The Bathla group

M

51, 134, 146 Station Lane Station Lane

LGA: Maitland

Aboriginal Heritage Due Diligence Assessment

23 April 2020

McCARDLE CULTURAL HERITAGE PTY LTD

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McCARDLE
CULTURAL HERITAGE

Report No: J20021DD	
Approved by:	Penny McCardle
Position:	Director
Signed:	
Date:	23 April 2020

CONTENTS

APPENDICES

LIST OF TABLES

LIST OF FIGURES

EXECUTIVE SUMMARY

McCardle Cultural Heritage Pty Ltd (MCH) has been commissioned by The Bathla Group to undertake an Archaeological Due Diligence Assessment for the proposed residential subdivision of 134 Station Lane (Lot 4 DP634523), 146 Station Lane (Lot 2 DP634523) and 51 Station Lane (Lot 3 DP564631), Lochinvar, all located in the Maitland Local Government Area (LGA).

The assessment has been undertaken to meet the NSW Biodiversity and Conservation Division (BCD) formerly the Office of Environment and Heritage (OEH), Aboriginal Cultural Heritage Consultation Requirements for Proponents 2010 (DECCW 2010), the BCD Guide to Investigating, Assessing and Reporting on Aboriginal Cultural Heritage in NSW (OEH 2011), the DECCW Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales (DECCW 2010b) and the brief.

The project area is located within the Central Lowlands and consists of the Permian Dalwood Group consisting of the Lochinvar geological formation of siltstone, sandstone, basic lava and tuff, providing some suitable materials (e.g. tuff) for stone tool manufacturing). Consisting of a crest through the centre of the project area and part of a crest in the south, slopes and drainage/creeks, the soils landscape includes an A horizon of up to 30cm in depth which overlays a clay B horizon. 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. Two 1st order creeks are located in the eastern side of the project area and converge to form a 2nd order roughly in the middle along the eastern border that converges with a 3rd order unnamed creek in the north eastern section of the project area. Lochinvar Creek (3rd order) is located in and out of the project area along the western border of the project area. Additional 1st and 2nd order creeks are located outside the project area to the east and west and the Hunter River (6th order) is located 1.5 kilometres to the north of the project area. Being located in between two semi reliable water sources (along the east and western borders) and the Hunter River located 1.5 kilometres to the north, the project area was likely utilised for small scale hunting parties as more reliable water would have been required for larger groups of people. European settlers extensively cleared the original native vegetation in the 1800's and since then the investigation area has been subject to continued clearing and grazing. There are numerous tracks and access roads to residential houses and sheds, six dams and fencing, all of which would have disturbed nay cultural materials that may have been present at those locations.

A search of the BCD AHIMS register indicates there are has shown that 75 known Aboriginal sites are currently recorded within three kilometres of the project area and include 69 artefact sites, four PADs and two Artefact with PAD sites. Three previously identified sites are located in the project area and include two artefact scatters (one with an area of potential archaeological sensitivity) and one isolated artefact.

When 37-6-2223 (low density artefact scatter) first recorded in 2009, this site consisted of 11 artefacts at six locations along the creek. Artefacts included flakes and cores manufactured from tuff, mudstone and quartzite. In addition, the banks of the creek appeared to have retain some original topsoil and had been assessed as retaining subsurface archaeological potential.

37-6-2225, a low density artefact scatter, also recorded in 2009, was located on a slope and included three artefacts located (mudstone flake piece, tuff flake, chert flake piece) located in an exposure and trampled ground around adjacent to a small horse enclosure and the third artefact located approximately 50m west along an exposed foot track.

The isolated stone artefact, 37-6-2217) (recorded in 2009) was located in a paddock about 80m to the east of 37-6-2225 and no further artefacts were located. Located on moderately sloping ground and are not expected to have been used intensively in the past.
Previous assessments of the regional and local area 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. Elevated landforms within 50 metres of reliable water appear 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 resource. A number of sites were also found on slopes; however, it is likely they were eroded down slope and not found in their original location. 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.

Consisting of three landforms, the project area was divided into three survey units. Survey Unit 1, consisting of the crest through the centre of the project area and the partial crest in the south, had been previously cleared and grazed. A residential house is located at the southern and northern ends of the large crest along with the associated infrastructure and utilities. Visibility was excellent due to drought conditioned reducing vegetation cover (pasture grasses with scattering of trees) at 80% and exposures were moderate (sheet wash, erosion) at 60%.

The slopes throughout the project area (Survey Unit 2), consisted of pasture grass with few trees. This area had been previously cleared and utilised for grazing. Including four dams, tracks, access roads and fencing, visibility was good at 80% due to drought conditions and associated reduced grass cover. Exposures were moderate (70%) due to erosion, tracks and dams.

The third survey unit included all drainage lines and the two 3rd order creeks (one in the east and Lochinvar Creek in the west). Previously cleared, these areas consisted of pasture grass and trees along Lochinvar Creek. Erosion, including sheet wash and creek bank erosion was present and visibility was good at 70% and exposures high at 80%.

This assessment relocated the area of sensitivity but no artefacts were identified at 37-6-2223. Vegetation included pasture grasses and scatterings of trees along the creek banks. Visibility was excellent due to drought conditions (80%). The site had been subject to irregular local flooding, erosion and grazing since 2009 (11 years), thus it is not surprising the artefacts are no longer present. Whilst the site itself is of low scientific significance, the significance of the area of potential archaeological significance remains unknown.

37-6-2225 consisted of pasture grass with visibility being excellent due to drought conditions (60%). The area contained a small shed currently housing calves, fences are present and a sewer line. The previously recorded artefacts were not relocated and this is not surprising as 11 years of sheet wash and grazing have occurred at this site. Due to the erosion, there is very little of the A horizon remaining and as such the presence of subsurface cultural materials is low to zero. This site is of low scientific significance.

The isolated stone artefact, 37-6-2217) was not relocated and this is not surprising as 11 years of sheet wash and grazing have occurred at this site. Due to the erosion, there is very little of the A horizon remaining and as such the presence of subsurface cultural materials is low to zero. This site is of low scientific significance.

An additional are of potential archaeological sensitivity was identified. This area includes the eastern 3rd order creek on the eastern side. The western side of the creek consists of slopes and unsuitable for camping. This PAD commences north of the confluence with a 2nd order creek and continues north to the border of the project area and extends east to the border of the project area. Being a very low slope (almost flat) elevated landform overlooking the 3rd order creek, this area would have supported small numbers of people for short periods of time during times of heavy rain and as some topsoils remain, there is a potential for subsurface cultural materials. The archaeological significance of this area remains unknown.

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 within an environment that provided resources, including raw materials, fauna, flora and water, that would have allowed for low density occupation of the areas for short period sof time. Specifically along Lochinvar Creek and the un-named 3rd order creek in the east of the project area, with the sourounding landscape being utilised for activities associated with camping such as hunting and gathering.

In relation to modern alterations to the landscape, the use of the majority of the project area for agricultural purposes can be expected to have had low impacts upon the archaeological record. European land uses such as clearing, grazing, and the construction of dams, housing and fences may have displaced cultural materials, however in less disturbed areas, it is likely that archaeological deposits may remain relatively intact.

The results of the assessment indicate that two sites (37-6-2225 and 37-6-2217) and part of both areas of potential archaeological deposits will be impacted upon by the development. The majority of the PADs will not be impacted on due to the mandatory 30 metres buffer along waterways, and as such only part of the PADs will be impacted. Additionally, the artefacts within 37-6-2223 will also be protected in the buffer zone. These sites are well represented both locally and regionally and are highly disturbed with little to no research or scientific potential.

The cumulative impact to Aboriginal heritage in the area is limited given that:

- The net development footprint (i.e. the area of direct impact) is small and does not affect a high proportion of any particular landform present within the region;
- A comparable suite of landforms that are expected to, and do contain a similar archaeological resource occur in multiple contexts both within the local area and throughout the local area;
- The high-density deposits identified to date occur outside the development footprint;
- Sites 37-6-2225 and 37-6-2217 have been impacted by natural processes and are no longer present (AHIMS site cards will be updated as destroyed by natural processes);
- Small sections of the PADs will be impacted on due to the mandatory 30 metres buffer along waterways which will protect 30 metres width of both PADs along both creeks;
- The PAD has been subject to long term past land uses (impacts) that have resulted in a disturbed landscape and as a consequence of these disturbances the representative value of the archaeological resource is lessened; and
- The artefacts within 37-6-2223 will also be protected in the buffer zone.

The following recommendations are made:

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.

2) If any section of the identified PADs will be impacted upon by any future development an archaeological subsurface investigation will be required in accordance with the Aboriginal Cultural Heritage Consultation Requirements for Proponents 2010 (DECCW 2010), the OEH Guide to Investigating, Assessing and Reporting on Aboriginal Cultural Heritage in NSW (OEH 2011), and the DECCW Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales (DECCW 2010b).

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 as debitage).

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
BCD	Biodiversity and Conservation Division

BCD 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 commissioned by The Bathla Group to undertake an Archaeological Due Diligence Assessment for the proposed residential subdivision of 134 Station Lane (Lot 4 DP634523), 146 Station Lane (Lot 2 DP634523) and 51 Station Lane (Lot 3 DP564631), Lochinvar, all located in the Maitland Local Government Area (LGA).

The assessment has been undertaken to meet the NSW Biodiversity and Conservation Division (BCD) formerly the Office of Environment and Heritage (OEH), Aboriginal Cultural Heritage Consultation Requirements for Proponents 2010 (DECCW 2010), the BCD Guide to Investigating, Assessing and Reporting on Aboriginal Cultural Heritage in NSW (OEH 2011), the DECCW Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales (DECCW 2010b) 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 includes 134 Station Lane (Lot 4 DP634523), 146 Station Lane (Lot 2 DP634523) and 51 Station Lane (Lot 3 DP564631), Lochinvar. The location of the project area is shown in Figures 1.1 and 1.2.

Figure 1.1 Local location of the project area

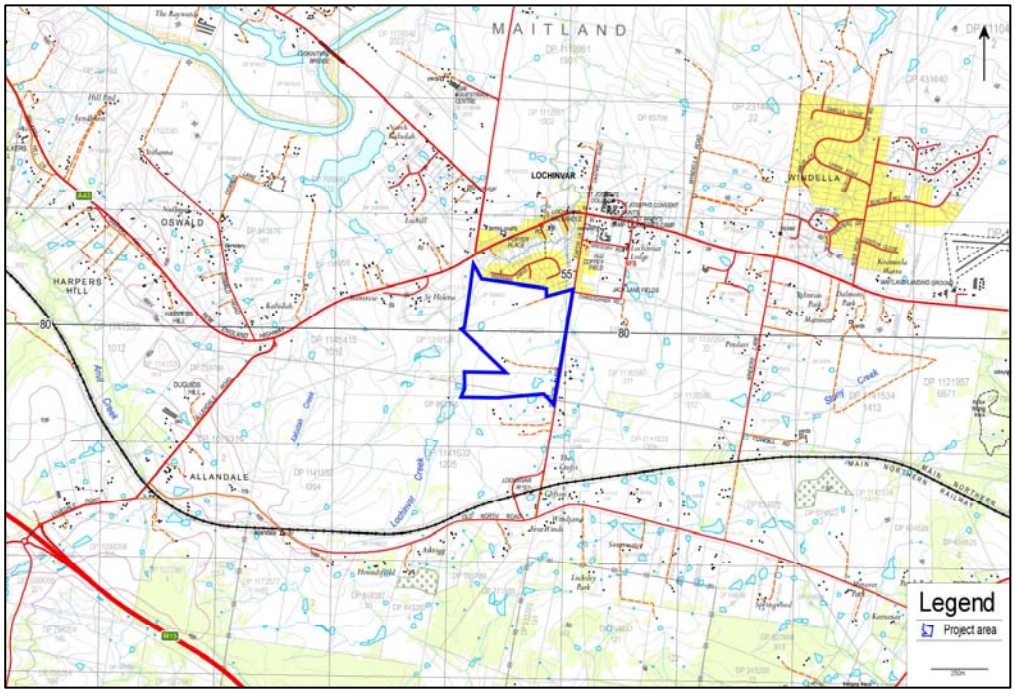
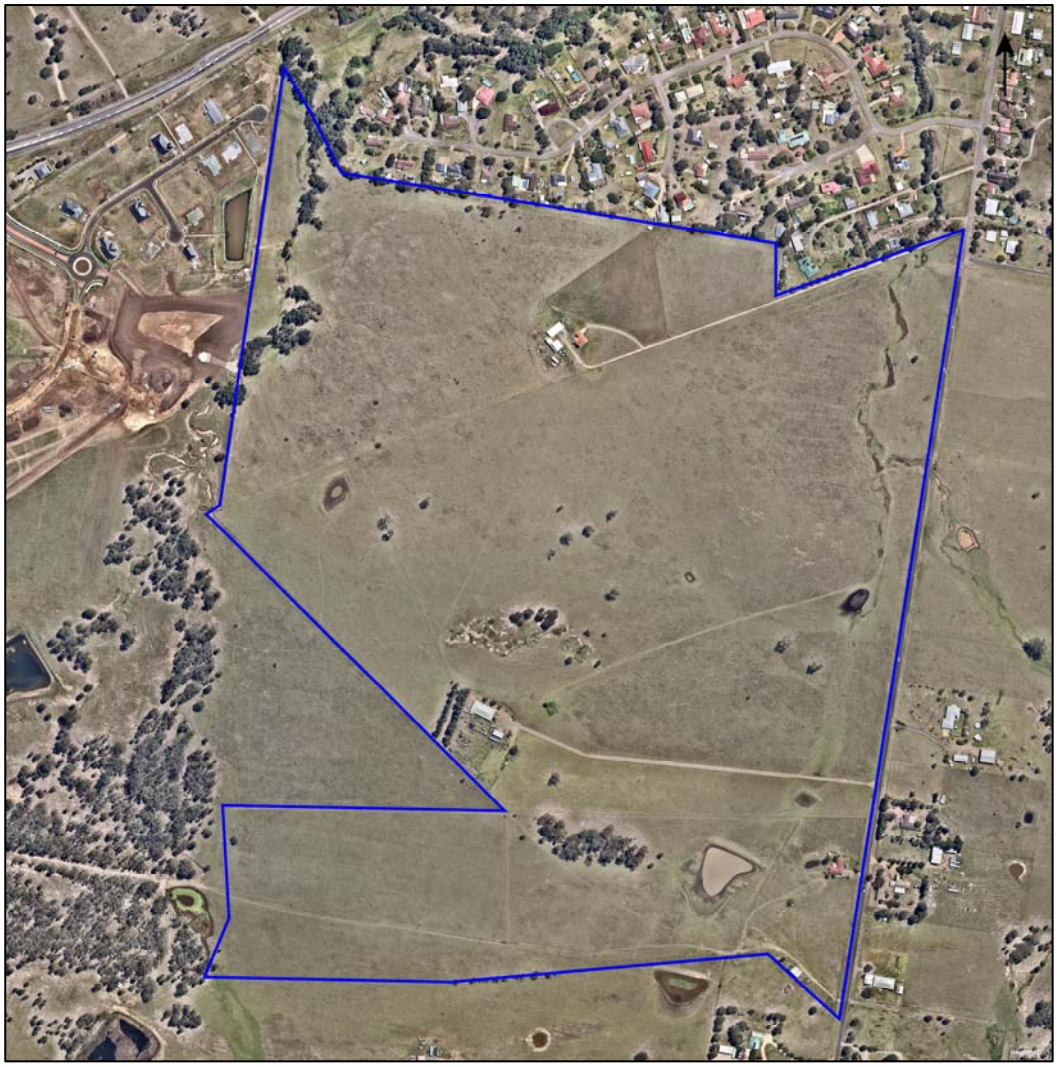


Figure 1.2 Aerial photograph of the project area (nearmap 2019)



1.3 DESCRIPTION OF THE PROPOSED DEVELOPMENT

The project is for the residential subdivision that will entail housing construction and associated infrastructure and utilities (Figure 1.3). Any development or impacts occurring within the project area will have regard to and managed in accordance with the requirements and provisions of the National Parks and Wildlife Act 1974.

Figure 1.3 Proposed layout

1.4 OBJECTIVES OF THE DUE DILIIGENCE ASSESSMENT

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

- Undertake a search of the BCD 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 the BCD 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 by 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 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
- Hostile Environment Awareness Training (HEAT), 2018
- Tactical Emergency Casualty Care – Level, 1 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 archaeological significance, Section 5 the Impact Assessment, Section 6 discusses the mitigation measures and Section 7 provides the management recommendations.

2 ENVIRONMENTAL AND ARCHAEOLOGICAL CONTEXT

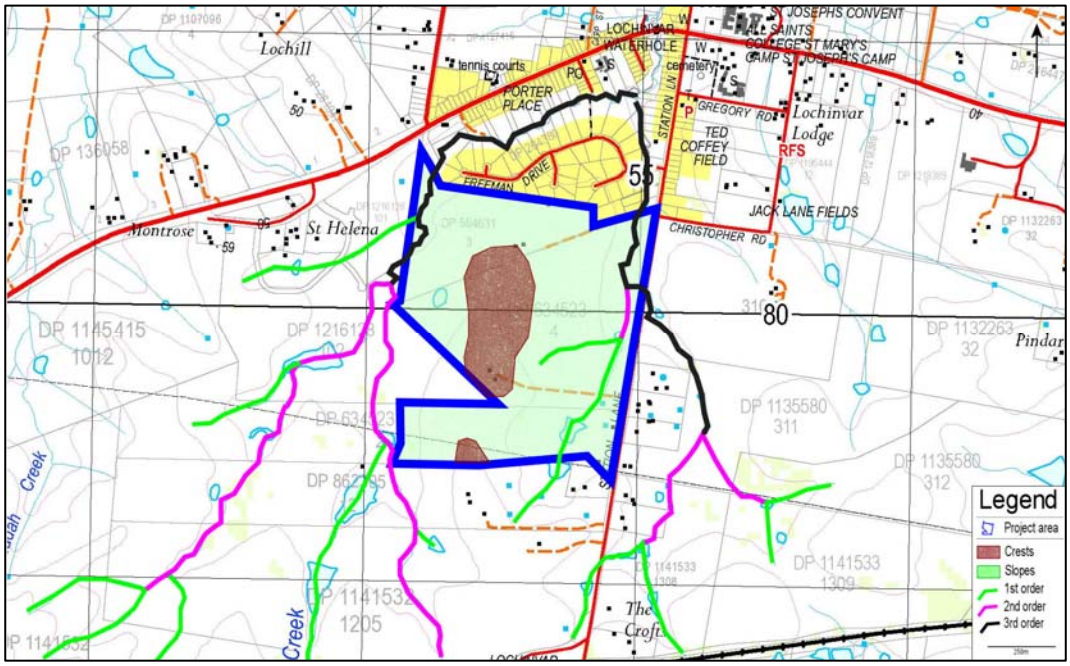
The archaeological due diligence process and assessment requires that the available knowledge and information in relation to the environmental and archaeological contexts is considered. The purpose of this is to assist in identifying whether Aboriginal objects, sites or places are likely to be present 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.

The project area is located within 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. Consisting of the Permian Dalwood Group consisting of the Lochinvar geological formation of siltstone, sandstone, basic lava and tuff (Singleton Geological Map Sheet 1969) Consisting of a crest through the centre of the project area and part of a crest in the south, slopes and drainage/creeks (Figure 2.1), the soils landscape includes an A horizon of up to 30cm in depth which overlays a clay 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.

Figure 2.1 Landforms and stream orders in the project area



Two 1st order creeks are located in the eastern side of the project area and converge to form a 2nd order roughly in the middle along the eastern border that converges with a 3rd order unnamed creek in the north eastern section of the project area (Figure 2.1). Lochinvar Creek (3rd order) is located in and out of the project area along the western border of the project area. Additional 1st and 2nd order creeks are located outside the project area to the east and west and the Hunter River (6th order) is located 1.5 kilometres to the north of the project area. Being located in between two semi reliable water sources (along the east and western borders) and the Hunter River located 1.5 kilometres to the north, the project area was likely utilised for small scale hunting parties as more reliable water would have been required for larger groups of people.

European settlers extensively cleared the original native vegetation in the 1800's and since then the investigation area has been subject to continued clearing and grazing. There are numerous tracks and access roads to residential houses and sheds, six dams and fencing. 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. These factors 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 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.

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 water, along the eastern and western borders of the project area(along the 2nd order creeks) that would have allowed for transitory activities by small numbers of people such as hunting and gathering parties as well as travel to the more reliable Hunter River 1.5 kilometres to the north. In relation to modern alterations to the landscape, the use of the majority of the project area for agricultural purposes can be expected to have had moderate impacts upon the archaeological record. European land uses such as clearing, grazing, ploughing, and the construction of dams, housing and fences may have displaced cultural materials, however in less disturbed areas, it is likely that archaeological deposits may remain relatively intact.

2.2 ARCHAEOLOGICAL CONTEXT

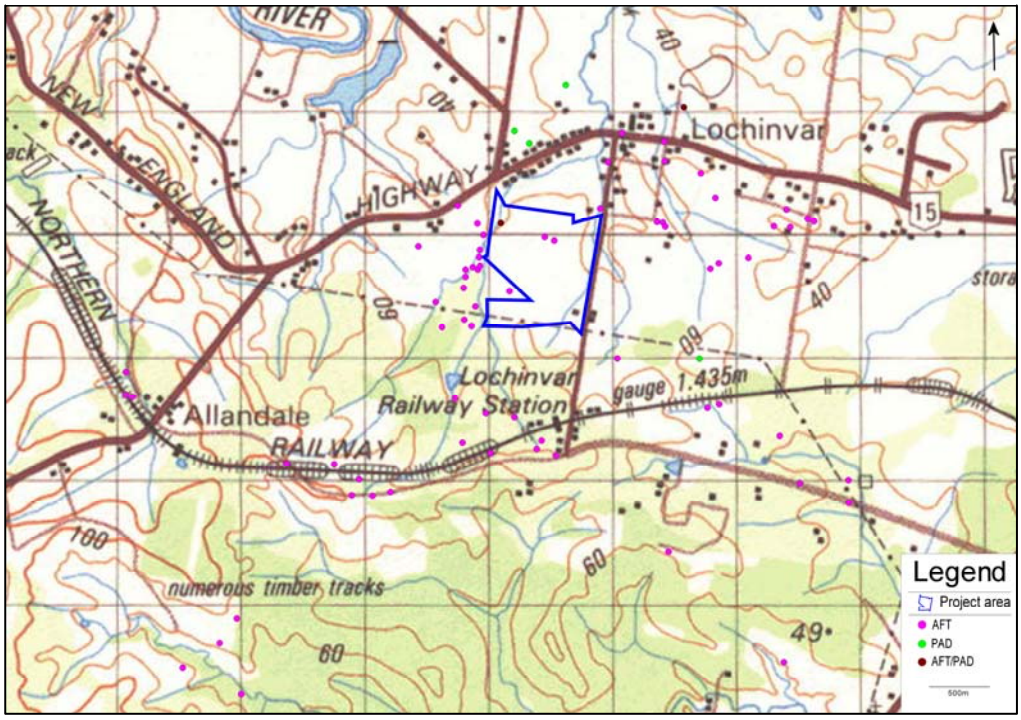
A review of the archaeological literature of the region, and more specifically the Maitland area and the results of an BCD AHIMS search provide essential contextual information for the current assessment.

2.2.1 BCD 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 BCD over the years that failed to correctly translate old coordinate systems to new systems. Secondly, BCD 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 BCD 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 BCD AHIMS search is limited and provides a basis only that aids in predictive modelling.

A search of the BCD AHIMS register (Appendix A) indicate there are has shown that 75 known Aboriginal sites are currently recorded within three kilometres of the project area and include 69 artefact sites, four PADs and two Artefact with PAD sites (Figure 2.1).

Figure 2.2 Approximate 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 Maitland Local Environmental Plan have no Aboriginal objects, sites or places listed.

2.2.3 SUMMARY OF THE REGIONAL ARCHAEOLOGICAL CONTEXT

The most relevant investigations from across the regional area 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 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) and 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 local 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).

Proximity to reliable water was essential for past occupation and the highest percent of sites are identified within 50 metres of a water source. Other landforms such as slopes and crest/ridge formations are also common site locations when in close proximity to reliable water, and when at a distance from water, sites are few and very low density and are typically interpreted as being indicative of travel routes and/or hunting/gathering grounds.

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 (Dyall 1980; Dallas 1985; Hamm 2004; MCH 2005, 2011; Stuart 2005) 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. Elevated landforms within 50 metres of reliable water appear 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 resource. A number of sites were also found on slopes; however, it is likely they were eroded down slope and not found in their original location. 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.

2.3 PREVIOUS ASSESSMENT OF THE PROJECT AREA

Dallas (2010) undertook an assessment of portions of the Lochinvar Urban release area, of which the northern portion of this project area was included. This section, referred to in the Dallas report as 'Area C', comprised of slopes at the northern end of the crest and along part of Lochinvar Creek.

Dallas noted that the area around the house and sheds was highly disturbed with o evidence of the original topsoils remaining. A low-density artefact scatter (37-6-2225) was located next to a horse enclosure and an isolated artefact in the adjoining paddock (37-6-2217), both areas containing minimal topsoils and as such little to no potential for subsurface artefacts. Additionally, eleven artefacts were located along Lochinvar Creek in the west of the project area (37-6-2223), and this area as well as the creek banks were recorded as one site and potential deposits extending from the creek banks. These sites and area of potential are discussed in detail below.

2.3.1 AHIMS SITES WITHIN THE PROJECT AREA

Three previously identified sites are located in the project area (Figure 2.2) and include two artefact scatters (one with an area of potential archaeological sensitivity) and one artefact and PAD. The site locations in figure 2.2 are based on the AHIMS coordinates, and Figure 2.3 are based on the site card location maps. These sites are discussed below.

Figure 2.3 Location of AHIMS sites in the project area based on AHIMS coordinates

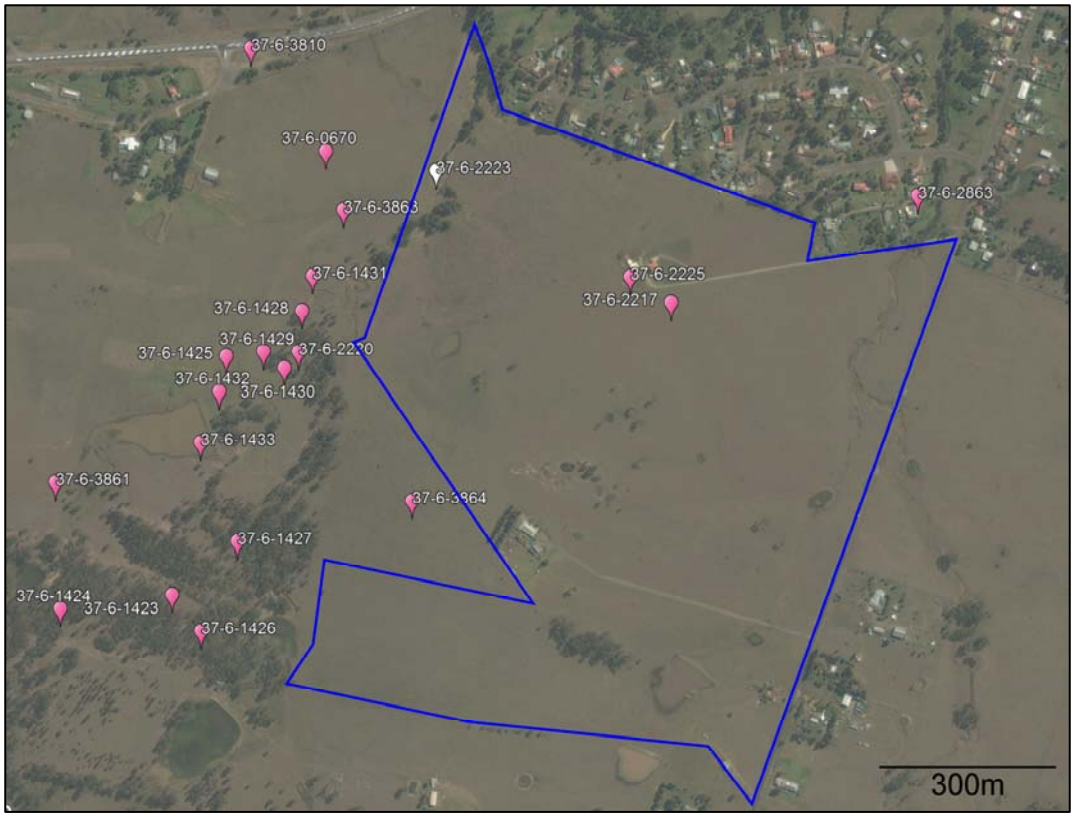
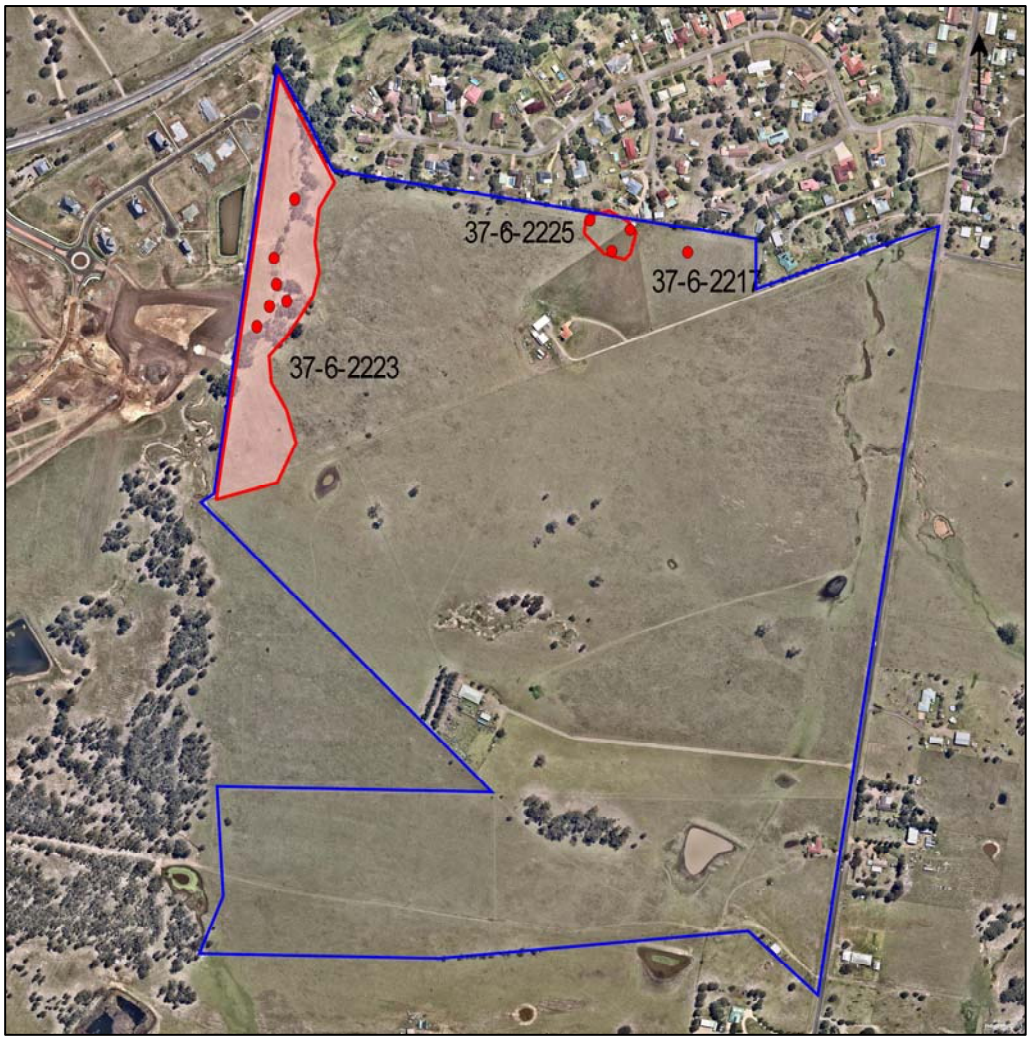


Figure 2.4 Location of sites in the project area based on site card maps and Dallas (2010) report



37-6-2223 AFT/PAD

This artefact scatter and PAD, recorded in 2009, are located along Lochinvar Creek within the project area (and likely extends beyond the project area). This site consisted of 11 artefacts at six locations along the creek. Artefacts included flakes and cores manufactured from tuff, mudstone and quartzite. These sites were noted to be associated with the creek and its immediate banks had been recorded as one open campsite. In addition, the banks of the creek appeared to have retain some original topsoil and had been assessed as retaining subsurface archaeological potential.

37-6-2225 AFT

This artefact scatter, also recorded in 2009, was located on a slope. Three artefacts were located (mudstone flake piece, tuff flake, chert flake piece), two of which were located in an exposure and trampled ground around adjacent to a small horse enclosure and the third artefact located approximately 50m west along an exposed foot track. There was minimal original topsoil in this area.

37-6-2217 AFT

This isolated stone artefact (recorded in 2009) was located in a paddock about 80m to the east of 37-6-2225 and no further artefacts were located. Located on moderately sloping ground and are not expected to have been used intensively in the past.

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 on elevated land forms in close proximity to reliable water sources and associated resources compared to locations at distance from such necessary resources where 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 three-kilometre radius of our project area, it can be expected that:

- The majority of sites are located within 50 metres of a water source;
- High artefact densities sites appear to be situated within 50 metres of a reliable water source;
- Artefact densities decrease with increased distance from reliable water source;
- Main site types are artefact scatters and isolated finds;
- Mudstone/tuff and silcrete are by far the most common raw material types represented at sites in the region. Quartz and chert are the next most frequently in artefact assemblages followed by volcanic materials, porphyry and petrified wood. Siltstone, rhyolite and porcellanite are relatively rare;
- flakes, broken flakes and flaked pieces are the most common artefact types recorded; and
- 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 site area is often given as the area of exposure. Hence, it is inappropriate to attempt to draw any conclusions regarding site extent based on current information.

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 patters. 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.

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 locality and the broader region. Artefact scatters are present within the project area and additional artefact scatters are expected along Lochinvar Creek, the confluence of two first order creeks in the eastern side of the project area and along the 2nd order creek which these two 1st order creeks form. There is also the potential for such sites to be impacted on through past land uses including.

- **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 broarder 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.

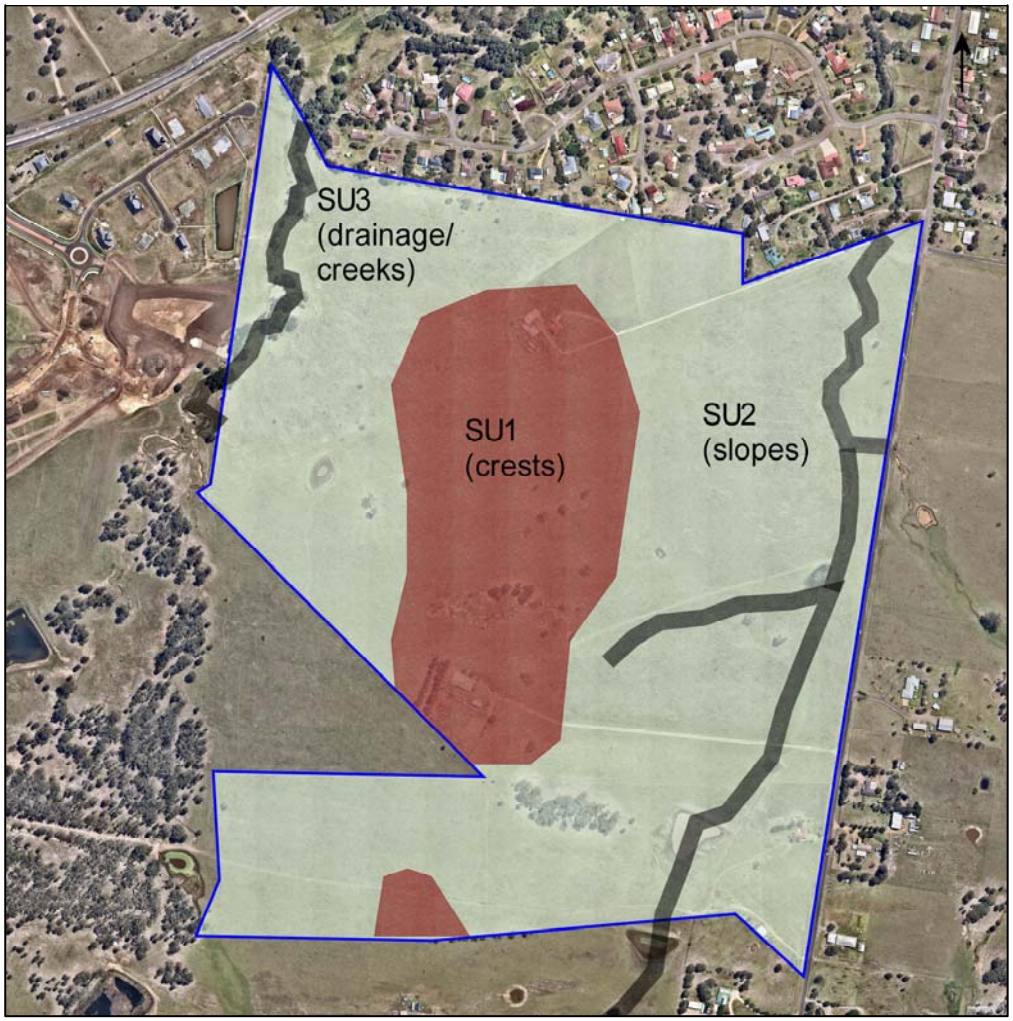
3 RESULTS AND DISCUSSION

To comply with the due diligence requirement that a visual inspection of the project area be undertaken, an archaeological survey (10m wide transects) across the project area was undertaken by MCH archaeologist Penny McCardle on 15th January 2020. The survey focused on areas of high ground surface visibility and exposures (erosional features, creek banks, tracks, dams, cleared areas).

3.1 SURVEY UNITS

The project area, consisting of three landforms, was divided into three survey units (SU) that were based on landform elements (following McDonald *et al* 1984). The locations of the SUs are marked on Figure 3.1 and are summarised below.

Figure 3.1 Survey Units



Survey Unit 1

Consisting of the crest through the centre of the project area and the partial crest in the south, this area had been previously cleared and grazed. A residential house is located at the southern and northern ends of the large crest along with the associated infrastructure and utilities. Visibility was excellent due to drought conditioned reducing vegetation cover (pasture grasses with scattering of

trees) at 80% and exposures were moderate (sheet wash, erosion) at 60%. Examples of this survey unit are provided in Figure 3.2.

Figure 3.2 Photographs of the project area

Survey Unit 2

Consisting of the slopes throughout the project area, this landform consisted of pasture grass with few trees. This area had been previously cleared and utilised for grazing. Including four dams, tracks, access roads and fencing, visibility was good at 80% due to drought conditions and associated reduced grass cover. Exposures were moderate (70%) due to erosion, tracks and dams. Examples of the slopes are provided in Figure 3.2.

Survey Unit 3

This survey unit included all drainage lines and the two 3rd order creeks (one in the east and Lochinvar Creek in the west). Previously cleared, these areas consisted of pasture grass and trees along Lochinvar Creek. Erosion, including sheet wash and creek bank erosion was present and visibility was good at 70% and exposures high at 80%. Examples of the slopes are provided in Figure 3.2.

As shown if Table 3.1 the total effective coverage for the project area was 426,720m^2, or 54.36% reflecting the good surface visibility due to the drought and associated decreased pasture grass cover.

Table 3.1 Effective coverage for the investigation area

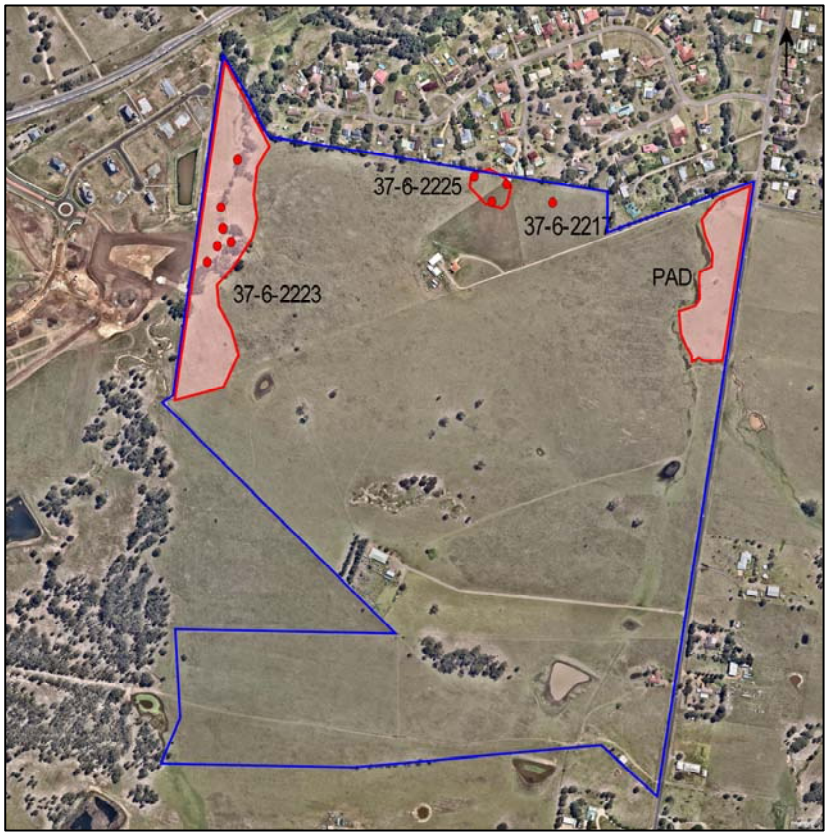
SU	Landform	Area (m2)	Vis. %	Exp. %	Exposure type	Previous disturbances	Present disturbances	Limiting visibility factors	Effective coverage (m2)
1	crest	161,000	80%	60%	erosion, tracks	clearing, grazing, housing	erosion, grazing, houses	grass, leaf litter	77,280
2	slopes	605,500	80%	70%	erosion, tracks, dams	clearing, grazing, dam	erosion, grazing, dams	grass, leaf litter	339,080
3	drainage	18,500	70%	80%	erosion, tracks	clearing, tracks, grazing	motorbikes, grazing	grass, leaf litter	10,360
Totals		**785,000**							**426,720**
								Effective coverage %	**54.36%**

The level and nature of the effective survey coverage is considered satisfactory to provide an effective assessment of the Aboriginal sites identified and those potentially present within the investigation area. The coverage was comprehensive for obtrusive site types (e.g. grinding grooves and scarred trees) and for the less obtrusive surface stone artefact sites due to good surface visibility across the project area due to drought conditions and associated reduced vegetation cover.

3.2 ARCHAEOLOGICAL SITES AND PADS

The three previous sites and PAD were re-assessed and one additional PAD was identified, all of which are discussed below and their location shown in Figure 3.3.

Figure 3.3 Location of sites and PADs in the project area



37-6-2223 AFT/PAD

When first recorded in 2009, this site consisted of 11 artefacts at six locations along the creek. Artefacts included flakes and cores manufactured from tuff, mudstone and quartzite. In addition, the banks of the creek appeared to have retain some original topsoil and had been assessed as retaining subsurface archaeological potential.

This assessment relocated the area of sensitivity but no artefacts were identified. Vegetation included pasture grasses and scatterings of trees along the creek banks. Visibility was excellent due to drought conditions (80%). The site had been subject to irregular local flooding, erosion and grazing since 2009 (11 years), thus it is not surprising the artefacts are no longer present. Examples of the site are shown in Figures 3.4 to 3.7.

Figure 3.4 Eastern side of Creek (southern section) facing south

Figure 3.5 Eastern side of Creek (northern section) facing north

Figure 3.6 Western side of Creek (southern section) facing south

Figure 3.7 Western side of Creek (northern section) facing north

37-6-2225 AFT

This artefact scatter, also recorded in 2009, was located on a slope and included three artefacts located (mudstone flake piece, tuff flake, chert flake piece) located in an exposure and trampled ground around adjacent to a small horse enclosure and the third artefact located approximately 50m west along an exposed foot track.

The site consisted of pasture grass with visibility being excellent due to drought conditions (60%). The area contained a small shed currently housing calves, fences are present and a sewer line (Figure 3.8). The previously recorded artefacts were not relocated and this is not surprising as 11 years of sheet wash and grazing have occurred at this site. Due to the erosion, there is very little of the A horizon remaining and as such the presence of subsurface cultural materials is low to zero.

Figure 3.8 Site 37-6-2225 Facing east

37-6-2217 AFT

This isolated stone artefact (recorded in 2009) was located in a on moderately sloping ground. The site consisted of pasture grass with visibility being excellent due to drought conditions (60%) (Figure 3.9). The previously recorded artefact was not relocated and this is not surprising as 11 years of sheet wash and grazing have occurred at this site. Due to the erosion, there is very little of the A horizon remaining and as such the presence of subsurface cultural materials is low to zero.

Figure 3.9 Site 37-6-2217 Facing east

PAD

This area includes the eastern 3rd order creek on the eastern side. The western side of the creek consists of slopes and unsuitable for camping. This PAD commences north of the confluence with a 2nd order creek and continues north to the border of the project area and extends east to the border of the project area (Figure 3.3). Being a very low slope (almost flat) elevated landform overlooking the 3rd order creek, this area would have supported small numbers of people for short periods of time during times of heavy rain and as some topsoils remain, there is a potential for subsurface cultural materials. Figure 3.10 shows the PAD area

Figure 3.10 Southern side of the confluence facing north across the PAD

In view of the predictive modelling and the results obtained from the effective coverage, 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 Aboriginal objects, specifically previously recorded low density stone artefacts and areas of potential, within the project area. The results are consistant with those obtained from other studies in the local area. The results indicate a number of possible past Aboriginal land use within the project area;

- A very low intensity of Aboriginal occupation
- Ground disturbances having disturbed or removed evidence

Considering general models of occupation for the locality, the results of this and local investigations, the locality was clearly utilised by Aboriginal people. However, the project area itself is located approximately 1.5 kilometres form the Hunter River (reliable water and associated resources). As

such, the project area is unlikely to have been utilised more than a low intensity usage, for example, low density, short term camping along the two 3rd order creeks creeks and transitory movement or hunting/gathering activities.

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 is located within an environment that provided resources, including raw materials, fauna, flora and water, that would have allowed for low density occupation of the areas for short period sof time. Specifically along Lochinvar Creek and the un-named 3rd order creek in the east of the project area, with the sourounding landscape being utilised for activities associated with camping such as hunting and gathering.

In relation to modern alterations to the landscape, the use of the majority of the project area for agricultural purposes can be expected to have had low impacts upon the archaeological record. European land uses such as clearing, grazing, and the construction of dams, housing and fences may have displaced cultural materials, however in less disturbed areas, it is likely that archaeological deposits may remain relatively intact.

4 ASSESSMENT OF ARCHAEOLOGICAL SIGNIFICANCE

4.1 THE SIGNIFICANCE ASSESSMENT PROCESS

The assessment of significance of archaeological sites and resources is defined in most cases by what these entities can contribute to our understanding or knowledge of a place or site. In most cases, it is not possible to fully articulate or comprehend the extent of the archaeological resource at the outset, let alone its value. Therefore, the evaluation of the significance of archaeological material is based on the potential this resource has to contribute to our understanding of the past. (Sullivan and Bowdler 1984; Pearson and Sullivan 1995).

4.2 BASIS FOR EVALUATION

The significance of indigenous archaeological sites or cultural places can be assessed on the criteria of the Burra Charter, the Australian Heritage Commission Criteria of the National Estate, and the BCD guidelines that are derived from the former two. There are five (5) set criteria for significance assessment and these are briefly summarised as follows:

1) Archaeological (scientific) significance

Scientific significance is assessed according to the contents of a site, state of preservation, integrity of deposits, representativeness/rarity of the site type, and potential to answer research questions on past human behaviour (NPWS 1997). Levels for defining archaeological significance include high, medium and low.

2) Research potential

Research potential refers to the potential for information gained from further investigations of the evidence to be used in answering current or future research questions. Research questions can relate to any number of issues concerning past human material culture and associated behaviour (including cultural, social, spiritual etc) and/or use of the environment. Several inter-related factors to take into consideration include the intactness or integrity of the site, the connectedness of the site to other sites, and the potential for a site to provide a chronology extending back in the past. Assessing research potential therefore relies on comparisons with other evidence both within the local and regional context. Levels for defining research potential include high, medium and low.

3) Representativeness and rarity

Representativeness and rarity are assessed at a local, regional and national level (although assessing at a national level is difficult and commonly not possible due to a lack of national reports and available database). The more unique or rare the evidence is, the greater its value as being representative within a regional context.

4) Nature of the Evidence

The nature of the evidence is related to representativeness and research potential. For example, the less common the type of evidence, the more likely it is to have representative value. The nature of the evidence is directly related to its potential to be used in addressing current and/or future research questions.

5) Integrity

The state of preservation and disturbances of the evidence (integrity) is also related to representativeness and research potential. The higher the integrity (well preserved and not

disturbed) of the evidence, the greater the level of information that is likely to be obtained from further study.

4.3 EVALUATION

Table 4.1 presents the evaluation of the scientific significance of the individual archaeological sites identified within the project area.

Table 4.1 Significance assessment

Site	Site Type	Representativeness	Integrity	Res. Pot	Sci. Sig
37-6-2223	artefact scatter	well represented	poor	low	low
	PAD	unknown	unknown	unknown	unknown
37-6-2225	artefacts scatter	well represented	poor	low	low
37-6-2217	isolated find	well represented	poor	low	low
	PAD	unknown	unknown	unknown	unknown

5 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.

5.1 IMPACTS

The BCD 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

Table 5.1 Impact summary

Site	Site type	Type of harm	Degree of harm	Consequence of harm
37-6-2223	artefact scatter	direct	total	total loss
	PAD	direct	partial	partial loss
37-6-2225	artefacts scatter	direct	total	total loss
37-6-2217	isolated find	direct	total	total loss
	PAD	direct	partial	partial loss

The results of the assessment indicate that two sites (37-6-2225 and 37-6-2217) and part of both areas of potential archaeological deposits will be impacted upon by the development. The majority of the PADs will not be impacted on due to the mandatory 30 metres buffer along waterways, and as such only part of the PADs will be impacted. Additionally, the artefacts within 37-6-2223 will also be protected in the buffer zone. These sites are well represented both locally and regionally and are highly disturbed with little to no research or scientific potential.

5.2 CUMULATIVE IMPACTS

The cumulative impact to Aboriginal heritage in the area is limited given that:

- The net development footprint (i.e. the area of direct impact) is small and does not affect a high proportion of any particular landform present within the region;
- A comparable suite of landforms that are expected to, and do contain a similar archaeological resource occur in multiple contexts both within the local area and throughout the local area;
- The high-density deposits identified to date occur outside the development footprint;

- Sites 37-6-2225 and 37-6-2217 have been impacted by natural processes and are no longer present;
- Small sections of the PADs will be impacted on due to the mandatory 30 metres buffer along waterways which will protect 30 metres width of both PADs along both creeks;
- The PAD has been subject to long term past land uses (impacts) that have resulted in a disturbed landscape and as a consequence of these disturbances the representative value of the archaeological resource is lessened; and
- The artefacts within 37-6-2223 will also be protected in the buffer zone.

Mitigation measures to minimise these impacts are outlined in the following chapter.

6 MITIGATION AND MANAGEMENT STRATEGIES

Specific strategies, as outlined through the DECCW (2010b) 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.

6.1 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.

Site 37-6-2223 is located along Lochinvar Creek and will be protected in the mandatory 30 metres buffer. Additionally, up to 30 metres of both PADs will also be protected within the buffer zone.

6.2 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.

If the identified PADs, will be impacted upon, test excavations may be required for part of the PAD2 prior to any works in those areas.

6.3 AHIP

If harm will occur to an Aboriginal object or Place, then an AHIP is required form the BCD. 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 37-6-2225 and 37-6-2217 no longer exist and have been destroyed through natural processes, the AHIMS cards will be updated accordingly and as such an AHIP will not be required.

7 RECOMMENDATIONS

7.1 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.

7.2 PAD& SITES

2) If the identified PADs will be impacted upon by any future development an archaeological subsurface investigation will be required in accordance with the Aboriginal Cultural Heritage Consultation Requirements for Proponents 2010 (DECCW 2010), the OEH Guide to Investigating, Assessing and Reporting on Aboriginal Cultural Heritage in NSW (OEH 2011), and the DECCW Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales (DECCW 2010b).

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APPENDIX A

AHIMS Search Results

AHIMS Web Services (AWS)
Search Result

Purchase Order/Reference : Lochinvar

Client Service ID : 469925

Penny Mccardle

Po Box 166
Adamstown New South Wales 2289
Attention: Penny Mccardle

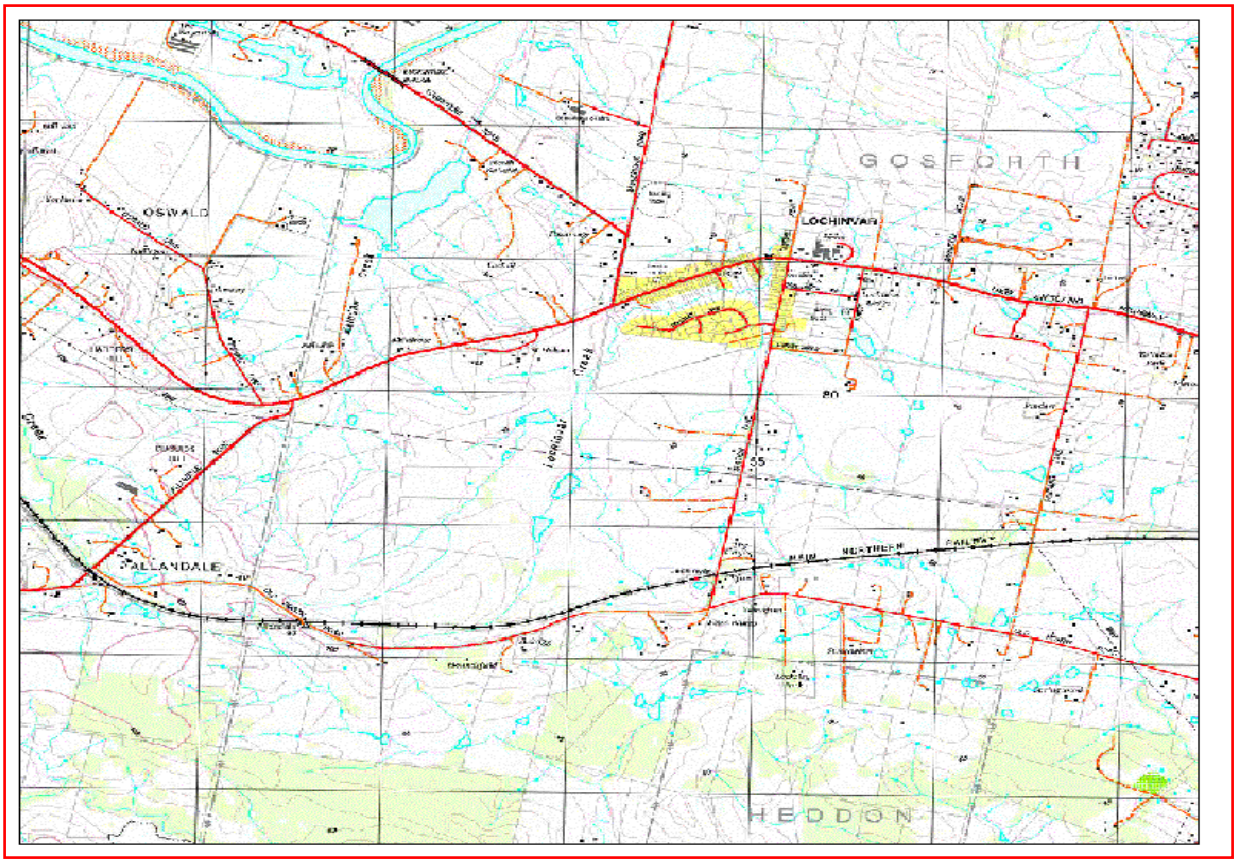
Email: mcheritage@iprimus.com.au

Date: 04 December 2019

Dear Sir or Madam:

AHIMS Web Service search for the following area at Datum :GDA, Zone : 56, Eastings : 351200 - 357200, Northings : 6376700 - 6382700 with a Buffer of 50 meters. Additional Info : Assessment, conducted by Penny Mccardle on 04 December 2019.

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 the Office of the Environment and Heritage AHIMS Web Services (Aboriginal Heritage Information Management System) has shown that:

75	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 (http://www.nsw.gov.au/gazette) website. Gazettal notices published prior to 2001 can be obtained from Office of Environment and Heritage's Aboriginal Heritage Information Unit 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 Office of Environment and Heritage 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.

3 Marist Place, Parramatta NSW 2150
Locked Bag 5020 Parramatta NSW 2220
Tel: (02) 9585 6380 Fax: (02) 9873 8599

ABN 30 841 387 271
Email: ahims@environment.nsw.gov.au
Web: www.environment.nsw.gov.au

AHIMS Web Services (AWS)

Extensive search - Site list report

Your Ref/PO Number : Lochinvar

Client Service ID : 469925

SiteID	SiteName	Datum	Zone	Easting	Northing	Context	Site Status	SiteFeatures	SiteTypes	Reports
37-6-2233	Allandale Rail 24	GDA	56	352992	6378091	Open site	Valid	Artefact : 1		
	Contact	**Recorders**	Mr.Peter Kuskie					**Permits**		
37-6-2234	Allandale Rail 25	GDA	56	353306	6378118	Open site	Valid	Artefact : 2		
	Contact	**Recorders**	Mr.Peter Kuskie					**Permits**		
37-6-2235	Allandale Rail 26	GDA	56	353160	6378088	Open site	Valid	Artefact : 1		
	Contact	**Recorders**	Mr.Peter Kuskie					**Permits**		
37-6-2232	Allandale Rail 23	GDA	56	351169	6379090	Open site	Valid	Artefact : 1		
	Contact	**Recorders**	Mr.Peter Kuskie					**Permits**		
37-6-2228	LCC1 and PAD	GDA	56	355673	6381234	Open site	Partially Destroyed	Artefact : 15, Potential Archaeological Deposit (PAD) : -		
	Contact	**Recorders**	Mrs.Angela Besant,Umwelt (Australia) Pty Limited,Mr.Kirwan Williams					**Permits**	3963	
37-6-2243	Lochinvar Rail 5	GDA	56	354113	6378433	Open site	Valid	Artefact : 1		
	Contact	**Recorders**	Mr.Peter Kuskie					**Permits**	3658	
37-6-1607	Lochinvar 1	AGD	56	355515	6380960	Open site	Valid	Artefact : 2		99841
	Contact Searle	**Recorders**	Ms.Penny Mccardle					**Permits**	2456,3963	
37-6-1332	Bishops Creek RTA 3	AGD	56	351925	6376897	Open site	Valid	Artefact : 2		
	Contact	**Recorders**	Umwelt (Australia) Pty Limited,Leila McAdam					**Permits**	2102	
37-6-1333	Bishops Creek RTA 4 (BC RTA 4)	AGD	56	351627	6376696	Open site	Valid	Artefact : 14		
	Contact	**Recorders**	Umwelt (Australia) Pty Limited,Leila McAdam					**Permits**	2102	
37-6-1334	Bishops Creek RTA 5 IF (BC RTA 5 IF)	AGD	56	352100	6376485	Open site	Valid	Artefact : 1		
	Contact	**Recorders**	Umwelt (Australia) Pty Limited,Leila McAdam					**Permits**	2102	
37-6-1337	Bishops Creek RTA 8 (BC RTA 8)	AGD	56	352065	6377092	Open site	Valid	Artefact : 4		
	Contact	**Recorders**	Umwelt (Australia) Pty Limited,Leila McAdam					**Permits**	2102	
37-6-1423	Lochinvar4/A (L4/A)	AGD	56	353900	6379510	Open site	Valid	Artefact : 1		100792
	Contact	**Recorders**	Mr.Peter Kuskie					**Permits**	2421,3053	
37-6-1424	Lochinvar 4/B (L4/B)	AGD	56	353720	6379450	Open site	Valid	Artefact : 7		100792
	Contact Searle	**Recorders**	Mr.Peter Kuskie					**Permits**	2421,3053	
37-6-1425	Lochinvar 10/A	GDA	56	353910	6379920	Open site	Destroyed	Artefact : 1		100792
	Contact Searle	**Recorders**	Mr.Peter Kuskie,Mrs.Angela Besant,Insite Heritage Pty Ltd					**Permits**	2421,3053,4168	
37-6-1426	Lochinvar 20/A	AGD	56	353960	6379460	Open site	Valid	Artefact : 1		100792
	Contact Searle	**Recorders**	Mr.Peter Kuskie					**Permits**	2421	
37-6-1427	Lochinvar 20/B	AGD	56	353990	6379620	Open site	Valid	Artefact : 1		100792
	Contact Searle	**Recorders**	Mr.Peter Kuskie					**Permits**	2421,3053	

Report generated by AHIMS Web Service on 04/12/2019 for Penny Mccardle for the following area at Datum :GDA, Zone : 56, Eastings : 351200 - 357200, Northings : 6376700 - 6382700 with a Buffer of 50 meters. Additional Info : Assessment. Number of Aboriginal sites and Aboriginal objects found is 75

AHIMS Web Services (AWS)

Extensive search - Site list report

Your Ref/PO Number : Lochinvar

Client Service ID : 469925

SiteID	SiteName	Datum	Zone	Easting	Northing	Context	Site Status	SiteFeatures	SiteTypes	Reports
37-6-1428	Lochinvar 21/A	AGD	56	354020	6380020	Open site	Valid	Artefact : 1		100792
	Contact Searle	**Recorders**	Mr.Peter Kuskie					**Permits**	2421,3053	
37-6-1429	Lochinvar 21/B	AGD	56	353970	6379940	Open site	Valid	Artefact : 1		100792
	Contact Searle	**Recorders**	Mr.Peter Kuskie					**Permits**	2421,3053	
37-6-1430	Lochinvar 21/C	AGD	56	354010	6379920	Open site	Valid	Artefact : -		100792
	Contact Searle	**Recorders**	Mr.Peter Kuskie					**Permits**	2421,3053	
37-6-1431	Lochinvar 22/A	GDA	56	354026	6380081	Open site	Destroyed	Artefact : -		100792
	Contact Searle	**Recorders**	Mrs.Angela Besant,South East Archaeology,Insite Heritage Pty Ltd					**Permits**	2421,3053,4168	
37-6-1432	Lochinvar 22/B	AGD	56	353910	6379860	Open site	Valid	Artefact : 3		100792
	Contact S Scanlon	**Recorders**	South East Archaeology					**Permits**	2421,3053	
37-6-1433	Lochinvar 22/C	GDA	56	353896	6379771	Open site	Destroyed	Artefact : 19		100792
	Contact S Scanlon	**Recorders**	Mrs.Angela Besant,South East Archaeology,Insite Heritage Pty Ltd					**Permits**	2421,3053	
37-6-1824	East Lochinvar Site 6	GDA	56	356724	6380310	Open site	Destroyed	Artefact : -		
	Contact	**Recorders**	Umwelt (Australia) Pty Limited,Mr.Giles Hamm,Mr.Kirwan Williams					**Permits**	3963	
37-6-1825	East Lochinvar Site 7	GDA	56	356673	6380330	Open site	Valid	Artefact : -		
	Contact	**Recorders**	Mr.Giles Hamm					**Permits**	4482	
37-6-1826	East Lochinvar Site 8	GDA	56	356532	6380262	Open site	Valid	Artefact : -		
	Contact	**Recorders**	Mr.Giles Hamm					**Permits**	3963,4482	
37-6-1827	East Lochinvar Site 9	GDA	56	356502	6380405	Open site	Valid	Artefact : -		
	Contact	**Recorders**	Mr.Giles Hamm					**Permits**	4482	
37-6-1828	East Lochinvar Site 10	GDA	56	356400	6380271	Open site	Valid	Artefact : -		
	Contact	**Recorders**	Mr.Giles Hamm					**Permits**	3963,4482	
37-6-1830	East Lochinvar Site 2	GDA	56	355928	6380499	Open site	Valid	Artefact : -		
	Contact	**Recorders**	Mr.Giles Hamm					**Permits**		
37-6-1831	East Lochinvar Site 3	GDA	56	355886	6379927	Open site	Valid	Artefact : -		
	Contact	**Recorders**	Mr.Giles Hamm					**Permits**	4482	
37-6-1832	East Lochinvar Site 4	GDA	56	355955	6379972	Open site	Valid	Artefact : -		
	Contact	**Recorders**	Mr.Giles Hamm					**Permits**	4482	
37-6-1834	East Lochinvar Site 5	GDA	56	356195	6380016	Open site	Valid	Artefact : -		
	Contact	**Recorders**	Mr.Giles Hamm					**Permits**	4482	
37-6-1835	East Lochinvar Site 1	GDA	56	355811	6380701	Open site	Valid	Artefact : -		
	Contact	**Recorders**	Mr.Giles Hamm					**Permits**		
37-6-3861	St Helena IF	GDA	56	353670	6379657	Open site	Valid	Artefact : -		
	Contact	**Recorders**	Mrs.Angela Besant,Insite Heritage Pty Ltd					**Permits**		

Report generated by AHIMS Web Service on 04/12/2019 for Penny Mccardle for the following area at Datum :GDA, Zone : 56, Eastings : 351200 - 357200, Northings : 6376700 - 6382700 with a Buffer of 50 meters. Additional Info : Assessment. Number of Aboriginal sites and Aboriginal objects found is 75

SiteID	SiteName	Datum	Zone	Easting	Northing	Context	Site Status	SiteFeatures	SiteTypes	Reports
37-6-3862	St Helena 1	GDA	56	353530	6380110	Open site	Destroyed	Artefact : -		
	Contact	**Recorders**	Mrs.Angela Besant,Mrs.Angela Besant,Insite Heritage Pty Ltd,Insite Heritage Pty Lt					**Permits**		
37-6-3863	St Helena 2	GDA	56	354055	6380200	Open site	Destroyed	Artefact : -		
	Contact	**Recorders**	Mrs.Angela Besant,Mrs.Angela Besant,Insite Heritage Pty Ltd,Insite Heritage Pty Lt					**Permits**		
37-6-3864	St Helena 3	GDA	56	354265	6379745	Open site	Destroyed	Artefact : -		
	Contact	**Recorders**	Mrs.Angela Besant,Mrs.Angela Besant,Insite Heritage Pty Ltd,Insite Heritage Pty Lt					**Permits**		
37-6-0171	Farley;Farley N;	AGD	56	355550	6377637	Open site	Valid	Artefact : -	Open Camp Site	102646
	Contact	**Recorders**	Len Dyall					**Permits**		
37-6-0172	Farley;Farley O;	AGD	56	356481	6376740	Open site	Valid	Artefact : -	Open Camp Site	102231,102646
	Contact	**Recorders**	Len Dyall					**Permits**		
37-6-0173	Farley;Farley P&Q;	AGD	56	356447	6378569	Open site	Valid	Artefact : -	Open Camp Site	102231,102646
	Contact	**Recorders**	Len Dyall					**Permits**		
37-6-0670	Loch-1 (St Helena)	GDA	56	354006	6380291	Open site	Destroyed	Artefact : -	Isolated Find	2985,100792,102646
	Contact	**Recorders**	Iain Stuart,Mrs.Angela Besant,Insite Heritage Pty Ltd					**Permits**	2183,2421,3053,4168	
37-6-0115	Lochinvar;Farley;D;	AGD	56	357005	6378031	Open site	Valid	Artefact : -	Open Camp Site	317,1086,102231,102646
	Contact	**Recorders**	Len Dyall					**Permits**	326	
37-6-0116	Lochinvar;Farley;A;	AGD	56	357002	6378213	Open site	Valid	Artefact : -	Open Camp Site	317,1086,102231,102646
	Contact	**Recorders**	Len Dyall					**Permits**	326	
37-6-0117	Lochinvar;Farley;B;	AGD	56	356610	6378190	Open site	Valid	Artefact : -	Open Camp Site	317,1086,102231,102646
	Contact	**Recorders**	Mary Dallas Consulting Archaeologists (MDCA)					**Permits**	326	
37-6-2187	Lochinvar Rail 1	GDA	56	354485	6378465	Open site	Valid	Artefact : 1		
	Contact	**Recorders**	South East Archaeology					**Permits**	3658	
37-6-2189	Lochinvar Rail 3	GDA	56	355864	6378798	Open site	Valid	Artefact : 1		
	Contact	**Recorders**	South East Archaeology					**Permits**		
37-6-2190	Station Lane 1	GDA	56	354641	6378413	Open site	Valid	Artefact : 1		
	Contact	**Recorders**	South East Archaeology					**Permits**	3286,3658	
37-6-2191	Station Lane 3	GDA	56	354305	6378723	Open site	Valid	Artefact : 1		
	Contact	**Recorders**	Doctor.Johan Kamminga					**Permits**	3286,3658	
37-6-2192	Lochinvar Rail 4	GDA	56	355958	6378826	Open site	Valid	Artefact : 1		102231
	Contact	**Recorders**	South East Archaeology					**Permits**		
37-6-2127	Allandale Rail 17	GDA	56	351167	6378904	Open site	Valid	Artefact : 1		

Report generated by AHIMS Web Service on 04/12/2019 for Penny Mccardle for the following area at Datum :GDA, Zone : 56, Eastings : 351200 - 357200, Northings : 6376700 - 6382700 with a Buffer of 50 meters. Additional Info : Assessment. Number of Aboriginal sites and Aboriginal objects found is 75

SiteID	SiteName	Datum	Zone	Easting	Northing	Context	Site Status	SiteFeatures	SiteTypes	Reports
	Contact	Recorders	South East Archaeology					Permits	3658	
37-6-2129	Station Lane 2	GDA	56	354524	6378532	Open site	Valid	Artefact : 1		
	Contact	Recorders	South East Archaeology					Permits	3286	
37-6-2130	Allandale Rail 18	GDA	56	351222	6378887	Open site	Valid	Artefact : 1		
	Contact	Recorders	South East Archaeology					Permits	3658	
37-6-2131	Allandale Rail 19	GDA	56	352466	6378346	Open site	Valid	Artefact : 1		
	Contact	Recorders	South East Archaeology					Permits		
37-6-2132	Allandale Rail 20	GDA	56	352850	6378343	Open site	Valid	Artefact : 1		
	Contact	Recorders	South East Archaeology					Permits		
37-6-2133	Allandale Rail 21	GDA	56	353051	6378222	Open site	Valid	Artefact : 1		
	Contact	Recorders	South East Archaeology					Permits	3658	
37-6-2213	Christopher Road 1	GDA	56	355520	6380800	Open site	Destroyed	Artefact : 2		
	Contact	Recorders	Umwelt (Australia) Pty Limited,Mr.Giles Hamm,Mr.Kirwan Williams					Permits	3963	
37-6-2214	Christopher Road 2	GDA	56	355457	6380305	Open site	Partially Destroyed	Artefact : 6		
	Contact	Recorders	Umwelt (Australia) Pty Limited,Mr.Paul Irish,Ms.Mary Dallas,Mr.Kirwan Williams					Permits	3963	
37-6-2215	LIF 1	AGD	56	353886	6378515	Open site	Valid	Artefact : 1		
	Contact	Recorders	Mr.Paul Irish,Ms.Mary Dallas					Permits		
37-6-2216	LIF 2	AGD	56	354075	6378754	Open site	Valid	Artefact : 1		
	Contact	Recorders	Mr.Paul Irish,Ms.Mary Dallas					Permits		
37-6-2217	LIF 3	AGD	56	354627	6380156	Open site	Valid	Artefact : 1		
	Contact	Recorders	Mr.Paul Irish,Ms.Mary Dallas					Permits	3963	
37-6-2218	PAD 1 Lochinvar URA	AGD	56	355800	6379200	Open site	Not a Site	Potential Archaeological Deposit (PAD) : 1		
	Contact	Recorders	Mr.Paul Irish,Ms.Mary Dallas,RPS Australia East Pty Ltd - Sydney					Permits		
37-6-2219	PAD 2 Lochinvar URA	AGD	56	354720	6381415	Open site	Valid	Potential Archaeological Deposit (PAD) : 1		
	Contact	Recorders	Mr.Paul Irish,Ms.Mary Dallas					Permits		
37-6-2220	St Helena OC1	AGD	56	354028	6379951	Open site	Valid	Artefact : 2		
	Contact	Recorders	Mr.Paul Irish,Ms.Mary Dallas					Permits		
37-6-2221	Station Lane OC1	GDA	56	355061	6380792	Open site	Valid	Artefact : 1		
	Contact	Recorders	Mr.Paul Irish,Ms.Mary Dallas					Permits		
37-6-2222	LOC2	AGD	56	355137	6379201	Open site	Valid	Artefact : 10		
	Contact	Recorders	Mr.Paul Irish,Ms.Mary Dallas					Permits	4482	

Report generated by AHIMS Web Service on 04/12/2019 for Penny Mccardle for the following area at Datum :GDA, Zone : 56, Eastings : 351200 - 357200, Northings : 6376700 - 6382700 with a Buffer of 50 meters. Additional Info : Assessment. Number of Aboriginal sites and Aboriginal objects found is 75

AHIMS Web Services (AWS)

Extensive search - Site list report

Your Ref/PO Number : Lochinvar

Client Service ID : 469925

SiteID	SiteName	Datum	Zone	Easting	Northing	Context	Site Status	SiteFeatures	SiteTypes	Reports
37-6-2223	LOC1	GDA	56	354195	6380295	Open site	Partially Destroyed	Artefact : 11, Potential Archaeological Deposit (PAD) : -		
	Contact	**Recorders**	Umwelt (Australia) Pty Limited,Mr.Paul Irish,Ms.Mary Dallas,Mr.Kirwan Williams					**Permits**	3963,4168	
37-6-2224	LOC3	AGD	56	353825	6378876	Open site	Valid	Artefact : 2		
	Contact	**Recorders**	Mr.Paul Irish,Ms.Mary Dallas					**Permits**		
37-6-2225	LOC4	AGD	56	354551	6380185	Open site	Valid	Artefact : 3		
	Contact	**Recorders**	Mr.Paul Irish,Ms.Mary Dallas					**Permits**	3963	
37-6-2963	26 Windemere Rd Site 1 (PAD 1)	GDA	56	354426	6380945	Open site	Valid	Potential Archaeological Deposit (PAD) : -		
	Contact Mindaribba Local Aboriginal L	**Recorders**	Archaeological Risk Assessment Services (ARAS)					**Permits**		
37-6-2964	26 Windemere Rd Site 2 (PAD 2)	GDA	56	354305	6381044	Open site	Valid	Potential Archaeological Deposit (PAD) : -		
	Contact Mindaribba Local Aboriginal L	**Recorders**	Archaeological Risk Assessment Services (ARAS)					**Permits**		
37-6-2861	Christopher Road Site 1	GDA	56	355504	6380299	Open site	Destroyed	Artefact : 1		
	Contact	**Recorders**	Umwelt (Australia) Pty Limited,Mr.Kirwan Williams,Mr.Giles Hamm					**Permits**	3963,4080	
37-6-2862	Christopher Road Site 2	GDA	56	355456	6380305	Open site	Partially Destroyed	Artefact : 1		
	Contact	**Recorders**	Umwelt (Australia) Pty Limited,Mr.Kirwan Williams,Mr.Giles Hamm					**Permits**	3963,4080	
37-6-2863	Christopher Road Site 3	GDA	56	354999	6380414	Open site	Valid	Artefact : 1		
	Contact	**Recorders**	Mr.Giles Hamm					**Permits**	3963,4080	
37-6-3810	Lochinvar Water Pump Station 2	GDA	56	353848	6380436	Open site	Valid	Artefact : -		
	Contact	**Recorders**	Umwelt (Australia) Pty Limited,Ms.Alison Lamond					**Permits**		
37-6-3830	SITE 11 LOT 310 LOCHINVAR	GDA	56	355523	6380268	Open site	Valid	Artefact : 1		
	Contact	**Recorders**	Mr.Giles Hamm					**Permits**		
37-6-3654	Cantwell Rd 1	GDA	56	355173	6381028	Open site	Destroyed	Artefact : -		
	Contact	**Recorders**	Umwelt (Australia) Pty Limited,Umwelt (Australia) Pty Limited,Mr.Kirwan William					**Permits**		

Report generated by AHIMS Web Service on 04/12/2019 for Penny Mccardle for the following area at Datum :GDA, Zone : 56, Eastings : 351200 - 357200, Northings : 6376700 - 6382700 with a Buffer of 50 meters. Additional Info : Assessment. Number of Aboriginal sites and Aboriginal objects found is 75