginal sites
Alluvial	Low lying areas associated with a variety of water features including rivers, creeks, channels, billabongs, swamps and lakes. Landforms include alluvial fans, alluvial terrace, alluvium, channel, floodplain, flood channel, gilgai, wetland/swamp and palaeo channels.	Aboriginal sites occur frequently
Deep stable sand	Landform types include yellow sand sheets and sand monkey. Water is scarce.	Aboriginal sites occur less frequently
Terrace group	Landform types consist of terrace with scalds, terrace with overland flow, terrace and clay pans. Each variety of terrace adjoins a landform associated with an alluvium landform.	Areas where terrace ad floodplains overlap will have a high potential for sites
Higher contour	Landforms that are elevated and consist of rocky ground, rocky ravines, colluvial slope, soil mantled slope, bench and talus,	High frequency of sites when associated with alluvial landforms or creek lines

In 2016 OzArk established a predictive model for Aboriginal site locations within Travelling Stock Reserves across the Central West Local Land Services area. The landscape in the area were divided into the following types: channel and floodplains, alluvia plains, slopes, uplands and down. Observations about the location and site types recorded to date within these landforms were compiled by OzArk and it was noted that:

- A high number of sites were recorded in Slope landscapes. This was perhaps biased by the fact that Dubbo is located within this landscape type and the highest number of sites in the area have been recorded to date in and around Dubbo;
- The highest concentration of sites was within Channel and Floodplain landscapes
- Alluvial Plains landscapes had the third highest concentration of sites;
- Relatively small numbers of sites were recorded in Uplands landscapes; and
- A moderate number of sites were recorded in Downs landscapes.

The study area investigated by OzArk was also divided into two stream orders with major and minor waters noted to have sensitivity with a 200 m buffer added to either side of major waters and a 100 m buffer added either side of minor waterways. The field investigation of 32 Traveling Stock reserve areas within the study area was used to test the predictive model. A total of 59 sites were recorded which included 26 modified trees, 22 artefact scatters and 11 isolated finds. The majority of the recorded sites were located in Channel and Floodplain landscapes with lower numbers recorded on slopes, alluvial plains and down landscapes. Oz Ark concluded that the most archaeologically sensitive landscape in the Central West Local Land Services area was Channels and Floodplain landscapes. Additionally, OzArk noted that 63% of the sites recorded were within the buffers of major and minor waterways.

3.2.5. Previous archaeological studies

The following are summaries of those archaeological survey reports that have been completed in the Dunedoo area and in relative proximity to the Subject Land.

In 1998 McDonald completed a cultural heritage assessment of the Dubbo to Tamworth natural gas pipeline who recorded a total of 98 Aboriginal sites across the 300 km survey area. The survey area went via the township of Dunedoo and roughly follows the Golden Highway. The survey area intersects the existing Dunedoo substation area within the Subject Land as show in Figure 3-3. The majority of recorded sites were stone artefact sites comprising of one or more stone artefacts (n= 56) and scarred trees (n=36). She found that sites were generally associated with more permanent watercourses with most sites within 50 m of a watercourse (McDonald 1998). Over half (56%) of the sites recorded with stone artefact were found to occur with 200 m of a water course. Grinding grooves were also noted to have a strong association with watercourses. The site AHIMS # 36-2-0049 which is located within the Subject Land was initially recorded during this survey.

In 2012, OzArk conducted a survey for the proposed duplication of the existing 66kv powerline from the Beryl Substation to the Dunedoo Substation. The proposed transmission line from the Dunedoo Solar Farm for the current assessment will also connect to the Dunedoo substation and intersect the area assessed by OzArk as show in Figure 3-3. OzArk (2012) assessed an impact footprint that was 40 km in length and 15m wide. It was also noted by OzArk that the proximity to a permanent water supply appeared to be the primary factor determining the location of Aboriginal campsites in the area. Two previously recorded sites were noted to have been legally impacted and it was determined that these sites no longer existed and were not a constraint to the proposed development. Two new sites were also identified near the headwaters of Limestone Creek; both were artefact scatters with potential archaeological deposit.

In 2012 EMM conducted an Aboriginal Cultural Assessment for the Cobbora Coal Project involving a study area of 276 square kilometres of land located near Cobbora in the central west of New South Wales, NSW, approximately 22 kilometres south-west of Dunedoo. The study area was within the southern edge of the Brigalow Belt South (BBS) biogeographic region of NSW. The Sandy Creek catchment forms a

southerly extending finger of the Talbragar Valley sub-system of the BBS. The BBS is characterised by primarily sedimentary geology and geomorphology derived largely from the eroding sandstone and conglomeritic geology. Most Aboriginal sites were located along the major watercourses of Sandy Creek and Laheys Creek. Of the 229 Aboriginal sites recorded within the study area, 164 were open stone artefact sites, 25 were scarred trees, 18 were grinding groove sites, 15 were hearths and seven were rockshelters. Several of the hearths had been recorded within the boundaries of open stone artefact sites. Aboriginal flaked stone artefacts were the most common type of Aboriginal object. Areas of archaeological sensitivity were also identified along many of the creeks (EMM 2012).

In 2017 NGH completed an Aboriginal Cultural Heritage Assessment Report for the proposed Beryl Solar Farm, located at Beryl approximately 6 kilometres west of the township of Gulgong, NSW, and 33 kilometres south of Dunedoo. A pedestrian survey was undertaken to cover as much as possible of the proposed disturbance area within the 332 hectare proposal site with a combined area of 46 hectares examined. The average effective visibility was 15% due to vegetation cover of the ground, which reduced the effective survey coverage to 6.9 ha, or 3.3% of the total project area. Six stone artefacts were found across the Subject Land, which were recorded as five site occurrences. Based on the land use history of the Subject Land, and an appraisal of the results from the field survey it was determined that there was negligible potential for the presence of intact subsurface deposits with high densities of objects or cultural material within the solar farm and powerline easement areas. The models of site locations for the area were noted to have been shown to be accurate, with the sites located within 100-400 m to a water source, even in areas highly disturbed by farming activities (NGH Environmental 2017).

In 2017 OzArk completed an Aboriginal Due Diligence assessment for the proposed upgrade to Beni Crossing which is a low level bridge that crosses the Castlereagh River, approximately 31 km north of Dunedoo between the townships of Mendooran and Merrygoen. It was noted that the banks of the Castlereagh River would have been ideal for Aboriginal occupation and camping. A single modified tree was identified within the works area which was recorded as Beni Crossing Scarred Tree 1 located on the southern bank of the river. The modified tree consisted of an elliptical scar on a grey box tree and it was suggested by OzArk that the scar may have been created during the removal of bark to create a coolamon.

In 2018 Oz Ark completed an Aboriginal Due Diligence assessment for the Merrygoen Free Range Layer Farm on Lot 4 DP 754971, Lot 21 DP 754971 and part of the Castlereagh Highway near Merrygoen. The initial AHIMS search undertaken for the study identified four previously recorded AHIMS sites within the study area however the GPS location of some of these sites was determined to be incorrect compared to the data provided in the site cards. Consequently a visual inspection of the study area was undertaken. One Aboriginal site, a grinding groove site was recorded as Merrygoen-GG1 with five groups of grinding grooves recorded across five sandstone outcrops. It was estimated that up to 150 grooves were present across the five sandstone outcrop area. Additionally, all four previously recorded scarred trees were located during the visual inspection. The site Merrygoen-GG1 and the three previously recorded scarred trees are noted to be located outside the impact footprint and therefore would not be impacted by the proposed works.

In 2019 Access Archaeology and Heritage completed an Aboriginal Heritage Due Diligence assessment for a proposed feedlot extension on the property "Corumbene", located approximately 4 km north-west of Dunedoo and approximately 2.2 km west of the proposed intersection upgrade works for the Dunedoo Solar Farm as show in Figure 3-3. The terrain of the study area was noted to be gently undulating, falling from the north to the south towards an ephemeral creek. The proposed location for a burial pit, compost pad, additional irrigation pivot, drains and water storage on the property were inspected and noted to be highly disturbed by clearing and cultivation with no cultural material observed and deemed to have low archaeological potential. On a sandy levee adjacent to a creek a total of 20 Aboriginal stone artefacts were recorded on a farm track as the site Corumbene 1. The low density artefact scatter was noted to be within a distinct rise on the northern side of the creek which was also noted as an area of potential archaeological deposit (PAD). The recorded locations of stone artefacts nor the extent of the sensitive

landscape on which they were recorded were noted to be disturbed by the proposed works. The majority of the artefacts were quartz with lesser numbers of chert, sandstone, fine grains volcanic and fine grained silcrete were recorded. The artefact types recorded included flakes, broken flakes, cores, core fragments, flaked pieces, a retouched flake and a grindstone fragment (Access Archaeology & Heritage 2019).

Based on the studies discussed above it is plausible to suggest that while Aboriginal sites may be expected through all landscapes there does appear to be a pattern of sites that relate to the presence of potential resources for Aboriginal use. In the local area the dominant raw material type is quartz, with variations of colour and quality. Sites tend to be concentrated on elevated level ground associated with a reliable water source. Additionally, the presence of scarred trees is relatively common and can occur across all landscapes. Based on site modelling and the prevalence of sites in the surrounding and immediate area, the site types most likely to be encountered within the Dunedoo Solar Farm Subject Land are quartz lithic scatters, isolated artefacts and scarred trees in remnant old growth vegetation areas bordering the cleared proposed development area and/or as isolated paddock trees.

3.2.6. Summary of Aboriginal land use

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

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

A detailed understanding of Aboriginal land use of the region is lacking, as few in depth studies have been completed in close proximity to the Subject Land. It is possible however, to ascertain that proximity to water sources and raw materials was a key factor in the location of Aboriginal sites. It is also reasonable to expect that Aboriginal people ventured away from these resources to utilise the broader landscape, but the current archaeological record of that activity is limited.

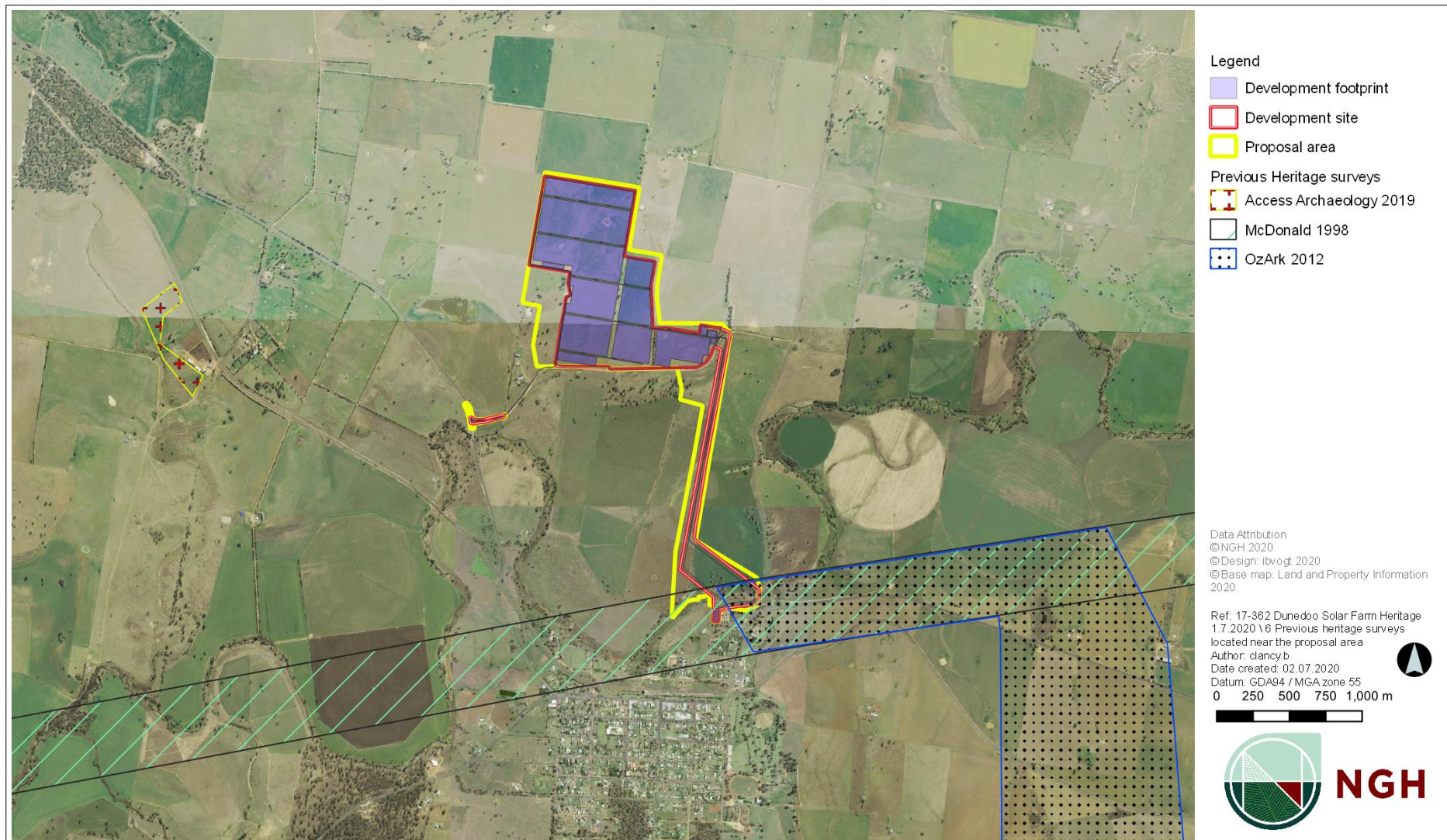


Figure 3-3. Previous heritage surveys located near the Subject Land.

3.2.7. Archaeological Site Location Model

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

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

Isolated Artefacts – are present across the entire landscape, in varying densities. As Aboriginal people traversed the entire landscape for thousands of years, such finds can occur anywhere and indicate the presence of isolated activity, dropped or discarded artefacts from hunting or gathering expeditions or the ephemeral presence of short term camps. This feature is likely to occur.

Stone artefact scatters – representing camp sites or flaking and maintenance activity can occur across the landscape, usually in association with some form of resource or landscape. Water bodies, such as rivers, ephemeral creeks or clay pans can also be a focus of Aboriginal occupation. Given the proximity of the Subject Land to Talbragar River low to moderate density artefact scatters are likely to occur.

Scarred Trees – these require the presence of mature trees and are likely to be concentrated along major waterways and around swamps areas. There are patches of remnant vegetation within and adjacent to the Subject Land and therefore this feature may occur.

Hearths/Ovens – are identified by burnt clay used for heat retainers. Some are recorded in the district in association with resource locations. However, they could occur either independently or in association with other Aboriginal cultural features such as artefact scatters. Hearths are generally considered to be limited, one-off use or reused but few times and are smaller concentrations. Ovens are considered to represent larger features, often extending over a larger area and can include other material such as bone. Very few hearths are recorded in the district but they could occur either independently or in association with other Aboriginal cultural features such as campsites, often in association with resource locations. This feature is unlikely to occur within the Subject Land but is possible.

Mounds - are accumulations of heat retainer ovens that have built up over time. They are typically round or oval in shape and range in length from just a few metres to over 100 m and range in height from 0.1 m to 2 m. They are identified by the presence of baked clay heat retainers, which have usually been brought to the location from a nearby source of natural clay such as a lakebed, swamp or drainage line. Mounds are generally found in proximity to wetland areas such as lakes, swamps and creeks, often elevated above these areas by being situated on sandy rises, lunettes, source bordering dunes and paleochannels. Mounds are likely to contain a range of other archaeological features such as bone, shell, stone artefacts and burials. Only one such site has been recorded in the area and therefore such sites are less likely to occur.

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

There is a possible historic site where Aboriginal people were shot and killed near the Subject Land however the Aboriginal community consulted with for this assessment have confirmed that the site is located outside the Subject Land and it will not be impacted by the development of the Dunedoo Solar Farm. Therefore such sites are unlikely to occur within the Subject Land for the Dunedoo Solar Farm.

Stone resources – are areas where people used natural stone resources as a source material for flaking. This requires geologically suitable material outcropping to be accessible. The Subject Land contains no natural outcropping stone and therefore this feature is unlikely to occur.

Shell Middens – are the agglomeration of shell material disposed of after consumption. Such places are found along the edges of significant waterways, swamps and billabongs. Given the transmission line area is located adjacent to the Talbragar River it is possible that this site type will be identified however only one site within the surrounding area is noted to contain shell.

Grinding Grooves – are typically elongated narrow depressions in rocks, particularly sedimentary bedrock, that are generally associated with watercourses. The depressions are created by repeated activities at the same location to shape and sharpen stone objects (generally axes) and/or during the grinding of food sources. The Subject Land contains no natural outcropping stone and therefore this feature is unlikely to occur.

Rock Art and Engravings – human-made markings placed on natural stone by painting on a surface or making engravings into stone. Such places are found along rock platforms, stone outcroppings or in rock shelters. The Subject Land contains no rock platforms or overhangs and therefore this feature is unlikely to occur.

In summary, the topography and landscape features within the proposed Dunedoo Solar Farm indicate that this area would likely have been part of the Wiradjuri landscape, particularly given its proximity to the Talbragar River. Therefore, the Subject Land could have a possibility of providing an archaeological signature. Given that Aboriginal people have lived in the region for tens of thousands of years, there is potential for archaeological evidence to occur throughout the area, this is most likely to be in the form of stone artefacts and modified trees.

3.2.8. Comment on Existing Information

The AHIMS database is a record of those places that have been identified and had site cards submitted. It is not a comprehensive list of all places in NSW as site identification relies on an area being surveyed and on the submission of site forms to AHIMS. There are likely to be many areas within NSW that have yet to be surveyed and therefore have no sites recorded. However, this does not mean that sites are not present.

Within the general vicinity of the Subject Land there have been few archaeological investigations. The information relating to site patterns, their age and geomorphic context is little understood. The robustness of the AHIMS survey results are therefore considered to be only moderate for the present investigation. There are likely to be many sites that exist that have yet to be identified. Past land use activity has also greatly disturbed the archaeological record and there are unlikely to be many places that retain *in situ* archaeological material. With regard to the limitations of the information available, archaeologists rely on Aboriginal parties to divulge information about places with cultural or spiritual significance in situations where non archaeological sites may be threatened by development. To date, we have not been told of any such places within the Subject Land beyond the use of Talbragar River as a transitional route however there is always the potential for such places to exist but insofar as the current proposed works area, no such places or values have been identified.

As part of the consultation process an Aboriginal community member provided culturally sensitive information that was relevant to the Subject Land. This information related to the location of an historic event where it is believed Aboriginal people were shot and killed near Dunedoo. This site is located outside the Subject Land however due to its close proximity it was noted to be relevant and information was shared with the NGH archaeologists. The location of this site is noted to be culturally sensitive and further information regarding the possible location is treated in this report as confidential. The Aboriginal community have confirmed that the site is located outside the Subject Land and have not raised any issues about the proximity of the site to the Subject Land.

4. ARCHAEOLOGICAL INVESTIGATION RESULTS

4.1. SURVEY STRATEGY

The initial archaeological investigation area for the Dunedoo Solar Farm project was significantly larger than the Subject Land assessed in this report. Consequently, a larger area than that proposed for development in this report was initially investigated for the presence of any Aboriginal sites.

Following the initial survey additional areas were identified for possible impacts for the intersection upgrade and transmission line corridor which were also surveyed. The survey strategy objective during all survey works undertaken for the Dunedoo Solar Farm was however to cover as much of the ground surface within the possible impact areas as possible.

Within the Dunedoo Solar Farm a survey strategy was devised to walk a series of transects across the landscape to achieve maximum coverage. Because the Subject Land was generally disturbed and cleared, transects were spaced evenly with the survey team spread apart at 20 m intervals, walking in parallel lines. The nature of the paddocks made this an ideal survey strategy as the team were able to walk in parallel lines at a similar pace which allowed for maximum survey coverage and maximum opportunity to identify any heritage objects. The survey team for the solar farm area consisted of six people including two archaeologist and four Aboriginal community representatives which allowed for a 120 m wide tract of land to be surveyed with each transect. At the end of each transect, the team would reposition along a new transect line at the same spacing and walk back on the same compass bearing. Any mature trees within the areas assessed were also inspected for any evidence of Aboriginal scarring (c.f. Long 2005).

For the survey of the transmission line corridor the teams consisted of three people spread apart at 20-30 m intervals with one team commencing survey from the solar farm and surveying the area south within the transmission line corridor while the other survey team commenced survey from the Essential Energy Dunedoo Substation heading north along the transmission line corridor spread apart at 20-30 m intervals. The two teams continued to survey the transmission line corridor until they met. Any mature trees within the transmission line corridor were also inspected for any evidence of Aboriginal scarring (c.f. Long 2005).

The additional survey which was undertaken for the intersection road upgrade was undertaken by two archaeologists with two Aboriginal community representatives. Given the small nature of the area the team of four people walked at approximately 2 m spacing along one side of the road before surveying the other side back to cover the entirety of the proposed impact area. Any mature trees within the intersection road upgrade area were also inspected for any evidence of Aboriginal scarring (c.f. Long 2005).

The additional transmission line survey was undertaken by two archaeologists with five Aboriginal community representatives. Because the additional transmission line area north of the Talbragar River was heavily vegetated with dense high weeds and low visibility the transects were spaced evenly with the survey team spread apart at 30 to 40 m intervals, walking in parallel lines and checking any mature trees within the additional transmission line impact area for any evidence of Aboriginal scarring (c.f. Long 2005). This allowed for a 180 to 240 metre-wide tract of the additional transmission line area to be surveyed with each transect. The area south of Talbragar River within the additional transmission line area was also surveyed by the team spread apart at 5 m to 10 m intervals walking in parallel lines.

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

The areas surveyed during the archaeological investigations undertaken for the Dunedoo Solar Farm were divided into three landforms as listed below.

- Alluvial Flats which covers the solar farm area and transmission line area north of the Talbragar River;
- Disturbed road corridor which covers the intersection road upgrade area; and
- Elevated river banks which covers the substation and transmission line area south of the Talbragar River.

During all survey fieldwork undertaken for the Dunedoo Solar Farm notes were made about visibility, photographs were taken, and any possible Aboriginal objects or features identified were inspected, assessed and recorded if deemed to be Aboriginal in origin.

4.2. SURVEY COVERAGE

The solar farm area and transmission line corridor north of the Talbragar River comprised primarily of paddocks that had been subject to farming and grazing activities. Survey transects were undertaken on foot and traversed the entire development site. Visibility within the solar farm area was variable, however, as a whole it generally had good visibility averaging 40% overall. The solar farm portion of the Subject Land also exhibited exposures that were noted to be mostly along established access tracks, fences, dams, along animal tracks and area of bare ground which averaged about 90% visibility.

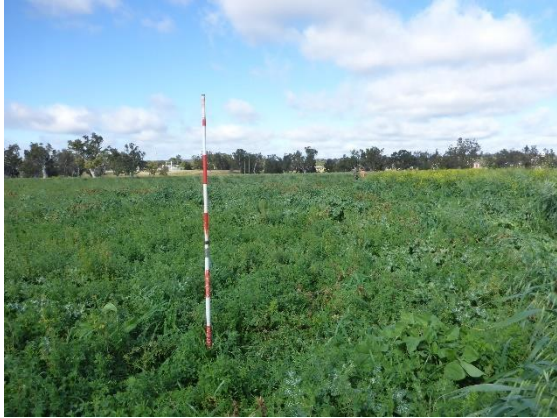

The visibility along the transmission line varied from averaging 40% in the northern portion to less than 5% in areas with a dense grass and weed cover on either side of the Talbragar River. The visibility within the intersection upgrade works area was also noted to generally be very low with less than 5% in areas with a dense grass cover. Some exposures were however noted to be present within the transmission line and intersection upgrade areas which were also inspected.

Between the survey participants, over the course of the field survey work undertaken for the Dunedoo Solar Farm, approximately, 100 km of transects were walked across the Subject Land as assessed in this report.

Table 4-1 below shows the calculations of effective survey coverage and Plates 1-8, show examples of the transects within the Subject Land.

Allowing for an effective view width of 5 m for each person and given the variability in the ground visibility across the proposal site overall the survey effectively examined 12.8% of the Subject Land. It is considered that the survey of the development site had sufficient and effective survey coverage. The discovery of a number of Aboriginal sites indicates that the survey technique was effective enough to identify the presence of Aboriginal occupation and in what areas it was concentrated. Therefore, the results identified are considered a true reflection of the nature of the Aboriginal archaeological record present within the Subject Land.

	
<p>Plate 1. View south-east from the northern portion of the Subject Land.</p>	<p>Plate 2. View east along the southern boundary of the Subject Land.</p>
	
<p>Plate 3. View south along the row of trees planted in the eastern portion of the Subject Land.</p>	<p>Plate 4. View south from the central portion of the Subject Land.</p>
	
<p>Plate 5. View north from the central portion of the Subject Land.</p>	<p>Plate 6. View west of road intersection upgrade area.</p>

	
<p>Plate 7. View south-east from the additional transmission line area on the northern side of Talbragar River towards the existing substation.</p>	<p>Plate 8. View south-east from the southern side of Talbragar River towards the existing substation.</p>

4.2.1. Consideration of potential for subsurface material

The field survey results for the Dunedoo Solar Farm in consideration with archaeological modelling for the area and comments from the RAPs who participated in the field survey resulted in the identification of several areas considered to have potential for *in situ* subsurface deposits that require further assessment if they are proposed to be impacted. These areas tended to have moderate surface artefact densities and were subsequently grouped in three archaeologically sensitive areas and included areas proposed to be impacted by solar arrays and the elevated banks adjacent to the Essential Energy Dunedoo Substation which appeared to be relatively undisturbed as shown in Figure 4-1. It was recommended that the areas of archaeological sensitivity be subject to a limited subsurface testing programme to establish the true archaeological potential of the areas, significance and extent of sites if they were unable to be avoided by development footprint. The archaeologically sensitive areas within the proposed solar arrays all had relatively moderate surface artefact densities, while an area adjacent to the Essential Energy Dunedoo Substation was identified as a sensitive landform that had very low visibility at the time of the initial survey.

Based on the land use history, an appraisal of the landscape, soil, level of disturbance and observations from the field survey, it was concluded that there was negligible potential for the presence of intact subsurface deposits with high densities of cultural material within the remainder of the Subject Land, outside the archaeologically sensitive areas. Consequently, subsurface testing was not warranted beyond the archaeologically sensitive area identified and shown in Figure 4-1.

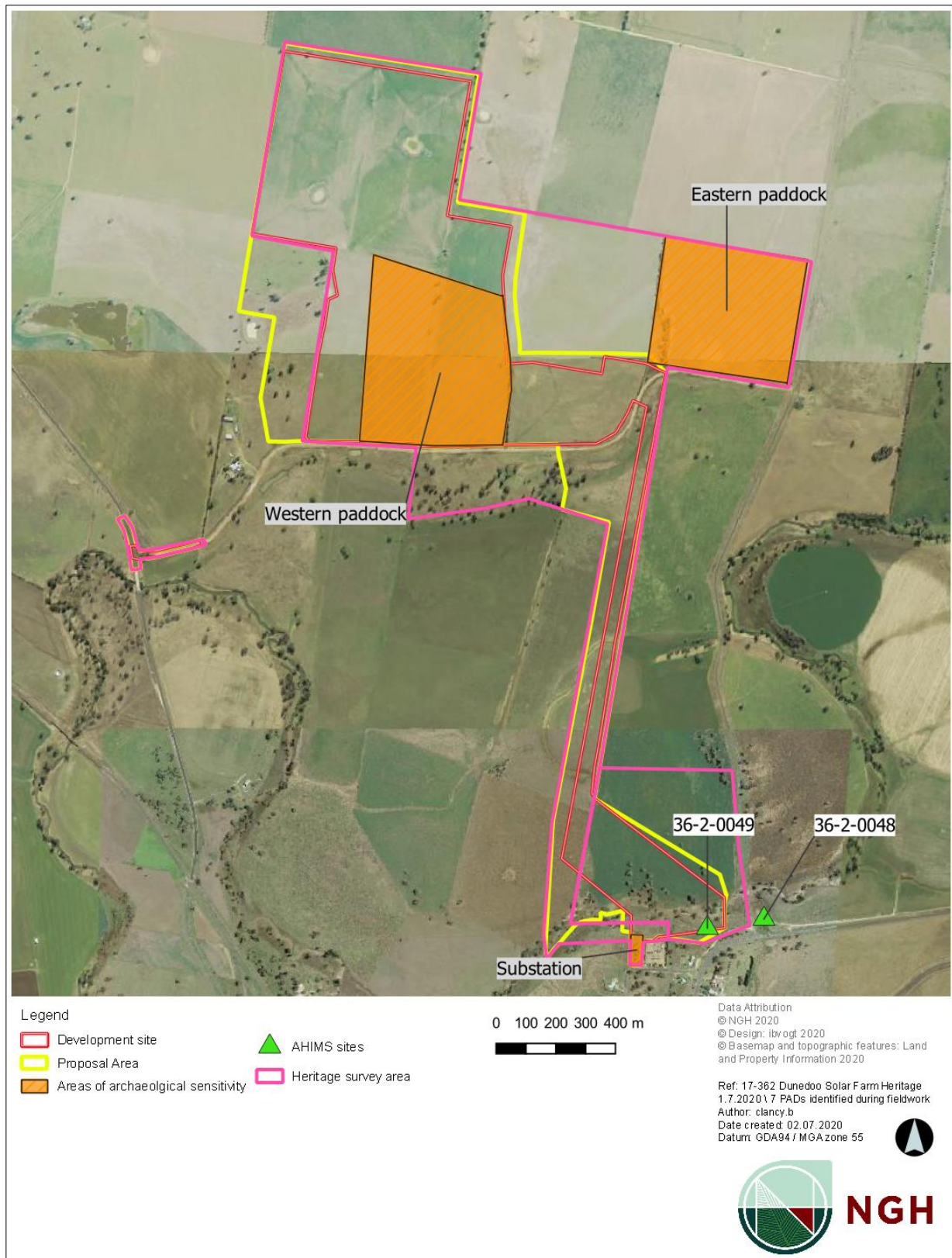


Figure 4-1. Areas of archaeological sensitivity identified during fieldwork.

Table 4-1 Transect information.

Landforms	Number of Survey Transects	Exposure type	Area (ha)	Surveyed area (length m x width m)	Survey Area m ²	Visibility	Effective coverage (area x visibility) m ²	Area surveyed (ha)	% of area effectively surveyed	Survey Result
Alluvial Flats within Subject Land	22	Bare ground, vehicle and animal tracks, exposures near dams and infrastructure, ploughed ground and disturbance areas.	128	12,200 X 30 1,900 x 15 800 x 35	366,000 28,500 28,000	40% average	169,000	16.9	13.2	1 x archaeologically sensitive area 8 x artefact scatters 6 x isolated finds
Disturbed road corridor	2	Bare ground and disturbance areas	1	770 x 20	15,400	5% average	770	0.077	7.7	Nil
Elevated riverbanks	3	Bare ground and disturbance areas	5	700 x 35 300 x 15	24,500 4,500	5% average	1,450	0.145	2.9	1 x archaeologically sensitive area 1 x previously recorded AHIMS site
Total within the Subject Land assessed in this report	27	N/A	134	N/A	N/A	N/A	171,220	17.1	12.8	2 x archaeologically sensitive area 8 x artefact scatters 6 x isolated finds 1 x previously recorded AHIMS site

Landforms	Number of Survey Transects	Exposure type	Area (ha)	Surveyed area (length m x width m)	Survey Area m ²	Visibility	Effective coverage (area x visibility) m ²	Area surveyed (ha)	% of area effectively surveyed	Survey Result
Alluvial Flats outside the Subject Land	12	Bare ground, vehicle and animal tracks, exposures near dams and infrastructure, ploughed ground and disturbance areas.	62	5,700 x 30 1000 x 35	171,000 35,000	40% average	82,400	8.42	13.5	1 x archaeologically sensitive area 6 x artefact scatters 3 x isolated finds
Total within archaeological areas assessed for the Dunedoo Solar Farm	39	N/A	196	N/A	N/A	N/A	253,620	25.36	12.9	3 x archaeologically sensitive area 16 x artefact scatters 9 x isolated finds 1 x previously recorded AHIMS site

4.3. SURVEY RESULTS

Despite the variable visibility encountered during the surveys undertaken for the Dunedoo Solar Farm a total of nine isolated finds and 14 artefact scatters were recorded. Three archaeologically sensitive areas were also identified.

A summary of the Aboriginal sites recorded during the field surveys of the Dunedoo Solar Farm are provided in Table 4-2 and their locations shown in Figure 4-2. The detailed site descriptions are provided in Appendix B. The surface artefact data is provided in Appendix C.

Of the sites recorded during the surveys undertaken for the Dunedoo Solar Farm a total of six isolated finds and eight artefact scatters are located within the Subject Land and proposed Dunedoo Solar Farm development footprint.

The GPS location of the previously recorded site AHIMS#36-2-0049 which is located within one of the transmission line options on the southern bank of the Talbragar River was thoroughly inspected during the survey undertaken in May 2020 however no artefacts were able to be identified. The artefacts at the site were noted in the initial recording in 1998 to be suspected to have been brought in with stockpiled material and the location was described as highly disturbed. The more recent survey of the area by OzArk in 2012 for the proposed Beryl to Dunedoo 66kV Transmission Line also noted that while the site is listed on AHIMS as valid it has actually been previously legally impacted under two permits issued under the NPW Act. The 2012 survey by OzArk was also unable to locate any artefacts remaining within or near the site GPS location and they noted that the site no longer existed. The field survey of the GPS location of the previously recorded site AHIMS#36-2-0049 by NGH archaeologist with Aboriginal community representatives in May 2020 confirm this previous assessment by OzArk and the RAPs commented that the site had previously been significantly impacted and destroyed.

Table 4-2 Summary of Aboriginal sites recorded during surveys for this project

AHIMS	Name	Type	Notes
36-2-0049	DTG/OC27 - Dunedoo 1	Artefact scatter	Previously recorded site which has since been impacted and destroyed. AHIMS should be updated to list the site as destroyed. Located within the Final Subject Land for the Dunedoo Solar Farm as assessed in this report
28-5-0081	Dunedoo Solar AFT 1	Artefact scatter	Within the Final Subject Land for the Dunedoo Solar Farm as assessed in this report
28-5-0082	Dunedoo Solar AFT 2	Artefact scatter	Within the Final Subject Land for the Dunedoo Solar Farm as assessed in this report
28-5-0083	Dunedoo Solar AFT 3	Artefact scatter	Within the Final Subject Land for the Dunedoo Solar Farm as assessed in this report
28-5-0084	Dunedoo Solar AFT 4	Artefact scatter	Within the Final Subject Land for the Dunedoo Solar Farm as assessed in this report
28-5-0085	Dunedoo Solar AFT 5	Artefact scatter	Within the Final Subject Land for the Dunedoo Solar Farm as assessed in this report
28-5-0086	Dunedoo Solar AFT 6	Artefact scatter	Within the Final Subject Land for the Dunedoo Solar Farm as assessed in this report
28-5-0087	Dunedoo Solar AFT 7	Artefact scatter	Within the Final Subject Land for the Dunedoo Solar Farm as assessed in this report
28-5-0088	Dunedoo Solar AFT 8	Artefact scatter	Within the Final Subject Land for the Dunedoo Solar Farm as assessed in this report
28-5-0089	Dunedoo Solar AFT 9	Isolated Find	Within the Final Subject Land for the Dunedoo Solar Farm as assessed in this report
28-5-0090	Dunedoo Solar AFT 10	Isolated Find	Within the Final Subject Land for the Dunedoo Solar Farm as assessed in this report

AHIMS	Name	Type	Notes
28-5-0091	Dunedoo Solar AFT 11	Isolated Find	Within the Final Subject Land for the Dunedoo Solar Farm as assessed in this report
28-5-0092	Dunedoo Solar AFT 12	Isolated Find	Within the Final Subject Land for the Dunedoo Solar Farm as assessed in this report
28-5-0093	Dunedoo Solar AFT 13	Isolated Find	Within the Final Subject Land for the Dunedoo Solar Farm as assessed in this report
28-5-0094	Dunedoo Solar AFT 14	Isolated Find	Within the Final Subject Land for the Dunedoo Solar Farm as assessed in this report
28-5-0095	Dunedoo Solar AFT 15	Artefact scatter	Outside the Final Subject Land for the Dunedoo Solar Farm as assessed in this report
28-5-0096	Dunedoo Solar AFT 16	Artefact scatter	Outside the Final Subject Land for the Dunedoo Solar Farm as assessed in this report
28-5-0097	Dunedoo Solar AFT 17	Artefact scatter	Outside the Final Subject Land for the Dunedoo Solar Farm as assessed in this report
28-5-0098	Dunedoo Solar AFT 18	Artefact scatter	Outside the Final Subject Land for the Dunedoo Solar Farm as assessed in this report
28-5-0099	Dunedoo Solar AFT 19	Artefact scatter	Outside the Final Subject Land for the Dunedoo Solar Farm as assessed in this report
28-5-0100	Dunedoo Solar AFT 20	Artefact scatter	Outside the Final Subject Land for the Dunedoo Solar Farm as assessed in this report
28-5-0080	Dunedoo Solar AFT 21	Isolated Find	Outside the Final Subject Land for the Dunedoo Solar Farm as assessed in this report
28-5-0079	Dunedoo Solar AFT 22	Isolated Find	Outside the Final Subject Land for the Dunedoo Solar Farm as assessed in this report
28-5-0078	Dunedoo Solar AFT 23	Isolated Find	Outside the Final Subject Land for the Dunedoo Solar Farm as assessed in this report

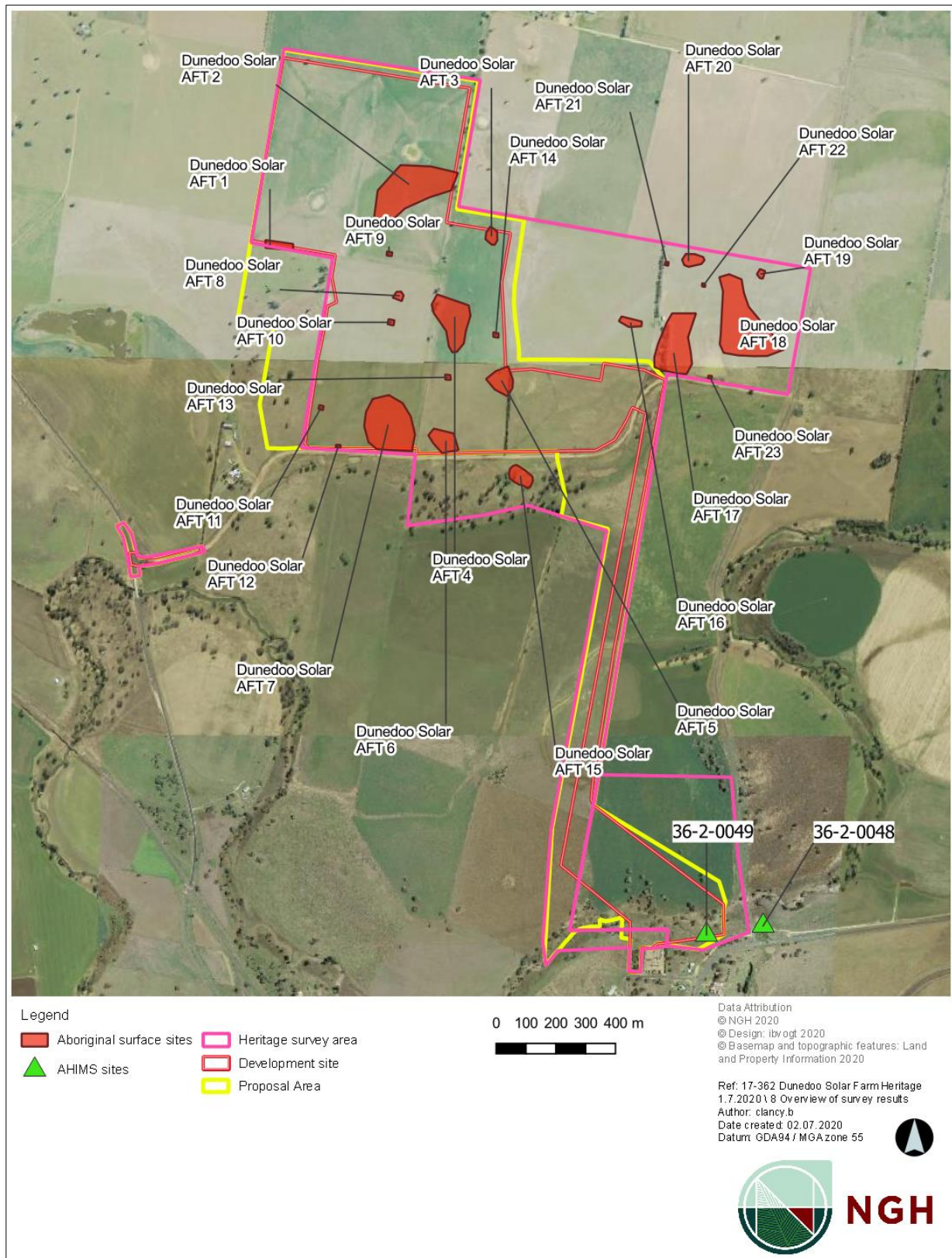


Figure 4-2. Overview of survey results.

4.4. EXCAVATION METHODOLOGY

The subsurface excavation of the areas considered to have potential for *in situ* subsurface deposits that could not be avoided by the proposed development works was undertaken following the *Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales*. As such, the basic parameters of the investigation were limited to the methodology outlined in the Code. The following provides details of the methodology used in the testing strategy for the subsurface testing programme for the Dunedoo Solar Farm. Based on the results of the surveys undertaken for the Dunedoo Solar Farm it was determined that subsurface testing was required to investigate the presence and extent of archaeological material within the archaeologically sensitive areas which were considered to have potential for *in situ* subsurface deposits that could not be avoided by the proposed development.

It was determined that the most effective way of testing the archaeologically sensitive areas identified which at the time were noted to be unable to be avoided by the development was through the hand excavation of a series of test pits along nominal baselines. Test pits were therefore placed along a nominal baseline within the archaeologically sensitive areas as determined with the Aboriginal community representatives and NGH archaeologist. Test pits were placed to investigate the areas at 20 m intervals along nominal baselines to assess the presence or absence of archaeological material within the areas assessed to be archaeologically sensitive. Plates 9 to 12 show the landscape of the archaeologically sensitive areas tested. The result was a total of 76 test pits excavated across the three archaeologically sensitive areas as shown in Figure 4-3.

Test pits were numbered in sequential order as they were excavated in the areas which were referred to as the Western Paddock area, Eastern Paddock area and the Substation area. In areas where higher density artefacts were detected compared to others in the study, additional test pits were placed at 5 m intervals from the test pit to sufficiently assess the area.

The location of the test pits was recorded in the field using a GPS enabled Trimble Nomad, running ArcPad and Samsung Tablet, running QFIELD.

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

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

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

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

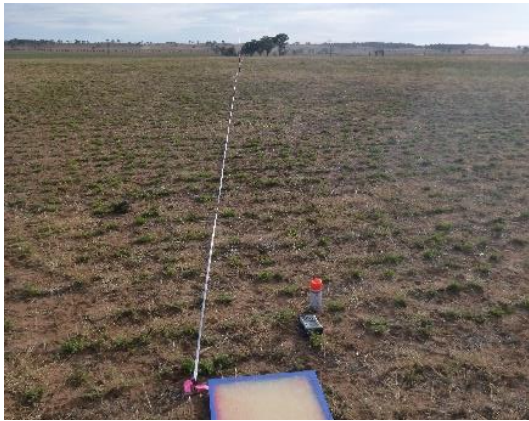


Plate 9. View north from Western Paddock Pit 1 along the transect.



Plate 10. View north from Western Paddock Pit 24.



Plate 11. View east from Eastern Paddock Pits 12-15.



Plate 12. View east of Substation.

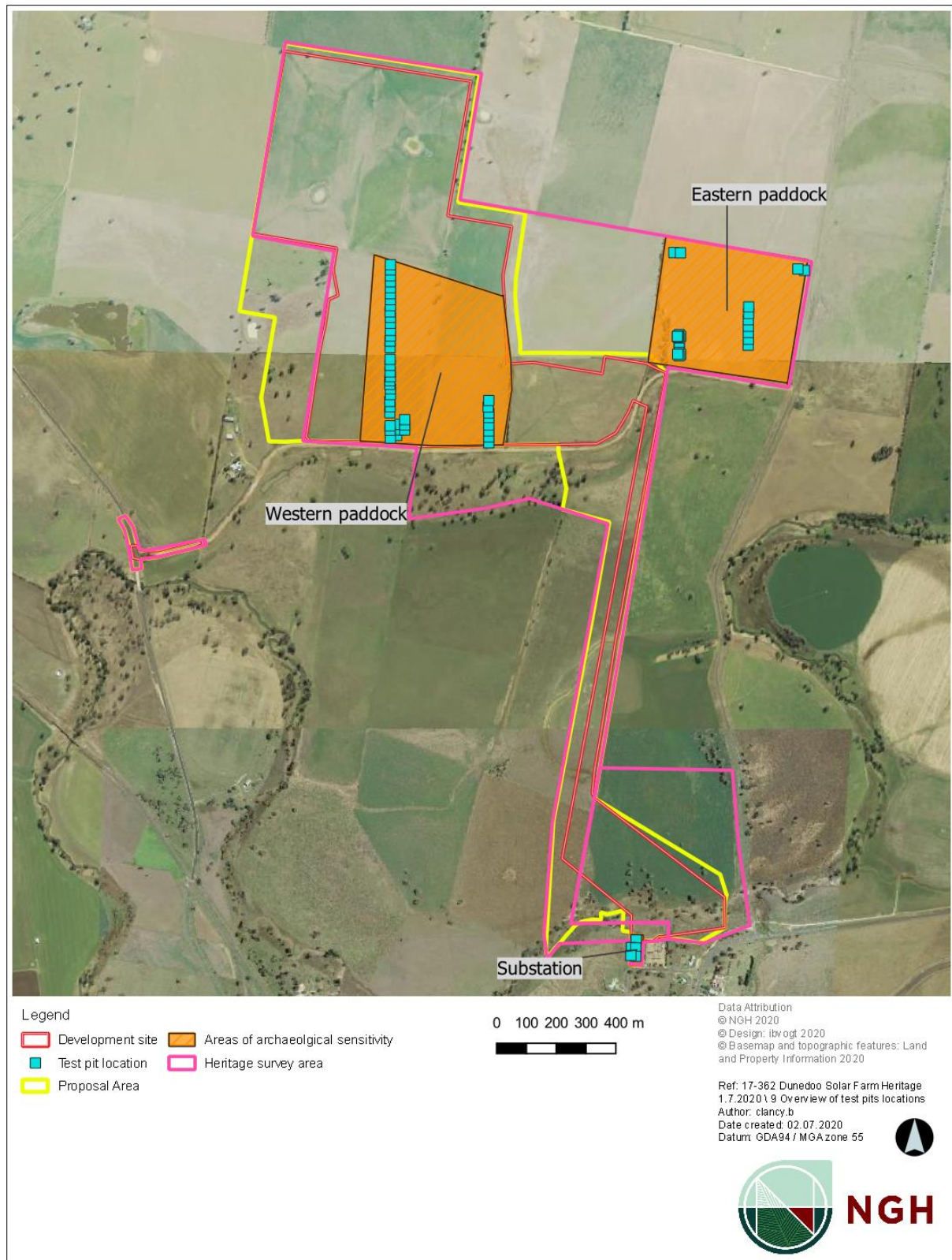


Figure 4-3. Overview of test pits locations

4.5. EXCAVATION RESULTS

4.5.1. Testing Results

Of the 75 test pits excavated across the archaeologically sensitive areas investigated for the Dunedoo Solar Farm only 13 contained stone artefacts as detailed in Table 4-3. Figure 4-4 and Figure 4-5 show the location of the test pits with subsurface artefacts and the full details of all recovered subsurface artefacts are provided in Appendix D. A total of five artefacts were recovered from three of the 43 test pits (Western Paddock Pit 1 to Pit 43) excavated in the Western Paddock. A total of 35 artefacts were recovered from seven of the 28 test pits (Eastern Paddock Pit 1 to Pit 43) excavated within the Eastern Paddock. A total of 45 artefacts were recovered from two of the five test pits (Substation Pit 1 to Pit 5) excavated within the Substation area. Plates 13 to 16 show some of the artefacts recovered from the subsurface testing programme of work. From the 76 test pits, a total of 3.3 m³ of deposit was excavated and sieved across the project area. Test pits ranged in depth from 5 cm to 60 cm. All soil descriptions are provided in Appendix E. The artefacts recovered from the subsurface testing programme were a mixture of flakes and cores manufactured from quartz, silcrete, glass, fine-grained siliceous and basalt (see Plates 13-18) as detailed in Table 4-4 and Table 4-5.

Following the completion of the subsurface testing program the proposed development area was significantly reduced in size and redesigned. Consequently, the Eastern Paddock area is no longer within the Subject Land as assessed in this report. Therefore, no further detailed analysis of the results of the testing program undertaken within the Eastern Paddock is included in this report. The subsurface artefacts recovered from the Eastern Paddock and Western Paddock were however incorporated into the sites with surface artefacts which were initially recorded during the survey.

All three artefacts recovered from the Western Paddock were quartz flakes. The low number of artefacts recovered from the subsurface testing programme across the Western Paddock prevents any meaningful analysis of technology or density but does provide an indication of the low distribution of subsurface archaeological material within the proposed solar array areas within the Subject Land.

The highest artefact density was identified within the Substation area. Pit 3 within the Substation area had the highest density with 27 artefacts recovered which equates to 108 artefacts/ m². Pit 1 within the Substation area had 18 artefacts recovered which equates to 72 artefacts/ m² which is also considered a high density. The artefacts recovered from the Substation area were predominantly flakes (n=30; 66.7%) with a lesser number of proximal fragments (n=5; 11.1%), flakes pieces (n=5; 11.1%), cores (n=4; 8.9%) and a medial fragment (n=1; 2.2%). The majority of the artefacts were manufactured from quartz (n=42; 93.3%), which is a common lithology for the Dunedoo area, with a lesser number of basalt (n=3; 6.7%). All the artefacts were recovered from the upper deposits, 0-30 cm below the surface. A total of thirteen artefacts were recovered from 0-10 cm below the surface (29%), a total of 25 artefacts recovered from 10-20 cm below the surface (55.5%) and a total of seven artefacts were recovered from 20-30 cm below the surface (15.5%). The presence of flakes, broken flakes, flaked pieces and cores in relatively high densities within the Substation Pits 1 and 3 suggest that tool manufacture likely occurred onsite. The subsurface artefacts recovered from the Substation area were assigned the site name Dunedoo Solar AFT 24 as described in Appendix B.

Given the low density of subsurface material recovered from the Western Paddock no further salvage excavation of the areas proposed for impact by the solar arrays and other infrastructure for the Dunedoo Solar Farm is deemed to be warranted. However, the high density subsurface material recovered from the Substation Pit 1 and Pit 3 suggests that further mitigation measures such as an excavation salvage programme would be warranted around these pits if impacts to the Substation area are unable to be avoided by the final development design.



Plate 13. Western Paddock Pit 12, Spit 1, quartz flake (Artefact 84).



Plate 14. Eastern Paddock Pit 4, Spit 2, glass flake (Artefact 48).



Plate 15. Eastern Paddock Pit 19c, Spit 2, silcrete flake (Artefact 64).



Plate 16. Substation Pit 3, Spit 2, basalt core (Artefact 37).



Plate 17. Substation Pit 1, Spit 2, basalt proximal fragment (Artefact 13).



Plate 18. Substation Pit 3, Spit 3, quartz flake (Artefact 41).

Table 4-3. Distribution of artefacts recovered during the testing programme by test pit and spit.

Test Pit No	SPIT 1 (0-10 cm)	SPIT 2 (10-20 cm)	SPIT 3 (20-30 cm)	SPIT 4 (30-40 cm)	SPIT 5 (40-50 cm)	TOTAL
Western Paddock Pit 5	1	-	-	-	-	1
Western Paddock Pit 10	2	-	-	-	-	2
Western Paddock Pit 12	2	-	-	-	-	2
Eastern Paddock Pit 1	2	1	-	-	-	3
Eastern Paddock Pit 4	2	3	-	-	-	5
Eastern Paddock Pit 5	1	-	-	-	-	1
Eastern Paddock Pit 19A	1	5	1	-	-	7
Eastern Paddock Pit 19C	3	6	-	-	-	9
Eastern Paddock Pit 19D	7	2	-	-	-	9
Eastern Paddock Pit 19E	1	-	-	-	-	1
Substation Pit 1	13	5	-	-	-	18
Substation Pit 3		20	7	-	-	27
Total	35	42	8	0	0	85

Table 4-4. Distribution of material recovered during the testing programme.

Lithologies	Western Paddock	Eastern Paddock	Substation	TOTAL
Quartz	5	7	42	54
Silcrete	-	20	-	20
Fine-grained silicious	-	2	-	2
Glass	-	6	-	6
Basalt	-	-	3	3
TOTAL	5	35	45	85

Table 4-5. Distribution of artefact types recovered during the testing programme.

Artefact Types	Western Paddock	Eastern Paddock	Substation	TOTAL
Flakes	5	23	30	58
Flaked Pieces		9	5	14
Proximal Fragment		1	5	6
Medial Fragment			1	1
Distal fragment		1		1
Core fragment		1		1
Cores			4	4
TOTAL	5	35	45	85

4.5.2. Deposit Characteristics

The general sediment units described below that were recorded across the areas tested relevant to the Subject Land for the Dunedoo Solar Farm are shown in Table 4-6.

The soils across the Western Paddock area generally comprised of two main sediment units which consisted of a brown to reddish brown sandy silty loam topsoil with no gravels, overlying a hard, red


clay. The clay layer generally appeared at a depth of 10 to 50 cm. Occasionally, the test pits in the Western Paddock area went straight from the sandy silty loam topsoil onto clay with a number of pits exhibiting a largely similar deflated soil profile with very shallow deposits.

The deposits across the Substation area was characterised by light brown to reddish brown poorly sorted silty sandy loam. The soils across the Substation area generally comprised of three main sediment units which consisted of a brown to a dark brown sandy silty loam topsoil with no gravels, overlying a light reddish brown sandy clay over a hard red clay. The base clay layer generally appeared at a depth of 10 to 30 cm. One of the five test pits excavated in the Substation area went straight from the sandy silty loam topsoil onto clay at 10 cm while another pit was also noted to contain fill material, possibly from the stabilisation and levelling of the area. The pits had a varying depth from 10-30 cm deep, with hard red clay at the base of all pits.

The areas excavated all had grasses covering the area which meant that roots were present in the initial 10 cm of deposit excavated. The excavation was also made difficult by the compaction of the soils due to dryness and extreme drought conditions affecting the area at the time when the subsurface testing programme was undertaken. Consequently, the primary hand tools used for excavation were mattocks and crowbars. The presence of insects and roots were noted to be present through the deposits across the areas tested. The impacts of these actions results in the continual movement of soil and through it the movement of stone artefacts in a process known as bioturbation. However, the greatest impact on the deposits is through the agricultural and pastoral activities that have occur on the land including vegetation clearing and ploughing which is generally noted to disturb the top 10-20 cm of deposits.

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

Table 4-6 Sediment units at Dunedoo Solar Farm

Testing Area	Unit	Image	Sediment Description	Artefacts Present
Western Paddock	1		Brown to reddish brown sandy silty loam	5
	2		Red clay	NA
Substation	1		Dark brown to reddish brown sandy silty loam	19
	2		light reddish brown sandy clay	26
	3		Red clay	NA

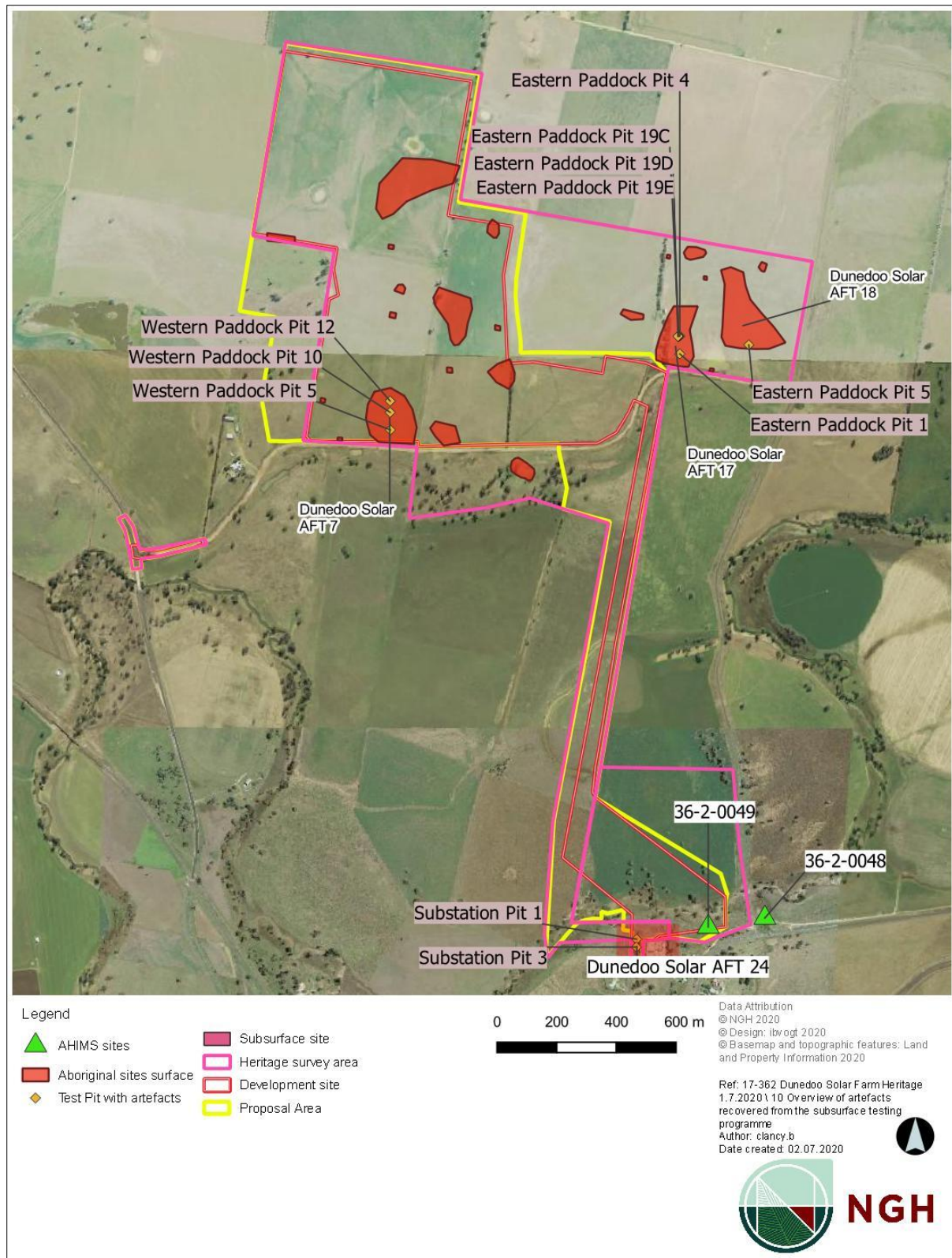


Figure 4-4. Overview of artefacts recovered from the subsurface testing programme of works.

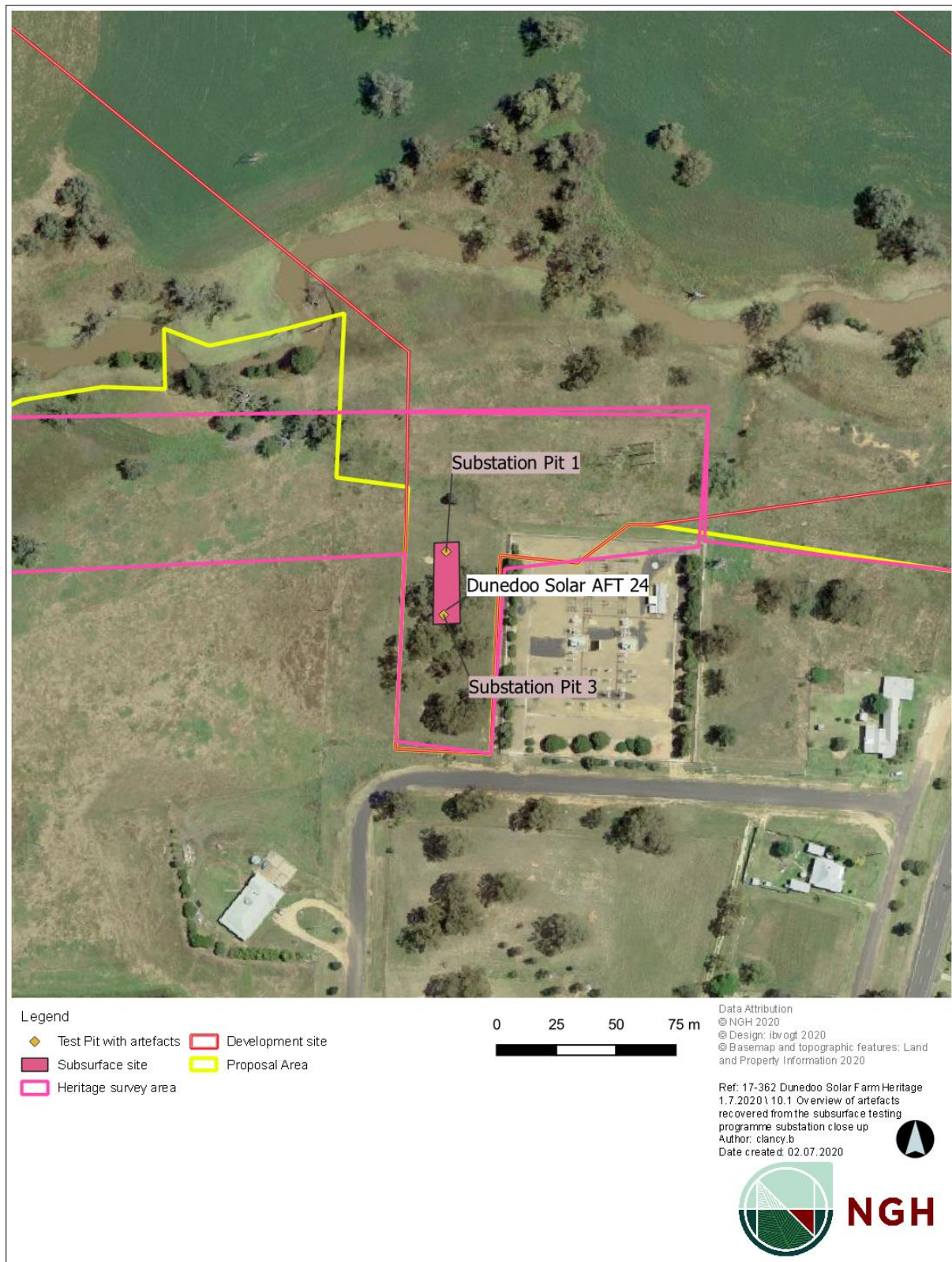


Figure 4-5. Overview of artefacts recovered from the subsurface testing programme of works at the Substation area.

4.6. DISCUSSION

The predictions, based on modelling for the Subject Land, were that isolated artefacts and artefact scatters consisting predominately of quartz objects were the most likely manifestation of Aboriginal occupation in the area. Modified trees were also noted to likely occur as isolated paddock trees or in areas of remnant vegetation. The results of the survey and subsurface testing programme indicate that low to moderate density artefact scatters and isolated Aboriginal objects can occur throughout the landscape, even in areas of highly disturbed farming activities. While no modified trees were recorded within the Subject Land, this is likely the result of clearing activities with few mature trees remaining. However, it is noted that modified trees are still possible to occur in the wider region outside the areas assessed.

Areas of archaeological sensitivity were also predicted to occur in areas with higher densities of surface artefacts across the Subject Land and on the elevated banks south of the Talbragar River. While the subsurface testing identified that there were less artefacts present than expected the very low density of recovered artefacts across the solar farm array area suggests that the whole of the proposed solar farm development area may contain a very low density of subsurface artefacts which are predominantly manufactured from quartz, interspersed with areas with no artefactual material.

No direct evidence of long term base camps were identified within the Subject Land during the field survey and subsurface testing programme however some moderate density sites were recorded. The sites identified in the archaeological assessments for the Dunedoo Solar Farm were scattered across the Subject Land and are representative of the opportunistic use and movement of small to medium groups of Aboriginal people through the landscape occupying short term camps or traveling through the Subject Land. The area was likely used intermittently over a period of time for camping, hunting and gathering resources. The sites identified are most likely representative of the repeated use of the associated back country near the Talbragar River. Based on this assumption, there is every chance that there are similar low density artefact scatters or isolated artefacts across similar landforms in the Dunedoo area and in close proximity to the Talbragar River. It also suggests that Aboriginal stone objects are more prevalent in the Dunedoo area than previously envisaged.

The majority of the artefacts recorded during the survey and subsurface testing programme were manufactured from quartz which is common for the general region with a lesser number of chert, tuff, quartzite, fine grained siliceous and basalt artefacts also recorded. The presence of flakes, broken flakes, flaked pieces, hammerstones and cores in low to moderate densities across the Subject Land indicates that tool manufacture also likely occurred onsite. The low number and small average size of cores recorded during the survey and subsurface testing programme is likely to be representative of the low discard rate of quality raw materials in the area until they were exhausted. The presence of the two edge ground axes is also noted to suggest that some artefacts were also being transported through the landscape.

The use of a volcanic and basalt material for the manufacture of the two edge-grounded axes and a flaked axe recorded is common for the region. The presence of grinding grooves in the wider region with the nearest grinding groove approximately 7.8 km away and eight other grinding grooves sites within 18 km of the Subject Land suggests that such artefacts may be common in the region.

Given the level of clearing within the Subject Land, the absence of modified trees in the area assessed is not considered unusual. It is likely that the dominance of modified trees as a site type in the local area is related to the more obtrusive nature of modified trees compared to stone artefacts. The prevalence of the Aboriginal community recording possible modified trees on the AHIMS database may also be the reason for the high number of modified trees recorded in the wider area.

It should also be noted that the results of this survey and subsurface testing programme of works have substantially increased the number of stone artefact sites recorded in the local area. In terms of the current proposal, extrapolating from the results of this survey and subsurface testing programme, it is

likely that additional low density surface and subsurface artefacts could occur within the proposed development footprint and the surrounding areas. The density of any additional subsurface artefacts within the proposed development footprint for the solar farm is likely to be very low with the testing programme confirming that the soils are heavily deflated with generally very shallow deposits in the area.

Based on the results of the subsurface testing programme we consider that there is little value in undertaking further investigations such as salvage excavation within the proposed development footprint for the solar farm based on the generally low density of subsurface material identified through the testing programme conducted to date. However, the high density subsurface material recovered from the Substation Pit 1 and Pit 3 suggests that further mitigation measures such as an excavation salvage programme may be warranted around these pit locations if impacts to the Substation area are unable to be avoided by works.

5. CULTURAL HERITAGE VALUES AND STATEMENT OF SIGNIFICANCE

The assessment of the significance of Aboriginal archaeological sites is currently undertaken largely with reference to criteria outlined in the ICOMOS Burra Charter (Australian ICOMOS 2013). Criteria used for assessment are:

- *Social or Cultural Value:* In the context of an Aboriginal heritage assessment, this value refers to the significance placed on a site or place by the local Aboriginal community – either in a contemporary or traditional setting.
- *Scientific Value:* Scientific value is the term employed to describe the potential of a site or place to answer research questions. In making an assessment of scientific value issues such as representativeness, rarity and integrity are addressed. All archaeological places possess a degree of scientific value in that they contribute to understanding the distribution of evidence of past activities of people in the landscape. In the case of flaked stone artefact scatters, larger sites or those with more complex assemblages are more likely to be able to address questions about past economy and technology, giving them greater significance than smaller, less complex sites. Sites with stratified and potentially in situ sub-surface deposits, such as those found within rock shelters or depositional open environments, could address questions about the sequence and timing of past Aboriginal activity, and will be more significant than disturbed or deflated sites. Groups or complexes of sites that can be related to each other spatially or through time are generally of higher value than single sites.
- *Aesthetic Value:* Aesthetic values include those related to sensory perception and are not commonly identified as a principal value contributing to management priorities for Aboriginal archaeological sites, except for art sites.
- *Historic Value:* Historic value refers to a site or place's ability to contribute information on an important historic event, phase or person.
- *Other Values:* The Burra Charter makes allowance for the incorporation of other values into an assessment where such values are not covered by those listed above. Such values might include Educational Value.

All sites or places have some degree of value, but of course, some have more than others. In addition, where a site is deemed to be significant, it may be so on different levels or contexts ranging from local to regional to national, or in very rare cases, international. Further, sites may either be assessed individually, or where they occur in association with other sites the value of the complex should be considered.

5.1. SOCIAL OR CULTURAL VALUE

While the true cultural and social value of Aboriginal sites can only be determined by local Aboriginal people, as a general concept, all sites hold cultural value to the local Aboriginal community. An opportunity to identify cultural and social value was provided to all the registered Aboriginal stakeholders for this proposal through the draft reporting process.

Feedback about the cultural value of the sites while in the field with the representatives was that all sites hold cultural value to the Aboriginal community. It was clear from the conversations held in the field that the community view the stone artefacts as important and would like to see the surface artefacts that are unable to be avoided by the development collected before any construction works occurs. It was noted during the conversations that there was importance placed on collecting the artefacts and placing them in a safe location to avoid future disturbance.

The Subject Land as a whole was noted by the RAPs to be very important to Wiradjuri people given the proximity to Talbragar River. Talbragar River is a major waterway in the area and is considered to have cultural value to the Aboriginal community.

As part of the consultation process an Aboriginal community member provided culturally sensitive information that was relevant to the study area. This information related to the location of an historic event where it is believed Aboriginal people were shot and killed near Dunedoo. This site is located outside the Subject Land however due to its close proximity it was noted to be relevant and information was shared with the NGH archaeologists. The location of this site is noted to be culturally sensitive and further information regarding the possible location is treated in this report as confidential. The Aboriginal community have confirmed that the site is located outside the Subject Land and have not raised any issues about the proximity of the site to the Dunedoo Solar Farm.

5.2. SCIENTIFIC (ARCHAEOLOGICAL) VALUE.

The research potential of the sites located during this assessment within the Subject Land is considered to be low. While the presence of the sites can be used to assist in the development of site modelling for the local landscape, their scientific value for further research is limited.

While the artefacts themselves are intrinsically interesting in terms of their base technical information their current lack of temporal context and the absence of information about local resources makes further conclusions about land use difficult. Their scientific value for further research is also limited due to the disturbed nature of the landscape and the subsequent movement of objects by clearing and ploughing activities.

The two edge-grounded axes and flaked axe recorded during the surveys for the Dunedoo Solar Farm are located within the sites Dunedoo Solar AFT 16, Dunedoo Solar AFT 17 and Dunedoo Solar AFT 19. The artefacts manufactured from glass are also located within the site Dunedoo Solar AFT 17. These three sites are considered of higher archaeological value due to the relative rarity of axes and glass artefacts compared to common flaking material of cores and flakes. These sites are however located outside the Subject Land and will not be impacted by the proposed Dunedoo Solar Farm.

Given the very low density of subsurface material recovered from the Western Paddock subject to testing as part of this assessment within the Subject Land no further salvage excavation of the solar farm area within the Subject Land is deemed to be warranted. However, the high density subsurface material recovered from the Substation area within Pit 1 and Pit 3 suggests that further mitigation measures such as an excavation salvage programme is warranted around these pit locations if impacts to the Substation area are unable to be avoided by works.

The findings of the archaeological investigations undertaken for the Dunedoo Solar Farm project have substantially increased the number of sites listed in the AHIMS database for the area. In terms of representativeness and rarity however, we would argue that there are likely to be many hundreds of

such sites in the local area. The relatively low number of sites in AHIMS in the local area is merely an indication that few surveys have been undertaken in the Dunedoo area and therefore they are yet to be found. The nature of Aboriginal occupation in almost any landscape in Australia is that stone artefact sites considerably outnumber any other site type, including scarred trees.

5.3. AESTHETIC VALUE

There are no aesthetic values associated with the archaeological site *per se*, apart from the presence Talbragar River and the presence of Aboriginal artefacts in the landscape. The modified and heavily disturbed landscape of the Subject Land however detracts from this aesthetic setting.

5.4. HISTORIC VALUE

As part of the consultation process an Aboriginal community member provided culturally sensitive information that was relevant to the project area. This information related to the location of an historic event where it is believed Aboriginal people were shot and killed near Dunedoo. This site is located outside the Subject Land however due to its close proximity it was noted to be relevant and information was shared with the NGH archaeologists. The location of this site is noted to be culturally sensitive and further information regarding the possible location is treated in this report as confidential. The Aboriginal community have confirmed that the site is located outside the Subject Land and have not raised any issues about the proximity of the site to the Subject Land. It is concluded that there are no known historic values within the Subject Land, the sites identified or links to known important historic events, phases or persons beyond that noted above.

5.5. OTHER VALUES

The area may have some educational value (not related to archaeological research) through educational material provided to the public about the Aboriginal occupation and use of the area, although the archaeological material is primarily within private property and there is little for the public to see.

6. PROPOSED ACTIVITY

6.1. HISTORY AND LANDUSE

It has been noted above that historically the Subject Land has been impacted through land use practices, in particular clearing, ploughing and grazing.

The implications for this activity are that the archaeological record has been compromised in terms of the potential for scarred trees to remain outside the areas of remnant vegetation. The implication for stone artefacts is that they may have been damaged or moved but they are likely to be present and remain in the general area they were discarded by Aboriginal people.

Despite these impacts, Aboriginal artefacts remain in the area, indicating the presence of past Aboriginal people and providing indications of their use of this landscape.

6.2. PROPOSED DEVELOPMENT ACTIVITY

As noted in section 1.2, the proposal involves the construction of a solar farm. The power generated will be fed into the National Electricity Market (NEM) via a new transmission line which currently has two options for connection to the existing Essential Energy Dunedoo substation.

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

The Dunedoo Solar Farm is expected to operate for around 30 years. The construction phase of the proposal is expected to take less than 18 months. After the initial 30 year operating period, the solar farm would either be decommissioned, removing all above ground infrastructure and return the site to its existing land capability, or repowered with new PV equipment subject to landowner and planning consents.

The development activity will therefore involve disturbance of the ground during the construction of the solar farm and the transmission line to the existing Essential Energy Dunedoo substation. Once established however, there would be minimal ongoing disturbance of the ground surface with occasional maintenance activities.

6.3. ASSESSMENT OF HARM

As described in this report, a total of nine isolated finds and 15 artefact scatters (with surface and/or subsurface artefacts) were recorded during archaeological investigations undertaken for the Dunedoo Solar Farm. A single previously recorded AHIMS site is also located within the Subject Land.

Table 6-1 and Table 6-2 provide a summary of sites to be impacted and avoided by the development of the Dunedoo Solar Farm within the Subject Land. Table 6-3 details the degree of harm and the consequence of that harm upon the heritage value of each site recorded during archaeological investigations undertaken for the Dunedoo Solar Farm within the Subject Land.

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

Site Type	Type of Harm	Degree of Harm	Consequence of harm	No. of Sites	% of site type identified in surveys for the project	% of site type within the Subject Land
Isolated Finds	Direct	Complete	Total loss of value	6	66.7	100
	Nil	Nil	Not Applicable	3	33.3	N/A
Artefact Scatters	Direct	Complete	Total loss of value	10	62.5	100
	Nil	Nil	Not Applicable	6	37.5	N/A
Previously recorded site	Direct	Complete	Total loss of value	1	NA	100

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

Sites impacted within Final Subject Land	Sites avoided as outside Final Subject Land
<ul style="list-style-type: none"> DTG/OC27 - Dunedoo 1 (Artefact Scatter) Dunedoo Solar AFT 1 (Artefact Scatter) Dunedoo Solar AFT 2 (Artefact Scatter) Dunedoo Solar AFT 3 (Artefact Scatter) Dunedoo Solar AFT 4 (Artefact Scatter) Dunedoo Solar AFT 5 (Artefact Scatter) Dunedoo Solar AFT 6 (Artefact Scatter) Dunedoo Solar AFT 7 (Artefact Scatter) Dunedoo Solar AFT 8 (Artefact Scatter) Dunedoo Solar AFT 9 (Isolated Find) Dunedoo Solar AFT 10 (Isolated Find) Dunedoo Solar AFT 11 (Isolated Find) Dunedoo Solar AFT 12 (Isolated Find) Dunedoo Solar AFT 13 (Isolated Find) Dunedoo Solar AFT 14 (Isolated Find) Dunedoo Solar AFT 24 (Artefact Scatter) 	<ul style="list-style-type: none"> Dunedoo Solar AFT 15 (Artefact Scatter) Dunedoo Solar AFT 16 (Artefact Scatter) Dunedoo Solar AFT 17 (Artefact Scatter) Dunedoo Solar AFT 18 (Artefact Scatter) Dunedoo Solar AFT 19 (Artefact Scatter) Dunedoo Solar AFT 20 (Artefact Scatter) Dunedoo Solar AFT 21 (Isolated Find) Dunedoo Solar AFT 22 (Isolated Find) Dunedoo Solar AFT 23 (Isolated Find)

Figure 6-1 shows the location of the sites and the proposed development footprint for the Dunedoo Solar Farm. Figure 6-2 and Figure 6-3 provide a close up of the proposed development impact on the sites recorded during archaeological investigations undertaken for the Dunedoo Solar Farm, including the previously recorded AHIMS site within the Subject Land..

It should be noted that significant design changes to the Dunedoo Solar Farm area and layout have been made subsequent to the initial survey and subsurface testing program being completed. The development footprint has therefore been significantly reduced and the Dunedoo Solar Farm will now avoid six artefact scatters and three isolated finds (Dunedoo Solar AFT 15 to Dunedoo Solar AFT23). All impacts to the sites with axes (Dunedoo Solar AFT 16, Dunedoo Solar AFT 17 and Dunedoo Solar AFT 19) and artefacts manufactured from glass (Dunedoo Solar AFT 17), which are considered of higher archaeological value, will now be avoided by the proposed works for the Dunedoo Solar Farm.

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

Of the six isolated finds, nine artefact scatters (with surface and/or subsurface artefacts) and the single previously recorded AHIMS site within the redefined Subject Land all will be impacted by works proposed for the construction of solar arrays, tracks, fencing and associated infrastructure. The impact to these 16 sites with stone artefacts is likely to be most extensive where earthworks occur such as the installation of cabling and the transmission line poles, which may involve the removal, breakage or displacement of artefacts. This is considered a direct impact on the sites and the Aboriginal objects by the development in its present form.

The proposed construction methodology for the Dunedoo Solar Farm will however result in only small areas of disturbance. The construction of access and maintenance tracks may involve some grading but given the flat nature of the majority of the terrain, this is likely to be minimal. The installation of the solar arrays involves drilling or screwing the piles into the ground and no widespread ground disturbance work such as grading is required to accomplish this. The major ground disturbance will be the trenching for cables and vehicle movement during construction. Major earthworks would likely be required for the extension of the Essential Energy Dunedoo Substation.

The assessment of harm overall for the Dunedoo Solar Farm is therefore assessed as low.

6.4. IMPACTS TO VALUES

The values potentially impacted by the development are any social and cultural values attributed to the artefacts and the sites by the local Aboriginal community. The extent to which the loss of the sites or parts of the sites would impact on the community is only something the Aboriginal community can articulate.

The impact to scientific values for this development are summarised in Section 5 and detailed in Table 6-3. A total of 16 stone artefact sites which are primarily assessed as having low scientific value are proposed to be impacted by the development of the Dunedoo Solar Farm. While all the stone artefact sites within the Subject Land are rated as having total loss of scientific value it is argued that there are likely to be a number of similar sites in the local area and therefore the impact to the overall local archaeological record is considered to be low. Additionally, there are eight sites with stone artefact that are no longer within the proposed development footprint as the Subject Land for the Dunedoo Solar Farm has been reduced which will not be harmed.

The stone artefacts within the Subject Land have little research value apart from what has already been gained from the information obtained during the present assessment. This information relates more to the presence of the artefacts and in the development of Aboriginal site modelling, which has largely now been realised by the recording. The intrinsic values of the artefacts themselves may be affected by the development of the Subject Land. Any removal of the artefacts, or their breakage would reduce the low scientific value they retain.

Figure 6-1 shows the sites to be impacted by the proposed Dunedoo Solar Farm works. No other values have been identified within the Subject Land that would be affected by the development of the Dunedoo Solar Farm.

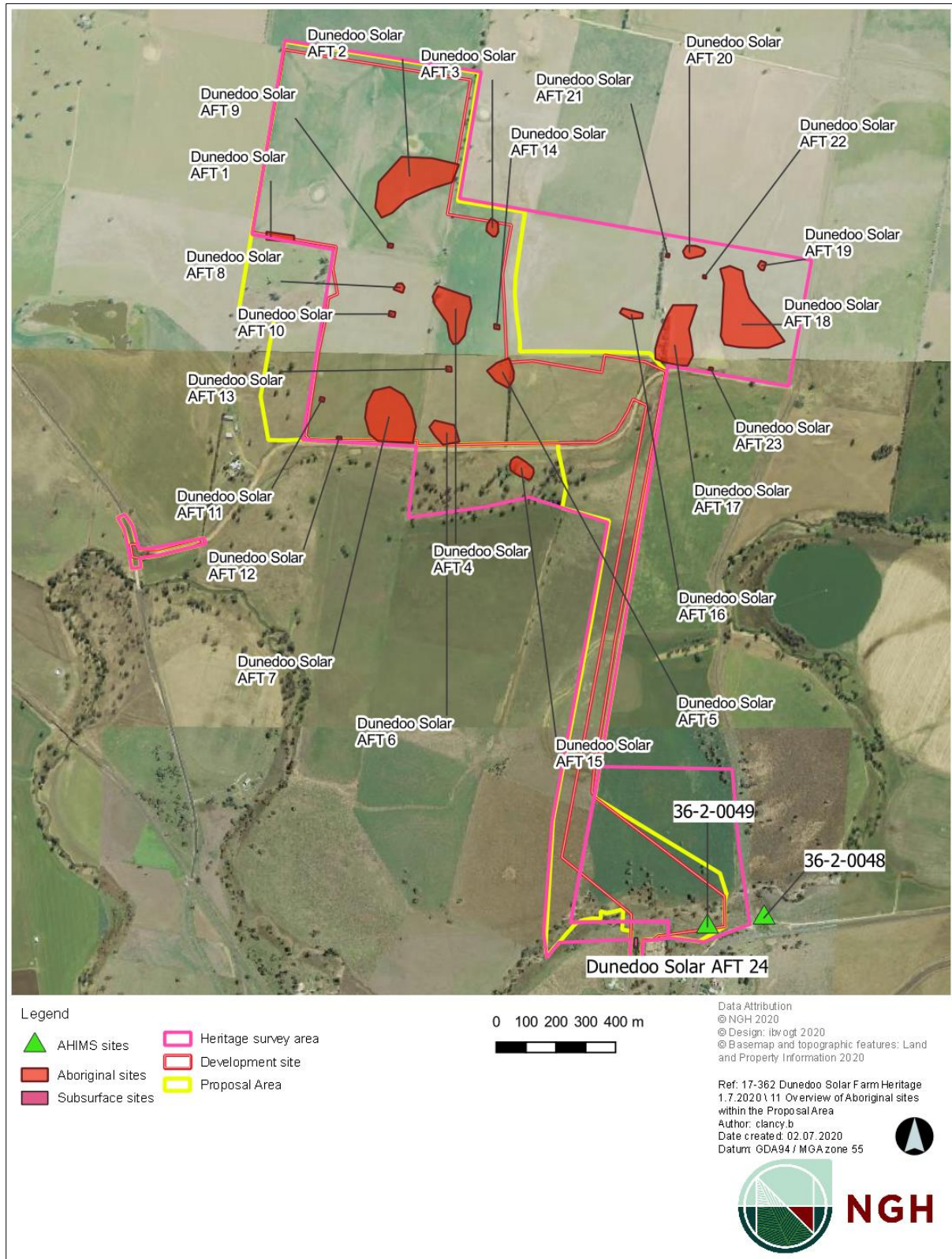


Figure 6-1. Overview of Aboriginal sites recorded during archaeological investigations for the Dunedoo Solar Farm.

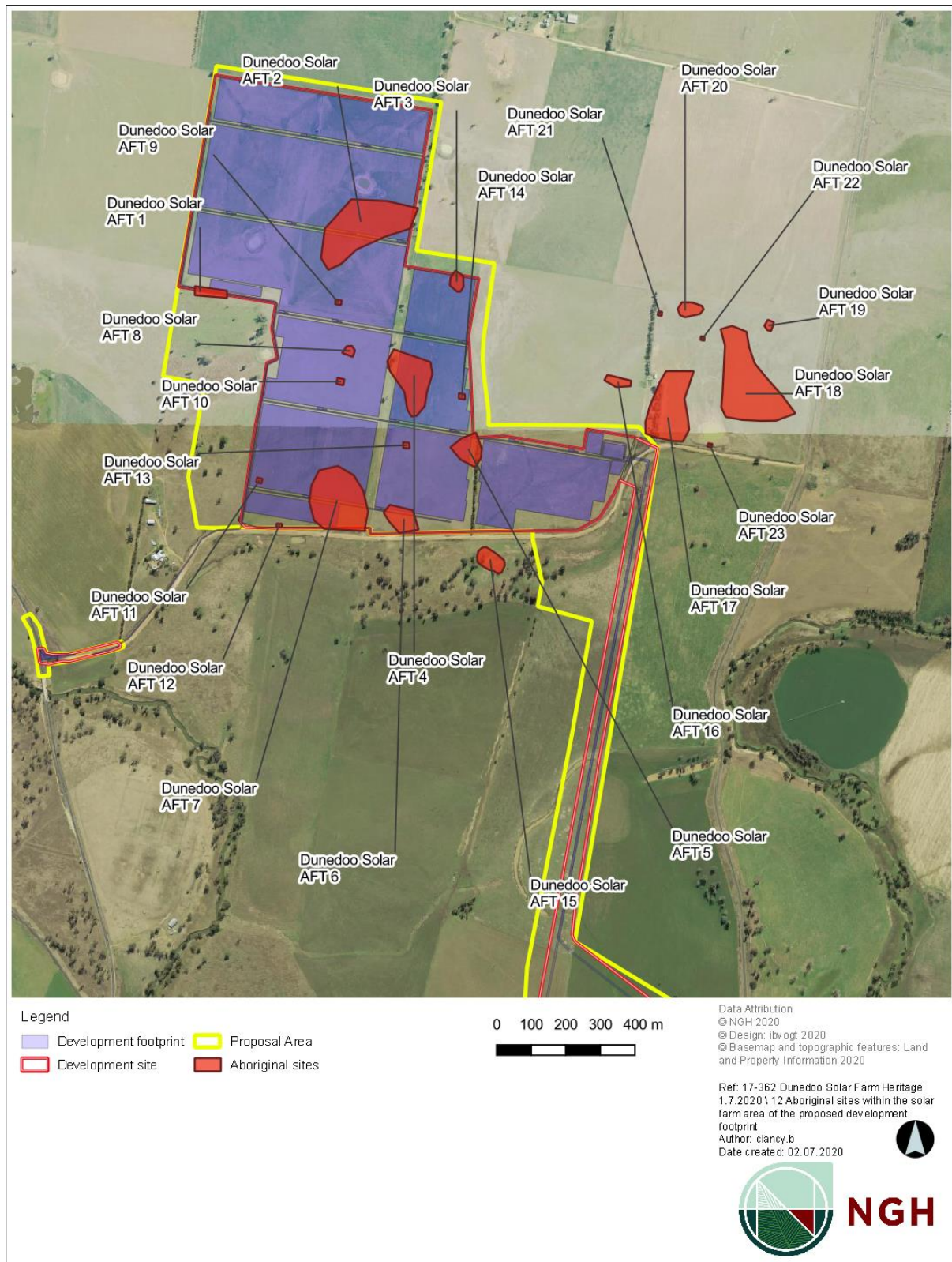


Figure 6-2. Aboriginal sites within the solar farm area of the proposed development footprint.

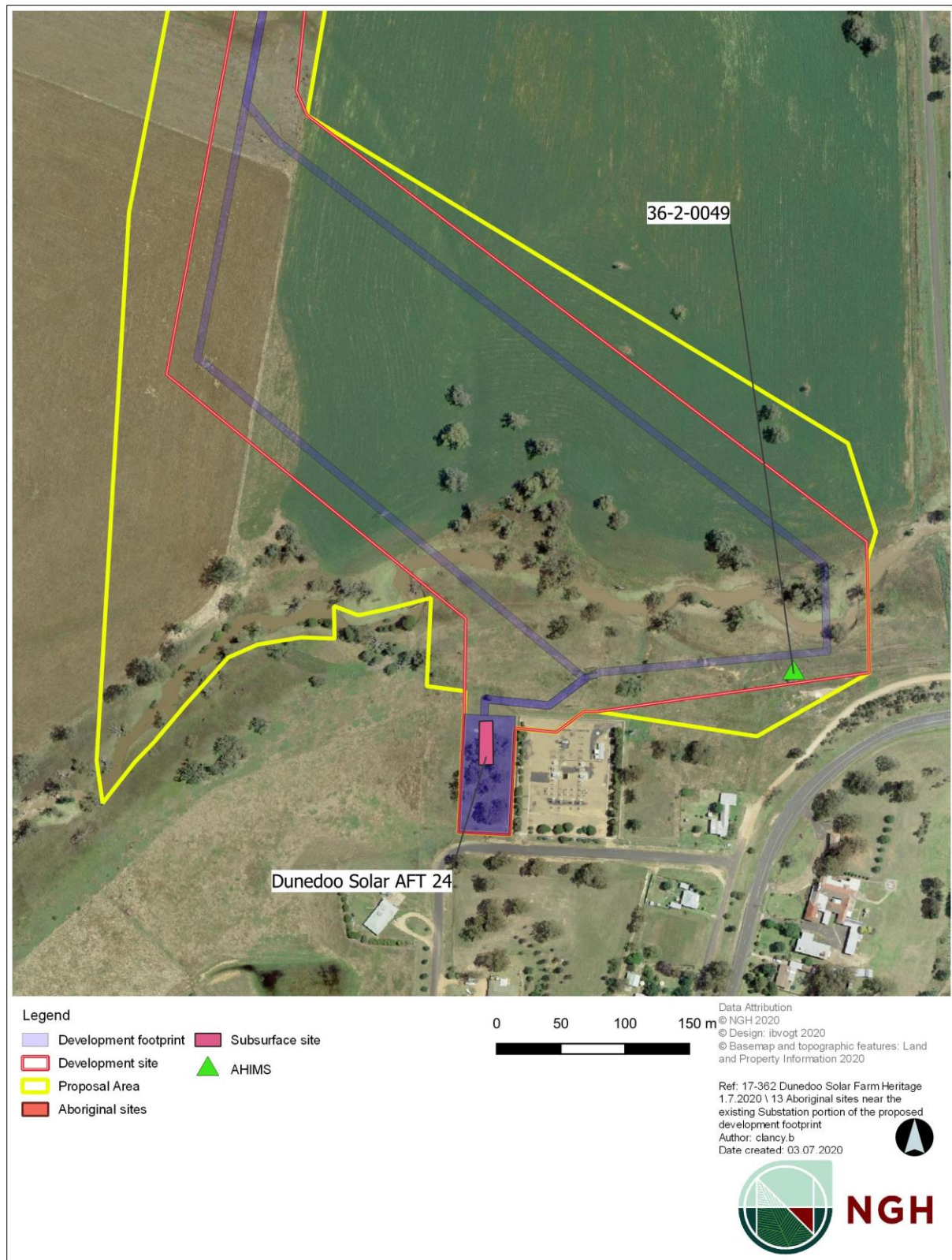


Figure 6-3. Aboriginal sites near the existing Substation portion of the proposed development footprint.

Table 6-3. Identified risk to known Aboriginal sites recorded during archaeological investigations for the Dunedoo Solar Farm.

AHIMS #	Site name	Artefact Type	Site integrity	Scientific significance	Type of harm	Degree of harm	Consequence of harm	Recommendation
36-2-0049	DTG/OC27 - Dunedoo 1	Artefact scatter	Very Poor – impacted by previous development works for infrastructure & services	Low	Direct	Total	Total loss of value	Unmitigated impacts. Update site card to note as destroyed.
28-5-0081	Dunedoo Solar AFT 1	Artefact scatter	Poor – 100+ year history of agricultural and pastoral use.	Low	Direct	Total	Total loss of value	Salvage surface objects prior to development of Subject Land.
28-5-0082	Dunedoo Solar AFT 2	Artefact scatter	Poor – 100+ year history of agricultural and pastoral use.	Low	Direct	Total	Total loss of value	Salvage surface objects prior to development of Subject Land.
28-5-0083	Dunedoo Solar AFT 3	Artefact scatter	Poor – 100+ year history of agricultural and pastoral use.	Low	Direct	Total	Total loss of value	Salvage surface objects prior to development of Subject Land.
28-5-0084	Dunedoo Solar AFT 4	Artefact scatter	Poor – 100+ year history of agricultural and pastoral use.	Low	Direct	Total	Total loss of value	Salvage surface objects prior to development of Subject Land.
28-5-0085	Dunedoo Solar AFT 5	Artefact scatter	Poor – 100+ year history of agricultural and pastoral use.	Low	Direct	Total	Total loss of value	Salvage surface objects prior to development of Subject Land.
28-5-0086	Dunedoo Solar AFT 6	Artefact scatter	Poor – 100+ year history of agricultural and pastoral use.	Low	Direct	Total	Total loss of value	Salvage surface objects prior to development of Subject Land.
28-5-0087	Dunedoo Solar AFT 7	Artefact scatter	Poor – 100+ year history of agricultural and pastoral use.	Low	Direct	Total	Total loss of value	Salvage surface objects prior to development of Subject Land.
28-5-0088	Dunedoo Solar AFT 8	Artefact scatter	Poor – 100+ year history of agricultural and pastoral use.	Low	Direct	Total	Total loss of value	Salvage surface objects prior to development of Subject Land.
28-5-0089	Dunedoo Solar AFT 9	Artefact scatter	Poor – 100+ year history of agricultural and pastoral use.	Low	Direct	Total	Total loss of value	Salvage surface objects prior to development of Subject Land.

AHIMS #	Site name	Artefact Type	Site integrity	Scientific significance	Type of harm	Degree of harm	Consequence of harm	Recommendation
28-5-0090	Dunedoo Solar AFT 10	Artefact scatter	Poor – 100+ year history of agricultural and pastoral use.	Low	Direct	Total	Total loss of value	Salvage surface objects prior to development of Subject Land.
28-5-0091	Dunedoo Solar AFT 11	Artefact scatter	Poor – 100+ year history of agricultural and pastoral use.	Low	Direct	Total	Total loss of value	Salvage surface objects prior to development of Subject Land.
28-5-0092	Dunedoo Solar AFT 12	Artefact scatter	Poor – 100+ year history of agricultural and pastoral use.	Low	Direct	Total	Total loss of value	Salvage surface objects prior to development of Subject Land.
28-5-0093	Dunedoo Solar AFT 13	Artefact scatter	Poor – 100+ year history of agricultural and pastoral use.	Low	Direct	Total	Total loss of value	Salvage surface objects prior to development of Subject Land.
28-5-0094	Dunedoo Solar AFT 14	Artefact scatter	Poor – 100+ year history of agricultural and pastoral use.	Low	Direct	Total	Total loss of value	Salvage surface objects prior to development of Subject Land.
28-5-0095	Dunedoo Solar AFT 15	Isolated Find	Poor – 100+ year history of agricultural and pastoral use.	Low	Nil	Nil	Nil	Site will be avoided by proposed development. Ensure avoidance with a minimum 5 m buffer around site
28-5-0096	Dunedoo Solar AFT 16	Isolated Find	Poor – 100+ year history of agricultural and pastoral use.	Low to moderate	Nil	Nil	Nil	Site will be avoided by proposed development. Ensure avoidance with a minimum 5 m buffer around site
28-5-0097	Dunedoo Solar AFT 17	Isolated Find	Poor – 100+ year history of agricultural and pastoral use.	Moderate	Nil	Nil	Nil	Site will be avoided by proposed development. Ensure avoidance with a minimum 5 m buffer around site
28-5-0098	Dunedoo Solar AFT 18	Isolated Find	Poor – 100+ year history of agricultural and pastoral use.	Low	Nil	Nil	Nil	Site will be avoided by proposed development. Ensure avoidance with a minimum 5 m buffer around site

AHIMS #	Site name	Artefact Type	Site integrity	Scientific significance	Type of harm	Degree of harm	Consequence of harm	Recommendation
28-5-0099	Dunedoo Solar AFT 19	Isolated Find	Poor – 100+ year history of agricultural and pastoral use.	Low to moderate	Nil	Nil	Nil	Site will be avoided by proposed development. Ensure avoidance with a minimum 5 m buffer around site
28-5-0100	Dunedoo Solar AFT 20	Isolated Find	Poor – 100+ year history of agricultural and pastoral use.	Low	Nil	Nil	Nil	Site will be avoided by proposed development. Ensure avoidance with a minimum 5 m buffer around site
28-5-0080	Dunedoo Solar AFT 21	Isolated Find	Poor – 100+ year history of agricultural and pastoral use.	Low	Nil	Nil	Nil	Site will be avoided by proposed development. Ensure avoidance with a minimum 5 m buffer around site
28-5-0079	Dunedoo Solar AFT 22	Isolated Find	Poor – 100+ year history of agricultural and pastoral use.	Low	Nil	Nil	Nil	Site will be avoided by proposed development. Ensure avoidance with a minimum 5 m buffer around site
28-5-0078	Dunedoo Solar AFT 23	Isolated Find	Poor – 100+ year history of agricultural and pastoral use.	Low	Nil	Nil	Nil	Site will be avoided by proposed development. Ensure avoidance with a minimum 5 m buffer around site
36-2-0513	Dunedoo Solar AFT 24	Artefact scatter	Poor – 100+ year history of agricultural and pastoral use.	Low to moderate	Low	Direct	Total	Undertake a program of salvage excavation prior to impacts, particularly surrounding the locations of Pit 1 and Pit 3 which had recovered high density subsurface artefacts.

7. AVOIDING OR MITIGATING HARM

7.1. CONSIDERATION OF ESD PRINCIPLES

Consideration of the principles of Ecologically Sustainable Development (ESD) and the use of the precautionary principle was undertaken when assessing the harm to the sites and the potential for mitigating impacts to the sites recorded during the surveys and subsurface testing programme for the proposed Dunedoo Solar Farm. The main consideration was the cumulative effect of the proposed impact to the sites and the wider archaeological record. The precautionary principle in relation to Aboriginal heritage implies that development proposals should be carefully evaluated to identify possible impacts and assess the risk of potential consequences.

In broad terms, the archaeological material located during this investigation is similar to what has been found previously within the region, comprising of isolated finds and low-density artefact scatters dominated by quartz lithology. The identification of 24 new sites with one or more stone artefacts during the surveys and subsurface testing programme for the Dunedoo Solar Farm correlates with previously identified site types and artefact assemblages in the area.

While there have been archaeological investigations for other projects in the region, there is no clear regional synthesis of the nature, number, extent and content for archaeological sites within the Warrumbungle Local Government Area. Nevertheless, given the size of the geographical area, it is almost certain that there would be similar site types present within the region. The result of this Aboriginal heritage assessment supports the proposed model of site location and site distribution, whereby objects and sites could be expected to occur across all landscapes even in areas of highly disturbed farming activities. The results of this Aboriginal heritage assessment suggest that other low to moderate density artefact sites could be expected to occur in the area than was previously envisaged.

The implications for the ESD principles are that in fact more sites, particularly sites with stone artefacts, are likely to be present in the region than previously thought. This reduces the individual value of the particular sites within the Subject Land as they are also likely to be represented elsewhere. It must be recognised that large parts of the region have been heavily cleared, farmed and developed through the construction and maintenance of roads and residential structures and therefore other sites are also likely to have been disturbed. The conclusion that similar sites exist in the region reduces the representative values of the sites within the Subject Land. It should also be noted that not all sites recorded during surveys undertaken for the Dunedoo Solar Farm fall within the Subject Land and the proposed development footprint for the Dunedoo Solar Farm. The sites recorded which are now located outside the Subject Land for the Dunedoo Solar Farm will not be impacted by this project.

As noted above, the archaeological values of the Aboriginal sites within the development footprint, considering the scientific, representative and rarity values assigned to them was deemed to be generally low. In terms of representativeness and rarity the previous relatively low number of overall sites in the local area on AHIMS was merely an indication that few surveys have been undertaken in the immediate Dunedoo area and therefore they are yet to be found. It is believed therefore that the proposed impacts to the 16 stone artefact sites through the development of this particular solar farm proposal would not adversely affect the broader archaeological record for the local area or the region.

The principle of inter-generational equity requires the present generation to ensure that the sites and diversity of the archaeological record is maintained or enhanced for the benefit of future generations. We believe that the diversity of the archaeological record is not compromised by development of this solar farm proposal, particularly given that nine stone artefact sites which were recorded during archaeological investigations for the Dunedoo Solar Farm will be avoided by the development of the Subject Land. Further to this, the number of yet unknown sites in the wider region allow opportunity for identification by future generations.

We estimate, that while the development of the Dunedoo Solar Farm will impact all of the stone artefact sites identified within the Subject Land as assessed in this report, the overall cumulative impact on the archaeological record for the region is likely to be minimal, assuming a similar density of artefact sites remain across the wider region. Therefore, it is argued that the cumulative impacts of the proposal on the archaeological record are not enough to outright reject the development proposal for the Dunedoo Solar Farm.

7.2. CONSIDERATION AND MITIGATION OF HARM

Avoiding harm to all the Aboriginal sites identified within the Subject Land is technically possible through avoidance. However, the scattered nature of the sites across the Subject Land would pose serious design constraints on the proposed development of the Dunedoo Solar Farm. Given that the Subject Land has already been significantly reduced from the area subject to archaeological investigations for the Dunedoo Solar Farm, avoiding nine sites with stone artefacts, additional measures to redesign the development footprint for the Dunedoo Solar Farm are not considered to be necessary in this instance.

Based on the assessment of the Aboriginal sites and in consideration of discussions with the Aboriginal representatives during the field surveys and subsurface testing programme, it is not considered necessary to prevent all development at the solar farm location, or for total avoidance of the stone artefact sites identified within the Subject Land. The stone artefact sites have been shown to be in highly disturbed contexts with little remaining scientific value. Aboriginal cultural value has been determined by the local Aboriginal community to be generally low enough to not prevent the development proposal proceeding.

A total of 16 Aboriginal sites with stone artefacts are situated within the Subject Land for solar arrays, tracks, cables, fencing, transmission line and substation area. The most likely cause of harm to these 16 Aboriginal sites with stone artefacts will therefore be through ground preparation such as vegetation clearance, installation of the transmission line, installation of poles for the solar arrays and extension of the existing substation. However, the question remains about possible occurrence of artefacts within the balance of the solar farm site. It is possible and considered likely that additional stone artefacts will be present, most likely in the form of isolated artefacts or small low density scatters. Without knowing their exact locations, it is difficult to manage the impacts. We do not consider that the risk of such disturbances means the development should be abandoned. The archaeological material identified in the surveys and subsurface testing programme, and potentially present in the remainder of the development area within the Subject Land is not of sufficient value to reject the development proposal for the Dunedoo Solar Farm.

Mitigation of harm to Aboriginal heritage sites generally involves some level of detailed recording to preserve the information contained within the site/s. Mitigation can also occur in the form of minimising harm through slight changes in the development plan or through direct management measures of the sites and Aboriginal objects. The nine Aboriginal sites recorded during the archaeological investigations considered of higher archaeological value are now avoided by the significant reduction in the development footprint including the avoidance of any impacts to the sites with axes and artefacts manufactured from glass (Dunedoo Solar AFT 16, Dunedoo Solar AFT 17 and Dunedoo Solar AFT 19). It is argued here therefore, that mitigation in the form of further alteration is not feasible or warranted within the Subject Land as assessed in this report for the Dunedoo Solar Farm. However, the stone artefact sites within the development footprint that will be impacted by the works for the Dunedoo Solar Farm are conducive to surface collection salvage as a mitigation strategy. The surface collection salvage of the stone artefact sites within the Subject Land was also requested by the Aboriginal representatives during the fieldwork programme of works. It is recommended that the stone artefacts sites that will be impacted by the proposed development of the Dunedoo Solar Farm are salvaged by an archaeologist with representatives of the registered Aboriginal parties prior to the proposed

development commencing. The artefacts should be collected and moved to a safe area within the property that will not be subject to any solar farm related ground disturbance works.

Given the low density of the subsurface material recovered from the testing program undertaken across the Western Paddock for the Dunedoo Solar Farm mitigation in the form of salvage excavation is deemed not be feasible or warranted in this instance. However, the high density subsurface material recovered from the Substation Pit 1 and Pit 3 suggests that further mitigation measures such as an excavation salvage programme is warranted to be undertaken around these pit locations if impacts to the Substation area are unable to be avoided by works. An excavation salvage programme at the Substation works area was also requested by the Aboriginal representatives during the fieldwork programme of works based on the high density of material recovered.

The Aboriginal community representatives onsite during the field surveys and subsurface testing programme noted their preference for the surface stone artefacts and the subsurface artefacts recovered during the testing programme (currently in temporary care at the NGH Sydney office) to be relocated and buried outside the development footprint within the Subject Land prior to development construction works commencing for the Dunedoo Solar Farm.

As part of the consultation process an Aboriginal community member provided culturally sensitive information that was relevant to the project area. This information related to the location of an historic event where it is believed Aboriginal people were shot and killed near Dunedoo. The Aboriginal community have confirmed that the site is located outside the Subject Land and have not raised any issues about the proximity of the site to the Subject Land.

8. LEGISLATIVE CONTEXT

Aboriginal heritage is primarily protected under the NPW Act and as subsequently amended in 2019 with the introduction of the *National Parks and Wildlife Amendment Regulation 2019*. The aim of the NPW Act includes:

The conservation of objects, places or features (including biological diversity) of cultural value within the landscape, including but not limited to: places, objects and features of significance to Aboriginal people.

An Aboriginal object is defined as:

Any deposit, object or material evidence (not being a handicraft made for sale) relating to the Aboriginal habitation of the area that comprises New South Wales, being habitation before or concurrent with the occupation of that area by persons on non-Aboriginal extraction and includes Aboriginal remains.

Part 6 of the NPW Act concerns Aboriginal objects and places and various sections describe the offences, defences and requirements to harm an Aboriginal object or place. The main offences under section 86 of the NPW Act are:

A person must not harm or desecrate an object that the person knows is an Aboriginal object.

A person must not harm an Aboriginal object.

For the purposes of this section, "circumstances of aggravation" are:

- that the offence was committed in the course of carrying out a commercial activity, or
- that the offence was the second or subsequent occasion on which the offender was convicted of an offence under this section.

A person must not harm or desecrate an Aboriginal place.

Under section 87 of the NPW Act, there are specified defences to prosecution including authorisation through an Aboriginal Heritage Impact Permit (AHIP) or through exercising due diligence or compliance through the regulation.

Section 89A of the Act also requires that a person who is aware of an Aboriginal object, must notify the Director-General in a prescribed manner. In effect, this section requires the completion of AHIMS site cards for all sites located during heritage surveys.

Section 90 of the NPW Act deal with the issuing of an AHIP, including that the permit may be subject to certain conditions. This does not apply in this instance as the development is listed as a State Significant Development (SSD) and project approval will be determined by the Department of Planning.

The EP&A Act is legislation for the management of development in NSW. It sets up a planning structure that requires developers (individuals or companies) to consider the environmental impacts of new projects. Under this Act, cultural heritage is considered to be a part of the environment. This Act requires that Aboriginal cultural heritage and the possible impacts to Aboriginal heritage are formally considered in land-use planning and development approval processes.

Proposals classified as State Significant Development (SSD) or State Significant Infrastructure (SSI) under the *Environmental Planning and Assessment Act 1979* (EP&A Act) have a different assessment regime. As part of this process, Section 90 harm provisions under the NPW Act are not required, that is, an AHIP is not required to impact Aboriginal objects. However, the Department of Planning, Infrastructure and Environment (DPIE) is required to ensure that Aboriginal heritage is considered in the environmental impact assessment process.

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

9. RECOMMENDATIONS

The recommendations are based on the following information and considerations:

- Results of the current archaeological surveys and subsurface testing conducted for the project;
- Consideration of results from other local archaeological studies;
- Results of consultation with the registered Aboriginal parties;
- The assessed significance of the sites;
- Appraisal of the proposed development, and
- Legislative context for the development proposal.

It is recommended that:

1. The sites Dunedoo Solar AFT 1 to Dunedoo Solar AFT 14 which are located within the development footprint for the Dunedoo Solar Farm must be salvaged via surface collection prior to construction works commencing for the Dunedoo Solar Farm. Until surface collection salvage has occurred at the sites a minimum 5 m buffer must be observed to ensure no inadvertent impacts occur.

2. The collection and relocation of the surface artefacts within the Dunedoo Solar Farm Subject Land should be undertaken by an archaeologist with representatives of the registered Aboriginal parties and be consistent with Requirement 26 of the *Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales*. The salvage of Aboriginal objects can only occur following development consent that is issued for State Significant Developments and must occur prior to any construction works commencing.
3. No mitigation is required prior to impacts to the previously recorded site AHIMS# 36-2-0049/DTG/OC27 - Dunedoo 1. Following development consent that is issued for State Significant Development to allow impacts to the Aboriginal site AHIMS# 36-2-0049 an *Aboriginal Site Impact Recording Form* must be completed to list the site as destroyed.
4. The sites Dunedoo Solar AFT 15 to Dunedoo Solar AFT 23 which are located outside the Dunedoo Solar Farm Subject Land must not be impacted. Any future impacts to these sites by this project would need to be assessed by an archaeologist and additional consultation with the registered Aboriginal parties would be required.
5. Prior to works commencing adjacent to the existing Essential Energy Dunedoo Substation an excavation salvage programme must be undertaken for the site Dunedoo Solar AFT 24. The areas surrounding the locations of Pit 1 and Pit 3 which had high densities of subsurface artefacts recovered during the testing programme should be focus areas for the excavation salvage programme.
6. All objects salvaged, following development consent that is issued for State Significant Developments, including those recovered from the subsurface testing and salvage excavation programmes, must be buried in line with Requirement 26 of the *Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales* and at an appropriate location within the Subject Land that will not be subject to any ground disturbance. The burial location/s must be submitted to the AHIMS database.
7. An *Aboriginal Site Impact Recording Form* must be completed and submitted to AHIMS following harm for each site collected or destroyed from salvage and/or construction works as approved for impacts in line the development consent for this State Significant Development .
8. For any additional impacts to sites and areas outside the surveyed extent of the development footprint, as assessed in this report, a modification application would need to be submitted to the to the Department of Planning, Industry and Environment (DPIE) for this State Significant Development which includes consideration of impacts on Aboriginal Heritage as determined by an archaeologist, additional Aboriginal consultation and survey may be required.
9. The Proponent should prepare a Cultural Heritage Management Plan (CHMP) to address the potential for finding additional Aboriginal artefacts during the construction of the Dunedoo Solar Farm and for the management of known sites and artefacts within the Subject Land. The Plan should include the unexpected finds procedure to deal with construction activity. Preparation of the CHMP should be undertaken in consultation with the registered Aboriginal parties.
10. In the unlikely event that human remains are discovered during the construction of the Dunedoo Solar Farm, all work must cease in the immediate vicinity. The appropriate heritage team within the Department of Planning, Industry and Environment (DPIE) and the local police should be notified. Further assessment would be undertaken to determine if the remains were Aboriginal or non-Aboriginal. If the remains are deemed to be Aboriginal in origin the Registered Aboriginal Parties should be advised of the find as directed by the appropriate heritage team within DPIE.
11. Further archaeological assessment would be required if the proposal activity extends beyond the area assessed in this report. This would include consultation with the registered Aboriginal parties and may include further field survey.

10. REFERENCES

- Access Archaeology & Heritage 2019, *Aboriginal Heritage Due Diligence Assessment: Proposed Feedlot Extension Near Dunedoo, NSW*, Unpublished Report Prepared for Enviro-Ag Australia.
- Australian ICOMOS 2013, *The Burra Charter: the Australia ICOMOS Charter for Places of Cultural Significance 2013*,.
- Boileau, J 2007, *Thematic History of Nundle, Manilla and Barraba: Tamworth Regional Council Community Based Heritage Study*, Report prepared for Tamworth Regional Council.
- Cameron, R 1993, *Around the Black Stump: The History of Coolah, Dunedoo, Mendooran Areas*, Coolah Shire Council.
- Cameron, R 2004, *Coolah Shire Thematic History*, Report prepared for the Coolah Shire Council.
- DE&E 2016, 'Interim Biogeographic Regionalisation for Australia (IBRA), Version 7 (Subregions)', accessed from <<http://data.gov.au/dataset/74442a9f-9909-485d-ae3f-8dfa72e4b6b2>>.
- DECC 2002, *Descriptions for NSW (Mitchell) Landscapes: Based on Descriptions compiled by Dr. Peter Mitchell*, A Report prepared for the Department of Environment and Climate Change.
- Department of Regional New South Wales 2009, *NSW 1500K Simplified Surface Geology*, accessed from <<https://datasets.seed.nsw.gov.au/dataset/nsw-1500k-simplified-surface-geology>>.
- Dowling, P 1997, *A Great Deal of Sickness: Introduced Diseases Among the Aboriginal People of Colonial Southeast Australia 1788-1900*, Unpublished Doctor of Philosophy Thesis, The Australian National University.
- Egloff, B, Peterson, N & Wesson, SC 2005, *Biamanga and Gulaga: Aboriginal cultural association with Biamanga and Gulaga National Parks*, Office of the Registrar, Aboriginal Land Rights Acts 1983 (NSW).
- EMM 2012, *Cobbora Coal Project*, Report prepared for Cobbora Holding Company Pty Limited.
- Evans, G 1815, 'Historical Records of Australia Series 1', , vol. 8.
- Fraser, J 1892, *The Aborigines of New South Wales*, Charles Potter, Government Printer, Sydney.
- Gammage, B 2012, *The biggest estate on Earth: How Aborigines made Australia*, Allen & Unwin.
- Gott, B 1982, 'Ecology of Root Use by the Aborigines of Southern Australia', *Archaeology in Oceania*, vol. 17, no. 1, pp. 59–67.
- Horton, D 1994, *The encyclopaedia of Aboriginal Australia: Aboriginal and Torres Strait Islander history, society and culture* D Horton (ed), Aboriginal Studies Press, Canberra.
- Howitt, AW 1904, *The native tribes of south-east Australia*, Macmillan and Company Ltd.
- Kabaila, P 1999, *Archaeological Aspects Of Aboriginal Settlement Of The Period 1870-1970 In The Wiradjuri Region*, Unpublished Doctor of Philosophy Thesis, The Australian National University.
- Koettig, M 1985, *Assessment of Aboriginal sites in the Dubbo City area*, Unpublished report to Dubbo City Council.
- Littleton, J & Allen, H 2007, 'Hunter-gatherer burials and the creation of persistent places in southeastern Australia', *Journal of Anthropological Archaeology*, vol. 26, pp. 283–298.
- Long, A 2005, *Aboriginal scarred trees in New South Wales : a field manual*, Dept. of Environment and Conservation.
- MacDonald, G 1983, *The Concept of Boundaries in Relation to the Wiradjuri People of Inland New South Wales: An assessment of Inter-Group Relationships at the Time of European Conquest*, Report prepared for Wiradjuri Land Council.
- McCarthy, FD 1963, *New South Wales Aboriginal Place Names and Euphonious Words, with their Meanings*, Australian Museum, Sydney.

- McDonald, G 1998, *Dubbo to Tamworth Gas Pipeline*, Unpublished report prepared for AGL Pipelines Ltd.
- Mitchell, T 1839, *Three Expeditionas into the Interior of Eastern Austrlia*, London.
- Monitor Heritage Consultants 2019, *Warrumbungle Thematic History*, Report for the Warrumbungle Shire Council.
- NGH Environmental 2017, Beryl Solar Farm ACHA, Unpublished report to First Solar Pty Ltd.
- OEH 2010a, Due Diligence Code of Practice for the Protection of Aboriginal Objects in New South Wales,.
- OEH 2010b, Aboriginal Cultural Heritage Consultation Requirements for Proponents 2010,.
- OEH 2011, Guide to Investigating, Assessing and Reporting on Aboriginal Cultural Heritage in NSW,.
- Oxley, J 1820, *Journals of Two Expeditions Into the Interior of New South Wales*, undertaken by order of the British Government in the Years 1817-1818, John Murray, London.
- OzArk 2012, Beryl to Dunedoo Powerline., Unpublished Report for Essential Energy.
- OzArk 2016 Central West Local Land Services Travelling Stock Reserves Study. Unpublished report for Central West Local Lands Service.
- OzArk 2017, Aboriginal DUE Diligence Assessemnt Beni Crossing UPgrade., Unpublished Report for Warrumbungle Shire Council.
- OzArk 2018 Aboriginal Due Diligence Archaeolgcial Assessment Merrygoen Free Range Later Farm. Unpublished report prepared for SLR Consulting Australia.
- Pearson, M 1981, *Seen through different eyes: changing land use and settlement patterns in the Upper Macquarie River region of NSW from prehistoric times to 1860*, Unpublished Doctor of Philosophy Thesis, Department of Prehistory and Anthropology, The Australian National University.
- Purcell 2002, *Aboriginal Cultural Heritage Assessment Brigalow Belt South Stage 2*, Unpublished report to the Resource and Conservation Assessment Council.
- Ramson, M 1983, *To Kill a Flocking Bird*, Unpublished B. Litt Thesis, Department of Prehistory and Anthropology, ANU.
- Soil Management Designs 2018, *Soil Report: 'Dunedoo Solar Farm' Site*, Unpublished Report Prepared for ib vogt GmbH.
- State of NSW and Department of Planning, I and E 2020 2020, 'eSPADE', accessed from <espade.environment.nsw.gov.au >.
- Tindale, N 1940, *Distribution of Australian aboriginal tribes: a field survey*,.
- Tindale, NB 1974, *Aboriginal tribes of Australia: their terrain, environmental controls, distribution, limits, and proper names*, ANU Press, Canberra.
- Woolrych, FBW 1890, 'Native names of some of the runs etc. in the Lachlan District', *Journal of the Royal Society of New South Wales*, vol. 24, pp. 63–70.

APPENDIX A ABORIGINAL CONSULTATION

Redacted from public display.

Public Notice placed in the Mudgee Guardian on the 17th of October 2017.

12 MUDGEE GUARDIAN Tuesday, October 17, 2017

mudgeeguardian.com.au

Connect with Classifieds

Mudgee Guardian
and its associated businesses

Phone: 02 6372 1455
Email: bookings.mudgee@fairfaxmedia.com.au

Mudgee Guardian
Connect with Classifieds

Place a Classifieds ad

6372 1455
bookings.mudgee@fairfaxmedia.com.au
Save time, submit online 24/7
advertisers.com.au

Print and online packages available throughout Australia.
Ongoing business advertising self service
enquiries: acmadm@fairfaxmedia.com.au

Emoji now available 😊

Public Notices

Notification for registration of interest for Aboriginal stakeholders

NGH Environmental Pty Ltd has been contracted by IB Vogt GmbH to undertake an Aboriginal Cultural Heritage Assessment (ACHA) for a proposed solar farm that will be identified as Dunedoo Solar Farm. The proposed location for the Dunedoo Solar Farm is approximately 77 kilometres north east of Dubbo in the Warumbungle Local Government Area (LGA).

The assessment area for the proposed Dunedoo Solar Farm comprises of the Lots 137 DP 754309, Lot 140 DP754309, Lot 1 DP 854326, Lot 2 DP 854326 and Lot 80 DP754309. The transmission line would be located on Lot 37 DP754309 and Lot 7012 DP93290 and an area of apparently Crown Land (with no land identifier).

The proponent (ib vogt, Level 35, 1 International Tower, 100 Barangaroo Avenue, Sydney NSW 2000) is proposing to construct a utility scale solar farm including panels, electrical conduits, transformers, internal access tracks, site office and perimeter fencing.

The purpose of this consultation, particularly with Aboriginal people, is to assist the proponent in the preparation of an ACHA for the proposal site and to be involved in consultation as part of the lodgement of a State Significant Development application.

In order to fulfil the requirements set out in the OEH Aboriginal Cultural Heritage Consultation Requirements for Proponents 2010, NGH Environmental is seeking interested Aboriginal parties who hold cultural knowledge of the assessment areas to register their interest in the consultation process for the projects and to assist in the determination of cultural significance of any Aboriginal objects or places located within the proposed Dunedoo Solar Farm area.

Registrations should be provided in writing to:

NGH Environmental Pty Ltd
Unit 18, 21 Mary Street
SURREY HILLS NSW 2010

Or Via Email to:
ngh@nghenvironmental.com.au

All correspondence must be received by COB 1 November 2017. Those registering an interest will be contacted to discuss the project further. Those who do register are advised that their details will be provided to OEH and the Local Aboriginal Land Council, unless they specifically advise in writing that their details are not to be forwarded.

Public Notices

GULGONG JUNIOR RUGBY LEAGUE ADM
Tuesday 31st October at 7pm
Billy Dunn Club House
All positions will be made available
ALL WELCOME

Kandos District Waratahs A.G.M.
Tuesday 24th October, 2017.
7pm at The Kandos Hotel
All positions declared vacant.

Accommodation

SHORT & LONG STAY ACCOMMODATION
1,2,3,4 bedrooms. Weekly and monthly rates available from \$650.
Fully furnished in town.
Inclusive of water, electricity & free WiFi.
Colonial Court Villas 02 6372 0529

Wanted to Buy

BRICKS WANTED
Mudgee Sandstock bricks
Call 0418 246 809

Furniture Removalists

GULGONG REMOVALS MUDGEES
Member of A.F.R.A. Australian Furniture Removers Association.
Accredited staff.
Cartons /Self-storage-units.
Local Country, Interstate.
Patrick Ginn
6373-4863
0412-790-122.

FRIDGE COLD ENOUGH?
The fridge seals may need replacing.
Ring Peters Refrigeration & Airconditioning
(02) 6372-3489 or service@petersrefrigeration.com.au
Lic. No. 167398C

PHIL MARCHANT CARPENTER BUILDER
Renovations, Extensions, Bathrooms, Verandahs, Decks, Pergolas. Lic. No. 124082C
Phone 6372-2427
0418-394-274

Adult Services

Anna
Stunning Asian
Simply The Best
Come be my guest.
Busty size 8. Friendly, fetishes & fantasies.
no private numbers
0475 072 533
Tues-Fri every week from 9am to 9pm

Deaths & Funerals

PALMER James Harry

7th October 2017 taken too soon, late of Arborwood Avenue, Springfield and formerly of Rylstone. Much loved son of Paul & Helen. Father of Paul. Cherished brother & brother-in-law of Paula & Darren, Shane, Nicole & Aaron. Loved uncle to Zachary, Kai and Seian. Good mate to many.

Aged 43 years
"You had a smile for everyone, you had a heart of gold. You left the sweetest memories, for all of us to hold."

Relatives and friends are kindly invited to attend a Service to Celebrate the Life of James, which will take place at 11.00am on Friday 20th October 2017 at St Dominic's Catholic Church, Kandos.

At the conclusion of the Service a private cremation will take place.

MACQUARIE VALLEY FUNERALS & MONUMENTS
Mudgee: (02) 6372 2331
www.mvf.funerals.com.au
N.F.D.A. F.D.A. of NSW

Ulan Community Information Line

If you have a question, to obtain blasting information, provide us with your feedback or to register a complaint, please call us on:

1800 647 630
or please email:
ulancommunity@glencore.com.au

ULAN COAL GLENORE

Kandos District Waratahs APPLICATIONS FOR 2018 COACHES
A Grade Mens & Womens League Tag
Only applications in writing will be accepted
Send to: The Secretary,
Kandos District Waratahs,
P.O. Box 76 Kandos NSW 2848.
Applications must be received by 7pm, 24/10/17

myDENTURE CLINIC MUDGEES
LEON DOBRINSKI
1300 134 408
Denture Clinic is now in attendance Mudgee Medical Centre, 145 Church Street, 8am to 12pm Wednesday

ROAD CLOSURE
LOUEE STREET, RYLSTONE between Dabee Street and Cudgegong Street will be closed to vehicular traffic from 8am till 6pm on Saturday 28th of October, for Rylstone Street Feast.

Gulgong Hostel Association Inc
Annual General Meeting, **Rescheduled**
From 25 Oct to Wednesday 8 Nov 2017.
7pm at Wenonah Lodge 27-31 Mayne Street
Gulgong for receipt of annual reports and election of office bearers. All welcome.

For Sale

Spanline
Patio's, Rooms, Cladding, Carports.
As on TV
6372 6996 (01 63737C)
www.spanline.com.au

Boats and Accessories

BOATING LICENCE
Mudgee 22 October
Limited places avail.
Phone 0478 691 620

Garage Sale
TRAIC CHOICES TO REUSE

Kandos Mens Shed
(next to the Railway Station, Kandos)
Saturday 21st of October @ 9.00am
Lots of collectables & handmade items are for sale. Come join us in a friendly atmosphere & enjoy a sausage sizzle.

Put the feels in with Emoji!

Mudgee Guardian

designlink - Creative design and print solutions for any platform.

Designlink offers a complete suite of professional design and print solutions for any business without the expensive commercial design agency costs.



designlink.fairfax.com.au

designlink@fairfaxmedia.com.au

APPENDIX B SITE DESCRIPTIONS



Dunedoo Solar AFT 1

This site consisted of a quartz flake and quartz flaked piece located along a paddock fence line. The flake was identified as products of the tertiary stage of reduction. The artefacts were located on a reddish-brown silty loam deposit and visibility within the area of the track was approximately 90% with the visibility in the area surrounding the track and fenceline reduced to 30%. The area has been subject to disturbance from ploughing and farming activities in the past and in recent years.

	
View west of Dunedoo Solar AFT 1.	View of quartz flake at Dunedoo Solar AFT 1.

Dunedoo Solar AFT 2

This site consisted of five artefacts on a flat a paddock in an area of high visibility in proximity to a dam. The artefacts recorded included two quartz flakes, a basalt flake, a quartz flaked piece and a fine grain siliceous hammerstone. One of the quartz flakes was noted to possibly be a thumbnail scraper with knapping along the margin while the hammerstone was noted to have pitting. The artefacts were located on a reddish-brown silty loam deposit and visibility within the area was approximately 80%. The area has been subject to disturbance from ploughing and farming activities in the past and in recent years.

	
View south of Dunedoo Solar AFT 2.	View north to the dam with the hammerstone located at base of pole.

Dunedoo Solar AFT 3

This site consisted of three artefacts on a flat paddock approximately 100 m west of a dam at the edge of a paddock. The three artefacts recorded were a retouched basalt flake and two quartz cores. The artefacts were located on a reddish-brown silty loam deposit and visibility within the area was approximately 60%. The area has been subject to disturbance from ploughing and farming activities in the past and in recent years.



View of artefact from Dunedoo Solar AFT 3.



View of artefact from Dunedoo Solar AFT 3

Dunedoo Solar AFT 4

This site consisted of 11 artefacts in a flat paddock on a flat recently harvested paddock, extending east from a fence line. The artefacts recorded were mostly manufactured from quartz with a single basalt retouched flake. The quartz artefacts included flakes, broken flakes, retouched flakes and cores. The artefacts were located on a reddish-brown silty loam deposit and visibility within the area was approximately 60%. The area has been subject to disturbance from ploughing and farming activities in the past and in recent years.



View north of Dunedoo Solar AFT 4.



View of quartz flake from Dunedoo Solar AFT 4.

Dunedoo Solar AFT 5

This site consisted of three artefacts in an exposure near a fenceline in flat paddock. The artefacts recorded include a quartz flaked piece, a quartz flake and a quartzite core. The artefacts were located on a reddish-brown silty loam deposit and visibility within the area was approximately 60%. The area has been subject to disturbance from ploughing and farming activities in the past and in recent years.



View south of Dunedoo Solar AFT 5.



View of quartz flake from DunedooSolar AFT 5.

Dunedoo Solar AFT 6

This site consisted of three artefacts on flat paddock. The artefacts recorded included a quartz flake and two quartz flaked pieces. The artefacts were located on a reddish-brown silty loam deposit and visibility within the area was approximately 60%. The area has been subject to disturbance from ploughing and farming activities in the past and in recent years.



View south from Dunedoo Solar AFT 6.



View of quartz flaked piece from Dunedoo Solar AFT 6.

Dunedoo Solar AFT 7

This site consisted of 35 artefacts scattered across a flat recently paddock just north of the fence line bordering All Weather Road. The artefacts recorded were mostly manufactured from quartz and the artefact types included flakes, cores, broken flakes, retouched flakes and flaked pieces. The artefacts were located on a reddish-brown silty loam deposit and visibility within the area was approximately 30%. Five quartz flakes were also recorded from the site during a subsurface testing program. The area has been subject to disturbance from ploughing and farming activities in the past and in recent years.



View north of Dunedoo Solar AFT 7.



View of quartz flake from Dunedoo Solar AFT 7.

Dunedoo Solar AFT 8

This site consisted of three artefacts in flat paddock. The artefacts recorded included two quartz flakes and a mudstone flake. The artefacts were located on a reddish-brown silty loam deposit and visibility within the area was approximately 30%. The area has been subject to disturbance from ploughing and farming activities in the past and in recent years.



View south from Dunedoo Solar AFT 8.



View of quartz flake from Dunedoo Solar AFT 8.

Dunedoo Solar AFT 9

This site consisted of a single chert core in a flat paddock. The core was multiplatform with three platforms recorded. The artefact was located on a reddish-brown silty loam deposit and visibility within the area was approximately 30%. The area has been subject to disturbance from ploughing and farming activities in the past and in recent years.



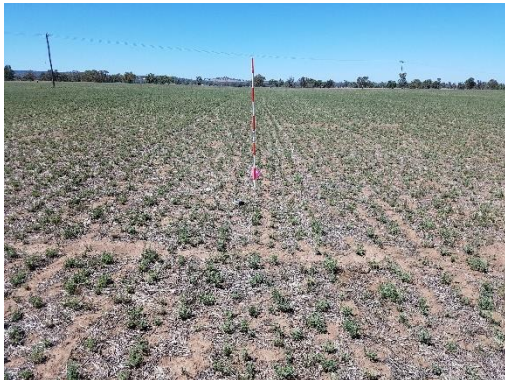
View south from Dunedoo Solar AFT 9.



View of artefact from Dunedoo Solar AFT 9.

Dunedoo Solar AFT 10

This site consisted of a single core in a flat paddock. The core was multiplatform with two negative scar recorded. The artefact was located on a reddish-brown silty loam deposit and visibility within the area was approximately 30%. The area has been subject to disturbance from ploughing and farming activities in the past and in recent years.



View of Dunedoo Solar AFT 10.



View of artefact from Dunedoo Solar AFT 10.

Dunedoo Solar AFT 11

This site consisted of a single quartz flaked piece on flat paddock. The artefact was located on a reddish-brown silty loam deposit and visibility within the area was approximately 40%. The area has been subject to disturbance from ploughing and farming activities in the past and in recent years.



View west from Dunedoo Solar AFT 11.



View of quartz flaked piece from Dunedoo Solar AFT 11.

Dunedoo Solar AFT 12

This site consisted of a single quartz flake approximately 5 m north of a fence line boarding All Weather Road on a flat paddock. The artefact was located on a reddish-brown silty loam deposit and visibility within the area was approximately 10%. The area has been subject to disturbance from ploughing and farming activities in the past and in recent years.



View east from Dunedoo Solar AFT 12.



View of quartz flake from Dunedoo Solar AFT 12.

Dunedoo Solar AFT 13

This site consisted of a single quartz flake on a flat paddock. The artefact was located on a reddish-brown silty loam deposit and visibility within the area was approximately 10%. The area has been subject to disturbance from ploughing and farming activities in the past and in recent years.



View west from Dunedoo Solar AFT 13.



View of quartz flake from Dunedoo Solar AFT 13.

Dunedoo Solar AFT 14

This site consisted of a single chert core on a flat paddock. The core was multiplatform with four platforms recorded and a minimum of 6 negative scars noted. The artefact was located on a reddish-brown silty loam deposit and visibility within the area was approximately 10%. The area has been subject to disturbance from ploughing and farming activities in the past and in recent years.





View south from Dunedoo Solar AFT 14.



View of artefact from Dunedoo Solar AFT 14.



Dunedoo Solar AFT 15

This site consisted of 15 artefacts in flat paddock on the southern side of All Weather Road. The artefacts recorded were mainly quartz with two tuff and a chert artefact also recorded. The artefact types included flakes, flaked pieces and broken flakes. The artefacts were located on a reddish-brown silty loam deposit and visibility within the area was approximately 40%. The area has been subject to disturbance from ploughing and farming activities in the past and in recent years.

	
View of Dunedoo Solar AFT 15.	View of chert artefact from Dunedoo Solar AFT 15.





Dunedoo Solar AFT 16

This site consisted of two artefacts in flat paddock. The artefacts recorded were a quartz core and a basalt axe. The core was noted to have 4 negative scars and the basalt flaked axe was noted to have some cortex remaining on all sides with negative flake scars on both sides and the ends flaked to form an edge. The artefacts were located on a reddish-brown silty loam deposit and visibility within the area was approximately 40%. The area has been subject to disturbance from ploughing and farming activities in the past and in recent years.

	
View of axe from Dunedoo Solar AFT 16	View of axe from Dunedoo Solar AFT 16



Dunedoo Solar AFT 17

This site consisted of 18 artefacts in flat paddock. The artefacts recorded were mainly manufactured from quartz with some chert, tuff and basalt also recorded. The artefact types were mostly flakes with lesser number of flaked pieced, cores and an axe fragment. The basalt axe fragment was noted to have two grinding surfaces with the first ground surface measuring 28 mm x 8mm and the second ground surface measuring 28 mm x 5 mm. The artefacts were located on a reddish-brown silty loam deposit and visibility within the area was approximately 40%. The area has been subject to disturbance from ploughing and farming activities in the past and in recent years. A total of 35 aretafcts were also recorded from the subsurface testing program which were mostly silcrete flakes. Six glass artefacts were also recovered form the subsurface testing program.

	
View west of Dunedoo Solar AFT 17	View of ground edge axe from Dunedoo Solar AFT 17
	
View of ground edge axe from Dunedoo Solar AFT 17	A glass flake recovered from subsurface testing program from Dunedoo Solar AFT 17



Dunedoo Solar AFT 18

This site consisted of 32 surface artefacts in flat paddock. The artefacts recorded were mainly manufactured from quartz with some chert, quartzite, silcrete and other also recorded. The artefact types were mostly flakes with lesser number of flaked pieced, cores, broken flakes and retouched flakes. The artefacts were located on a reddish-brown silty loam deposit and visibility within the area was approximately 20%. The area has been subject to disturbance from ploughing and farming activities in the past and in recent years. A single subsurface artefact was also recorded from the subsurface testing program

	
View west of Dunedoo Solar AFT 18	View of quartz flake from Dunedoo Solar AFT 18



Dunedoo Solar AFT 19

This site consisted of two artefacts in flat paddock. The artefacts recorded were a quartzite hammerstone and a volcanic axe. The axe was noted to have some grinding on one side for 46 mm x 7 mm. The hammerstone was noted to a broken large river pebble which had been polished and had with pecking evident on lateral margin. The artefacts were located on a reddish-brown silty loam deposit and visibility within the area was approximately 20%. The area has been subject to disturbance from ploughing and farming activities in the past and in recent years.

	
View west of Dunedoo Solar AFT 19	View of axe from Dunedoo Solar AFT 19



Dunedoo Solar AFT 20

This site consisted of three artefacts in flat paddock. The artefacts recorded were a quartzite hammerstone, a tuff flake and a quartz flake. The hammerstone was noted have pitting measuring 25 mm x 12 mm. The artefacts were located on a reddish-brown silty loam deposit and visibility within the area was approximately 40%. The area has been subject to disturbance from ploughing and farming activities in the past and in recent years.

	
View east of Dunedoo Solar AFT 20	View of hammerstone from Dunedoo Solar AFT 20

Dunedoo Solar AFT 21

This site consisted of a single volcanic core on a flat paddock. The core was single platform with a single negative scar. The artefact was located on a reddish-brown silty loam deposit and visibility within the area was approximately 10%. The area has been subject to disturbance from ploughing and farming activities in the past and in recent years.

	
View west of Dunedoo Solar AFT 21	View of artefact from Dunedoo Solar AFT 21

Dunedoo Solar AFT 22

This site consisted of a single quartzite flake on a flat paddock. The artefact was located on a reddish-brown silty loam deposit and visibility within the area was approximately 20%. The area has been subject to disturbance from ploughing and farming activities in the past and in recent years.



View south of Dunedoo Solar AFT 22



View of artefact from Dunedoo Solar AFT 22

Dunedoo Solar AFT 23

This site consisted of a single chert flake on a dam wall in a flat paddock. The flake was broken into two pieces likely by livestock impacts and was noted to have a parallel arris. The artefact was located on a reddish-brown silty loam deposit and visibility within the area was approximately 20%. The area has been subject to disturbance from ploughing and farming activities in the past and in recent years.



View west of Dunedoo Solar AFT 23



View of artefact from Dunedoo Solar AFT 23

Dunedoo Solar AFT 24

This site consisted of 45 artefacts recovered from two test pits from a subsurface testing program undertaken on the elevated banks of the Talbragar River adjacent to the existing Dunedoo Substation. The artefacts recovered were primarily manufactured from quartz with a lesser number of basalt artefacts recorded. The artefact types were mostly flakes with lesser numbers of flaked pieces, broken flakes and cores. All the artefacts were recovered from the upper deposits, 0-30 cm below the surface. A total of thirteen artefacts were recovered from 0-10 cm below the surface (29%), a total of 25 artefacts recovered from 10-20 cm below the surface (55.5%) and a total of seven artefacts were recovered from 20-30 cm below the surface (15.5%). The presence of flakes, broken flakes, flaked pieces and cores in relatively high densities within the area suggest that tool manufacture likely occurred onsite.



View east of Dunedoo Solar AFT 24.



View of artefact from Dunedoo Solar AFT 24

Previously recorded site AHIMS#36-2-0049

The GPS location of the previously recorded site AHIMS#36-2-0049 was thoroughly inspected during the survey undertaken in May 2020 by NGH archaeologist and Aboriginal community representatives however no artefacts were able to be identified. The 2012 survey by OzArk was also unable to locate any artefacts remaining within or near the site GPS location and they noted that the site no longer existed. RAPs commented that the site had previously been significantly impacted and destroyed.



View west from GPS location of AHIMS#36-2-0049 towards substation, note the area is highly disturbed.



View east from GPS location of AHIMS#36-2-0049 towards substation, note the area is highly disturbed.

APPENDIX C SURFACE ARTEFACT DATA

Site ID	Type	Raw Material	Size class	Length mm	Width mm	Thickness mm	Platform surface	Platform type	Termination	Reduction stage	Comments
Dunedoo Solar AFT 1	flake	quartz	<30 mm	18	11	5	flake scar	focal	feather	tertiary	
Dunedoo Solar AFT 1	flaked piece	quartz	<20 mm	20	10	10					
Dunedoo Solar AFT 2	flake	quartz	<30 mm	22	18	6		broad			Appears to be a thumbnail scraper. Retouched. One lateral margin is thick and knapped. Located on flat, exposed paddock, near stock track approximately 150m south of dam.
Dunedoo Solar AFT 2	flake	basalt	<90 mm	65	81	16	faceted		feather	tertiary	The proximal end is heavily knapped. Neg flake scars on both dorsal and proximal sides.
Dunedoo Solar AFT 2	flaked piece	quartz	<10 mm	9	13	2					
Dunedoo Solar AFT 2	hammerstone	fine-grained siliceous	<100 mm	100	100	55					possible hammerstone with pitting approx 20m south of dam
Dunedoo Solar AFT 2	flake	quartz	<20 mm	20	25	7	flake scar	broad	feather	tertiary	
Dunedoo Solar AFT 3	retouched flake	basalt	<70 mm	69	58	27					Retouched flake with small amount of cortex on the dorsal side. Approximately 13 neg flake scars located on all sides and multi directional.

Site ID	Type	Raw Material	Size class	Length mm	Width mm	Thickness mm	Platform surface	Platform type	Termination	Reduction stage	Comments
Dunedoo Solar AFT 3	core	quartz	<30 mm	29	24	19					
Dunedoo Solar AFT 3	core	quartz	<40 mm	34	32	20					Multi platform, rotated core.
Dunedoo Solar AFT 4	core	basalt	<70 mm	61	58	30					Multi platform, rotated core. Multiple neg flake scars
Dunedoo Solar AFT 4	flake	quartz	<20 mm	22	12	7	faceted	focal	feather	tertiary	
Dunedoo Solar AFT 4	retouched flake	quartz	<50 mm	49	40	19		broad			Retouched, proximal flake.
Dunedoo Solar AFT 4	broken flake	quartz	<30 mm	29	13	6	flake scar	focal	feather	tertiary	Retouched and longitudinally split, with errillure scar. Retouched on the 3 outer edges.
Dunedoo Solar AFT 4	retouched flake	quartz	<40 mm	34	34	16		broad	feather	tertiary	
Dunedoo Solar AFT 4	flake	quartz	<20 mm	15	12	4	flake scar	focal	feather	tertiary	adjacent to tree approx 5 m west of fence line
Dunedoo Solar AFT 4	distal fragment	quartz	<30 mm	25	23	11					
Dunedoo Solar AFT 4	core	quartz	<40 mm	34	29	12					
Dunedoo Solar AFT 4	flake	quartz	<20 mm	12	16	7					Artefact has one lateral margin ticker than the rest.
Dunedoo Solar AFT 4	core	quartz	<70 mm	69	50	40					Multi-platform core, 6 neg flake scars

Site ID	Type	Raw Material	Size class	Length mm	Width mm	Thickness mm	Platform surface	Platform type	Termination	Reduction stage	Comments
Dunedoo Solar AFT 4	retouched flake	quartz	<50 mm	44	59	22					
Dunedoo Solar AFT 5	flaked piece	quartz	<10 mm	10	12	3					in exposure adjacent to fence line
Dunedoo Solar AFT 5	core	quartzite	<50 mm	19	42	36					2 platform 5 scars
Dunedoo Solar AFT 5	flake	quartz	<30 mm	24	15	10	flake scar	broad	feather	tertiary	adjacent to fence line in sandy silty soil
Dunedoo Solar AFT 6	flaked piece	quartz	<20 mm	17	17	8					
Dunedoo Solar AFT 6	flake	quartz	<20 mm	18	17	8	flake scar	broad	feather	tertiary	off fence line
Dunedoo Solar AFT 6	flaked piece	quartz	<20 mm	11	8	3					
Dunedoo Solar AFT 7	core	quartz	<50 mm	40	29	25					Multi-platform, multi directional core.
Dunedoo Solar AFT 7	flake	quartz	<30 mm	30	25	7					
Dunedoo Solar AFT 7	core	quartz	<30 mm	35	32	20					Multi-platform, multi directional core.
Dunedoo Solar AFT 7	flake	quartz	<20 mm	23	13	4			feather		
Dunedoo Solar AFT 7	flake	quartz	<30 mm	19	28	8	flake scar	broad	feather	tertiary	

Site ID	Type	Raw Material	Size class	Length mm	Width mm	Thickness mm	Platform surface	Platform type	Termination	Reduction stage	Comments
Dunedoo Solar AFT 7	flake	quartz	<30 mm	15	22	8	flake scar	broad	feather	tertiary	
Dunedoo Solar AFT 7	distal fragment	quartzite	<40 mm	34	33	16					
Dunedoo Solar AFT 7	core	quartzite	<40 mm	39	38	39					1 platform 1 scar
Dunedoo Solar AFT 7	core	quartz	<60 mm	52	42	20					1 platform 2 scars
Dunedoo Solar AFT 7	flaked piece	quartz	<10 mm	0	0	0					
Dunedoo Solar AFT 7	flaked piece	quartz	<20 mm	0	0	0					
Dunedoo Solar AFT 7	flake	quartz	<20 mm	25	18	8	flake scar	broad	feather	tertiary	k
Dunedoo Solar AFT 7	flake	quartz	<30 mm	26	29	8	flake scar	broad	feather	tertiary	
Dunedoo Solar AFT 7	flake	quartz	<30 mm	15	24	10	flake scar	broad	feather	tertiary	
Dunedoo Solar AFT 7	flaked piece	quartz	<30 mm	0	0	0					
Dunedoo Solar AFT 7	flake	quartz	<10 mm	8	6	2	flake scar	focal	feather		
Dunedoo Solar AFT 7	core	other	<50 mm	50	30	17					single platform core 4 scars

Site ID	Type	Raw Material	Size class	Length mm	Width mm	Thickness mm	Platform surface	Platform type	Termination	Reduction stage	Comments
Dunedoo Solar AFT 7	flaked piece	quartz	<20 mm	0	0	0					
Dunedoo Solar AFT 7	core	other	<90 mm	80	60	35					single platform core 11 scars 90 percent riverine cortex
Dunedoo Solar AFT 7	flake	quartz	<50 mm	25	45	14	flake scar	broad	feather	tertiary	1 scar approx 40m north of fence line
Dunedoo Solar AFT 7	flaked piece	quartz	<20 mm	0	0	0					
Dunedoo Solar AFT 7	flaked piece	quartz	<20 mm	0	0	0					
Dunedoo Solar AFT 7	flake	quartz	<30 mm	29	22	8	flake scar	broad	feather	tertiary	
Dunedoo Solar AFT 7	flake	quartz	<40 mm	37	35	15	flake scar	broad	feather	tertiary	
Dunedoo Solar AFT 7	flake	quartz	<20 mm	17	12	6	flake scar	broad	feather	tertiary	
Dunedoo Solar AFT 7	flake	quartz	<30 mm	26	23	9	flake scar	broad	feather	tertiary	
Dunedoo Solar AFT 7	flaked piece	quartz	<20 mm	17	10	4					
Dunedoo Solar AFT 7	flaked piece	quartz	<40 mm	0	0	0					
Dunedoo Solar AFT 7	flake	quartz	<20 mm	15	20	6	flake scar	broad	feather	tertiary	

Site ID	Type	Raw Material	Size class	Length mm	Width mm	Thickness mm	Platform surface	Platform type	Termination	Reduction stage	Comments
Dunedoo Solar AFT 7	flake	quartz	<40 mm	36	28	18	flake scar	broad	feather		80 percent riverine cortex
Dunedoo Solar AFT 7	flake	quartz	<30 mm	21	8	4					
Dunedoo Solar AFT 7	retouched flake	quartz	<40 mm	30	20	8					
Dunedoo Solar AFT 7	flake	quartz	<30 mm	22	11	8					
Dunedoo Solar AFT 7	retouched flake	quartz	<30 mm	26	18	7			feather		
Dunedoo Solar AFT 7	broken flake	quartz	<10 mm	3	2	2					
Dunedoo Solar AFT 8	flake	quartz	<20 mm	12	5	5					
Dunedoo Solar AFT 8	flake	quartz	<30 mm	28	18	8	flake scar	broad	feather	tertiary	
Dunedoo Solar AFT 8	flake	other	<30 mm	31	25	18	flake scar	broad	feather		
Dunedoo Solar AFT 9	core	chert	<80 mm	60	81	52					multiple platform core 3 platform
Dunedoo Solar AFT 10	core	other	<70 mm	65	60	59					Multi-platform core with 2 neg flake scars.
Dunedoo Solar AFT 11	flaked piece	quartz	<10 mm	9	9	3					

Site ID	Type	Raw Material	Size class	Length mm	Width mm	Thickness mm	Platform surface	Platform type	Termination	Reduction stage	Comments
Dunedoo Solar AFT 12	flake	quartz	<20 mm	12	10	6	flake scar	broad	feather	tertiary	approx 5 north of fence line
Dunedoo Solar AFT 13	flake	quartz	<10 mm	9	6	2	flake scar	focal	feather		
Dunedoo Solar AFT 14	core	chert	<40 mm	38	38	28					4 platform min 6 scars
Dunedoo Solar AFT 15	flake	quartz	<20 mm	14	12	5	flake scar	broad	feather	tertiary	
Dunedoo Solar AFT 15	flake	tuff	<30 mm	27	22	5	flake scar	broad	feather	secondary	
Dunedoo Solar AFT 15	flaked piece	quartz	<20 mm	0	0	0					
Dunedoo Solar AFT 15	flaked piece	quartz	<10 mm	0	0	0					
Dunedoo Solar AFT 15	flake	chert	<20 mm	19	19	5	flake scar	broad	feather	tertiary	
Dunedoo Solar AFT 15	flaked piece	quartz	<20 mm	19	14	5					
Dunedoo Solar AFT 15	flake	quartz	<20 mm	11	9	3	flake scar	focal	feather	tertiary	
Dunedoo Solar AFT 15	distal fragment	quartz	<20 mm	11	11	3					
Dunedoo Solar AFT 15	flake	quartz	<30 mm	20	14	7	flake scar	broad	feather	tertiary	

Site ID	Type	Raw Material	Size class	Length mm	Width mm	Thickness mm	Platform surface	Platform type	Termination	Reduction stage	Comments
Dunedoo Solar AFT 15	flake	quartz	<20 mm	16	9	6	flake scar	broad	feather	tertiary	
Dunedoo Solar AFT 15	distal fragment	quartz	<20 mm	12	19	4					
Dunedoo Solar AFT 15	flaked piece	tuff	<40 mm	0	0	0					
Dunedoo Solar AFT 15	flaked piece	quartz	<40 mm	0	0	0					
Dunedoo Solar AFT 15	flake	quartz	<30 mm	22	22	6	flake scar	broad	feather	tertiary	
Dunedoo Solar AFT 15	flake	quartz	<20 mm	12	12	4	flake scar	focal	feather	tertiary	
Dunedoo Solar AFT 16	axe	basalt	>100 mm	106	59	26					Basalt flaked axe. Some cortex remaining on all sides. Neg flake scars on both sides and the ends have been flaked to form an edge.
Dunedoo Solar AFT 16	core	quartz	<40 mm	45	31	26					Quartz core. 4 neg flake scars. Located west and 40m from sheep run.
Dunedoo Solar AFT 17	flaked piece	quartz	<40 mm	0	0	0					
Dunedoo Solar AFT 17	core	quartz	<30 mm	22	22	18					1 platform 1 scar
Dunedoo Solar AFT 17	flake	quartz	<30 mm	26	18	8	flake scar	focal	feather	tertiary	adjacent to silo

Site ID	Type	Raw Material	Size class	Length mm	Width mm	Thickness mm	Platform surface	Platform type	Termination	Reduction stage	Comments
Dunedoo Solar AFT 17	flake	chert	<50 mm	50	21	12	flake scar	broad	feather	tertiary	dorsal side has prep adjacent to silo
Dunedoo Solar AFT 17	flake	quartz	<20 mm	16	16	10	flake scar	broad	feather		
Dunedoo Solar AFT 17	flake	quartz	<20 mm	8	11	3	flake scar	broad	feather		
Dunedoo Solar AFT 17	flake	quartz	<20 mm	13	13	7					
Dunedoo Solar AFT 17	axe fragment	basalt	<40 mm	35	24	8					Grounded-edge axe fragments with 2 grinding surfaces 1 surface is 28 x 8, 2 surface is 28 x 5
Dunedoo Solar AFT 17	flake	quartz	<30 mm	0	0	0					
Dunedoo Solar AFT 17	flake	tuff	<30 mm	22	27	8	flake scar	broad	feather		ohr
Dunedoo Solar AFT 17	flake	quartz	<30 mm	30	26	15	flake scar	broad	feather		
Dunedoo Solar AFT 17	core	quartz	<40 mm	33	28	18					1 platform 1 scar
Dunedoo Solar AFT 17	flake	tuff	<20 mm	18	23	6	flake scar	broad	feather		adjacent to animal track
Dunedoo Solar AFT 17	flake	quartz	<20 mm	22	18	6	flake scar	broad	feather	tertiary	
Dunedoo Solar AFT 17	flaked piece	tuff	<20 mm	0	0	0					

Site ID	Type	Raw Material	Size class	Length mm	Width mm	Thickness mm	Platform surface	Platform type	Termination	Reduction stage	Comments
Dunedoo Solar AFT 17	flake	quartz	<10 mm	10	10	4	ground	broad	feather		adjacent to animal track
Dunedoo Solar AFT 17	flake	quartz	<20 mm	10	11	3	flake scar	broad	feather		
Dunedoo Solar AFT 17	flaked piece	quartz	<20 mm	0	0	0					
Dunedoo Solar AFT 18	flake	chert	<20 mm	16	18	4	flake scar	focal	feather		
Dunedoo Solar AFT 18	core	quartz	<50 mm	20	46	18					1 platform 1 scar
Dunedoo Solar AFT 18	flake	quartz	<20 mm	15	8	5	flake scar	broad	feather		
Dunedoo Solar AFT 18	core	other	<30 mm	32	28	26					petrified wood 3 platform 5 scars
Dunedoo Solar AFT 18	flake	quartz	<10 mm	16	11	6	flake scar	broad	feather		
Dunedoo Solar AFT 18	broken flake	quartzite	<80 mm	77	58	21					
Dunedoo Solar AFT 18	flake	quartzite	<50 mm	50	31	21	flake scar	broad	feather		adjacent to animal track 90 percent riverine
Dunedoo Solar AFT 18	broken flake	chert	<20 mm	15	11	6					distal fragments
Dunedoo Solar AFT 18	flaked piece	quartz	<30 mm	30	18	8					

Site ID	Type	Raw Material	Size class	Length mm	Width mm	Thickness mm	Platform surface	Platform type	Termination	Reduction stage	Comments
Dunedoo Solar AFT 18	flake	quartz	<20 mm	18	5	5	flake scar	focal	feather		
Dunedoo Solar AFT 18	core	quartz	<70 mm	28	58	35					1 scars 1 platform
Dunedoo Solar AFT 18	flake	quartz	<20 mm	12	10	3	flake scar	focal	feather		
Dunedoo Solar AFT 18	flake	quartz	<20 mm	19	18	8	flake scar	broad	feather		
Dunedoo Solar AFT 18	flake	quartz	<10 mm	8	5	1	flake scar	focal	feather		
Dunedoo Solar AFT 18	flaked piece	quartz	<20 mm	20	12	7					
Dunedoo Solar AFT 18	flake	quartzite	<60 mm	51	34	15	ground	broad	feather		riverine cortex 80 percent,
Dunedoo Solar AFT 18	flake	quartz	<30 mm	22	18	8	flake scar	focal	feather		
Dunedoo Solar AFT 18	flake	quartzite	<80 mm	75	48	22	flake scar	broad	feather		
Dunedoo Solar AFT 18	flake	other	<30 mm	23	18	7	flake scar	focal	feather		
Dunedoo Solar AFT 18	flake	quartz	<20 mm	18	11	5	ground	focal	feather		broken in two
Dunedoo Solar AFT 18	core	quartz	<40 mm	40	35	30					1 platform 2 scars

Site ID	Type	Raw Material	Size class	Length mm	Width mm	Thickness mm	Platform surface	Platform type	Termination	Reduction stage	Comments
Dunedoo Solar AFT 18	flake	chert	<40 mm	39	13	4	flake scar	broad	feather		
Dunedoo Solar AFT 18	flake	quartz	<20 mm	10	10	5	flake scar	focal	feather		
Dunedoo Solar AFT 18	flake	other	<20 mm	20	25	5	flake scar	broad	feather		small cluster of artefacts in exposure
Dunedoo Solar AFT 18	flaked piece	quartz	<20 mm	0	0	0					
Dunedoo Solar AFT 18	proximal fragment	silcrete	<30 mm	20	34	9		broad		tertiary	3 x flake scars.
Dunedoo Solar AFT 18	core	quartz	<30 mm	30	30	20					Quartz core. 4 x neg flake scars.
Dunedoo Solar AFT 18	Medial flake	quartz	<20 mm	10	20	4				tertiary	Medial flake. 1 neg flake scar.
Dunedoo Solar AFT 18	flake	quartz	<20 mm	11	10	2	faceted	broad	feather		
Dunedoo Solar AFT 18	flake	quartz	<40 mm	31	35	16	flake scar	broad	feather	tertiary	
Dunedoo Solar AFT 18	retouched flake	quartz	<20 mm	20	10	2		focal	feather		Quartz proximal flake. Retouched margins
Dunedoo Solar AFT 18	proximal fragment	quartzite	<40 mm	40	40	20	flake scar	broad			Old, weathered artefact with 1 neg flake scar.
Dunedoo Solar AFT 19	axe	volcanic	>100 mm	120	79	46					axe on flat on brown grey fine silty soil. grinding on one side for 46 mm x 7 mm. possibly ground-edge axe

Site ID	Type	Raw Material	Size class	Length mm	Width mm	Thickness mm	Platform surface	Platform type	Termination	Reduction stage	Comments
Dunedoo Solar AFT 19	hammerstone	quartzite	>100 mm	122	61	39					Broken, quartzite hammerstone. Large, river pebble. Polished with pecking evident on lateral margin.
Dunedoo Solar AFT 20	flake	tuff	<90 mm	39	89	16	flake scar	broad	feather		
Dunedoo Solar AFT 20	hammerstone	quartzite	<100 mm	86	62	42					hammerstone with pitting measures 25 by 12 mm
Dunedoo Solar AFT 20	flake	quartz	<20 mm	20	18	4	flake scar	focal	feather		
Dunedoo Solar AFT 21	core	volcanic	<60 mm	63	18	20					flake core 1 platform 1 scar
Dunedoo Solar AFT 22	flake	quartzite	<50 mm	51	34	14	flake scar	broad	feather		
Dunedoo Solar AFT 23	flake	chert	<40 mm	42	22	4	flake scar	focal	feather	tertiary	1 parallel arris broken into 2 pieces, on dam wall

APPENDIX D SUBSURFACE ARTEFACT DATA

Artefact #	Test Pit	Spit	Type	Raw Material	Colour	Size Class	Length mm	Width mm	Thickness mm	Weight	Plat surf	Plat Type	Termination	Shape.	Retouch	Reduction stage	Notes
1	Substation Pit 1	1	Flake	Quartz	Grey		15	11	3	0.99	Crushed	Focal	Feather	Parallel	No	Tertiary	
2	Substation Pit 1	1	Flake	Quartz	Grey		13	11	2	0.79	Crushed	Focal	Feather	Contracting	No	Tertiary	
3	Substation Pit 1	1	Flake	Quartz	White		10	6	2	0.34	Flake scar	Broad	Feather	Contracting	No	Tertiary	
4	Substation Pit 1	1	Flake	Quartz	White		11	3	2	0.15	Crushed	Focal	Feather	Parallel	No	Tertiary	
5	Substation Pit 1	1	Core	Quartz	White		10	6	3	0.48					No	Tertiary	1 neg flake scar 1 platform
6	Substation Pit 1	1	Flake	Quartz	Grey		13	8	3	0.78	Crushed	Focal	Feather	Expanding	No	Tertiary	
7	Substation Pit 1	1	Flake	Quartz	White		7	12	2	0.38	Flake scar	Broad	Feather	Expanding	No	Tertiary	
8	Substation Pit 1	1	Flake	Quartz	White		18	22	9	5.07	Flake scar	Broad	Feather	Contracting	No	Tertiary	
9	Substation Pit 1	1	Flake	Quartz	White		9	10	2	0.43	Crushed	Focal	Feather	Expanding	No	Tertiary	
10	Substation Pit 1	1	Flake	Quartz	White		10	5	1	0.17	Flake scar	Focal	Feather	Expanding	No	Tertiary	
11	Substation Pit 1	1	Proximal Fragment	Quartz	white		6	5	2	0.21	Crushed	Focal			No	Tertiary	
12	Substation Pit 1	1	Core	Quartz	white		20	16	12	3.96					No	Tertiary	2 neg scar 2 plat
13	Substation Pit 1	2	Proximal Fragment	Basalt	Dark grey		13	10	2	0.61	Flake scar	Broad	Feather	Contracting	No	Tertiary	
14	Substation Pit 1	2	Medial Fragment	Basalt	Dark Grey		7	6	1	0.3					No	Tertiary	
15	Substation Pit 1	2	Proximal	Quartz	Grey		8	8	1	0.27	Crushed	Focal		Expanding	No	Tertiary	

Artefact #	Test Pit	Spit	Type	Raw Material	Colour	Size Class	Length mm	Width mm	Thickness mm	Weight	Plat surf	Plat Type	Termination	Shape.	Retouch	Reduction stage	Notes
			Fragment														
16	Substation Pit 1	2	Flake	Quartz	White		7	4	1	0.06	Flake scar	Focal	Feather	Contracting	No	Tertiary	
17	Substation Pit 1	2	Flaked Piece	Quartz	White	<10 mm				0.09					No	Tertiary	
18	Eastern Paddock Pit 1	1	Flake	Quartz	Grey		38	25	15	16.11	Cortex	Focal	Axial	Expanding	No	Secondary	60% pebble cortex
19	Eastern Paddock Pit 1	2	Proximal Fragment	Quartz	white		7	6	2	0.18	Crushed	Broad		Contracting	No	Tertiary	
20	Substation Pit 3	2	Flake	Quartz	White		20	14	8	2.4	Flake scar	Broad	Feather	Contracting	No	Tertiary	
21	Substation Pit 3	2	Flake	Quartz	white		16	14	4	1.33	Flake scar	Broad	Feather	Contracting	No	Tertiary	
22	Substation Pit 3	2	Flake	Quartz	crystal		11	5	1	0.19	Flake scar	Focal	Feather	Parallel	No	Tertiary	
23	Substation Pit 3	2	Flake	Quartz	White		8	9	1	0.36	Flake scar	Focal	Feather	Expanding	No	Tertiary	
24	Substation Pit 3	2	Flake	Quartz	White		11	10	3	0.58	Flake scar	Broad	Feather	Contracting	No	Tertiary	
25	Substation Pit 3	2	Proximal Fragment	Quartz	white		8	6	2	0.34	Flake scar	Focal			No	Tertiary	
26	Substation Pit 3	2	Flake	Quartz	white		8	6	2	0.16	Flake scar	Focal	Feather	Contracting	No	Tertiary	
27	Substation Pit 3	2	Flake	Quartz	Crystal		10	6	1	0.17	Crushed	Focal	Feather	Contracting	No	Tertiary	
28	Substation Pit 3	2	Flake	Quartz	White		10	7	2	0.3	Flake scar	Focal	Feather	Contracting	No	Tertiary	
29	Substation Pit 3	2	Flake	Quartz	White		10	9	3	0.62	Flake scar	Focal	Feather	Contracting	No	Tertiary	
30	Substation Pit 3	2	Proximal	Quartz	white		5	8	1	0.08	Crushed	Focal	Feather	Expanding	No	Tertiary	

Artefact #	Test Pit	Spit	Type	Raw Material	Colour	Size Class	Length mm	Width mm	Thickness mm	Weight	Plat surf	Plat Type	Termination	Shape.	Retouch	Reduction stage	Notes
			Fragment														
31	Substation Pit 3	2	Flake	Quartz	white		17	8	5	0.98	Flake scar	Focal	Axial	Contracting	No	Tertiary	
32	Substation Pit 3	2	Flake	Quartz	white		9	5	2	0.23	Flake scar	Broad	Feather	Contracting	No	Tertiary	
33	Substation Pit 3	2	Flaked Piece	Quartz	white	<10 mm									No	Tertiary	
34	Substation Pit 3	2	Flake	Quartz	white		8	12	2	0.57	Flake scar	Broad	Feather	Contracting	No	Tertiary	
35	Substation Pit 3	2	Flake	Quartz	white		8	3	2	0.11	Crushed	Focal	Feather	Contracting	No	Tertiary	
36	Substation Pit 3	2	Flake	Quartz	crystal		5	6	1	0.04	Flake scar	Broad	Feather	Contracting	No	Tertiary	
37	Substation Pit 3	2	Core	Basalt	Dark grey		56	39	29	54.65	Flake scar	Focal	Axial	Contracting	No	Tertiary	Flake core, 4 neg flake scar 3 platforms
38	Substation Pit 3	2	Core	Quartz	white		22	12	15	6.25					no	Tertiary	2 neg scar, 2 platforms
39	Substation Pit 3	3	Flake	Quartz	White		8	9	2	0.3	Flake scar	Focal	Feather	Expanding	No	Tertiary	
40	Substation Pit 3	3	Flake	Quartz	white		7	4	1	0.12	Crushed	Focal	Feather	Contracting	No	Tertiary	
41	Substation Pit 3	3	Flake	Quartz	white		12	8	3	0.6	Flake scar	Focal	Feather	Expanding	No	Tertiary	
42	Substation Pit 3	3	Flake	Quartz	white		8	5	1	0.12	Flake scar	Focal	Feather	Expanding	No	Tertiary	
43	Substation Pit 3	3	Flake	Quartz	White		5	4	1	0.06	Crushed	Focal	Feather	Expanding	No	Tertiary	
44	Substation Pit 3	3	Flake	Quartz	white		10	18	5	1.72	Flake scar	Broad	Feather	Contracting	No	Tertiary	
45	Eastern Paddock Pit 1	2	Flaked Piece	Fine-grained silicious	red	<10 mm				0.2					No	Tertiary	
46	Eastern Paddock Pit 4	1	Flaked Piece	Glass	Clear	<20 mm				0.16					No		

Artefact #	Test Pit	Spit	Type	Raw Material	Colour	Size Class	Length mm	Width mm	Thickness mm	Weight	Plat surf	Plat Type	Termination	Shape.	Retouch	Reduction stage	Notes
47	Eastern Paddock Pit 4	Surface find	Core fragment	Quartz	white		60	73	67	363					No	Tertiary	
48	Eastern Paddock Pit 4	2	Flake	Glass	green olive		15	6	2	0.36	Flake scar	Focal	Feather	Contracting	No	Tertiary	
49	Eastern Paddock Pit 4	2	Flake	Glass	green olive		10	18	3	1.06	Crushed	Focal	Feather	Expanding	No	Tertiary	
50	Eastern Paddock Pit 4	2	Flaked Piece	Quartz	white	<20 mm				0.64					No	Tertiary	
51	Eastern Paddock Pit 5	1	Flaked Piece	Quartz	white	<20 mm				1.68					no	Tertiary	
52	Eastern Paddock Pit 19	1	Flake	Silcrete	grey		11	10	3	0.32	flake scar	focal	feather	Contracting	no	Tertiary	
53	Eastern Paddock Pit 19	2	flake	Silcrete	grey		12	20	3	0.92	flake scar	focal	feather		no	Tertiary	
54	Eastern Paddock Pit 19	2	distal fragment	Silcrete	grey		10	11	2	0.49			feather		no	Tertiary	
55	Eastern Paddock Pit 19	2	flake	Silcrete	grey		18	4	1	0.23	flake scar	focal	feather	Parallel	no	Tertiary	
56	Eastern Paddock Pit 19	2	Flaked Piece	Silcrete	grey	<20 mm				0.28					no	Secondary	10 terrestrial cortex
57	Eastern Paddock Pit 19	2	flake	Quartz	white		10	7	3	0.3	flake scar	focal	feather	expanding	no	Tertiary	
58	Eastern Paddock Pit 19	3	flake	Silcrete	grey		12	12	1	0.13	flake scar	focal	feather	Contracting	no	Tertiary	

Artefact #	Test Pit	Spit	Type	Raw Material	Colour	Size Class	Length mm	Width mm	Thickness mm	Weight	Plat surf	Plat Type	Termination	Shape.	Retouch	Reduction stage	Notes
59	Eastern Paddock Pit 19C	1	flake	Fine-grained silicious	blue		23	11	3	1.2	flake scar	Broad	feather	Parallel	no	Tertiary	
60	Eastern Paddock Pit 19C	1	flake	Silcrete	grey		15	11	3	0.69	flake scar	Broad	feather	Contracting	no	Tertiary	
61	Eastern Paddock Pit 19C	1	flake	Silcrete	grey		18	5	4	0.58	flake scar	focal	feather	Parallel	no	Tertiary	
62	Eastern Paddock Pit 19C	2	flake	Silcrete	grey		14	20	3	1.3	flake scar	focal	feather	expanding	no	Tertiary	
63	Eastern Paddock Pit 19C	2	flake	Silcrete	grey		16	10	2	0.52	flake scar	focal	feather	Parallel	no	Tertiary	
64	Eastern Paddock Pit 19C	2	flake	Silcrete	grey		12	18	5	1.2	flake scar	Broad	feather	expanding	no	Tertiary	
65	Eastern Paddock Pit 19C	2	flake	Silcrete	brown		8	15	8	1.64	flake scar	Broad	feather	expanding	no	Secondary	20% terrestrial cortex
66	Eastern Paddock Pit 19C	2	Flaked Piece	Silcrete	grey	<20 mm				0.45					no	Secondary	10% terrestrial cortex
67	Eastern Paddock Pit 19C	2	Flaked Piece	Silcrete	grey	<20 mm				0.23					no	Secondary	20% terrestrial cortex
68	Eastern Paddock Pit 19D	1	flake	Silcrete	grey		25	11	5	1.81	flake scar	focal	feather	Parallel	no	Tertiary	
69	Eastern Paddock Pit 19D	1	flake	Silcrete	grey		14	7	5	0.66	flake scar	Broad	feather	Parallel	no	Tertiary	

Artefact #	Test Pit	Spit	Type	Raw Material	Colour	Size Class	Length mm	Width mm	Thickness mm	Weight	Plat surf	Plat Type	Termination	Shape.	Retouch	Reduction stage	Notes
70	Eastern Paddock Pit 19D	1	flake	Silcrete	grey		27	7	2	0.49	flake scar	focal	feather	Parallel	no	Tertiary	
71	Eastern Paddock Pit 19D	1	flake	Silcrete	grey		22	9	5	1.03	flake scar	focal	feather	expanding	no	Tertiary	
72	Eastern Paddock Pit 19D	1	flake	glass	clear		8	7	1	0.15	flake scar	focal	feather	expanding	no		
73	Eastern Paddock Pit 19D	1	flake	glass	clear		11	19	5	1.09	flake scar	Broad	feather	expanding	no		edge damage
74	Eastern Paddock Pit 19D	1	Flaked Piece	glass	purple		16	23	4	1.92					no		edge damage
75	Eastern Paddock Pit 19D	2	flake	Silcrete	grey		17	18	3	1.16	flake scar	Broad	feather	Contracting	no	Tertiary	
76	Eastern Paddock Pit 19D	2	Flaked Piece	Silcrete	grey	<20 mm				0.57					no	Tertiary	
77	Eastern Paddock Pit 19E	1	flake	Quartz	White		14	6	4	0.6	flake scar	focal	feather	Contracting	no	Tertiary	
78	Substation Pit 1	1	Flaked Piece	Quartz	White	<10 mm				0.23					no	Tertiary	
79	Substation Pit 3	2	Flaked Piece	Quartz	White	<20 mm				0.26					no	Tertiary	

Artefact #	Test Pit	Spit	Type	Raw Material	Colour	Size Class	Length mm	Width mm	Thickness mm	Weight	Plat surf	Plat Type	Termination	Shape.	Retouch	Reduction stage	Notes
80	Substation Pit 3	3	Flaked Piece	Quartz	White	<20 mm				0.22					no	Tertiary	
81	Western Paddock Pit 5	1	flake	Quartz	White		12	8	2	0.29	flake scar	focal	feather	expanding	no	Tertiary	
82	Western Paddock Pit 10	1	flake	Quartz	White		12	8	4	0.54	flake scar	focal	feather	expanding	no	Tertiary	
83	Western Paddock Pit 10	1	flake	Quartz	White		22	11	4	1.04	flake scar	crushed	feather	Contracting	no	Tertiary	
84	Western Paddock Pit 12	1	flake	Quartz	White		15	16	4	1.08	flake scar	Broad	feather	expanding	no	Tertiary	
85	Western Paddock Pit 12	1	flake	Quartz	White		14	12	4	1.01	flake scar	Broad	feather	expanding	no	Tertiary	

APPENDIX E SOIL PROFILES

Pit no	Grid Reference	Spit number	Depth (cm)	Soil Description
Western Paddock	725861E	Surface	-	Exposed sand, no humic layer, some vegetation
Pit 1	6457585N	1	1-5	Light brown, silty sand, well sorted coarse grain, no inclusions
		2	5-10	Part way through spit 2, distinct soil change to a red, hard clay. Last spit excavated.
Western Paddock	725869E	Surface	-	Loose, light brown, silty sand, cropped paddock. High visibility
Pit 2	6457603N	1	1-10	Light brown , silty sand. Top 20mm includes <10% rootlets. Well sorted deposit - no gravels. One quartz retouched flake.
		2	10-20	At the transition between spit 1&2 came onto a friable, mostly red/brown clay - indurated. Began using jimmy bar <5% rootlets.
Western Paddock	725872E	Surface	-	Exposed brown sand. No humic layer some vegetation.
Pit 3	6457622N	1	1-10	Light brown silty sand. Well sorted with some small pebbles. Grass root inclusions. Some mottling of red clay coming through in north west corner. No other inclusions.
		2	10-20	Hard red clay. No inclusions.
Western Paddock	725840E	Surface	-	Exposed brown sand. No humic layer some vegetation.
Pit 4	6457576N	1	1-10	Light brownish red, coarse grained sand. No inclusions. Well sorted sand. Hard red clay coming through. Last spit dug.
Western Paddock	725840E	Surface	-	Exposed sand, some vegetation.
Pit 5	6457602N	1	1-10	Light brown, fine, loose, silty sand <5% rootlets. Well sorted. No inclusions. 1 x quartz flake.
Western Paddock	725839E	Surface	-	Light brown silty sand. Minimal grass.
Pit 6	725839E	1	1-10	Light brown silty sand. Well sorted. Small amount of pebbles. No inclusions.
	6457617N	2	10-20	Coming down onto rusty, red/brown clay with a fine 10mm layer of white ash-like clay. Deposit is cracking - 20mm wide crack running Nth-Sth - 40cm. End of excavation.
Western Paddock	725888E	Surface	-	Exposed reddish brown sand, no humic layer, some vegetation.
Pit 7	6457603N	1	1-10	Light brown silty sand. Well sorted <5% rootlets. 7 piece of river gravel cemented as conglomerate (7x7cm) clay reached - End of excavation.
Western Paddock	725888E	Surface	-	Exposed reddish brown sand no humic layer, some grass roots
Pit 8	6457620N	1	1-10	Reddish brown sand, well sorted. Course grained, clay coming through at base of spit 1. Hard red clay. Last spit dug.
Western Paddock	725888E	Surface	-	Patchy grass with light brown sandy soil.
Pit 9	6457638N	1	1-10	Light brown, silty sand. Well sorted some small, rounded pebbles. Grass. No inclusions.
		2	10-20	Light brown silty sand continuation coarse grained. Well sorted with minimal small pebbles. No other inclusions. Clay coming through at base of spit 2. Last spit dug.
Western Paddock		Surface	-	Loose, fine, light brown silty sand.
Pit 10		1	1-10	Indurated rusty, red brown clay coming up by 70mm depth. <5% rootlets. Well sorted.

Western Paddock	725839E	Surface	-	Exposed reddish brown sand, grass roots, no humic layer.
Pit 11	6457681N	1	1-10	Reddish brown sand, well sorted, with no inclusions. Hard clay at the base of spit 1. Last spit dug.
Western Paddock	725838E	Surface	-	Exposed reddish brown sand, no humic layer, some grass roots.
Pit 12	6457699N	1	1-10	Reddish brown silty sand, very well sorted. Course grained. 2 quartz flakes. Hard clay at base of spit 1. Last spit dug.
Western Paddock	725840E	Surface	-	Loose fine, light brown soil. Lightly grassed.
Pit 13	6457722N	1	1-10	Reddish brown sand, coarse grained. Well sorted with minimal river pebbles. No inclusions. Hard red clay reached at 8cm depth. Last spit dug.
Western Paddock	725840E	Surface	-	Exposed brown sand with grass roots.
Pit 14	6457741N	1	1-10	Dark brown/black medium clay. Very dry & hard. Well sorted with no inclusions. Last spit dug.
Western Paddock	725838E	Surface	-	Exposed brown sand with grass roots. No humic layer.
Pit 15	6457756N	1	1-10	Dark brown to black, very hard indurated silty clay.
Western Paddock	725841E	Surface	-	Light brown, sandy soil minimal grass.
Pit 16	6457785N	1	1-10	Darker soil than to the south dark brown, silty clay. Forming gravel and pebble size peds 20% rootlets.
Western Paddock	7258840E	Surface	-	Exposed dark brown silt, grass roots.
Pit 17	6457782N	1	1-10	Dark brown/black medium clay. Hard and very dry. Well sorted with no inclusions. Excavation ceased due to clay hardening and even more compacted.
Western Paddock	725839E	Surface	-	Exposed dark brown top soil with grass roots. No humic layer.
Pit 18	6457798N	1	1-10	Dark brown/black medium clay. Very hard and dry. Very well sorted with no inclusions. First and only spit dug.
Western Paddock	725839E			Data sheet lost
Pit 19	6457820N			
Western Paddock	725839E			Data sheet lost
Pit 20	64575840N			
Western Paddock	725839E	Surface	-	Dark brown exposed top soil, grass roots.
Pit 21	6457879N	1	1-10	Dark brown /black medium clay. Very hard + dry. Excavation ceased due to greater compaction of clay.
Western Paddock	725839E	Surface	-	Dark brown/black exposed top soil with grass roots. No humic layer.
Pit 22	6457901N	1	10-20	Dark brown/black clay. No inclusions. Clumpy texture.
Western Paddock	725840E	Surface	-	Exposed brown/black clay with grass roots. No humic layer.
Pit 23	6457918N	1	1-10	Dark brown/black medium clay. Very dry. Fine grained and very well soiled with no inclusions. Last spit dug for TP23.
Western Paddock	725840E	Surface	-	Exposed dark brown/black medium clay with some grass roots. No humic layer.

Pit 24	6457937N	1	1-10	Dark brown/black medium clay. Very hard clumps. Fine grained well sorted with minimal small, river pebbles. No other inclusions.
Western Paddock	725840E	Surface	-	Dry, exposed, silty dark/black clay. Some tree roots.
Pit 25	6457961N	1	1-10	Dark brown/black medium clay. Very dry, hard and clumping. Fine grained and silty. No inclusions. Last pit dug.
Western Paddock	725840E	Surface	-	Dry exposed brown/black clay, some grass roots.
Pit 26	6457981N	1	1-10	Dark brown/black medium clay. Very dry, hard clumps. No inclusions. First and only spit dug.
Western Paddock	725839E	Surface	-	Exposed dark brown/black clay with some grass roots.
Pit 27	6457999N	1	1-10	Dark brown/black medium clay. Very dry & clumping. No inclusions. First only spit.
Western Paddock	725840E	Surface	-	Dry, exposed dark brown/black clay, grass roots. No humic layer.
Pit 28	6458020N	1	1-10	Dark brown/black clay. Very dry, hard and clumping. No inclusions. Last spit dug.
Western Paddock	725840E	Surface	-	Dark brown/black exposed clay with some grass roots. No humic layer.
Pit 29	6458040N	1	1-10	Dark brown/black hard clay. Very dry & clumping. No inclusions. Last spit for TP29.
Western Paddock	725840E	Surface	-	Dark brown/black exposed clay. Some grass roots. No humic layer.
Pit 30	645860N	1	1-10	Dark brown/black clay. No inclusions clumpy. Some grass roots.
		2	10-20	Dark brown/black medium clay. Transitioning to dark brown/black hard clay. Very dry, clumps. No inclusions.
Western Paddock	725840E	Surface	-	Dark brown/black clay. Grassy roots.
Pit 31	6458080N	1	1-10	Dark brown clay. No inclusions clumpy soil. Grass root inclusions.
Western Paddock	725840E	Surface	-	Exposed brown/black clay, dry, grass roots.
Pit 32	6458100N	1	1-10	Dark brown/black hard clay. Very dry and clumping. No inclusions. Last spit.
Western Paddock	725840E	Surface	-	Exposed dark brown/black clay. Grass roots.
Pit 33	6458120N	1	1-10	Dark brown/black medium clay. Well sorted, fine grained. Dry and clumping. No inclusions. Last spit dug.
Western Paddock	725840E	Surface	-	Dark brown/black clay, some grass cover.
Pit 34	6458140N	1	1-10	Dark brown clay soil. No inclusions. Grass root. Not as difficult to get through sieve.
Western Paddock	725840E	Surface	-	Dark brown/black exposed, dry clay. Some grass roots. No humic layer.
Pit 35	6458157N	1	1-10	Dark brown/black hard clay. Very dry clumps. Very well sorted with no inclusions. First and last spit dug.
Western Paddock	726170E	Surface	-	Light brown sandy top soil that's exposed. 90% vegetation cover.
Pit 36	6457560N	1	1-10	Light brown, sandy soil coarse grained. Very well sorted with no inclusions.
		2	10-20	Light brown, sandy soil coarse grained. Well sorted. No inclusions.
		3	20-30	Light brown, sandy soil coarse grained. Well sorted. No inclusions.

		4	30-40	After 35cm, the deposit includes eroding cemented sand nodules (between 5-30mm diameter) at <5% of deposit. There are some larger pebble to cobble sized.
		5	40-50	Continuation of light brown/grey sand with increasing cemented sand nodules. Increase in nodule size to 40mm diameter. Sand becoming more compacted. Last spit dug.
Western Paddock	726170E	Surface	-	Light brown sandy top soil with 90% low vegetation cover.
Pit 37	6457580N	1	1-10	Light brown sandy soil, very well sorted. Some grass roots and sheep manure. No other inclusions.
		2	10-20	Continuation of light brown sandy soil with red soil mottling coming through at the base of spit 2. Very well sorted with no inclusions.
		3	20-30	Continuation of light brown sandy soil. Some cement soil (small pieces <2cm). Well sorted, no other inclusions.
		4	30-40	Continuation of light brown, sandy soil, some cement soil. Well sorted. No inclusions.
		5	40-50	Continuation of light brown, sandy soil. Large amount of cement - style soil.
		6	50-60	Light brown sandy soil. Cement style inclusions at base of pit.
Western Paddock	726170E	Surface	-	Cropped paddock. Exposure = 40% due to grass and roots. Light brown, silty sand.
Pit 38	6457600N	1	1-10	Light brown, silty sand., loose. <5% rootlets, <5% gravels.
		2	10-20	After 15cm the deposit became more compacted.
		3	20-30	Sandy, light brown soil. Well sorted with some cemented sand fragments.
		4	30-40	Continuation of light brown, sandy soil. Larger fragments of cemented sand. Otherwise very well sorted.
		5	40-50	Change to a light brown/grey sand. Increase in fragments of cemented sand, gravel and size of fragments.
		6	50-60	Light grey/brown sandy soil. Increase in size and amount of cemented gravel. Sand becoming more compacted. No other inclusions. Last spit dug.
Western Paddock	726170E	Surface	-	Light brown exposed soil 60%. Vegetation 40% coverage.
Pit 39	6457620N	1	1-10	Light brown sandy soil, well sorted with grass roots and some small fragments of cemented sand. No other inclusions.
		2	10-20	Continuation of light brown sandy soil. Increase in frequency of cemented sand fragments. Some red as opposed to light brown.
		3	20-30	Continuation of sand although change to a medium brown/red colour. Increase in cemented fragments, red in colour. Increase in fragment size to 30mm diameter.
		4	30-40	Continuation of medium brown/ red sand. Increase in size of cemented fragments (40-50mm diameter). Increase in sand compaction.
		5	40-50	Continuation of medium brown sand and move into red cement type gravel. No other inclusions.
Western Paddock	726170E	Surface	-	25m from pit #39 to avoid a rabbit burrow. 80% exposed light brown sand. 20% vegetation.
Pit 40	6457645N	1	1-10	Medium brown sand, very well sorted. No inclusions.
		2	10-20	Continuation of medium brown sand. Increase in compaction. Very well sorted. No inclusions.
		3	20-30	Continuation of medium brown sand. Cemented sand fragments (10mm diameter) beginning to occur. 1 quartz possible flaked piece. No other inclusions.
		4	30-40	Continuation of medium brown sand. Cemented sand fragments (up to 20mm diameter) occurring.

		5	40-50	Large cemented sand fragments occurring at bottom of pit.
Western Paddock	726170E	Surface	-	Medium brown sand, 30% exposure, 70% vegetation cover.
Pit 41	6457660N	1	1-10	Medium brown sand. Some grass roots.
		2	10-20	Continuation of medium brown sand. Very well sorted with no inclusions.
		3	20-30	Change to light brown/grey sand. Beginning of small (10-20mm diameter) cemented sand fragments. No other inclusions.
		4	30-40	Continuation of light brown/grey sand. Well sorted with cemented gravel pieces. No other inclusions.
Western Paddock	726168E	Surface	-	80% grass coverage. 20% exposed. Medium brown sand. No humic layer.
Pit 42	6457680N	1	1-10	Light brown sandy soil. Small pebble inclusions (<10mm). Some grass roots. No other inclusions.
		2	10-20	Continuation of light brown, sandy soil. Small pebble inclusions. No other inclusions.
		3	20-30	Continuation of light brown, sandy soil. Small pebble inclusions. No other inclusions.
		4	30-40	Continuation of light brown sandy soil. Cement type soil at base of pit.
Western Paddock	726170E	Surface	-	Exposed brown sand 10%. 90% grass roots coverage. No humic layer.
Pit 43	6457702N	1	1-10	Medium brown sand, course-grained. Very well sorted. No inclusions.
		2	10-20	Continuation of medium brown sand, course-grained, very well sorted. No inclusions.
		3	20-30	Medium brown sand, course-grained. Very well sorted. Transition to hard red clay at base of spit 3 Last spit dug.
Eastern Paddock	726809E	Surface	-	Exposed medium brown sand 20%, 80% grass coverage. No humic layer.
Pit 1	6457863N	1	1-10	Medium brown sand well sorted with some quartz pebbles. 2 flakes found (quartz + quartzite). No other inclusions.
		2	10-20	Continuation of medium brown sand, very well sorted. 1 flake. No other inclusions.
		3	20-30	Continuation of medium brown sand, course grained. Very well sorted. Compaction of sand toward base of spit. Red clay coming through at bottom of spt. Last spit dug.
Eastern Paddock	726809E	Surface	-	Low grass cover on 90% of pit. Light-medium brown sandy soil.
Pit 2	6457877N	1	1-10	Light brown sandy soil. Some grass roots. Well sorted. No other inclusions.
		2	10-20	Light brown, sandy soil, very well sorted with no inclusions. Red clay at the base of spit 2. Last spit dug.
Eastern Paddock	726809E	Surface	-	Brown sand 80%. Exposed grass roots 20%. No humic layer.
Pit 3	6457897N	1	1-10	Light/medium brown sandy soil. Some grass roots. Fine consistency, very well sorted. No other inclusions.
		2	10-20	Light brown sand. Well sorted with some river pebbles. No other inclusions.
Eastern Paddock	726809E	Surface	-	Test Pit moved east 50cm due to green ants nest. Grass roots coverage 90%, 10% exposed. 1 large quartz core on surface.
Pit 4	6457917N	1	1-10	Medium brown sand, compacted. Well sorted with some small pebbles. 1 quartz core, 1 possible clear glass flake. Some glass fragments. No other inclusions.
		2	10-20	Medium brown sand, well sorted. 2 green glass fragments and 1 possible quartz flake. Red clay at 22cm. Last spit dug.
Eastern Paddock	727040E	Surface	-	10% exposed medium brown sand. 90% grass roots. No humic layer.

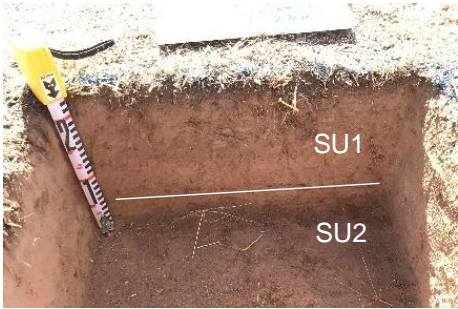
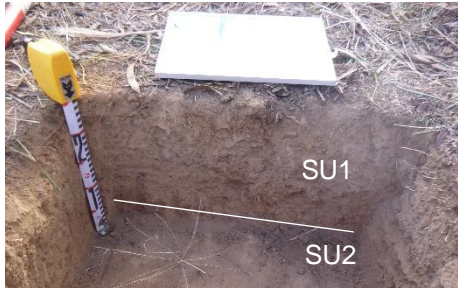
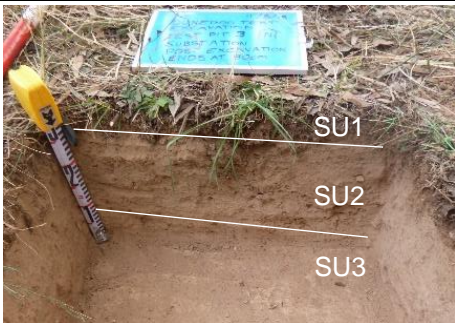
Pit 5	6457887N	1	1-10	Medium brown sand, well sorted.
		2	10-20	Red clay coming through at 14cm. Some glass (purple) fragments found. 1 quartz possible flake. Last spit dug.
Eastern Paddock	727041E	Surface	-	Umbrella grass coverage on 99% of pit. Medium brown silty soil.
Pit 6	6457907N	1	1-10	Medium brown/red clay. Transitioning to black hard clay at base of spit 1. Well sorted with some quartz pebbles. No other inclusions. Last spit dug.
Eastern Paddock	727040 E	Surface	-	Medium brown sand 10% exposed, 90% grass coverage.
Pit 7	6457930N	1	1-10	Medium brown, light clay transitioning to clumping hard clay at base of spit. Very well sorted, some grass roots. No other inclusions. Last spit dug.
Eastern Paddock	727040E	Surface	-	Dark brown light silty clay. 10% exposed, 90% grass coverage.
Pit 8	6457950N	1	1-10	Dark brown/black hard clay, compacted and clumping. No inclusions. Red clay coming through at base of spit. Last spit dug.
Eastern Paddock	727040E	Surface	-	Dark brown/black silty clay 80%. Grass coverage 20%. No humic layer.
Pit 9	6457972N	1	1-10	Dark brown/black hard clay. Compacted. Very well sorted with no inclusions. Last spit dug.
Eastern Paddock	727041E	Surface	-	90% grass coverage, 10% dark brown/black clay.
Pit 10	6457993N	1	1-10	Dark brown/black hard clay. No inclusions. Black clay sitting on hard red clay at 10cm.
Eastern Paddock	727042E	Surface	-	Dark brown/black clay 20% exposure, 80% grass coverage.
Pit 11	6458015N	1	1-10	Dark brown/black hard clay. Clumping and compacted. Some grass roots. No other inclusions.
Eastern Paddock	726809E	Surface	-	Short grass covered 100%, some sheep manure.
Pit 12	6457863N	1	1-10	Light brown, sandy soil. Well sorted. 3 possible artefacts.
		2	10-20	Continuation of light brown, sandy soil. Well sorted. No inclusions.
		3	20-30	Light brown/grey sand. Very well sorted with no inclusions. Red hard clay at 27cm near base of spit. Last spit dug.
Eastern Paddock	726814E	Surface	-	90% short grass coverage, 10% exposed medium brown sand, sheep manure.
Pit 13	6457857N	1	1-10	Light brown, sandy soil. Grass roots. Well sorted. No other inclusions.
		2	10-20	Transition to a light brown/grey sand. Very well sorted with no inclusions.
		3	20-30	Continuation of light brown/grey sand. Very well sorted with no inclusions. Course-grained. Red hard clay at 22cm on western wall and at 26cm on eastern wall. Last spit dug.
Eastern Paddock	726809E	Surface	-	100% grass coverage, sheep manure.
Pit 14	6457852N	1	1-10	Medium brown sand, course grained. Very well sorted with no inclusions.
		2	10-20	Transition to a light brown/grey sand, course-grained. Very well sorted with no inclusions.
		3	20-30	Continuation of light brown/grey sand, course grained. Very well sorted with no inclusions. Red hard clay at base of spit.
Eastern Paddock	726804E	Surface	-	80% grass coverage, 20% exposed medium brown sandy soil. No humic layer.
Pit 15	6457857N	1	1-10	Light brown, sandy soil, very well sorted with no inclusions.
		2	10-20	Light brown/grey sand. Very well sorted with no inclusions.
		3	20-30	Light brown/ grey sand at top of spit 3. Red hard clay at base. No inclusions. Last spit dug.

Eastern Paddock	726809E	Surface	-	9-% exposed medium brown sand.
Pit 16	6457923N	1	1-10	Light brown sand, course-grained. Very well sorted with no inclusions. 1 historic glass bottle stopper.
		2	10-20	Continuation of light brown sand, very well sorted. Poly water pipe running from the NW to SE corner.
		3	20-30	Red clay coming through at 24cm. Last spit dug.
Eastern Paddock	726814E	Surface	-	20% exposed medium brown sand, 80% grass coverage.
Pit 17	6457917N	1	1-10	Medium brown sand, course-grained. Very well sorted with minimal river pebbles. A few glass fragments (clear and green). No other inclusions.
		2	10-20	Continuation of medium brown sand, course-grained. Very well sorted with no other inclusions.
		3	20-30	Continuing medium brown sand, course-grained. Very well sorted with no inclusions. Red hard clay at 24cm. Last spit dug.
Eastern Paddock	726809E	Surface	-	80% grass coverage, 20% exposed medium brown sand.
Pit 18	6457912N	1	1-10	Medium brown sand, course-grained. Very well sorted with no inclusions.
		2	10-20	Continuation of medium brown sand, course grained. Very well sorted with no inclusions.
		3	20-30	Continuing medium brown sand, course grained. Very well sorted with no inclusions. Hard red clay at 26cm. Excavations ceased.
Eastern Paddock	726804E	Surface	-	70% grass coverage, 30% exposed medium brown sand.
Pit 19A	6457917N	1	1-10	Medium brown sand, well sorted. Historic glass fragments and ceramic. 1 chert flake. No other inclusions.
		2	10-20	Medium brown sand continuing, course-grained. Historic glass and 7 flakes (quartz and chert). No other inclusions.
		3	20-30	Medium brown sand continuing, course grained. 1 chert flake. No other inclusions. Red hard clay coming through at 23cm. Last spit dug.
Eastern Paddock	726805E	Surface	-	80% exposed medium brown sand. 20% low grass roots.
Pit 19B	6457917N	1	1-10	Medium brown sand. Very well sorted. Historic glass (clear and purple) fragments and ceramic fragments. No other inclusions.
		2	10-20	Transition to a light brown/grey compacted sand. Very well sorted. Red clay mottled through the base of spit 2. No inclusions. Last spit dug.
Eastern Paddock	726805E	Surface	-	80% exposed medium brown sand, 20% grass coverage.
Pit 19C	6457916N	1	1-10	Medium brown sand, well sorted. 3 chert flakes. Glass and ceramic historic fragments. No other inclusions.
		2	10-20	Transition to a light brown sand. Historic glass and ceramic fragments. 8 chert flakes. No other inclusions.
		3	20-30	Light brown sand continuing, becoming compacted and harder. Very dry. Well sorted. No other inclusions. Red clay at 24cm. Last spit dug.
Eastern Paddock	726804E	Surface	-	60% dirt exposure (medium brown sand), 40% grass coverage.
Pit 19D	6457916N	1	1-10	Medium brown sand, well sorted with some pebbles. Historic glass (purple, green, clear) fragments and ceramic. 4 chert flakes. 3 possible glass flakes.
		2	10-20	Transition to a light brown sand, hard and compacted. 2 chert flakes, 1 quartz flake. Some glass fragments (historic).

		3	20-30	Continuation of light brown sand, hard and compacted. Some glass fragments. Hard red clay at 24cm. No other inclusions. Last spit excavated.
Eastern Paddock	726803E	Surface	-	80% exposed medium brown sand, 20% grass coverage. No humic layer.
Pit 19E	6457916N	1	1-10	Medium brown sand, well sorted. Some glass and ceramic historic fragments. 1 possible quartz core. No other inclusions.
		2	10-20	Transition to a light brown sand, hard + compacted. Very well sorted. Historic glass and ceramic fragments. 1 quartz flake. No other inclusions.
		3	20-30	Continuing light brown hard compacted sandy soil. Very well sorted. No inclusions. Hard red clay at 24cm coming through. Last spit dug.
Eastern Paddock	726803E		-	Data sheet lost
Pit 19F	6457917N			
Eastern Paddock	727229E	Surface	-	20% visibility. Cropped paddock.
20	6458138N	1	1-10	Dark brown, silty sand. Deposit is granular. <2% gravels and pebbles present.
		2	10-20	After 100mm the deposit becomes dry, mottled clay forming <40mm peds. Last spit dug.
Eastern Paddock	727207E	Surface	-	Dark brown/black soil. Long grass cover on pit.
Pit 21	6458143N	1	1-10	Dark brown/black silty soil. Some grass roots. Clumpy texture, difficult to sieve. Hard black clay at base of pit.
Eastern Paddock	726791E	Surface	-	Dark brown/black soil. Low grass coverage.
Pit 22	6458198N	1	1-10	Dark brown/ black silty clay. No inclusions. Hard black clay at base of pit.
Eastern Paddock	726813E	Surface	-	Dark brown/black silty soil. Partially covered in grass.
Pit 23	6458197N	1	1-10	Dark brown/black silty soil. Grass roots. No other inclusions. Black clay at base of pit.
Substation	726660E	Surface	-	100% grass coverage.
Pit 1	6455894N	1	1-10	Light brown, fine grained silty soil. Grass roots. Well sorted. 11 artefacts.
		2	10-20	Light brown, fine grained silty soil. Well sorted. Hard clay at base of pit. 5 artefacts.
Substation	726648E	Surface	-	100% grass coverage.
Pit 2	6455877N	1	1-10	Medium brown silty sand, compacted. Very dry and clumping. 6 possible quartz flakes/ small cores. Well sorted with no other inclusions.
		2	10-20	Medium/light brown/yellow/ medium clay. Hard, dry and clumping. Poorly sorted with pebbles and small rocks. No other inclusions.
Substation	726660E	Surface	-	100% grass coverage. Pit located under trees.
Pit 3	6455866N	1	1-10	Light brown, silty sandy clay. Quartz artefacts.
		2	10-20	Light brown, fine/loose silty, sandy clay. Approx. 12 artefacts.
		3	20-30	Light brown fine silty, sandy clay. 9 artefacts found. Hard clay at base of spit.
Substation	726663E	Surface	-	Leafy cover and some grass. Yellow, sandy soil underneath.
Pit 4	6455839N	1	1-10	Rubble like clay with grass roots and debris. Hard clay at base of spit.

Substation	726642E	Surface	-	Complete long grass coverage of pit.
Pit 5	6455842N	1	1-10	Light brown silty sand. Very poorly sorted with gravel, rocks and pebbles. No other inclusions.
		2	10-20	Continuation of light brown silty sand. Very poorly sorted with gravel, rocks and pebbles. Appears to be fill. No other inclusions.
		3	20-30	Continuation of light brown silty sand. Very poorly sorted with gravel, rocks and pebbles. Hard red clay at base of spit 3.

Stratigraphic units at Dunedoo Solar Farm

Area Tested	Unit	Image	Sediment Description
Western Paddock	1		Brown to reddish brown sandy silty loam
	2		Red clay
Eastern Paddock	1		Brown to reddish brown sandy silty loam
	2		Red clay
Substation	1		Dark brown to reddish brown sandy silty loam
	2		light reddish brown sandy clay
	3		Red clay

APPENDIX F SITE CARDS

Redacted from public display

APPENDIX G UNEXPECTED FINDS PROTOCOL

G.1 Introduction

This unexpected find protocol has been developed to provide a method for managing unexpected non-Aboriginal and Aboriginal heritage items identified during the construction and maintenance of the Project. The unexpected find protocol has been developed to ensure the successful delivery of the Project while adhering to the NSW *National Parks and Wildlife Act 1974* (NPW Act) and the *Heritage Act 1977* (Heritage Act).

All Aboriginal heritage objects are protected under the NPW Act Under Part 6 of the Act, Though in a State Significant Development Conditions of Consent (CoC) may be issued that allows for conditional harm to Aboriginal objects. There are some circumstances where despite undertaking appropriate heritage assessment prior to the commencement of works Aboriginal cultural heritage items or places are encountered that were not anticipated which may be of scientific and/or cultural significance.

Therefore, it is possible that unexpected heritage items may be identified during construction, operation and maintenance works. If this happens the following unexpected find protocol should be implemented to avoid breaching obligations under the NPW Act. This unexpected find protocol provides guidance as to the circumstances under which finds may occur and the actions subsequently required.

G.2 What is a Heritage Unexpected Find?

An unexpected heritage find is defined as any possible Aboriginal or non-Aboriginal heritage object or place, that was not identified or predicted by the Project's heritage assessment and may not be covered by appropriate permits or development consent conditions. Such finds have potential to be culturally significant and may need to be assessed prior to development impact.

Unexpected heritage finds may include:

- Aboriginal stone artefacts, shell middens, modified trees, mounds, hearths, stone resources and rock art;
- Human skeletal remains; and
- Remains of historic infrastructure and relics.

G.3 Aboriginal Heritage Places or Objects

All Aboriginal objects are protected under the NSW *National Parks and Wildlife Act 1974* (NPW Act).

An Aboriginal object is defined as:

Any deposit, object or material evidence (not being a handicraft made for sale) relating to the Aboriginal habitation of the area that comprises New South Wales, being habitation before or concurrent with the occupation of that area by persons on non-Aboriginal extraction and includes Aboriginal remains.

All Aboriginal objects are protected and it is an offence to harm or desecrate an Aboriginal object or place.

G.4 Historic Heritage

The *Heritage Act 1977* protects relics which are defined as:

Any deposit, artefact, object or material evidence that relates to the settlement of the area that comprises NSW, not being Aboriginal settlement; and is of State or local heritage significance.

G.5 Unexpected Find Management Procedure

In the event that any unexpected Aboriginal heritage places or objects or any substantial intact historic archaeological relics that may be of State or local significance are unexpectedly discovered during the Project, the following management protocols will be implemented. **Note: this process does not apply to human or suspected human remains. Follow Section G6 Human Skeletal Remains below if human remains or suspected human remains are encountered.**

1. Works within the immediate identified heritage location will cease and no further harm to the object will occur. Personnel should notify their supervisor of the find, who will notify the project manager.
2. Establish whether the unexpected find is located within an area covered by approved Conditions of Consent or not.
3. **If the find it is determined to be covered under approved CoC undertake the following steps**
 - a. Establish an appropriate buffer zone of at least 20 metres to allow for the assessment and management of the find. All site personnel will be informed about the buffer zone with no further works to occur within the buffer zone. The area will be secured to avoid any further harm to the Aboriginal object.
 - b. A heritage specialist or the project archaeologist will be engaged to assess the Aboriginal place or object encountered and undertake appropriate salvage of the site in line with the mitigation methods and approval requirements of the CoC. An AHIMS site card will be completed on the discovery of the newly identified Aboriginal objects / Aboriginal heritage items. Should the object(s) / heritage items be salvaged under the Conditions of Consent, an Aboriginal Site Impact Recording Form (ASIRF) must be completed and submitted to AHIMS. Salvage of Aboriginal heritage items would not include scarred trees. If previously unidentified scarred trees are identified, further consultation with the Biodiversity and Conservation Division (BCD) team within the Department of Planning, Industry and Environment (DPIE) and Aboriginal stakeholders would need to be undertaken regarding management.
 - c. Following appropriate salvage of the unexpected find works may continue at this location
4. **If the unexpected find is not covered under the existing approved CoC undertake the following steps.**
 - a. All works at this location must cease and no further harm to the object will occur.
 - b. An appropriate buffer zone of at least 20 metres to allow for the assessment and management of the find must be established. All site personnel will be informed about the buffer zone with no further works to occur. The area will be secured to avoid any further harm to the Aboriginal object.
 - c. A heritage specialist or the project archaeologist will be engaged to assess the Aboriginal place or object encountered. The Registered Aboriginal Parties (RAPs) may also be engaged to assess the cultural significance of the place or object.
 - d. The discovery of an Aboriginal object will be reported to the local BCD office within DPIE as soon as practical on 131 555 and works will not recommence at the heritage place or object until advised to do so in writing by the BCD team within DPIE. A site card will be completed and submitted to AHIMS for registration and the details of the site and its location will be provided to the BCD team within DPIE.
 - e. If the unexpected find can be managed *in situ*, works at the location will not recommence until appropriate heritage management controls have been implemented, such as protective fencing.
 - f. If the unexpected find cannot be managed *in situ*, works at the heritage location will not recommence until further assessment is undertaken and appropriate approvals to impact Aboriginal cultural heritage are confirmed and authorised in writing by the BCD team within DPIE.

5. For historic relics, work must cease in the affected area and the Heritage Council must be notified in writing. This is in accordance with section 146 of the *Heritage Act 1977*.
6. Depending on the nature of the discovery, additional assessment may be required prior to the recommencement of work in the area. At a minimum, any find should be recorded by an archaeologist.

Human Skeletal Remains

If any human remains or suspected human remains are discovered during any works, all activity in the immediate area must cease immediately. The following plan describes the actions that must be taken in instances where human remains, or suspected human remains are discovered. Any such discovery at the activity area must follow these steps.

Discovery:

- If any human remains or suspected human remains are found during any activity, works in the **immediate vicinity must** cease and the Project Manager must be contacted immediately.
- The remains must be left in place and protected from harm or damage.
- All personnel should then leave the immediate vicinity of the area.

Notification:

- The NSW Police must be notified immediately. Details of the location and nature of the human remains must be provided to the relevant authorities.
- If there are reasonable grounds to believe that the remains are Aboriginal, the following must also occur;
 - a. The Biodiversity and Conservation Division (BCD) of the Department of Planning, Industry and Environment must be contacted as soon as practicable and provide any available details of the remains and their location. The BCD's Environment Line can be contacted on 131 555;
 - b. The relevant project archaeologist may be contacted to facilitate communication between the police, BCD and Aboriginal community groups. Aboriginal community groups must be notified throughout the process.

Process:

- If the remains are considered to be Aboriginal by the Police and BCD no work can recommence at the particular location of the find unless authorised in writing by BCD.
- Recording of Aboriginal ancestral remains must be undertaken by, or be conducted under the direct supervision of, a specialist physical anthropologist or other suitably qualified person.
- Archaeological reporting of Aboriginal ancestral remains must be undertaken by, or reviewed by, a specialist physical anthropologist or other suitably qualified person, with the intent of using respectful and appropriate language and treating the ancestral remains as the remains of Aboriginal people rather than as scientific specimens.

If the remains are considered to be Aboriginal by the Police and BCD, an appropriate management and mitigation, or salvage strategy will be implemented following further consultation with the Aboriginal community and BCD.