

Avid Residential Estates Pty Ltd

M

24 Duckenfield Rd, Berry Park

LGA: Maitland

Archaeological Due Diligence Assessment

14 June 2022


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EXECUTIVE SUMMARY

McCardle Cultural Heritage Pty Ltd (MCH) has been engaged by Avid Residential Estates Pty Ltd to undertake an Archaeological Due Diligence Assessment for the proposed subdivision of part of Lot 112 DP734271 (24 Duckenfield Road, Berry Park).

The underlying geology of the project area is predominantly the Permian Tomogo Coal Measures consisting of shale, mudstone, sandstone, coal, tuff and clay. The northern component of the property consists of alluvial gravel, sand, silt, clay, waterloo rock, marine and fresh water deposits. The presence of mudstone and tuff within the geology of the project area indicates that stone materials suitable for manufacturing stone artefacts may occur in various locations throughout the project area. Consisting of a gentle slope and wide drainage depressions, the project area includes the residual Beresfield soil landscape and in terms of fresh water sources, the project area is located approximately 160 metres south of Four Mile Creek, although the flood plain of the creek is located approximately 20 metres north of the project area. The Hunter River (6th order), is located approximately 2.1 kilometres to the north and east of the project area.

A search of the AHIMS register has identified 50 known Aboriginal sites currently recorded within two kilometres of the project area and include 38 artefact sites, 2 PADs and 10 artefacts with PAD sites. Three sites are located in the project area. AHIMS site 38-4-1052 is an isolated artefact recorded in 2007 and is located on a dam wall 150 metres south of a track adjoining McFarlanes Road and highly disturbed. AHIMS site 38-4-1053, is an artefact scatter comprising of two loci. Locus A consisted of an isolated artefact and Locus B, also an isolated artefact was located on a dam wall are located approximately 100 metres south of a vehicle track adjoining McFarlanes Road. The site card indicates that the broader area closer to the wetlands/former Hunter valley estuary has potential for cultural material to be present. AHIMS site 38-4-1054 is an isolate artefact and may have been transported in with fill material.

Considering the AHIMS results, local and regional archaeological investigations as well as the environmental context, given that fresh water was necessary for survival and the project area is located approximately 160 metres south of Four Mile Creek, but within close proximity of the flood plain of the creek (approximately 20 metres), indicate the project area would have been used for hunting and gathering opportunities rather than large-scale long-term camping. Evidence of such past Aboriginal land uses manifest in the archaeological record as artefact scatters and isolated artefacts, such as those already identified in the project area.

The survey confirmed that large scale clearing had occurred across the project area. As least one ploughing event had occurred due to the presence of pasture grass throughout, and two dams also located in the project area. Vegetation consisted of grass with few trees scattered throughout. Significant natural processes recently (heavy rain fall and flooding) resulted in very soft soils and continued grazing by hooved animals has resulted in the disturbances across the project area up to approximately 20cm in depth. Visibility was moderate as were exposures (erosion, exposed areas, dams).

The previously identified AHIMS sites (38-4-1052, 38-4-1053, 38-4-1054) were not identified during the assessment. This is not surprising given the sites were disturbed and exposed through both human and natural processes in 2007, the amount of time since being first recorded (15 years ago) and the significant natural events (major rain/flooding events and erosion) that has resulted in this site being destroyed through natural processes.

Taking into consideration the environmental and archaeological contexts, considering the results of previous investigations in the immediate vicinity, and the results of the survey, the project area, consisting of a gentle slope along the margins of the wetlands/flood plain of Four Mile Creek, is

likely to have been utilised for hunting and gathering opportunities with a focus of activity closer to the floodplain margins (1:100-year flood) along the western side of the project area. Whilst it is difficult, if not impossible, to predict the location of hunting and gathering activities with or without activity areas, evidence throughout the region have demonstrated it is the areas closer to such resources that have the highest density of evidence. For these reasons an area of high potential archaeological sensitivity within the project area has been identified as extending east from the western boundary (1:200-year flood level) for 100 metres.

As the previously identified AHIMS sites 38-4-1052, 38-4-1053 and 38-4-1054 were not identified and destroyed through natural processes over the past 15 years and AHIMS updated accordingly, there are no impacts to the known archaeological record.

However, as an area of archaeological potential has been identified in the project area, and it remains unknown at this time if evidence of past Aboriginal land use is present in that location, impacts to the archaeological record remain unknown at this time 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 Regulation 2019, under the National Parks and Wildlife Act 1974;
- 2) Further investigations should include an Aboriginal Cultural Heritage Assessment (ACHA) with archaeological test excavation as per the Heritage NSW, Department of Premier & Cabinet, Aboriginal Cultural Heritage Consultation Requirements for Proponents 2010 (DECCW 2010), the Guide to Investigating, Assessing and Reporting on Aboriginal Cultural Heritage in NSW (OEH 2011), the Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales (DECCW 2010b); and
- 3) Works may proceed in the eastern part of the project area (outside the PAD) and 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 (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 resharpening that edge.

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

ACRONYMS

ACHA	Aboriginal Cultural Heritage Assessment
ACHMP	Aboriginal Cultural Heritage Management Plan
AHIMS	Aboriginal Heritage Information Management System
AHIP	Aboriginal Heritage Impact Permit

AHIMS SITE ACRONYMS

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

1 INTRODUCTION

1.1 INTRODUCTION

McCardle Cultural Heritage Pty Ltd (MCH) has been engaged by Avid Residential Estates Pty Ltd to undertake an Archaeological Due Diligence Assessment for the proposed subdivision and associated detention basins of part of Lot 112 DP734271 (24 Duckenfield Road, Berry Park).

The assessment has been undertaken to meet the Heritage NSW, Department of Premier & Cabinet Due Diligence Code of Practice for the Protection of Aboriginal Objects in NSW 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 they 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 Heritage NSW Due Diligence 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 located at 24 Duckenfield Road, Berry Park. Including part of Lot 112 DP734271 - the southern portion above the floodplain with the western boundary along the 1:100-year flood level, the location of the project area is shown in Figures 1.1 and 1.2.

Figure 1.1 Location of the project area

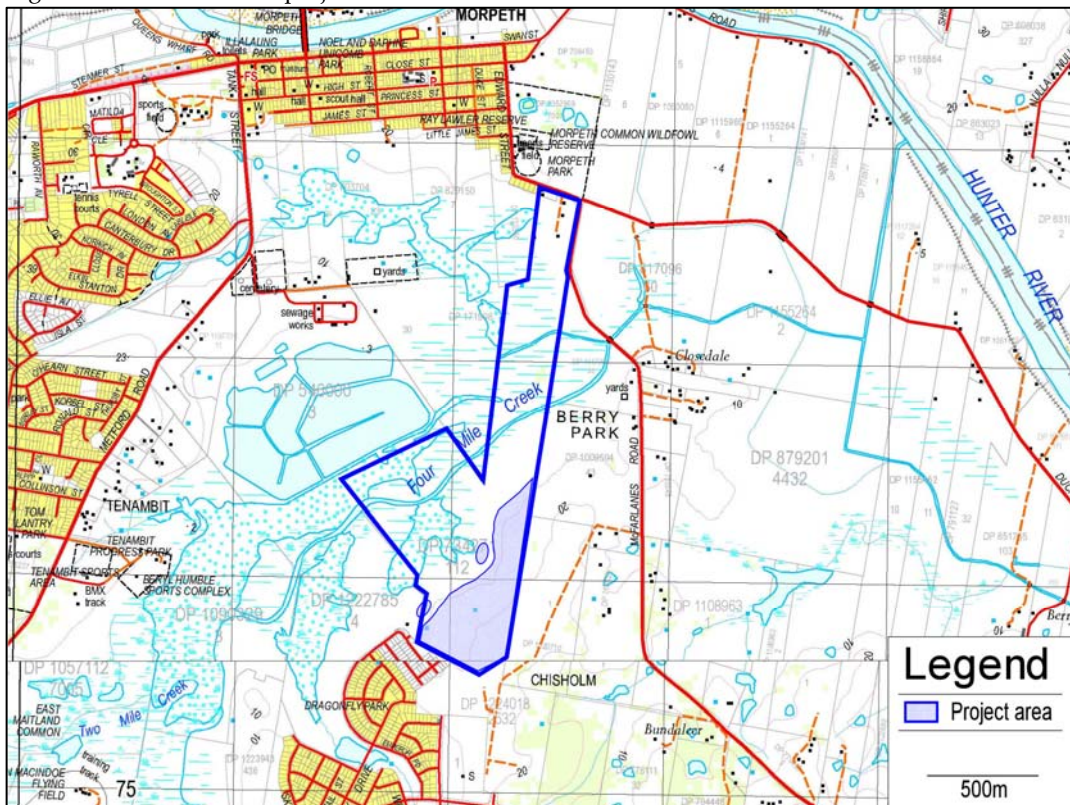


Figure 1.2 Aerial photograph of the project area (Nearmap April 2022)



1.3 DESCRIPTION OF THE PROPOSED DEVELOPMENT

The project will include the subdivision of the southern end of Lot 112 DP734271 into residential lots with two detention basins located west of the development. Works typically associated with residential developments include clearing and demolition of existing structures, site remediation, bulk earthworks including construction of dwellings and roads, services reticulation: WW, PW, NBN, electrical and gas and landscaping.

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 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 (2019)
- 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 2019, 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 Heritage NSW, Department of Premier & Cabinet notified (DECCW 2010:13). The due diligence defence does not allow for continuing harm or as defence to s.86(1) or (4).

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

1.5.2 NATIONAL PARKS AND WILDLIFE REGULATION (2019)

The National Parks and Wildlife Regulation 2019 provides a framework for undertaking activities and exercising due diligence in respect to Aboriginal heritage. The Regulation (2019) recognises various due diligence codes of practice, including the Due Diligence Code of Practice for the Protection of Aboriginal Objects in NSW, 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.

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 Heritage NSW (DECCW 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

Dr. Penny McCardle: Principal Archaeologist & Forensic Anthropologist has 22 years experience in Indigenous archaeological assessments, excavation, research, reporting, analysis and consultation and 19 years in skeletal identification, biological profiling and skeletal trauma identification for NPWS, NSW Police and the NSW Department of Forensic Medicine.

- BA (Archaeology and Palaeoanthropology): Indigenous archaeology, 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 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 are 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, both natural and anthropogenic.

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.

Story et al (1963) divided the Hunter Valley into eight main sub-regions including the Southern Mountains, Central Goulburn Valley, Merriwa Plateau, Liverpool and Mt Royal Ranges, Barrington tops, North-Eastern Mountains, Central lowlands and the Coastal Zone. The project area is situated in the Central Lowlands (a broad lowland belt of lowlands approximately 15 kilometres wide) which lies at the centre of the region extending from Murrurundi to Newcastle. The underlying geology of the project area is predominantly the Permian Tomago Coal Measures consisting of shale, mudstone, sandstone, coal, tuff and clay. The northern component of the property consists of alluvial gravel, sand, silt, clay, Waterloo rock, marine and fresh water deposits (Newcastle 1:250,000 Geological Series Sheet, 1966). The presence of mudstone and tuff within the geology of the project area indicates that stone materials suitable for manufacturing stone artefacts may occur in various locations throughout the project area.

Consisting of a gentle slope with wide drainage lines, the project area includes the residual Beresfield soil landscape. The dominant soils of this soil landscape include a friable shallow brownish black loam (topsoil - A₁ horizon). The A₂ horizon underlies this and consists of hard setting dull yellowish brown sandy loam that is moderately to slightly acid. Topsoils are shallow being no deeper than 15cm. A reddish-brown plastic pedal clay (subsoil – B₂ and B₃ horizons) occurs that is strongly to slightly acid (pH 4.5 – 6.0). Also occurring is a greyed ‘puggy’ silty clay (subsoil – B₂, B₃, C horizons) that is moderately acid to neutral (pH 5.0 – 7.0). Erosion across the area ranges from low to high (Matthei 1995: 30 – 33). The A horizon of the Beresfield Soil Landscape of the project area are generally 15cm or less in depth and soil deflation and erosion expose rather than bury former land surfaces on which stone artefacts may have been present, removing the upper part of the soil profile, usually to the exposed B horizon.

The geomorphology of the Hunter Valley is complex and include texture contrast soils that mantle the undulating to hilly landscapes on Permian and Carboniferous rocks and the older alluvial terraces and valley fills. These soils consist of an upper soil Horizon A and underlying B (referred to as duplex soils (Galloway 1963; Hughes 1984). Unit A and Unit B are interpreted as being Holocene and Pleistocene in age respectively. 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 sources, the project area is located approximately 160 metres south of Four Mile Creek, although the flood plain of the creek is located approximately 20 metres from project area. The Hunter River (6th order), is located approximately 2.1 kilometres to the north and east of the project area. As water is necessary for survival, the project area itself may be considered under-resourced in terms of fresh water availability but may have been utilised for hunting and gathering

opportunities following heavy rain and, or, travel following rain whereby Four Mile Creek would be flowing and when flooding occurred when more resources would have been available. The local area would also have provided a range of substance and medicinal resources.

The Hunter Valley, being a mature riverine estuary, has undergone significant environmental changes over the past million years and bears relevance to past Aboriginal land uses. Based on previous research (e.g., Roy & Boyd 1996, Thom & Chappell 1975, Thom & Roy 1983), Young et al 1993, Haworth et al 2002), Kuskie (2007), who undertook an assessment of the project area previously, provides a landscape reconstruction of the project area as follows:

- During the last glacial maximum from about 24,000 to 17,000 years ago, the coastline was located approximately 25 kilometres to the east of its current location, as the sea level was about 130 metres below the present level. The study area would have bordered a small valley with a minor watercourse that drained run-off from the adjacent slopes northward towards the Hunter River. However, resources of the coastline were located some distance away and potable water was probably not frequently available within the vicinity of the study area. In terms of subsistence resources and potable water, the study area did not represent an environment conducive to Aboriginal occupation;
- Deglaciation and melting of the ice sheets occurred rapidly from 18,000 years ago as temperatures rose. And post-glacial sea levels rose quickly (about one metre per 100 years) up to 8,000 BP, before slowing to half that rate between 8,000 and 6,500 BP. Mean eustatic sea levels remained between 1.5 and 2.2 metres above the present level until around 3,600 years ago;
- During the mid-Holocene, the Hunter Valley (including the area adjacent to the current study area) was infilled with marine to brackish water in an estuary stretching 32 kilometres inland from the present coastline. The presence of estuarine resources would have provided more abundant subsistence resources in this location than had been available previously and the area may have become attractive to Aboriginal people for the first time. However, potable water supplies may have remained largely ephemeral;
- After about 3,600 years BP a rapid decline in the sea level of approximately one metre occurred, although until 1,500 years BP the sea level may still have remained about one metre above the present level. As the sea level fell, the area adjacent to the current study area may have transformed in the late Holocene from a shallow estuary to swamps and terrestrial floodplains; and
- Since the arrival of non-indigenous settlers' significant changes have occurred to the study area (and Hunter Valley environment in general). Within the study area, these include the removal of the native vegetation, at least one ploughing event for pasture and long-term grazing activities along with the construction of two dams.

Whilst evolving into an environment suitable for past Aboriginal land use, the landscape also became suitable for European land use. In relation to land uses and associated impacts, Heritage NSW (DECCW 2010) defines disturbed lands as land that has been the subject of human activity that has changed the lands' surface and, or subsurface, these changes being changes that remain clear and observable. This definition is based on the types of disturbances classified in The Australian Soil and Land Survey Field Handbook (CSIRO 2010) and Table 2.1 provides a scale formulated by the CSIRO of the levels of disturbances and their classification, which will assist in determining the level of disturbance across the project area and its impact on potential cultural material that may be present.

Table 2.1 Land use scale (CSIRO 2010)

Minor disturbance		Moderate disturbance		Major disturbance	
Cleared and/or grazed at some time, but apparently never ploughed		Cleared and/or grazed at some time, with ploughing also attested		Severe disturbance to natural soil profiles; complete-to-near complete topsoil loss/disturbance	
0	No effective disturbance; natural	3	Extensive clearing (e.g., poisoning and ringbarking)	6	Cultivation: grain fed
1	No effective disturbance other than grazed by hoofed animals	4	Complete clearing: pasture native or improved, but never cultivated	7	Cultivation: irrigated, past and present
2	Limited clearing (e.g., selected logging)	5	Complete clearing: pasture native or improved, cultivated at some stage	8	Highly disturbed: e.g., quarry, road works, mining, landfill, urban

Regionally, following European settlement of the area in the 1820s, the regional landscape has been subjected to a range of different modifactory activities including extensive logging and clearing, agricultural cultivation (ploughing), pastoral grazing, residential developments and other construction works. The associated high degree of landscape disturbance has resulted in the alteration of large tracts of land and the cultural materials contained within these areas.

Based on aerial photography (Nearmap 2010 – 2022), the current project area has been subject to a range of both moderate and high landuses disturbances and impacts. The project area has been cleared and primarily used for pastoral purposes (grazing) and at least one ploughing/seeding event for pasture grass involving the wholesale clearance of native vegetation and the introduction of pasture grass, the construction of dams and tracks. Additionally, a water main and two large rising mains have been constructed adjacent to the western boundary but outside the project area. These landuses and how they impact on the landscape and deposits are discussed below.

Early vegetation clearing included the uprooting of trees by chaining which disturbed or destroyed that may be present near, or underneath trees and vegetation (Wood 1982). Farming and agricultural activities also disturbed the landscape. Pastoralism activities result in disturbances due to vegetation clearance and the trampling and compaction of grazed areas which accelerate the natural processes of sheet and gully erosion, which in turn can cause the horizontal and lateral displacement of artefacts. Furthermore, grazing by hoofed 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 (up to 18 metres per plough run) and vertical movement of artefacts, thus causing artificial changes in artefact densities and distributions (e.g., Roper 1976; Odell and Cowan 1987; 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.

Excavation works required for developments, including but not limited to business, residential, industrial, works depots and associated infrastructure and utilities, require excavation, cut and fill

methods. These direct impacts to the land and associated cultural materials that may be present are easy to see and understand. Any form of construction or resource exploitation that involves the removal of, relocation of or compaction or soils sediments or minerals, requires the modification of the topography, thus displacing and/or destroying any cultural materials that may have been present (Wood 1982). These significant disturbances have results in none of the original topsoils remaining in situ.

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 (Waters 2000; Waters and Kuehn 1996). If erosion occurs after cultural material is deposited, it will disturb or destroy sections, or all of, archaeological sites even if they were initially in a good state of preservation. The more frequent and severe the episodes of erosional events the more likely it is that the archaeological record in that area will be disturbed or destroyed. 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; Canti 2003; Stein 2003:).

The project area is located within an environment that provided limited resources. Without a reliable fresh water supply to enable camping, the project area may have been utilised for more transitory activities such as travel and hunting and gathering in close proximity to Four Mile Creek on the way to reliable water such as the Hunter River and associated subsistence resources. Such past Aboriginal land uses are manifest in the archaeological record as a background scatter of discarded artefacts (such as isolated artefacts and/or very low-density artefact scatters). In relation to modern alterations to the landscape, the previous large-scale clearing, ploughing, grazing, dam construction and tracks, can be expected to have had moderate to high impacts upon the archaeological record at those locations.

2.2 ARCHAEOLOGICAL CONTEXT

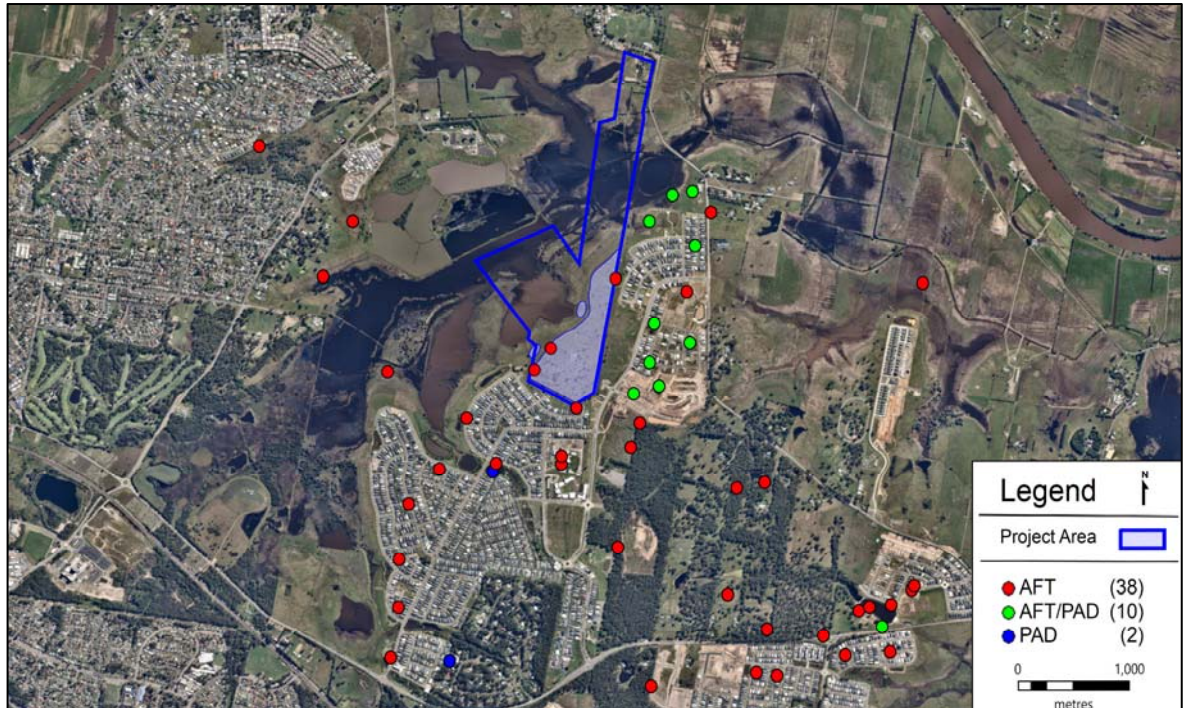
A review of the archaeological literature of the region, and more specifically the local area and the results of an AHIMS search provide essential contextual information for the current assessment.

2.2.1 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 AHIMS 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 limiting 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.

A search of the AHIMS register (Appendix A) has identified 50 known Aboriginal sites currently recorded within two kilometres of the project area and include 38 artefact sites, 2 PADs and 10 artefacts with PAD sites (Figure 2.1).

Figure 2.1 Location of AHIMS sites



2.2.2 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 relevant Local Environmental Plan have no Aboriginal objects, sites or places listed.

2.2.3 SUMMARY OF THE REGIONAL ARCHAEOLOGICAL CONTEXT

The majority of archaeological surveys and excavations throughout the region have been undertaken in relation to environmental assessments for various developments, including but not limited to, residential and industrial, infrastructure, utilities, mining and quarrying. A review of the of the most relevant investigations (Davidson et al 1993; Dean-Jones and Mitchell 1993; Koettig and Hughes 1984; McDonald 1997; Haglund 1999; Kuskie 2000; HLA-Envirosciences 2002; AMBS 2002; MCH 2004a, b) provides a regional archaeological context in terms of site location and distribution.

Based on the available information it is possible to identify a number of trends in site location and patterning within the regional area. Open campsites are by far the most common site type with isolated finds also comparatively well represented. A variety of other site types have been identified in far lower concentrations and include grinding grooves, scarred trees, rock shelters, shelters with art and burials. The high representation of sites containing stone artefacts is to be expected due to the durability of stone in comparison to other raw materials. Raw materials used for tool manufacture include mudstone (also called tuff by some) which is the most common lithic artefactual material found in the region, followed by silcrete and in lesser quantities chert, quartz, quartzite, petrified wood, porcellanite, basalt, limestone, sandstone, rhyolite, basalt, European glass and other non-specific lithic types also occur in smaller quantities. The most common stone artefacts include flakes, flake fragments and flaked pieces. Cores, edge ground axes, millstones, grindstones, hammer stones and backed artefacts including backed blades, bondi points, geometric microliths and eloueras also occur though in lower frequencies. In general, the stone artefact assemblage in the area

has been relatively dated to what was previously known as the Small Tool Tradition (10,000 years BP). On the basis of stone tool technology, the overwhelming majority of Aboriginal open sites within the region are attributed to the Holocene period. However, at Glennies Creek, north of Singleton, based on radiocarbon dated charcoal and geomorphological evidence it is suggested that artefacts found in the B-horizon may have been deposited between 10,000 and 13,000 BP (Koettig 1986a, 1986b).

2.2.4 SUMMARY OF THE LOCAL ARCHAEOLOGICAL CONTEXT

All archaeological surveys throughout the local area have been undertaken in relation to environmental assessments for developments. The most relevant investigations indicate differing results and observations based on surface visibility and exposure, alterations to the landscape, proximity to water sources and geomorphology.

Previous assessments of the local area (Kuskie 1994, 2004a, b, c, 2007, 2015; Kuskie & Clarke 2006a, Brayshaw 1984, Dallas 1996; Insite Heritage 2007; MCH 2022) have identified that artefact scatters and isolated finds are the most prominent site type. These assessments have also identified that both landform and distance to water were important factors in past Aboriginal land use with elevated landforms within 50 metres of reliable water to have been the most favoured. The higher the stream order (and more reliable water source) the higher the numbers of sites and site densities, and both decrease with distance from the water source, and a decrease in stream order.

Additionally, evidence in the local area in similar environmental contexts (wetlands/flood plain) have shown a slight increase in artefact densities closer to the wetlands/flood plain that is indicative of transitory movement and hunting/gathering without camping (background scatter of artefacts). The evidence suggests there is a low-density distribution of artefacts along the wetland/flood plain margins (one elevated landforms) that is interpreted to be consistent with background discard, interspersed by a low number of discrete activity areas in which more focused activity has occurred such as the production of backed artefacts or food processing. The evidence indicates past Aboriginal land uses of the flood plain margins may have been undertaken in multiple episodes each of short duration.

The following is a summary of the previous investigations and it is noted that there are various factors which will have skewed the results. Therefore, the summary provides an indication of what may be expected in terms of site location and distribution.

- a wide variety of site types are represented in the project area with open campsites and isolated artefacts by far the most common;
- lithic artefacts are primarily manufactured from mudstone and silcrete with a variety of other raw materials also utilised but in smaller proportions;
- site location is closely linked to proximity to fresh water sources;
- sites in proximity to ephemeral water sources or located in the vicinity of headwaters of upper tributaries (1st order streams) have a sparse distribution and density and contain little more than a background scatter;
- sites located in the vicinity of the upper reaches of minor tributaries (2nd order streams) also have a relatively sparse distribution and density and may represent evidence of localised one-off behaviour;
- sites located in the vicinity of the lower reaches of tributaries (3rd order creeks) have an increased distribution and density and contain evidence that may represent repeated occupation or concentration of activity;

- sites located in the vicinity of major tributaries (4th and 5th order streams/rivers) have the highest distribution and densities. These sites tend to be extensive and complex in landscapes with permanent and reliable water and contain evidence representative of concentrated activity; and
- sites located within close vicinity at the confluence of any order stream may be a focus of activity and may contain a relatively higher artefact distribution and density.

In relation to wetland/flood plain environmental contexts, such as the project area, the following summary is provided;

- sites are located in close proximity to the margins of wetlands, specifically simple slopes and basal slopes;
- artefacts tend to be distributed in a virtual continuum across the entire landscape at a relatively low mean density consistent with a background scatter of discarded artefacts;
- the artefactual evidence is insufficient either in number or in association with other material to suggest focused activity in a particular location along the wetlands/flood plain margins;
- the background scatter of discarded artefacts may be interspersed by areas of higher density where focused activity or repeated occupation has occurred. However, the locations of such activity cannot be predicted; and
- all sites were noted to have been disturbed through past landuses including but not limited to clearing, agricultural and pastoral activities, residential developments, utilities, infrastructure and erosion.

These findings are consistent with models developed for the area.

2.3 PREVIOUS ASSESSMENT OF THE PROJECT AREA

Kuskie (2007) undertook an Aboriginal heritage assessment of an area that was 98 hectares in size and included the current project area. The topography of the overall project area consisted of a ridge, hill crest, spur crest, gentle slopes, flats and a terrace. The underlying geology contained siltstone, sandstone and conglomerate of the Permian Era Mulbring Siltstone as well as shale, mudstone, sandstone, tuff and coal of the Permian Era Tomago Coal Measures. Vegetation had been cleared across the study area but was likely to have consisted of a dry sclerophyll open to scattered forest with spotted gum, grey ironbark, grey box, forest red gum, white stringybark and white mahogany. An unnamed first order drainage channel bisected the study area and Four Mile Creek was located in close proximity, passing to the north and the west of the study area. It is likely the study area would have contained resources useful to Aboriginal people living in this area in the past, such as stone toolmaking material, flora and fauna.

A search of the Aboriginal Heritage Information Management System (AHIMS), other relevant registers and past assessment reports did not identify any sites within the bounds of the study area and Kuskie predicted that artefact scatters were the only site type with a high potential to occur within the study area. Seven sites were identified (consisting of artefact scatters and isolated artefacts) were identified in the overall project area (Table 2.2).

Table 2.2 Summary of sites (Kuskie 2007)

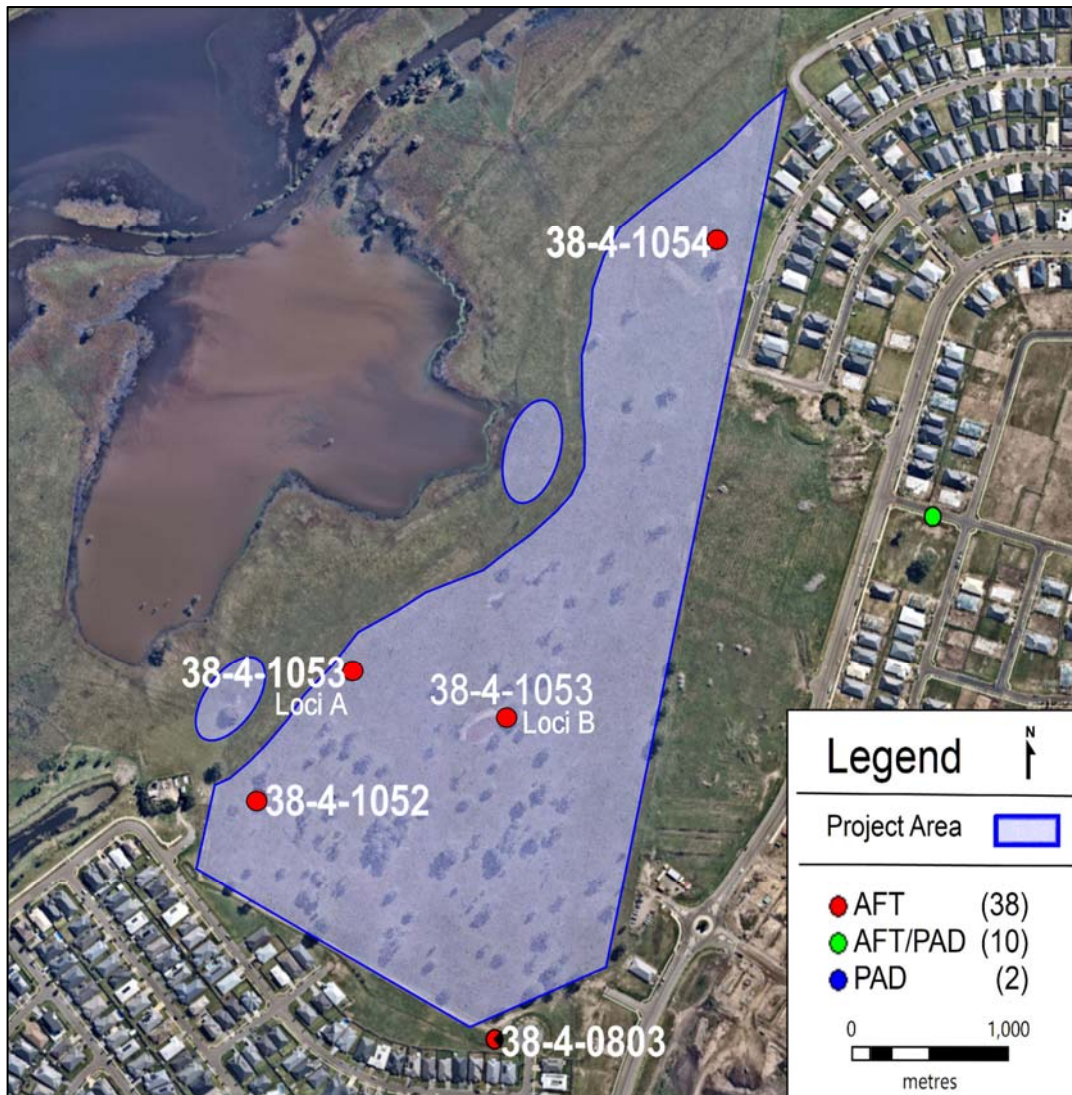
Site	Site type	Landform	Distance to water	Stream order	Artefacts /features	Disturbance	Subsurface potential
Thornton Beechworth 6 (TB6)	artefact scatter	slope	not provided	not provided	2	erosion	yes
Thornton Beechworth 11 (TB11)	isolated artefact	modified	not provided	1st order drainage line	1	dam	yes
Thornton Beechworth 15 (TB15)	isolated artefact	slope	not provided	1st order drainage line	1	fence	yes
Thornton Beechworth 27 (TB27)	isolated artefact	not provided	not provided	1st order drainage line	1	erosion	yes
Thornton Vets 1 (TV1)	isolated artefact	slope	not provided	not provided	1	earthworks	yes
Thornton Vets 3 (TV3)	artefact scatter	slope	not provided	Four Mile Creek	2	dam	yes
Thornton Vets 5 (TV5)	isolated artefact	slope	not provided	Four Mile Creek	1	dam	yes

Of the seven sites identified, three are located in the project area (Figure 2.2), AHIMS site 38-4-1052 (TV5) is an isolated artefact located on a dam wall 150 metres south of a track adjoining McFarlanes Road and highly disturbed.

AHIMS site 38-4-1053 (TV3), is an artefact scatter comprising of two loci. Locus A consisted of an isolated artefact and Locus B, also an isolated artefact was located on a dam wall are located approximately 100 metres south of a vehicle track adjoining McFarlanes Road. The site card indicates that the broader area closer to the wetlands/former Hunter valley estuary has potential for cultural material to be present.

AHIMS site 38-4-1054 (TV1) is an isolate artefact and may have been transported in with fill material. The site card describes this site as being located approximately 130 metres directly south of vehicle track adjoining McFarlanes Road.

Figure 2.2 Location of AHIMS sites in the project area (based on AHIMS coordinates)



2.4 SYNTHESIS OF ENVIRONMENTAL AND ARCHAEOLOGICAL CONTEXTS

When assessing sites in terms of distance to water, in the Hunter Valley there is a clear pattern of past land uses whereby the majority of high-density sites are situated within 50 metres of reliable fresh water (high order) and reduce in both numbers and densities with a decrease in stream order. Thus, it is apparent that open campsites/isolated finds are most concentrated in number and size within 50 metres of reliable fresh water.

As is to be expected, the majority of sites within 50 metres of water are present on elevated landforms in association with creek lines whilst slopes and crest/ridge formations are also common site locations, although with an absence of reliable fresh water, were used for more transitory activities. The frequent presence of sites on crest/ridges and slopes is also noticeable for sites located over 50 metres from water. Based on information gained from previous studies, both regionally and locally, and the environmental context, within a two-kilometre radius of our project area, it can be expected that:

- the likelihood of locating sites increases with proximity to available water;

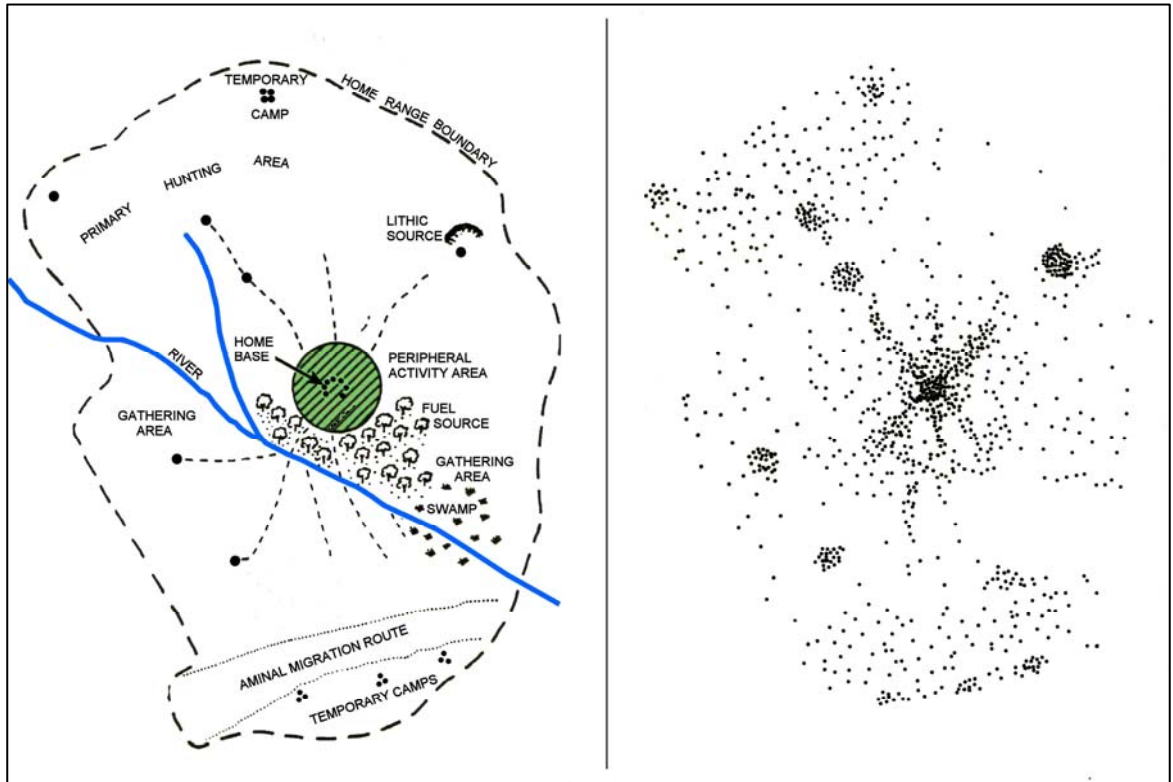
- the likelihood of finding large sites of high densities increases markedly with proximity to reliable water and decreases with a reduction in stream order;
- the likelihood of finding sites within a wetland/flood plain environment, increases with an increased proximity to the wetlands/flood plain;
- 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 mudstone 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 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).

Figure 2.3 Foley's model (L) and its manifestation in the archaeological record (R), (Foley 1981).



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.

2.6 MODEL OF OCCUPATION FOR THE LOCAL AREA

Work throughout NSW has aimed to understand the nature of Aboriginal occupation and to identify the nature of past Aboriginal land uses. This theme often aims 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 for the region have been reviewed (McBryde 1976; Koettig 1994; Dean-Jones and Mitchell 1993; Rich 1995; Kuskie and Kamminga 2000). All models state that the primary requirements for repeated, concentrated or permanent occupation is access to reliable fresh water. Brief and possible repeated occupation may be represented in areas that have unreliable access to ephemeral water sources, however, these areas will not contain high archaeological evidence or potential (Goodwin 1999).

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., McDonald and White 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 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 (e.g., 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 as 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 2.2 derives from Kuskie and Kamminga (2000).

Table 2.3 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	<ul style="list-style-type: none"> 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	<ul style="list-style-type: none"> 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	<ul style="list-style-type: none"> 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	<ul style="list-style-type: none"> 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	<ul style="list-style-type: none"> 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

2.7 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 current 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 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.

Considering the AHIMS results, local and regional archaeological investigations as well as the environmental context, given that fresh water was necessary for survival and the project area is located approximately 160 metres south of Four Mile Creek, but within close proximity of the 1:100-year flood plain of the creek, indicate the project area would likely have been used for hunting and gathering opportunities rather than large-scale long-term camping. Evidence of such past Aboriginal land uses manifest in the archaeological record as low-density artefact scatters and isolated artefacts, such as those already identified in the project area. Additionally, evidence suggests the areas in close proximity to the margins of the wetlands/flood plains were preferred.

Non-indigenous settlement and land uses have impacted the investigation area, most noticeably from large scale clearing, ploughing and grazing along with dam construction. These land uses would have impacted on the archaeological record by disturbing or removing any cultural materials that may have been present in the project area. The site types that may be present within the project area, include very low-density artefact scatters and, or isolated artefacts, both of which are described 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 locality and the broader region. There is potential for low-density artefact scatters to occur within the project area. However, 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.

3 RESULTS AND DISCUSSION

To comply with the due diligence requirement that a visual inspection of the project area be undertaken, an archaeological survey across the project area was undertaken by MCH archaeologist Dr. Penny McCardle on 8th June 2022. The survey focused on areas of high ground surface visibility and exposures (erosional features, tracks, dams, cleared areas).

3.1 SURVEY UNITS

The project area, consisting of a gentle slope with three wide drainage depressions, was surveyed as one survey unit. The survey confirmed that large scale clearing had occurred across the project area. As least one ploughing event had occurred due to the presence of pasture grass throughout, and two dams also located in the project area. Vegetation consisted of grass with few trees scattered throughout. Significant natural processes recently (heavy rain fall and flooding) resulted in very soft soils and continued grazing by hooved animals has resulted in the disturbances across the project area up to approximately 20cm in depth. Visibility was moderate as were exposures (erosion, exposed areas, dams). Examples of the project area are provided in Figures 3.1 to 3.3.

Figure 3.1 Southern end of the project area facing west



Figure 3.2 Southern end of the project area facing north



Figure 3.3 Middle of the project area facing north



Figure 3.4 Hoofed animal disturbances



As shown in Table 3.1 the total effective coverage for the project area was 86,625m², or 31.50% reflecting the moderate surface visibility.

Table 3.1 Effective coverage for the investigation area

SU	Landform	Area (m ²)	Vis. %	Exp. %	Exposure type	Previous disturbances	Present disturbances	Limiting visibility factors	Effective coverage (m ²)
1	slope	275,000	35%	90%	erosion, tracks, dams, grazing	clearing, ploughing, grazing, dams	erosion, dams, grazing	grass	86,625
Totals		275,000							86,625
Effective coverage %									31.50%

The level and nature of the effective survey coverage is considered satisfactory to provide an effective assessment of the project 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.

In relation to land uses and the associated impacts on the landscape and any cultural materials that may have been present, the project area has been subject to large-scale clearing, grazing, at least one ploughing event, and construction works associated with the dams and as indicated in Table 3.2, these disturbances are assessed as moderate.

Table 3.2 Land use scale (CSIRO 2010) and land uses in the project area

Minor disturbance		Project area	Moderate disturbance		Project area	Major disturbance		Project area
0	No effective disturbance; natural		3	Extensive clearing (e.g., poisoning and ringbarking)		6	Cultivation: grain fed	
1	No effective disturbance other than grazed by hoofed animals		4	Complete clearing: pasture native or improved, but never cultivated	yes	7	Cultivation: irrigated, past and present	
2	Limited clearing (e.g., selected logging)		5	Complete clearing: pasture native or improved, cultivated at some stage	yes	8	Highly disturbed: e.g., quarry, road works, mining, landfill, urban	

3.2 ARCHAEOLOGICAL SITES

The previously identified AHIMS sites (38-4-1052, 38-4-1053, 38-4-1054) were not identified during the assessment. This is not surprising given the sites were disturbed and exposed through both human and natural processes in 2007, the amount of time since being first recorded (15 years ago) and the significant natural events (major rain/flooding events and erosion) that has resulted in this site being destroyed through natural processes.

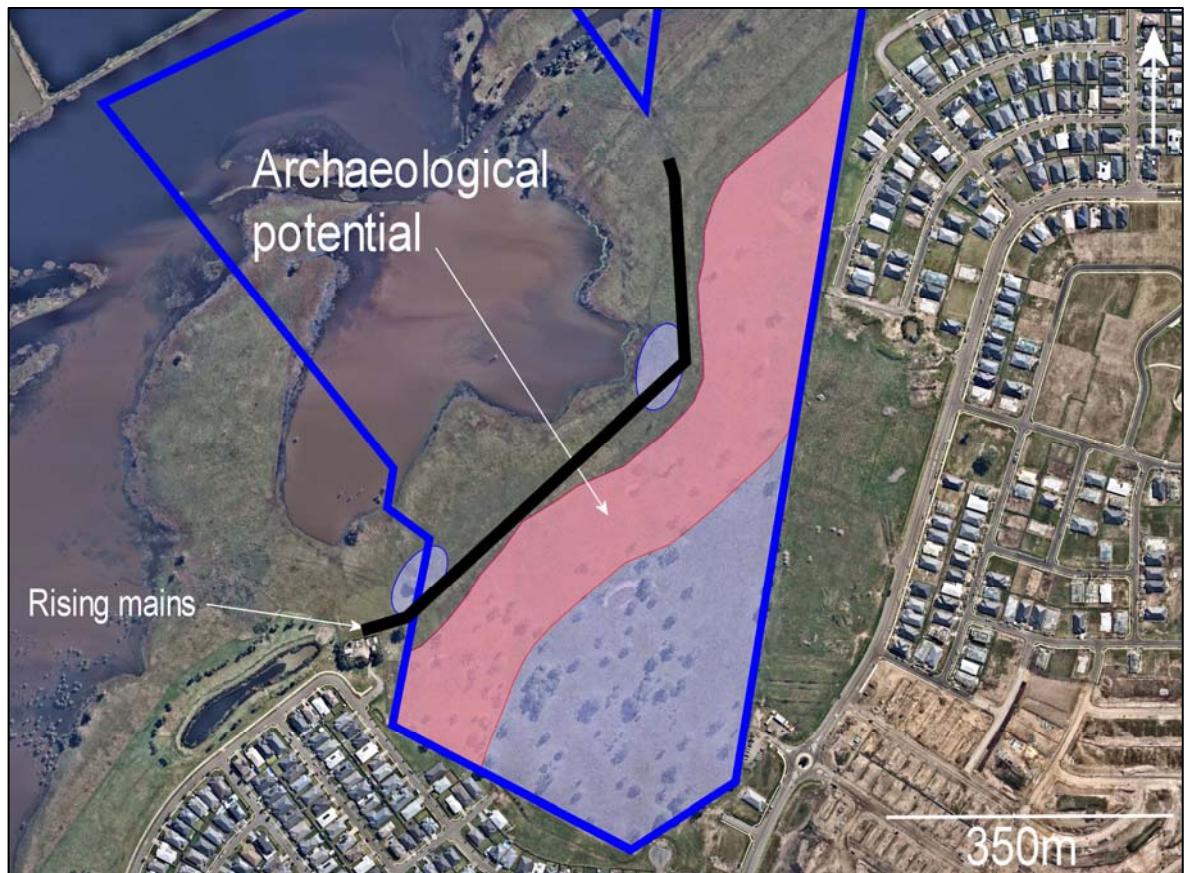
3.3 ARCHAEOLOGICAL SENSITIVITY

The terms “potential archaeological deposit (PAD)” and “area(s) of archaeological sensitivity” are used to describe areas that are likely to contain sub-surface cultural deposits. These sensitive landforms or areas are identified based upon the results of fieldwork, the knowledge gained from previous studies in or around the subject area and the resultant predictive models. Any or all of these attributes may be used in combination to define an area of potential archaeological sensitivity.

The likelihood of a landscape having been used by past Aboriginal societies and hence containing archaeologically sensitive areas is primarily based on the availability of local natural resources for subsistence, artefact manufacture and ceremonial purposes. The likelihood of surface and subsurface cultural materials surviving in the landscape is primarily based on past land uses and preservation factors.

Taking into consideration the environmental and archaeological contexts, considering the results of previous investigations in the immediate vicinity, and the results of the survey, the project area, consisting of a gentle slope along the margins of the wetlands/flood plain of Four Mile Creek, is likely to have been utilised for hunting and gathering opportunities with a focus of activity closer to the floodplain margins (1:100-year flood) along the western side of the project area. Whilst it is difficult, if not impossible, to predict the location of hunting and gathering activities with or without activity areas, evidence throughout the region have demonstrated it is the areas closer to such resources that have the highest density of evidence. For these reasons an area of high potential archaeological sensitivity within the project area has been identified as extending east from the western boundary (1:200-year flood level) for 100 metres (Figure 3.5).

Figure 3.5 Archaeological potential



In view of the predictive modelling and the results obtained from the effective coverage and disturbance rating, it is concluded that the survey provides a valid basis for determining the probable impacts of the proposal and formulating recommendations for the project. The survey results demonstrate the presence of previously identified Aboriginal objects within the project area. The results are consistent with those obtained from other studies in the local area and the results indicate a number of possible past Aboriginal land use within the project area;

- Low density Aboriginal occupation
- Hunting and gathering

Considering general models of occupation for the locality, the results of this and local investigations, as the project area itself is located in close proximity to the flood plain/wetlands of Four Mile Creek,

the project area is likely to have been utilised for low intensity activities such as hunting/gathering activities following rain and localised flooding, as evidenced through archaeological assessments in the immediate local area.

3.4 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 is located along the Four Mile Creek floodplain/wetlands, and includes an elevated gentle slope that overlooks the floodplain. Due to a combination of land form elements (elevated gentle slope) and proximity to the wetlands/floodplain, this location would have been suitable for hunting and gathering opportunities following heavy rain and, or localised flooding events. The lack of reliable fresh water within the floodplain itself indicates that camping would not likely to have occurred in the project area but was likely focused in closer proximity to Four Mile Creek.

In relation to modern alterations to the landscape, previous large-scale clearing, grazing, at least one ploughing event, and construction works associated with the dams and impacts from grazing hoofed animals, have had moderate to high impacts upon the archaeological record. Natural factors such as the significant rain/flooding and erosion events have also impacted on the archaeological record, all of which would have displaced cultural materials and the likelihood of in situ cultural materials is reduced.

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

The previously identified AHIMS sites 38-4-1052, 38-4-1053 and 38-4-1054 were not identified during the assessment due to a combination of time since being recorded (15 years) and significant natural events (major rain/flooding events and erosion) that has resulted in this site being destroyed through natural processes. AHIMS has been updated accordingly and as such there are no impacts to the known archaeological record.

However, as an area of archaeological potential has been identified in the project area, and it remains unknown at this time if evidence of past Aboriginal land use is present in that location, impacts to the archaeological record remain unknown at this time.

5 MITIGATION AND MANAGEMENT STRATEGIES

Specific strategies, as outlined through the Heritage NSW 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(s) 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 managed in a way that is consistent with the nature of peoples' attachment to them.

As an area of archaeological potential has been identified in the project area, and it remains unknown at this time if evidence of past Aboriginal land use is present in that location, conservation/protection measures are not required at this time.

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 an area of archaeological potential has been identified in the project area, and it remains unknown at this time if evidence of past Aboriginal land use is present in that location, further investigations are required.

Further investigations should include an Aboriginal Cultural Heritage Assessment (ACHA) with archaeological test excavation as per the Heritage NSW, Department of Premier & Cabinet, Aboriginal Cultural Heritage Consultation Requirements for Proponents 2010 (DECCW 2010), the Guide to Investigating, Assessing and Reporting on Aboriginal Cultural Heritage in NSW (OEH 2011), the Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales (DECCW 2010b).

5.3 AHIP

If harm will occur to an Aboriginal object or Place, then an AHIP should be sought from Heritage NSW, Department of Premier & Cabinet as a defence to that harm. 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, and, or community collection, may be an appropriate strategy to enable the salvage of cultural objects.

As AHIMS sites 38-4-1052, 38-4-1053 and 38-4-1054 have been destroyed through natural processes, and the AHIMS register updated accordingly, an AHIP for those sites 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 Regulation 2019, under the National Parks and Wildlife Act 1974;
- 2) Further investigations should include an Aboriginal Cultural Heritage Assessment (ACHA) with archaeological test excavation as per the Heritage NSW, Department of Premier & Cabinet, Aboriginal Cultural Heritage Consultation Requirements for Proponents 2010 (DECCW 2010), the Guide to Investigating, Assessing and Reporting on Aboriginal Cultural Heritage in NSW (OEH 2011), the Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales (DECCW 2010b); and
- 3) Works may proceed in the eastern part of the project area (outside the PAD) and 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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(=Mt. Thorley E/W4), Carried out in Compliance with NPWS Consent #732. Volumes 1-111. Report to Warkworth Mining Pty.

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APPENDIX A

AHIMS Search Results

Penny Mccardle

Date: 01 June 2022

Po Box 166

Adamstown New South Wales 2289

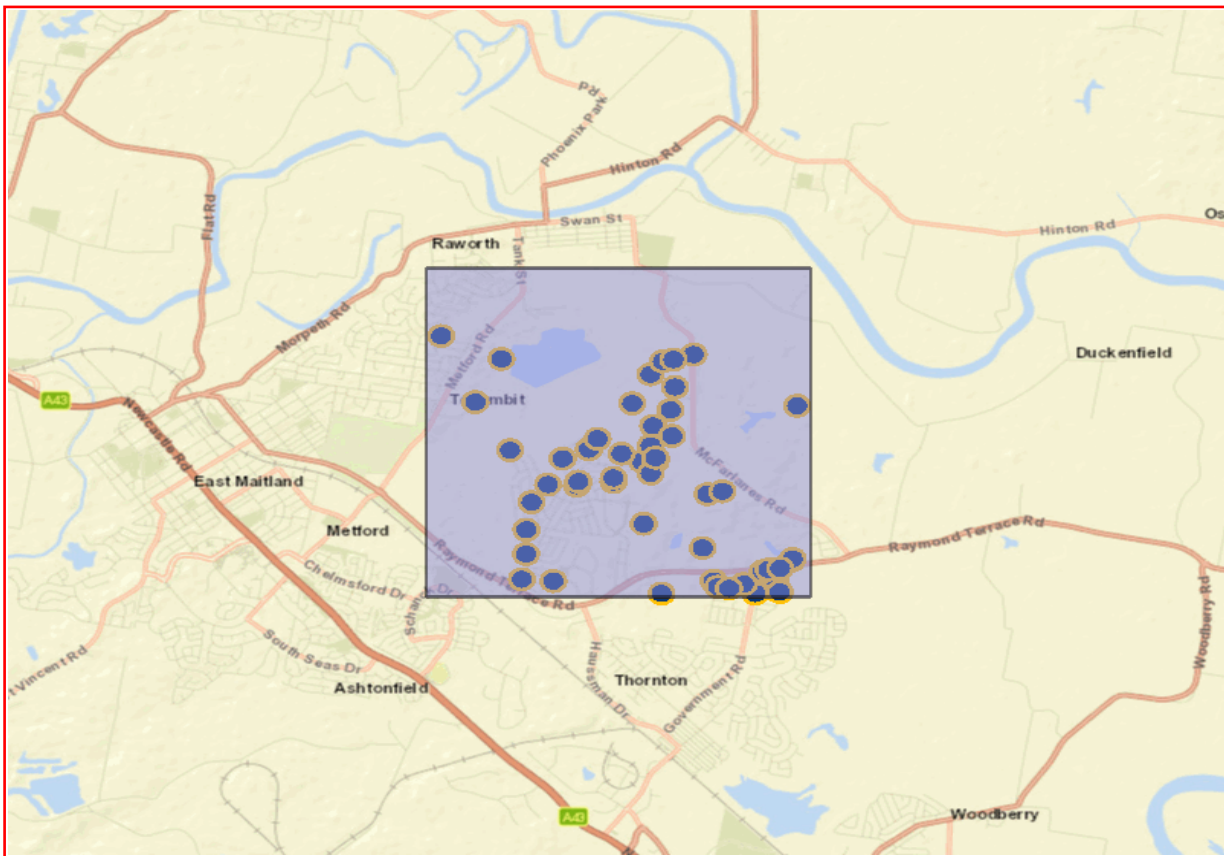
Attention: Penny Mccardle

Email: penny@mheritage.com.au

Dear Sir or Madam:

AHIMS Web Service search for the following area at Datum :GDA, Zone : 56, Eastings : 370100.0 - 374100.0, Northings : 6373800.0 - 6377800.0 with a Buffer of 0 meters, conducted by Penny Mccardle on 01 June 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:

	50 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.

SiteID	SiteName	Datum	Zone	Easting	Northing	Context	Site Status **	SiteFeatures	SiteTypes	Reports
38-4-1054	TV1 (Thornton Vets 1)	GDA	56	372240	6376160	Open site	Valid	Artefact : 1		
	Contact	Recorders	Mr.Peter Kuskie					Permits		
38-4-0890	Thornton North 1	GDA	56	373125	6373986	Open site	Destroyed	Artefact : -		
	Contact T Russell	Recorders	Mr.Giles (dup ID#12832) Hamm,MCH - McCardle Cultural Heritage Pty Ltd,Ms.Peni					Permits	2592,2819	
38-4-0884	Thornton North 2 (TN2)	AGD	56	371950	6375000	Open site	Valid	Artefact : 1		100914
	Contact T Russell	Recorders	Mr.Peter Kuskie					Permits	2880,2881,3341	
38-4-0943	Thornton North 3 (TN3)	AGD	56	371950	6375050	Open site	Valid	Artefact : 3		100914
	Contact T Russell	Recorders	Mr.Peter Kuskie					Permits	2880,2881,3341	
38-4-1734	TB14	GDA	56	372353	6375445	Open site	Valid	Artefact : -, Potential Archaeological Deposit (PAD) : -		
	Contact	Recorders	Mr.Peter Kuskie,South East Archaeology					Permits	3875	
38-4-1730	TB22	GDA	56	372463	6375885	Open site	Valid	Artefact : -, Potential Archaeological Deposit (PAD) : -		
	Contact	Recorders	South East Archaeology					Permits	3875	
38-4-0928	Thornton North Site 2 - Lot 20	AGD	56	373068	6373723	Open site	Destroyed	Artefact : 1		
	Contact T Russell	Recorders	Mr.Giles (dup ID#12832) Hamm					Permits	3745,4359	
38-4-1959	MET/2	GDA	56	370587	6376155	Open site	Destroyed	Artefact : -		
	Contact	Recorders	MCH - McCardle Cultural Heritage Pty Ltd,MCH - McCardle Cultural Heritage Pty Lt					Permits		
38-4-1052	TV5 (Thornton Vets 5)	GDA	56	371790	6375590	Open site	Valid	Artefact : 1		
	Contact	Recorders	Mr.Peter Kuskie					Permits		
38-4-0803	Thornton North 8 - TN 8	AGD	56	372030	6375350	Open site	Valid	Artefact : -		100914
	Contact T Russell	Recorders	Mr.Peter Kuskie					Permits	2113,2509,2880,2881,3341	
45-7-0375	RPS CHISHOLM PAD01	GDA	56	372666	6375765	Open site	Destroyed	Artefact : 1, Potential Archaeological Deposit (PAD) : 1		
	Contact	Recorders	RPS Australia East Pty Ltd - Hamilton,RPS Australia East Pty Ltd - Hamilton,RPS Au					Permits	4546	
38-4-0927	Thornton North Site 1 - Lot 20	AGD	56	372943	6374863	Open site	Valid	Artefact : 6		
	Contact T Russell	Recorders	Mr.Giles (dup ID#12832) Hamm					Permits	4762	
38-4-1759	RPS Thornton AS1	GDA	56	373569	6373835	Open site	Destroyed	Artefact : 1		
	Contact	Recorders	RPS Australia East Pty Ltd - Hamilton					Permits		
38-4-1643	Lot 2 Govt Road Thornton	GDA	56	373775	6374010	Open site	Partially Destroyed	Artefact : -, Potential Archaeological Deposit (PAD) : -		
	Contact	Recorders	Mr.Giles (dup ID#12832) Hamm					Permits	3725	
38-4-0396	Morpeth STW Camp Site;	AGD	56	370750	6376500	Open site	Valid	Artefact : -	Open Camp Site	3835
	Contact	Recorders	Mary Dallas Consulting Archaeologists (MDCA)					Permits		

SiteID	SiteName	Datum	Zone	Easting	Northing	Context	Site Status **	SiteFeatures	SiteTypes	Reports
38-4-0881	Thornton North 26 (TN26)	AGD	56	371000	6373790	Open site	Valid	Artefact : 5		
	Contact T Russell	Recorders Mr.Peter Kuskie						Permits	2468,2592,3642	
38-4-0944	Thornton North 13 (TN13)	AGD	56	371090	6374740	Open site	Valid	Artefact : 18		100914
	Contact T Russell	Recorders Mr.Peter Kuskie						Permits	2468,2592,2880,2881,3341,3642	
38-4-1053	TV3 (Thornton Vets 3)	GDA	56	371880	6375720	Open site	Valid	Artefact : 2		
	Contact	Recorders Mr.Peter Kuskie						Permits		
38-4-1957	RPS CHISHOLM AS01	GDA	56	372645	6376085	Open site	Destroyed	Artefact : 1		
	Contact	Recorders RPS Australia East Pty Ltd - Hamilton,RPS Australia East Pty Ltd - Hamilton,RPS Au						Permits	4546	
38-4-1731	TB21	GDA	56	372688	6376367	Open site	Valid	Artefact : -, Potential Archaeological Deposit (PAD) :-		
	Contact	Recorders Mr.Peter Kuskie,South East Archaeology						Permits	3875	
38-4-0885	Thornton Beechwood 27	AGD	56	372775	6376580	Open site	Valid	Artefact : 1		103380
	Contact T Russell	Recorders Mr.Peter Kuskie,Mr.Peter Kuskie						Permits	2816,2817,3875	
38-4-0932	Thornton North Site 2 Lot 1	AGD	56	372474	6373634	Open site	Valid	Artefact : 2		
	Contact T Russell	Recorders Mr.Giles (dup ID#12832) Hamm						Permits	4531	
38-4-0882	Thornton North 21 (TN21)	AGD	56	371040	6374100	Open site	Valid	Artefact : 6		
	Contact T Russell	Recorders Mr.Peter Kuskie						Permits	2468,2592,3642	
38-4-0883	Thornton North 20 (TN20)	AGD	56	371040	6374400	Open site	Valid	Artefact : 1		100914
	Contact T Russell	Recorders Mr.Peter Kuskie						Permits	2880,2881,3341,3642	
38-4-0978	Thornton North PAD 1	AGD	56	371564	6374950	Open site	Valid	Potential Archaeological Deposit (PAD) :-		
	Contact Searle	Recorders Ms.Penny Mccardle						Permits	2509	
38-4-0892	Thornton North Site 2	GDA	56	373444	6373951	Open site	Destroyed	Artefact : 1		
	Contact T Russell	Recorders Mr.Giles (dup ID#12832) Hamm,MCH - McCardle Cultural Heritage Pty Ltd,Ms.Peni						Permits	2592,2819	
38-4-1789	RPS JN 2	GDA	56	373940	6374242	Open site	Destroyed	Artefact : -		
	Contact	Recorders RPS Australia East Pty Ltd - Hamilton,RPS Australia East Pty Ltd - Hamilton,Ms.Jo N						Permits	4157	
38-4-1788	RPS JN 1	GDA	56	373954	6374267	Open site	Destroyed	Artefact : -		
	Contact	Recorders RPS Australia East Pty Ltd - Hamilton,RPS Australia East Pty Ltd - Hamilton,Ms.Jo N						Permits	4157	
38-4-1845	RPS BP AS1	GDA	56	373978	6376153	Open site	Destroyed	Artefact : -		
	Contact	Recorders RPS Australia East Pty Ltd - Hamilton,RPS Australia East Pty Ltd - Hamilton,Ms.Jo N						Permits	4196	
38-4-0888	Thornton Beechwood 6	AGD	56	372275	6374489	Open site	Valid	Artefact : 2		103380
	Contact T Russell	Recorders Mr.Peter Kuskie,Mr.Peter Kuskie						Permits	2816,2817,3875	
38-4-1727	TB23	GDA	56	372427	6376520	Open site	Valid	Artefact : -, Potential Archaeological Deposit (PAD) :-		
	Contact	Recorders Mr.Peter Kuskie,South East Archaeology						Permits	3875	

SiteID	SiteName	Datum	Zone	Easting	Northing	Context	Site Status **	SiteFeatures	SiteTypes	Reports
38-4-1728	TB25	GDA	56	372556	6376682	Open site	Valid	Artefact : -, Potential Archaeological Deposit (PAD) : -		
	Contact							Permits	3875	
38-4-1137	Metford Road 1	GDA	56	370216	6376964	Open site	Valid	Artefact : 1		101247
	Contact							Permits	3018	
38-4-0886	Thornton Beechwood 15	AGD	56	372390	6375260	Open site	Valid	Artefact : 1		103380
	Contact T Russell							Permits	3875	
38-4-0833	Four Mile Creek PAD	AGD	56	371333	6373772	Open site	Valid	Potential Archaeological Deposit (PAD) : -		
	Contact T Russell							Permits	2140	
38-4-1729	TB26	GDA	56	372668	6376705	Open site	Valid	Artefact : -, Potential Archaeological Deposit (PAD) : -		
	Contact							Permits	3875	
38-4-0125	None Specified	AGD	56	372900	6374200	Open site	Valid	Artefact : -	Open Camp Site	
	Contact							Permits		
38-4-1732	TB17	GDA	56	372440	6375642	Open site	Valid	Artefact : -, Potential Archaeological Deposit (PAD) : -		
	Contact							Permits	3875	
38-4-0123	None Specified	AGD	56	373100	6374900	Open site	Valid	Artefact : -	Open Camp Site	
	Contact							Permits		
38-4-0942	Thornton North 7 (TN7)	AGD	56	371410	6375280	Open site	Valid	Artefact : 20		100914
	Contact T Russell							Permits	2509,2880,2881,3341	
38-4-2033	Raymond Terrace Road IF	GDA	56	373643	6374110	Open site	Valid	Artefact : -		
	Contact							Permits		
38-4-2032	Raymond Terrace Road IF1	GDA	56	373702	6374134	Open site	Destroyed	Artefact : -		
	Contact							Permits		
38-4-2031	Raymond Terrace Road IF2	GDA	56	373825	6374148	Open site	Valid	Artefact : -		
	Contact							Permits		
38-4-0887	Thornton Beechwood 11	AGD	56	372340	6375110	Open site	Valid	Artefact : 1		103380
	Contact T Russell							Permits	3875	
38-4-1733	TB16	GDA	56	372495	6375495	Open site	Valid	Artefact : -, Potential Archaeological Deposit (PAD) : -		
	Contact							Permits	3875	
38-4-1844	MET/1	GDA	56	370960	6375567	Open site	Valid	Artefact : -		

Report generated by AHIMS Web Service on 01/06/2022 for Penny Mccardle for the following area at Datum :GDA, Zone : 56, Eastings : 370100.0 - 374100.0, Northings : 6373800.0 - 6377800.0 with a Buffer of 0 meters.. Number of Aboriginal sites and Aboriginal objects found is 50

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.



AHIMS Web Services (AWS)

Extensive search - Site list report

Your Ref/PO Number : Berry Park

Client Service ID : 687655

SiteID	SiteName	Datum	Zone	Easting	Northing	Context	Site Status **	SiteFeatures	SiteTypes	Reports
	Contact	Recorders	MCH - McCardle Cultural Heritage Pty Ltd,Ms.Penny Mccardle					Permits	4389	
38-4-0945	Thornton North 12 (TN12)	AGD	56	371260	6374960	Open site	Valid	Artefact : -		100914
	Contact T Russell	Recorders	Mr.Peter Kuskie					Permits	2880,2881,3341	
38-4-0804	Thornton North 9 - TN9	AGD	56	371580	6375000	Open site	Valid	Artefact : -		100914
	Contact T Russell	Recorders	Mr.Peter Kuskie					Permits	2113,2509,2880,2881,3341	
38-4-0891	Thornton North 3	AGD	56	373185	6373705	Open site	Destroyed	Artefact : -		
	Contact T Russell	Recorders	Navin Officer Heritage Consultants Pty Ltd					Permits	2592,2819,3189,3745	
38-4-1760	RPS Thornton AS2	GDA	56	373823	6373858	Open site	Destroyed	Artefact : 1		
	Contact	Recorders	RPS Australia East Pty Ltd - Hamilton					Permits		

**** Site Status**

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

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

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

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

Report generated by AHIMS Web Service on 01/06/2022 for Penny Mccardle for the following area at Datum :GDA, Zone : 56, Eastings : 370100.0 - 374100.0, Northings : 6373800.0 - 6377800.0 with a Buffer of 0 meters.. Number of Aboriginal sites and Aboriginal objects found is 50

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