

13L NARROMINE ROAD (Lot 22 DP1038924) & JANNALI ROAD  
(Lot 7 DP223428), DUBBO NSW

## ABORIGINAL HERITAGE ASSESSMENT

Report to The Bathla Group

June 2022





## EXECUTIVE SUMMARY

Apex Archaeology were engaged to assist The Bathla Group in the Aboriginal heritage assessment of 13L Narromine Road (Lot 22 DP1038924) and Jannali Road (Lot 7 DP223428), Dubbo, NSW, to support Development Applications (DA's) for the site.

This report has been produced in accordance with the DECCW 2010 *Due Diligence Code of Practice for the Protection of Aboriginal Objects in New South Wales* (the Due Diligence Code of Practice).

The study area is located directly west of Dubbo at and is legally defined as Lot 22 DP 1038924 and Lot 7 DP 223428. The study area is located 300 km north west of Sydney. It is located within the Dubbo Local Government Area (LGA). The study area comprises approximately 272ha.

A site visit was conducted in October of 2021 and May 2022. No previously registered archaeological sites were located within the study area. No newly identified archaeological material was identified during the survey.

Ground surface visibility (GSV) was low throughout the study area. GSV was rated at 10% overall. No raw material sources were identified within the study area.

Ground disturbance was moderate throughout the study area due to historic vegetation clearance, subsequent agricultural development and ongoing rural land use practices. The study area is irregular of shape and is situated on a generally level area between Narromine Road to the east, the Main Western Railway to the south and Rosedale Road to the west.

The level of disturbance from prior land clearing activities, agriculture, and current land use is visible throughout the study area. No specific landforms were identified within the study area that conform to areas of potential sub-surface archaeological deposits. The area is almost 2km from the Macquarie River and the closest registered AHIMS sites are located more than 1.5km west along Sandy Creek.

The following recommendations have been made:

- No further Aboriginal archaeological assessment is required prior to the commencement of development works as described in this report.
- The results of this assessment fulfil the requirement for Due Diligence in accordance with the *Due Diligence Code of Practice for the Protection of Aboriginal Objects in New South Wales* (Code of Practice). Works may proceed with caution.
- This heritage assessment must be kept by The Bathla Group so that it can be presented, if needed, as a defence from prosecution under Section 86(2) of the National Parks and Wildlife Act 1974.
- The proposed works must be contained to the area assessed during this due diligence assessment, as shown on Figure 1. If the proposed location is



amended or expanded, further archaeological assessment may be necessary to determine if the proposed works will impact any Aboriginal objects or archaeological deposits.

- Should unanticipated archaeological material be encountered during site works, all work must cease and an archaeologist contacted to make an assessment of the find. Further archaeological assessment and Aboriginal community consultation may be required prior to the recommencement of works. Any objects confirmed to be Aboriginal in origin must be reported to Heritage NSW.



Apex Archaeology would like to acknowledge the Aboriginal people who are the traditional custodians of the land in which this project is located. Apex Archaeology would also like to pay respect to Elders both past and present.

## DOCUMENT CONTROL

The following register documents the development and issue of the document entitled '13L Narromine Rd (Lot 22 DP1038924) and Jannali Rd (Lot 7 DP223428), Dubbo NSW – Aboriginal Heritage Assessment', prepared by Apex Archaeology in accordance with its quality management system.

Revision	Prepared by	Reviewed by	Comment	Issue Date
1 – Draft	Leigh Bate	Jenni Bate	Issue for client review	2 November 2021
2 – Final	Leigh Bate	Sahand Farooji	Final issued to client	17 November 2021
3 – Final	Leigh Bate	Aziz Madadghar	Additional study area added – minor updates	17 May 2022
4 – Final	Leigh Bate	Paul Solomon	Minor updates	24 June 2022



## GLOSSARY OF TERMS

<b>Aboriginal Object</b>	An object relating to the Aboriginal habitation of NSW (as defined in the NPW Act), which may comprise a deposit, object or material evidence, including Aboriginal human remains.
<b>AHIMS</b>	Aboriginal Heritage Information Management System maintained by Heritage NSW, detailing known and registered Aboriginal archaeological sites within NSW
<b>AHIP</b>	Aboriginal Heritage Impact Permit
<b>BP</b>	Before Present, defined as before 1 January 1950.
<b>Code of Practice</b>	The DECCW September 2010 <i>Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales</i>
<b>Consultation</b>	Aboriginal community consultation in accordance with the DECCW April 2010 <i>Aboriginal cultural heritage consultation requirements for proponents 2010</i> . Consultation is not a required step in a due diligence assessment; however, it is strongly encouraged to consult with the relevant Local Aboriginal Land Council and to determine if there are any Aboriginal owners, registered native title claimants or holders, or any registered Indigenous Land Use Agreements in place for the subject land
<b>DA</b>	Development Application
<b>DECCW</b>	The Department of Environment, Climate Change and Water – now Heritage NSW
<b>Disturbed Land</b>	If land has been subject to previous human activity which has changed the land's surface and are clear and observable, then that land is considered to be disturbed
<b>Due Diligence</b>	Taking reasonable and practical steps to determine the potential for an activity to harm Aboriginal objects under the <i>National Parks and Wildlife Act 1974</i> and whether an application for an AHIP is required prior to commencement of any site works, and determining the steps to be taken to avoid harm
<b>Due Diligence Code of Practice</b>	The DECCW Sept 2010 <i>Due Diligence Code of Practice for the Protection of Aboriginal Objects in New South Wales</i>
<b>DRC</b>	Dubbo Regional Council
<b>GIS</b>	Geographical Information Systems
<b>GSV</b>	Ground Surface Visibility
<b>Harm</b>	To destroy, deface or damage an Aboriginal object; to move an object from land on which it is situated, or to cause or permit an object to be harmed
<b>Heritage NSW</b>	Heritage NSW in the Department of Premier and Cabinet, incorporating the former DPIE/OEH and Heritage Branch
<b>LALC</b>	Local Aboriginal Land Council
<b>LGA</b>	Local Government Area
<b>NPW Act</b>	NSW <i>National Parks and Wildlife Act 1974</i>
<b>OEH</b>	The Office of Environment and Heritage of the NSW Department of Premier and Cabinet – now Heritage NSW
<b>RAPs</b>	Registered Aboriginal Parties



## CONTENTS

<b>1.0</b>	<b>Introduction.....</b>	<b>1</b>
1.1	Study Area .....	1
1.2	Investigators and Contributors .....	1
1.3	Statutory Context .....	1
1.3.1	Commonwealth Native Title Act 1993.....	1
1.3.2	NSW National Parks and Wildlife Act 1974 .....	3
1.3.3	NSW National Parks and Wildlife Regulation 2019.....	3
1.4	NSW Due Diligence Code of Practice .....	4
<b>2.0</b>	<b>The Due Diligence Code of Practice Process.....</b>	<b>6</b>
2.1	Step 1: Will the activity disturb the ground surface? .....	6
2.2	Step 2a: AHIMS and Available Literature Search.....	6
2.2.1	AHIMS Results .....	6
2.2.2	Literature review.....	7
2.2.3	Synthesis.....	8
2.3	Step 2b: Landscape Features .....	9
2.3.1	Existing Environment.....	9
2.3.2	Ethnohistory .....	10
2.3.3	Raw Materials.....	11
2.3.4	Procurement .....	14
2.3.5	Manufacture.....	14
2.3.6	Predictive Model .....	15
2.4	Step 3: Avoid harm .....	16
2.5	Step 4: Visual Inspection .....	16
2.5.1	Survey Coverage.....	17
2.5.2	Discussion.....	26
<b>3.0</b>	<b>Conclusions and Recommendations.....</b>	<b>27</b>
3.1	Conclusions .....	27
3.2	Recommendations.....	27
<b>4.0</b>	<b>References.....</b>	<b>28</b>
	<b>Appendix A: AHIMS Basic Search Results.....</b>	<b>30</b>



## FIGURES

Figure 1: General location of the study area in its local context.....	2
Figure 2: The Strahler system (Source: Department of Planning and Environment 2016).....	10

## PLATES

Plate 1: General view from the Narromine Road entrance into the property looking west across the northern portion of the area. ....	17
Plate 2: Looking across the oat fields within the northern portion of the property.....	18
Plate 3: Looking west along modified drainage swale embankment within the northern portion of the study area.....	18
Plate 4: Looking north east across the northern dam site.....	19
Plate 5: Looking west towards the western boundary of the property within the central portion of the study area. ....	19
Plate 6: Looking north along the western boundary of the site .....	20
Plate 7: Looking south through the central portion of the study area. ....	20
Plate 8: Looking north through the central portion of the study area within the southern section of the study area.....	21
Plate 9: Looking south towards the southern boundary of the study area. ....	21
Plate 10: Looking north over the central dam site within the study area .....	22
Plate 11: Looking north east across the central portion of the study area within the central portion of the site. ....	22
Plate 12: Looking north west over the eastern portion of Lot 7 DP 223428. ....	23
Plate 13: Looking south west across the central portion of Lot 7 DP 223428. ....	23
Plate 14: Looking north over the central portion of Lot 7 DP 223428 showing recent disturbance from sheep over an area of exposure. ....	24
Plate 15: Looking west across Lot 7 DP 223428 showing piles of rocks removed from across the site. ....	24
Plate 16: Looking south showing recent disturbance from 4WD (ground was extremely wet). ....	25
Plate 17: Looking south along the eastern border of Lot 7 DP 223428. ....	25



## 1.0 INTRODUCTION

Apex Archaeology were engaged to assist The Bathla Group in the Aboriginal heritage assessment of 13L Narromine Road (Lot 22 DP1038924) and Jannali Road (Lot 7 DP223428), Dubbo, NSW, to support Development Applications (DA's) for the site.

This report has been produced in accordance with the *Due Diligence Code of Practice for the Protection of Aboriginal Objects in New South Wales* (the Due Diligence Code of Practice).

### 1.1 STUDY AREA

The study area is located directly west of Dubbo and is legally defined as Lot 22 DP 1038924 and Lot 7 DP 223428. The study area is located 300 km north west of Sydney. It is located within the Dubbo Local Government Area (LGA). The study area comprises approximately 272ha.

### 1.2 INVESTIGATORS AND CONTRIBUTORS

This report has been prepared by Leigh Bate, Director and Archaeologist with Apex Archaeology, and reviewed by Jenni Bate, Director and Archaeologist with Apex Archaeology. Both have over 15 years of consulting experience within NSW.

Name	Role	Qualifications
Leigh Bate	Project Manager, Primary Report Author, GIS, Field inspection	B.Archaeology; Grad. Dip. Arch; Dip. GIS
Jenni Bate	Review	B.Archaeology; Grad. Dip. CHM

### 1.3 STATUTORY CONTEXT

Heritage in Australia, including both Aboriginal and non-Aboriginal heritage, is protected and managed under several different Acts. The following section presents a summary of relevant Acts which provide protection to cultural heritage within NSW.

#### 1.3.1 COMMONWEALTH NATIVE TITLE ACT 1993

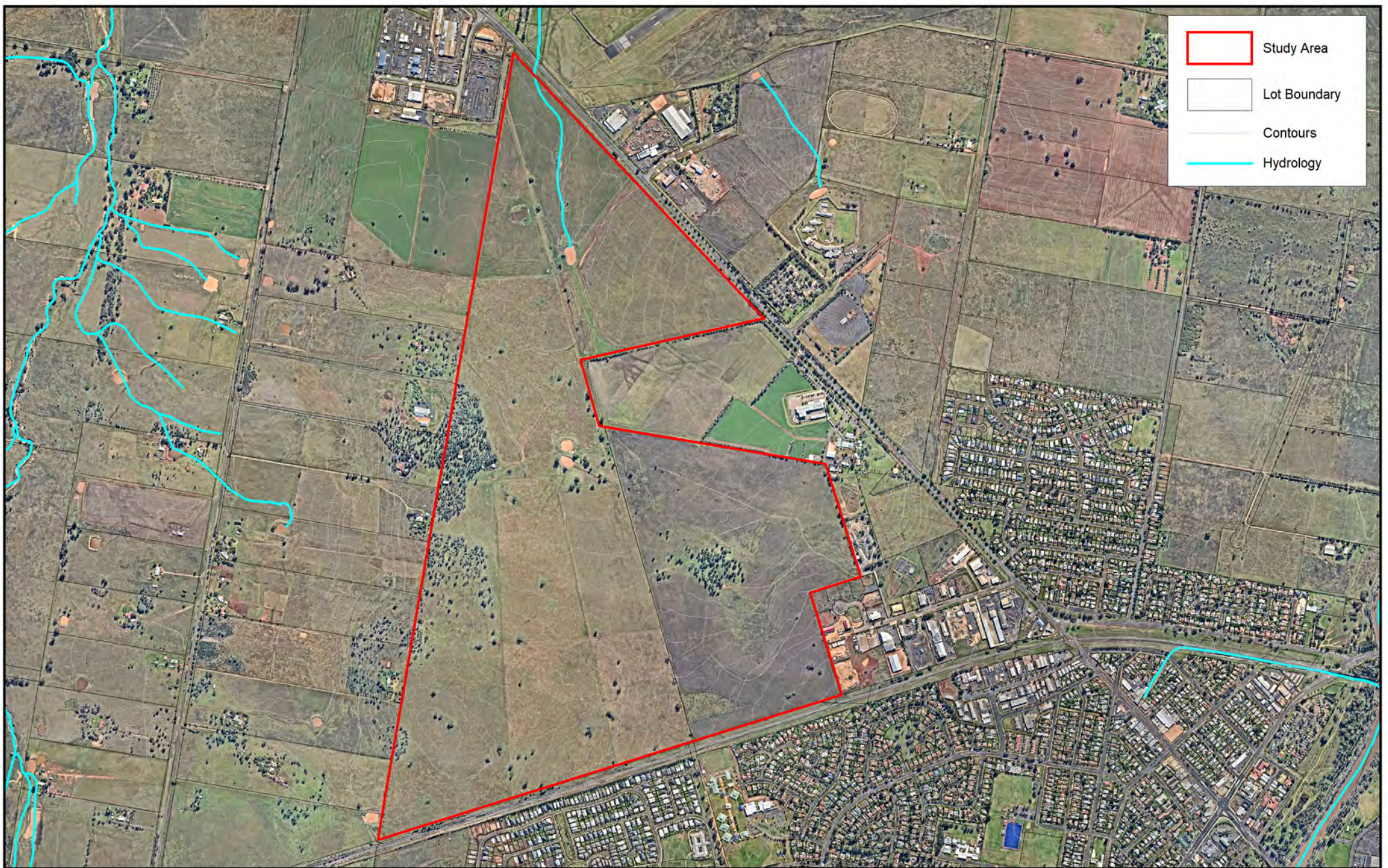
The *Native Title Act 1993*, as amended, provides protection and recognition for native title. Native title recognises the traditional rights of Aboriginal and Torres Strait Islanders to land and waters.

The National Native Title Tribunal (NNTT) was established to mediate native title claims made under this Act. Three registers are maintained by the NNTT, as follows:

- National Native Title Register
- Register of Native Title Claims
- Register of Indigenous Land Use Agreements.

A search of the above registers did not identify any applicable Native Title claims, registrations, or applications, for the study area or surrounds.









### 1.3.2 NSW NATIONAL PARKS AND WILDLIFE ACT 1974

Protection for Aboriginal heritage in NSW is provided primarily under the *National Parks and Wildlife Act 1974* (NPW Act). Although cultural heritage is protected by other Acts, the NPW Act is the relevant Act for undertaking due diligence assessments. Protection for Aboriginal sites, places and objects is overseen by Heritage NSW, of the Department of Premier and Cabinet.

Changes to the NPW Act with the adoption of the *NPW Amendment (Aboriginal Objects and Places) Regulation 2010* in October 2010 led to the introduction of new offences regarding causing harm to Aboriginal objects or declared Aboriginal places. These new offences include destruction, defacement or movement of an Aboriginal object or place. Other changes to the NPW Act include:

- Increased penalties for offences relating to Aboriginal heritage for individuals and companies who do not comply with the legislation;
- Introduction of the strict liability offences, meaning companies or individuals cannot claim 'no knowledge' if harm is caused to Aboriginal objects or places; and
- Changes to the permitting process for AHIPs – preliminary archaeological excavations can be undertaken without the need for an AHIP, providing the excavations follow the *Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales*.

A strict liability offence was introduced, meaning a person who destroys, defaces or moves an Aboriginal object without an Aboriginal Heritage Impact Permit (AHIP) is guilty of an offence, whether they knew it was an Aboriginal object or not. Exercising due diligence (as described in Section 1.4) provides a defence against the strict liability offence.

### 1.3.3 NSW NATIONAL PARKS AND WILDLIFE REGULATION 2019

Part 5, Division 2 addresses Aboriginal objects and places in relation to the NPW Act 1974, and outlines how compliance with relevant codes of practice can be met, including with the *Due Diligence Code of Practice for the Protection of Aboriginal Objects in New South Wales*. Clause 57 states:

*For the purposes of section 87(3) of the Act, compliance with any of the following codes of practice and documents (when undertaking an activity to which the code of document applies) is taken for the purposes of section (87(2) of the Act to constitute due diligence in determining whether the act or omission constituting the alleged offence would harm an Aboriginal object.*

Clause 58(1) outlines the defence of low impact acts or omissions to the offence of harming Aboriginal objects, which includes maintenance works on existing roads and fire trails, farming and land management work, grazing of animals, activities on land that has been disturbed that is exempt or complying development, mining exploration work, removal of vegetation (aside from Aboriginal culturally modified trees), seismic surveying or groundwater monitoring bores on disturbed ground,



environmental rehabilitation work (aside from erosion control or soil conservation works such as contour banks) or geological mapping, surface geophysical surveys, or sub-surface geophysical surveys.

Clause 58(4) outlines the definition of ‘disturbed land’, as land that “has been the subject of a human activity that has changed the land’s surface, being changes that remain clear and observable”.

‘Disturbance’ is further defined in a note to the above clause as follows:

*Examples of activities that may have disturbed land include the following—*

- (a) soil ploughing,*
- (b) construction of rural infrastructure (such as dams and fences),*
- (c) construction of roads, trails and tracks (including fire trails and tracks and walking tracks),*
- (d) clearing of vegetation,*
- (e) construction of buildings and the erection of other structures,*
- (f) construction or installation of utilities and other similar services (such as above or below ground electrical infrastructure, water or sewerage pipelines, stormwater drainage and other similar infrastructure),*
- (g) substantial grazing involving the construction of rural infrastructure,*
- (h) construction of earthworks associated with anything referred to in paragraphs (a)–(g).*

## **1.4 NSW DUE DILIGENCE CODE OF PRACTICE**

The *Due Diligence Code of Practice for the Protection of Aboriginal Objects in New South Wales* (Code of Practice) was introduced in September 2010. It outlines a method to undertake ‘reasonable and practical’ steps to determine whether a proposed activity has the potential to harm Aboriginal objects within the subject area, and thereby determine whether an application for an Aboriginal Heritage Impact Permit (AHIP) is required. When due diligence has been correctly exercised, it provides a defence against prosecution under the NPW Act under the strict liability clause if Aboriginal objects are unknowingly harmed without an AHIP.

The Code of Practice provides the ‘reasonable and practicable’ steps to be followed when determining the potential impact of a proposed activity on Aboriginal objects. Due diligence has been defined by OEH as “taking reasonable and practical steps to determine whether a person’s actions will harm an Aboriginal object and, if so, what measures can be taken to avoid that harm” (DECCW 2010:18).

These steps include:

- Identification of whether Aboriginal objects are, or are likely to be, present within the subject area, through completing a search of the Aboriginal Heritage Information Management System (AHIMS);
- Determine whether the proposed activity is likely to cause harm to any Aboriginal objects; and



- Determine the requirement for an AHIP.

Should the conclusion of a due diligence assessment be that an AHIP is required, further assessment must be undertaken, with reference to the following guidelines:

- DECCW, April 2010, *Aboriginal cultural heritage consultation requirements for proponents 2010. Part 6 National Parks and Wildlife Act 1974*;
- DECCW, Sept 2010, *Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales*;
- OEH, April 2011, *Guide to Investigation, assessing and reporting on Aboriginal cultural heritage in NSW*; and
- OEH, May 2011, *Applying for an Aboriginal Heritage Impact Permit: Guide for Applicants*.



## 2.0 THE DUE DILIGENCE CODE OF PRACTICE PROCESS

The Due Diligence Code of Practice provides a specific framework to guide the assessment of Aboriginal cultural heritage. The following section presents the results of this process.

### 2.1 STEP 1: WILL THE ACTIVITY DISTURB THE GROUND SURFACE?

The proposed works will disturb the ground surface. The study area is proposed to be subdivided to accommodate new residential dwellings, along with the installation of services, including sewerage, electricity, town water, roads, and associated landscaping.

Excavation relating to the residential development will include infrastructure and levelling of the ground surface. Connection to town water supply, sewerage, and electricity will require trenching. Earthworks would also include clearing, grubbing, stripping and stockpiling topsoil, excavation of soil and backfilling. On completion of the development the area would be landscaped. All proposed works would have an impact to some extent on the ground surface.

### 2.2 STEP 2A: AHIMS AND AVAILABLE LITERATURE SEARCH

Heritage NSW is required to maintain a register of Aboriginal sites recorded during archaeological assessments and other activities within NSW. This is known as the Aboriginal Heritage Information Management System (AHIMS). This register provides information about site types, their geographical location, and their current status. It is the requirement for the recorder of a newly identified site to register this site with Heritage NSW to be placed onto the AHIMS register. It is a requirement of the Code of Practice to undertake a search of this register as part of undertaking a due diligence assessment.

Heritage NSW also maintains a register of archaeological reports relating to archaeological investigations throughout NSW. These reports are a valuable source of information regarding investigations previously completed and their findings, and can inform the assessment process regarding the potential for Aboriginal cultural material and archaeological potential within a study area.

#### 2.2.1 AHIMS RESULTS

A search of the study areas using the Lot and DP of the properties with a 50m buffer did not identify any registered sites within the area. A copy of the Basic Search is attached in Appendix A. A wider basic search using the map extents function within the AHIMS website was undertaken to identify the closest registered site. A copy of this search is also attached to Appendix A, with 96 registered sites identified. An extensive search was not undertaken as no sites fall within the proposed study area, as determined by the initial basic search over the study area.



### **2.2.2 LITERATURE REVIEW**

A review of previous archaeological work within the wider region of the study area was undertaken. A number of reports were identified from the AHIMS database and previous assessment undertaken by Apex Archaeology in the region and are detailed below.

#### **MOORE 1970**

The Australian Museum completed detailed surveys and excavations of specific sites within the Hunter River Valley between 1965 and 1967, from the source of the Hunter River to Singleton, and the headwaters of the Goulburn River at the watershed of the Great Dividing Range to the junction of the Goulburn with the Hunter near Denman. A number of rock shelters and open sites were excavated within the Hunter River region, with a wide range of results. One rock shelter (BOB/1) near Bobadeen, was excavated in 1967, with a large assemblage of 16,609 artefacts recovered and a carbon-14 date obtained from Spit 7 at approximately 25-30 inches (approximately 63-76cm) depth of  $7750 \pm 120$  BP. Subsequent additional dating (Moore 1981) estimated occupation of the shelter to commence around 6,000 years BP.

#### **MCINTYRE 1985**

McIntyre surveyed the proposed route of two Electricity Commission transmission lines between Wellington and Dubbo. The survey of these proposed transmission lines began at the Wellington substation and followed the line of the Mitchell Highway approximately 54 km northwest to Dubbo. A total of 27 sites were recorded generally situated within close proximity to water. McIntyre noted that the areas of high archaeological sensitivity were areas adjacent to reliable seasonal water sources and stands of mature native vegetation.

#### **PURCELL 2002**

As part of the Western Regional Assessments of NSW, Purcell undertook an Aboriginal cultural heritage assessment of the Brigalow Belt South bioregion, an area of 52,409km<sup>2</sup>. The assessment focused on aspects of cultural heritage such as Aboriginal sites, historical, social and spiritual associations with these sites, and Aboriginal land use of the region. The project collected 110 Aboriginal oral histories, identified 1,110 Aboriginal sites and recorded information relating to 60 plant species of Aboriginal cultural significance.

#### **OZARK ENVIRONMENTAL AND HERITAGE MANAGEMENT PTY LTD 2007**

OzArk were engaged to conduct a cultural heritage review of the Dubbo LGA that overlaid all recorded sites within the LGA on a mapped geomorphological GIS layer of landforms. The study confirmed that almost all Aboriginal sites recorded within 100 m of water are accompanied by a general trend of there to be fewer sites recorded further away from water. Additionally, the majority of the recorded sites were identified to be located on Quaternary alluvium soils that once supported the more complex ecological communities in the region. This geological unit in the region occurs near major waterways and consequently, the likelihood of associated Aboriginal objects and sites in such landforms increases.



### **OZARK ENVIRONMENTAL AND HERITAGE MANAGEMENT PTY LTD 2017**

In 2017 OzArk undertook a due diligence assessment for the connection between the Dubbo Solar farm and the electricity substation located near the corner of Boundary Road and Wheelers Lane. No Aboriginal heritage constraints as a result of this assessment.

### **OZARK ENVIRONMENTAL AND HERITAGE MANAGEMENT PTY LTD 2020**

OzArk were engaged to undertake an Aboriginal due diligence assessment for a planning proposal to rezone a parcel of land to the south east of Dubbo. No Aboriginal heritage constraints were identified and the project was allowed to proceed with caution.

#### **2.2.3 SYNTHESIS**

Archaeological works within the wider areas have generally been related to development and mining related proposals. It appears that artefact evidence generally comprises low density background scatter or discard distributed widely across the locality, with higher densities occurring occasionally in areas of more focused occupation such as camp sites or repeat occupation sites. This generally occurs in favourable environmental contexts such as elevated, well drained spur and ridge crests, flats, terraces and simple slopes in close proximity to watercourses, with a greater focus on higher order water courses. Artefacts tend to comprise raw materials such as quartz, tuff, silcrete and chert. In general, non-specific flaking activities are represented, although microlith and microblade production is also noted.

Rock shelter sites in the area are identified as varying in size and habitable area, their topographical location and also contents; with rock art occurring relatively infrequently in the locality and generally comprising red ochre hand stencils. Grinding groove sites are not only identified along watercourses on sedimentary bedrock such as sandstone, but also on open sandstone surfaces in other contexts such as in rock shelters. Scarred or culturally modified trees have been identified within the wider region, generally in areas of uncleared old growth vegetation. Low numbers of other sites such as stone arrangements, a possible burial, and ochre or lithic quarries have also been identified.



## **2.3 STEP 2B: LANDSCAPE FEATURES**

An assessment of landscape features is required to determine whether Aboriginal objects are likely to be present within the proposed activity area. Certain landscape features are more likely to have been utilised by Aboriginal people in the past and therefore are more likely to have retained archaeological evidence of this use. Focal areas of activity for Aboriginal people include rock shelters, sand dunes, water courses, waterholes and wetlands, as well as ridge lines for travel routes.

The presence of specific raw materials for artefact manufacture, as well as soil fertility levels to support vegetation resources, are also factors to be considered in the assessment of the environmental context of a study area. Geomorphological factors, such as erosion and accretion of soils, affect the preservation of potential archaeological deposits and therefore need to be considered when making an assessment of the potential for archaeological material to be present within a study area. This assessment is predominantly a desktop exercise.

### **2.3.1 EXISTING ENVIRONMENT**

#### **SOILS, GEOLOGY AND VEGETATION**

The study area falls across two soil landscapes, comprising the Wongarbone and Goonoo soil landscapes. The majority of the area falls within the Wongarbone soil landscape with a small portion within the north east corner of the study area falling within the Goonoo soil landscape.

The Wongarbone soil landscape is generally located on low undulating hills and rises with some stony hillocks. Local relief ranges between 20 - 60 m. Drainage lines are 400 - 1500 m apart and made up of undulating low hills and hills. The underlying geology consists of Tertiary Volcanics, Tertiary Basalt and Olivine basalt and colluvial material. Vegetation within this area consists of open-woodland dominated by a white-yellow box-white cypress pine association. White box occupies the upper slopes, with white cypress pine on stony, shallow ridges and yellow box and fuzzy box on lower slopes. This soil landscape has moderate to high fertility with friable surface soils and high water holding capacity. There is a moderate to high erosion hazard for this soil landscape when under cultivation.

The Goonoo soil landscape is identified on undulating rises and low hills and is considered to have low fertility with acidic surface soils and seasonal waterlogging with sodic subsoils on lower slopes. Vegetation consists of shrub woodland of broad-leaved red ironbark, red ironbark and narrow-leaved red ironbark. There are black and white cypress pine with Dwyer's red mallee on stony rises. Geology consists of Quartz sandstone, conglomerate, siltstone and shale from the Great Artesian Basin/Oxley Basin Pilliga Sandstone.



## HYDROLOGY

The nearest major permanent water source is Sandy Creek which runs approximately 1.5km to the west of the study area. Sandy Creek is defined as a third order water course according to the Strahler system as used by DPI Water (Figure 2). Watercourse classification ranges from first order through to fourth order (and above), with first order being the lowest, ie a minor creek or ephemeral watercourse. Sandy Creek is a tributary of the Macquarie River which is a fourth order watercourse.

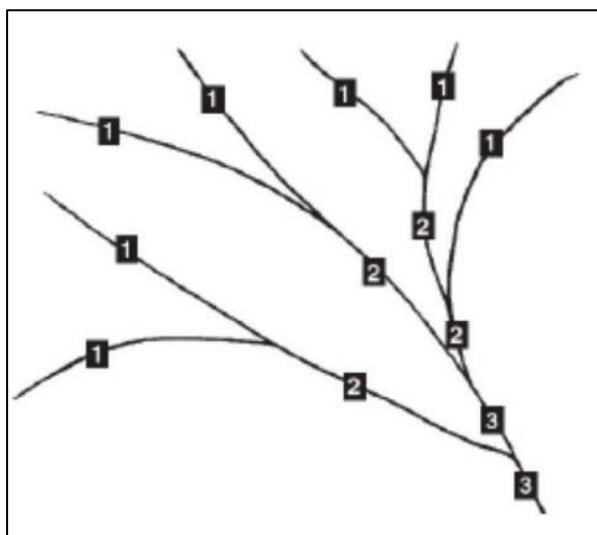


Figure 2: The Strahler system (Source: Department of Planning and Environment 2016).

The study area is not located within 200m of a natural watercourse. The study area is considered to have moderate levels of disturbance relating to historic land clearance, and subsequent ongoing agricultural land use practices. However, to completely rule out the possibility of Aboriginal heritage being located within the study area there is a requirement to proceed to Step 4 of the due diligence assessment process to visually assess the area.

## 2.4 ETHNOHISTORY

According to Tindale (1974), the study area is located within the Wiradjuri tribal and linguistic territory. This territory is described by Tindale (1974) as being:

...on the Lachlan River and south from Condoblin to Booligal; at Carrathool, Wagga Wagga, Cootamundra, Cowra, Parkes, Trundle; east to Gundagai, Boorowa and Rylstone; at Wellington, Mudgee, Bathurst and Carcoar; west along Billabong Creek to beyond Mosgiel, south west to near Hay and Narranderra, south to Howlong on the upper Murray; at Albury and east to about Tumbarumba (Tindale 1974).

Aboriginal society was constructed of a hierarchy of social levels and groups, with fluid boundaries (Peterson 1976), with the smallest group comprising a family of a man and his wife/wives, children and some grandparents. The next level consists of bands, which were small groups of several families who worked together for hunting



and gathering purposes. The third level comprised regional networks with a number of bands, and these bands generally shared a common language dialect and/or had a belief in a common ancestor. Networks would come together for specific ceremonial purposes. The highest level is the tribe, which is usually described as a linguistic unit with flexible territorial boundaries (Peterson 1976). Various dialects of the Wiradjuri language were identified within the region (Tindale 1974). Tindale also considered the Wiradjuri to be “one of the largest tribal groupings in Australia, with many hordes”.

Following the contact period in the 1820s, when European people began settling in the Hunter Valley, clashes between Aboriginal and European settlers were common (Dormer 1997). R.H Mathews (1894) described a ceremonial bora ground located along Wilpinjong Creek, which he saw in 1893 along with a local resident, who described that he had been aware of several boras being held there since the 1860s.

An Aboriginal mission station was established at Wellington by 1832. An 1845 report by Graham D. Hunter, Commissioner for Crown Lands in the County of Bligh, described that the condition of the Aboriginal peoples in the area had not changed much in recent years, with some employed with the caveat that they could still participate in traditional life when required by tribal elders. Conflict was still occurring in some areas but the Commissioner was trying to provide protection for both ‘white and black’ people (Dormer 1997:151).

A major influenza epidemic in 1860 decimated the local Aboriginal population (Murray-Prior 1973, quoted in NOHC 2005: F-38).

Aboriginal people utilised a wide range of subsistence resources in the past, with ethnohistorical sources recording the diet of Aboriginal people including kangaroo, possum, kangaroo rat, lizards, birds, platypus, wallaby and a range of plants and insects as well as fish and shell fish (Pearson 1981). A wide range of native animals, including birds and reptiles, have been identified within the wider environment, and are likely to have been utilised as food resources by Aboriginal people in the past.

#### **2.4.1 RAW MATERIALS**

A wide range of raw materials were selected by Aboriginal people for flaking to create stone implements. Material types ranged from high quality to poor quality for flaking purposes, depending on the geology of the area and readily available material types. The following is a description of a range of raw material types known to have been utilised by Aboriginal people for the creation of stone artefacts.

##### **BRECCIA**

Breccias are coarse, angular volcanic fragments cemented together by a finer grained tuffaceous matrix.

##### **CHALCEDONY**

Chalcedony is a microcrystalline, siliceous rock which is very smooth and can be glossy. Introduction of impurities can produce different coloured versions of



chalcedony, including yellow/brown (referred to as carnelian), brown (sard), jasper (red/burgundy) and multicoloured agate. It flakes with a sharp edge and was a prized material type for the creation of stone artefacts in parts of Australia (Kuskie & Kamminga 2000: 186).

### **CHERT**

Chert is a highly siliceous sedimentary rock, formed in marine sediments and also found within nodules of limestone. Accumulation of substances such as iron oxide during the formation process often results in banded materials with strong colours. Chert is found in the Illawarra Coal Measures and also as pebbles and colluvial gravels. It flakes with durable, sharp edges and can range in colour from cream to red to brown and grey.

### **PETRIFIED WOOD**

Petrified wood is formed following burial of dead wood by sediment and the original wood being replaced by silica. Petrified wood is a type of chert and is a brown and grey banded rock and fractures irregularly along the original grain.

### **QUARTZ**

Pure quartz is formed of silicon dioxide, and has a glossy texture and is translucent. Introduction of traces of minerals can lead to colouration of the quartz, such as pink, grey or yellow. The crystalline nature of quartz allows for minute vacuoles to fill with gas or liquid, giving the material a milky appearance.

Often quartz exhibits internal flaws which can affect the flaking quality of the material, meaning that in general it is a low-quality flaking material (Kuskie & Kamminga 2000: 186). However, quartz is an abundant and widely available material type and therefore is one of the most common raw materials used for artefact manufacture in Australia. Flaking of quartz can produce small, very sharp flakes which can be used for activities such as cutting plant materials, butchering and skinning.

### **QUARTZITE**

Formed from sandstone, quartzite is a metamorphic stone high in silica that has been heated or had silica infiltrate the voids found between the sand grains. Quartzite ranges in colour from grey to yellow and brown.

### **SILCRETE**

Silcrete is a siliceous material formed by the cementing of quartz clasts with a matrix. These clasts may be very fine grained to quite large. It ranges in colour from grey to white, brown, red or yellow. Alluvial and terrace gravels of the Hunter River were a major primary source of silcrete within the Hunter Valley. Silcrete flakes with sharp edges and is quite durable, making silcrete suitable for use in heavy duty woodworking activities and also for spear barbs (Kuskie & Kamminga 2000:184).



### **TUFF/INDURATED MUDSTONE**

There is some disagreement relating to the identification of lithic materials as tuff or indurated mudstone. The material is a finely textured, very hard yellow/orange/reddish-brown or grey rock from the upper Hunter Valley. Kuskie and Kamminga (2000: 6, 180) describe that identification of lithic materials within the Hunter Valley followed the classification developed by Hughes (1984), with indurated mudstone described as a common stone material in the area. However, Kuskie and Kamminga's analysis, which included x-ray diffraction, identified that lithics identified as 'indurated mudstone' was actually rhyolitic tuff, with significant differences in mineral composition and fracture mechanics between the stone types. They define mudstone as rocks formed from more than 50% clay and silt with very fine grain sizes and then hardened.

The lithification of these mudstones results in shale (Kuskie & Kamminga 2000: 181) and thus 'indurated mudstone', in the opinion of Kuskie and Kamminga, do not produce stones with the properties required for lithic manufacture.

In 2011, Hughes, Hiscock and Watchman undertook an assessment of the different types of stones within the Hunter Valley to determine whether tuff or indurated mudstone is the most appropriate terminology for describing this lithic material. The authors undertook thin section studies of a number of rocks from the Hunter Valley and determined that the term 'indurated mudstone' is appropriate, with an acknowledgment that some of this material may have been volcanic in origin. They also acknowledge that precise interpretation of the differences between material types is difficult without detailed petrological examination, and suggest that artefacts produced on this material are labelled as 'IMT' or 'indurated mudstone/tuff'.

### **BASALT**

Basalt, which is commonly referred to as 'blue metal', is solidified lava that was produced by now extinct volcanoes and diatremes that are spread-out within the Sydney Basin. If the lava cools quickly it results in fine-grained basalt that is easily flaked or ground to make tools, implements or weapons. Tuff forms from the tiny ash particles that are also released during volcanic explosions. When it cools it hardens into a fine-grained rock called 'tuff', as discussed above.

Basalt would have been either collected from the primary deposits formed during the eruption, which would require pieces to be broken off (quarried) or it was collected in cobble-form from a creek bed or shoreline. Cobbles are referred to as secondary sources as they are formed from pieces of rock that have been dislodged from their primary source and end up in creeks and/or river systems (Petrequin 2016; Attenbrow et al. 2017). The flow of water moves them around and smooths them into water-rolled cobbles that can be transported considerable distance from the original source. Basalt was often used to make axes which were either flaked into the desired shape from quarried stone, or from cobbles which quite often only required only one end to be ground into a sharp working edge.



Basalt cobbles can be found along the banks of rivers, and in bedrock quarries within the Hunter Region. Recent research undertaken by the Australian Museum and University of New England using portable XRF technology demonstrated that a number of stone axes held at the Australian Museum from the Hunter Valley area have been traced to these sources (Attenbrow et al. 2017).

#### **2.4.2 PROCUREMENT**

Assemblage characteristics are related to and dependent on the distance of the knapping site from raw materials for artefact manufacture, and different material types were better suited for certain tasks than other material types. Considerations such as social or territorial limitations or restrictions on access to raw material sources, movement of groups across the landscape and knowledge of source locations can influence the procurement behaviour of Aboriginal people. Raw materials may also have been used for trade or special exchange between different tribes.

#### **2.4.3 MANUFACTURE**

A range of methodologies were used in the manufacture of stone artefacts and tools, through the reduction of a stone source. Stone may have been sourced from river gravels, rock outcrops, or opportunistic cobble selection. Hiscock (1988:36-40) suggests artefact manufacture comprises six stages, as follows:

1. The initial reduction of a selected stone material may have occurred at the initial source location, or once the stone had been transported to the site.
2. The initial reduction phase produced large flakes which were relatively thick and contained high percentages of cortex. Generally the blows were struck by direct percussion and would often take advantage of prominent natural ridges in the source material.
3. Some of these initial flakes would be selected for further reduction. Generally only larger flakes with a weight greater than 13-15 grams would be selected for further flaking activities.
4. Beginning of 'tranchet reduction', whereby the ventral surface of a larger flake was struck to remove smaller flakes from the dorsal surface, with this retouch applied to the lateral margins to create potential platforms, and to the distal and proximal ends to create ridges and remove any unwanted mass. These steps were alternated during further reduction of the flake.
5. Flakes were selected for further working in the form of backing.
6. Suitable flakes such as microblades were retouched along a thick margin opposite the chord to create a backed blade.

Hiscock (1986) proposed that working of stone materials followed a production line style of working, with initial reduction of cores to produce large flakes, followed by heat treatment of suitable flakes before the commencement of tranchet reduction. These steps did not necessarily have to occur at the same physical location, but instead may have been undertaken as the opportunity presented.



## 2.5 PREDICTIVE MODEL

Navin Officer (2005) and South East Archaeology (2009; 2013) have both developed and refined detailed predictive and occupational models for the Aboriginal occupation in the wider region. In general, their occupational models identified that:

- Aboriginal occupation focussed predominantly on resource rich zones, particularly along higher order watercourses. Abundant resources for sustenance and water would supply longer stays for family and community base camps, as well as occasional gatherings of larger groups. These areas were considered to be primary resource zones;
- Secondary resource zones were focussed on watercourses, wetlands and/or swamps in close proximity to higher order watercourses and the associated flats and terraces. These areas were seasonally occupied during the course of hunting and gathering activities by small hunting parties and family groups. Generally level ground was selected for camping, near water sources, and was sporadic rather than continuous occupation;
- Outside of the primary and secondary resource zones, activities included resource gathering and movement across the landscape by small parties, in order to access areas with greater resources;
- Opportunistic reduction of raw materials to create stone artefacts would be quite widespread across the landscape, in order to produce stone tools on an 'as needed' basis;
- Locally available quartz was favoured for knapping activities, along with tuff and chert, depending on their availability;
- Exposed sandstone would be utilised for creating and maintaining ground edge hatchets, creating grinding grooves. This action may have been opportunistic rather than specific, with evidence of long term, repeated use not expected to occur; and
- Aboriginal occupation of the general area is believed to have occurred within the past 5,000 years, although it is possible it may extend as far as 30,000-40,000 years ago (SEA 2013:23).

From these general predictions of how the area was utilised for occupation by Aboriginal people in the past, a predictive model for the location of archaeological sites was developed by Navin Officer (2005) and South East Archaeology (2009; 2013). This has been summarised below:

- Low spurs within 100m of higher order streams are likely to contain sites with relatively higher numbers of artefacts;
- Very low density artefact scatters may occur throughout valley floor contexts;
- Elevated, level ground adjacent to major, permanent streams has the potential for open sites with higher concentrations of artefacts;
- Stone artefact scatters are likely to increase in number and density relative to the site's proximity to water and raw material sources;



- Suitable rockshelters with relatively level floors, adequate shelter and located in basal slope contexts in association with a drainage line may contain occupation deposit and/or pigment rock art;
- Grinding grooves are likely to occur only where suitable sandstone exposures occur in association with a source of water;
- Burials are rare but may occur in deep, fine grained alluvial or Aeolian sediments, or in the form of stone cairns;
- Scarred trees have the potential to survive in areas of suitable old growth trees;
- Archaeological deposits with high scientific significance are most likely to be found in rockshelters with suitable deposit depth, or on elevated areas with aggrading sediments in close proximity to permanent or reliable water sources, or within rockshelter contexts;
- Outside of these identified areas, stratified deposits or in situ archaeological material is unlikely to survive due to bioturbation and/or natural processes such as water action, erosion etc; and
- Isolated surface and subsurface archaeological material may exist as background scatter in very low densities, but the location of this potential material is impossible to predict.

The hydrology, topography, soils and geology of an area are all important considerations when developing a predictive model for an area.

## **2.6 STEP 3: AVOID HARM**

A visual inspection of the land parcel was necessary to identify any surface objects or landforms with potential archaeological deposits (PAD). This inspection would allow conclusions to be made regarding the probability of archaeological objects occurring within the proposed development areas. This would assist in determining if there was any archaeological potential within the study areas which could potentially be harmed by the proposed works, and in turn, assist in determining if harm to the archaeological resource could be avoided.

The proposed development would impact the entirety of the study area, either through construction of residences, roads, associated infrastructure or landscaping works. As such, it would not be possible to avoid impact to Aboriginal cultural values within the study area, should such exist. As such, a visual inspection of the site was undertaken to confirm if any such values exist within the study area.

## **2.7 STEP 4: VISUAL INSPECTION**

An initial visual pedestrian inspection of Lot 22 DP 1038924 was undertaken in October 2021 by Leigh Bate, Archaeologist with Apex Archaeology. A subsequent pedestrian inspection was undertaken in May 2022 for an additional area directly to the east incorporating Lot 7 DP 223428. Both areas are now considered the “Study Area”.



### 2.7.1 RESULTS

The area was inspected by pedestrian survey to identify any surface artefacts or any areas with potential for subsurface deposits to be present.

No newly identified archaeological material was identified during the survey. Ground surface visibility (GSV) was low throughout the study area. GSV was rated at 10% overall.

Ground disturbance was fairly consistently moderate across the area, with some areas exhibiting higher levels of disturbance (excavated dams and drainage swales) within the study area. Large piles of rocks have been placed across the eastern portion of the study area indicating site clearance attempts for agricultural purposes over the years.

No areas of potential archaeological deposit (PAD) were identified within the study area. No Aboriginal cultural material was identified on the ground surface within the study area.



Plate 1: General view from the Narramine Road entrance into the property looking west across the northern portion of the area.





Plate 2: Looking across the oat fields within the northern portion of the property.



Plate 3: Looking west along modified drainage swale embankment within the northern portion of the study area.





Plate 4: Looking north east across the northern dam site.



Plate 5: Looking west towards the western boundary of the property within the central portion of the study area.





Plate 6: Looking north along the western boundary of the site



Plate 7: Looking south through the central portion of the study area.





Plate 8: Looking north through the central portion of the study area within the southern section of the study area.



Plate 9: Looking south towards the southern boundary of the study area.





Plate 10: Looking north over the central dam site within the study area



Plate 11: Looking north east across the central portion of the study area within the central portion of the site.





Plate 12: Looking north west over the eastern portion of Lot 7 DP 223428.



Plate 13: Looking south west across the central portion of Lot 7 DP 223428.





Plate 14: Looking north over the central portion of Lot 7 DP 223428 showing recent disturbance from sheep over an area of exposure.



Plate 15: Looking west across Lot 7 DP 223428 showing piles of rocks removed from across the site.





Plate 16: Looking south showing recent disturbance from 4WD (ground was extremely wet).



Plate 17: Looking south along the eastern border of Lot 7 DP 223428.





### 2.7.2 DISCUSSION

In accordance with the Due Diligence Code of Practice, land is considered disturbed if human activities within the area have left clear and observable changes on the landscape. The study area meets this definition in general, as ground disturbance was consistently moderate throughout the study area. Evidence of site clearance for agricultural use has occurred historically and agricultural land use practices have considerably altered the landscape and soil matrix for more than 150 years.

In this instance the level of disturbance from land clearing activities, agriculture, cattle grazing and current land use including landscape modification has reduced the potential for any intact archaeological sub-surface deposits to nil. It is likely that the site was not utilised for long term or short term habitation as there are far more favourable areas closer to water sources within the area.



## 3.0 CONCLUSIONS AND RECOMMENDATIONS

### 3.1 CONCLUSIONS

- No previously registered Aboriginal sites are located within the study area.
- The study area was assessed as having no sub-surface archaeological potential, based on the results of the visual pedestrian inspection.
- No archaeological material was identified on the ground surface of the study area.
- This assessment was based on identification of landform elements, previous archaeological work undertaken within the wider Dubbo region, and a visual inspection of the study area.

### 3.2 RECOMMENDATIONS

- No further Aboriginal archaeological assessment is required prior to the commencement of upgrade works as described in this report.
- The results of this assessment fulfil the requirement for Due Diligence in accordance with the *Due Diligence Code of Practice for the Protection of Aboriginal Objects in New South Wales* (Code of Practice). Works may proceed with caution.
- This heritage assessment must be kept by The Bathla Group so that it can be presented, if needed, as a defence from prosecution under Section 86(2) of the National Parks and Wildlife Act 1974.
- The proposed works must be contained to the area assessed during this due diligence assessment, as shown on Figure 1. If the proposed location is amended, further archaeological assessment may be necessary to determine if the proposed works will impact any Aboriginal objects or archaeological deposits.
- Should unanticipated archaeological material be encountered during site works, all work must cease and an archaeologist contacted to make an assessment of the find. Further archaeological assessment and Aboriginal community consultation may be required prior to the recommencement of works. Any objects confirmed to be Aboriginal in origin must be reported to Heritage NSW.



## 4.0 REFERENCES

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## **APPENDIX A: AHIMS BASIC SEARCH RESULTS**

Apex Archaeology

PO BOX 236

Nowra New South Wales 2541

Attention: Leigh Bate

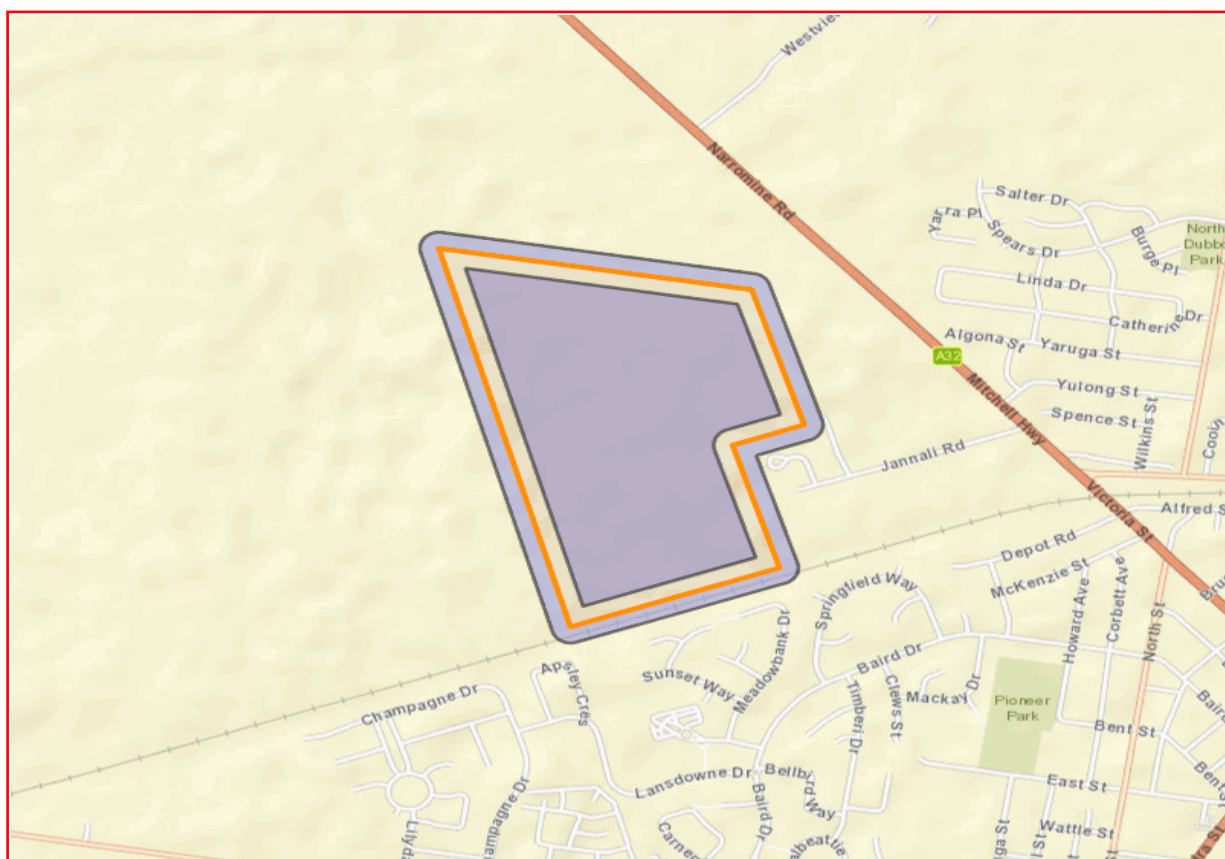
Email: leigh@apexarchaeology.com.au

Date: 03 May 2022

Dear Sir or Madam:

**AHIMS Web Service search for the following area at Lot : 7, DP:DP223428, Section : - with a Buffer of 50 meters, conducted by Leigh Bate on 03 May 2022.**

The context area of your search is shown in the map below. Please note that the map does not accurately display the exact boundaries of the search as defined in the paragraph above. The map is to be used for general reference purposes only.



A search of Heritage NSW AHIMS Web Services (Aboriginal Heritage Information Management System) has shown that:

0	Aboriginal sites are recorded in or near the above location.
0	Aboriginal places have been declared in or near the above location. *

**If your search shows Aboriginal sites or places what should you do?**

- You must do an extensive search if AHIMS has shown that there are Aboriginal sites or places recorded in the search area.
- If you are checking AHIMS as a part of your due diligence, refer to the next steps of the Due Diligence Code of practice.
- You can get further information about Aboriginal places by looking at the gazettal notice that declared it. Aboriginal places gazetted after 2001 are available on the [NSW Government Gazette \(https://www.legislation.nsw.gov.au/gazette\)](https://www.legislation.nsw.gov.au/gazette) website. Gazettal notices published prior to 2001 can be obtained from Heritage NSW upon request

**Important information about your AHIMS search**

- The information derived from the AHIMS search is only to be used for the purpose for which it was requested. It is not to be made available to the public.
- AHIMS records information about Aboriginal sites that have been provided to Heritage NSW and Aboriginal places that have been declared by the Minister;
- Information recorded on AHIMS may vary in its accuracy and may not be up to date. Location details are recorded as grid references and it is important to note that there may be errors or omissions in these recordings,
- Some parts of New South Wales have not been investigated in detail and there may be fewer records of Aboriginal sites in those areas. These areas may contain Aboriginal sites which are not recorded on AHIMS.
- Aboriginal objects are protected under the National Parks and Wildlife Act 1974 even if they are not recorded as a site on AHIMS.
- This search can form part of your due diligence and remains valid for 12 months.

Apex Archaeology

PO BOX 236

Nowra New South Wales 2541

Attention: Leigh Bate

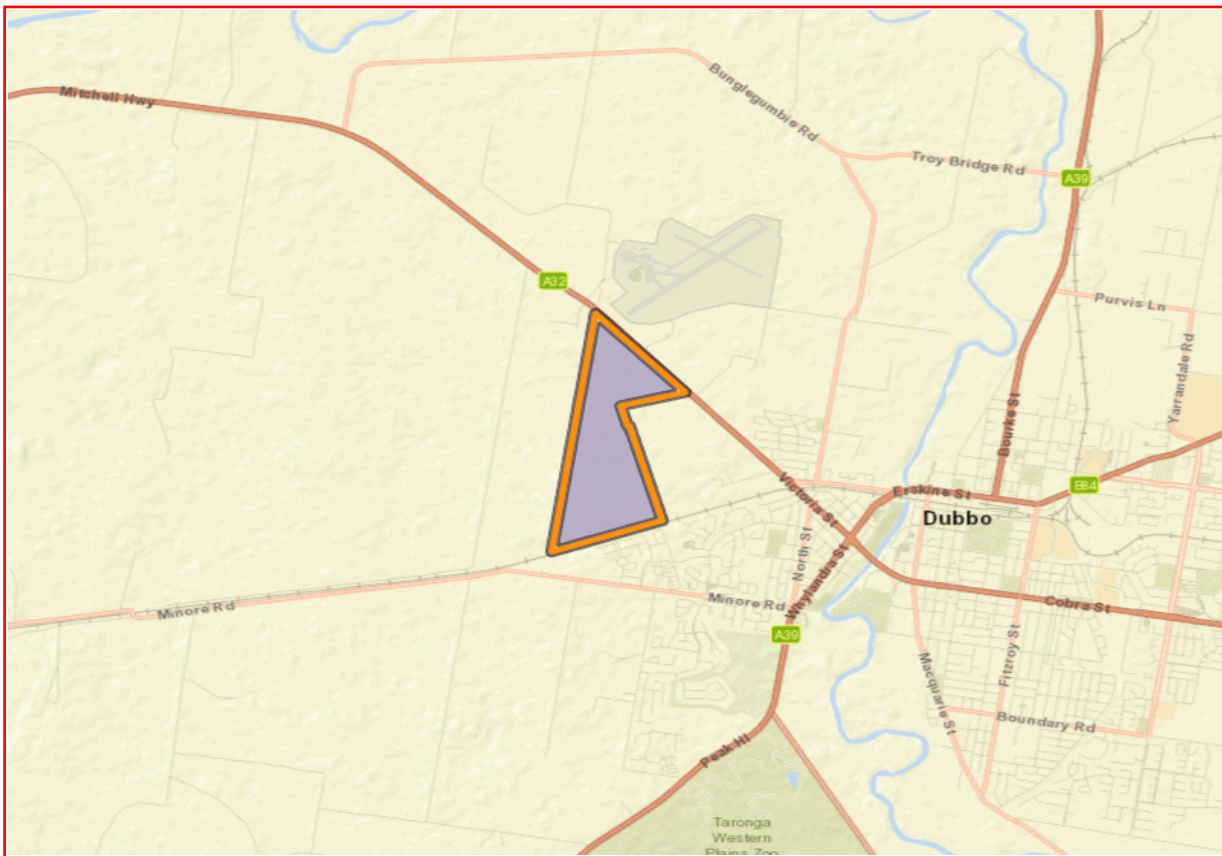
Email: leigh@apexarchaeology.com.au

Date: 12 October 2021

Dear Sir or Madam:

**AHIMS Web Service search for the following area at Lot : 22, DP:DP1038924, Section : - with a Buffer of 50 meters, conducted by Leigh Bate on 12 October 2021.**

The context area of your search is shown in the map below. Please note that the map does not accurately display the exact boundaries of the search as defined in the paragraph above. The map is to be used for general reference purposes only.



A search of Heritage NSW AHIMS Web Services (Aboriginal Heritage Information Management System) has shown that:

0	Aboriginal sites are recorded in or near the above location.
0	Aboriginal places have been declared in or near the above location. *



**If your search shows Aboriginal sites or places what should you do?**

- You must do an extensive search if AHIMS has shown that there are Aboriginal sites or places recorded in the search area.
- If you are checking AHIMS as a part of your due diligence, refer to the next steps of the Due Diligence Code of practice.
- You can get further information about Aboriginal places by looking at the gazettal notice that declared it. Aboriginal places gazetted after 2001 are available on the [NSW Government Gazette \(https://www.legislation.nsw.gov.au/gazette\)](https://www.legislation.nsw.gov.au/gazette) website. Gazettal notices published prior to 2001 can be obtained from Heritage NSW upon request

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- This search can form part of your due diligence and remains valid for 12 months.

Apex Archaeology

PO BOX 236

Nowra New South Wales 2541

Attention: Leigh Bate

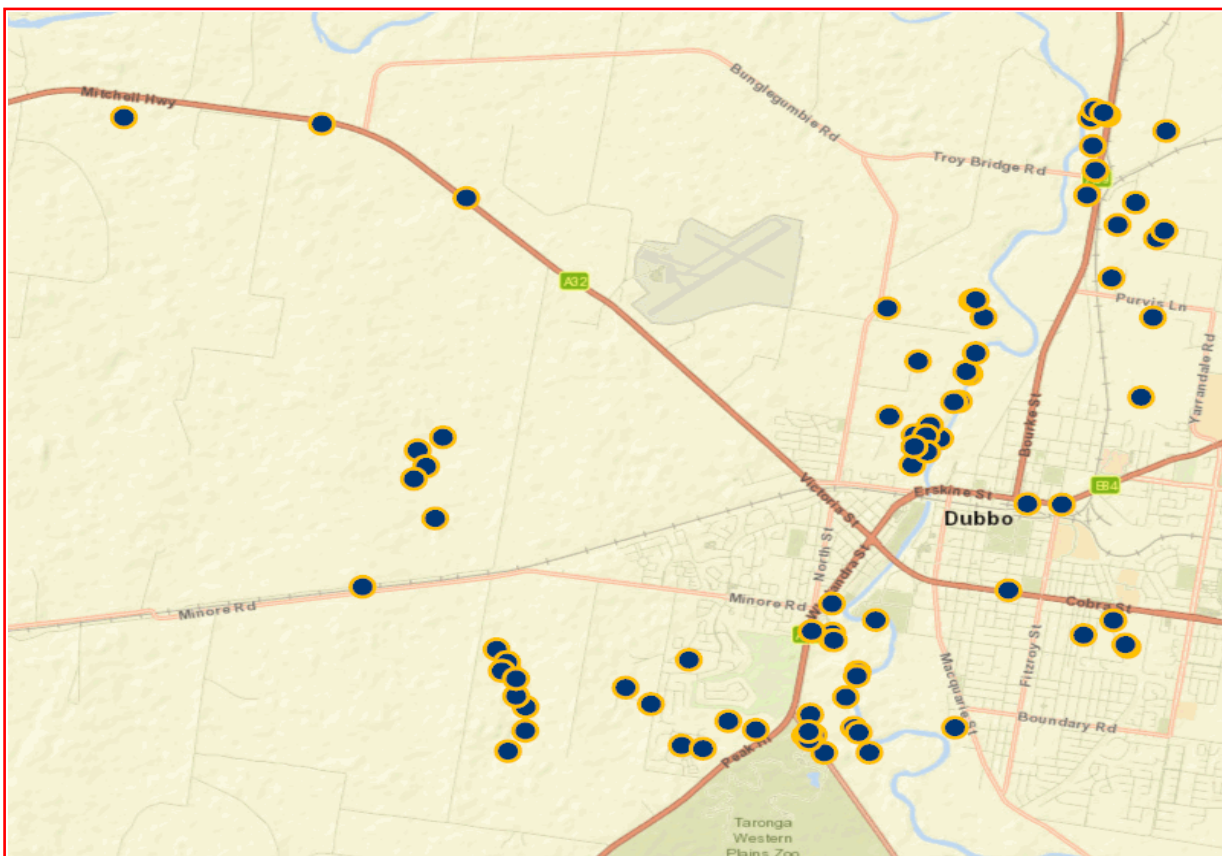
Email: leigh@apexarchaeology.com.au

Date: 01 November 2021

Dear Sir or Madam:

**AHIMS Web Service search for the following area at Lat, Long From : -32.27, 148.5 - Lat, Long To : -32.2, 148.63, conducted by Leigh Bate on 01 November 2021.**

The context area of your search is shown in the map below. Please note that the map does not accurately display the exact boundaries of the search as defined in the paragraph above. The map is to be used for general reference purposes only.



A search of Heritage NSW AHIMS Web Services (Aboriginal Heritage Information Management System) has shown that:

96	Aboriginal sites are recorded in or near the above location.
0	Aboriginal places have been declared in or near the above location. *

**If your search shows Aboriginal sites or places what should you do?**

- You must do an extensive search if AHIMS has shown that there are Aboriginal sites or places recorded in the search area.
- If you are checking AHIMS as a part of your due diligence, refer to the next steps of the Due Diligence Code of practice.
- You can get further information about Aboriginal places by looking at the gazettal notice that declared it. Aboriginal places gazetted after 2001 are available on the [NSW Government Gazette \(https://www.legislation.nsw.gov.au/gazette\)](https://www.legislation.nsw.gov.au/gazette) website. Gazettal notices published prior to 2001 can be obtained from Heritage NSW upon request

**Important information about your AHIMS search**

- The information derived from the AHIMS search is only to be used for the purpose for which it was requested. It is not to be made available to the public.
- AHIMS records information about Aboriginal sites that have been provided to Heritage NSW and Aboriginal places that have been declared by the Minister;
- Information recorded on AHIMS may vary in its accuracy and may not be up to date. Location details are recorded as grid references and it is important to note that there may be errors or omissions in these recordings,
- Some parts of New South Wales have not been investigated in detail and there may be fewer records of Aboriginal sites in those areas. These areas may contain Aboriginal sites which are not recorded on AHIMS.
- Aboriginal objects are protected under the National Parks and Wildlife Act 1974 even if they are not recorded as a site on AHIMS.
- This search can form part of your due diligence and remains valid for 12 months.