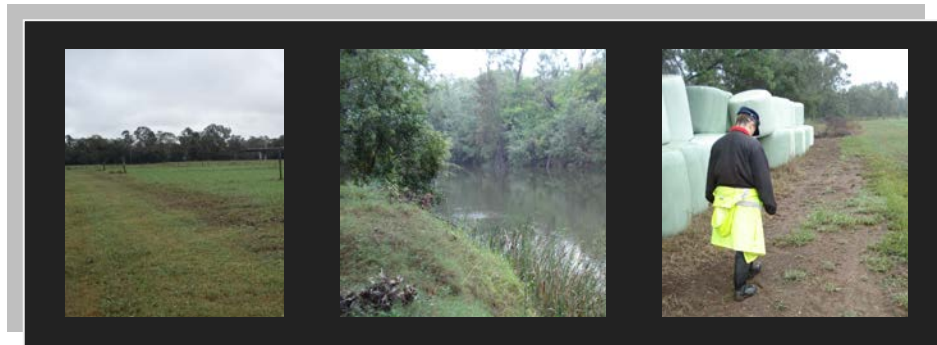


Proposed sand/soil extraction site, Macarthur Rd, Elderslie

Aboriginal Archaeological Assessment

Report to M. Collins and Sons [Contractors] Pty Ltd

July 2011



Artefact Heritage Services
ABN 73 144 973 526

PO BOX 279 Coogee
NSW Australia 2034
+61 2 9025 3958
+61 2 9025 3990

office@artefact.net.au
www.artefact.net.au

Executive Summary

Artefact Heritage Services was commissioned by Musecape and M. Collins and Sons (Contractors) Pty Ltd to undertake an assessment of Aboriginal heritage for the proposed sand/soil extraction site at Macarthur Road, Elderslie. The assessment has been undertaken in response to the Director General's Requirements for the Environmental Assessment in relation to a Section 75W submission under Part 3A of the *Environmental Planning and Assessment Act 1979*. An Aboriginal heritage assessment was therefore conducted in order to assess heritage opportunities and constraints on the proposed development.

The archaeologist and representatives from Tharawal Local Aboriginal Land Council and Cubbitch Barta undertook a site survey of the study area. The site was found to have been subject to surface disturbance caused by a long history of intensive cultivation. No Aboriginal artefacts were located during the site survey. Analysis of soil landscape unit data, and of the findings of previous archaeological studies in the local area resulted in the assessment of the site as having a low potential for containing subsurface archaeological deposits. The assessment of this potential is primarily based on soil profile testing which confirmed that former land surfaces with a high archaeological potential were not buried beneath more recent flood deposits within the study area. The cultural significance of the study area has been addressed by the registered Aboriginal stakeholder groups.

It is therefore recommended that no archaeological constraints currently exist for the proposed sand/soil extraction within the study area. If Aboriginal objects are located during excavations the archaeologist, Aboriginal stakeholders and the Office of Environment and Heritage should be informed. If burials or fragmentary human remains are located during excavations, work should cease immediately, the site should be secured, and the NSW Police and the Office of Environment and Heritage should be notified.

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1.0 Introduction and Background

1.1 Background

Artefact Heritage Services was commissioned by Musescape and M. Collins and Sons (contractors) Pty Ltd to conduct an assessment of Aboriginal heritage as part of the Environmental Assessment for the proposed extension to a sand and soil extraction facility, which is currently subject to a Part 75W modification application submission under the transitional arrangements pertaining to the former Part 3A of the *Environment Planning and Assessment Act 1979*. The aim of this study is therefore to fulfill the requirements of the DGRs, outline opportunities and constraints on the proposed development regarding Aboriginal heritage, and to recommend if further action is required to fulfill statutory heritage obligations.

1.2 The Study Area

The study area is a portion of land comprising Part Lot 22 DP833317 and Part Lot 32 DP635271, Macarthur Road, Elderslie. The study area is bounded to the north by the Camden Bypass; to the east by an anabranch of the Nepean River; to the south by an area from which sand and soil has previously been extracted by M. Collins and Sons; and to the west by the banks of the Nepean River.

Figure 1: Study area in its locality. Development area bounded in blue, Phase 1 area bounded in red.

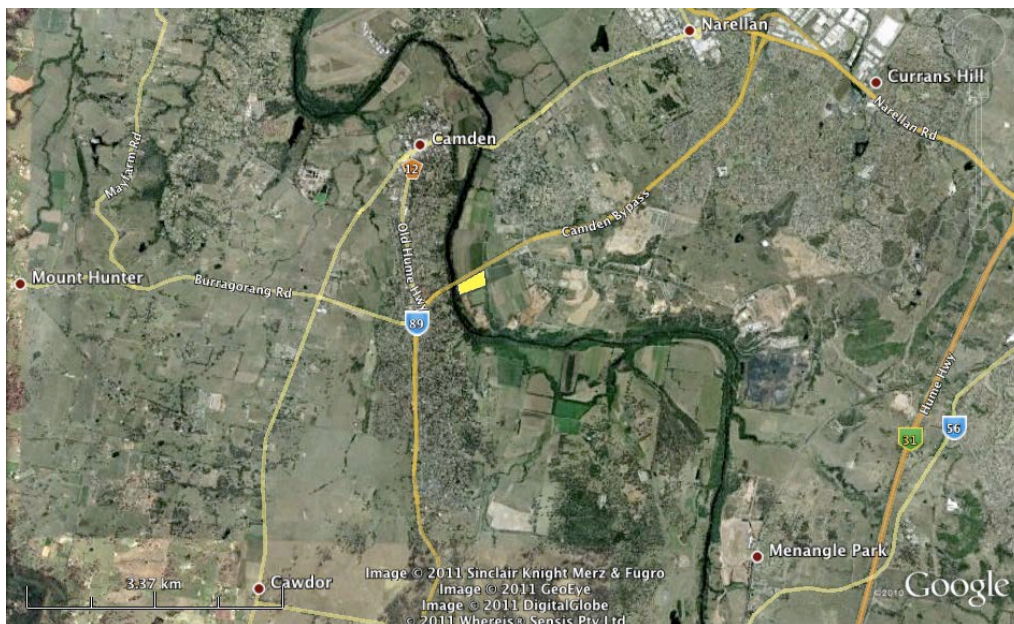


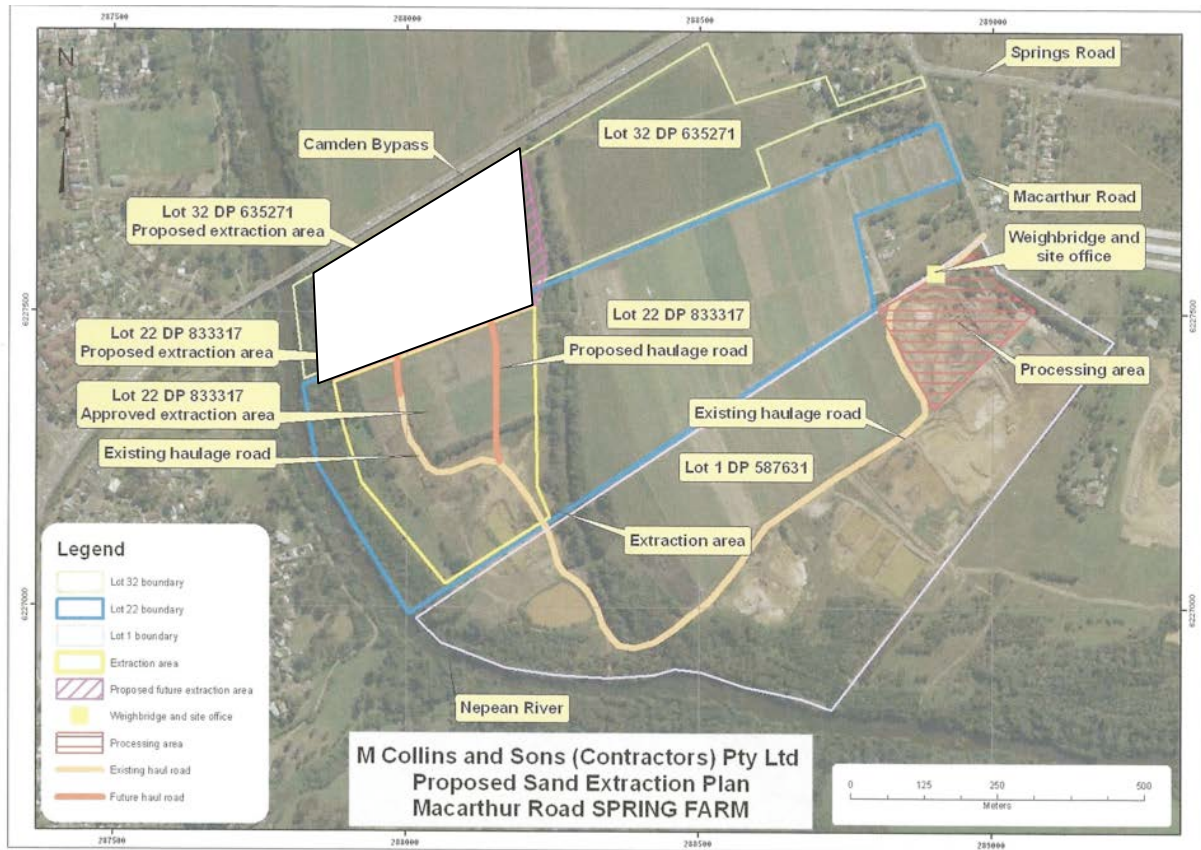
Figure 2: The study area aerial view. Development area is outlined in red. Background sourced from Google Earth.



1.3 Proposed Development

It is proposed to incrementally extract approximately 400,000 cubic meters by open pit methods and to progressively reinstate a final landform which blends with the approved post extractive landform for the adjoining extraction area to the south. Setbacks will be observed from the river (40m) and the Camden Bypass which is within the road corridor immediately to the north of the proposed extraction site.

Figure 3: Development Plan. Area marked with purple hashed lines subject to this study.



1.4 Summary of Findings and Recommendations

The following recommendations are based on consideration of:

- Statutory requirements under the *National Parks and Wildlife Act 1974* as amended;
- The Director General's Requirements as specified for the Aboriginal heritage component of the Environmental Assessment for this project;
- The results of the background research, site survey and assessment;
- The interests of the Aboriginal stakeholder groups; and
- The likely impacts of the proposed development.

It was found that:

- No Aboriginal sites have been previously recorded within the study area, or were located during the site survey;



- There is a low potential that subsurface archaeological deposits exist within the study area. The study area is therefore assessed as having low archaeological potential;
- The study area has a low archaeological significance;
- The Aboriginal groups have addressed the cultural significance of the study area.

It is therefore recommended that:

- There are no archaeological constraints on the proposed development;
- If Aboriginal objects are located during excavation the archaeologist, Aboriginal stakeholders and the Office of Environment and Heritage should be notified, and further archaeological work may be necessary.
- If human skeletal remains are encountered during excavation, work must cease immediately and the NSW Police, and the Office of Environment and Heritage must be notified. If the skeletal remains are found to be Aboriginal a process of consultation and investigation in accordance with the Office of Environment and Heritage guidelines must be implemented.
- A copy of this draft report should be sent to all registered Aboriginal stakeholder groups for their comments.

1.5 Legislation and Regulatory Guidelines

Two principal pieces of legislation provide automatic statutory protection for Aboriginal heritage and the requirements for its management in New South Wales. These are the *National Parks and Wildlife Act 1974* as amended (2010) and the *Environmental Planning and Assessment Act 1979*. The *National Parks & Wildlife Service* (NPWS) now comprises an administration branch of the Office of Environment and Heritage (OE&H).

National Parks and Wildlife Act (1974)

The *National Parks & Wildlife Act 1974*, administered by the OE&H provides statutory protection for all Aboriginal 'objects' (consisting of any material evidence of the Aboriginal occupation of NSW) under Section 90 of the Act, and for 'Aboriginal Places' (areas of cultural significance to the Aboriginal community) under Section 84.

The protection provided to Aboriginal objects applies irrespective of the level of their significance or issues of land tenure. However, areas are only gazetted as Aboriginal Places if the Minister is satisfied

that sufficient evidence exists to demonstrate that the location was and/or is, of special significance to Aboriginal culture.

The Act was recently amended (2010) and as a result the legislative structure for seeking permission to impact on heritage items has changed. An s.90 permit is now the only Aboriginal Heritage Impact Permit (AHIP) available and may only be granted by the OE&H if the conditions of the 'due diligence guidelines', and/or an 'archaeological investigation' have been met. The penalties and fines for damaging or defacing an Aboriginal object have also increased. As noted below however, s90 AHIPs are not required for impacts to Aboriginal objects for projects which were assessed under Part 3A of the *Environmental Planning & Assessment Act 1979*.

As part of the administration of Part 6 of the Act the OE&H has developed regulatory guidelines on Aboriginal consultation, which are outlined in the *Aboriginal Cultural Heritage Consultation Requirements for Proponents (2010)*. Guidelines have also been developed for the processes of due diligence - *Due Diligence Code of Practice for the Protection of Aboriginal Objects in NSW (2010)*, and for investigation of Aboriginal objects - *Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales (2010)* in accordance with the 2010 amendment to the Act.

Environmental Planning & Assessment Act (1979)

The EP&A Act is administered by the Department of the Premier and Cabinet and provides planning controls and requirements for environmental assessment in the development approval process. This Act has three main parts of direct relevance to Aboriginal cultural heritage. Namely, Part 3 which governs the preparation of planning instruments, Part 4 which relates to development assessment process for local government (consent) authorities and Part 5 which relates to activity approvals by governing (determining) authorities.

In 2005 the Act was amended with the introduction of section Part 3A. This section 'switches off' Part 6 of the NPW Act which specifies penalties for destruction of Aboriginal heritage. NPW Act s90 AHIPs are therefore not required to impact on Aboriginal heritage under Part 3A development applications as the penalties for doing so are nullified. Under Part 3A assessments proponents must adhere to the *Draft Guidelines for Aboriginal Heritage Impact Assessment and Community Consultation 2005* developed by the Office of Environment and Heritage. Part 3A has recently been abolished with transitional arrangements put in place by the State Government.

Heritage Act (1977)

The *Heritage Act 1977* is also administered by the Department of the Premier and Cabinet (formerly the Department of Planning) and protects the natural and cultural heritage of NSW. Generally this Act only pertains to Aboriginal Heritage if it is listed on the State Heritage Register, or subject to an interim heritage order.

Aboriginal Land Rights Act (1983)

The *Aboriginal Land Rights Act 1983* is administered by the NSW Department of Human Services - Aboriginal Affairs. This Act established Aboriginal Land Councils (at State and Local levels). These bodies have a statutory obligation under the Act to;

- (a) take action to protect the culture and heritage of Aboriginal persons in the council's area, subject to any other law,
- (b) promote awareness in the community of the culture and heritage of Aboriginal persons in the council's area.

Native Title Act (1994)

The *Native Title Act 1994* was introduced to work in conjunction with the Commonwealth Native Title Act. Native Title claims, registers and Indigenous Land Use Agreements are administered under the Act.

Implications

The proposed development is being assessed as a Section 75W modification under Part 3A of the EP&A Act. Subsequently permits from the OE&H are not required in order to impact Aboriginal heritage. Instead of the statutory control lying solely with the OE&H, a Part 3A application is assessed in relation to the Director General's Requirements (DGRs). Best practice, regardless of the statutory context, advocates that development impact to documented and/or potential sites of Aboriginal cultural heritage sensitivity be avoided where practicable and/or mitigated at the minimum, and that all decisions made for either course of action be made consequent to direct guidance provided by Aboriginal stakeholders.

1.6 Aboriginal Community Consultation

Aboriginal community consultation was conducted for this study in adherence with the *Draft Guidelines for Aboriginal Heritage Impact Assessment and Community Consultation 2005*. The consultation process followed is also in line with the 2010 *Aboriginal Cultural Heritage Consultation Requirements for Proponents*.

A Public Notice inviting expressions of interest from relevant Aboriginal individuals and organisations was placed in the Camden Advertiser on the 22nd February 2011. No responses were received.

Letters requesting information on Aboriginal stakeholders were sent to the Department of Environment, Climate Change and Water (now the Office of Environment and Heritage), the National Native Title Tribunal, the Office of the Registrar (Aboriginal Land Rights Act), and the Native Title Service Corporation. The Office of Environment and Heritage - Environment Protection and Regulation Division (Planning and Aboriginal Heritage) contacted Artefact on 23 February with a list of Aboriginal groups who have registered an interest in the Elderslie area. These groups are;

- Darug Custodial Aboriginal Corporation,
- Darug Tribal Aboriginal Corporation,
- Darug Aboriginal Cultural Heritage Assessments,
- Darug Land Observations,
- Darug Aboriginal Land Care Inc.,
- Cubbitch Barta,
- Tharawal Local Aboriginal Land Council.

No further Aboriginal stakeholder groups have been identified.

The Tharawal Local Aboriginal Land Council (TLALC) has a statutory obligation under the Aboriginal Land Rights Act to manage Aboriginal cultural heritage within the Land Council boundary, which includes the study area. Artefact Heritage contacted Dulcine Blair, administration officer at TLALC on the 23 March to book an Aboriginal sites officer for the site survey. Donna Whillock of TLALC participated in the survey and will be forwarded a copy of this draft report for comment. Cubbitch Barta was also invited by the proponent to attend the survey as Glenda Chalker from Cubbitch Barta conducted a site survey of the adjoining land during the original Environmental Assessment.



All other registered Aboriginal groups were informed that the assessment was taking place, provided with information on the project, and were forwarded a copy of the draft report. All registered Aboriginal groups were given the opportunity to comment on the cultural significance of the study area and on the recommendations of the draft report. Responses received were as follows:

Tharawal LALC sent a letter after the walkover (23 March 2011) which indicated they would like test pits to be dug to ascertain whether there were artefacts within the study area. They did not offer further comments after receiving the draft report.

Darug Aboriginal Cultural Heritage Assessments supported the findings and recommendations of the report in a fax dated 24 June 2011.

In an email dated 24 June 2011 Darug Land Observations commented that as they were not involved in the field survey they did not want to comment on the report. They had no input on the cultural significance of the study area.

In an email also dated 24 June 2011, Darug Land Care Inc. stated that they supported the findings and recommendations of the report.

John Reilly, Aboriginal sites officer for Darug Tribal Aboriginal Corporation, stated during a phone conversation that Darug Tribal Aboriginal Corporation agreed with the findings and recommendations of the report.

In an email dated 27 June, Leanne Watson of Darug Custodian Aboriginal Corporation stated her support for the findings and recommendations of the report.

Glenda Chalker of Cubbitch Barta stated in a letter dated 4 July 2011 that there are no constraints to this development from an archaeological perspective. She went on to say that the riverbank, which is just outside the study area, should not be impacted, and that the proponent should be aware that burials may occur in sands nearby the river.

All registered groups have therefore responded to the report. Copies of these responses are attached in Appendix 1.



1.7 Report Authorship

Dr Sandra Wallace wrote this report. The assistance of Jim Cuppitt from Harvest Scientific is acknowledged in supplying relevant plans and soils information. Donna Whillock of Tharawal Local Aboriginal Land Council (TLALC), and Glenda Chalker from Cubbitch Barta are acknowledged for their participation in the site survey, and input into the assessment of the cultural significance of the study area.

2.0 Environment and Context

2.1 Geology and Soils

The study area is within the Theresa Park Soil Landscape Group underlain by the Bringelly Shale formation. The Theresa Park Soil Landscape Group is a fluvial unit associated with Tertiary and Quaternary floodplains and terraces of the Nepean River. Soil types include brown sandy loams, reddish-brown sandy clay and light clay. Fluvial bedding is sometimes evident and their sand rich nature is reflected in typically higher permeability and low available water holding capacity. These soils can be prone to water logging, erosion, hard-setting surfaces and are generally of low fertility (Harvest Scientific provided by Jim Cuppitt).

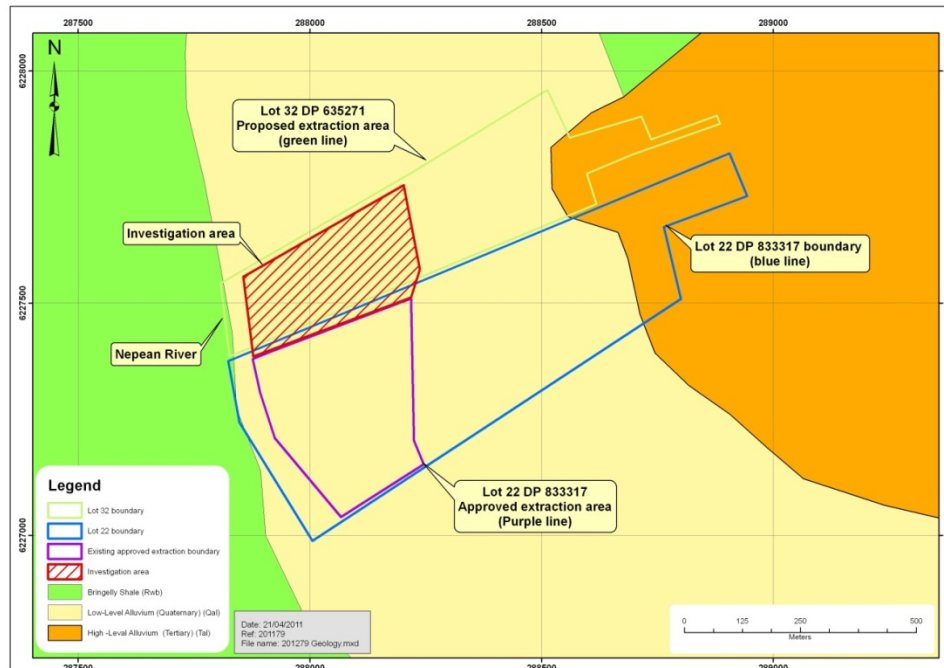
Nature of the soil and sand deposits within the study area

Based on the 1:100,000 Wollongong to Port Hacking Geological Map Sheet (NSW Department of Mineral Resources, 1986) the sand and soil deposits within the investigation area are mapped as Quaternary Low-Level Alluvium (Qal). The following description of the geomorphology of the study area is taken directly from the salinity assessment 32 DP 635271 Macarthur Road Spring Farm (Harvest Scientific provided by Jim Cuppitt).

The Qal unit consists of Cainozoic sediments and is considered to be of Holocene age. Deposition is active and additional sediments accumulate with every flood event. Qal deposits of the Nepean River are mainly derived from the weathering of Permian and Triassic bedrock located in the up-stream catchment and comprise typically of grey-brown, medium grained quartz sand with layers of silt and humic clays.

Underlying the Qal unconsolidated sediments are the sedimentary rock sequences of the Wianamatta Group, the Hawkesbury Sandstone and the Illawarra Coal Measures. None of these formations outcrop within the investigation area. The sedimentary geological unit immediately below the unconsolidated sediments is mapped as Bringelly Shale. High-Level Alluvium (Tal) deposits are mapped by the NSW Department of Mineral Resources (1986) to occur to the north-east of the investigation area. These deposits are believed to be of the Tertiary age but the age of these sands can be estimated only by circumstantial evidence because of a lack of fossils (NSW Department of Mineral Resources, 1986).

Figure 4: Surface Geology Plan. Source Jim Cupitt – Harvest Scientific.

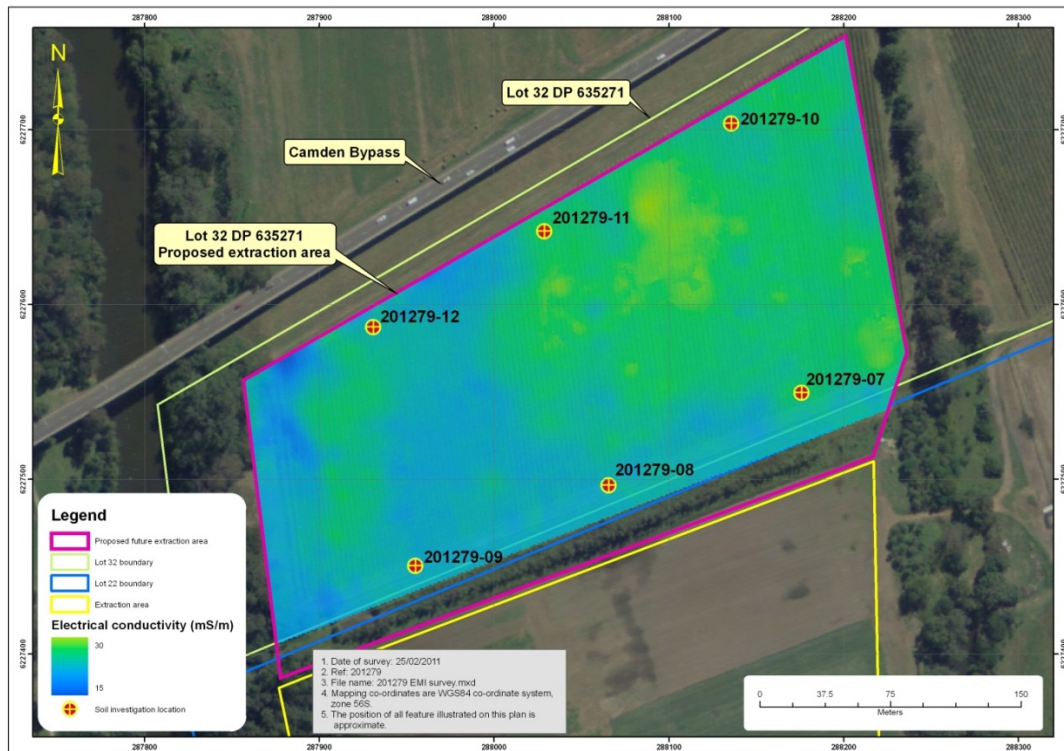


Tal sands vary in colour from white to orange-red, with various shades of the latter being more common. Based on the descriptive notes associated with the Wollongong to Port Hacking map sheet, all known Tal deposits mapped on the map sheet are located on the concave side of present river bends, indicating a point bar origin. These deposits are almost wholly above the maximum known flood levels (1873) so it is unlikely that they were deposited by the Nepean River at its present elevation. Tal deposits are located mostly between the 80 and 100 m (ASL) contours, and it is likely that this interval represents the difference between the river bed level and the flood level at the time the sand was deposited. The distribution of the Tal sand deposits could also be explained by westerly winds piling alluvial deposited sand against the westerly slopes of the hills in the area (NSW Department of Mineral Resources, 1986). As it was thought possible that some Tal deposits may be located buried at depth under the Qal deposits and above the underlying Bringelly Shale bedrock within the investigation area, geomorphological testing was conducted to ascertain the existence of possible buried land surfaces.

Soil test pitting

Soil test-pitting revealed soil profiles across the investigation area that were consistent with the Teresa Park Soil Landscape Group and Qal unconsolidated sediments. Test-pit locations are depicted on Figure 5.

Figure 5: Figure showing soil investigation locations taken from the Harvest Scientific Salinity report.



A deep Very Dark Brown (10YR 2/2) fine sandy loam topsoil was encountered across the entire investigation area. This layer varied in depth from approximately 0.5 metres (locations 201279-08, 09) to approximately 1.0 metre at locations 201279-07, 10, 11 and 12.

The top-soil layer was underlain by a fine-grained Loamy Sand textured sub-soil to the maximum test-pit depth of approximately 5.8 metres (location 201279-08). Sub-soils varied in colour and included the colours: Brown (10YR 4/3, 5YR 4/4), Dark Brown (10YR, 3/3), Yellowish Red (5YR 5/6), Reddish Brown (5YR 4/3), Reddish Brown (5YR 4/3, 2.5YR 5/4). Alluvial bedding was noted in sub-soil materials at all locations.

At location 201279-10 the soil below a depth of 4.5 metres was mottled and Gleyed indicating that saturated and/or intermittently saturated soil conditions occur below this depth. This soil was also very moist but no seepage (free running water) was observed. There were no other indicators of potential soil saturation at any other location within the study area.

The sand material observed in all sub-soil profiles was fine-grained and smaller in diameter than the medium-grained sands typically associated with High Level Tertiary Alluvium (Tal) that occur in the

local area. It is also noted that Tertiary Alluvium (Tal) is reported to have been distributed by Aeolian processes (Department of Mineral Resources, 1986).

Based on the presence of alluvial bedding that occurs across the investigation area and the fine grain size of sand that is associated with the sub-soil materials within the study area, onsite soils are considered to be consistent with being deposited as part of the depositional processes associated with the levee bank of the current Nepean River (i.e. Quaternary Alluvium – i.e. the mapped geological unit) and are not considered to be a buried Tal landscape.

2.2 Topography

The subject site consists of a floodplain classified as extremely low relief (HLA 2004). There is a very gentle slope upwards towards the east.

2.3 Hydrology

The Nepean River runs along the western edge of the study area and an anabranch of the river forms its eastern boundary. The study area is entirely within the floodplain and has been subject to repeated episodes of flooding. Major flood events on the Nepean have deposited up to three feet of mud and sand on the surrounding area at one time. Sedimentation of this magnitude was recorded during the flood of 1867 at Castlereagh near Penrith (pers comm, Anne Bickford). The 1873 flood was even larger and the flood line reached just west of Macarthur Road covering the current study area. The 1873 flood was classified as a 1 in 180 year event (Camden Flood Inundation Map). The 1 in 100 year flood line is below the level of the 1873 flood and is located to approximately 200m to the west of Macarthur Road.

Major flooding would have affected the archaeological record in the study area in a number of ways. Firstly archaeological deposits near the river banks may have been washed away during scouring and bank slippage associated with fast moving water flows during flood events. Second, archaeological sites further away from the banks would have been washed away or buried by thick alluvial sediment in inundations such as the 1867 and 1873 floods.

2.4 Vegetation

The study area would originally have been vegetated by alluvial woodland which occurs on floodplains and margins of creek and rivers. Tree species would have included Forest Red Gum (*Eucalyptus tereticornis*), Cabbage Gum (*Eucalyptus amplifolia*) and Gossamer Wattle (*Acacia floribunda*). The understory would have primarily consisted of shrubs such as Blackthorn (*Bursaria spinosa*) and herb and grass species.

The riparian forest along the channel of the Nepean River is still intact to the west of the study area. The vegetation characterized by this community includes Broad Leaf Apple (*Angophora subvelutina*), Cabbage Gum (*Eucalyptus amplifolia*), Bangalay (*Eucalyptus botryoids*) and River Peppermint (*Eucalyptus elata*). The understory includes pockets of rainforest vegetation.

2.5 Resources

Aboriginal people were highly mobile hunter-gatherers utilising different landform units and resource zones. Different resources may have been available seasonally, necessitating movement or trade (Attenbrow 2010: 78). Aboriginal people hunted kangaroo and wallaby and snared possums for food and skins (Bradley 1788). In marine or estuarine environments Aboriginal people caught fish and collected shellfish. There are many accounts by Europeans of Aboriginal people in canoes on rivers and the ocean, fishing and cooking the fish on small fires within the vessels (e.g. Collins 1798).

Plants were an important source of nutrition, common edible species being *Macrozamia*, a cycad palm with poisonous seeds that were detoxified and ground into a paste and *Xanthorrhoea*, or grass tree. The grass tree nectar was a high-energy food, the resin a strong hafting glue, and the flower spikes used for spear barbs. From observations by early European colonists, only about twenty species of plant are identified as being used for food or manufacture by Aboriginal people of the Sydney region (Attenbrow 2010:41). It is likely this is only a fraction of what was actually used.

Resources available around the study area would have been rich and varied. The river would have provided fish, water birds and other game. A swampy area is known to have once existed to the east of the study area (JMcDCHM 2010) and would have provided a different suite of resources. The woodland on the river margins would have provided habitat for a number of animal species utilized by Aboriginal people, such as possums and small marsupials. In 1802 Barrallier made the observation that the

Aboriginal residents of the Camden area, 'usually fed upon opossums and squirrels which are abundant in that country, and also upon kangaroo-rat and kangaroo, but they can only catch this last one with great trouble and are obliged to unite in great numbers to hunt it ' (Attenbrow 2010:71 after Barrallier 1802).

Barrallier also noted that in areas around Camden there were swamps where 'enormous eels, fishes and various species of shells are found, which are sometimes used by the natives as food' (Attenbrow 2010: 70 after Barrallier 1802).

2.6 Historical land Use

The history of colonisation and European settlement of the study area has been dealt with in detail by Anne Bickford in the non-Indigenous Heritage Study for this Environmental Assessment. Therefore a brief summary of land use since colonization will inform the discussion of land disturbance and therefore of archaeological potential.

The Camden area was divided into land grants from the early 1800s. The fertile area along the river bank was divided into small lots while large grants such as John Oxley's grant to the east of the study area were located further from the river (Figure 5). Records show John Macathur's grant was cleared with convict labour from around 1805 to make way for the growing of wheat, hay, vines and wool (Rosen 1995). The study area and surrounds would have been comprehensively cleared by the 1830s. The study area has most likely been under constant cultivation since, with the most recent crop being grape vines that were only recently cleared.

Analysis of historical maps and aerial photos suggests that there has not been a residence or building within the bounds of the study area. A Chinese market garden was located within the study area with the residence in the adjoining block. This can be seen in the 1949 aerial photo (Figure 7).

The types of cultivation that have occurred within the study area, such as market gardening and viticulture would have heavily impacted surface deposits, probably to depths of 30-50cm. Any surface Aboriginal sites would have been disturbed by early cultivation, and would have probably since been buried by sediment deposited by flood events.



Figure 6: Parish Map – Camden parish 13835801. Dated 1887.



Figure 7: 1951 Military Map with Study area transposed. Courtesy of Anne Bickford

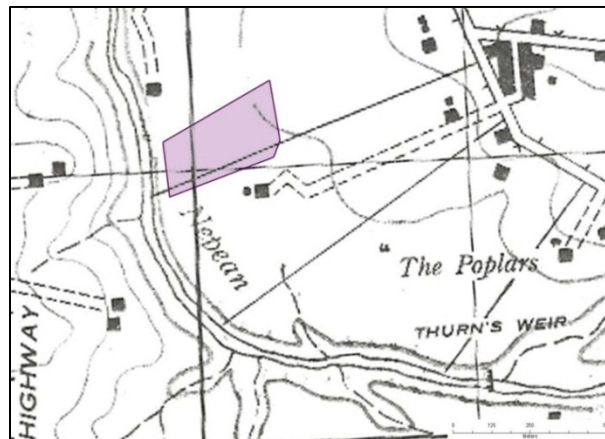


Figure 8: 1949 aerial. Sourced from Harvest Scientific. North to top of page.



3. Archaeological Context

3.1 Aboriginal material culture

Aboriginal people have lived in the Sydney area for more than 20,000 years. The oldest securely dated site in the greater Sydney region is 17,800 years before present (yBP), which was recorded in a rock shelter at Shaw's Creek (Nanson et al 1987). Evidence of Aboriginal occupation has been found dated to 50-60,000 yBP at Lake Mungo in NSW, so it is likely that Aboriginal people have lived in the Sydney region for even longer than indicated by the oldest recorded dates we have at present. The archaeological material record provides evidence of this long occupation, but also provides evidence of a dynamic culture that has changed through time.

The existing archaeological record is limited to certain materials and objects that were able to withstand degradation and decay. As a result the most common type of Aboriginal objects remaining in the archaeological record are stone artefacts. Archaeological analyses of these artefacts in their contexts have provided the basis for the interpretation of change in material culture over time. Technologies used for making tools changed, along with preference of raw material. Different types of tools appeared at certain times, for example ground stone hatchets are first observed in the archaeological record around 4,000yBP in the Sydney region (Attenbrow 2010:102). It is argued that these changes in material culture were an indication of changes in social organisation and behaviour.

The Eastern Regional Sequence was first developed by McCarthy in 1948 to explain the typological differences he was seeing in stone tool technology in different stratigraphic levels during excavations such as Lapstone Creek near the foot of the Blue Mountains (McCarthy 1948). The sequence had three phases that corresponded to different technologies and tool types (the Capertian, Bondaian and Eloueran). The categories have been refined through the interpretation of further excavation data and radiocarbon dates (Hiscock & Attenbrow 2005, JMcDCHM 2005). It is now thought that prior to 8,500 yBP tool technology remained fairly static with a preference for silicified tuff, quartz and some unheated silcrete. Bipolar flaking was rare with unifacial flaking predominant. No backed artefacts have been found of this antiquity. After 8,500 yBP silcrete was more dominant as a raw material, and bifacial flaking became the most common technique for tool manufacture. From about 4,000yBP to 1,000yBP backed artefacts appear more frequently. Tool manufacture techniques become more complex and bipolar flaking increases (JMcD CHM 2006). It has been argued that from 1,400 to 1,000 years before contact there is

evidence of a decline in tool manufacture. This reduction may be the result of decreased tool making, an increase in the use of organic materials, changes in the way tools were made, or changes in what types of tools were preferred (Attenbrow 2010:102). The reduction in evidence coincides with the reduction in frequency of backed blades as a percentage of the assemblage.

After European colonization Aboriginal people often continued to manufacture tools, sometimes with new materials such as bottle glass or ceramics. There are a number of sites in Sydney where flaked glass has been recorded, for example at Kurnell (Dickson 1971) and Oran Park (JMcD CHM 2007).

3.2 Aboriginal Occupation and Site Types

Material traces of this long occupation exist throughout the landscape and are known as Aboriginal sites. The primary site types that may be present in the study area are as follows.

- Stone Artefacts – Flaked and ground stone artefacts are the most common trace of Aboriginal occupation in the Sydney region. Aboriginal people used particular techniques to flake stone and these changed over time. The approximate age of a tool can often be diagnosed by the way that it was made. Stone artefacts are most often found in scatters that may indicate an Aboriginal campsite was once present. Stone tools in the Sydney region are most often made from raw materials known as silcrete, tuff and quartz. These are all easily flaked and form sharp edges, which can be used for cutting or barbing spears. It is possible that stone artefacts exist within the study area.
- Rock shelters with deposit – Rock shelters were used by Aboriginal people for habitation, rest places and as art or ceremonial sites. Deposits can build up on the floor of these shelters over time and bury traces of Aboriginal occupation. If these deposits are not disturbed, rock shelters can provide an intact stratigraphy that can tell us about the way Aboriginal occupation changed through time. It is unlikely that rock shelters are located within the study area.
- Shell middens – Shell middens are remains of campsites in which the primary traces are shell and/or bones of fish. Shell middens are often found close to rivers or streams and are either along banks or within enclosed shelters. The majority of shell middens in the Sydney region were destroyed when they were mined for lime in the early days of the colony. It is unlikely that any major shell midden remains in the study area, although it is possible that remains of shellfish or fish could be found in an archaeological deposit.



- Rock engravings/Rock art – Rock engravings are often found in Hawkesbury geologies on flat sandstone platforms. Shapes of animals, ancestor figures or other symbols were carved into the sandstone. Weathering has affected the visibility of many rock engravings. Other rock art of various forms has also been recorded in the Sydney basin. Stencils and charcoal drawings are examples of the techniques used by Aboriginal people. Rock art is relatively rare, but is more common on sandstone geologies than on the plains of western Sydney. It is unlikely that art or engravings are located within the study area.
- Axe grinding grooves – Axe grinding grooves are created when axe blanks (often basalt cobbles) are shaped by rubbing the stone across an abrasive rock such as sandstone, often using water. Sharpening axes and other tools also forms them. Axe grinding grooves are often found on the banks of streams or rock pools. It is unlikely that axe-grinding grooves remain within the study area as there are no sandstone outcrops along the river bank.
- Scarred trees – Aboriginal people practiced tree marking or scarring for a variety of reasons. Large scars are often the result of a tree being debarked for a canoe blank and smaller scars may have been the result of making shields or coolamons (storage vessels). Tree marking may have been the result of ritual practices, or associated with burial. Scarred trees that remain today would be over 150 years old and the scar would retain certain characteristics that enable its identification as cultural. It is possible that scarred trees remain in the vicinity of the study area along the river banks. A rare ‘canoe tree’ is located approximately two kilometers southwest of the study area along the river bank. The study area itself has been completely cleared of trees.
- Post-Contact sites – Sites where evidence of early interaction between Aboriginal people and Europeans are known as contact sites. Artefacts found at contact sites may include flaked glass or ceramic. It is possible that a contact site was located within the study area, as Europeans settled Camden very early in the colonization of Sydney.
- Potential Archaeological Deposit (PAD) – Areas are classified as PADs if there is a likelihood of archaeological material existing below the ground surface or on the ground surface but obscured from view. An Aboriginal object does not need to be recorded for an area of PAD to be specified.
- Burials – Aboriginal skeletal remains and burials are rare in the Sydney region, but have been found to occur in sand deposits such as at Rose Bay (JMcDCHM 2010b) and Narrabeen (JMcDCHM 2008). There is a possibility that burials may be found within the sand deposits associated with the Nepean River.

3.3 Ethnohistory of the Local Area

Prior to the appropriation of their land by Europeans, Aboriginal people lived in small family or clan groups that were associated with particular territories or places. It seems that territorial boundaries were fairly fluid, although details are not known. The language group spoken in the Elderslie area is thought to have been Dharawal (Tindale 1974). The Dhrawal language group is thought to have extended from the Shoalhaven River, north to Botany Bay and then inland to Camden. Some sources also describe the Elderslie area as being home to the Muringong people, speakers of the Darug language group.

There is also some evidence that Aboriginal people around Camden spoke a distinctly separate language group and their tribal area was known as Cubbitch-Barta after its white pipe clay (Russell 1914). Government records from the 1830s and 1840s identify an Aboriginal group known as the Cobbiti Barta as associated with the Camden area (JMcDCHM 2010a).

Historical records also show that Gandangara people came into the Camden area. It is not known whether these visitation represented recent displacement patterns as a result of European colonization or were part of a longer term interaction with the Dharawal (Karskens 2010:496).

Overall it appears that the Camden area on the Nepean River was a landscape where various peoples and groups interacted and may have been on the periphery of a number of tribal areas. The language and clan borders would have been fluid and probably varied through time. Laila Haglund has suggested that at contact the Elderslie area would have been near the border of the Dharawal, Darug and Gandangara territories and that the Narellan Valley may have been part of a 'travel corridor' facilitating movement between the northern Cumberland Plain and the Illawarra (JMcDCHM 2010a after Haglund 1989).

Historical observations suggest that Aboriginal people lived in the Camden in relatively large numbers. Lieutenant Dawes observed that a number of bark huts, about seventy in all, located close to the river between the farms of Mr Wentworth and Mr Campbell (Barton 1996).

British colonization had a profound and devastating effect on the Aboriginal population of the Sydney region. In the early days of the colony Aboriginal people were disenfranchised from their land as the British claimed areas for settlement and agriculture. The colonists, often at the expense of the local Aboriginal groups, also claimed resources such as pasture, timber, fishing grounds and water sources. Overall the devastation of the Aboriginal culture did not come about through war with the British, but



instead through disease and forced removal from traditional lands. It is thought that during the 1789 smallpox epidemic over half of the Aboriginal people of the Sydney region died. The disease would have spread southwest to the Camden area. It may have in fact spread much further afield, over the Blue Mountains forming a vanguard to colonization (Butlin 1983). This loss of life meant that some of the Aboriginal groups who lived away from the coastal settlement of Sydney may have disappeared entirely before Europeans could observe them, or record their clan names (Karskens 2010:452). This may have been the precursor to Watkin Tench's observation that he did not encounter Aborigines during his exploration of the Camden region during the first years of the colony.

Some Aboriginal people of the Camden area may have seen cattle before being first confronted by the colonists. Two bulls and four cows escaped from the Sydney colony in 1788 and were not recovered. In 1790 a group of cows were observed grazing near Camden in what became known as the 'Cowpastures'. The herd expanded and by 1801 were thought to number in the hundreds and efforts were made to recapture them (Turbet 2011: 88, Kayandel 2010:23).

In the early 1800s relationships between the Aboriginal people of the Camden area and the European settlers were in general amicable. Grace Karskens notes several examples of close relationships between land owners and local Aboriginal people, including John Kennedy who gave the Dharawal protection on Teston Farm in later, not so peaceful, times (Karskens 2010).

Relations between Aboriginal people and colonists did not remain amicable. A sustained drought during 1814 and 1815, and continued disenfranchisement lead to tensions between farmers and Aboriginal people who remained in the Camden area. The Aborigines were accused of stealing corn and potatoes and spearing cattle. A number of farmers were killed on their properties. In a dispatch Governor Macquarie wrote that 'The Native Blacks of this country...have lately broken out in open hostility against the British Settlers residing on the banks of the River Nepean near the Cow Pastures'. Aboriginal people were targeted and it was ordered that Aboriginal men be strung from trees when they were killed as an example (Turbet 2011:234).

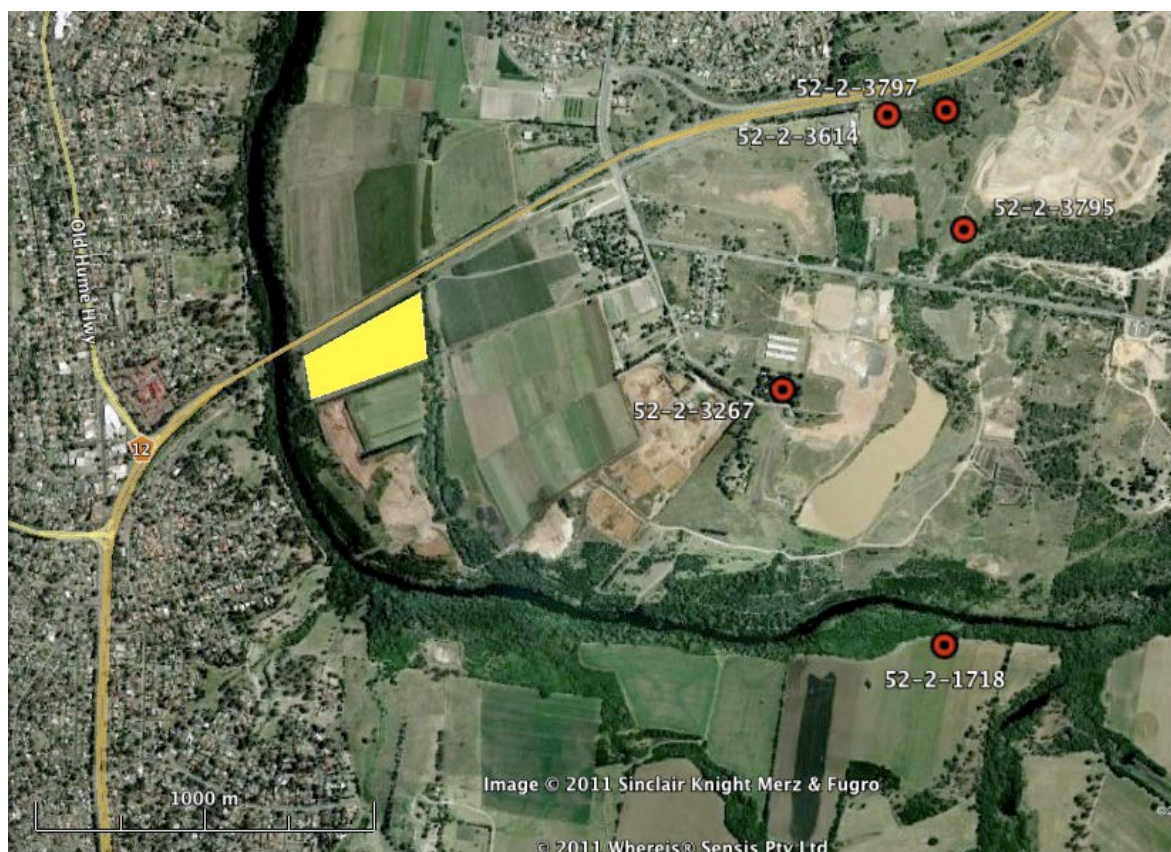
In 1816 the tensions culminated in the Appin massacre when Aboriginal people were pursued by a detachment led by Captain James Wallis. Fourteen Aborigines of the Dharawal nation were shot or driven over a cliff to their deaths by the soldiers. The bodies of two of the Aboriginal men were strung up at the site (Turbet 2011).

Although the numbers of Aboriginal people in the Camden area decreased as settlers and farmers moved into the area a community remained living at Camden Park.

3.4 Registered Aboriginal sites in the local area – AHIMS search

A search of the Aboriginal Heritage Information Management System (AHIMS) was conducted on 2 March 2011. The search took in a 3km radius of the study area (Zone 56, Easting from 286900 to 289900, Northing from 6225700 to 6228700). Five registered Aboriginal sites were located within this area. No registered Aboriginal places are located within the study area. Figure 8 shows the location of the AHIMS listings. Site 52-2-1718 is a canoe tree with site 52-2-3267 and area of potential archaeological deposit (PAD).

Figure 9: Aboriginal sites in the local area



The location of Aboriginal sites is considered culturally sensitive information. It is advised that this information, including the AHIMS data map should be removed from this report if it is to enter the public domain.

Table 1: Frequency of site types from AHIMS data

Site Type	Frequency	Percentage
Modified Tree (Canoe Tree)	1	20
Artefact (Stone)	3	60
Potential Archaeological Deposit (PAD)	1	20

The Camden LEP, the State Heritage Register or Register of the National Estate do not list any areas within the study area as of Aboriginal heritage significance.

3.5 Previous Archaeological Studies in the Local Area

There have been a number of archaeological studies in the vicinity of the study area. Studies that have taken place close to the current study area or within similar topographic units on the Nepean floodplain have been mentioned here. It is understood that no previous survey for Aboriginal heritage has taken place within the study area although it did form part of the Camden Bush Corridor Heritage Study (Barton 1996). Results and recommendations of previous studies inform the predictive statements and recommendations of this study. It is particularly important to note the nature and density of sites found on different landform units in the locality, as this may indicate the likelihood of subsurface archaeological deposit remaining within the landform unit that characterizes the study area.

Mary Dallas Consulting Archaeologists 1994: MDCA conducted the survey for Aboriginal heritage for Lot 2 DP228039 to the southeast of the current study area in relation to the proposed extraction of the river bank. The subject land consisted of lands approximately 500m along the river and 200m into the floodplain. MDCA assessed the area as having a low archaeological potential because of disturbance caused by clearing, cultivation and floods.

Huw Barton 1996: The Camden Bush Corridor Management Plan: Archaeological Study was commissioned by EDAW to provide an environmentally based predictive model regarding the likelihood of Aboriginal sites occurring within the area. One of the findings of the study was that 'the alluvial sands and terraces of the Nepean River floodplain may contain sites of significance including human skeletal remains from Aboriginal burials and very old site (>5,000 years old but <20,000 years old)' (Barton 1996: 4).

During the study Barton conducted limited ground survey and recorded five new Aboriginal sites. A group of sites were found on elevated ground associated with Narellan Creek just above Nepean River floodplain between 500m and a kilometre from the river bank. .

The current study area was included in the Camden Bush Corridor study and an assessment of archaeological potential and subsequent general recommendations were made regarding it. The current study area was assessed as being Zone 2 (moderate archaeological potential). This means that the study area was assessed as having a moderate potential for undisturbed sites, although it would have a lesser potential to contain significant sites. Barton states that more detailed investigation is required before areas with moderate potential can be fully assessed (Barton 1996:21). This recommendation applies to the current study area and has been fulfilled by this assessment.

Mary Dallas Consulting Archaeologists 2001: MDCA conducted the Aboriginal heritage assessment for the Spring Farm Urban Release Area. The assessment discussed known Aboriginal sites within the study area, historical disturbance, potential for Aboriginal sites to occur, and management recommendations for all lands within the urban release area. The current study area is just outside the area assessed by MDCA. The eastern portion of Lot 32 DP635271 (the current study area is the western portion of this Lot) was assessed by MDCA as having been disturbed by cultivation, having a low potential for Aboriginal sites to occur, but the management recommendation was for test excavations to be conducted prior to development. This test excavation would be designed to locate any land surfaces that may have been buried by alluvial deposits.

HLA 2004: HLA were commissioned to complete an Aboriginal heritage assessment for the rezoning of and area at Menangle Park for the Menangle Park Urban Release Area. The area investigated by HLA has its northwestern boundary approximately two kilometers to the southeast of the current study area. The Menangle Park study area includes an approximately three kilometre stretch of Nepean River floodplain with sections similar in character to the current study area. The west section of the Menangle Park study area along the Nepean River is of particular interest. It is the within the same geological, topographic and soil landscape units as the current study area and therefore the recommendations made by HLA are relevant to this report. No Aboriginal sites were found on the surface within 500m of the river bank on the floodplain although the HLA report states that the extremely low relief slopes of the Nepean floodplain have a high archaeological sensitivity unless they have been highly disturbed.

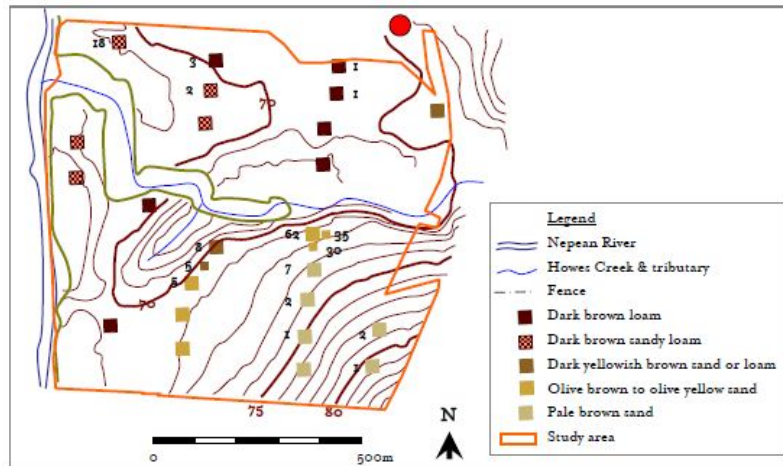
Mary Dallas Consulting Archaeologists 2007: As part of the investigation of the Spring Farm Urban Release Area MDCA conducted an archaeological test excavation of four areas of archaeological sensitivity in late 2006. These were Spring Farm 1, 2, 3 and 4. Areas Spring Farm 1, 2 and 3 were located within a kilometre of each other approximately three kilometres to the northwest of the current study area. The landform units tested in all three areas were elevated grassy spurs and slopes. All three areas were found to contain duplex soils with shallow topsoil over a clay base. Area Spring Farm 1 was tested with five test squares which yielded only 1 stone artefact. Spring Farm 2 was tested with thirteen test squares from which sixteen culturally modified pieces of stone were recovered. Spring Farm 3 was tested with 28 test squares yielding 36 stone artefacts. Overall artefact density was low across these test areas and further work was not recommended.

Area Spring Farm 4 was located approximately a kilometre east of the current study area on a sand body to the south of Springs Road. Initial geomorphological investigation suggested that any subsurface Aboriginal material would be restricted to the upper most units as no buried land surfaces were located. Fourteen trenches were dug into the sand and twelve stone artefacts were recovered. Spring Farm 4 was also assessed as being a low density site and no further work was recommended.

Jo McDonald CHM 2009: Menangle Park West test excavations were conducted four kilometres to the southeast of the current study area in an area proposed for sand extraction. The area subject to the test excavations shares similar landscape characteristics with the current study area and therefore the results are relevant to this report.

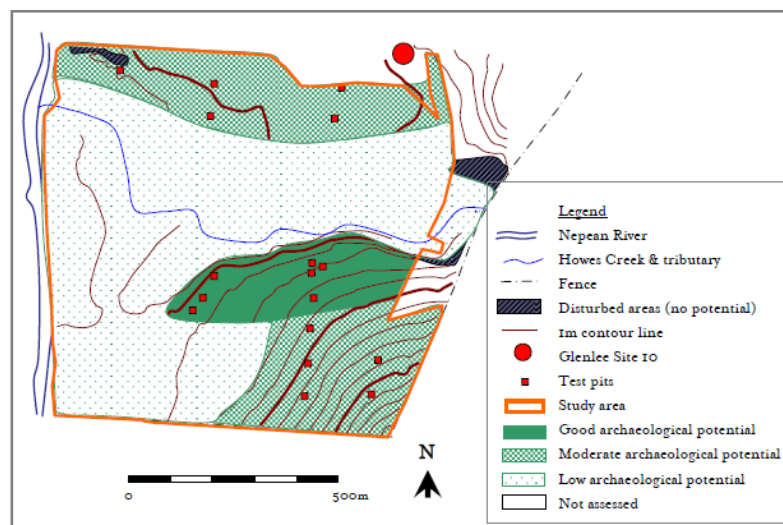
During test excavations Aboriginal stone artefacts were recovered from 13 of the 24 machine dug test pits (1.2m x 0.8 m) and from each of three additional pits that were excavated around areas with highest artefact density. A total of 168 Aboriginal artefacts were recovered during the project. The primary area of artefact density was within a sand layer approximately 700m from the Nepean River and within 200m of Howes Creek. The majority of pits dug into the alluvial soil closer to the river did not contain artefacts, apart from an area of slightly higher artefact density within the sandy loam alluvial deposits within 200m of the river bank (Figure 10).

Figure 10: Lithic distribution and soil type for the Menangle Park West excavations (JMcDCHM 2009:31).



It was concluded that the area of primary artefact density located on the sand body is of high archaeological sensitivity and should be conserved. This area was elevated from the river flat and 500-700 meters from the current river bank.

Figure 11: Menangle Park West area of archaeological zoning map (JMcDCHM 2009: 36)



Kayandel 2009: Kayandel Archaeological Services conducted an Aboriginal heritage assessment of Lot 1 DP 397936 and part Lot 1 & 2 DP 883299 239 Richardson Road, Spring Farm within the Spring Farm Urban Release Area. No Aboriginal sites were located during the ground survey but the majority of the study area was designated as having a high archaeological potential. It was suggested by Kayandel that as the study area was on the transition between the sand body and shale soil landscape some remnant in situ archaeological deposit may be buried within the sand body.



Jo McDonald CHM 2010: JMcDCHM conducted a test excavation on a section of the area of potential archaeological deposit SFPAD5 at 239 Richardson Road, Spring Farm, which Kayandel identified in 2009. A total of twelve 1x1m test squares and a 40m² open area were excavated during the project. 108 cultural lithics were recovered from the test excavation, with a further 969 recovered from the open area. The site was excavated in a Blacktown soil landscape which was above the flood line and therefore would not have been affected by the sedimentation that has occurred in the current study area. The SFPAD5 site contains the highest density of artefacts so far excavated in the Spring Farm area. Repeated occupation of the site may have occurred as it was located adjacent to a swampy area which would have provided rich and varied resources for Aboriginal people.

At the conclusion of the excavation a backhoe trench was dug within the open area to ascertain whether Pleistocene dune deposits that may have contained archaeological material were buried beneath the clay soils. A sand deposit was uncovered at 2m depth but was found not to be a buried land surface and to be too old to contain cultural deposits.

Kayandel 2010: Kayandel Archaeological Services conducted an Aboriginal heritage assessment of stages 1 & 3 water main, Spring Farm. This investigation covered the proposed routes of two water mains located just over three kilometers to the northwest of the current study area to the east of areas Spring Farm 1, 2, and 3 investigated by MDCA in 2006. Six Aboriginal sites and two area of potential archaeological deposit were recorded during the ground survey. The sites were found on lower hill slopes and associated with minor creek lines. Kayandel suggested that there may have been a higher than average density of Aboriginal sites because of the proximity to Mount Annan which would have been a culturally significant landmark. The area as a whole was assessed as having a moderate archaeological significance and further archaeological work, such as test excavations was recommended if the sites or areas of potential archaeological deposit were to be impacted.

3.6 Site Prediction

Based on the distribution of known Aboriginal sites provided by previous studies and an AHIMS register search; and the types of landform units found in the study area, statements can be made about the likelihood of archaeological sites being present within the study area, and what they may constitute.

Beth White and Jo McDonald have recently contributed to the debate over site prediction on the Cumberland Plain in their discussion on the nature of Aboriginal site distribution as interpreted through



lithic analysis of excavated sites in the Rouse Hill Development Area (RHDA) (White and McDonald 2010). This analysis brings together data from 631 dispersed 1mx1m test squares from nineteen sample areas, which yielded 4,429 stone artefacts in total. The findings of this study generally support earlier models that predicted correlations between proximity to permanent water sources and site location, but also highlighted the relationship between topographical unit and Aboriginal occupation.

The major findings of the study were that artefact densities were most likely to be greatest on terraces and lower slopes within 100m of water. The stream order model was used to differentiate between artefact densities associated with intermittent streams as opposed to permanent water. It was found that artefacts were most likely within 50-100m of higher (4th) order streams, within 50m of second order streams, and that artefact distribution around first order streams was not significantly affected by distance from the watercourse (White and McDonald 2010: 33). Overall landscapes associated with higher order streams (2nd order or greater) were found to have higher artefact densities, higher maximum densities, and more continuous distribution than lower order intermittent streams. The analysis also concluded that while there were statistically viable correlations that demonstrated a relationship between stream order, land form unit and artefact distribution across the RHDA, the entire area should be recognised as a cultural landscape with varied levels of artefact distribution (White and McDonald 2010: 37). Although this analysis is relevant to a different landscape, its general conclusions may be transferred to the Elderslie area.

Site prediction models suggest that the most likely locations for Aboriginal sites are within 100m of permanent fresh water, on a terrace or lower slope. If permanent water is not available within the study area the likelihood of Aboriginal sites declines. Shell middens, and axe grinding grooves are most likely to occur alongside permanent water sources. It is therefore possible that these site types will exist within the study area. Rock shelters and rock engravings/art are most common in sandstone geologies where sandstone is visible at the surface. No sandstone shelters or platforms were observed within the study area. It is unlikely that any rock engravings or shelters with archaeological deposit exist within the study area. It is possible that culturally modified or scarred trees exist adjacent to the study area along the river banks where a number of old growth trees remain. A 'canoe tree' was found at Camden Park in the vicinity of the study area.

Site prediction in relation to the study area is also closely related to geomorphological considerations. Based on previous studies in the area and on similar landform units (floodplains) within the Sydney



Basin it is most likely that Aboriginal sites will occur on buried land surfaces below the recent alluvial deposits. It would therefore be unlikely that surface artefacts or open sites would be located close to the river within the 100 year flood line, as any Aboriginal sites would have been covered by sediment or washed away. Sites are more likely to occur on elevated ground or terraces on the edge of the floodplain, such as the Glenlee site at Menangle Park (JMcDCHM 2009), the Clutha sites recorded by Barton (1996) or the Spring Farm site excavated by JMcDCHM (2010).

Aboriginal sites within the study area would most likely be found on or in any existing buried land surface (Tertiary Alluvium). Geomorphological testing has shown that Tertiary Alluvium is unlikely to occur within the study area above the water table, but is likely to occur to the east of the anabranch and therefore outside the area of impact. It is therefore unlikely that significant Aboriginal archaeological deposits remain within the study area.

4.0 Survey Methodology and Results

4.1 Background

The site survey was undertaken by Dr Sandra Wallace (Artefact), Donna Whillock (TLALC) and Glenda Chalker (Cubbitch Barta) on Monday 21st March.

4.2 Sampling Strategy

As the study area is uniform in landform unit and disturbance level the entire study area was surveyed as one survey unit. The river bank was also inspected although it is outside the study area and would only be exposed to minimal indirect impacts from the proposed development.

4.3 Site definition

An Aboriginal site is generally defined as an Aboriginal object or place. An Aboriginal object is the material evidence of Aboriginal land use, such as stone tools, scarred trees or rock art. Some sites, or Aboriginal places can also be intangible and although they might not be visible, these places have cultural significance to Aboriginal people.

DECCW guidelines state in regard to site definition that one or more of the following criteria must be used when recording material traces of Aboriginal land use.

1. the spatial extent of the visible objects, or direct evidence of their location
2. obvious physical boundaries where present, e.g. mound site and middens (if visibility is good), a ceremonial ground
3. identification by the Aboriginal community on the basis of cultural information

4.4 Survey Methodology

The study area was covered on foot. The majority of the study area has very low ground surface visibility so areas of exposure became the focus.



The survey was undertaken in accordance with best practice standards. A handheld Global Positioning System (GPS) was used to track the path of the surveyors, and to record the co-ordinates of features and location of landform units along the route.

Ground exposures were examined for stone artefacts, or other traces of Aboriginal occupation. Mature trees along the river bank were examined for cultural scarring or marking that may have been the work of Aboriginal people. Although the river bank is not within the study area any scarred trees or other Aboriginal sites located adjacent to the study area would need to be managed for indirect impacts. It was therefore necessary to survey the river bank. The western bank of the anabranch was also examined for Aboriginal sites.

A photographic record was kept during the survey. Photos were taken to represent the landform unit, vegetation communities, objects of interest and levels of disturbance. Scales were used for photographs where appropriate.

4.5 Effective Survey Coverage

Ground visibility was low throughout the study area. Exotic vegetation obscured visibility throughout the study area. Exposures along tracks adjacent to the fence lines to the east, south and north were examined. The area along the river has very low ground surface visibility as thick trees, weeds and shrubs made access difficult. Exposures within the treed areas were generally covered with leaf litter and therefore the only ground exposures near the river were along several tracks leading from the study area to the water's edge.

4.6 Site Survey Observations

The study area was walked in transects and ground exposures were examined for artefacts. Ground surface visibility was low as exotic grasses around the edges of the study area, and a crop in the central portion obscured visibility.

The ground surface of the study area was observed to be disturbed with furrows from the vineyard noted, along with recent plough lines. Overall the study area was fairly uniform with surface disturbance from cultivation, and low ground surface visibility.

Plate 1: The study area looking west from the southeastern corner towards the river.



Plate 2: Western edge of the study area adjacent to the river bank.



The river bank was also examined although it is outside the area of development impacts as it is possible that scarred trees may have survived along the bank. A number of old growth trees were noted along the river bank but no cultural modifications were observed. The vegetation along the river was very thick with weeds choking sections of the bank.

Plate 3: Vegetation along the river bank.



4.7 Assessment of archaeological potential

The study area is assessed as having a **low archaeological potential** based on the following considerations.

Geomorphological Character: The study area has been disturbed heavily by cultivation including market gardens and viticulture. It is been demonstrated by soil profile testing that buried Tertiary Alluvial land surfaces are unlikely to remain beneath Quaternary Alluvial deposits within the study area. There is a low potential that archaeological material may be found within the Quaternary Alluvial deposits, and a low potential that buried Tertiary Alluvial former land surface which may contain evidence of occupation remain within the study area.

Archaeological Context: The study area is within a broader region of intensive Aboriginal land use, and within the vicinity of important Aboriginal sites such as SFPAD5 and the Camden Park 'Canoe tree'. The only archaeological excavations so far conducted in the local area on the Nepean floodplain (Menangle Park West – JMcDCHM 2009) have demonstrated that significant archaeological deposits were located within the Tertiary Alluvial sand body on the edge of the floodplain several hundred meters from the river bank.

Previous Assessments: Two previous archaeological studies have made assessments and recommendations for the study area and the area adjacent to it. These assessments and recommendations are taken into account in this report. The Camden Bush Corridor study assessed the current study area as



having a moderate archaeological potential (Zone 2) and that if the area was to be impacted, further investigations should be conducted to ascertain whether buried land surface remained (Barton 1996). The assessment of the adjacent block by MDCA concluded that the area had a low archaeological potential and that there were no archaeological constraints. The assessment of this report that the study area has a low archaeological potential is therefore in keeping with the results of previous studies.

4.8 Significance assessment

This significance assessment discusses archaeological, cultural, aesthetic and public significance in the context of Aboriginal heritage. This significance assessment is based on best practice criteria as outlined in the ICOMOS Burra Charter as amended 1999.

The study area has a low archaeological significance as there is a low potential for archaeological deposits that would further scientific knowledge of Aboriginal occupation of the study area. It is not rare in its local or regional context.

The study area has cultural significance as the Nepean River is culturally important to Aboriginal people. This view was expressed by representatives of Tharawal Land Council and Cubbitch Barta during the site survey and in comments received regarding the project.

The study area has a low aesthetic significance and a low public significance as any Aboriginal sites would be buried and therefore not visible.

5.0 Discussion

5.1 Management Principles

Management principles aid in the formulation of impact assessments and recommendations on whether further investigation is required. Jo McDonald CHM (JMcD CHM 2010c) outlines the following principles, which have also been used in this assessment.

- Sites and/or landscapes with high archaeological potential or Aboriginal significance (particularly in threatened landscapes) should be identified as worthy of conservation, and development impacts on these should be avoided.
- Sites and/or landscapes with moderate archaeological potential or Aboriginal significance (particularly in threatened landscapes) should be avoided if possible by development proposals. If impacts are unavoidable then these features should be the subject of further investigation to ensure that information is retrieved prior to their destruction;
- Sites and/or landscapes of low or no archaeological potential or Aboriginal significance do not require planning consideration or further archaeological investigation in relation to the proposed development.

As the study area has been assessed as having low archaeological potential further archaeological investigations will not be necessary.

5.2 Impact Assessment

Impacts from the proposed development will be extensive. The soil/sand deposit will be entirely removed so any archaeological deposits, even at some depth would be impacted by the proposed development.

5.3 Conclusions and Discussion

The study area has been assessed as having a low archaeological potential and therefore it is no further archaeological investigations are required prior to soil extraction commencing. This recommendation is based on the management principles which stipulate that impacts on areas of low archaeological potential should not be subject to archaeological constraints. This recommendation is also based on the fact that the study area has a low archaeological significance.

6.0 Recommendations

The following recommendations are based on consideration of:

- Statutory requirements under the *National Parks and Wildlife Act 1974* as amended;
- The Director General's Requirements as specified for the Aboriginal heritage component of the Environmental Assessment for this project;
- The results of the background research, site survey and assessment;
- The interests of the Aboriginal stakeholder groups; and
- The likely impacts of the proposed development.

It was found that:

- No Aboriginal sites have been previously recorded within the study area, or were located during the site survey;
- There is a low potential that subsurface archaeological deposits exist within the study area. The study area is therefore assessed as having low archaeological potential;
- The study area has a low archaeological significance;
- The Aboriginal groups have addressed the cultural significance of the study area.

It is therefore recommended that:

- There are no archaeological constraints on the proposed development;
- If Aboriginal objects are located during excavation the archaeologist, Aboriginal stakeholders and the Office of Environment and Heritage should be notified, and further archaeological work may be necessary.
- If human skeletal remains are encountered during excavation, work must cease immediately and the NSW Police, and the Office of Environment and Heritage must be notified. If the skeletal remains are found to be Aboriginal a process of consultation and investigation in accordance with the Office of Environment and Heritage guidelines must be implemented.
- A copy of this draft report should be sent to all registered Aboriginal stakeholder groups for their comments.

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Appendix 1

Responses from Aboriginal Stakeholder groups

Cubbitch Barta Native Title Claimants
Aboriginal Corporation
55 Nightingale Road,
PHEASANTS NEST. N.S.W. 2574.
4th July, 2011.

Artefact,
P.O. Box279,
COOGEE. N.S.W. 2034

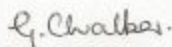
Dear Sandra,

RE; MACARTHUR ROAD
SOIL SITE

Thank you for the opportunity of commenting on your draft report for the above project. There were no Aboriginal sites located during the survey. The ground area was examined for ground exposures and the mature trees along the riverbank were also examined for the possibility of scarred trees, given the ages of the trees.

There are no constraints to this development from an Aboriginal perspective. However I would hope that the riverbank where the very old trees are will not be impacted. The only other thing that I always try to bring to developers attention along the Nepean River is always the possibility of burials. Aboriginal people around the Camden area continued to bury their own right up until 1870. These burials took place around the river, as it was much easier to dig in the sandy/silty soil. Even though there has not been any burials that have been notified, there is still the need to be vigilant.

Yours faithfully,



Glenda Chalker
Hon. Chairperson
Phone/Fax 46841129 0427218425

TIME RECEIVED
June 24, 2011 1:22:21 PM GMT+10:00

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STATUS
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Darug Aboriginal Cultural Heritage Assessments

ABN 51734106483

Gordon Morton

Mob: 0422 865 831
Fax: 45 677 421

Celestine Everingham
90 Hermitage Rd., Kurrajong Hills, 2758
Ph/Fax: 45677 421
Mob: 0432 528 896

24.6.11

Attention

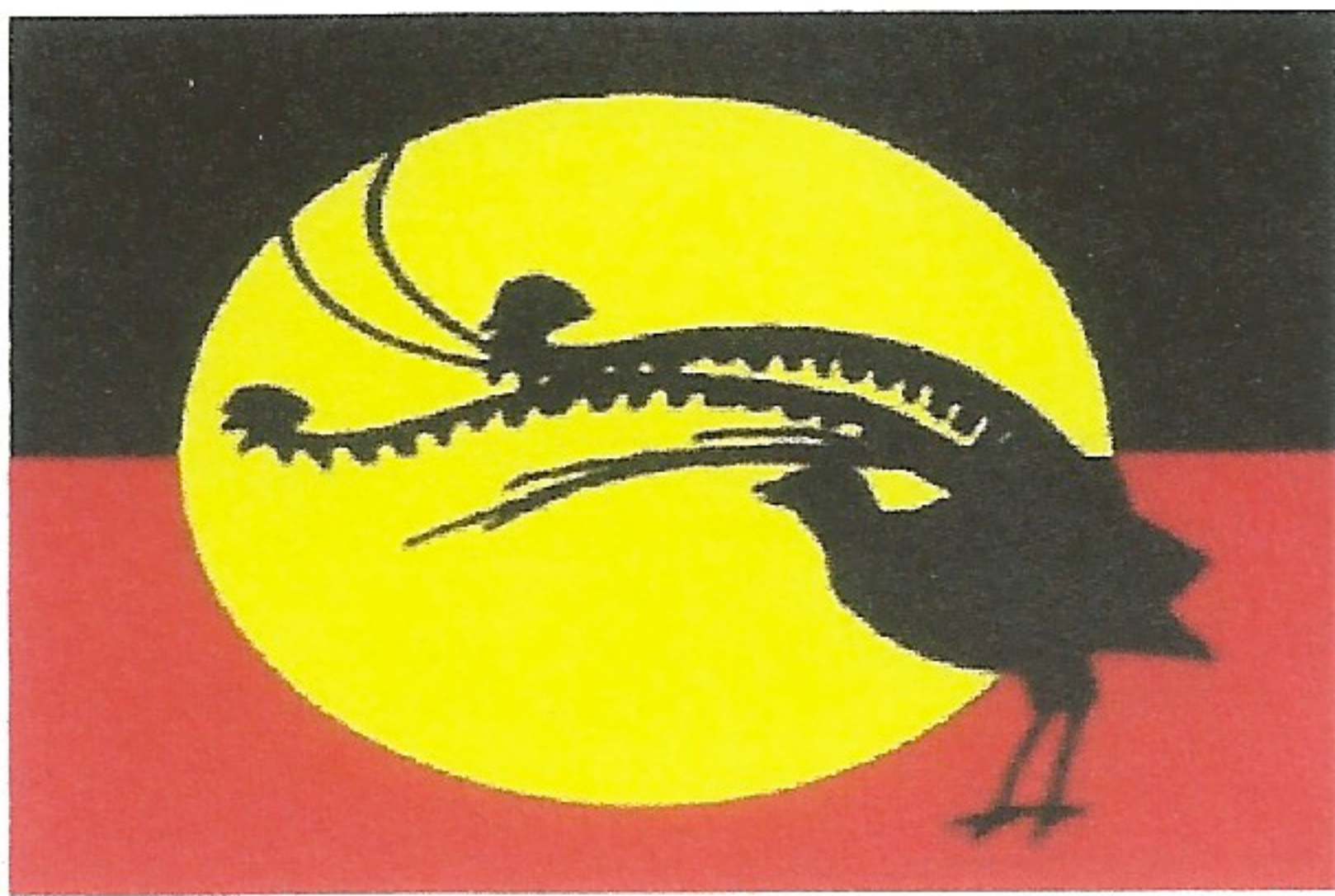
Sandra Wallace
Artefact

re sand/soil extraction site, Elderslie

DACHA have reviewed your draft report on
the above site and we support your
recommendations.

Yours Sincerely,
G. Morton

4
C. Everingham



THARAWAL LOCAL ABORIGINAL LAND COUNCIL

Gibbergunyah (Formerly Stonequarry Lodge)
50 Matthews Lane, Picton NSW 2571

23rd March 2011

Sandra Wallace
Artefact Heritage

RE: Report

Dear Sandra,

On Monday 21st March I attended a walkover survey of a property at Elderslie (near the bridge). We walked over the area and due to the high disturbance of the previously highly ploughed and cultivated area there were no artefacts found on the ground surface. The area runs along the river bank and due to this I feel that there may be artefacts under the surface of the soil. Prior to any work commencing with sand mining I would recommend some test pits being performed in the surrounding areas.

I would like to thank you for your invitation on this survey and I look forward to working with you again.

Yours in Indigenous Unity,

Donna Whillock
Temporary Cultural & Heritage Representative
Tharawal Local Aboriginal Land Council

PO Box 168
Picton NSW 2571
Phone: 02 4681 0059 Fax: 02 4683 1375
tharawa@bigpond.net.au

From: mulgokiwi@bigpond.com
To: sandra.wallace@artefact.net.au
Subject: Re: Elderslie sand/soil extraction assessment
Date: Sunday, 26 June 2011 2:42:12 PM
Attachments: [20110626023711_image1.png](#)

Dear Sandra,

The Darug Custodian Aboriginal Corporation have recieved and reveiwd the report for the Elderslie Sand/ soil extraction assessment and we suppoth the findings and recommendations set out within this report. Please contact us with all other enquiries on 0415770163 or by email.

Regards
Leanne Watson

On 21/06/2011 10:04 AM sandra wallace wrote:

Hi all,

Please find attached the draft Aboriginal assessment for the proposed sand/soil mining facility at Elderslie.

Could you please email any comments you may have regarding the report and recommendations back to me as soon as possible.

Regards,
Sandra

Dr Sandra Wallace
Principal Archaeologist

T: +61 2 9025 3958 | M: 0403565086 | E: sandra.wallace@artefact.net.au | W: www.artefact.net.au

artefact
...discover

 You replied to this message on 25/06/2011 7:15 AM.

From: desmond dyer <desmond4552@hotmail.com>
To: sandra.wallace@artefact.net.au
Cc:
Subject: RE: Elderslie sand/soil extraction assessment

Hi Sandra,
the Darug Aboriginal Land care agree with your recommemandations
Des

From: gordon <gordow51@bigpond.net.au>
To: sandra wallace
Cc:
Subject: Re: Elderslie sand/soil extraction assessment

Sorry Sandra D.L.O was not involoed in this work and we can not do a reply.

Uncle
Gordon Workman
Darug Elder