Appendix 06
Aboriginal Testing report

COMBER CONSULTANTS

ARCHAEOLOGY – HERITAGE – MEDIATION – ARBITRATION

170 Russell St Emu Plains

Aboriginal Archaeological Testing Report

March **2023**

Report to: Glenstone Pty Ltd

LGA: Penrith

Version: B.2023

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ACKNOWLEDGEMENT OF COUNTRY

We acknowledge the Traditional Custodians of the land that we live and work on.

We pay our respects to the Elders, past, present and emerging, for they hold the memories, the traditions, the culture and hopes of Aboriginal people.

We honour and acknowledge the stories, traditions and living cultures of Aboriginal and Torres Strait Islander peoples on this land and commit to building a brighter future together.

A better understanding and respect for Aboriginal and Torres Strait Islander cultures develops an enriched appreciation of Australia's cultural heritage and can lead to reconciliation. This is essential to the maturity of Australia as a nation and fundamental to the development of an Australian identity.

DOCUMENT CONTROL

PROJECT NO: NV427 **STATUS:** FINAL

REV	DATE	PREPARED BY	EDITED BY	APPROVED BY
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B	22/03/2023	Dr Jillian Comber and Supriya Singh	David Nutley	Dr Jillian Comber

INTEGRATED MANAGEMENT SYSTEM

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CONTENTS

EXECUTIVE SUMMARY

Glenstone Pty Ltd propose the development of 170 Russell Street, Emu Plains. The proposal includes a single storey mixed-use development with a carpark.

An Aboriginal archaeological assessment of the site recommended that Aboriginal archaeological testing be undertaken. The testing revealed that the site was highly disturbed from continual flooding action and prior development of the site as a motocross circuit. The motocross circuit included grading the site and the creation of tracks and mounds.

Seventeen Aboriginal objects were uncovered during the test excavation, which were mostly micro-debitage. One hammerstone and one glass artefact were uncovered.

This report makes the following recommendations:

Recommendation 1: AHIP
An application for an Aboriginal Heritage Impact Permit (AHIP) should be submitted to Heritage NSW. The proposed development cannot proceed until the AHIP has been received.

Recommendation 2: Induction
Prior to redevelopment of the site, all personnel, employees, contractors and sub-contractors should be inducted into their responsibilities under the NSW *National Parks & Wildlife Act 1974* and that it is an offence to harm Aboriginal objects. The induction should include instructions on how to identify an Aboriginal object and actions to be taken as detailed in Recommendation 4.

Recommendation 3: Unexpected Heritage Finds and Human Remains Procedure
Unexpected Heritage Finds: If any Aboriginal objects are unexpectedly uncovered during the redevelopment of the site, all work must cease in the vicinity of the object and an area of at least one metre around the Aboriginal objected secured and cordoned off using fencing and/or appropriate barriers. The archaeological consultant must be immediately contacted for further advice. The consultant will assess the object and provide further advice. In addition, the consultant will liaise with the Registered Aboriginal Parties. No-one should enter the secured area and work can only recommence when advised by the consultant.

Human Remains: If any skeletal remains are uncovered during the redevelopment of the site, all work must cease in the vicinity of the human skeletal remains and an area of at least one metre around the skeletal remains secured and cordoned off using fencing and/or appropriate barriers. The archaeological consultant must be immediately contacted and must attend immediately. The consultant will inspect the skeletal remains to confirm that they are human. If the remains are human, the consultant will contact and liaise with the Police, Heritage NSW and the Registered Aboriginal Parties, all of whom will most likely attend the site. Work will not be able to recommence within the secured area until suitable management procedures are in place. It could take several months to determine an appropriate course of action.

1 INTRODUCTION

Glenstone propose the commercial development of 170 Russell Street, Emu Plains. The plans for the proposal are contained at Appendix A.

Comber Consultants were engaged to undertake an Aboriginal archaeological assessment of the study area to ensure that the Aboriginal archaeology on the site is not adversely impacted upon by the proposed development. The report was prepared in accordance with *Guide to investigating, assessing and reporting on Aboriginal cultural heritage in NSW.* That report (Comber & Nutley 2022) determined that the study area contained subsurface Aboriginal archaeological potential and recommended Aboriginal consultation in accordance with *Aboriginal cultural heritage consultation requirements for proponents 2010* and archaeological testing in accordance with *Code of practice for archaeological investigation of Aboriginal Objects in NSW* (Comber & Nutley 2022).

Accordingly, Aboriginal consultation and archaeological test excavation was undertaken by Comber Consultants. The consultation was undertaken in accordance with the *Aboriginal cultural heritage consultation requirements for proponents 2010* and an Aboriginal Cultural Heritage Assessment report was prepared by Comber Consultants (Nutley & Singh 2022). The archaeological testing occurred from Monday 28th November to Friday 2nd December 2022 in accordance with *Code of practice for archaeological investigation of Aboriginal Objects in NSW.* This report details the results of that testing.

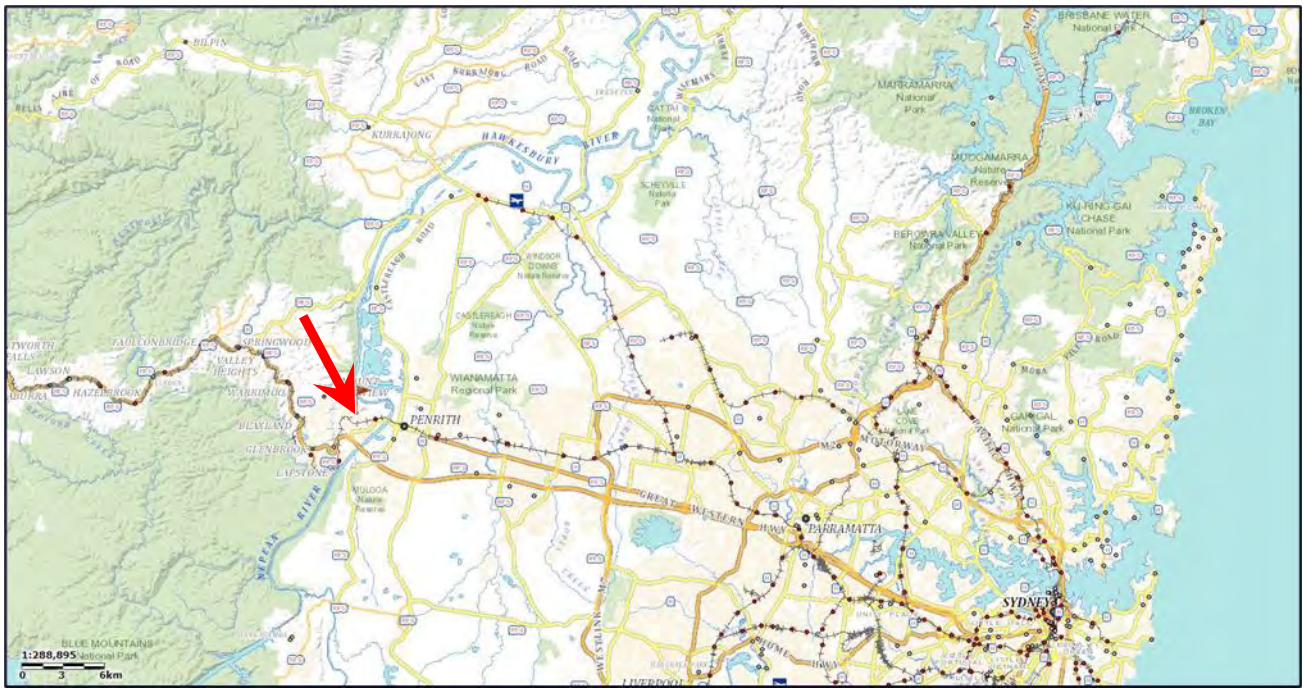

Figure 1: Location of study area indicated by red arrow (Source: Six Maps)

Photograph 1: Aerial imagery of study area Lot 1 DP1273251 edged in red (Source: Six Maps)

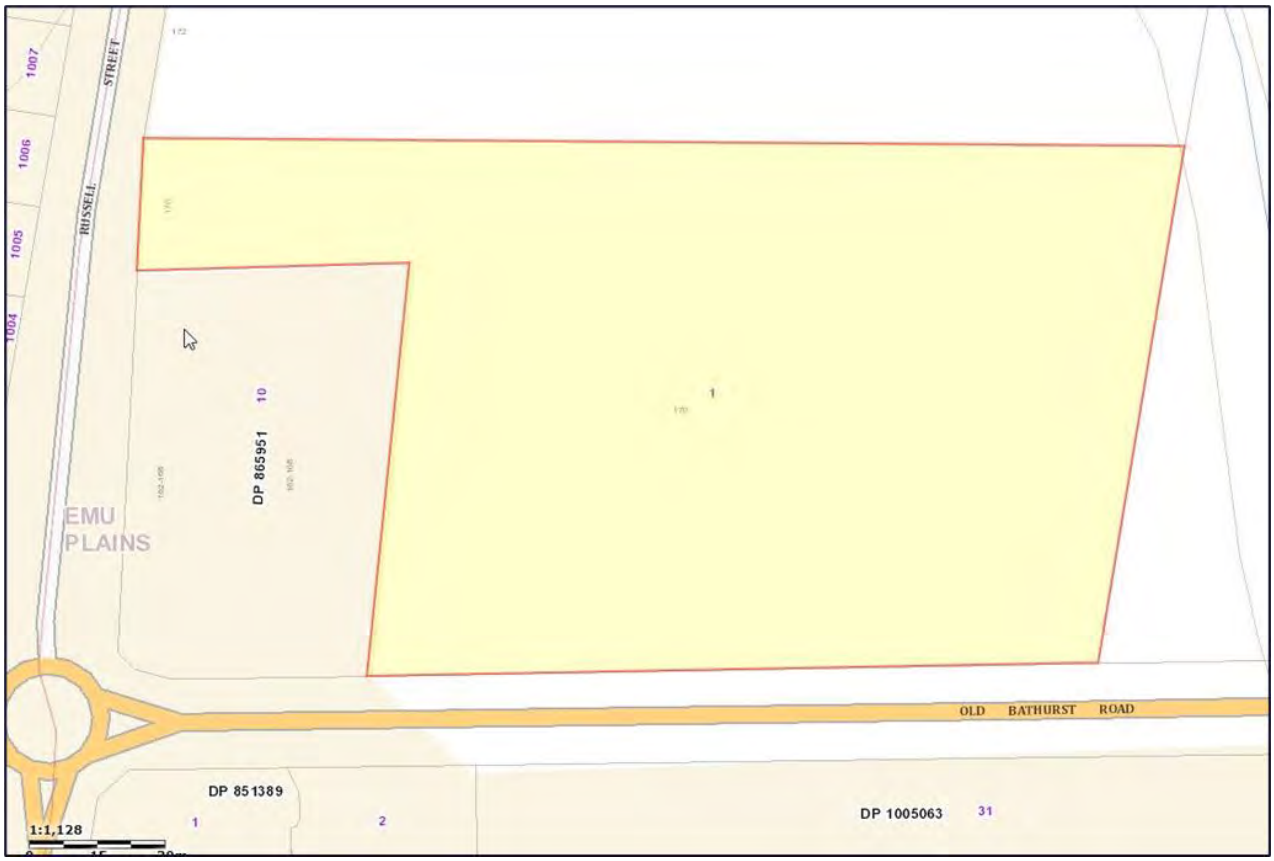

Figure 2: Map of study area, 170 Russell Street, Lot 1 DP1273251 (Source: Six Maps)

2 LEGISLATION

2.1. National Parks and Wildlife Act 1974

The National Parks & Wildlife Act 1974 (NPW Act) provides statutory protection for all Aboriginal objects within New South Wales. The Department of Planning, Industry and Environment is the State Government agency responsible for the implementation and management of this Act.

Part 6 of the NPW Act provides protection of all "Aboriginal objects" and states that it is an offence to harm or desecrate an Aboriginal object or Aboriginal place, without an Aboriginal Heritage Impact Permit (AHIP). Aboriginal objects are defined 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.*

An Aboriginal archaeological assessment was undertaken by Comber Consultants (Nutley & Singh 2022) which determined that the site contains Aboriginal archaeological potential. That report recommended that Aboriginal consultation be undertaken in accordance with the *Aboriginal Cultural Heritage Consultation Guidelines for Proponents 2010* and an archaeological testing be undertaken in accordance *Code of Practice for Archaeological Investigation of Aboriginal Objects in NSW.*

The Aboriginal consultation was undertaken and is documented in a separate Aboriginal Cultural Heritage Assessment Report. This report details the results of that testing. As a result of the testing it has been recommended that an application for an Aboriginal Heritage Impact Permit be submitted to Heritage NSW.

2.2. The Penrith Local Environmental Plan (PLEP) 2010

The objectives of the PLEP are to conserve the heritage of the Penrith LGA including Aboriginal objects and places. Development consent is required to demolish or move an Aboriginal object as detailed below:

(1) Objectives

The objectives of this clause are as follows:
- (a) to conserve the environmental heritage of Penrith City Council,
- (b) to conserve the heritage significance of heritage items and heritage conservation areas, including associated fabric, settings and views,
- (c) to conserve archaeological sites,
- (d) to conserve Aboriginal objects and Aboriginal places of heritage significance.

(2) Requirement for consent

Development consent is required for any of the following:
- (a) demolishing or moving any of the following or altering the exterior of any of the following (including, in the case of a building, making changes to its detail, fabric, finish or appearance):
  - (i) a heritage item,
  - (ii) an Aboriginal object,
  - (iii) a building, work, relic or tree within a heritage conservation area,
- (b) altering a heritage item that is a building by making structural changes to its interior or by making changes to anything inside the item that is specified in Schedule 5 in relation to the item,
- (c) disturbing or excavating an archaeological site while knowing, or having reasonable cause to suspect, that the disturbance or excavation will or is likely to result in a relic being discovered, exposed, moved, damaged or destroyed,
- (d) disturbing or excavating an Aboriginal place of heritage significance,
- (e) erecting a building on land:
  - (i) on which a heritage item is located or that is within a heritage conservation area, or
  - (ii) on which an Aboriginal object is located or that is within an Aboriginal place of heritage significance,
- (f) subdividing land:

(i) on which a heritage item is located or that is within a heritage conservation area, or
(ii) on which an Aboriginal object is located or that is within an Aboriginal place of heritage significance.

(3) When consent not required

However, development consent under this clause is not required if:

(a) the applicant has notified the consent authority of the proposed development and the consent authority has advised the applicant in writing before any work is carried out that it is satisfied that the proposed development:
(i) is of a minor nature or is for the maintenance of the heritage item, Aboriginal object, Aboriginal place of heritage significance or archaeological site or a building, work, relic, tree or place within the heritage conservation area, and
(ii) would not adversely affect the heritage significance of the heritage item, Aboriginal object, Aboriginal place, archaeological site or heritage conservation area, or

(b) the development is in a cemetery or burial ground and the proposed development:
(i) is the creation of a new grave or monument, or excavation or disturbance of land for the purpose of conserving or repairing monuments or grave markers, and
(ii) would not cause disturbance to human remains, relics, Aboriginal objects in the form of grave goods, or to an Aboriginal place of heritage significance, or

(c) the development is limited to the removal of a tree or other vegetation that the Council is satisfied is a risk to human life or property, or

(d) the development is exempt development.

(4) Effect of proposed development on heritage significance

The consent authority must, before granting consent under this clause in respect of a heritage item or heritage conservation area, consider the effect of the proposed development on the heritage significance of the item or area concerned. This subclause applies regardless of whether a heritage management document is prepared under subclause (5) or a heritage conservation management plan is submitted under subclause (6).

(5) Heritage assessment

The consent authority may, before granting consent to any development:

(a) on land on which a heritage item is located, or

(b) on land that is within a heritage conservation area, or

(c) on land that is within the vicinity of land referred to in paragraph (a) or (b), require a heritage management document to be prepared that assesses the extent to which the carrying out of the proposed development would affect the heritage significance of the heritage item or heritage conservation area concerned.

(6) Heritage conservation management plans

The consent authority may require, after considering the heritage significance of a heritage item and the extent of change proposed to it, the submission of a heritage conservation management plan before granting consent under this clause.

(7) Archaeological sites

The consent authority must, before granting consent under this clause to the carrying out of development on an archaeological site (other than land listed on the State Heritage Register or to which an interim heritage order under the *Heritage Act 1977* applies):

(a) notify the Heritage Council of its intention to grant consent, and

(b) take into consideration any response received from the Heritage Council within 28 days after the notice is sent.

(8) Aboriginal places of heritage significance

The consent authority must, before granting consent under this clause to the carrying out of development in an Aboriginal place of heritage significance:

(a) consider the effect of the proposed development on the heritage significance of the place and any Aboriginal object known or reasonably likely to be located at the place by means of an adequate investigation and assessment (which may involve consideration of a heritage impact statement), and
(b) notify the local Aboriginal communities, in writing or in such other manner as may be appropriate, about the application and take into consideration any response received within 28 days after the notice is sent.

The property at Lot 1 DP1273251 is not listed in the Environmental Schedule of the LEP

This report addresses the above requirements. An archaeological assessment was undertaken which determined that the site contains Aboriginal archaeological potential and recommended testing. That testing was undertaken in consultation with the Registered Aboriginal Parties and is detailed in this report. This report has determined that no further Aboriginal archaeological assessment, monitoring, testing or salvage is required.

3 CONSULTATION

Aboriginal culture is dynamic and continuous. It includes the tangible and intangible and links people over time to their community and land. It is important to recognise that Aboriginal people have the right to protect, preserve and promote their cultural heritage. In recognition of that right, Aboriginal consultation was undertaken in accordance with *Aboriginal Cultural Heritage Consultation Guidelines for Consultants 2010.* That consultation is detailed in a separate Aboriginal Cultural Heritage Assessment Report. As a result of the consultation, the following are the Registered Aboriginal Parties (RAPs).

- Steven Randall, Deerubbin Local Aboriginal Land Council
- Adam Gunther, Gunya Aboriginal Cultural Heritage Services Pty Ltd
- Korri Currell, Koori Digs Services
- Rodney Gunther, Waawaar Awaa Aboriginal Corporation
- Steven Johnson, Woka Aboriginal Corporation
- Scott Franks, Tocomwall
- Paul Boyd, Didge Ngunawal Clan
- Merekai Bell, Yurwang Gundana Cultural Heritage Services
- Name Withheld
- Phil Khan, Kamilaroi Yankuntjatjara Working Group
- Shayne Dickson, Gunjeewong Cultural Heritage Aboriginal Corporation
- Daniel Chalker, Wori Wooilywa
- Justine Coplin, Darug Custodian Aboriginal Corporation
- Carolyn Hickey, A1 Indigenous Services
- Amanda Hickey, Amanda Hickey Cultural Services
- Steven Hickey, Widescope Indigenous Services

This report was sent to the Registered Aboriginal Parties and their responses are shown in Appendix E.

4 INVESTIGATORS AND CONTRIBUTORS

Dr Jillian Comber, BA, Litt B., PhD M.AACAI., M.ICOMOS
Project Director/Investigator
Dr Jillian Comber, the Director of Comber Consultants Pty Ltd, has over 30 years' experience as an Archaeologist and Cultural Heritage Manager. She is experienced in all aspects of Aboriginal Cultural Heritage Management with particular expertise in Aboriginal excavation and stone tool management.

Tory Stening, BA, MA, M.AACAI, M.ICOMOS
Project Co-Director/Artefact Specialist/Investigator
Tory Stening has an undergraduate degree in Indigenous Archaeology from Macquarie University and a Master's Degree from the University of New England. Her Master's Degree was an analyses of stone tools from an excavation in Cowra. She has over ten years' experience in excavation and stone tool management.

Dr Agata Calabrese, BA, MA, PhD
Senior Archaeologist/Supervisor
Agata Calabrese is a senior archaeologist who has a PhD in archaeology from the University of Sydney and an International Double Degree Master in archaeology from the University of Catania (Italy) and the University of Warsaw (Poland). She has over five years' experience in Aboriginal archaeology with specialist expertise in excavation and field techniques

Glenn Suey, **Diploma in Indigenous Archaeology**
Glenn Suey, archaeologist, is a Senior Kamilaroi man with extensive experience in the management of Aboriginal sites and places including survey, assessment, monitoring, testing and excavation.

Supriya Singh, B.A., M.A.
Archaeologist
Supriya is an archaeologist with over five years' experience in Aboriginal archaeology with an undergraduate degree in archaeology and a Masters Degree in Cultural Heritage Management. She has specialist expertise in excavation and field techniques.

Dr Maria Glaros, B.A. (Hons), PhD
Historian/Archaeologist
Maria is a historian with a focus on Aboriginal histories for Aboriginal archaeological reports. She is presently completing a Graduate Certificate in Archaeology with Flinders University and has expertise in excavation techniques and artefact identification.

Chris Jones, Operations Manager

Registered Aboriginal Parties:

- Korri Currell, Koori Digs
- Bradley Leslie, Koori Digs
- Belinda Jackson, Kamilaroi Yankuntjatjara Working Group
- Jamie Currell, Kamilaroi Yankuntjatjara Working Group
- Steven Knight, Deerbbin Local Aboriginal Land Council
- Lana Wedgwood Darug Custodian Aboriginal Corporation

4 ABORIGINAL HISTORY

4.1. People and their Land

The Mulgoa clan of the Darug were the traditional owners of the land around the Penrith area on the Cumberland Plain, Mulgoagal for the male members of the clan and Mulgoagalleon for the female members. The suffix 'gal' or 'galleon' was added to denote whether the individual from the clan was male (gal) or female (galleon) (Phillip 13 Feb 1790 in HRA (1) cited in Attenbrow 2003:22-24). Knowledge of the names and boundaries of language groups and bands in Sydney is incomplete due to the scarcity of reliable data. Although exact figures for the Aboriginal population at the time Europeans arrived is not known, estimates for the greater Sydney region range from 2000-3000 to 4000-8000 (Attenbrow 2002:17). The population of the Darug occupying the Cumberland Plain was probably from 500-1000 (Hinkson 2001; Kohen 1986:76), who divided into smaller communities of from 35 to 60 people who camped, travelled, foraged, fished, and hunted together. In April these communities would congregate around the swamps to catch eels whilst in summer when food was plentiful several of these communities would gather along the Nepean River. In winter these communities split into smaller extended family groups (Kohen 1993b:3).

Aboriginal communities allocated responsibility for the care of different geographical areas to individuals, families, or groups (Kohen 1986:9). Clan groups, who were one family consisting of husband, wife, children, grandparents, unmarried adult males and females etc., had a spiritual relationship to the land they regarded as their territory, or estate. However, on a daily basis several clans often hunted, fished and collected food together across the various clan territories. This not only ensured economic survival but provided a broader range of adults of marriageable age, as men and women of the same clan could not marry. These groups are known as bands. They had an economic relationship to the land and their range could overlap several clan estates. On special occasions such as initiations, funerals and other ceremonial occasions much larger groups from further afield would assemble (Attenbrow: 2002, 28).

Clans in the Hawkesbury-Nepean area all claim membership through the father (patrilineal) and receive their clan design through him (Attenbrow 2002, 72).

4.2. Darug

'Darug' is primarily a linguistic term used to describe the language or dialects spoken by many clan groups in the greater Sydney area, but with regional differences. The people of the Sydney coastal areas spoke a dialect of the Darug language and had many different cultural customs to the people of the Hawkesbury-Nepean/Cumberland Plain area. The people on the western side of the Hawkesbury-Nepean River also spoke a dialect of Darug and had different customs. Some linguists refer to 'coastal Darug" and 'hinterland Darug' to distinguish between the groups living in the Port Jackson-Botany Bay area, and those living in the Cumberland Plain area. The land of the "hinterland Darug" stretches from Appin in the south to the Hawkesbury River in the north, and west of the Georges River, Parramatta, Lane Cove River and Berowra Creek (Attenbrow: 2002:34). The people of central Sydney, sometimes called the Eora, spoke a Darug dialect (Kohen 1986 9) and could converse with people living near the Nepean, but did have many different words (Attenbrow 2002:31).

"Darug" was used by the Aboriginal people along the Nepean River to describe themselves to Colonial ethnographer R H Mathew in the late nineteenth century (Kohen 1986:60).

The term Darug is now widely used to describe the Aboriginal people living on the Cumberland Plain. However, it should be noted that the Deerubbin Local Aboriginal Land Council do not recognise the term "Darug" as a cultural group.

The word Darug was recorded by early Colonists as a word for "a kind of wild yam" who noted that the yam was a stable diet of the people living along the banks of the Hawkesbury River (Kohen 1986:60).

4.3. Religion

Spiritual belief permeated every aspect of Darug culture. Every aspect of the life for the Darug was governed by religious beliefs which were based on their skin (sometimes referred to as a "totem". However, the term "totem" tends to trivialise a highly complex spiritual life). Each skin (or clan) had their own clan design which was based on skin names ie, the name of a plant animal or object given to each child at birth and passed on through the father. People could not marry anyone with the same skin name; a hunter would not kill any animal whose skin name he carried; no-one would eat a plant or animal of their skin name. In this way it was thought to protect and encourage the increase of a persons particular name-

sake. There were specific male and female skin names. These clan designs were represented in the body marking, the designs on possum skin cloaks, necklaces, hair-styles and on carved trees (Attenbrow 2002, 108).

Members of the Darug clan believed that in the Dreaming all the animals existing today were men, or had human attributes (Kohen 1993b, 39). They lived in trees, clouds, mountains and other natural features of the landscape.

Some beliefs applied to all people, but others were specifically for male or females only. Similarly, some ceremonies were celebrated by all while others were performed by segregated groups (Kohen 1993b:33).

A large bird, possibly the white-whinged chuff, was regarded by the Darug as a deliverer of bad messages (Kohen 1993b, 35).

4.4. Burial

Different burial practices were carried out depending on the status of the person. Burials occurred along the banks of the Hawkesbury and Nepean Rivers. Ground-edge hatchets and other personal items were often buried with their owners (Kohen 1993b, 33), whilst trees were carved with the persons clan or skin design to mark a burial.

4.5. Sustenance

Plant food

As early as 1793 it was recorded that the people who lived between Parramatta and the Blue Mountains were more dependent upon plant food and the hunting of small animals rather than fishing although fresh-water mullet and eel were seasonally available (Kohen 1986:77). A paste of yam, and ants was mixed together, sometime with ant eggs as well (Collins 1802 462).

More plant foods were available in spring, summer and autumn than in winter. Yams and tubers were present all year, but they have greater nutrient value at different times of the year. Seeds of two species of macrozamia were a major source of carbohydrate. However, as the macrozamia seed is poisonous, they needed careful preparation to remove the toxins. These were leached out either by soaking the nuts in rainwater for several days in nets made from possum fur, or placing them under rocks at the bottom of a stream. The nuts were then baked into “cakes about 15 inches in diameter to be eaten when hungry” (Kohen 1986, 40).

There were many tuberous plants which grew in the rich soil deposited on the banks of the Nepean when the river flooded, including orchids, lilies and several sorts of ferns. The common bracken was also a food source. Other edible tubers came from *Glycine tabacina*, which had a licorice flavour, *Eustrephus latifolia* and *Geitonoplesium cymosum* (Kohen 1986, 41).

William Dawes, who recorded extensively in the early days of the colony, suggested that the Sydney region Aboriginal people grouped plants in three categories: wigi, fruit or berries, like the macrozamia; watangal, plants with honey-bearing flowers like the grevilleas and melaleucas, and plants which came from under the ground, although there was no single word for this group (Kohen 1986:43). Plants provided a varied and nutritional diet.

Governor Phillip recorded that the Aboriginal people regularly burned areas of the Cumberland Plain to catch small animals for food, but regular burning also reportedly resulted in larger macrozamia berries, and the regeneration of tuberous plants may also have benefited (Kohen 1986, 51).

Animal food

A large variety of small animals was available along the banks of the Nepean and in the adjacent woodlands, such as the eastern grey kangaroo (Macropus giganteus), wallabies and the brush-tailed possum which still exist in the Castlereagh Nature Reserve on the eastern side of The Northern Road near Penrith (Plan of Management Agnes Banks etc Nature Reserves 1999, 12). Small birds such as quail were trapped along the river, and there were emus as well in the early days of European settlement possibly providing eggs (Kohen 1999:52).

Possums provided a significant source of protein in the diet. Toe-holds were cut into trees with an axe or hatchet, to assist in tree-climbing, or to hollow out the base of trees so fires could be lit to drive the possums into the open. Large fruit bats, or flying foxes, were also caught in this way (Kohen 1986, 79).

Women and children were responsible for collecting yams, fruit, roots and small game such as lizards and birds, which formed the basis of the diet, while the men hunted for wallabies, possums, and quails with traps and snares. Pitfall traps were also dug for larger animals. It is thought that kangaroo hunting was pursued more as a social function than as a source of food. Fires were lit to drive the kangaroos in the required direction and, watched by a large crowd, the men threw spears at the animals as they rushed past (Kohen 1986, 78).

Aquatic resources
Fish were trapped in small pools formed in the rivers and streams by arranging logs and stones into retaining walls, then speared with a multi-pronged spear made specifically for the purpose. Mussels, yabbies, tortoises and water birds also contributed to the diet (Kohen 1993b, 78).

4.6. Material Culture

Tools
The hatchets used to cut trees were made from the basalt pebbles collected from the gravel beds of the Hawkesbury and Nepean Rivers. This raw material was highly valued and possibly formed part of a trade system between the coastal and inland Darug.

The sandstone country around the Hawkesbury-Nepean provided a range of stone materials for manufacturing tools. Small quartz pebbles, about 10mm-15mm across, formed in the sandstone and were used to make small sharp points or cutting tools. They could be gathered from along the banks of the river and small creeks. In the western part of the Cumberland Plain, a number of stone outcrops contained silcrete, a highly siliceous material suitable for small tool manufacture. Quartzite and quartz was also available as pebbles, stones or boulders. Silcrete outcrops are located at Luddenham approximately 20km to the south, Plumpton approximately 15km to the west, St Clair approximately 15km to the south-east and Erskine Park approximately 20km to the south-east. Other material used in the manufacture of stone tools on the Cumberland Plain, such as chert, tuff, quartz, basalt and quartzite, are located within the Rickabys Creek Formation, which is located between Cranebrook and Windsor, to the north of the survey area with some outcrops just to the west of the survey area (Jones & Clark 1991:32-33; Smith 1989a:9-11 & 1989b:6-7). In addition, the St Mary's Formation, occurring in the valleys of Mulgoa Creek, South and Eastern Creeks contains silcrete. Rickaby's Creek Gravels, also containing hornfels, porphyry and tuff, occurs over a similar wide area, and Moroota Sands, which in addition to the quartz and silcrete materials, contains jasper, agate, and chert (Attenbrow 2002, 44).

Plumpton Ridge, running near Richmond Road between Bells Creek and Eastern Creek, contains such large amounts of silcrete that Aboriginal people apparently travelled long distances to collect it. Local Darug histories suggest that the ridge may have been a winter camping site (Hinkson: 2001, 149).

Food was collected by the women with digging sticks, then placed into string bags and in wooden dishes (coolamons) made from various eucalyptus trees to be carried back to the camp site (Kohen 1993b:28). The women's toolkit consisted of a digging stock, string bags, woven baskets and coolomons. With this toolkit a woman could collect sufficient food to ensure that her family was well fed.

Canoes
Canoes, suited to the gentle flow of the Hawkesbury, were constructed from large pieces of bark cut from a tree and tied at both ends with vines (Kohen 1986:80). These, as well as well-worn paths, were used to travel up and down the river.

Huts
People lived in small huts made of bark, usually along the shores of rivers and streams, or in the valley bottoms. Smaller huts were probably used for a few days only while collecting provisions from hunting or fishing, while larger more permanent places were used for longer periods, perhaps during winter camps. In 1816, a 'village' of about 70 huts was recorded near present-day Bent's Basin on the Nepean River (Kohen 1986:71).

Rock Shelters
Rock shelters in the sandstone hills were used, sometimes for accommodation and sometimes for ceremonial purposes. Paintings made with coloured ochres in the rock shelters were often linked to ceremonial occasions and in areas near the Hawkesbury stone arrangements may have been used as directional indicators pointing to the rock art galleries (Kohen 1993b:7).

Ochres
Red (iron oxide) and yellow (limonite) ochres occurring in the ironstone layers of the St Mary's Formation have been suggested as possible sources for ochres used for decorating peoples' bodies, weapons and tools, and for making pigments used in rock shelters and burials. White pipeclay, found in the clays beside rivers and streams, was used to adorned the heads and shoulders of male mourners if a man suffered a violent death (Kohen 1993b, 32).

String
Fibre for string and ropes was obtained from several different plants, the most important belonging to the families Sterculiaceae and Malvaceae. These included Abutilon oxycarpum, Hibiscus spp., Camersonia fraseri, Rulingia pannosa, and both species of Brachychiton. The roots of ficus spp. were also a source of fibre, while baskets for collecting various foods, were woven from Dianella laevis, Doryanthes excels, Lomandra spp., Livistona australis and Phragmites communis (Kohen 1986, 47).

Adhesives
Adhesives were obtained from the grasstree Xanthorrhoea resinosa var resinosa and from wax from the hives of the small black bee, Trigona spp. The flower stalk of the grasstree were often used for spear shafts, topped with a hardwood point. The resin would be used to fasten the point to the tip of the shaft, to fasten hatchets into a hafted handle, to patch canoes and baskets, and also for fastening decorative objects into hairstyles (Attenbrow 2002, 117).

Nets
Nets made of possum fur in which the Macrozamia. were soaked to leach out the toxins (Edgeworth: 1890: 11, in Kohen: 1986, 40).

Clothing
Winters around the Nepean and the foot of the Blue Mountains could be quite chilly, and people from this area are shown in early colonial drawings wearing long, enveloping cloaks made from sugar glider, possum or kangaroo skins, one of which was described by Governor Phillip as "neatly sewn together, the inside ornamented with diamonds of curved lines, by raising the skin with the point of a small bone needle". Bark cloaks were also used as protection from the rain (Attenbrow 2002:107).

The soft papery bark of the Melaleuca was used by women to wrap their babies. (Maiden 1889: 627 in Kohen 1986:47), until the babies were old enough to grab onto the mother's hair when carried on her back.

5 ARCHAEOLOGICAL CONTEXT

5.1. Sydney Basin and Cumberland Plain

Many surveys have been undertaken in the Sydney region which indicate the richness of the archaeological resources and which provide information about Aboriginal occupation within the region. In particular, Attenbrow (2003) has excavated a range of sites within the Sydney Basin. The aim of her study was to identify local geographic variation and temporal changes in the subsistence patterns and material culture of the people of this area. She excavated sites at Balmoral Beach, Cammeray, Castle Cove, Sugarloaf Point (Lane Cove River), Darling Mills State Forest, Winston Hills, Vaucluse and Cumberland Street in the Rocks. Dates for initial occupation range from approximately 10,000 years BP at Darling Mills to approximately 450 years BP at Cumberland Street, the Rocks.

One of the oldest dated occupations for the Sydney region is 15,000 years BP from the Shaws Creek K2 rockshelter on the Nepean River (Kohen 1984; Nanson et al. 1987). The dates obtained by Kohen (1984) and Attenbrow (2003) must be considered in association with environmental data related to sea level rises. The Sydney region that we know today was vastly different to the landscape of 15,000 years ago.

The period of maximum glaciation was 15,000 – 18,000 years BP. Therefore, the date of the K2 rockshelter and Attenbrow's Darling Mills site indicate that Aboriginal people lived throughout a period of extreme environmental change. During this period, sea levels were up to 130m below current sea levels (Nutley 2006: 1). About 10,000 years ago, as temperatures began rising at the end of the last ice age, the polar ice started melting and sea levels rose. The rising sea levels forced people to abandon coastal sites and move inland, with the result that the oldest coastal sites were inundated.

By about 6,000 years ago, rising water levels had flooded the coastal plain forming the Sydney landscape that we know today. The vast majority of sites in the Sydney region date to around 5,000 years BP, after sea levels had stabilised. Whilst research into submerged indigenous sites is now being undertaken (Nutley 2006), there are few sites in the Sydney area that are known to date beyond 10,000 years BP. Therefore, research undertaken to date has focused on subsistence patterns and cultural change, e.g. Attenbrow (2003).

Many archaeological surveys have been conducted within the Sydney region, particularly on the Cumberland Plain, in relation to Environmental Impact Statements. As a result of those studies, which were occasioned by the burgeoning urban expansion extending into the Cumberland Plain, the NPWS recognised the need for a coherent study of the area to fully assess the impact of urbanisation on the natural and cultural heritage of the Cumberland Plain. Smith (1989a) was commissioned by the NPWS to undertake an Aboriginal Site Planning Study to be utilised in the management of Aboriginal sites on the Cumberland Plain. Prior to her study, 307 sites had been recorded on the Cumberland Plain, mainly open artefact scatters (297) with four scarred trees, one carved tree, four axe-grinding grooves and a Mission site (the Blacktown Institute). Smith (1989a:2) added 79 open sites and 29 isolated finds from field surveys related to her study.

Smith's (1989a:3) analysis indicated that site location and site densities were influenced by the availability of water and raw materials. She concluded that other factors such as topography, natural vegetation and soil types did not influence site location.

She also identified that the majority of sites recorded have been in the northern sector of the Cumberland Plain, during site surveys of areas threatened by development (Smith 1989a:21). Her field studies (1989a & 1989b:10) confirmed that site densities in the southern Cumberland Plain appear to be lower overall to site densities on the northern Plain.

Since Smith's study, there has been a dramatic increase in development in Western Sydney, resulting in a great deal more archaeological survey and excavation (Comber 1990a&b, 1991, 2006a&b, 2007; 2008; 2010; McDonald 1997, 2002 & 2005a). This further work has indicated the complexity in the archaeological record of the area that was not previously recognised. For example, sites on permanent water are more complex than sites on ephemeral drainage lines with major confluences being prime site locations. However, McDonald (2005a) reports that archaeological sites are found in a range of landscapes and that their condition is dependent on the amount of impact from European land practices.

McDonald's 2005a report demonstrates the dynamic nature of stone tool technologies on the Cumberland Plain. She reviewed previous work within a theoretical framework to identify intra and inter-regional variation. She not only identified change over time in the stone tool technology, but the manner in which "stone technologies were organised in relation to

landscape" (McDonald 2005a: np). Her report provides a framework to tentatively date sites through technological analyses and to identify cultural changes.

Her study also indicated that the surface representation of a site on the Cumberland Plain does not necessarily reflect the actuality of that site. Of the excavations conducted by her, sub-surface deposits were present even when there was no surface indication of a site. According to McDonald (2005a:5), "despite artefacts being rare or completely absent on the surface at each of the sites investigated, all six sites were found to contain intact archaeological deposit. Almost 500 square metres were excavated during this Project and almost 35,000 artefacts retrieved." McDonald (2005) also considers that Aboriginal occupation was focussed on the major river systems and characterised by mobility between a small number of sites. As a result of her various studies and applying stream order modelling she (2005) further predicts that the density and complexity of archaeological sites will vary according to stream order, as follows:

- Fourth-Fifth order creeks (or rivers): Archaeological evidence will be more complex and possibly stratified, reflecting more permanent and repeated occupation on major creeks.
- Third order creeks: Evidence of more frequent occupation such as knapping floors or higher artefact densities will be found in the lower reaches of tributary creeks.
- Second order creeks: Sparse archaeological evidence will be found which indicates occasional use and/or occupation.
- First order creeks: Due to the intermittent nature of water flow only very sparse evidence would be found in the headwaters of upper tributaries such as background artefact scatter.

Kohen's studies at Penrith confirmed the importance of fifth order creeks and rivers. He recorded over 50 sites in the Penrith area which included open artefact scatters, axe grinding grooves and rock shelters. Kohen (1997:7) indicates that sites occurring throughout the Penrith area "are particularly likely to occur adjacent to the rivers and creeks. The distribution of raw materials associated with the manufacture of stone tools suggests that chert and basalt were carried or traded east from the river gravels and that silcrete was traded or carried from sources near South Creek and Eastern Creek, west towards the Nepean flood plain".

Comber (2010d&e) also recorded open artefact scatters and scarred trees within the Cumberland Plain. She undertook excavation at two sites at Penrith Lakes known as Camenzulis (2010e) and PL9 (2010d). At PL9 she retrieved more than 1,500 artefacts, including backed blades and an edge ground axe. Her work confirms McDonald's (2005) and Kohen's predictive model that sites are more likely to occur adjacent to the rivers and high order creeks. These excavations (Comber 2010d&e) at Penrith Lakes further indicates the possibility that sub-surface archaeological deposits will remain despite disturbance by non-Aboriginal activities and the complexity of such sites. Surveys (2006c & d) undertaken prior to the excavations recorded the areas as being disturbed by agricultural activities. They had been grazed, ploughed, planted with crops and a dam constructed. Only a small number of artefacts were recorded on the surface but over 2,500 artefacts retrieved during excavation.

A survey undertaken by Comber (2008) and subsequent excavations undertaken by Stening (2011) at Doonside demonstrated that although no surface artefacts were recorded (Comber 2008) substantial subsurface deposits did exist on the site with over 1,000 artefacts being recovered from a highly disturbed context (Stening 2011). This site was located beside Eastern Creek an important 4th or 5th order creek. It is an important watershed with extensive evidence of Aboriginal occupation.

5.2. Emu Plains/Penrith

A large number of sites have been recorded by Kohen (1997; 1981; 1984a and 1984b) and Comber (2006a and b; 2007; 2008; 2010) within the Penrith area.

Kohen recorded over 50 sites which included open artefact scatters, axe grinding grooves and rock shelters. Kohen (1997:7) indicates that sites occurring throughout the Penrith area "are particularly likely to occur adjacent to the rivers and creeks. The distribution of raw materials associated with the manufacture of stone tools suggests that chert and basalt were carried or traded east from the river gravels and that silcrete was traded or carried from sources near South Creek and Eastern Creek, west towards the Nepean flood plain".

Comber (2006a; 2010) also recorded open artefact scatters and scarred trees. She undertook excavation at two sites at Penrith Lakes known as Camenzulis (2006a) and PL9 (2010). At PL49 she retrieved more than 1,500 artefacts including

backed blades and an edge ground axe. Her work confirms the predictive model developed by Kohen that sites are more likely to occur adjacent to the rivers and creeks. She also undertook an assessment (2006b) at Emu Plains on the banks of the Nepean River, but did not record any sites, although she did recommend sub-surface testing.

In 1986 Rich (1986) undertook a survey for Aboriginal sites for the proposed transmission line between Regentville and Penrith. She identified five open artefact scatters, none of which were recorded within the present study area. A Section 90 Consent to Destroy was issued for all of these sites in August 1987.

Dallas recorded an open artefact scatter (AHIMS 45-5-2414) comprising a hammerstone and a "mudstone" flake which was located approximately 700m to the south-west of the present study area along a fence line of a trotting track.

Dallas also recorded an open campsite and potential archaeological deposit (AHIMS 45-5-2416) in close proximity to 45-5-2414. However, the AHIMS site card for AHIMS 45-5-2416 is a replication of the site card for 45-5-2414. Therefore, it is not clear whether these are two separate sites.

An isolated find (AHIMS 45-5-3317), comprising a chert flaked piece and an artefact scatter (AHIMS 45-5-3318) comprising two "mudstone" flakes and three "mudstone" flaked pieces were recorded in a sports field located 3km to the north-east of the study area in a moderately disturbed context. During a survey by Stening (2013) these sites could not be relocated in the field (Stening 2013).

An isolated find and potential archaeological deposit (AHIMS 45-5-3319) was recorded approximately 2km to the north-east of the present study area. The site comprised a red silcrete flake which was located on a dirt walking track (Figure 5).

Within 1.2 km of the study area 4 sites have been recorded: AHIMS 45-5-0539, 45-5-0540, 45-5-0541 and 45-5-4361 all open artefact scatters. Figure 5 shows the location of these sites.

The evidence from the above brief review of previous work within Penrith area indicates that sites are located throughout the area with larger more complex sites occurring near the confluence of the Nepean River and along creeks and rivers. The archaeological evidence also indicates that subsurface deposits can exist even if there is no evidence on the surface and despite subsequent disturbance.

5.3. Study Area

A search of AHIMS Register indicates that there are no objects or registered sites on the subject property or within 1km of the site. The study area is not a registered Aboriginal Place.

In 2006 Comber (2006b) undertook an assessment of the current property, but did not record any sites, although she did recommend sub-surface testing. The current excavation uncovered a very low density scatter of artefacts and the site has been recorded with AHIMS as 45-5-5685.

6 RESULTS OF TESTING

6.1. Methodology

The archaeological test excavation was undertaken in accordance with *Code of Practice for Archaeological Investigation of Aboriginal Objects in NSW* (Code of Practice) and the methodology which is attached at Appendix B.

The southern portion of the site was heavily vegetated with exotic trees and weeds including African boxthorn and lantana. Therefore, the testing could only be undertaken on the northern portion of the site.

Three transects were placed on the northern portion of the site. The location of the trenches was based upon geomorphological conditions. The study area was located on a small rise overlooking Lapstone Creek. One trench was placed on the crest of the rise and a trench was placed at the base of the eastern and western slope. Trench 1 was located beside Lapstone Creek on the eastern side of the low rise. Transect 2 was placed on the crest of the rise and Trench 3 was at the base of the western slope. Figure 3 shows the location of the transects.

Test excavation trenches were placed approximately 10m apart along the transects in the study area (Figure 4). Test units were excavated in 50cm x 50cm units, which were combined to form 1m x 1m trenches. Trenches were excavated in 5cm spits using hand tools and wet sieved through a 3mm sieve. A total of 12 1 x 1m trenches were excavated. Due to the level of disturbance and compaction no further trenches were excavated. Sufficient evidence was gained from the 12 test trenches to characterise the site.

In the field it was noted that the site was highly disturbed. The grass in the northern section of the site was long. The site was previously part of a motorcross circuit. It contained remnant mounds, jumps and tracks. Small stockpiles of cement rubble indicated that the site once contained sealed tracks. As a result of this use, the site was highly disturbed and all trenches contained evidence of the motorcross circuit including rubble and the soils were very mixed. Due to the use of the site for motorcross some of the trenches were highly compacted.

Photo 1: Study area. Camera facing west towards Russell St. Motocross mound shown on the RHS.

Photo 2: Facing south showing invasive vegetation.

Photo 3: Transect 1

Figure 3: Location of transects. Note vegetation in southern portion of the site.

Figure 4: Showing the location of the trenches numbered 1 to 12.

6.2. Topography

The survey area is located within the Cumberland Plain which is characterised by low gently undulating slopes. The Cumberland Plain covers approximately 600 square kilometres. It is bordered on the west by the Blue Mountains and on the east by the Georges River and headwaters of the Parramatta Rivers. To the north is the Hornsby Plateau and to the south is the Woronora Plateau (Smith 1989a:8).

Lapstone Creek (Figures 5 & 6), now contained within a concrete walled canal, flows north along the eastern boundary of the study area and then to the northwest before feeding into the Nepean River (Figure 4). The study area is approximately 2ha. It contains a small rise overlooking Lapstone Creek. (Figure 5) The site is approximately 24 metres above sea level and 12m above the normal height of the Nepean River.

The study area is located within a semi-urban landscape. The Nepean River is 850 metres to the north. Directly to the west and south is residential development whilst to the north is the Penrith Lakes Scheme and to the east is the Emu Plains Correctional Centre for women. The site has been the subject of ongoing and continual indundation from both Laptsone Creek and the Nepean River.

The study area contains a small rise in the centre and northern eastern portion of the study area. This rise overlooks Lapstone Creek. Figures 5 and 6 show the site contours.

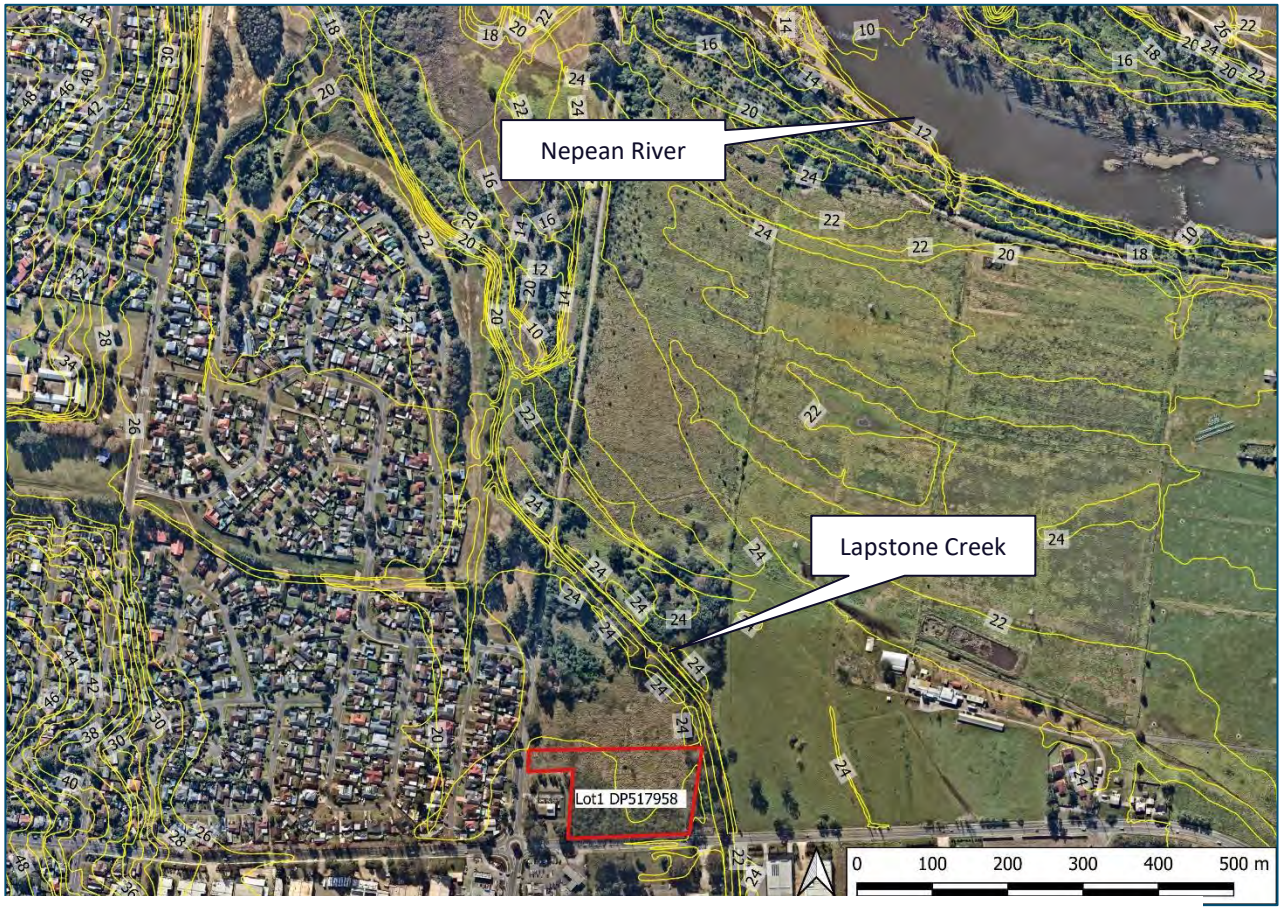

Figure 5: Showing detail of the contours of the landscape and the location of the canal on the eastern boundary of the study area. The Nepean River is to the north

Figure 6: Showing detail of the contours and landscape within the study area with canal to the east.

6.3. Geology

The Cumberland Plain, generally overlies the Wianamatta Group of Shales. The survey area consists of the Ashfield Shale sub-group of Wianamatta Shales. This sub-group is comprised of shales, carbonaceous claystones, claystones laminate, fine to medium grained lithic sandstone, tuff and some coal. The Cranebrook Formation disconformably overlies the Ashfield Shales. The Cranebrook Formation contains pebbles and cobbles of quartz, quartzite, chert, porphyry, granite, hornfells, sandstone and silcrete. (Penrith 1:100,000 geological map; Jones & Clark 1991:43-49). The tuff from the Ashfield shales and the cobbles from the Cranebrook Formation would have provided suitable material for small tool production for the Darug whilst the sandstone would have been suitable for the manufacture of ground edge axes.

Other locations on the Cumberland Plain which contain suitable material for stone tool manufacture, such as silcrete are located nearby. Silcrete outcrops are located at Luddenham approximately 15kms to the south-south-east, Plumpton approximately 17kms to the east, St Clair approximately 13km to the south-east and Erskine Park approximately 15km to the south-east. Other material used in the manufacture of stone tools on the Cumberland Plain, such as chert, tuff, quartz, basalt and quartzite, are located within the Rickabys Creek Formation, which is located between Cranebrook and Windsor, to the north of the survey area with some outcrops just to the west of the survey area (Jones & Clark 1991:32-33; Smith 1989a:9-11 & 1989b:6-7).

Artefacts recovered from the test excavation were predominantly manufactured from silcrete.

6.4. Soils

The soils for the study area are mapped as the Richmond soils (Bannerman & Tillie 1:100,000 soil landscapes of the Penrith). This was confirmed in the field. Richmond soils are characterised as poorly structured clay loams, clays, and sands (Bannerman & Hazelton 1990:75). The dominant soil material for the A1 horizon is described to consist of porous sandy fabric with reddish brown colouring and texture ranging from loamy sand to sandy loam. A2 horizon texture ranges from sandy clay loam to fine sandy clay loam with brown colouring (Bannerman & Hazelton 1990:76). The subsoil (B horizon) is

characterised as brown mottled clay, alternating between light or light medium reddish to yellow clays with apedal massive structure and stiff medium-heavy reddish brown to yellowish brown clays with variable structure (Bannerman & Hazelton 1990:76).

The test excavation confirmed the above mapping, although the soils were mixed. The test excavation revealed that the study area was highly disturbed. Evidence from the excavation indicated that the site had been highly disturbed by continual and ongoing flooding from Lapstone Creek. Inclusions of river pebbles, charcoal, quartz which were found in the trenches are indicative of alluvial flood deposits. In addition, disturbance from the motorcross circuit impacted upon the soils with most trenches containing , river pebbles, inclusions from flooding whole and broken bricks and rubble. A clear A1 or A2 horizon could not be discerned. The soils consisted of mixed brown, black and grey sandy loam which became compacted at around 15cm in depth. Excavation ceased at the basal clays at around 75cm-95cm in depth.

6.5. Vegetation

The study area has been cleared of endemic vegetation and currently the site is comprised of an open grassed area in the northern section of the site. The southern section is infested with several species of exotic weeds, including *Robinia pseudoacacoa* (Black Locust aka Robinia)*, Lycium fercissimum* (African Boxthorn)*, Lantana spp* (Lantana) and *Pavonia hastata* (Pink Pavonia). Whilst *Lantana camara* (Lantana) occurs along the eastern boundary of the site. The thick vegetation on the southern section of the site made it impossible to access the southern section or to undertake testing in that area.

6.6. Artefacts

A total of 17 artefacts manufactured from silcrete, tuff and quartz were recovered from the test excavation. The use of these raw materials is consistent with the geological description of the area and the resources available. The majority of the artefacts were debitage measuring less than 7mm. Table 1 provides a description. Only two could be described as tools:

- The brown glass artefact recovered from trench 7 spit 1. Microscopic examination by Dr Nina Kononenko of the Australian Museum showed marginal retouch from use of the elongate edge. The edge being characterised by overlapping continuous small scars and micro-scars. The wear attributes on the ventral face of the edge, short dense, slightly diagonal striations, and very light edge rounding, indicate that the glass artefact was used for scraping plant material such as soft wood (Kononenko 2023:2). Dr Kononenko's report is attached at Appendix C.
- A cobble retrieved from trench 5, spit 1 displays obvious impact fractures on narrow edge. Deep elongate scars and dense peck marks have intensively damaged the used surface. Crushed and dislodged rock grains create abrasive agents which level the edges of scars and peck marks during forceful percussive strokes. The used area has a rough surface with a slightly reflective sheen on the highest points, in addition to deep isolated linear cracks and striations. This type of wear traces indicate that the stone pebble was used as a hammerstone for knapping and flaking stone material (Kononenko and White 2023:2).

Table 1: Artefact descriptions

Trench	Spit	Material	Description
3	2	Silcrete Silcrete	Flaked piece 3cm x 2.4cm x 1mm with retouch Flaked piece 1.7cm x 1.3cm x 1mm
3	6	3 fragments of silcrete	Micro debitage
5	1	Basalt	Hammerstone measuring 9.5cm x 7cm
7	1	Brown Glass	Flake measuring 3cm x 12cm x 4cm used for scraping plant material such as soft wood
7	6	4 fragments dark brown tuff	Micro debitage
9	7	1 fragment of dark brown tuff	Micro debitage

9	13	2 fragments of quartz	Micro debitage
11	10	Silcrete	Micro debitage
11	11	Silcrete	Micro debitage
12	3	Grey tuff	Micro debitage

6.7. Summary of Test Excavation

The study area is a highly disturbed landscape containing a small rise overlooking Lapstone Creek. It is located on the boundary between Emu Plains and Emu Heights, within a semi-urban landscape. Lapstone Creek, now channelised, flows north along the eastern boundary of the site, with the Nepean River 850 metres to the north.

A total of 12 1m x 1m trenches were excavated. The trenches were excavated in 5cm spits and wet sieved through a 3mm sieve. The combined trenches were 10m apart along 3 transects. Figure 4 shows the location of the test trenches.

The soils consisted of brown, black and grey mixed silty loam and clays with river pebbles, inclusions from flooding whole and broken bricks and rubble from the construction of a motocross circuit. The site had been disturbed by continual and ongoing inundation from both the Nepean River and Lapstone Creek and construction of a motocross circuit. Development of the motocross circuit included grading the site and creating tracks and large mounds.

17 artefacts were uncovered during the test excavation. The majority of the artefacts were micro debitage but one small silcrete artefact contained retouch, whilst a river pebble had been used as a hammerstone and one glass artefact had been used for scrapping plant material such as soft wood. The glass artefact is significant as it provides evidence of occupation of the site during the early contact period, unless it had been washed on to the site as a result of flooding. None of the artefacts were *insitu*. The number and type of artefacts are too small to allow a detailed analyses and comparison with other sites.

Due to the highly disturbed nature of the site and the limited amount of evidence of Aboriginal occupation uncovered on the site, it is not considered necessary to undertake salvage excavations. It is doubtful that any significant evidence of occupation would be uncovered.

7 SIGNIFICANCE ASSESSMENT

7.1. Preamble

Significance assessment is the process whereby sites or landscapes are assessed to determine their value or importance to the community.

A range of criteria have been developed for assessing the significance which embody the values contained in the Burra Charter. The Burra Charter provides principles and guidelines for the conservation and management of cultural heritage places within Australia.

Following are the criteria which will be used to assess the significance of the site of 170 Russell Street, Emu Plain.

7.2. Criteria

Social Value (sometimes termed 'Aboriginal' value) which refers to the spiritual, traditional, historical or contemporary associations or attachments which the place or area has for the present-day Aboriginal community.

Historic Value refers to the associations of a place with a person, event, phase or activity of importance to the history of an Aboriginal community.

Scientific Value refers to the importance of a landscape, area, place or object because of its potential to provide information which is of value in scientific analysis and the ability to answer scientific or technical research questions.

Aesthetic Value refers to the sensory, scenic and creative aspects of the place.

Representativeness refers to whether the site demonstrates the principal characteristics of that site and is a good representative example of that site type.

Rarity refers to the degree to which such as site is known elsewhere and whether the site is uncommon, rare or endangered.

7.3. Assessment of Significance

Social Values
Consultation with representatives of the Aboriginal community indicates the study area is important to the local and broader Aboriginal community, despite the only evidence of occupation being a small number of artefacts. The few artefacts recovered from the site provide evidence of Aboriginal occupation, within the Emu Plains region, representing their past providing a direct link to their ancestors. The one glass artefact is significant as it provides evidence of occupation during the period of contact.

Historic Values
The artefacts recovered from the site provide evidence and information of occupation of the Mulgoa Clan in the study area, including during the period of early contact.

Scientific Values
The site does not meet this criterion.

Aesthetic Values
The site does not meet this criterion.

Representative Values
The site does not meet this criterion.

Rarity Values
The site does not meet this criterion.

7.4. Statement of Significance

Consultation with representatives of the Aboriginal community indicates that the study area is important to the local and broader Aboriginal community, despite the only evidence of occupation being a small number of artefacts. The artefacts retrieved from the study area provide evidence of Aboriginal occupation within the Emu Plains region, representing their past and providing a direct link to their ancestors. The one glass artefact is significant as it provides evidence of occupation during the period of contact.

8 IMPACT & MITIGATION

8.1. Impact

The redevelopment of 170 Russell Street, Emu Plains, includes the construction of a single storey mixed commercial and industrial complex, including carpark. The proposed redevelopment will encompass the entire study area and will require extensive ground disturbance for the new structure. This will cause direct harm to the site with a partial loss of value. Although the site did not contain significant evidence of occupation and the development will occur across the whole of 170 Russell Street, the site still contains significance to the Aboriginal community as a site of previous Aboriginal occupation.

Site number	Type of harm	Degree of harm	Consequence of harm
45-5-5685	Direct	Total	Partial loss of value

Table 3: Type and degree of harm

8.2. Mitigation

The site has been highly disturbed by flooding and by construction of the motocross circuit. A small amount of artefacts were uncovered, which were mainly micro-debitage. Salvage excavation is not considered necessary. However, it will be necessary to apply for an Aboriginal Heritage Impact Permit prior to redevelopment of the site.

It is recommended that prior to redevelopment of the site, all personnel, employees, contractors, and sub-contractors should be inducted into their responsibilities under the NSW *National Parks & Wildlife Act 1974* and that is an offence to harm Aboriginal objects. The induction should be include how to identify an Aboriginal object and actions to be taken as detailed below.

If any Aboriginal objects are unexpectedly uncovered during the redevelopment of the site, all work must cease in the vicinity of the object and an area of at least one metre around the Aboriginal objected secured and cordoned off using fencing and/or appropriate barriers. The archaeological consultant must be immediately contacted for further advice. The consultant will assess the object and provide further advice. In addition, the consultant will liaise with the Registered Aboriginal Parties. No-one should enter the secured area and work can only recommence when advised by the consultant.

If any skeletal remains are uncovered during the redevelopment of the site, all work must cease in the vicinity of the human skeletal remains and an area of at least one metre around the skeletal remains secured and cordoned off using fencing and/or appropriate barriers. The archaeological consultant must be immediately contacted and must attend immediately. The consultant will inspect the skeletal remains to confirm that they are human. If the remains are human, the consultant will contact and liaise with the Police, Heritage NSW, and the Registered Aboriginal Parties, all of whom will most likely attend the site. Work will not be able to recommence within the secured area until suitable management procedures are in place. It could take several months to determine an appropriate course of action.

9 RECOMMENDATIONS

The following recommendations are made on the basis of:

- Legal requirements under the terms of the *National Parks & Wildlife Act 1974* (as amended) which states that it is an offence to harm or desecrate an Aboriginal object.
- The research into the archaeology of the region and the study area contained in this report.
- The archaeological test excavations and the analyses and results of those excavations contained in this report.

Recommendation 1: AHIP
An application for an Aboriginal Heritage Impact Permit (AHIP) should be submitted to Heritage NSW. The proposed development cannot proceed until the AHIP has been received.

Recommendation 2: Induction
Prior to redevelopment of the site, all personnel, employees, contractors and sub-contractors should be inducted into their responsibilities under the NSW *National Parks & Wildlife Act 1974* and that it is an offence to harm Aboriginal objects. The induction should include instructions on how to identify an Aboriginal object and actions to be taken as detailed in Recommendation 4.

Recommendation 3: Unexpected Heritage Finds and Human Remains Procedure
Unexpected Heritage Finds: If any Aboriginal objects are unexpectedly uncovered during the redevelopment of the site, all work must cease in the vicinity of the object and an area of at least one metre around the Aboriginal objected secured and cordoned off using fencing and/or appropriate barriers. The archaeological consultant must be immediately contacted for further advice. The consultant will assess the object and provide further advice. In addition, the consultant will liaise with the Registered Aboriginal Parties. No-one should enter the secured area and work can only recommence when advised by the consultant.

Human Remains: If any skeletal remains are uncovered during the redevelopment of the site, all work must cease in the vicinity of the human skeletal remains and an area of at least one metre around the skeletal remains secured and cordoned off using fencing and/or appropriate barriers. The archaeological consultant must be immediately contacted and must attend immediately. The consultant will inspect the skeletal remains to confirm that they are human. If the remains are human, the consultant will contact and liaise with the Police, Heritage NSW and the Registered Aboriginal Parties, all of whom will most likely attend the site. Work will not be able to recommence within the secured area until suitable management procedures are in place. It could take several months to determine an appropriate course of action.

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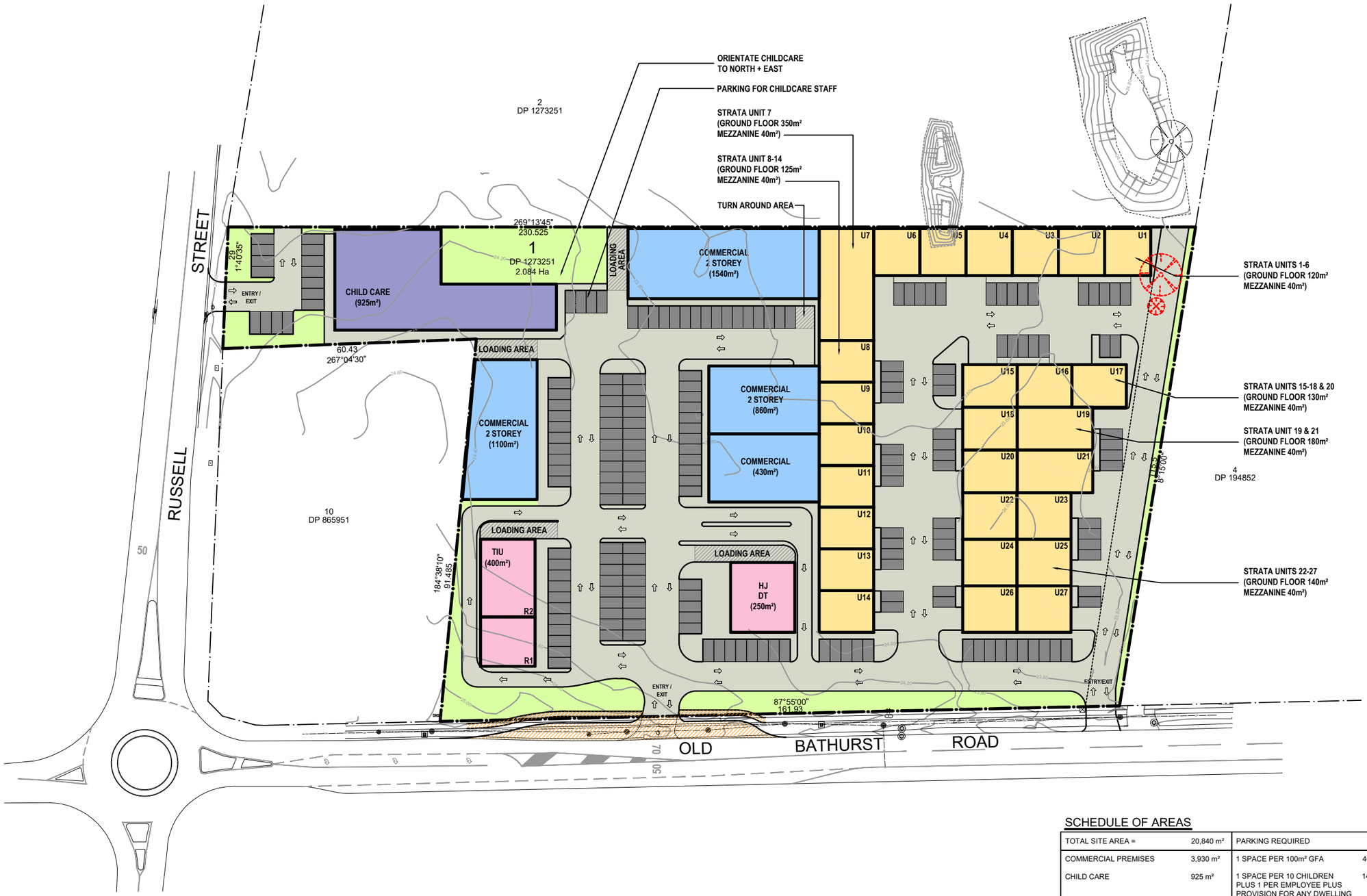
Abbreviations

AIAS	Australian Institute of Aboriginal Studies
HRA	Historical Records of Australia
HRNSW	Historical Records of New South Wales
ML	Mitchell Library
SLNSW	State Library of New South Wales

APPENDIX A: PLANS



SCHEDULE OF AREAS

TOTAL SITE AREA =	20,840 m²	PARKING REQUIRED		PARKING PROVIDED
COMMERCIAL PREMISES	3,930 m²	1 SPACE PER 100m² GFA	40 SPACES	62 SPACES
CHILD CARE	925 m²	1 SPACE PER 10 CHILDREN PLUS 1 PER EMPLOYEE PLUS PROVISION FOR ANY DWELLING	14 SPACES	19 SPACES
RESTAURANT (HJ DT)	250 m²	1 SPACE PER 6m² OF SEATING AREA PLUS 1 SPACE PER EMPLOYEE	25 SPACES	27 SPACES
RETAIL PREMISES (R1 / R2)	400 m²	1 SPACE PER 30m² GFA	14 SPACES	20 SPACES
INDUSTRIAL PREMISES	4,875 m²	1 SPACE PER 100m² GFA	49 SPACES	69 SPACES
		TOTAL	142 SPACES	197 SPACES
LANDSCAPE	1,880 m²			

1 - PROPOSED SITE PLAN
SCALE: 1:500 @ A1

0 5 10 25 50
metres

DRAFT

No	Date	Amendment	By
A	30.03.2022	ORIGINAL ISSUE	MF2

MCHP ARCHITECTS
ABN 21 096 632 450
SUITE 5, 38-46 ALBANY ST
ST LEONARDS NSW 2065
TELEPHONE: 02 9436 2222
FACSIMILE: 02 9439 1340
www.mchp.com.au

Client
GLENSTONE

Project
PROPOSED MIXED USE DEVELOPMENT
170 RUSSELL STREET
EMU PLAINS, NSW 2750
LOT 1, DP 1273251

Drawing Title
PROPOSED SITE PLAN - OPTION 5

A1 Scale	A3 Scale	Date	Drawn
1:500	HALF A1 SCALE	09.02.2022	MF2

Drawing No
21-078 SK05

Revision
A

APPENDIX B: METHODOLOGY

COMBER CONSULTANTS

ARCHAEOLOGY – HERITAGE – MEDIATION – ARBITRATION

ABORIGINAL – HISTORIC - MARITIME

76 EDWIN STREET NORTH, CROYDON, NSW, 2132
T 02 9799 6000 **F** 02 9799 6011

enquiries@comber.net.au
www.comber.net.au

DIRECTORS

DR JILLIAN COMBER | 0418 788 802

DAVID NUTLEY | 0408 976 553

21st July 2022

TEST METHODOLOGY: 170 RUSSELL STREET, EMU PLAINS

PROJECT NAME: ABORIGINAL ARCHAEOLOGICAL TESTING

LOCATION: 170 RUSSELL STREET, EMU PLAINS

LEGAL ENTITY WITH OVERALL RESPONSIBILITY: GLENSTONE

PERSON UNDERTAKING THE TEST EXCAVATIONS:
Dr Jillian Comber, Comber Consultants, 76 Edwin Street North, Croydon, NSW, 2132

DATE OF COMMENCEMENT & COMPLETION: TBA

TEMPORARY STORAGE OF ABORIGINAL OBJECTS UNCOVERED:
Aboriginal objects uncovered will be stored at the office of Comber Consultants, 76 Edwin Street, Croydon to allow for analyses.

ABORIGINAL ARCHAEOLOGICAL TESTING METHODOLOGY

1.00 BACKGROUND

Glenstone propose the commercial development of 170 Russell Street, Emu Plains. The plans for the proposal are attached to the archaeological assessment and the ACHAR.

An Aboriginal Cultural Heritage Assessment Report and archaeological assessment have been prepared which assessed the site as containing Aboriginal cultural significance. Both reports recommended that archaeological testing, and if required, salvage, be undertaken. This document details the methodology to be undertaken for the testing. If salvage is required, a further methodology will be prepared.

2.00 PLANNING

A Development Application (DA) will be submitted to Blacktown City Council.

4.0 METHODOLOGY

The testing is to be undertaken prior to the demolition of any buildings. Three transects have been proposed, as shown on Figure 1 below:

Testing is to be undertaken in accordance with requirements 15-17 (pp 24-28) of the *Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales,* as follows:

Notification
At least 14 days' notice will be provided to the Heritage NSW before commencement of the testing as detailed in requirement 15c.

Method
As detailed in requirement 15b a test sampling strategy has been developed that provides a framework for sampling all PADs. The strategy must be in accordance with requirement 16a:

1. Test excavation units will be placed 10m apart along three transect placed 40m apart (Figure 1). As shown in Figure 1, a small rise overlooks Lapstone Creek. One transect will be placed on the crest of this rise, another will be placed at the base of the slope, on the eastern side of the slope, parallel to Lapstone Creek and the

other will be placed at the base of the slope on the western side of the slope. As occupation most likely occurred on the top of the slope overlooking Lapstone Creek, by placing a transect along the crest the aim is to uncover such evidence of occupation. The transects at the base of the slope on either side are aimed to uncover evidence that may have moved down the slope due to taphonomic processes.

2. Test excavation units will be excavated using hand tools only.
3. Test excavations will be excavated in 50cm x 50 cm units.
4. Test excavation units will be combined and excavated as necessary to understand the site characteristics. They will generally be combined to form a 1m x 1m trench, however:
    i. The maximum continuous surface area of a combination of test excavation units at any single excavation point conducted in accordance with point 1 (above) will be no greater than 3 m^2
    ii. The maximum surface area of all test excavation units will be no greater than 0.5% of the PAD being investigated.
5. Additional test excavation units may be excavated as considered appropriate by the Director or the Registered Aboriginal Parties.
6. Where the 50 cm x 50 cm excavation unit is greater than 0.5% of the area then point 5 (ii) (above) does not apply.
7. The first excavation unit will be excavated and documented in 5 cm spits at each PAD being investigated. Based on the evidence of the first excavation unit, 10 cm spits or sediment profile/stratigraphic excavation (whichever is smaller) may then be implemented.
8. All material excavated from the test excavation units will be wet sieved using a 3mm aperture wire-mesh sieve.
9. Test excavation units will be excavated to at least the base of the identified Aboriginal object-bearing units, and must continue to confirm the soils below are culturally sterile.
10. Photographic and scale drawings will be undertaken.
11. Test excavation units will be backfilled immediately following completion of the test excavations for each PAD
12. If Aboriginal objects are uncovered a Site Recording Form will be completed and sent to AHIMS.
13. Following test excavation, an Aboriginal Site Impact Recording form will be completed and submitted to the AHIMS Registrar as soon as practicable, for each AHIMS site that has been the subject of test excavation.
14. A report detailing the results of the test excavation will be prepared.

Figure 1: Study area edged in red. Note contour indicating low rise overlooking Lapstone Creek.

Figure 2: Showing approximate locations of transects on crest of small rise overlooking Laptsone Creek and two transects at the base of the rise on either side of the rise.

APPENDIX C: ARTEFACT ANALYSES BY DR NINA KONONENKO

Report Reference № 1/03/2023

Dr Nina Kononenko and Dr Peter White

The Australian Museum,

1 William Street Sydney NSW 2010 Australia

Use-Wear/Residue Analysis of glass and stone artefacts from Test Excavation at 170 Russell Street, Emu Plains, NSW.

Brief Report prepared for Comber Consultants Pty Ltd

The report details the results of microscopic analysis undertaken on one stone pebble and three glass artefacts. The artefacts for the analysis were presented by Jillian Comber, the Director of Comber Consultants Pty Ltd to Dr Nina Kononenko, the Australian museum.

The artefacts were analysed and wear attributes were documented with a Dino-LiteTM (AM413ZT) digital microscope using magnifications from ×10 to ×50, with direct vertical light combined with an additional oblique light from an external source, and with the metallurgical microscope Olympus BX60M, fitted with vertical incident and transmitted light and providing magnifications from ×50 to ×1000. The images with use-wear traces and residues were taken with **the Olympus DP72 camera** and Soft Imaging System GmbH attached to the metallographic microscope. The artefacts were cleaned for microscopic use-wear analysis using an ultrasonic bath (Visage GT-7810a) with warm water and a few drops of liquid detergent for 3–5 minutes. Once dry, tool edges were additionally wiped with diluted ethanol (30%) using a Kimwipe© before microscopic examination. Use-wear attributes were recorded on stone and glass artefacts using established methodologies (e.g., Adams 1993, Attenbrow and Kononenko 2019, Fullagar 2014, Kononenko 2011)

Result of the microscopic analysis

Macroscopic and microscopic examination of three glass fragments and one stone pebble demonstrates that one glass artefact and the pebble were used as tools for scraping woody plants and knapping stone.

Medium sized flat pebble (Trench 5, Spit 2) has obvious impact fractures observed on the narrow end (Figure 1). The used surface is intensively damaged by deep elongate scars and dense peck marks (Figures 1b-e, 2d-e). Abrasive agents that were created by dislodged and crushed rock grains during forceful percussive strokes resulted in the edges of scars and peck marks becoming intensively levelled. The used abraded area has a rough texture, slightly reflective sheen on the highest points of the surface and isolated deep linear cracks and striations (Figure 1b-e). These wear traces indicate that the pebble was used as a hammerstone for knapping and flaking stone materials. Similar impact fractures from percussive stone-on-stone contact were observed on artefacts used as hammers for knapping stone (e.g. Adams 1993, Attenbrow and Kononenko 2019).

Flat surfaces of the pebble preserved dark-red iron oxide residues (Figures 1a, 2, 3). These residues have generally linier orientations and superficially attached to the surface (Figure 2d-f). There is no evidence of the association of these residues with wear attributes. Most likely the deposition of these residues on the tool was the result of occasional contact with items made of iron.

One fragment of glass artefact (Trench 7, Spit 1) displays marginal retouch resulted from use of the elongate edge (Figure 4a). The used edge is characterised by overlapping continuous small scars and microscars with step, bending and some feather terminations (Figure 4a, points 1 and 2). Irregular microscars on ventral face of the edge are associated with short dense and slightly diagonal striations and very light edge rounding (Figure 4b). Some isolated diagonal striations are also present within scars on dorsal face of the flake (Figure 4c). These wear attributes suggest that the glass was used for scraping plant material such as soft wood (Kononenko 2011: 24).

Two glass fragments (Figure 5a and b) were not utilised. The surfaces on both fragments are damaged by post-depositional abrasion and accidental retouch. There is no evidence of the intentional flaking, shaping or use of these glass artefacts.

Conclusion

The use-wear and residue examination of stone and glass artefacts indicates that the functions of two identified tools are related to the knapping stone and processing woody plants. Both these activities commonly used by Aboriginal people in their daily live (e.g. Attenbrow and Kononenko 2019) and this suggests that analysed tools were probably related to the Aboriginal occupation of the area.

Acknowledgement

We offer thanks to the Australian Museum for providing laboratory facilities for use-wear/residue analysis. Our thanks are extended to the Comber Consultants Pty Ltd and personally to Jillian Comber, Director of Comber Consultants Pty Ltd, who requested use-wear and residue analysis of the artefacts and provided access to collections.

References

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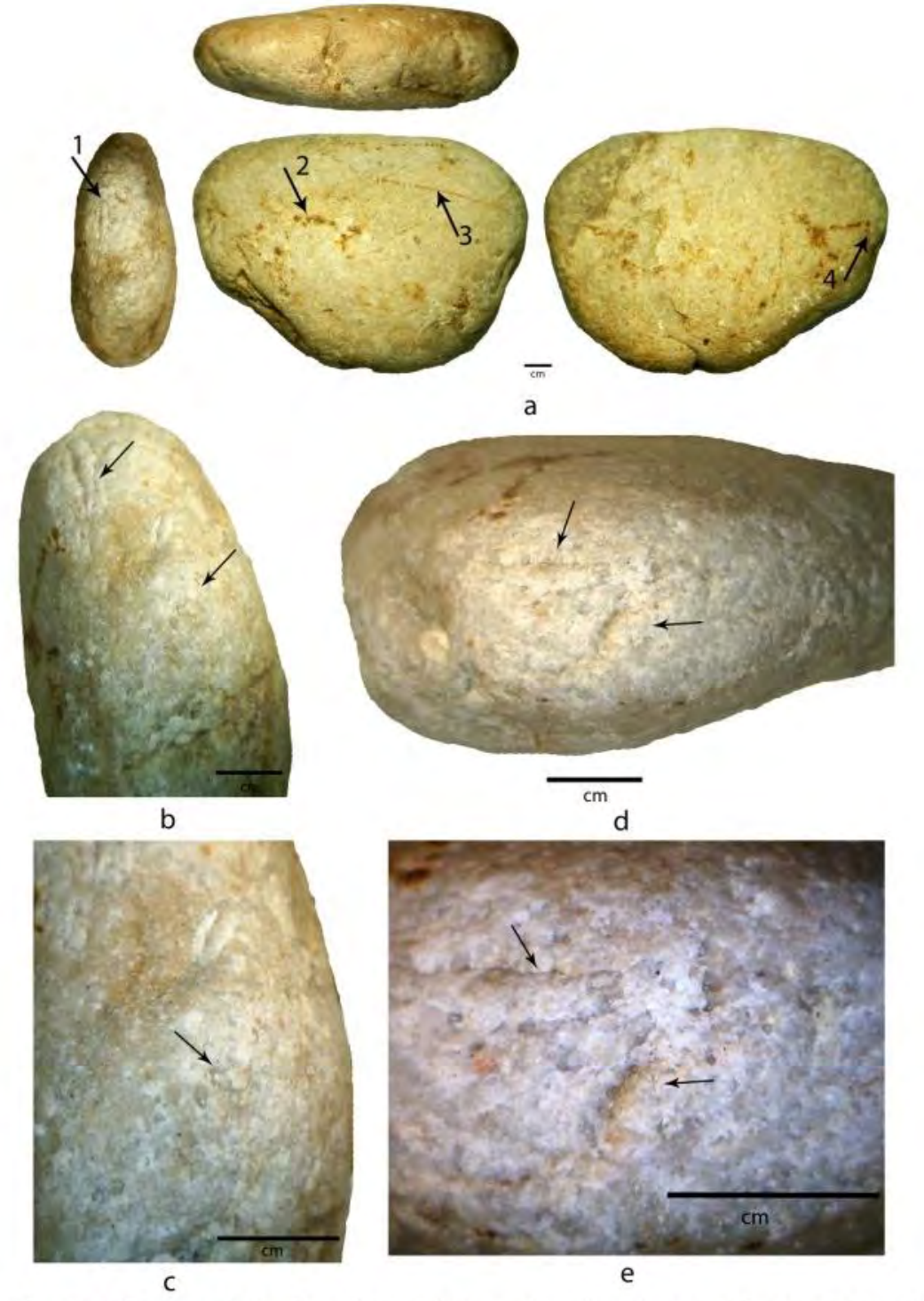

Figure 1: Stone pebble, Trench 5, Spit 2: a – dorsal and ventral faces and profile of the tool with points 1-4 where images were taken, b – point 1, elongate scars, cracks and striations indicated by arrows, c – point 1, abrasion and peck marks indicated by arrow, d – point 1, peck marks and cracks indicated by arrows, e – point 1, cracks and striations indicated by arrows.

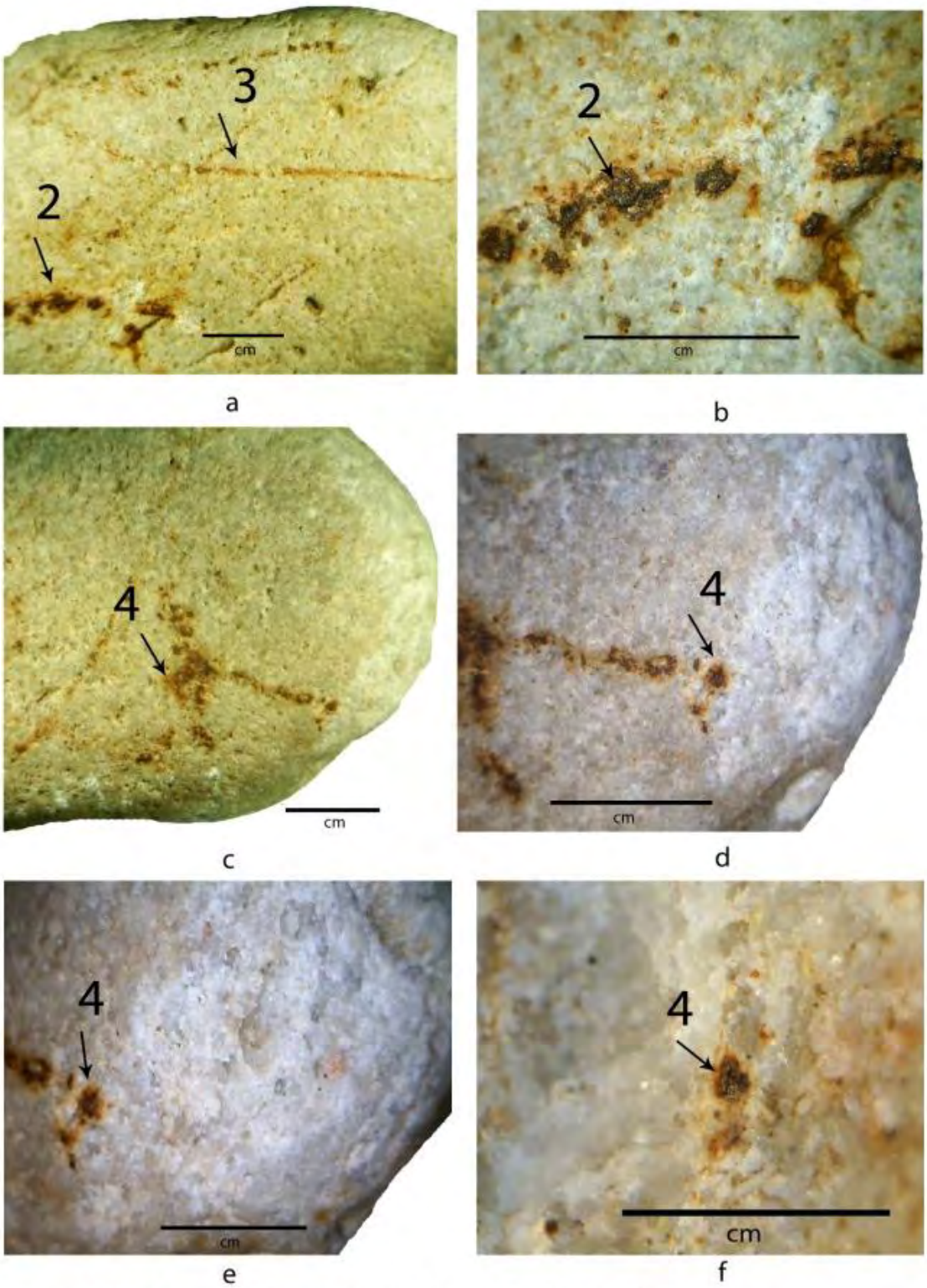

Figure 2: Stone pebble, Trench 5, Spit 2: a – iron oxide residues indicated by arrows at points 2 and 3, b – residues at point 3, c – residues at point 4, d-f – point 4, superficial attachment of residues to the surface indicated by arrows.

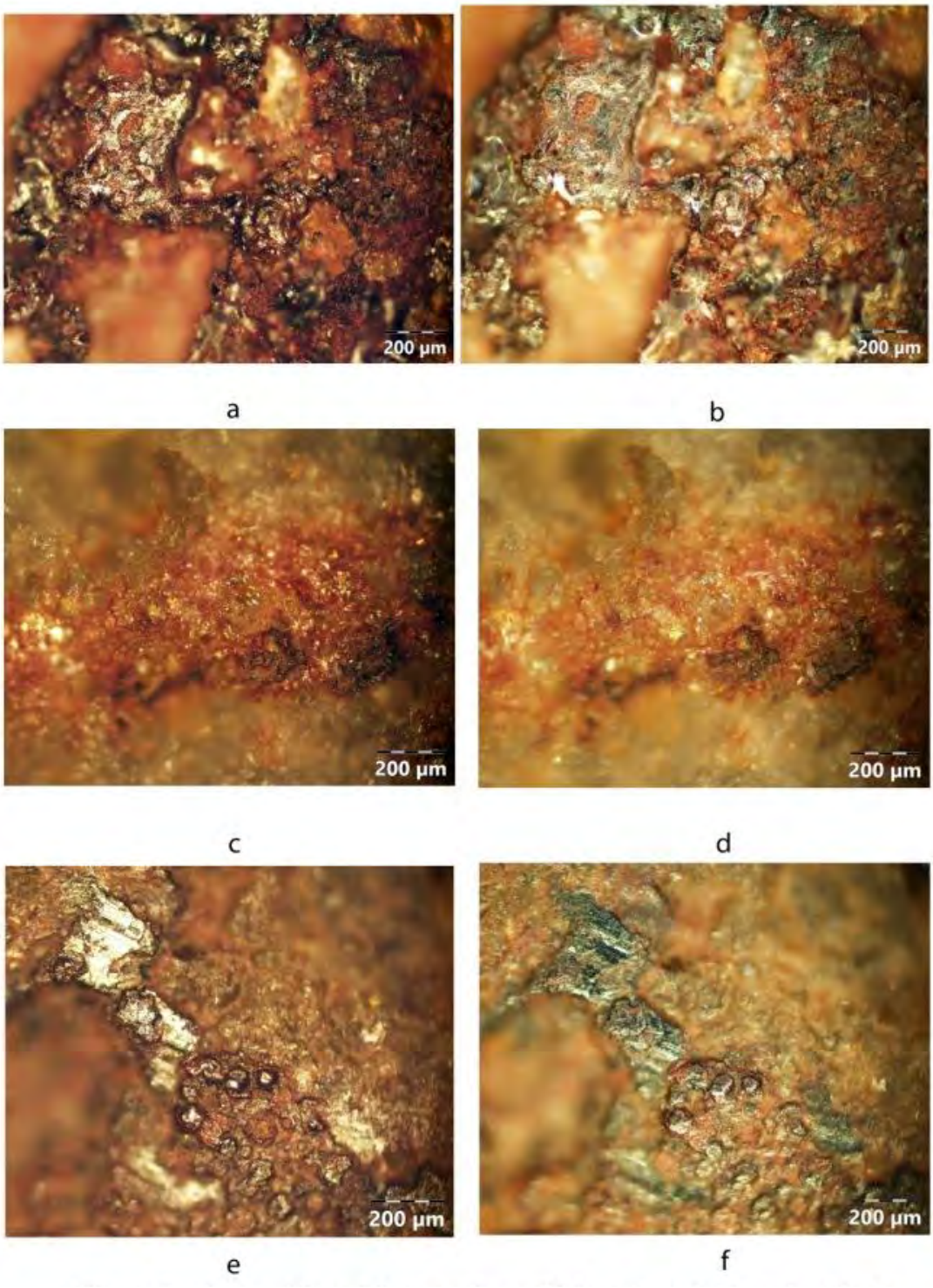

Figure 3: Stone pebble, Trench 5, Spit 2. Iron oxide residues at points 1-3 under ×100 magnification: a, c, e – incident light, b, d, f – dark field illumination.

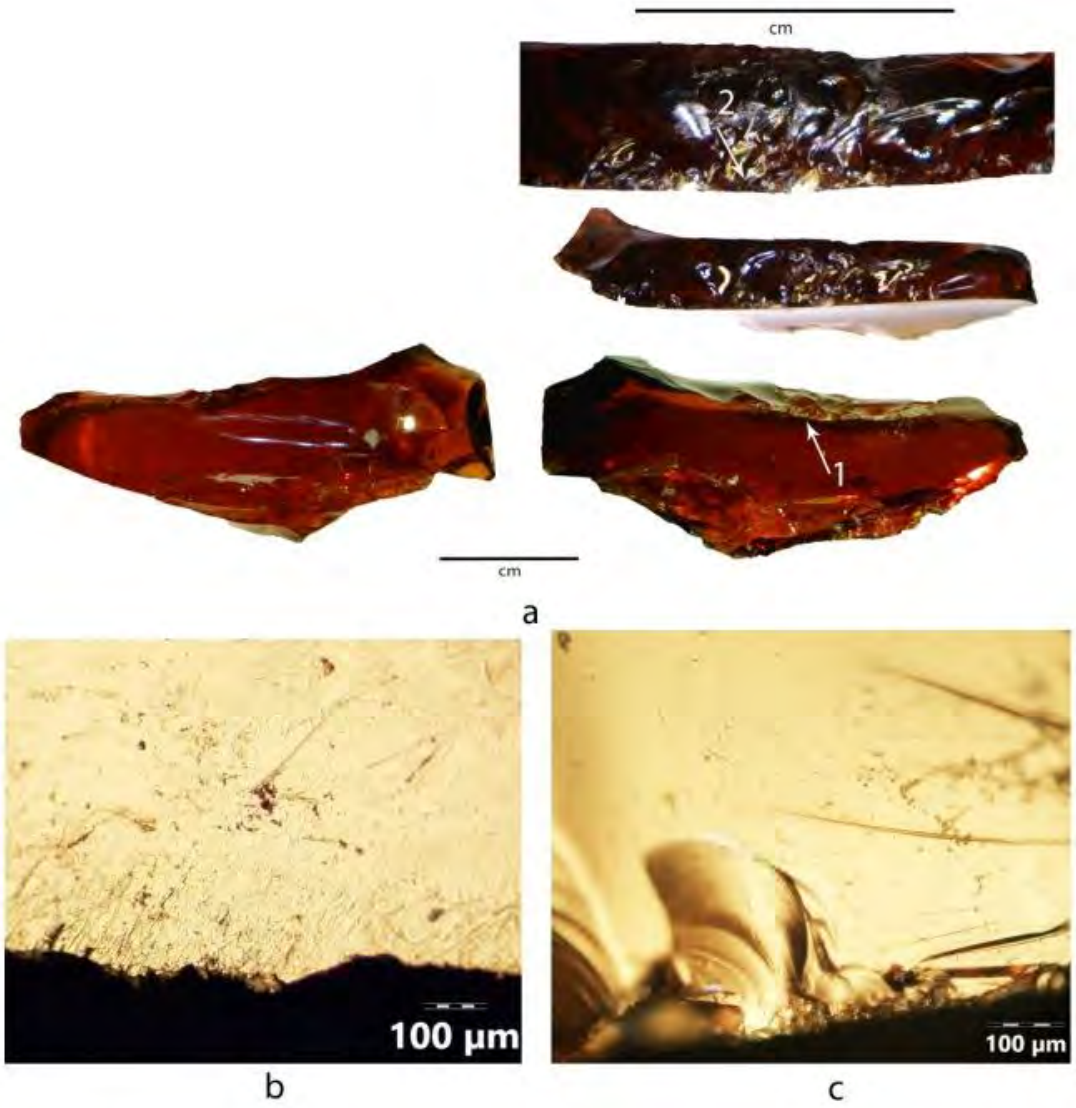

Figure 4: Glass artefact, Trench 7, Spit 1: a – dorsal and ventral faces and profiles with points 1-2 where images were taken, b – point 2, microscars, light edge rounding and slightly diagonal striations (×100), c – point 2, scars and few striations within scars and on the surface (×200).

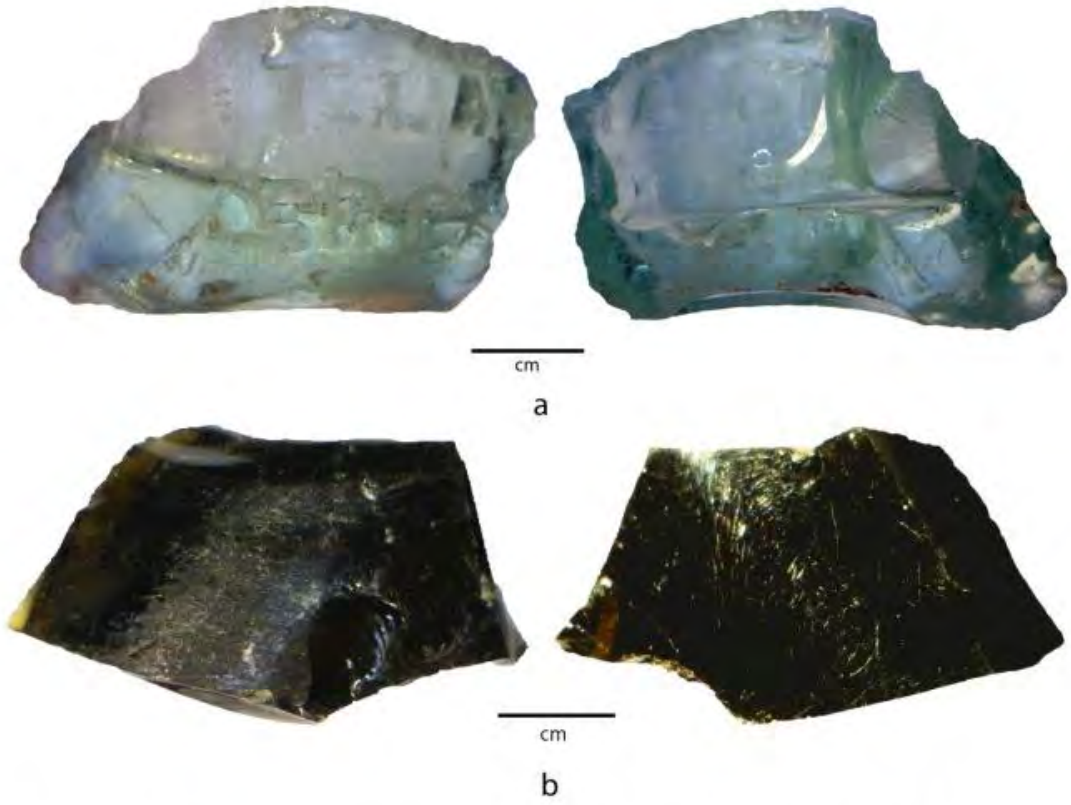

Figure 5: Glass fragments without wear traces: a – Trench 12, Spit 2, b – Trench 5, Spit 2.

APPENDIX D: GLOSSARY

A Horizon: used in soil sciences to describe the upper layer of a soil profile, not including surface organic matter. It can be subdivided into the A1 horizon, which is darker due to accumulated humic matter, and the A2 horizon, which is lighter and leached of clay, iron, humic material, and other colouring agents.

Aboriginal object means *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* (*National Parks & Wildlife Act 1974).*

Aboriginal Place means *any place declared to be an Aboriginal place under section 84* of the *National Parks & Wildlife Act 1974.*

Adze: an axe like bifacial tool with a bevelled bit or blade edge usually used to work wood, or sometimes to dig for root crops.

Alluvium: material which is transported by a river and deposited at points along the flood plain of the river.

Artefact: any object made by human agency. All lithic tools and lithic debitage are considered artefacts.

Artefact scatter: also known as a surface scatter or open site, where prehistoric material such as artefacts and waste debris are lying exposed on the surface of the ground.

Assemblage: a collection of artefacts from an archaeological site.

Australian small tool tradition: a mid Holocene tool industry of the Australian Aborigines that appeared about 5,000 years ago when a new ensemble of small, flaked stone tools began to come into use. The types consisted of backed blades and flakes, Unifacial and bifacial points, and small adze flakes. There are some regional distributions of tools, including Bondi points, geometric microliths, Pirri points and Tula adzes.

Axe: a stone artefact that has been ground on one or more sides to produce a sharp edge.

B horizon: used in soil sciences to describe lower layers of a soil profile. This is the zone in which colouring agents such as clay, iron, humic material, and other colouring agents accumulate. It can be subdivided into the B1 horizon, which is the upper transitional zone, and the lower B2.

Backed blade: a blade flake that has been abruptly retouched along one or more margins opposite an acute (sharp) edge. Backed pieces include backed blades and geometric microliths. They are thought to have been hafted onto wooden handles to produce composite cutting tools or spears. Backed blades are a feature of the "Australian small tool tradition", dating from between 5,000 and 1,000 years ago in south eastern Australia (Mulvaney 1975).

Bifacial flaking or retouch: when flakes have been removed from two opposing faces.

Biomantle: the upper part of soil produced by biodynamical agents and processes of which bioturbation is normally hierarchically dominant. By definition, it contains at least 50% biofabric, a condition met in essentially all topsoils.

Bioturbation: the alteration of a site by non-human agency, eg. burrowing animals, tree and grass roots, insects
Blade: a flake that is at least twice as long as it is wide.

Bondaian: Refers to the period in Australian stone tool production which saw a proliferation of the use of backed artefacts between 5,000 and 1,000 years ago in south eastern Australia (see 'Backed blade'). Pre-bondaian refers to earlier periods. Late-bondaian refers to the period from 1,500- 1000 years ago.

Bondi point: a small, asymmetric backed point, named after Bondi Beach where it was first found, which is a component of the Australian small tool tradition. It is usually less than 5cm long and is sometimes described as a backed blade.
BP: an abbreviation of "before present". A time scale used in archaeology to express old dates. The 'present' refers to January 1st 1950, being around the time when radiocarbon dating methods became available.

Broad platform flake: a flake which has a platform which is as wide as, or wider than, the body of the flake.
Bulb of percussion: a rounded bulge where the force from the hammerstone has radiated through the stone and split it from the core.

Burin: a flake tool that was produced by the removal of two flakes at right angles to one another to produce a very fine sharp and durable edge.

Carved trees: trees which have had designs carved into the bark or heartwood and in some areas may have been used to mark burial or initiation sites.

Chert: a sedimentary rock composed of microcrystallite quartz. It is a fine grained highly siliceous and hard rock that Aboriginal people used to make small tools. It can be flaked to form very sharp edges.

Contact: The early historic period of contact between Aboriginal people and the early settlers.

Contact Archaeology: Archaeological evidence indicating Aboriginal occupation of an area at the same time as the early settlers such as artefacts made from glass or electricity conductors etc.

Context: the time and space setting of an artefact, feature or culture. The context of a find is its position on a site, its relationship through association with other artefacts, and its chronological position as revealed through stratigraphy. An artefact's context usually consists of its immediate matrix (the material surrounding it, eg. clay, gravel or sand), its provenience (horizontal and vertical position within the matrix), and its association with other artefacts (occurrence together with other archaeological remains, usually in the same matrix). The assessment of context includes study of what has happened to the find since it was deposited.

Core: a piece of stone bearing one or more negative (concave) flake scars. A stone which has obviously had flakes and flaked pieces struck from it.

Cortex: refers to the original weathered outer surface of the rock used to manufacture an artefact.

Debitage (debris): detached pieces that are discarded during the reduction process.

Distal end: the end opposite to the platform or the point end of a blade.

Dorsal surface: the 'back' of the artefact or the side that was once part of the outside of the core or shows evidence of previous flake removals.

Edge-ground artefact: an artefact (generally an axe or adze) whose cutting edges have been ground, rather than flaked, to form a sharp edge.

Eraillure scar: the small flake scar on the dorsal side of a flake next to the platform. It is the result of rebounding force during percussion flaking.

Erosion: the wearing away or loosening and transportation of soil or rock by water, wind and ice.

Fabricator: a stone or bone artefact used in the manufacture of other tools. Often rod shaped and worn heavily on one end, it is used to chip flakes from a core, or to retouch a flake.

Flake: any piece of stone removed from a larger mass (core) by application of force (percussion), and having a striking platform and bulb of percussion.

Flaked piece: any stone struck from a larger mass by percussion but not containing all or any of the characteristics of a flake.
Focal platform flake: a flake which has a platform narrower than the body of the flake.

Grinding groove: a depression resulting from the sharpening of stone tools such as axes and adzes, usually located on surfaces of fine homogenous sandstone and near water.

Grinding stone: a thick stone used as a mortar for grinding seeds, roots, tubers, or ochre.
Hammerstone: the stone that is used to remove flakes from the core.

Holocene: that portion of geologic time that postdates the latest episode of continental glaciation. The Holocene Epoch is synonymous with the recent or postglacial interval of Earth's geologic history and extends from 10,000 years ago to the present day. It was preceded by the Pleistocene Epoch and is part of the Quaternary Period, a time characterised by dramatic climatic oscillations from warm (interglacial) to cold (glacial) conditions that began about 1.6 million years ago. The term Holocene is also applied to the sediments, processes, events, and environments of the epoch.

Horizon (or soil horizon): the layers of the upper crust of the earth. The top, or O, horizon is the layer of undecomposed litter; the A horizon is topsoil, where most roots grow; B is the subsoil; and C is the parent rock material, broken into chunks. Although some roots can penetrate into the C horizon, few microorganisms live there.

IMST: a rock type often referred to by archaeologists as indurated mudstone or silicified tuff.

Isolated find: a single stone artefact found on the surface of the land not in association with any other artefact.

Knapping: the process of hitting one stone (core) with another (hammerstone) to produce a flaked artefact.

Lamellate flaked piece: thin and wedge shaped, similar to a flake, but without the diagnostic features of a flake. A lamellate may by the distal end of a flake which has had its platform broken off.

Lithic: anything made of stone. Derived from the Greek word meaning stone or anything pertaining to stone.

Manuport: piece of stone intended to be, or used as, a core that has been carried to the area from somewhere else.

Microlith: a small (1 – 3cm long) flake with evidence of retouch. Bondi points, scrapers and backed blades are all types of microliths.

Midden: a prehistoric refuse site chiefly composed of shell fragments.

Multidirectional core: a lithic mass (core) with evidence of flaking originating from more than one direction and with more than a single striking platform.

Negative flake scar: the scar left by the removal of a flake. The scar may also show a rounded depression which is the negative of the bulb of percussion.

Object: See "Aboriginal Object"

Ochre: a crumbly to hard rock coloured by iron oxide used for as a material for painting. It is found in a variety of colours from pale yellow to dark reddish-brown.

Open site: also known as a surface or artefact scatter, where prehistoric material such as artefacts and waste debris are lying exposed on the surface of the ground.

Palynology: the study of pollen grains and other spores in the archaeological record.

Pirri point: a symmetrical leaf-shaped point, up to 7cm long, unifacially flaked all over its dorsal surface. The striking platform and bulb of percussion are sometimes removed to produce a rounded, thinned butt. Pirri points are a component of the Australian small tool tradition, found generally in inland Australia. The term pirri is an Aboriginal word for 'wood engraving tool'.
Platform: the flat surface which receives percussion or pressure in the removal of a flake or flaked piece.

Pleistocene: a geochronological division of geological time, an epoch of the Quaternary period following the Pliocene. During the Pleistocene, large areas of the northern hemisphere were covered with ice and there were successive glacial advances and retreats. The lower Pleistocene began about 1.8 million years ago; the Middle Pleistocene about 730,000 years ago; and the Upper Pleistocene about 127,000 years ago; it ended about 10,000 years ago. The Pleistocene was succeeded by the Holocene.

Potential archaeological deposit (PAD): any location considered to have a moderate to high potential for subsurface archaeological material

Potlid: small circular piece of stone that has literally "popped off" the surface of the artefact due to exposure to extreme heat.

Proximal end: the 'top' of the artefact, or the part that the knapper hit to remove it from the core, where the platform is expected to be.

Quarry: a location from which stone has been extracted in order to make stone artefacts.

Redoximorphic features: features indicating the chemical reduction and oxidation of iron and manganese compounds resulting from saturation through drainage of surface water or interaction with the water table.

Regolith: the layers of the Earth's surface overlying bedrock.

Retouch: refers to the secondary working of an artefact after it has been struck from the core. Retouch is used to sharpen the edges. It is the intentional modification of a stone tool edge by either pressure or percussion flaking techniques.

Scarred trees: trees from which bark has been removed for the manufacture of everyday items such as containers, canoes or shields.

Scraper: a generalised term used to describe a flake tool that has a retouched edge angle of approximately 60 to 90 degrees.

Silcrete: silica-rich duricrust identified by the presence of complete granules or even pebbles within the matrix.

Stratigraphy: the study and interpretation of the stratification of rocks, sediments, soils, or cultural debris, based on the principle that the lowest layer is the oldest and the uppermost layer is the youngest. The sequence of deposition can be assessed by a study of the relationships of different layers.

Taphonomy: Literally, 'the laws of burial'. In archaeology, it is the study of the processes by which archaeological remains are transformed by human and natural processes during their incorporation into archaeological deposits, their subsequent long-term preservation within those deposits, and their recovery by archaeologists. The aim is to understand the processes resulting in the archaeological record.

Thumbnail scraper: a small flake with a convex scraper edge, shaped like a thumbnail and located opposite the flake's platform. They exhibit unifacial retouch (usually on the ventral surface) and are usually less than 30mm in length.

Transect: an arbitrary sample unit which is a linear corridor of uniform specified width. A straight line or narrow sections through an archaeological site, along which a series of observations or measurements is made.

Tuff: a rock formed of volcanic fragments (generally ash).

Typology: a scheme to order multiple types in a relational manner. A common typology orders types in a hierarchical manner.

Unidirectional core: a core with only one striking platform surface and with flake scars extending in only one direction.

Unifacial flaking or retouch: where flakes have been removed from one face only.

APPENDIX E: RAP RESPONSES

This report was sent to the Registered Aboriginal Parties by email on 22/03/2023. The email to the RAPs and their responses are shown below:

From: Jillian Comber
Sent: Tuesday, March 21, 2023 2:56 PM
To: Steve Randall [srandall@deerubbin.org.au] <srandall@deerubbin.org.au>; Adam Gunther (gunya.ach@gmail.com) <gunya.ach@gmail.com>; Korri Currell (kooridigs@gmail.com) <kooridigs@gmail.com>; Rodney Gunther (waawaar.awaa@gmail.com) <waawaar.awaa@gmail.com>; Steven Johnson (wokacorp@yahoo.com) <wokacorp@yahoo.com>; Merekai Bell <Yurwang.Gundana.C.H.S@outlook.com> <yurwang.gundana.c.h.s@outlook.com>; Phil Khan (philipkhan.acn@live.com.au) <philipkhan.acn@live.com.au>; Shayne Dickson (Gunjeewongculturalheritage21@hotmail.com) <gunjeewongculturalheritage21@hotmail.com>; Daniel Chalker (woriwooilywa@gmail.com) <woriwooilywa@gmail.com>; Justine Coplin (justinecoplin@optusnet.com.au) <justinecoplin@optusnet.com.au>; Carolyn Hickey (cazadirect@live.com) <cazadirect@live.com>; Amanda Hickey (amandahickey@live.com.au) <amandahickey@live.com.au>; Steven & Donna Hickey (widescope.group@live.com) <widescope.group@live.com>
Subject: 170 Russell St, Emu Plains

Hi Everyone

At the end of last we undertook test excavations at 170 Russell Street, Emu Plans. The testing revealed that the site was highly disturbed from continual flooding. In addition, the site had formerly been used as a motocross circuit which included grading, construction of tracks and mounds. Seventeen artefacts were found which were mainly very small pieces of silcrete (less than 5mm), except for one glass artefact and one hammerstone. None of the artefacts were found *insitu.* It is quite possible that they were washed onto the site from flooding.

Given how disturbed the site is and the lack of evidence uncovered during the testing, I don't believe that salvage is necessary, as I don't believe anything significant will be found. I have recommended that the developer apply for an AHIP, but that testing is not necessary. I have also recommended an induction for all staff prior to commencing the development plus an unexpected finds procedure.

Could you please provide me with your comments and if you are happy with the report and the recommendations.

Kind regards

Jillian

DR JILLIAN COMBER

ARCHAEOLOGIST
HERITAGE CONSULTANT

76 EDWIN STREET NORTH, CROYDON, NSW, 2132
M: 0418 788 802
E: jillian.comber@comber.net.au

From: Korri Currell <kooridigs@gmail.com>
Sent: Tuesday, March 21, 2023 5:37 PM
To: Jillian Comber <jillian.comber@comber.net.au>
Subject: Re: 170 Russell St, Emu Plains

Hi Jillian

Thanks received.

Kind regards
Korri Currell

From: Adam Gunya <gunya.ach@gmail.com>
Sent: Tuesday, March 21, 2023 4:13 PM
To: Jillian Comber <jillian.comber@comber.net.au>
Subject: Re: 170 Russell St, Emu Plains

Hi Jillian,

Re: 170 Russell St, Emu Plains

Considering that the testing revealed that the site was highly disturbed, I am happy with the report and the recommendations.

regards

Adam Gunther