Proposed Subdivision of Lots 1 & 2, DP 8509 1 6, 4056 – 4078, Gundaroo Road, Gundaroo, NSW

Archaeological Due Diligence Assessment

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Prepared for the proponent: Mr Paul Carmody

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EXECUTIVE SUMMARY

Bowen Heritage Management Pty Ltd Australia (BHM) was commissioned by Mr Paul Carmody to prepare an Archaeological Due Diligence Assessment for a proposed residential land subdivision of Lots 1 & 2 DP8509 1 6 4056 – 4078, Gundaroo Road, Gundaroo, NSW (the study area). The project is in the planning stage and as yet, no ground disturbing activities have occurred. The land is subject to assessment under Part 4 (Development) and Part 5 (Environmental Assessment) of the NSW Environmental Planning and Assessment Act (EP&A Act) 1979. This due diligence assessment considers the Aboriginal and historical heritage and archaeology of the study area, the potential impacts of the proposed subdivision on any identified heritage values, and presents recommendations and an impact management strategy in compliance with the NSW National Parks and Wildlife Act (NPW Act) 1974.

The overall aim of the assessment is to ascertain whether there are any heritage values associated with the study area that could potentially be affected by the proposed subdivision development and to provide relevant management measures if impacts are likely.

RESULTS

A search (on 24/01/2014) of the Office of Environment and Heritage's (OEH) Aboriginal Heritage Information Management System (AHIMS) and other relevant literature, identified no Aboriginal heritage or historical heritage sites had previously been recorded within the study area. However, two Aboriginal sites were identified within a two kilometre radius of the study area, 15 Aboriginal heritage sites were identified within a four kilometre radius study area and 28 Aboriginal heritage sites were identified within a 10 kilometre radius study area. An archaeological field survey of the study area (on 03/02/2014) identified no new Aboriginal or historical heritage sites.

Three small areas with potential to reveal Aboriginal cultural heritage were identified during the field survey. These areas are considered to have a potential to reveal subsurface archaeological Aboriginal site deposits. The PAD areas are on higher land above a marsh zone within the study area. Two of these areas are thought to be located within the Environmental Management Area of the study area and are therefore not at risk of impact. The other area of Potential Archaeological Deposit (PAD) is located within a portion of the study area that is to be developed and will require a management strategy to be implemented before development works begin.

RECOMMENDATIONS

If the three PAD areas cannot be avoided by the proposed development, a heritage strategy of sub-surface test excavations investigations – to determine the presence, nature and extent of archaeological sites – is recommended to be undertaken (within the PAD areas only) before ground disturbing elements of the proposed development can occur. No archaeological constraints exist for the remainder of the study area.

At this stage, no Aboriginal Heritage Impact Permit (AHIP) is required to proceed with the development. Any archaeological test excavation procedures must be conducted in accordance with Requirements 15 and 16 of the Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales (2010).

ABBREVIATIONS USED IN THIS DOCUMENT

BHM:	Bowen Heritage Management
AHIMS:	Aboriginal Heritage Information Management System
AHIP:	Aboriginal Heritage Impact Permit
DECC:	Department of Environment and Climate Change
EP&A Act:	Environmental Planning and Assessment Act, 1979
NP&W Act:	NSW National Parks and Wildlife Act, 1974
OEH	Office of Environment and Heritage
PAD:	Potential Archaeological Deposit
SHI:	State Heritage Inventory
SHR:	State Heritage Register
RAO:	Registered Aboriginal Organisations
RNE:	Register of the National Estate

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Executive Summary

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1 INTRODUCTION

Bowen Heritage Management Pty Ltd (BHM) was commissioned by Paul Carmody (the Proponent) in January 2014 to undertake an Archaeological Due Diligence Assessment of 41 hectares of land immediately north of Gundaroo, NSW. This land makes up the study area. The study area comprises Lots 1 & 2 DP8509 1 6 4056 – 4078, Gundaroo Road, Gundaroo, NSW (*Figure 1, 2, 3*). This due diligence assessment has been prepared to assist the proponent with meeting heritage obligations required by the Office of Environment and Heritage (OEH) and Yass Valley Council.

The aim of this investigation is to identify any cultural values (and potential impacts to these values), through the use of appropriate archaeological procedures. This will facilitate an outline of the range and nature of Aboriginal and European cultural material (or areas of potential cultural heritage value) within the study area. Relevant mitigation measures for any potential impacts to this material are also provided, along with a determination of whether an Aboriginal Heritage Impact Permit (AHIP) application is required for the subdivision proposal.

The results of the archaeological assessment, in report format, will act as a suitable document to be incorporated, as appropriate, into the proponents Development application with Yass Valley Council detailing the study areas suitability for development.

This research has been conducted in accordance to the requirements of the *Due Diligence Code of Practice for the Protection of Aboriginal Objects in New South Wales (OEH 2010)*. It identifies the heritage values of the study area and suggests suitable mitigation approaches.

Figure 1: Study area location relative to the State of New South Wales (Google Earth).

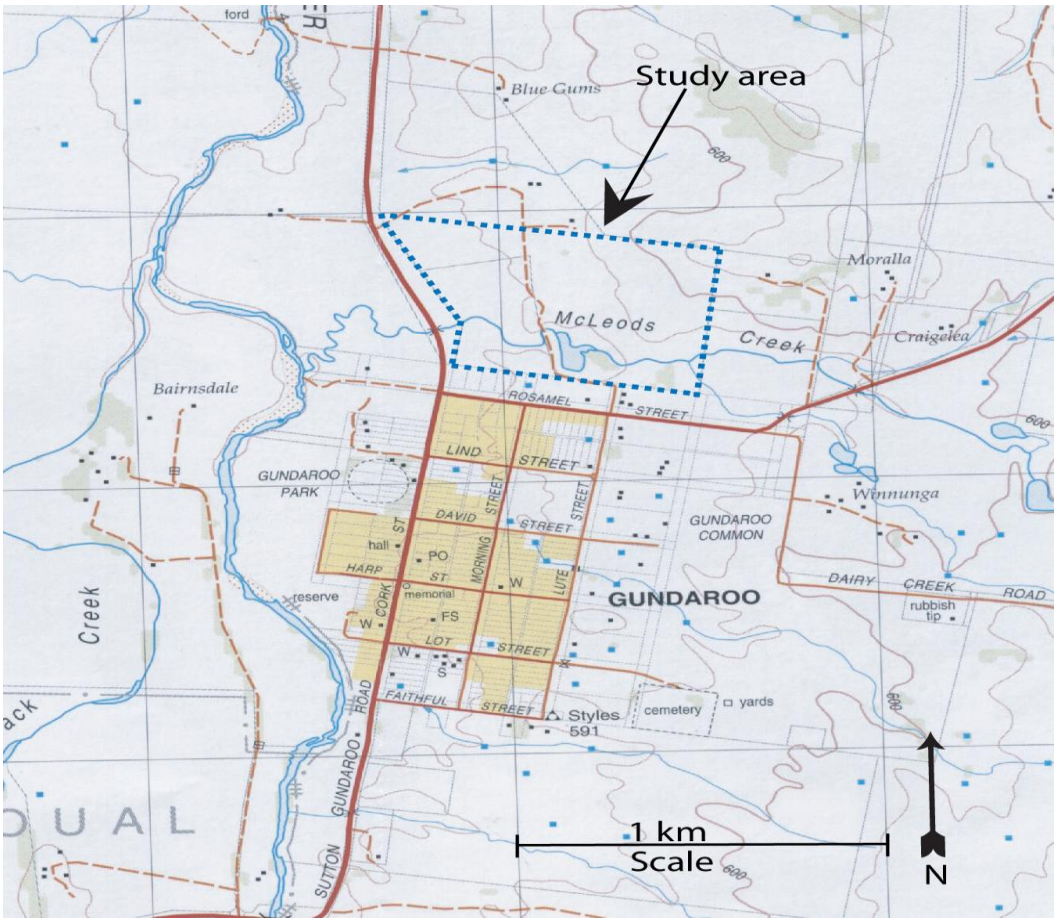

Figure 2: Study area location relative to the Village of Gundaroo (Lake George 8727-1N 1: 25,000 topographic map 2nd edition 2002).

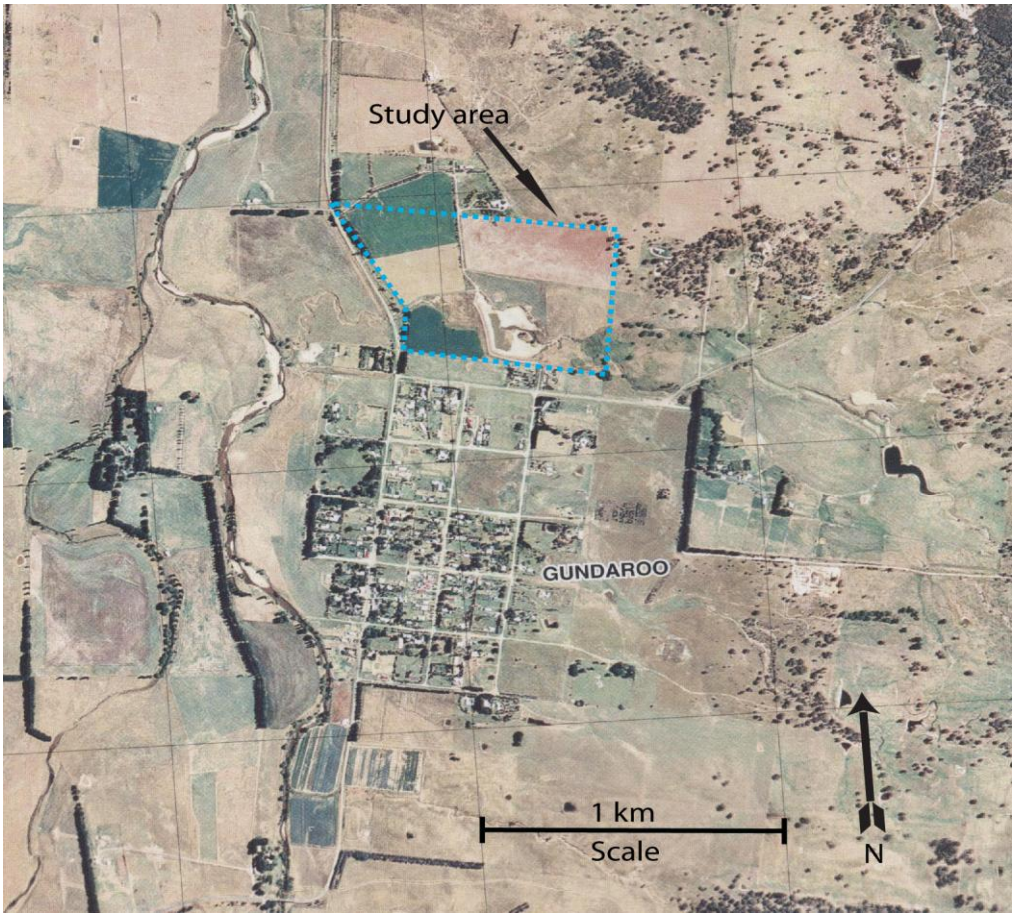

Figure 3: Study area location relative to the Village of Gundaroo (Lake George 8727-1N 1: 25,000 aerial map 2nd edition 2002).

AUTHORSHIP

Alister Bowen (BHM Archaeologist) conducted the desktop assessment, Aboriginal and historical heritage field survey and report writing for this project. Fieldwork was undertaken on the 3rd of February 2014. Alister completed an Honours degree in archaeology in 1999 at the Australian National University and a PhD in archaeology in 2007 at La Trobe University. A background in the Trades has equipped Alister with strong practical experience to complement his academic qualifications. He has undertaken a wide range of historical and pre-historical archaeological projects in Queensland, South Australia, Victoria, the Australian Capital Territory and New South Wales.

REPORT STRUCTURE

This report is structured in the following way:

Chapter 2 Outlines the proposed development;

Chapter 3 NSW heritage legislative framework and statutory requirements;

Chapter 4 Potential archaeological site types located within the study region;

Chapter 5 Background to the European occupation of the study region and study area;

Chapter 6 Background to the Aboriginal occupation of the study region;

Chapter 7 Environmental background relating to the study area, including its current archaeological context, and implications for potential archaeological sites;

Chapter 8 Assessment of heritage sites located within the study region and the archaeological potential of the study area;

Chapter 9 Explanation of the field methodology employed, any identified gaps in the in knowledge required for the study and the survey results;

Chapter 10 Heritage management, impact mitigation measures and sub-surface sampling strategy;

Chapter 11 Development of a series to actions to be taken in the event an unexpected heritage find during the construction works; and

Chapter 12 A list of references used in the report.

2 *PROPOSED DEVELOPMENT*

The proposed subdivision (the study area) incorporates an area of 41 hectares at the immediate northern end of the Gundaroo Village, NSW, in the Yass Valley Council local government area. It is proposed to subdivide the area into sixty 2000 meter square residential blocks and 5 larger 12000 meter square blocks, subject to final survey. The study area also comprises two zones of 'Environmental Management Area' which are to be left undeveloped and therefore undisturbed from building activities (*Figure 4*). The residential allotments are to be accessed by five 20 metre wide carriageways extending in an approximate north-south and east-west alignment within the proposed subdivision.

The proposal involves ground disturbing activities that are necessary for the construction of roads, the building of dwellings and the development of associated infrastructure such as sewerage, electricity, gas, telecommunication services, allotment fencing, and general block improvements.

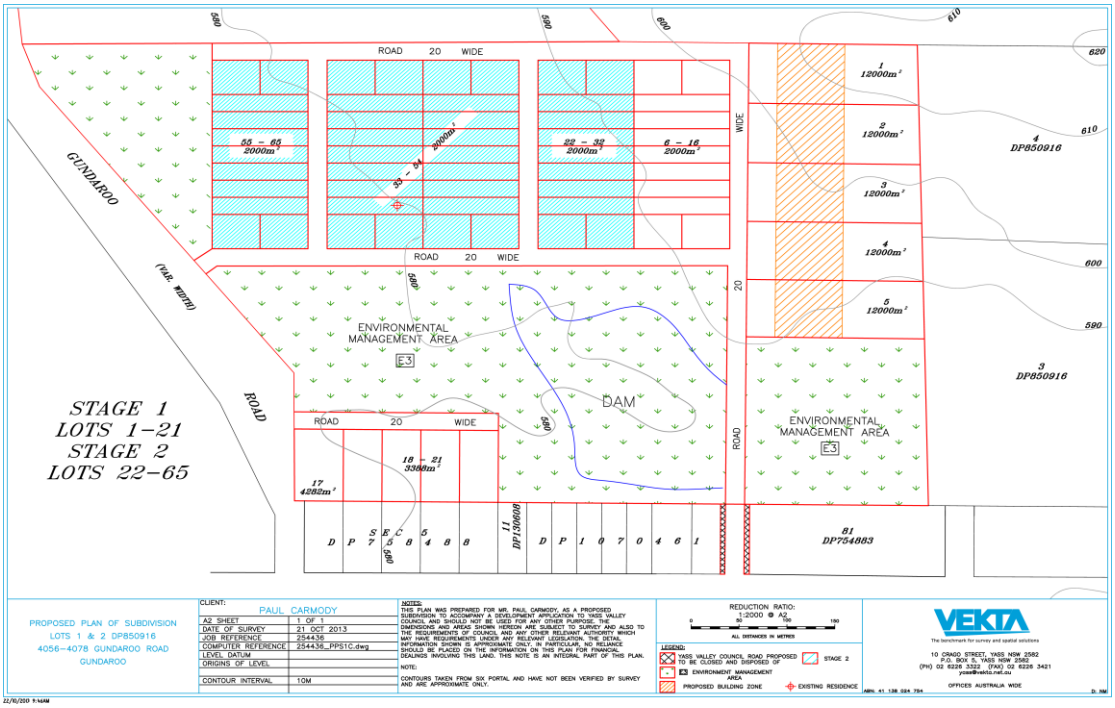

Figure 4. Plan of the proposed subdivision (Vekta 2013).

3 *HERITAGE LEGISLATION*

Aboriginal cultural heritage in New South Wales is protected by the *National Parks and Wildlife (NPW) Act 1974* (NPW Act). Land managers are required to consider the effects of their activities or proposed development on the environment under several pieces of legislation, principally the *Environmental Planning & Assessment Act 1979* (EP&A Act) and the *Heritage Act 1977* (the Heritage Act). Cultural heritage, which includes indigenous heritage, is included within the definition of "environment". In certain circumstances Commonwealth legislation protecting indigenous heritage may also apply to indigenous heritage places in NSW.

Presently, the study area is not heritage listed under Commonwealth, State or Local entities. A brief outline of the relevant legislation is provided below.

NATIONAL PARKS AND WILDLIFE ACT 1974 (NSW)

All Aboriginal objects within the state of New South Wales are protected under Part 6 – Aboriginal objects and Aboriginal Places – of the *National Parks and Wildlife Act 1974*.

The Act defines an "Aboriginal Object" as any deposit, object or material evidence (not being a handicraft made for sale) relating to the Aboriginal habitation of the area that comprises New South Wales, being habitation before or concurrent with (or

both) the occupation of that area by persons of non-Aboriginal extraction, and includes Aboriginal remains.

Sites of traditional significance that do not necessarily contain archaeological materials may be gazetted as "Aboriginal places" and are protected under Section 84 of the *National Parks and Wildlife Act 1974*. This protection applies to all sites, regardless of their significance or land tenure. Under Section 86 and Section 90, a person who, without first obtaining the consent of the Director-General, knowingly destroys, defaces or damages, or knowingly causes or permits the destruction or defacement of or damage to, an Aboriginal object or Aboriginal place is guilty of an offence.

The National Parks and Wildlife Act is administered by the NSW OEH (Office of Environment and Heritage), with the Director-General of that department the consent authority. All due diligence heritage assessments are to be undertaken in accordance with the appropriate OEH requirements set out in:

- *Due Diligence Code of Practice for the Protection of Aboriginal Objects in New South Wales*

Other similar and relevant legislation for investigating Aboriginal cultural heritage in NEW can be viewed in:

- *the Code of practice for Archaeological investigations of Aboriginal Objects in New South Wales;*
- *Guide to Investigating, Assessing and Reporting on Aboriginal Cultural heritage in NSW;*
- *Aboriginal cultural heritage consultation requirements for proponents 2010;*
- *the Guidelines to Aboriginal Heritage Impact Assessment 2005*.
- *the Heritage Branch NSW's Assessing Significance for Historical Archaeological Sites and 'Relics', 2009*;
- *NSW Heritage Manual 1996 and specific Heritage Office guidelines; and*
- *the Burra Charter.*

HERITAGE ACT 1977 (NSW)

The *Heritage Act 1977* is administered by the OEH and aims to protect the natural and cultural heritage of NSW with emphasis on non-indigenous cultural heritage through protection provisions and the establishment of a Heritage Council.

The *Heritage Act 1977* provides blanket protection for surface and sub-surface relics and for heritage items of state significance listed on the State Heritage Register. The Act defers to local planning instruments under the *Environmental Planning & Assessment Act* 1979 for the protection of items of local significance ('items of the environmental heritage").

While Aboriginal heritage sites and objects are primarily protected by the *NPW Act 1974*, if an Aboriginal site, object or place is listed on the State Heritage Register or is

of great significance it can be protected by an interim heritage order issued by the Minister on the advice of the Heritage Council.

ENVIRONMENTAL PLANNING AND ASSESSMENT ACT 1979 (NSW)

The *Environmental Planning and Assessment Act 1979* (EP&A Act) is administered by the NSW Department of Planning and Infrastructure. This Act requires that environmental impacts are considered in a land-use and development planning approval process, including impacts on indigenous and non-indigenous heritage. In the framework of Aboriginal heritage, the Act identifies permissible land use and development constraints.

The NSW NPW provides guidelines for Aboriginal heritage assessment, including those conducted under the *EP&A Act* 1979. However, where Aboriginal heritage assessments are conducted under the Integrated Development Approval process, a more detailed set of NPW guidelines applies.

ABORIGINAL AND TORRES STRAIT ISLANDER HERITAGE PROTECTION ACT 1984 (COMMONWEALTH)

The *Aboriginal and Torres Strait Islander Heritage Protection Act 1984* protects areas and/or objects which are of significance to Aboriginal people and which are under threat of destruction. The Act can, in certain circumstances override state and territory provisions, or it can be implemented in circumstances where state or territory provisions are lacking or are not enforced. A significant area or object is defined as one that is of particular importance to Aboriginal people according to Aboriginal tradition. The Act must be invoked by or on behalf of an Aboriginal or Torres Strait Islander or organisation.

DUE DILIGENCE CODE OF PRACTICE

As this heritage assessment is to be carried out in accordance with the OEH's *Due Diligence Code of Practice for the Protection of Aboriginal Objects in New South Wales (2010),* a basic understanding of the code requirements should be outlined.

The Code states that individuals and organisations are required to undertake reasonable and practicable steps in order to:

- Identify whether Aboriginal objects are, or are likely to be present, in the area.
- Determine whether their activities are likely to harm Aboriginal objects (if present).
- Determine whether an AHIP application is required.

A person who exercises due diligence in determining that their actions will not harm Aboriginal objects has a defence against prosecution for the strict liability offence if they later unknowingly harm an object without an AHIP.

The code sets out a series of assessments to identify the potential impact of an activity on Aboriginal cultural heritage and for deciding whether an AHIP is required for a development.

The proponent must:

- Determine whether the proposed activity is likely to disturb the ground surface or a culturally modified tree.
- Conduct a search of the OEH AHIMS database to ascertain whether Aboriginal objects have been recorded in the area of the proposed development.
- Undertake a landscape analysis to assess the archaeological sensitivity of the proposed development area.
- If Aboriginal objects are deemed likely to occur within an area of developmental impact and the land has not been previously disturbed, effort must be made to avoid harm to Aboriginal object/s or landscape features by moving the boundaries of the proposed activity.
- If activity boundaries cannot be moved, then a heritage based desktop assessment and visual land inspection must be conducted to determine the presence or absence of Aboriginal cultural heritage and the necessity for an AHIP application.
- If it has been determined that harm is likely to occur to Aboriginal cultural heritage, a detailed archaeological investigation and impact assessment must be carried out in accordance with the *Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales* (OEH 2010) and an application be made for an AHIP.

4 POTENTIAL ITEMS OF ARCHAEOLOGICAL INTEREST

ABORIGINAL SITES

A summary of the Aboriginal site types that may be located within the study area for this project is provided in *Table 1*. These artefact types are the material items (located on the grounds surface and revealed in areas of archaeological potential) that are capable of identifying Aboriginal occupation of an area.

Table 1 A summary of the site types that may be located within the study area for this project (from Parks and Wildlife Group Site Type Definitions).

Site types	Definition
Stone artefact scatters	Stone artefact scatter sites, also known as open campsites, are usually indicated by surface scatters of stone artefacts and sometimes fire blackened stones and charcoal. Where such sites are buried by sediment they may not be noticeable unless exposed by erosion or disturbed by modern activities. The term campsite is used as a convenient label which, in the case of open sites, does not necessarily imply that Aboriginal people actually camped on the sites; rather it indicates only that some type of activity was carried out there.

Site types	Definition
Isolated finds	Sites consisting of only one identified stone artefact, isolated from any other artefacts or archaeological evidence. They are generally indicative of sporadic past Aboriginal use of an area.
Grinding grooves	Grooves resulting from the grinding of stone axes or other implements are found on flat areas of suitable sandstone. They are often located near waterholes or creek beds as water is necessary in the sharpening process. In areas where suitable outcrops of rock were not available, transportable pieces of sandstone were used.
Quarries	These are areas where stone was obtained for flaked artefacts or ground-edge artefacts, or where ochre was obtained for rock paintings, body decoration or decorating wooden artefacts.
Art sites	Rock engravings, carvings or peckings are found on sandstone surfaces both in the open and in shelters. These are referred to as rock engraving sites.
Scarred trees	Scarred trees bear the marks of bark and wood removal for utilisation as canoes, shields, boomerangs or containers. It is commonly very difficult to confidently distinguish between Aboriginal scars and natural scars or those made by Europeans.
Burial sites	Burials may be of isolated individuals, or they may form complex burial grounds.
Stone arrangements, carved trees and ceremonial grounds	These site types are often interrelated. Stone arrangements range from simple cairns or piles of rocks to more elaborate arrangements; patterns of stone laid out to form circles and other designs, or standing slabs of rock held upright by stones around the base. Carved trees are trees with intricate geometric or linear patterns or representations of animals carved into their trunks. Ceremonial grounds and graves were often marked by such trees. Bora grounds are a common type of ceremonial site and they are generally associated with initiation ceremonies. They comprise two circles, generally edged with low banks of earth but sometimes of stone, a short distance apart and connected by a path.

POTENTIAL ARCHAEOLOGICAL DEPOSITS

An area of Potential Archaeological Deposit (a PAD), is defined by Parks (2010: 5) as any location where the potential for sub-surface archaeological material is considered to be medium or high, relative to the surrounding landscape. The potential for sub-surface material to be present is assessed using a criteria developed from the results of previous surveys and excavations relevant to the region. The boundaries of PADs are generally defined by the extent of particular micro-landforms known to have high correlations with archaeological material. A PAD may or may not be associated with surface artefacts.

HISTORICAL SITES

Historical archaeology in Australia relates to a study of the period after initial contact between Aboriginal and European people. Historical archaeology has the benefit of using the physical remains of human activities in conjunction with historical documents. As with Aboriginal sites, the physical remains may be above or below ground and may be any item, landform or feature that was formed by human action at or after the 'contact' period. Historical remains are particularly useful for conducting comparisons between sites and identifying local, regional and sometimes national and international patterns of behaviour. The historical site types that may be located within the study area for this project are (but not limited to):

- intact or ruined buildings, building foundations or building fabrics;
- board landform features that suggest 'post-contact' human occupation such as dug pits or mounds, transport infrastructure, plantings, and evidence of animal or land husbandry; and
- occupational domestic and industrial tools and refuse deposits.

Note: During the archaeological field inspection of the study area, no historical sites or features were identified.

HISTORICAL HERITAGE SEARCHES

The background investigation included a search of the NSW Heritage Branch, Department of Planning, State Heritage Register (SHR) and Inventory (SHI), the Register of the National Estate (RNE) and the National Trust Register.

It was found that no previously recorded historical heritage sites/items are located within the study area.

5 HISTORICAL OVERVIEW

The name Gundaroo is most likely aboriginal in origin coming from the Aboriginal name for the Yass River which is believed to have been 'Gondoroo' (http://gundaroo.info/gundaroo/history1.html). The following section contains a historical (non-Aboriginal) summary of the history of the study area and surrounding Gundaroo region.

The first documented case of Europeans visiting the Gundaroo area is from the explorer Charles Throsby who, in 1820, was in search of the Murrumbidgee River (http://gungahlin.net/history.html). Whilst exploring from Lake George to the Murrumbidgee River, Throsby would have travelled through the Gundaroo area and probably walked very close to the proposed subdivision land of this report.

Written histories and Government records suggest the general region surrounding the study area has been used predominantly for agricultural purposes since the mid-1800s. Probably as a result of more intensive farming regimes from the early 1830s (that intensified the sale of smaller block sizes), the study area is recorded as being purchased from the Crown by Tom Campbell as a 1200 acre lot. During this period, the study area became cleared of its natural vegetation to make way for the development of pasture land (Griffin Associates Environment 2011). Tom Campbell is likely a relative of Robert Campbell, an early European settler to the Canberra district, who, by approximately 1824, owned approximately 32,000 acres in Canberra's Duntroon region. The smaller scale landowners such as Tom Campbell would have been farmers taking advantage of affordable lands made available by the Government during the lead up to the passing of the Robertson Land Acts in 1860. The study areas most likely use during this period (the 1830 to 1900s), would have been crop growing and sheep farming. By the 1890s, most land in the areas surrounding Gundaroo had been granted or sold in small blocks of between 20 to 100 acres to European settlers.

Over 180 years later, European farming practices such as tree clearing, ploughing and growing of improved pasture crops (such as oat, lucerne and ryegrass) has resulted in very little remnant flora of native forest, woodland or natural grassland existing within the study area (besides two remnant Eucalypt trees in the north east portion of the study area) (Griffin Associates Environment 2011). Since European occupation of the region, the study area has been used predominantly for agricultural purposes. The study area is currently used for pastoral crop growing purposes.

6 ABORIGINAL OVERVIEW

Archaeological evidence suggests that Aboriginal people had occupied all of Australia's environmental zones by 31,000 years before present (BP) (Flood 1995: 286). Ethnographic information relating to the Aboriginal occupation of the study area has been obtained predominantly from historical documentation written by early European explorers, settlers and government officials during the mid-to-late 18th century (Barwick 1984).

Australian Aboriginal people occupied land according to a system of spatial organisation and land occupancy (Clark 1990: 11-14). Individual groups were intimately familiar with their own geographical regions and the seasonal availability of resources within it. Tribal boundaries were often defined through linguistic associations, social relations, and spiritual links to the land. These boundaries were most likely fluid, changing position over time. This suggests that tribal boundaries recorded by European people at, or after, the point of contact can only be considered as current to that period and were probably quite different prior to European observation. To make things more ambiguous, the few European accounts of Aboriginal groups in the broad study region are limited in detail, often confused in

regard to Aboriginal group names and give varying interpretations of territorial boundaries (Flood 1980: 2).

In general, early settlers recorded very little of their observations, particularly in regard to the Aboriginal people they encountered (Flood 1980: 26). The best recorded observations come from the journals of early explorers, government surveyors and authors of travel books. By the early 1840s, Currie, Bennet, Lhotsky, Backhouse, and George August Robinson had each recorded small amounts of detail regarding Aboriginal people within the broad region surrounding the study area. By the 1850s, European settlement of the region had impacted on Aboriginal people. They had been displaced from seasonal hunting and gathering grounds, suffered from European diseases, and their traditional economy had been altered to include European commodities (Flood 1980; Butlin 1983). By the 1880s, when more serious ethnographers came into the region, the consequences of European settlement had already greatly altered the traditional Aboriginal way of life (Flood 1980: 26).

As far as can be ascertained, the Aboriginal groups living permanently in the Gundaroo region spoke different, but related languages (all most likely associated with the dominant Ngarigo language) (Cooke 1988: 33; Flood 1980: 194). Aboriginal people in the broader district are associated collectively within the Ngunawal boundaries (*Figure 5*). These people are thought to have lived in small, highly mobile, kin-based groups. Individual groups came together regularly to participate in trade, marriage and ceremonial gatherings. An early ethnographic account from Bennett (1834: 173) records their diet as including flying squirrel, kangaroo, wallaby, wombat, koala, possum, emu, duck, swan, snake, goanna, platypus, ant eggs, insects, fish, mussels, yabbies, plant tubers, berries and seeds. Their material culture, which to some degree can be ascertained through the archaeological record, is suggested by Flood (1980) to have included stone and wooden artefacts, skin clothing and temporary bark dwellings.

Figure 5. Tribal boundaries of the Canberra and wider region (after Tindale 1974).

7 *ARCHAEOLOGICAL ASSESSMENT*

This chapter provides the environmental, archaeological and historical contexts of the current activity area.

ENVIRONMENTAL BACKGROUND

The purpose of this section is to provide environmental contextual information for the study area.

Interactions between people and their surroundings are of integral importance in both the initial formation and the subsequent preservation of the archaeological record. The nature and availability of resources including water, flora, fauna and suitable raw stone materials for the manufacture of tools and other items have a significant influence over the way in which people utilise the landscape. Alterations to the natural environment also impact upon the preservation and integrity of any cultural materials that may have been deposited in a landscape, whilst current

vegetation and erosional regimes affect the visibility and ability to detect archaeological sites and relics. For these reasons, it is essential to consider the environmental context as a component of any heritage assessment.

CLIMATE

The study area is positioned in a cool temperate climate with an approximate annual rainfall of 630mm. The region is dry in summer with most of the regions precipitation falling during the winter months. Winter brings heavy frosts which frequently freeze surface water (http://www.bom.gov.au/nsw/).

GEOLOGY, LANDSCAPE AND SOILS

The base geology and landscape values are assessed as part of the construction of a landscape. The assessment considers the natural range (diversity) of geological (bedrock), geomorphological (landform) and soil features, assemblages, systems and processes present within the study area.

The study area is located within the Yass River Valley which comprises part of the Southern Tablelands. As an average, the Gundaroo area is elevated at 580 metres above sea level and is dissected by the Yass River and several smaller water courses. The actual study area ranges in elevation from 610 metres above sea level (in the upper north eastern corner) to 575 metres above sea level (in the lower south western region, where McLeods Creek exits the study area). The study area region is a broad open valley of undulating to low level hilly terrain (including some peaks and crests), large floodplain and terrace ground formed through alluvial valley soil deposits from the Yass River (Coventry and Walker 1977). The underlying geology is of Late Ordovician Pittman Formation sediments (488.3 million years ago to 443.7 million years ago) that comprise sandstone, siltstone and shale. This valley setting is in contrast to the wider surrounding regions which are predominantly rolling or hilly Ordovician period shale and slate country with medium to thin soil deposits. The study areas overall terrain is sloping, with flat to gently sloping areas on the alluvial terraces.

Soils across the study area vary according to topography and include thin, gravel based lithosols (soil consisting chiefly of unweathered or partly weathered shale fragments,) in the elevated regions, and podzols (rich loam) in the lower more gently sloping terrain. Some areas of deeper, loose alluvial soil and silt (reddish to orange in colour) terraces occur adjacent to the margins and flood zones of McLeods Creek. On the upper hill slopes the soil depths are around 200mm, grading to light clay subsoil. In the lower laying regions soil depth is typically 600 to 800mm before grading to a rock base (Fogarty 2011). Arbitrary surface scatters of quartz and shales are common in the region. Quartz geological rock type has the potential to provide raw materials suitable for stone artefact manufacture. In the lower stratigraphic layers of the study

area the soils merge with clays that overlay the bedrock http://mapdata.environment.nsw.gov.au/DDWA/.

HYDROLOGY

Besides the presence of one man made dam within the study area, water resources are dominated by a medium gradient drainage feature – McLeods Creek. McLeods Creek exists in the central southern portion of the study area and drains surface water in a general westerly direction to the Yass River. McLeods Creek drainage line would contain fast flowing water after precipitation and would hold permanent water in localised areas throughout the year. One marshy wetland region exists within the study area. This marsh is at the junction of McLeods creek and a second tributary line in the south eastern portion of the study area, above the dam.

FAUNA AND FLORA

The study area's habitat supports a range of fauna species which broadly include birds, mammals, reptiles and invertebrates. Information regarding rare and threatened fauna recorded or potentially occurring within the study area was obtained from the Yass Valley Towns and Villages Study (2010) and http://www.cma.nsw.gov.au/. In the nearby vicinity to the study area the Golden sun moth, Superb parrot, Key's matchstick grasshopper, Striped legless lizard and Southern lined earless dragon have been recorded. However, a 2011 study by Griffin Associates Environmental suggests that no natural grassland species exist within the study area that is capable of supporting these faunal species.

The pre-European vegetation of the study area is most likely to have been woodlands with some interspersed native grasslands. Since European settlement, surface ground layers and the associated flora within the study area have been substantially altered. Scattered species of Eucalypt trees remain within the study area, but various varieties of native and introduced grasslands dominate. Any remnant mature native Eucalypt trees within the study area have the potential to contain Aboriginal cultural scars. All mature trees with the study area were searched for Aboriginal cultural scarring with no result recorded.

OVERVIEW OF HISTORICAL DISTURBANCES

Early farming practices in the region focused heavily on the cultivation of lower lying areas (deeper alluvial soil) and animal grazing in all other areas. From the 1830s, the study area has been subjected to hard hoof animal grazing (predominantly sheep). Over the next 180 years (after 1830) most of the study area has been ploughed and used for pasture cropping. Associated with the European use of the study are other ground disturbing activities. For example, tree clearing (the area has been mostly cleared of native vegetation, with only two mature Eucalypt remaining), tree

planting, road construction and use, dam building, house construction and fencing activities.

These historical uses have impacted on most sections of the study area's surface and sub-surface ground layers, and in turn the potential integrity of Aboriginal sites. As such, the areas where significant impacts have occurred hold a moderate Aboriginal archaeological potential. The impacts of ploughing would have only disturbed the upper 250 millimetres of soil horizons (i.e. 250 millimetres is the maximum plough depth). Therefore, deeper soil deposits may retain *in situ* Aboriginal archaeological sites. For this reason, the plough zone is considered as an area of significant disturbance, however, any artefacts existing below the top 250 millimetres of a plough zone should be considered as *in situ* and potentially of high archaeological significance. The identified patterns of land use have implications for the management recommendations associated with the need to either conserve or conduct sub-surface archaeological investigations within any areas of PAD identified during the archaeological field survey.

IMPLICATIONS FOR LOCAL ABORIGINAL HERITAGE

The location of the study area is within a wider region of undulating plains and low level hills. Within this setting, there are several landscape elements that would have provided suitable locations for Aboriginal subsistence activities such as camping, food gathering and tool making. For example, approximately 450 metres west of the study area is a major water course – the Yass River. In addition, McLeods Creek (a third order stream [using the Strahler stream order system (Speight 1990)] associated with a marsh area) runs through the southern section of the study area. Each of these water courses would have provided local native flora and attracted local native fauna in to the region, which would have been gathered and hunted by Aboriginal people. Random scatters of quartz (a traditional stone manufacturing material) are also evident within the study area. Eucalypt trees would have also been easily accessible for bark and wood removal to produce items such as canoes, shelter material, shields, boomerangs or containers. These subsistence resources and the slightly elevated regions above McLeods Creek would have attracted past Aboriginal groups into the region. As a third order stream, McLeods Creek, and the small scale of the marsh area and associated landscapes would probably not have been substantial enough to attract large scale Aboriginal occupation. It is more likely the study area was used for occasional hunting, gathering and other short-term subsistence activities which would result in low rates of artefact discard.

Overall, the study area exhibits a combination of environmental elements which could have been exploited by Aboriginal groups. Soil profiles associated with the study area suggest that any sub-surface archaeological deposits would, in general, be no deeper than 200mm on the upper slopes and 800mm in low lying areas. The historical review suggests that all upper soil horizons (the top 250mm) within the study area have been heavily disturbed through past European farming practices. Aboriginal cultural heritage material may still exist within the disturbed zone, but

would not be considered as *in situ*. Aboriginal cultural heritage material may exist *in situ* below the zone of disturbed soil.

8 LOCAL ARCHAEOLOGICAL CONTEXT

This chapter provides the findings of the desktop assessment and gives a description and approximate location of known Aboriginal artefacts/objects within the broad study region.

Information and details of local Aboriginal site locations and previously produced Aboriginal heritage reports have been provided by the OEH. Such material has helped to inform the current study on matters concerning local Aboriginal site patterning. The exact site location information has been kept broad in nature as it is restricted and should not be reproduced or distributed to the general public without prior knowledge and permission of the OEH.

ABORIGINAL HERITAGE INFORMATION MANAGEMENT SYSTEM (AHIMS)

A search of the OEH AHIMS database found that no items, objects or sites of Aboriginal cultural heritage have previously been recorded within the study area (AHIMS search number 123069 dated 24 January 2014). A search incorporating a two kilometre radius of the study area reveals that five stone artefact sites have been previously recorded in this area (AHIMS search number 123070 dated 24 January 2014, from Longitude Latitude -35.0378, 149.2372 to -34.9962, 149.3033). A wider search covering a four kilometre radius of the study area shows 15 Aboriginal Archaeological sites (14 stone artefact sites and one culturally modified tree) have been previously recorded in this area (AHIMS search number 123071 dated 24 January 2014, from Longitude Latitude -35.0587, 149.2042 to -34.9753, 149.3364). A still wider search covering a 10 kilometre radius of the study area shows 28 Aboriginal Archaeological sites have been previously recorded in this area (AHIMS search number 123072 dated 24 January 2014, from Longitude Latitude -35.1004, 149.1381 to -34.9336, 149.4025).

It should be noted that the AHIMS database only documents Aboriginal sites and objects that have been reported to NSW OEH. Therefore, AHIMS is not a full indication of what sites exist within an area and unrecorded Aboriginal sites or objects may be present within a location. In addition, OEH does not guarantee that AHIMS is an accurate database record.

PREVIOUS ARCHAEOLOGICAL STUDIES

In order to evaluate the potential for Aboriginal sites to exist within the study area, consideration should be given to regional and local site patterning. This section provides a review of past research (mostly archaeological consulting reports) and an examination of locally identified sites.

Several heritage studies have been undertaken in the study region that attest to Aboriginal occupation of the broader area. Over the past twenty seven years, five heritage studies have been undertaken within close vicinity to the study area. These localised studies are: Witter (1980, 1981); Paul Packard (1986a, 1986b); and Saunders (2007). A summary of these reports is provided in *Table 1*.

Table 1: ***Summary of previous heritage studies within the study region.***

Author and Date	Distance from current study area	Findings
Witter 1980	Incorporates a very broad region that covers a lineal route for a gas pipeline from Dalton to Canberra. The pipeline passes approximately 2km west of the Gundaroo Village.	A survey was conducted covering a lineal route of 58 kilometres from Dalton (approximately 31 km north west of Gundaroo) to Canberra. In the course of the survey 11 stone artefact scatter sites were identified along with a further 32 isolated stone artefact sites. All sites were located within areas of ground erosion and were described as having poor preservation. Witter suggests that the most likely location for Aboriginal sites to occur in this region is within close proximity to water courses and marsh areas. Two sites (DC-4 and DC-5) are within 2km of the current study area, both are represented by grey silcrete flakes. DC-4 is near the top of a prominent ridge and DC-5 on the lower slope of a low level hill.
Witter 1981	This report is an account of the archaeological salvage operation that resulted from the 1980 archaeological survey. An attempted salvage was conducted on Site DC-5 (approximately 2km to the west of the current study area).	During this project surface level artefacts were collected and archaeological excavation conducted. Site DC-5 was identified as requiring an intensive surface collection program. However, on returning to the site (located on the lower slope of a range of low level hills), it was found that the small area of erosion where the artefacts were originally located had been heavily ploughed by farm machinery and the artefacts could not be relocated.
Packard (1986a)	An area was surveyed at the Ruthfield and Glencoe properties. The boarder of which is approximately 500 metres west of the current study area, along the Yass River.	The purpose of the archaeological survey was for a topsoil, sand and gravel quarry. The archaeological survey identified 4 small stone artefact sites and one isolated stone artefact. All sites were on elevated ground in close proximity to a water course. The stone artefact materials consisted of quartz and grey silcrete. Four test excavations were conducted within a sand deposit associated with the Yass River. From these excavations 103 stone artefacts were located (75.5% silcrete, 18.5% quartz and 6% other). All

Author and Date	Distance from current study area	Findings
		artefacts came from between 50mm and 450mm below surface level, with the majority coming from between 100mm to 300mmm below surface level.
Packard (1986b)	Archaeologically surveyed a section of land approximately 4 kilometres south of the study area (along the Yass River and Brooks Creek).	This project involved an archaeological survey for Aboriginal cultural heritage material. The land surveyed was under proposal for development as a sand quarry. No archaeological sites were identified during the survey and no archaeological constraints were placed on the development proceeding.
Saunders 2007	The study area for this project comprises 83 hectares of land on both sides of the Yass River, approximately 2.5 kilometres north west of the Gundaroo Village.	Saunder's survey was for the purpose of a proposed subdivision of land and recorded two previously unidentified Aboriginal archaeological sites (each consisting of grey silcrete artefacts). Saunders suggests that for her study area, gently sloping ground within 100m of a water course has the most potential to hold Aboriginal cultural material.

ARCHAEOLOGICAL POTENTIAL OF THE STUDY AREA

A number of subsistence food resources would have been available to past Aboriginal groups within the study area. Associated with the lower lying areas (which contains the marsh area), would have been a range of aquatic animals (frogs, yabbies and a range of bird species) and flora (aquatic plant tubers and berries). Native dry land grasses would have provided seeds. A range of native fauna would also have been attracted to water and been hunted there by Aboriginal people.

The results of the documentary review show that most Aboriginal sites with the region occur along the margins of the Yass River, its tributaries or on and around low rises and flatter regions, usually within close proximity to water courses. It is noted that the pattern of recorded sites is dictated by the location of previous archaeological survey work, however several other observations can be made:

- Aboriginal sites do not necessarily appear within close proximity to a permanent water source;
- most sites within the study region are positioned along water course margins. However, sites may also be located on elevated flat or slightly undulating landforms;
- some sites occur on the crest or immediate slopes of low level rises;

- small tributaries (minor ephemeral water courses) with associated marshy areas are likely to be associated with Aboriginal archaeological sites; and

- all registered sites are related to stone artefacts and are composed predominantly of quartz and grey silcrete materials.

Much of the material used by Aboriginal people to produce subsistence equipment (such as wood, bone, shell and fibre material) are highly perishable and do not often survive in the archaeological record. Material culture that has survived, often found in locations where Aboriginal people camped, are generally stone artefacts and scarred trees (as previously noted, mature trees within the study area were search for cultural scar with no result). Therefore, quartz and grey silcrete stone artefacts are the most likely artefact types to be located within the study area. Aboriginal archaeological sites within the study area are likely to have been impacted upon (disturbed) due to past European farming practices (such as tree clearing and ploughing), underground irrigation lines, vegetation planting, the development of transport infrastructure (such as dirt roads), house construction, and dam building.

9 FIELD ASSESSMENT

ABORIGINAL CONSULTATION

As the *Due Diligence Code of Practice for the Protection of Aboriginal Objects in New South Wales (OEH 2010)* states that "Consultation with the Aboriginal community is not a formal requirement of the due diligence process", Aboriginal community consultation for this project has not been undertaken.

SURVEY METHODOLOGY

This Due Diligence assessment involved a site investigation. Based upon the background research, known Aboriginal site patterning, existing ground disturbances across the study area and consultation with the land owner, it was decided that the field survey should encompass a pedestrian survey methodology. The field based site assessment was undertaken on 03/02/2014 by Alister Bowen (BHM Archaeologist).

The field survey aimed to inspect the whole study area, particularly where ground surface visibility existed and any areas deemed to hold archaeological potential. The methodology involved pedestrian transects across the entire study area, with a particular focus on any exposed areas of ground, mature eucalypt trees, slightly raised flat regions, low gradient slopes, and the elevated ground in the north eastern portion of the study area, particularly sections close to and overlooking McLeods Creek. Prior to entering the field, a survey route was devised based upon current aerial photography (showing existing ground exposures and areas of disturbance i.e.

creeks, tracks, and dams) and terrain modelling from Google Earth. All survey transects and items of interest were recorded on a topographic map of the study area (using a GPS and GDA 94 coordinates), along with levels of visibility, erosion, soil conditions, evidence of disturbance and the extent of any PAD areas.

Traverses were conducted across the study area (navigating approximately east west transect lines). Ideal transect lines were set, however, to obtain access to particular areas of interest, routes were often random. Where larger areas of ground exposure were encountered, an intensive search was conducted with the survey transects spaced two metres apart – paying particular attention to areas displaying ground exposure (*Figure 6*). This follows the methodology set out in Burke and Smith (2004: 65) which states that a single person can effectively visually survey an area of two linear metres. In areas where limited ground exposure existed, an assessment of archaeological potential was undertaken. In some areas of thick ground cover the surveyor transects were spaced appropriately to capture areas of exposed ground. Areas of ground exposure were sporadic, with ground visibility recorded at between 0% and 35%. Weather on the day of the site survey was fine and sunny, with a very slight breeze from the southwest. The survey was completed within six hours.

Figure 6 Showing four typical areas of ground exposure within the study area.

GAPS ANALYSIS

Grasses, weed growth, tussocks, and bush debris obscured ground surface visibility in several places within the study area. Ground visibility (though exposed patched) was consistently low across the entire study area, varying between 0% and 35% (except for animal and vehicle tracks and areas of erosion). This limited the

effectiveness of identifying surface (or sub-surface) archaeological features within the study area.

SURVEY RESULTS

In order to provide an understanding of the landforms encountered and the ground surface condition, a summary of several of the survey transects is provided in *Table* 2.

Table 2: ***Example of survey transects, distance and notes.***

Transect	Landform	Length in metres	Field notes
1	Upper slope, mid-slope, lower plain.	872	Good views across the region, animal tracks, road, ripper line for tree planting, erosion exposures provided some ground visibility, definite ploughing of ground.
2	Basal slope, creek line; upper plain in undulating terrain.	549	Mounded soil (swale), definite ploughing of ground, little in the way of large ground exposures. Large areas of ground disturbance and underground irrigation, several areas of small ground exposure.
3	Mid-slope, in undulating terrain; low level hill crest, large dam.	654	Road visible, ground disturbance from ploughing, tree planting activities. Large dam, good ground visibility at gate, dam wall and vegetation planting areas.
4	Lower-plain, mid-slope, upper-slope; hill crest.	503	Along the eastern fence line, some boggy ground encountered with thick grass cover and marsh rushes.
5	Hill crest, mid-slope, hill crest, creek line, and valley.	416	Gum trees just below crest, good views of surrounding region and across marsh, underground irrigation lines.
6	Upper slope, hill crest, Mid-slope.	341	Steep ground close to McLeods Creek. Ground slopes towards the creek and dam, animal tracks and area of erosion exposures.

Visibility refers to the amount of ground upon which artefacts could be seen. The presence of vegetation, leaf litter and other variables can obscure visibility, which is expressed as a percentage (NPWS 1997: 18). An exposure is defined as an area in which ground surface disturbance (usually in the form of erosion) results in the removal of soils and permits the detection of archaeological material that was formerly contained within a subsurface context. The level of exposure is determined as a percentage (NPWS 1997:18).

The majority of the study area was covered by exotic grass species and weed. However, several animal and vehicle tracks, areas of disturbance and natural erosion afforded some level of ground visibility across the study area (see *Table 3*). Upper slopes and crests had a much thinner grass covering (due to the actions of wind and rain erosion) and could be more accurately surveyed.

The survey targeted locations with good ground exposure and moved quickly over areas where grass cover prohibited a visual observation of surface ground soils.

Table 3: ***Survey visibility and exposures for the various landforms.***

	Landform	Visibility	Exposure
1	Sloping/Undulating land	15%	5%
2	Basal Slope	10%	5%
3	Mid Slope	15%	15%
4	Upper Slope	20%	12%
5	Hill Crests	10%	12%
6	Valleys and Creeks	35%	35%

No historical archaeological sites were identified during the survey of the study area.

No Aboriginal cultural heritage sites were identified during the survey of the study area.

Three areas of PAD were identified in zones of moderate archaeological sensitivity (*Figure 7 & 8*). Due to grass cover over these three areas, a complete assessment of their Aboriginal heritage values could not be adequately conducted.

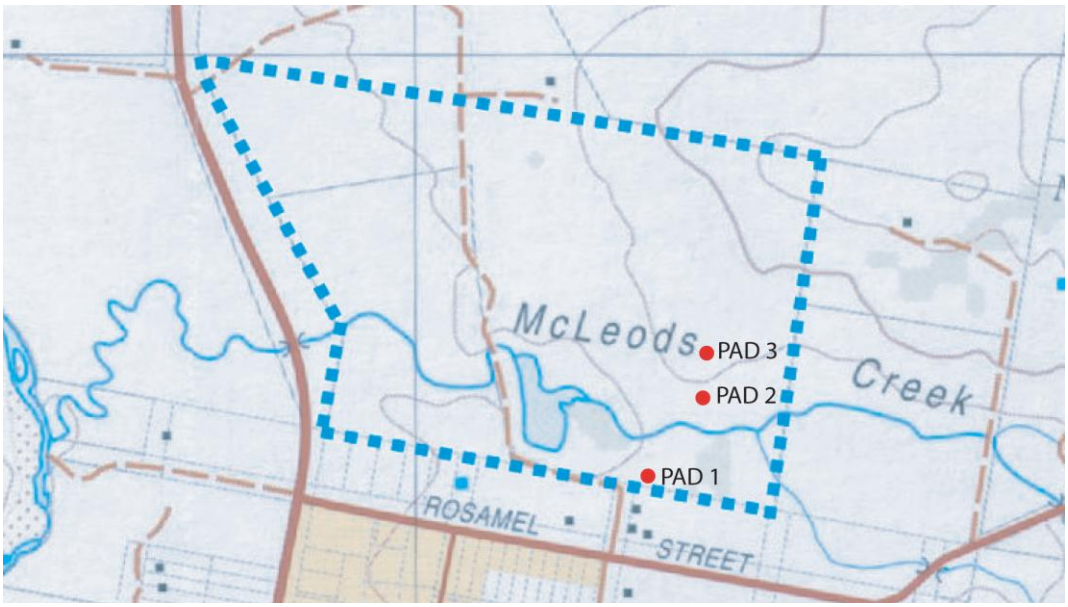

Figure 7 The locations of PADs 1, 2 and 3 recorded within the study area. Study area is indicated by dotted line.

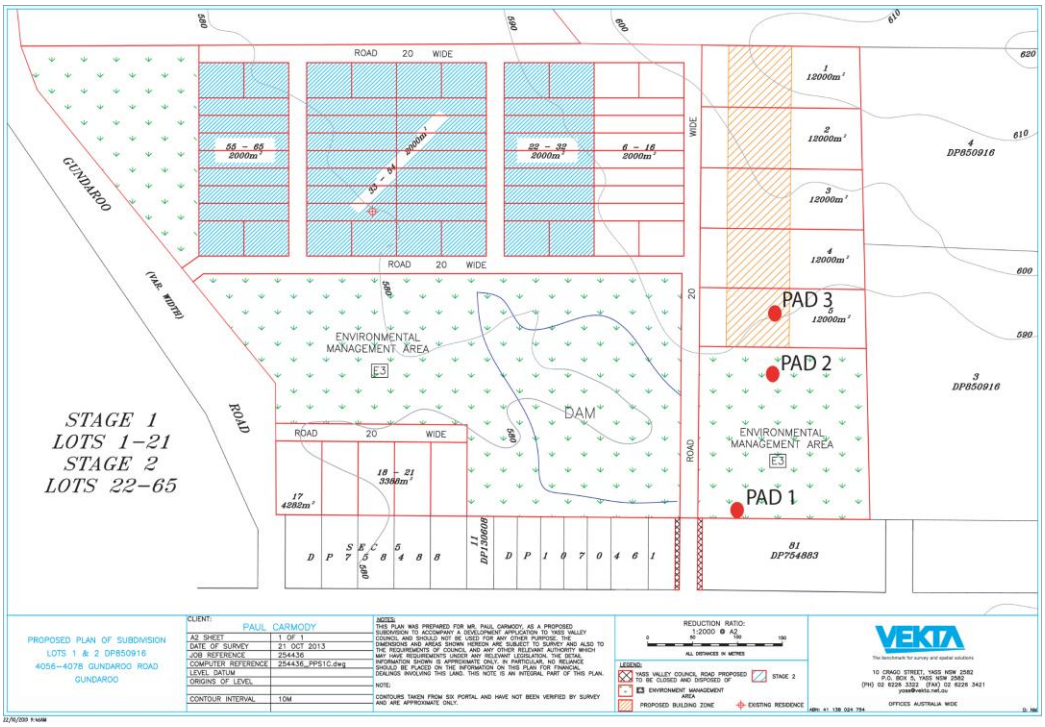

Figure 8 The location of PADs 1, 2 and 3 relative to the proposed areas of subdivision development.

PAD 1 – Covers and area of approximately 14m by 12m on a small crest immediately south of the study area's marsh. This PAD is wholly within the Environmental Management Area and will not be subject to ground disturbing elements of the proposed development. Its grid reference location is 0707386E 6122328N (Lake George 8727-1N, 1:25,000, 2nd edition, 2002. GDA 94) (*Figure 7 & 8 & 9*).

Figure 9 Looking east across the PAD 1 area (within Environmental zone). The marsh can be seen to the left of the PAD area.

PAD 2 – Covers and area of approximately 8m by 8m on a small flat rounded knoll overlooking and north of the marsh. This PAD appears to be within the Environmental Management Area. If this is the case, then it will also not be subject to ground disturbing elements of the proposed development. If this PAD area falls within the proposed area of development and ground disturbing activities are to be conducted in this location, then sub-surface archaeological investigations are to be carried out before ground disturbance takes place. Its grid reference location is 0707426E 6122482N (Lake George 8727-1N, 1:25,000, 2nd edition, 2002. GDA 94) (*Figure 7 & 8 & 10*).

Figure 10 Looking south east across the PAD 2 area. The marsh can be seen in the background.

PAD 3 - Covers and area of approximately 25m by 22m on a flat rounded mound overlooking and north of the marsh (directly above PAD 2). Its grid reference location is 0707440E 6122558N (Lake George 8727-1N, 1:25,000, 2nd edition, 2002. GDA 94) (*Figure 7 & 8 & 11*).

Figure 11 Looking east across the PAD 3 area.

The management and mitigation measures developed below are to be carried out if ground disturbing activities are to be conducted within 20 metres of any of the three identified PAD areas.

10 RECOMMENDATIONS AND MANAGEMENT AND MITIGATION

This section relates to the recommendations that have been made in light of the findings from the background research, the archaeological field assessment, the type of development proposed, and the relevant NSW legislation protecting Aboriginal heritage.

A total of three PAD areas have potential to be impacted upon by the proposed land development. Avoidance of archaeological sites and PAD areas represents the best heritage outcome as it means no impact on the identified heritage features.

If avoidance cannot be used as a strategy, then further heritage assessment will be required in the form of archaeological sub-surface test excavation within the PAD areas to be impacted. The aim of the sub-surface testing program is to ascertain an indication of the Aboriginal cultural heritage significance of these areas, to better understand the potential site characteristics, and to develop an appropriate site management strategy – if required. Any archaeological test excavation procedures must be conducted in accordance with Requirements 15 and 16 of the *Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales (2010).*

Based on the results of the present survey and previous regional archaeological knowledge, any as yet unidentified archaeological sites within the study area will most likely consist of low density stone artefact scatters of quartz and grey silcrete. Therefore, the potential Aboriginal cultural heritage contained within the identified PADs is unlikely to pose an absolute constraint to development.

Archaeological constraints are only relevant for the identified PADs areas 1, 2 and 3 within the study area. No archaeological constraints have been imposed for the remainder of the study area. As Aboriginal cultural heritage material has not been identified within the study area, an AHIP is, at this stage, not required for the proposed development.

Should any previously unrecorded Aboriginal or historical period heritage sites or objects be uncovered during the course of proposed development, then work in the vicinity of the item should cease and the site be reported to OEH in order to determine the appropriate course of action.

SUB-SURFACE SAMPLING STRATEGY

If archaeological test pitting goes ahead, it is recommended that a minimum of two transect lines be set out across the PAD area defined as holding moderate archaeological potential. Test pits 1 metre by 1 metre in size should then be hand excavated at appropriate intervals along each transect line. A minimum of four test pits should be excavated along each transect line. Smaller 0.5 metre by 0.5 metre test pits may be excavated to define an identified archaeological site boundary. It is also recommended that up to four 0.5 metre by 0.5 metre test pits be excavated randomly with the study area at the discretion of the excavation team – undertaken to capture archaeological samples of specific landforms within the study area.

This technique will ensure that the landforms identified as potentially holding archaeological deposits are adequately tested as part of the sub-surface investigation program. To obtain an appropriate sample of the identified PAD areas the proposed testing strategy should excavate a minimum of eight, 1 metre by 1 metre test pits along 2 transect lines, as well as the random pits.

It is recommended that copies of this report be provided to the Yass Valley Council and the OEH Queanbeyan Branch for their records and to support any forthcoming permit applications.

11 UNEXPECTED DISCOVERIES PROTOCOL

This section represents a contingency plan to manage any unexpected Aboriginal Cultural Heritage issues that may be encountered during the construction phase at the Study Area. This contingency plan should be kept on site during the construction works. The plan provides guidance to construction workers so that they may meet

their obligations with respect to heritage in accordance with the various OEH 2010 guidelines.

CONTINGENCY FOR THE DISCOVERY OF ABORIGINAL CULTURAL HERITAGE

There is a low potential for previously unknown Aboriginal cultural heritage to be discovered during the proposed activity. The potential for any previously unknown Aboriginal cultural heritage to be uncovered is most likely limited to isolated stone artefacts and low to medium density stone artefact scatters. Such sites are generally of low archaeological significance and if handled correctly, should pose minimal disruption to construction activities.

A person who discovers or suspects they have discovered Aboriginal cultural material during construction activities within the study area covered by this due diligence assessment (see *Figure 1 & 2*) should immediately notify the person in charge of the activity. The person in charge of the activity should then suspend any ground disturbing works at the location of the discovery and within 25 metres of the extent of the suspected site.

The person in charge of the activity must then contact a Cultural Heritage Advisor within two days who shall notify the OEH Queanbeyan Branch (on 62297188) within a period of three working days. The Cultural Heritage Advisor, after consultation with the appropriate RAO group, will be able to evaluate the Aboriginal cultural material to determine if it represents part of a known site or is a new site. A Cultural Heritage Advisor will then be engaged to update and/or complete site records and advise on possible management strategies.

Within a period of three working days a decision/recommendation will be made by the Cultural Heritage Advisor, in consultation with the RAO representative, regarding the process to be followed to manage the cultural material, and how to proceed with the works. These recommendations should be submitted to the OEH Queanbeyan Branch for review and endorsement.

In instances where salvage of discovered Aboriginal cultural heritage is required, decisions about how to proceed with salvage excavation must be made on a case-by-case basis by the Cultural Heritage Advisor, in consultation with the RAOs and the OEH Queanbeyan Branch.

The methodology of any salvage excavation must be appropriate to the site type(s) discovered and the nature, extent and significance of the site(s). Any salvage excavation undertaken following the unexpected discovery of Aboriginal cultural heritage should abide by the regulations set out in the *Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales (2010)* and be undertaken in accordance with appropriate archaeological procedure.

Construction work may recommence within the area of exclusion:

- when the appropriate protective measures have been taken;
- where the relevant Aboriginal cultural heritage recording forms have been completed;
- where all parties agree there is no other prudent or feasible course of action; and
- once any relevant dispute has been resolved.

The Cultural Heritage Advisor and the RAO representatives should ensure that the above steps are followed and that legal obligations and requirements are complied with at all times.

It should be noted that any Cultural Heritage Advisor engaged to investigate any Aboriginal cultural heritage should retain custody of Aboriginal cultural heritage for a period of up to three months for analysis. If a longer period is required for analysis, then the Cultural Heritage Advisor should inform the RAOs and make appropriate arrangements. Aboriginal material should then be individually bagged and labelled with reference to provenance, and be handed to the OEH Queanbeyan Branch or RAO representatives together with copies of the catalogue, assessment documentation, management plan and results of the analysis.

CONTINGENCY FOR THE DISCOVERY OF HISTORICAL CULTURAL HERITAGE

There is a low potential for previously unknown historical cultural heritage to be discovered during the proposed activity. The potential for any previously unknown historical cultural heritage to be uncovered is most likely limited to the underground remains (footings or post remains) of a domestic dwelling and associated artefacts.

If items of an historical nature are uncovered during the construction phase of the Study Area the following procedures must be followed:

- During construction activities, a person who discovers or suspects they have discovered cultural material of an historical nature should immediately notify the person in charge of the activity. The person in charge of the activity should then suspend any ground disturbing works at the location of the discovery and within 25 metres of the extent of the suspected site.
- The person in charge of the activity must then contact the OEH Queanbeyan Branch of the discovery (on 62297188).
- A Cultural Heritage Advisor should be employed to survey the site remains and evaluate their significance.
- If the items are considered to be historically significant the Cultural heritage Advisor should produce a written management procedure for the site and have it approved by the OEH Queanbeyan Branch.

- On completion of the management recommendations, the Study Area developments may continue.

CONTINGENCY FOR THE DISCOVERY OF HUMAN REMAINS

If any suspected human remains are discovered during the construction activity works, all activity in the vicinity must cease immediately. The remains must not be touched and should be left in place and protected from harm or damage. The NSW Police and the NSW Coroner's Office must be notified immediately. If there are reasonable grounds to believe the remains could be Aboriginal, the OEH Queanbeyan Branch should also be notified.

The following five step contingency plan describes the actions which should be taken in instances where human remains or suspected human remains are discovered. Any such discovery within the study area must follow these steps.

1. Discovery:

- if suspected human remains are discovered all activity in the vicinity must stop to ensure minimal damage is caused to the remains;
- the remains must be left in place, and protected from harm or damage; and
- a buffer zone of 50 metres should be established and remain in place around the suspected skeletal remains until they have been assessed.

2. Notification:

- once suspected human skeletal remain have been found, the NSW Coroner's Office (02 85847777) and the NSW Police must be notified immediately (02 62980555);
- all details of the location and nature of the human remains must be provided to the relevant authorities;
- if it is confirmed by these authorities that the discovered remains are Aboriginal skeletal remains, the person responsible for the activity must report the existence of the human remains to a suitably qualified Cultural Heritage Advisor and the OEH Queanbeyan Branch;
- no media is to be contacted in regards to the discovery of human remains; and
- no photographs of human remains are to be taken without appropriate approval of the RAO.

3. Impact Mitigation or Salvage:

- A suitably qualified Cultural Heritage Advisor should consult with the relevant RAOs with an interest in the Aboriginal human remains, carry out an assessment, and determine an appropriate course of action. This course of action should be submitted (in the form of a Cultural Heritage Management Plan) to the OEH Queanbeyan Branch for review and endorsement);

- An appropriate impact mitigation or salvage strategy as determined by the Cultural Heritage Advisor, RAOs, and OEH Queanbeyan Branch should be implemented (this will depend on the circumstances in which the remains were found, the number of burials found, the type of burials and the outcome of consultation with the RAOs);

- On the completion of the prescribed works, the relevant authorities (OEH Queanbeyan Branch) should inform the Site Supervisor (or Project Personnel) that construction works may recommence in the area where the burial was located. If there are further constraints to construction works the Site Supervisor should be informed.

4. Curation and Further Analysis:

- The treatment of salvaged Aboriginal human remains must be in accordance with the direction of the RAOs and the OEH Queanbeyan Branch.

12 REFERENCES

Barwick, D. E. 1984, 'Mapping the Past: An Atlas of Victorian Clans 1835 – 1904', *Aboriginal History* 8 pp. 100-132.

Bennett, G. 1834, *Wanderings in New South Wales, Batavia, Pedir Coast, Singapore and China: being the journal of a naturalist in those countries, during 1832, 1833 and 1834*. Two volumes, Bently, London.

Bureau of Rural Sciences after Commonwealth Scientific and Industrial Research Organisation (1991), *Digital Atlas of Australian Soils* (ARC/INFO® vector format). [Online] Available HTML: http://www.brs.gov.au/data/datasets

Burke, H. and C. Smith (2004), The Archaeologists Field Handbook, Allen and Unwin, Sydney.

Butlin, N. 1983, *Our Original Aggression: Aboriginal population of southeastern Australia 1788-1850*. Allen & Unwin, Sydney.

Clark, I. D. 1990, *Aboriginal Languages and Clans: An Historical Atlas of Western and Central Victoria, 1800-1900*. Monash Publications in Geography, Number 37, Department of Geography and Environmental Science, Monash University, Melbourne.

Cooke, H., 1988, An Interpretation of the Prehistory of Blue Water Holes and Cooleman Plain, New South Wales, BA (Hons) thesis, Australian National University, Canberra.

Coventry, R and Walker P 1977, Geomorphological Significance of Late Quaternary Deposits of the Lake George Area, NSW. *Australian Geology*. 13: 369-376.

Flood, J., 1980, *The Moth Hunters: Aboriginal Prehistory of the Australian Alps*. Australian Institute of Aboriginal Studies, Canberra.

Flood, J., 1995, *Archaeology of the Dreamtime: the story of prehistoric Australia and its people*. (2nd edition) Angus & Robertson, Pymble, N.S.W.

Fogarty, P. 2011, Capability Assessment for On-site Effluent Disposal: Stages 1and 2, proposed subdivision of Part lot 1 & 2, DP 850916 4076 Gundaroo Rd, Gundaroo. Soil and Land Conservation Consulting.

Griffin Associates Environment Pty Ltd 2011, Property "Kyeema" Gundaroo, NSW, Flora and Fauna Assissment.

National Parks and Wildlife Service (NPWS) 1997, *Aboriginal Cultural Heritage Standards and Guidelines Kit*.

Packard, P., 1986a, An Archaeological Assessment of Proposed Sand, Gravel and Topsoil Mining Areas, 'Ruthfield' and 'Glencoe', Near Gundaroo, NSW. A Report to Me F. Purcell and Capital Quarries Pty Ltd.

Packard, P., 1986b, An Archaeological Assessment of Proposed Sand, Gravel and Topsoil Mining Areas, 'Bowylie', Near Gundaroo, NSW. A Report to Me F. Purcell and Capital Quarries Pty Ltd.

Parks, B., 2010, *Suburb of Kenny, East Gungahlin, ACT*. A Cultural Heritage Assessment to ACTPLA by Navin Officer Heritage Consultants Pty Ltd.

Saunders, P., 2007, Proposed Rural Subdivision Yass River and Back Creek Roads, Gundaroo, NSW, An Aboriginal Archaeological Assessment. A Report for Riverview Group.

Speight, J.G. 1990, Landforms. In Australian Soil and Land Survey Field Handbook. Mcdonald, R.C et al. Inkata Press.

Tindale, N. B., 1974, *Aboriginal Tribes of Australia: Their Terrain, Environment Controls, Distribution, Limits and Proper Names*. University of California Press.

Witter, D., 1980, An Archaeological Pipeline Survey Between Dalton and Canberra. A Report to The Pipeline Authority.

Witter, D., 1981, Archaeological Salvage Investigations on the Dalton to Canberra Pipeline. Report to The Pipeline Authority.