

# Addenbrooke Pty Ltd

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## Blueys Beach

**LGA: Mid Coast Council**

**Archaeological Due Diligence Assessment**

**24 August 2022**

McCARDLE CULTURAL HERITAGE PTY LTD

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**Report No: J2021-112 DD**

Approved by: Penny McCardle

Position: Director

Signed: 

Date: 24 August 2022

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## EXECUTIVE SUMMARY

McCardle Cultural Heritage Pty Ltd (MCH) has been engaged by Addenbrooke Pty Ltd to undertake an Archaeological Due Diligence Assessment for the proposed residential subdivision located at Lot 23 DP 537919 Boomerang Drive, Blueys Beach.

The assessment has been undertaken to meet the Heritage NSW, Department of Premier & Cabinet, Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales (DECCW 2010), the Guide to Investigating, Assessing and Reporting on Aboriginal Cultural Heritage in NSW (OEH 2011), the Due Diligence Code of Practice for the Protection of Aboriginal Objects in NSW, Council requirements and the brief.

Consisting of steep to moderate slopes, the project area is situated on the Carboniferous Wootton Beds geological formation (consisting of sandstone, siltstone and clay stone). Consisting of a topsoil (A horizon) that overlays the B horizon of clays, within the region, sites tend to occur on or within soil Horizon A or are often present at the interface of the A and B horizons. In terms of fresh water availability, one 1st order drainage depressions are located in the project area. The closest reliable fresh water source is Wallis Creek located approximately 1.5 kilometres north west of the project area and the closest marine resource is Blueys Beach, located approximately 80 metres east at its closest point. the investigation area has been subject to clearing, ploughing and grazing along with dam construction. In terms of these land uses, these direct impacts to the land and associated cultural materials that may be present are easy to see and understand.

A search of the AHIMS has shown that there is one artefact site recorded within a four-kilometre radius of the project area. There are no registered sites or Aboriginal Places within the project area. The project area, consisting of steep to moderate slopes, is located approximately 80 metres from the beach and in terms of fresh water sources, Wallis Creek located approximately 1.5 kilometres north west of the project area. As water was essential for survival, it is not surprising that past Aboriginal people would focus their land uses and camping in close proximity to reliable water on flat landforms and as the project area had very limited fresh water supply or associated resources and consists of steep to moderate slopes (unsuitable for camping), the project area would have been utilised for more transitory activities such as hunting and gathering and travel to Wallis Creek or east to the ocean rather than camping. Evidence of such transitory activities manifest in the archaeological record as low-density artefact scatter, isolated finds and, or, low-density shell middens.

The project area, consisting of disturbed steep to moderate slopes was surveyed as one survey unit (SU). The survey confirmed that the project area had been previously cleared with evidence of some ploughing (eroded ridges and furrows), grazed and two dams constructed along the eastern border. Consisting of mainly of pasture greases, trees were scattered throughout. Visibility ranged from 10% in the north to 1% in the south and exposures were moderate throughout due to erosion, tracks and the dam.

The project area is not considered an archaeologically sensitive landform as the slopes are too steep for camping and distance from a reliable fresh water source precluded past habitation and longer-term activity/place use. Whilst likely utilised for hunting and gathering activities (manifests in the archaeological record as a background scatter of discarded artefacts), the land uses would have displaced or destroyed any such evidence.

No archaeological sites or Potential Archaeological Deposits (PADs) were identified during the survey and this is likely due to a number of factors including:

- Distance from reliable water and subsistence resources indicates the project area was unlikely to have been utilised for camping;
- Landforms of steep to moderate slopes indicates the project area was unsuitable for camping;
- The project area may have been used for travel and/or hunting and gathering which manifest in the archaeological record as very low-density artefact scatters and/or isolated finds; and
- Past and present land uses would have displaced and/or destroyed any evidence of past Aboriginal land use.

As no sites were identified there are no impacts on the archaeological record and the following recommendations are provided:

- 1) The persons responsible for the management of onsite works will ensure that all staff, contractors and others involved in construction and maintenance related activities are made aware of the statutory legislation protecting sites and places of significance. Of particular importance is the National Parks and Wildlife Amendment (Aboriginal Objects and Aboriginal Places) Regulation 2010, under the National Parks and Wildlife Act 1974; and
- 2) Should any Aboriginal objects be uncovered during works, all work will cease in that location immediately and the Environmental Line contacted.

## GLOSSARY

**Aboriginal Place:** are locations that have been recognised by the Minister for Climate Change and the Environment (and gazetted under the *National Parks and Wildlife Act 1974*) as having special cultural significance to the Aboriginal community. An Aboriginal Place may or may not include archaeological materials.

**Aboriginal Site:** an Aboriginal site is the location of one or more Aboriginal archaeological objects, including flaked stone artefacts, midden shell, grinding grooves, archaeological deposits, scarred trees etc.

**Artefact:** any object that is physically modified by humans.

**Artefact scatter:** a collection of artefacts scattered across the surface of the ground (also referred to as open camp sites).

**Assemblage:** a collection of artefacts associated by a particular place or time, assumed generated by a single group of people, and can comprise different artefact types.

**Backed artefact:** a stone tool where the margin of a flake is retouched at a steep angle and that margin is opposite a sharp edge.

**Background scatter:** a term used to describe low density scatter of isolated finds that are distributed across the landscape without any obvious focal point.

**Core:** a chunk of stone from which flakes are removed and will have one or more negative flake scars but no positive flake scars. The core itself can be shaped into a tool or used as a source of flakes to be formed into tools.

**Debitage:** small pieces of stone debris that break off during the manufacturing of stone tools. These are usually considered waste and are the by-product of production (also referred to as flake piece).

**Flake:** any piece of stone struck off a core and has a number of characteristics including ring cracks showing where the hammer hit the core and a bulb of percussion. May be used as a tool with no further working, may be retouched or serve as a platform for further reduction.

**Flaked piece/waste flake:** an unmodified and unused flake, usually the by-product of tool manufacture or core preparation (also referred to asdebitage).

**Harm:** is defined as an act that may destroy, deface or damage an Aboriginal object or place. In relation to an object, this means the movement or removal of an object from the land in which it has been situated

**In situ:** archaeological items are said to be "in situ" when they are found in the location where they were last deposited.

**Retouched flake:** a flake that has been flaked again in a manner that modified the edge for the purpose of sharpening that edge.

**Typology:** the systematic organization of artefacts into types on the basis of shared attributes.

## ACRONYMS

<b>ACHA</b>	Aboriginal Cultural Heritage Assessment
<b>ACHMP</b>	Aboriginal Cultural Heritage Management Plan
<b>AHIMS</b>	Aboriginal Heritage Information Management System
<b>AHIP</b>	Aboriginal Heritage Impact Permit

## AHIMS SITE ACRONYMS

<b>ACD</b>	Aboriginal ceremonial and dreaming
<b>AFT</b>	Artefact (stone, bone, shell, glass, ceramic and metal)
<b>ARG</b>	Aboriginal resource and gathering
<b>ART</b>	Art (pigment or engraving)
<b>BOM</b>	Non-human bone and organic material
<b>BUR</b>	Burial
<b>CFT</b>	Conflict site
<b>CMR</b>	Ceremonial ring (stone or earth)
<b>ETM</b>	Earth mound
<b>FSH</b>	Fish trap
<b>GDG</b>	Grinding groove
<b>HAB</b>	Habitation structure
<b>HTH</b>	Hearth
<b>OCQ</b>	Ochre quarry
<b>PAD</b>	Potential archaeological deposit.
<b>SHL</b>	Shell
<b>STA</b>	Stone arrangement
<b>STQ</b>	Stone quarry
<b>TRE</b>	Modified tree (carved or scarred)
<b>WTR</b>	Water hole



# 1 INTRODUCTION

## 1.1 INTRODUCTION

McCardle Cultural Heritage Pty Ltd (MCH) has been engaged by Addenbrooke Pty Ltd to undertake an Archaeological Due Diligence Assessment for the proposed residential subdivision located at Lot 23 DP 537919 Boomerang Drive, Blueys Beach.

The assessment has been undertaken to meet the Heritage NSW, Department of Premier & Cabinet, Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales (DECCW 2010), the Guide to Investigating, Assessing and Reporting on Aboriginal Cultural Heritage in NSW (OEH 2011), the Due Diligence Code of Practice for the Protection of Aboriginal Objects in NSW, Council requirements and the brief.

The purpose of a due diligence assessment is to assist proponents to exercise due diligence when carrying out activities that may harm Aboriginal objects or Aboriginal places and to determine whether that should apply for a consent to harm Aboriginal objects or Places through an Aboriginal Heritage Impact Assessment (AHIP). The purpose of this due diligence report is to demonstrate that all reasonable and practicable measures have been undertaken to prevent harm to any Aboriginal objects and/or place within the project area. This report has met the requirements and considered the relevant environmental and archaeological information, the project land condition, the nature of the proposed development activity and impacts, as well as preparing appropriate recommendations.

## 1.2 THE PROJECT AREA

The project area is described as Lot 23 DP 537919 Boomerang Drive, Blueys Beach. The location of the project area is shown in Figures 1.1 and 1.2.

Figure 1.1 Location of the project area



Figure 1.2 Aerial location of the project area (nearmap 2021)



### 1.3 DESCRIPTION OF THE PROPOSED DEVELOPMENT

The overall project is for the development of 73 residential lots, 2 commercial lots, 1 public park, 3 detention basins/lots, 1 residual C4 Lot and 1 residual C2 Lot. Works will consist of clearing, topsoil stripping, earthworks, filling, drainage works, road works, services, landscaping and stabilisation.

### 1.4 OBJECTIVES OF THE DUE DILIGENCE ASSESSMENT

The objectives and primary tasks of this due diligence assessment were to:

- Undertake a search of the Aboriginal Heritage Management System (AHIMS) and other relative registers;
- Undertake preliminary research into the environmental and archaeological contexts of the project area;
- Develop a predictive model of site location for the project area;
- Undertake a field survey of the project area;
- Assess the potential impacts of the proposed development on any identified Aboriginal sites or potential archaeological deposits (PADs) identified within the project area;
- Assess the significance of any identified Aboriginal objects or sites identified within the project area;

- Complete and submit site cards to AHIMS for any Aboriginal sites identified; and
- Provide appropriate recommendations.

## 1.5 LEGISLATIVE CONTEXT

The following overview of the legislative framework, is provided solely for information purposes for the client, and should not be interpreted as legal advice. MCH will not be liable for any actions taken by any person, body or group as a result of this general overview and MCH recommends that specific legal advice be obtained from a qualified legal practitioner prior to any action being taken as a result of the general summary below.

Land managers are required to consider the effects of their activities or proposed development on the environment under several pieces of legislation. Although there are a number of Acts and regulations protecting Aboriginal heritage, including places, sites and objects, within NSW, the three main ones include:

- National Parks and Wildlife Act (1974, as amended)
- National Parks and Wildlife Regulation (2009)
- Environmental Planning and Assessment Act (1979)

### 1.5.1 NATIONAL PARKS AND WILDLIFE ACT (1974, AS AMENDED)

The National Parks and Wildlife Act (1974), Amended 2010, is the primary legislation for the protection of Aboriginal cultural heritage in New South Wales. The NPW Act protects Aboriginal heritage (places, sites and objects) within NSW and the Protection of Aboriginal heritage is outlined in s86 of the Act, as follows:

- “A person must not harm or desecrate an object that the person knows is an Aboriginal object” s86(1)
- “A person must not harm an Aboriginal object” s86(2)
- “A person must not harm or desecrate an Aboriginal place” s86(4)

Penalties apply for harming an Aboriginal object, site or place. The penalty for knowingly harming an Aboriginal object (s86[1]) and/or an Aboriginal place (s86[4]) is up to \$550,000 for an individual and/or imprisonment for 2 years; and in the case of a corporation the penalty is up to \$1.1 million. The penalty for a strict liability offence (s86[2]) is up to \$110,000 for an individual and \$220,000 for a corporation. Harm under the National Parks and Wildlife Act (1974, as amended) is defined as any act that; destroys defaces or damages the object, moves the object from the land on which it has been situated, causes or permits the object to be harmed. However, it is a defence from prosecution if the proponent can demonstrate that;

- 1) harm was authorised under an Aboriginal Heritage Impact Permit (AHIP) (and the permit was properly followed), or
- 2) the proponent exercised due diligence in respect to Aboriginal heritage.

The ‘due diligence’ defence (s87[2]), states that if a person or company has applied due diligence to determine that no Aboriginal object, site or place was likely to be harmed as a result of the activities proposed for the Project Area, then liability from prosecution under the NPW Act 1974 will be removed or mitigated if it later transpires that an Aboriginal object, site or place was harmed. If any

Aboriginal objects are identified during the activity, then works should cease in that area and BCD notified (DECCW 2010:13). The due diligence defence does not allow for continuing harm.

The archaeological due diligence assessment and report has been carried out in compliance with the NSW DECCW 2010 Due Diligence Code of Practice for the Protection of Aboriginal Objects in NSW.

#### 1.5.2 NATIONAL PARKS AND WILDLIFE REGULATION (2009)

The National Parks and Wildlife Regulation 2009 provides a framework for undertaking activities and exercising due diligence in respect to Aboriginal heritage. The Regulation (2009) recognises various due diligence codes of practice, including the Due Diligence Code of Practice for the Protection of Aboriginal Objects in NSW which is pertinent to this report, but it also outlines procedures for Aboriginal Heritage Impact Permit (AHIP) applications and Aboriginal Cultural Heritage Consultation Requirements (ACHCRs); amongst other regulatory processes.

#### 1.5.3 ENVIRONMENTAL PLANNING & ASSESSMENT ACT 1979 (EP&A ACT)

EP&A Act establishes the statutory framework for planning and environmental assessment in NSW and the implementation of the EP&A Act is the responsibility of the Minister for Planning, statutory authorities and local councils. The EP&A Act contains three parts which impose requirements for planning approval:

- Part 3 of the EP&A Act relates to the preparation and making of Environmental Planning Instruments (EPIs), State Environmental Planning Policies (SEPPs) and Local Environmental Plans (LEPs).
- Part 4 of the EP&A Act establishes the framework for assessing development under an EPI. The consent authority for Part 4 development is generally the local council, however the consent authority may be the Minister, the Planning Assessment Commission or a joint regional planning panel depending upon the nature of the development.
- Part 4, Division 4.1 of the EP&A Act establishes the assessment pathway for State significant development (SSD) declared by the State Environmental Planning Policy (State and Regional Development) 2011 (NSW). Once a development is declared as SSD, the Secretary's Environmental Assessment Requirements (SEARs) will be issued outlining what issues must be considered in the EIS.
- Part 5 of the EP&A Act provides for the control of 'activities' that do not require development consent and are undertaken or approved by a determining authority. Development under Part 5 that are likely to significantly affect the environment is required to have an EIS prepared for the proposed activity.
- Part 5.1 of the EP&A Act establishes the assessment pathways for State significant infrastructure (SSI). Development applications made for SSI can only be approved by the Minister. Once a development is declared as SSI, the SEARs will be issued outlining what issues must be addressed in the EIS.

The applicable approval process is determined by reference to the relevant environmental planning instruments and other controls, LEPs and State Environmental Planning Policies (SEPPs). This project falls under Part 4 and has a current DA (DA – 323-2013/D).



## 1.6 ABORIGINAL COMMUNITY CONSULTATION

A due diligence assessment relates to the physical identification of Aboriginal objects, sites and places. Community consultation is only required once Aboriginal objects, sites or places have been identified and an Aboriginal Heritage Impact Permit (AHIP) is deemed necessary. Section 5.2 of the 2010 Due Diligence Code of Practice for the protection of Aboriginal Objects in NSW specifically states that;

*‘consultation with the Aboriginal community is not a formal requirement of the due diligence process’ (2010:8).*

## 1.7 QUALIFICATIONS OF THE INVESTIGATOR

Penny McCardle: Principal Archaeologist/Forensic Anthropologist has 19 years’ experience in Indigenous archaeological assessments, excavation, research, reporting, analysis and consultation and fifteen years Forensic Anthropology experience in skeletal identification, biological profiling and skeletal trauma reconstruction and identification.

- BA (Archaeology and Palaeoanthropology, University of New England 1999
- Hons (Archaeology and Palaeoanthropology): Physical Anthropology, University of New England 2001
- Forensic Anthropology Course, University of New England 2003
- Armed Forces Institute of Pathology Forensic Anthropology Course, Ashburn, VA 2008
- Analysis of Bone trauma and Pseudo-Trauma in Suspected Violent Death Course, Erie College, Pennsylvania, 2009
- Documenting Scenes of War and Human Rights Violations. Institute for International Criminal Investigations, 2018
- PhD, University of Newcastle, 2019

## 1.8 REPORT STRUCTURE

The report includes Section 1 which outlines the project, Section 2 presents the environmental and archaeological context, Section 3 provides the results and discussion and Section 4 presents the Impact Assessment, Section 5 discusses the mitigation measures and Section 6 provides the management recommendations.

## 2 ENVIRONMENTAL AND ARCHAEOLOGICAL CONTEXT

The archaeological due diligence process and assessment requires that the available knowledge and information in relation to the environmental and archaeological contexts is considered. The purpose of this is to assist in identifying whether Aboriginal objects, sites or places are likely to be present within the project area based on archaeological predictive modelling and in what condition they may be found in given the environmental impacts.

### 2.1 LOCAL ENVIRONMENT

Past site location and land use are closely linked to the environment including the landform, geology, geomorphology, soils, waterways and associated resources. The environmental context is important to identify potential factors relating to past Aboriginal land use patterns.

Consisting of steep to moderate slopes, the project area is situated on the Carboniferous Wootton Beds geological formation (consisting of sandstone, siltstone and clay stone). Consisting of a topsoil (A horizon) that overlays the B horizon of clays, within the region, sites tend to occur on or within soil Horizon A or are often present at the interface of the A and B horizons. Within the A horizon the lowermost (in terms of vertical positioning) artefact assemblages tend to contain artefacts that are typically attributed to the mid-Holocene, as characterised by an increase in the number of backed artefacts.

In terms of fresh water availability one 1<sup>st</sup> order drainage depressions are located in the project area. The closest reliable fresh water source is Wallis Creek located approximately 1.5 kilometres north west of the project area and the closest marine resource is Blueys Beach, located approximately 80 metres east at its closest point. As water was essential for survival, it is not surprising that past Aboriginal people would focus their land uses and camping in close proximity to reliable water and as the project area had very limited fresh water supply or associated resources, the project area would have been utilised for more transitory activities such as hunting and gathering and travel to Wallis Creek or east to the ocean rather than camping.

European settlers extensively cleared the original native vegetation in the 1800's and since then the investigation area has been subject to additional clearing, ploughing and grazing along with two dams construction. In terms of these land uses, these direct impacts to the land and associated cultural materials that may be present are easy to see and understand. Early vegetation clearing included the uprooting of trees by chaining will disturbed or destroy that may be present near or underneath trees and vegetation. Although pastoralism is a comparatively low impact activity, it does result in disturbances due to vegetation clearance and the trampling and compaction of grazed areas. Furthermore, grazing by hooved animals can affect the archaeological record due to the displacement and breakage of artefacts resulting from trampling (Yorston et al 1990). Pastoral land uses are also closely linked to alterations in the landscape due to the construction of dams, fence lines and associated structures. As a sub-set of agricultural land use, ploughing typically disturbs the top 10-12 centimetres of topsoil (Koettig 1986) depending on the method and machinery used during the process. Ploughing increases the occurrence of erosion and can also result in the direct horizontal and vertical movement of artefacts, thus causing artificial changes in artefact densities and distributions. In fact, studies undertaken on artefact movement due to ploughing (e.g., Roper 1976; Odell and Cowan 1987) has shown that artefact move between one centimetre up to 18 metres laterally depending on the equipment used and horizontal movement. Ploughing may also interfere with other features and disrupt soil stratigraphy (Lewarch and O'Brien 1981). Ploughing activities are typically evidenced through 'ridges and furrows' however a lengthy cessation in ploughing activities dictates that these features may no longer be apparent on the surface.

Additional disturbances would have derived from natural processes. The patterns of deposition and erosion within a locality can influence the formation and/or destruction of archaeological sites. Within an environment where the rate of erosion is generally high, artefacts deposited in such an environment will be eroded downslope after being abandoned. Additionally, bioturbation processes such as the redistribution and mixing of cultural deposits occurs as a result of burrowing and mounding by earthworms, ants and other species of burrowing animals. Artefacts can move downwards through root holes as well as through sorting and settling due to gravity, and translocation can also occur as a result of tree falls (Balek 2002; Peacock and Fant 2002:92).

The project area is located within an environment that provided limited resources, including raw materials, fauna, flora and reliable fresh water, that would have allowed for minimal past Aboriginal land use of the area. With no fresh water available, the project area may have been utilised for hunting and gathering opportunities rather than camping. In relation to modern alterations to the landscape, the clearing, ploughing and grazing can be expected to have had low to moderate to impacts upon the archaeological record.

## 2.2 ARCHAEOLOGICAL CONTEXT

A review of the archaeological literature of the region, and more specifically the local area and the results of an AHIMS search provide essential contextual information for the current assessment.

### 2.2.1 HERITAGE REGISTER LISTINGS

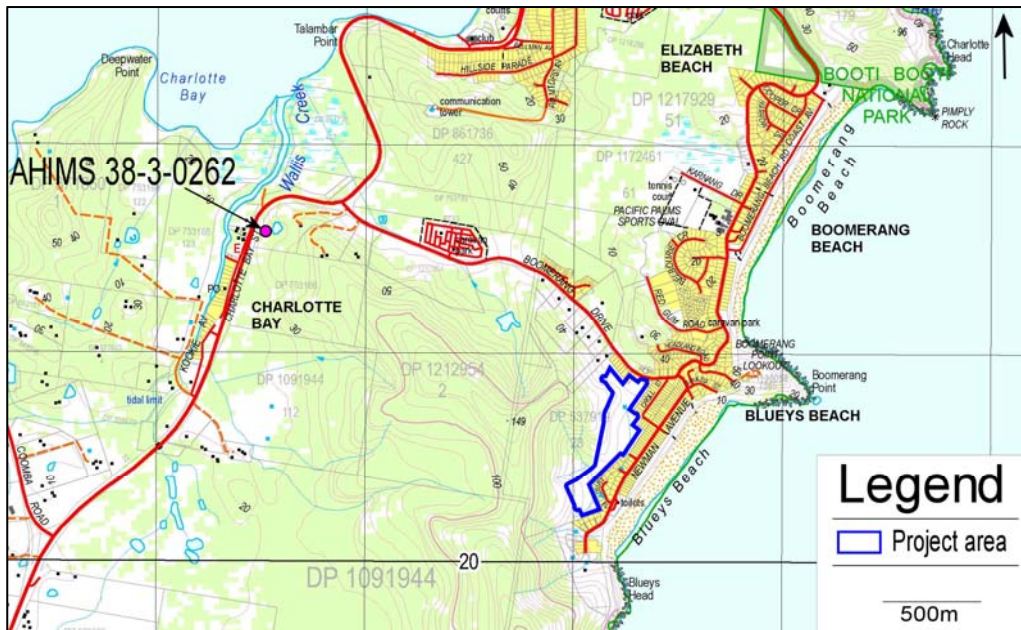
The National Heritage List, the Commonwealth Heritage List, the Australian Heritage Database, Australia's National Heritage List, The National Trust Heritage Register State Heritage Inventory the and the Mid Cast Councils' Local Environmental Plan have no Aboriginal objects, sites or places listed.

### 2.2.2 ABORIGINAL HERITAGE INFORMATION MANAGEMENT SYSTEM (AHIMS)

It must be noted that there are many limitations with an AHIMS search including incorrect site coordinates due to errors and changing of computer systems at over the years that failed to correctly translate old coordinate systems to new systems. Secondly, AHIMS will only provide up to 110 sites per search, thus limiting the search area surrounding the project area and enabling a more comprehensive analysis and finally, few sites have been updated on the AHIMS register to notify if they have been subject to a s87 or s90 and as such what sites remain in the local area and what sites have been destroyed, to assist in determining the cumulative impacts, is unknown. In addition to this, other limitations include the number of studies in the local area, high levels of erosion have proven to disturb sites, site contents, and the extent of those disturbances is unknown. Thus, the AHIMS search is limited and provides a basis that only aids in predictive modelling.

A search of the AHIMS register (Appendix A) has shown that there is one artefact site recorded within a four-kilometre radius of the project area (Figure 2.1). There are no registered sites or Aboriginal Places within the project area.

Figure 2.1 Location of AHIMS site



### 2.2.3 SUMMARY OF THE ARCHAEOLOGICAL CONTEXT

The most relevant investigations from across the region (Collins 1995; Roberts & Yettica 2004; Appleton 2005; MCH 2008, 2017, 2021a – c; ERM 2013) indicate differing results and observations based on surface visibility and exposure, alterations to the landscape (including mining, industrial and residential development), proximity to water sources and geomorphology. The following summary, is derived from a review of these investigations and provides a regional archaeological context in terms of site location and distribution.

By far, the highest numbers of sites are located within 50 metres of a water source and predominantly includes artefact scatters, isolated finds and shell middens. Raw materials are predominantly chert, tuff (also called indurated mudstone by some), silcrete and quartz. Stone artefacts are predominantly flake pieces, broken flakes, flakes, cores and reduced numbers of tools. Shell types typically identified in shell middens include cockle and oyster with reduced numbers of other species. The vast majority of artefactual material in the region was observed on exposures with good to excellent ground surface visibility. The likelihood of finding artefacts surrounding these exposures is reduced due to poor visibility. The regional archaeology of the area can be summarised as follows:

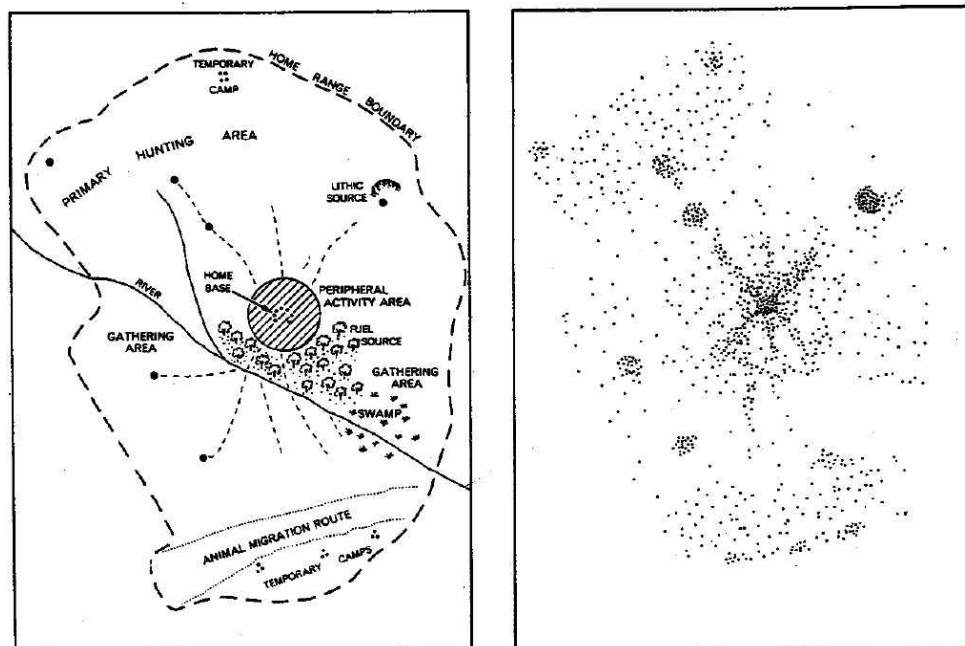
- the likelihood of locating sites increases with proximity to water;
- the likelihood of finding large sites increases markedly with proximity to water;
- a variety of raw materials will be represented though the majority of sites will include tuff/mudstone, chert, silcrete and quartz;
- a variety of artefact types will be located though the majority will be flakes, flaked pieces and debitage;
- grinding grooves will be located along or near water sources;
- the likelihood of finding scarred trees is dependent on the level of clearing in an area, and
- the majority of sites will be subject to disturbances including human and natural.



### 2.3 MODELS OF PAST ABORIGINAL LAND USE

The main aim of this project is to attempt to define both the nature and extent of occupation across the area. As a result, the nature of the analysis will focus on both the landform units and sites. The purpose of this strategy is to highlight any variations between sites and associated assemblages, landforms and resources across the area treating assemblages as a continuous scatter of cultural material across the landscape. In doing this, it is possible to identify variation across the landscape, landforms and assemblages that correspond with variation in the general patterns of landscape use and occupation. Thus, the nature of activities and occupation can be identified through the analysis of stone artefact distributions across a landscape. A general model of forager settlement patterning in the archaeological record has been established by Foley (1981). This model distinguishes the residential 'home base' site with peripheral 'activity locations'. Basically, the home base is the focus of attention and many activities and the activity locations are situated away from the home base and are the focus of specific activities (such as tool manufacturing). This pattern is illustrated in Figure 2.3. Home base sites generally occur in areas with good access to a wide range of resources (reliable water, raw materials etc). The degree of environmental reliability, such as reliable water and subsistence resources, may influence the rate of return to sites and hence the complexity of evidence. Home base sites generally show a greater diversity of artefacts and raw material types (which represent a greater array of activities performed at the site and immediate area). Activity locations occur within the foraging radius of a home base camp (approximately 10 km); (Renfrew and Bahn 1991). Based on the premise that these sites served as a focus of a specific activity, they will show a low diversity in artefacts and are not likely to contain features reflecting a base camp (such as hearths). However, it is also possible that the location of certain activities cannot be predicted or identified, adding to the increased dispersal of cultural material across the landscape. If people were opting to carry stone tools during hunting and gathering journeys throughout the area rather than manufacturing tools at task locations, an increased number of used tools should be recovered from low density and dispersed assemblages.

Figure 2.2 Foley's model (L) and its manifestation in the archaeological record (R), (Foley 1981).



### 2.3.1 MODEL OF OCCUPATION FOR THE LOCAL AREA

Occupation models often aim to identify and explain archaeological patterning in site type, content and distribution. General theories have been developed outlining the relationship between land use patterns and the resulting archaeological evidence. A number of models developed and reviewed (Dean-Jones and Mitchell 1993; Rich 1995; Kuskie and Kamminga 2000) and the most commonly accepted model is summarised and adapted to for the present project area. Kuskie and Kamminga (2000) established a general model of occupation strategies based primarily upon ethnographic research. Used as a starting point, it makes a general set of factors that are consistent with other studies (e.g., White and McDonald 2010, Nelson 1991). The model distinguishes between short-term or extended long-term occupation and makes some predictions about the likely location of different foraging and settlement activities. Combining this information with a general review of assemblage contents from a sample of excavated sites within the region, a baseline of settlement activities may be determined (Barton 2001). The model provides a number of archaeological expectations that may be tested. For example, the presence of features requiring a considerable labour investment such as stone-lined ovens or heat-treatment pits are likely to occur at places where occupation occurred for extended periods of time. The presence of grindstones is also a reliable indicator of low mobility and extended occupation. Seed grinding requires a large investment of time and effort (Cane 1989). In most ethnographic examples, seed grinding is an activity that takes place over an entire day to provide adequate energetic returns (Cane 1989; Edwards and O'Connell 1995). Where group mobility was high and campsites frequently shifted throughout the landscape, artefact assemblages are not expected to contain elements such as grindstones, heat-treatment pits, ovens and the diversity of implements frequently discarded at places of extended residential occupation. It may also have been the case that the location of particular activities could not be predicted by tool users, adding to the increased low-density scattering of artefacts over the landscape. Also, if individuals were opting to carry a number of stone tools during hunting and gathering activities and maintaining these tools rather than manufacturing new tools at each task location, the ratio of used tools to unworn flakes in these assemblages should be high. Table 2.1 has been adapted from Kuskie and Kamminga (2000).

Table 2.1 Site descriptions (Kuskie & Kamminga 2000).

Occupation Pattern	Activity Location	Proximity to water	Proximity to food	Archaeological expectations
Transitory movement	all landscape zones	not important	not important	assemblages of low density & diversity evidence of tool maintenance & repair evidence for stone knapping
Hunting &/or gathering without camping	all landscape zones	not important	near food resources	assemblages of low density & diversity evidence of tool maintenance & repair evidence for stone knapping high frequency of used tools
Camping by small groups	associated with permanent & temporary water	near (within 100m)	near food resources	assemblages of moderate density & diversity evidence of tool maintenance & repair evidence for stone knapping & hearths
Nuclear family base camp	level or gently undulating ground	near reliable source (within 50m)	near food resources	assemblages of high density & diversity evidence of tool maintenance, repair, casual knapping evidence for stone knapping heat treatment pits, stone lined ovens grindstones

Community base camp	level or gently undulating ground	near reliable source (within 50m)	near food resources	assemblages of high density & diversity evidence of tool maintenance, repair, casual knapping evidence for stone knapping heat treatment pits, stone lined ovens grindstones & ochre large area >100sqm with isolated camp sites
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To identify the specific activity areas through analysis of the composition of patterning of lithic assemblages, is utilised. However, this is applied to excavated materials as they provide more realistic data due to the lesser degree of disturbances, removal and breakages.

## 2.4 SYNTHESIS OF ENVIRONMENTAL AND ARCHAEOLOGICAL CONTEXTS

The site types identified throughout the area appear to be either low density/small occupation activities or sites that were associated with more secular activities. The broader landform assessment also suggests that larger sites indicative of larger camping groups may be located in close proximity to readily available resources. Other unsuitable locations, such as steep slopes, would have been limited in space and have uneven surfaces where by large scale habitation is not possible, but may have been utilised as activity areas away from the main camp. Based on information gained from previous studies, both regionally and locally, within a two-kilometre radius of the project area, it can be expected that:

- the likelihood of locating sites increases with proximity to available water; either creek/rivers, ocean;
- the likelihood of finding large sites increases markedly with proximity to reliable water;
- a variety of stone artefact types will be located though the majority will be flakes, flaked pieces and debitage;
- a variety of raw materials utilised in stone tool manufacture will be represented, though the majority of sites will be predominated by tuff/mudstone, chert and silcrete;
- the likelihood of finding scarred trees is dependent on the level of clearing in an area; and
- the majority of sites will be subject to disturbances including human and natural.

## 2.5 PREDICTIVE MODEL FOR THE PROJECT AREA

An archaeological predictive model is established to identify areas of archaeological sensitivity so it can be used as a basis for the planning and management of Aboriginal heritage. It involves reviewing existing literature to identify basic site distribution patterns. These patterns are then modified according to the specific environment of the project area to form a predictive model for site location within the specific project area. A sampling strategy is then used to test the model and the results of the survey used to confirm, refute or modify the model.

Land-systems and environmental factors are commonly used factors in predictive modelling based on the assumption that they provide distinctive sets of constraints and opportunities that influenced past Aboriginal land use patterns. As land use patterns may differ between zones (due to different environmental conditions), this may result in the physical manifestation of different spatial

distributions and forms of archaeological evidence. The predictive model presented here is based on the following information;

- Landform units;
- Previous archaeological assessments conducted within the region;
- Distribution of known sites and site densities; and
- Traditional Aboriginal land use patterns.

Also taken into consideration are land use impacts (both natural and anthropomorphic) that may have resulted in a disturbed landscape and associated archaeological record. However, these assumptions may only be clarified during survey and the model updated accordingly if needed.

The project area, consisting of steep to moderate slopes, is located approximately 80 metres from the beach and in terms of fresh water sources, Wallis Creek located approximately 1.5 kilometres north west of the project area. As water was essential for survival, it is not surprising that past Aboriginal people would focus their land uses and camping in close proximity to reliable water on flat landforms and as the project area had very limited fresh water supply or associated resources and consists of steep to moderate slopes (unsuitable for camping), the project area would have been utilised for more transitory activities such as hunting and gathering and travel to Wallis Creek or east to the ocean rather than camping. Evidence of such transitory activities manifest in the archaeological record as low-density artefact scatter, isolated finds and, or, low-density shell middens. Brief descriptions of the site types that may occur in the project area are presented below.

- **Artefact scatters**

Also described as open campsites, artefact scatters and open sites, these deposits have been defined at two or more stone artefacts within 50 metres of each other and will include archaeological remains such as stone artefacts and may be found in association with camping where other evidence may be present such as shell, hearths, stone lined fire places and/or heat treatment pits. These sites are usually identified as surface scatters of artefacts in areas where ground surface visibility is increased due to lack of vegetation. Erosion, agricultural activities (such as ploughing, grazing) and access ways can also expose surface campsites. Artefact scatters may represent evidence of;

- Large camp sites, where everyday activities such as habitation, maintenance of stone or wooden tools, manufacturing of such tools, management of raw materials, preparation and consumption of food and storage of tools has occurred;
- Medium/small camp sites, where activities such as minimal tool manufacturing occurred;
- Hunting and/or gathering events;
- Other events spatially separated from a camp site, or
- Transitory movement through the landscape.

Artefact scatters are a common site type in the broader region. There is a low potential for low-density artefact scatters representative of a background scatter of discarded artefacts to be present in the project area. There is also the potential for such sites to be impacted on through past land uses.

- **Isolated finds**

Isolated artefacts are usually identified in areas where ground surface visibility is increased due to lack of vegetation. Erosion, agricultural activities (such as ploughing) and access ways can also expose surface artefacts. Isolated finds may represent evidence of;

- Hunting and/or gathering events; or

- Transitory movement through the landscape.

Isolated finds are a common site type in the locality and the broader region. There is potential for isolated artefacts to occur across the project area and across all landforms. There is also the potential for such sites to be impacted on through past land uses.

- **Shell middens**

Shell middens are places where debris from eating shell fish has accumulated. Middens preserve a range of past dietary remains which have the potential to inform about past dietary consumption and availability of food resources. Most shell middens analysed to date pertain to coastal environments with few pertaining to inland middens. In NSW, middens are located on headlands, beaches and dunes, around estuaries, swamps, the tidal stretches of creeks and rivers and along the banks of inland rivers, creeks and lakes. Shell middens may be found in the open or in rock shelters and often those in the open are disturbed through erosion and land use impacts and those in shelters are usually well preserved. The location of middens is influenced by a variety of factors including, but not limited to, the availability of shell fish, aspect, accessibility and the nature of the immediate area and are typically located within a reasonable distance from water on level, sheltered surfaces.

Ranging in size from small scatters to deep layered deposits that have built up over time, the size of the midden may relate to its location (e.g., riverbank middens tend to be smaller than estuarine and coastal middens). Small middens may represent short term occupation or the debris from a single meal. Major estuarine species include bivalves such as cockle, whelk, mud and rock oyster and both edible and hairy mussels. Rock platform species of gastropods include limpets, turban shell, periwinkles, nerits, tritons and cartrut shell fish and the most important beach species is the pipi.

Shell middens may also include fish, sea birds, sea mammals and land mammals. Stone artefact are also typically found within middens and indicate trade and/or transportation of raw materials. Bone and shell artefacts, such as fish hooks and barbs, evidence of cooking may be present in the form of charcoal, ash, fire stones, hearths, burnt clay and/or burnt earth. The midden usually occurs within a soil or sand layer that is darker than the surrounding sediment. Middens may also contain burials and if present are usually located under the midden.

Preservation varies with food stuffs such as berries and fruits leaving no archaeological traces, sea foods such as cartilaginous fish, stingrays, octopus and fish eggs are likely to be equally invisible in the archaeological record. However, tissue such as shell and crustations and bone may be preserved. Preservation is also dependant on land use impacts and associated soil pH.

An important contribution to the study of coastal shell middens was made by Meehan (1975, 1977a, b) through ethnographic studies of coastal hunter and gatherers in northern Arnhem Land. Through a yearlong quantitative record of the total diet, Meehan provides unique insights into all aspects of shell fish gathering and the creation of shell middens with pertinent data to the interpretation of midden data. Shell middens may be distinguished from natural shell beds as follows (Attenbrow 1992; Bailey 1994; Gill 1951; Coutts 1966; Hughes and Sullivan 1974);

- 1) Middens contain charcoal, burnt wood, clay and/or earth, blackened shells, some artefacts, hearth stones. These are absent from natural shell beds.
- 2) Middens are either unstratified or roughly stratified whereas natural shell deposits are well stratified and exhibit sedimentary features of water laid deposits.
- 3) Middens contain edible species and sizes whereas shell beds contain shells of varied species and sizes as well as both edible and non-edible species.
- 4) Middens do not contain worn shell resulting from transportation from the off shore or beach zone, whereas shell beds do.

- 5) Middens contain mammal bones used in food consumption, shell beds do not.
- 6) Middens do not contain certain forms of marine life not used by Aboriginal people (e.g. corals, tube worms) but shell beds do.

Interpretation of shell middens usually falls into three main categories;

- 1) Taphonomy: differential survival value of different species may be considered.
- 2) Environmental/ecological: changes in habitat may bring about changes in the availability of species (Coutts 1970).
- 3) Economic/behavioural: changes in gathering habits brought about by some purely cultural factor may be considered (Bowdler 1970, 1976).

The interpretation of shell middens is only as good as one's analysis, which is only as good as one's sample, all of which are typically limited during surface survey only.

- Large camp sites, where everyday activities such as habitation, maintenance of stone or wooden tools, manufacturing of such tools, management of raw materials, preparation and consumption of food and storage of tools has occurred;
- Medium/small camp sites, where activities such as a small meal was cooked and/or consumed;
- Hunting and/or gathering events;
- Other events spatially separated from a camp site, or
- Transitory movement through the landscape.

Shell middens are a common site type in the broader region. There is potential for low -density shell middens to occur in the project area and be representative of more transitory activities rather than camping. There is also the potential for such sites to be impacted on through past land uses and associated impacts.



### 3 RESULTS AND DISCUSSION

To comply with the due diligence requirement that a visual inspection of the project area be undertaken, an archaeological pedestrian survey across the project area was undertaken by MCH archaeologist on 19<sup>th</sup> January 2022. The survey focused on areas of high ground surface visibility and exposures (erosional features, dam walls, tracks, cleared areas).

#### 3.1 SURVEY UNITS

The project area, consisting of disturbed steep to moderate slopes was surveyed as one survey unit (SU). The survey confirmed that the project area had been previously cleared with evidence of some ploughing (eroded ridges and furrows), grazed and a dam constructed along the eastern border. Consisting of mainly of pasture greases, trees were scattered throughout. Visibility ranged from 10% in the north to 1% in the south and exposures were moderate throughout due to erosion, tracks and the dam.

The project area is not considered an archaeologically sensitive landform as the slopes are too steep for camping and distance from a reliable fresh water source precluded past habitation and longer-term activity/place use. Whilst likely utilised for hunting and gathering activities (manifests in the archaeological record as a background scatter of discarded artefacts), the land uses would have displaced or destroyed any such evidence. Examples of the project area are provided in Figures 3.1 to 3.5.

Figure 3.1 North-western corner of the project area facing north-west



Figure 3.2 North-eastern corner facing north-east



Figure 3.3 Centre of the project area facing north



Figure 3.4 Southern portion facing south-west



Figure 3.5 Southern end facing south



As shown in Table 3.1 the total effective coverage for the project area was 4,200m<sup>2</sup>, or 4% reflecting the low surface visibility due to dense vegetation cover.

Table 3.1 Effective coverage for the investigation area

SU	Landform	Area (m2)	Vis. %	Exp. %	Exposure type	Previous disturbances	Present disturbances	Limiting visibility factors	Effective coverage (m2)
1	slope	105,000	5%	80%	erosion, tracks, dam	clearing, ploughing, grazing, dam	erosion, dam, tracks	grass, leaf litter	4,200
<b>Totals</b>		<b>105,000</b>							<b>4,200</b>
<b>Effective coverage %</b>									<b>4.00%</b>



The level and nature of the effective survey coverage is considered satisfactory to provide an effective assessment of the investigation area. The coverage was comprehensive for obtrusive site types (e.g., grinding grooves and scarred trees) but somewhat limited for the less obtrusive surface stone artefact sites by surface visibility constraints that included vegetation cover and minimal exposures.

### 3.2 ARCHAEOLOGICAL SITES AND PADS

No archaeological sites or Potential Archaeological Deposits (PADs) were identified during the survey and this is likely due to a number of factors including:

- Distance from reliable water and subsistence resources indicates the project area was unlikely to have been utilised for camping;
- Landforms of steep to moderate slopes indicates the project area was unsuitable for camping;
- The project area may have been used for travel and/or hunting and gathering which manifest in the archaeological record as very low-density artefact scatters and/or isolated finds; and
- Past and present land uses would have displaced and/or destroyed any evidence of past Aboriginal land use.

### 3.3 CONCLUSION

It is well established that proximity to water was an important factor in past occupation of the area, with sites reducing in number significantly away from water with most sites located within 50 metres of the tributaries. The project area contains no raw materials that are typically used in the manufacture of stone tools, its landforms of steep to moderate slopes as well as its distance from reliable water renders the project area unsuitable for camping. Whilst the area may have been utilised for hunting and gathering and/or travel, any evidence (low density artefact scatters and/or isolated finds) would likely have been destroyed through previous clearing, ploughing and grazing activities.

## 4 ASSESSMENT OF IMPACTS

The archaeological record is a non-renewable resource that is affected by many processes and activities. As outlined in Section 2 and Section 3, the various natural processes and human activities have impacted on archaeological deposits through both site formation and taphonomic processes.

### 4.1 IMPACTS

The Heritage NSW Code of Practice for the Archaeological Investigation of Aboriginal Objects in New South Wales (2010:21) describes impacts to be rated as follows:

- 1) Type of harm: is either direct, indirect or none
- 2) Degree of harm is defined as either total, partial or none
- 3) Consequence of harm is defined as either total loss, partial loss, or no loss of value

As no sites or PADs were identified, there are no impacts on the archaeological record.

## 5 MITIGATION AND MANAGEMENT STRATEGIES

Specific strategies, as outlined through the Heritage NSW, Department of Premier & Cabinet Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales (DECCW 2010b), the Guide to Investigating, Assessing and Reporting on Aboriginal Cultural Heritage in NSW (OEH 2011), and the Due Diligence Code of Practice for the Protection of Aboriginal Objects in NSW (DECCW 2010c), are considered below for the management of the identified site within the project area.

### 5.1 CONSERVATION/PROTECTION

Conservation is the first avenue and is suitable for all sites, especially those considered high archaeological significance and/or cultural significance. Conservation includes the processes of looking after an indigenous site or place so as to retain its significance and are managed in a way that is consistent with the nature of peoples' attachment to them.

As no sites or PADs were identified conservation/protection is not required.

### 5.2 FURTHER INVESTIGATION

An Aboriginal Heritage Impact Permit (AHIP) is no longer required to undertake test excavations (providing the excavations are in accordance with the Code of Practice for Archaeological Investigations in NSW). Subsurface testing is appropriate when a PAD has been identified, and it can be demonstrated that sub-surface Aboriginal objects with potential conservation value have a high probability of being present, and that the area cannot be substantially avoided by the proposed activity.

As no sites or PADs were identified further investigations are not justified.

### 5.3 AHIP

If harm will occur to an Aboriginal object or Place, then an AHIP is required from Heritage NSW, Department of Premier & Cabinet. If a systematic excavation of the known site could provide benefits and information for the Aboriginal community and/or archaeological study of past Aboriginal occupation, a salvage program may be an appropriate strategy to enable the salvage of cultural objects. The AHIP may also include surface collection of artefacts.

As no sites or PADs were identified an AHIP is not required.

## 6 RECOMMENDATIONS

### 6.1 GENERAL

- 1) The persons responsible for the management of onsite works will ensure that all staff, contractors and others involved in construction and maintenance related activities are made aware of the statutory legislation protecting sites and places of significance. Of particular importance is the National Parks and Wildlife Amendment (Aboriginal Objects and Aboriginal Places) Regulation 2010, under the National Parks and Wildlife Act 1974; and
- 2) Should any Aboriginal objects be uncovered during works, all work will cease in that location immediately and the Environmental Line contacted.

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## APPENDIX A

### AHIMS Search Results

Penny Mccardle

Date: 07 December 2021

Po Box 166

Adamstown New South Wales 2289

Attention: Penny Mccardle

Email: penny@mcheritage.com.au

Dear Sir or Madam:

**AHIMS Web Service search for the following area at Datum :GDA, Zone : 56, Eastings : 454000.0 - 458000.0, Northings : 6419000.0 - 6422000.0 with a Buffer of 0 meters, conducted by Penny Mccardle on 07 December 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:

1	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 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.



# AHIMS Web Services (AWS)

## Extensive search - Site list report

Your Ref/PO Number : Blueys Beach

Client Service ID : 645341

<u>SiteID</u>	<u>SiteName</u>	<u>Datum</u>	<u>Zone</u>	<u>Easting</u>	<u>Northing</u>	<u>Context</u>	<u>Site Status **</u>	<u>SiteFeatures</u>	<u>SiteTypes</u>	<u>Reports</u>
38-3-0262	PP 1	AGD	56	454450	6421340	Open site	Valid	Artefact : -	Isolated Find	
	<u>Contact</u>	<u>Recorders</u>	Ms.Laila Haglund					<u>Permits</u>		

### **\*\* Site Status**

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

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

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

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

Report generated by AHIMS Web Service on 07/12/2021 for Penny Mccardle for the following area at Datum :GDA, Zone : 56, Eastings : 454000.0 - 458000.0, Northings : 6419000.0 - 6422000.0 with a Buffer of 0 meters.. Number of Aboriginal sites and Aboriginal objects found is 1

This information is not guaranteed to be free from error omission. Heritage NSW and its employees disclaim liability for any act done or omission made on the information and consequences of such acts or omission.

