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NORTH SYDNEY PUBLIC SCHOOL
NORTH SYDNEY
NEW SOUTH WALES

ABORIGINAL ARCHAEOLOGICAL REPORT

FINAL REPORT

Schools Infrastructure NSW

13 August 2021

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EXECUTIVE SUMMARY

This Aboriginal Archaeological Report (AAR) has been prepared by Austral Archaeology Pty Ltd (Austral) according to the *Code of Practice for Archaeological Investigation of Aboriginal Objects in NSW* (CoP) (Department of Environment, Climate Change and Water 2010a). As well as being an appendix to the main Aboriginal Cultural Heritage Assessment (ACHA) report, this document is additionally required to be "a stand-alone technical report" (Department of Environment, Climate Change and Water 2010b). Therefore, this AAR by necessity includes duplication of the information contained in the main ACHA report.

This AAR details the proposed development at North Sydney Public School, Pacific Highway, North Sydney, New South Wales (NSW). The study area consists of the entirety of Lot 1, DP183591 and Lot 1, DP184559. The location of the study area is shown in Figure 1.1, Figure 1.2, Figure 1.3 and Figure 1.4. It is situated within the North Sydney Council Local Government Area (LGA) and within the area overseen by the Metropolitan Local Aboriginal Land Council (MLALC). The study area is located approximately 7 kilometres north of Sydney CBD. The study area is bound by McHatton Street on the north, the Pacific Highway on the east, Bay Road on the south and residential blocks of land on the west.

The proposed development within the study area will include alterations and additions of the school as a part of a State Significant Development (SSD). As such, the proposed impacts are likely to consist of cut and fill works through parts of the study area due to the construction of new buildings, foundations, demolition works, and subsurface excavations for delivery of services.

Based on issue 8 of the Secretary's Environmental Assessment Requirements (SEARs), issued on 24 December 2020 (SSD-11869481), it is understood that School Infrastructure (SI) will require an ACHA and AAR to be undertaken to support the Environmental Impact Statement (EIS) that is being prepared as part of the SSD application process for the proposed development.

The results of the Aboriginal archaeological survey presented in this report examine the likely nature and extent of the archaeological resource and inform the potential impacts on Aboriginal cultural heritage within the proposed area of development.

SUMMARY OF RESULTS

The study area has not been subject to any previous Aboriginal archaeological assessment. Furthermore, while high levels of the recent development in the area, have removed evidence of past waterways, it was considered unlikely that there were any large perennial waterways in the area, as any rain would have quickly drained into the harbour due to the topography of the surrounding area.

Research conducted into geology, geography, and history shows that the study area has experienced a wide range of construction and clearance on the site, with no part of the site left untouched. It was likely that initial land clearing would have highly impacted and destroyed Aboriginal artefacts, and with the subsequent level of disturbance evident on the site, there is very little likelihood that any remains exist within the study area.

No Aboriginal objects or sites were identified during the archaeological survey undertaken as part of this assessment. It was determined that this was due to the majority of the site being fully developed as part of a school, with most of the ground covering being concrete. No areas of archaeological potential were identified in the study area as the level of disturbance and development across the site was too high.

As stated above, the majority of the site is covered in concrete and asphalt, which precluded any view at the surface below the ground covering. It was determined that the construction of the buildings associated with the school would have caused large scale disturbance across the majority of the site. Disturbance associated with the proposed works can be seen in Figure **3.14** and **Figure 8.1.**

RECOMMENDATIONS

The following recommendations have been developed after considering the archaeological context, environmental information, consultation with the local Aboriginal community, the findings of the archaeological survey, and the predicted impact of the proposed development on archaeological resources. It is recommended that:

1) No further Aboriginal archaeological works are required to be undertaken.

2) No AHIP is required to proceed as the proposed development will not disturb recorded Aboriginal objects, and there is low potential for it to disturb unrecorded Aboriginal objects.

3) All contractors undertaking earthworks in the study area should undergo an induction on identifying Aboriginal heritage objects; and

4) All contractors undertaking earthworks on-site should be briefed on the protection of Aboriginal heritage objects under the *National Parks and Wildlife Act 1974* and the penalties for damage to these items.

5) A copy of this report should be forwarded to all Aboriginal stakeholder groups who have registered an interest in the project and to the AHIMS Registrar

6) If any object is found during development that is suspected to be an Aboriginal object or material, the proponent must:

    a. Not further harm or move the object;
    b. Immediately cease work at that particular location;
    c. Secure the area so as to avoid further harm to the Aboriginal object;
    d. Notify a qualified archaeologist as soon as possible to inspect, assess and, if necessary, record the object or material.
    e. Immediately notify Heritage NSW if the object or material is Aboriginal cultural heritage material on 131555, providing any details of the Aboriginal object and its location, and;
    f. Not recommence any work at the particular location unless authorised in writing by Heritage NSW.

7) If any object is found suspected to be human remains the proponent must,

    a. Prevent all personnel and vehicular access to or near the object;

    b. Immediately contact NSW Police.

    c. Immediately notify Heritage NSW on 131555, noting potential Aboriginal human remains and providing any details of the object and its location,
    d. Contact the project archaeologist, and;
    e. Not recommence any work at the particular location unless authorised in writing by Heritage NSW.

CONTENTS

EXECUTIVE SUMMARY ..... **iii**
CONTENTS ..... **v**
1 INTRODUCTION **1**
1.1 INTRODUCTION *1*
1.2 PROJECT DESCRIPTION *6*
1.3 PREDICTED IMPACT ON THE POTENTIAL ARCHAEOLOGICAL RESOURCE *6*
1.4 ASSESSMENT OBJECTIVES *6*
1.5 FEDERAL AND STATE LEGISLATION *6*
1.6 SECTION SUMMARY *8*
1.7 PROJECT TEAM AND QUALIFICATIONS *8*
1.8 ACKNOWLEDGEMENTS *9*
1.9 ABBREVIATIONS *9*
2 ARCHAEOLOGICAL CONTEXT **11**
2.1 REGIONAL ABORIGINAL ARCHAEOLOGICAL CONTEXT *11*
2.2 HERITAGE DATABASE SEARCH RESULTS *17*
2.3 PREVIOUS ARCHAEOLOGICAL INVESTIGATIONS *21*
3 LANDSCAPE CONTEXT **25**
3.1 GEOLOGICAL CONTEXT AND SOIL LANDSCAPE *25*
3.2 TOPOGRAPHY AND LANDFORM *29*
3.3 HYDROLOGY *34*
3.4 CLIMATE *34*
3.5 FLORA AND FAUNA *35*
3.6 PAST LAND USE PRACTICES *35*
3.7 POTENTIAL LAND USE IMPACTS ON THE ARCHAEOLOGICAL RESOURCE *46*
4 THE LOCAL AND REGIONAL CHARACTER OF ABORIGINAL LAND USE AND MATERIAL TRACES **47**
4.1 SUMMARY OF LOCAL ABORIGINAL MATERIAL TRACES WITHIN THE LOCAL REGION *47*
5 PREDICTIVE STATEMENT **49**
6 ABORIGINAL ARCHAEOLOGICAL SURVEY **51**
6.1 SURVEY METHODOLOGY *51*
6.2 SURVEY RESULTS *51*
7 CULTURAL HERITAGE VALUES **58**
7.1 INTRODUCTION TO THE HERITAGE ASSESSMENT PROCESS *58*
7.2 BASIS FOR ASSESSMENT OF ABORIGINAL SITES *58*
7.3 PRELIMINARY ASSESSMENT OF ABORIGINAL SITES *60*
7.4 SPECIFIC ABORIGINAL LANDSCAPE VALUES *60*
8 THE PROPOSED ACTIVITY **61**
8.1 THE PROPOSED WORKS AND POTENTIAL IMPACTS *61*
8.2 PREDICTED IMPACT ON THE POTENTIAL ARCHAEOLOGICAL RESOURCE *61*
9 AVOIDING AND MINIMISING HARM **63**
9.1 CUMULATIVE IMPACTS AND OPTIONS TO AVOID HARM *63*
9.2 MANAGEMENT AND MITIGATION STRATEGIES *63*
10 RECOMMENDATIONS **64**
REFERENCES **65**

APPENDICES 68

FIGURES

Figure 1.1 Topographic map showing study area and surrounding suburbs. 2
Figure 1.2 Aerial imagery of the area surrounding the study area 3
Figure 1.3 Detailed aerial imagery of the study area 4
Figure 1.4 Surrounding cadastral boundaries 5
Figure 2.1 Foraging Model (Foley 1981) 15
Figure 2.2 AHIMS Sites within 3 kilometres of the Study Area 19
Figure 2.3 AHIMS Sites nearby the study area 20
Figure 3.1 Sydney Basin in reference to surrounding plains. 26
Figure 3.2 Geological Landscape Associated with the Study Area 30
Figure 3.3 Soil Landscapes Associated with the Study Area 31
Figure 3.4 Mitchell Landscapes Associated with the study area 32
Figure 3.5 AHD Heights / Topography associated with the study area 33
Figure 3.6 1930 Historic Aerial Imagery Associated with the study area. 37
Figure 3.7 1943 Historic Aerial Imagery Associated with the study area 38
Figure 3.8 1951 Historic Aerial Imagery Associated with the study area 39
Figure 3.9 1961 Historic Aerial Imagery Associated with the study area 40
Figure 3.10 1978 Historic Aerial Imagery Associated with the study area 41
Figure 3.11 1986 Historic Aerial Imagery Associated with the study area 42
Figure 3.12 1994 Historic Aerial Imagery Associated with the study area 43
Figure 3.13 2009 Historic Aerial Imagery Associated with the study area 44
Figure 3.14 Disturbances Associated with the study area 45
Figure 6.1 View to the east of the playground area, all areas apart from the play equipment have been fully tarmacked. 52
Figure 6.2 View to the south of sunken area in western section of the study area. 52
Figure 6.3 View to north-west of tiered seating location. 53
Figure 6.4 View to the south-west of sporting area, showing to level this area. 53
Figure 6.5 View to the west of Area 1, small exposures and light earthworks can be seen. 54
Figure 6.6 View to the west of Area 2. 54
Figure 6.7 View to the west in Area 2 of exposures and a drain for the large pipe running through Area 1 and 2. 55
Figure 6.8 View to the east of Area 3. 55
Figure 6.9 Survey Results 57
Figure 8.1 Proposed Site Plan associated with the study area 62

TABLES

Table 1.1 Federal Acts 7
Table 1.2 State Acts 7
Table 1.3 State and Local Planning Instruments 7
Table 1.4 Aboriginal Community Consultation Guidelines 7
Table 2.1 AHIMS sites identified within 3 kilometres of the study area. 18
Table 2.2 A summary of archaeological consultant reports from the region. 21

1 INTRODUCTION

1.1 INTRODUCTION

This Aboriginal Archaeological Report (AAR) has been prepared by Austral Archaeology Pty Ltd (Austral) according to the *Code of Practice for Archaeological Investigation of Aboriginal Objects in NSW* (CoP) (Department of Environment, Climate Change and Water 2010a). As well as being an appendix to the main Aboriginal Cultural Heritage Assessment (ACHA) report, this document is additionally required to be "a stand-alone technical report" (Department of Environment, Climate Change and Water 2010b). Therefore, this AAR by necessity includes duplication of the information contained in the main ACHA report.

This AAR details the proposed development at North Sydney Public School, Pacific Highway, North Sydney, New South Wales (NSW). The study area consists of the entirety of Lot 1, DP183591 and Lot 1, DP184559. The location of the study area is shown in Figure 1.1, Figure 1.3, Figure 1.3 and Figure 1.4. It is situated within the North Sydney Council Local Government Area (LGA) and within the area overseen by the Metropolitan Local Aboriginal Land Council (MLALC). The study area is located approximately 7 kilometres north of Sydney CBD. The study area is bound by McHatton Street on the north, the Pacific Highway on the east, Bay Road on the south and residential blocks of land on the west.

The proposed development within the study area will include the redevelopment of the school as a part of a State Significant Development (SSD). As such, the proposed impacts are likely to consist of cut and fill works through parts of the study area due to the construction of new buildings, foundations, demolition works, and subsurface excavations for delivery of services.

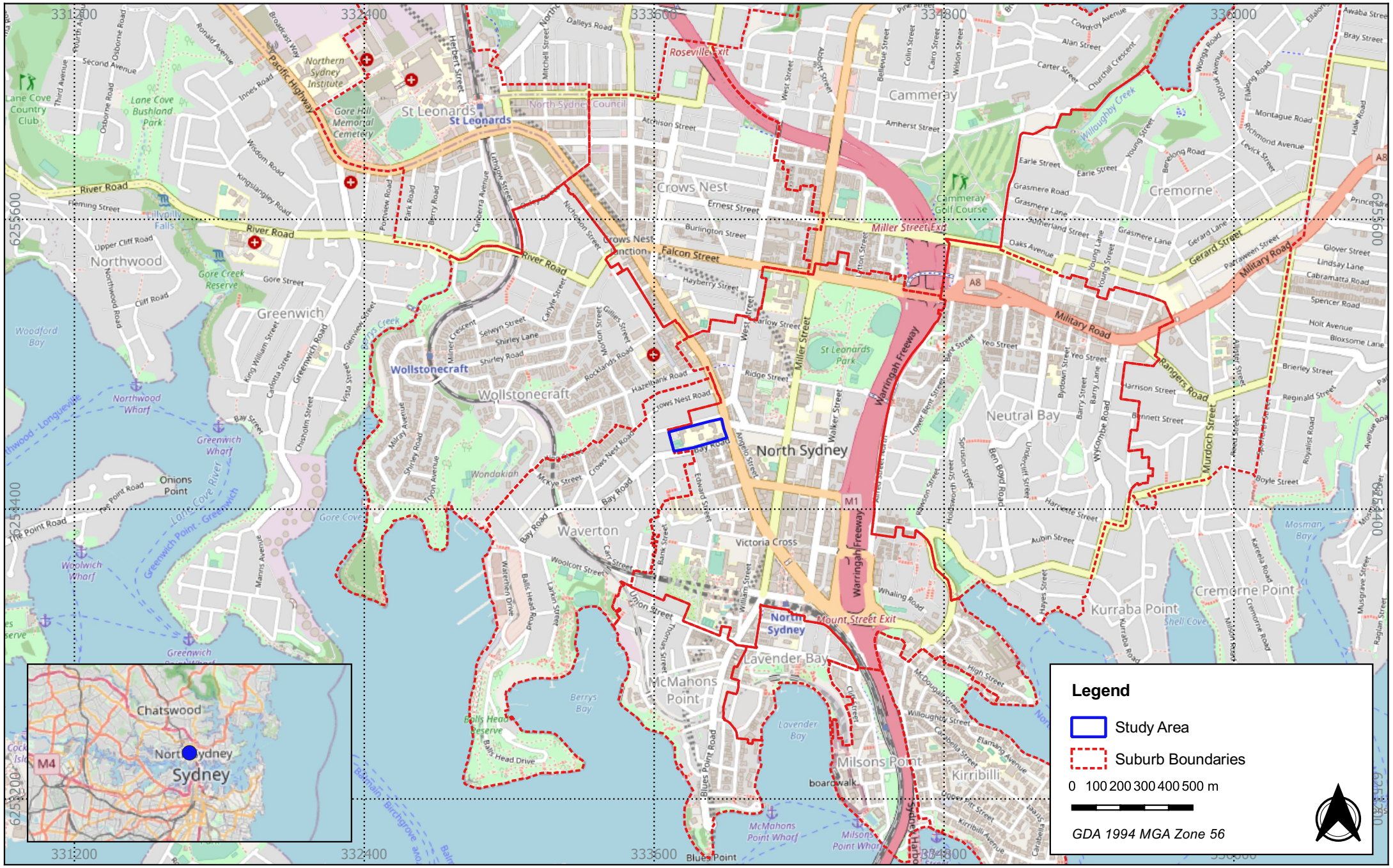

Figure 1.1 Topographic map showing study area and surrounding suburbs

2055 - North Sydney Public School - Aboriginal Archaeological Report

Source: OSM *Drawn by: WA Date: 2020-08-31*

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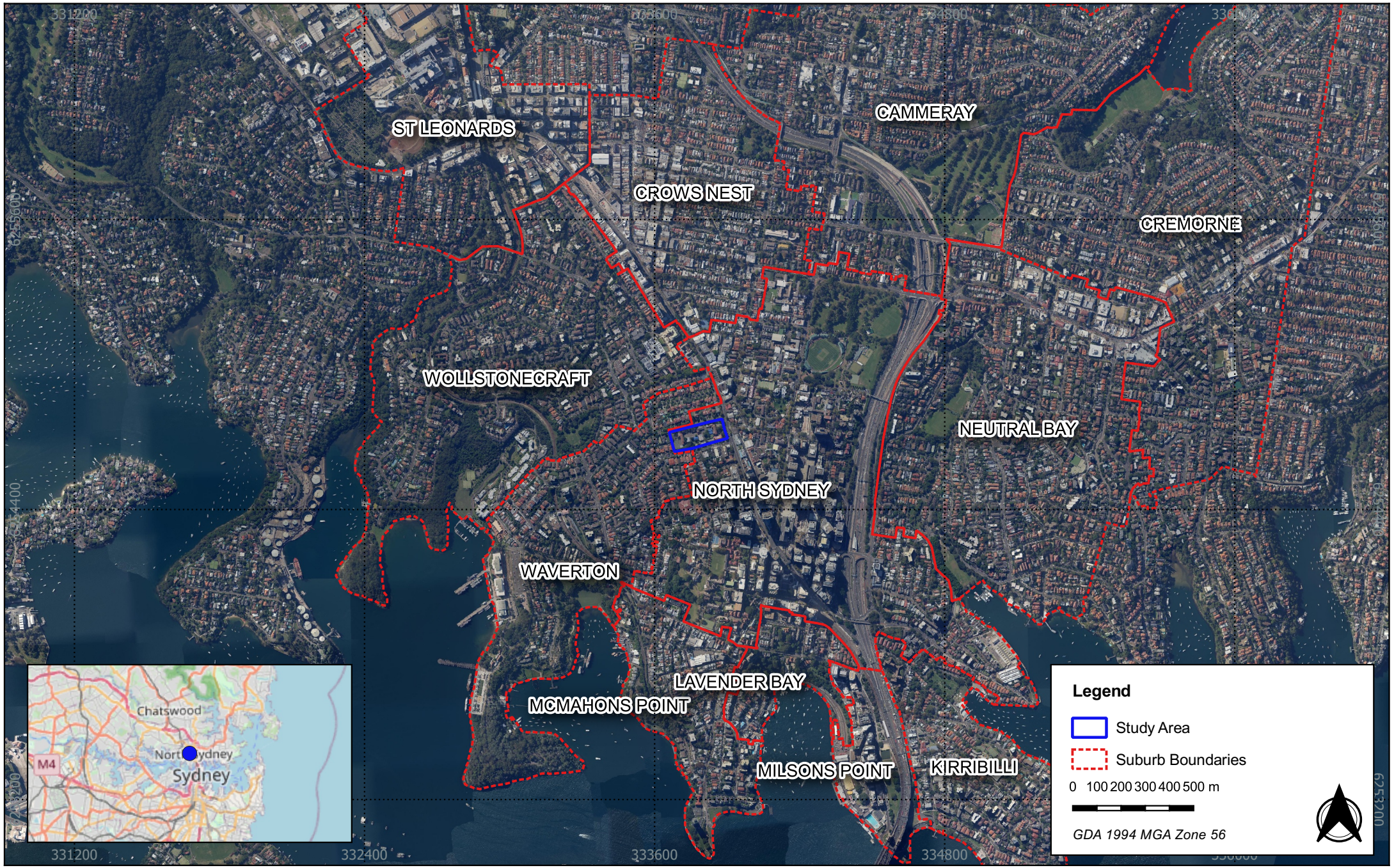

Figure 1.2 Aerial imagery of the area surrounding the study area

2055 - North Sydney Public School - Aboriginal Archaeological Report

Source: OSM, NSW DFSI Aerial

Drawn by: WA Date: 2020-08-31

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Figure 1.3 Detailed aerial imagery of the study area

2055 - North Sydney Public School - Aboriginal Archaeological Report

Source: OSM, NSW DFSI Aerial *Drawn by: WA Date: 2020-08-31*

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Figure 1.4 Surrounding cadastral boundaries

2055 - North Sydney Public School - Aboriginal Archaeological Report

Source: OSM, NSW DFSI Aerial

Drawn by: WA Date: 2020-08-31

AUSTRAL ARCHAEOLOGY

1.2 PROJECT DESCRIPTION

The proposed development within the study area will include the construction of new hall and classroom buildings as well as the installation of associated services and landscaping works. As such, the proposed impacts are likely to consist of cut and fill works through parts of the study area due to the construction of new buildings, foundations, demolition works and subsurface excavations for delivery of services.

It is understood that construction works will involve:

- Large scale groundworks including extensive earthwork, including extensive subsurface excavation, landscaping and levelling.
- Installation of associated services, including sewer drainage, water supply, and electrical cables as well as landscaping works.

1.3 PREDICTED IMPACT ON THE POTENTIAL ARCHAEOLOGICAL RESOURCE

In accordance with the key aims of the archaeological survey, the Aboriginal archaeological potential of the study area has been determined. The survey of the study area has confirmed that the entirety of the study area has been subject to high levels of disturbance caused by continuous development from the late 19th century onwards, associated with the construction of houses and the development of the North Sydney Public School.

No Aboriginal objects or sites were identified during the archaeological survey, and it was determined that the study area contains the low potential for the presence of subsurface Aboriginal cultural material due to the high levels of ground disturbance caused by previous developments.

It is therefore considered that further investigation would not yield material traces that would provide new information on the Aboriginal occupation of the study area. Therefore, further archaeological investigation of the study area is not warranted.

1.4 ASSESSMENT OBJECTIVES

The scope of this AAR is based on the legal requirements, guidelines and policies of Heritage NSW of the Department of Premier and Cabinet, formerly the Office of Environment and Heritage (OEH) and the Department of Environment, Climate Change and Water (DECCW). The guiding documents for this assessment are the *Guide to Investigating, Assessing and Reporting on Aboriginal Cultural Heritage in NSW* (DECCW 2011) [the Guide to Reporting] and the *Code of Practice for Archaeological Investigation of Aboriginal objects in NSW* (DECCW 2010a).

The scope of works includes the following:

- Undertake a literary review of available data, including previous studies/investigations from around the study area,
- Undertake necessary consultation with relevant Government agencies and key local Aboriginal stakeholders.
- Provide adequate documentation to support the EIS.

1.5 FEDERAL AND STATE LEGISLATION

Aboriginal archaeological and cultural heritage assessments in NSW are carried out under the auspices of a range of State and Federal acts, regulations, and guidelines. The acts and regulations allow for the management and protection of Aboriginal places and objects, and the guidelines set out best practice for community consultation under the requirements of the acts.

Table 1.1 to Table 1.4 detail the Australian acts and guidelines which have been identified as being applicable or with the potential to be triggered with regards to the proposed development.

Table 1.1 Federal Acts

Federal Acts:	Applicability and implications
Environment Protection and Biodiversity Conservation Act 1999	This Act has not been triggered, and so does not apply. • No sites listed on the National Heritage List (NHL) are present or in close proximity to the study area. • No sites listed on the Commonwealth Heritage List (CHL) are present or in close proximity to the study area.
Aboriginal and Torres Strait Islander Heritage Protection Amendment Act 1987	Applies. • This Act provides blanket protection for Aboriginal heritage in circumstances where such protection is not available at the state level. This Act may also override state and territory provisions.

Table 1.2 State Acts

State Acts:	Applicability and implications
Environmental Planning and Assessment Act 1979 (EPA Act)	Applies. • This project is being assessed under Part 5 of the EPA Act.
National Parks and Wildlife Act 1974 (NPW Act 1974)	• Provisions under Section 90 of the NPW Act do not apply for this project.

Table 1.3 State and Local Planning Instruments

Planning Instruments	Applicability and implications
Local Environmental Plans (LEP)	The following LEP is applicable: • *North Sydney Local Environmental Plan 2012*
Development Control Plans (DCP)	The following DCP is applicable: • *North Sydney Development Control Plan 2012*

Table 1.4 Aboriginal Community Consultation Guidelines

Guidelines	Applicability and implications
Aboriginal cultural heritage consultation requirements for proponents 2010 (DECCW 2010).	The development is to be conducted in accordance with Part 5 of the EPA Act. • As the project is to be assessed under Part 6 of the NP&W Act, approvals under Section 90 of the NP&W Act 1974 as amended 2010 will be required, S89A of the Act will apply, and the Part 4 Guidelines will apply.

1.6 SECTION SUMMARY

Aboriginal places and objects, both known and unknown, are protected in NSW by State and Federal legislation. The present assessment is being conducted under the *Aboriginal Cultural Heritage Consultation Requirements for Proponents* (Department of Environment, Climate Change and Water 2010b) [the Consultation Requirements], the Guide to Reporting, under Section 80 of the NP&W 1974 Regulations and Part 6 of the NP&W 1974 Act in respect to the identification of Aboriginal stakeholders. As the proposed work is a State significant project, the procedures under Part 5 of the EP&A Act apply.

Searches of the Australian Heritage Places Inventory (AHPI), the Register of the National Estate (RNE), the National Heritage List and the NSW Heritage Council SHR websites identified no recorded sites of Aboriginal cultural heritage within the study area.

At the State level, the works are to be assessed under the NP&W Act and the EP&A Act. The relevant sections of the NP&W Act are Section 86, Section 87, Section 89A and Section 90. The *North Sydney Local Environmental Plan 2013* (North Sydney LEP), produced in accordance with the EP&A Act, makes provision for the protection of Aboriginal heritage, archaeological sites and potential archaeological sites.

1.7 PROJECT TEAM AND QUALIFICATIONS

This ACHA was prepared by Sejal Pandya (Archaeologist, Austral) with GIS mapping undertaken by William Andrews (Archaeologist, Austral) and project management provided by David Marcus (Director, Austral). This report was reviewed by Amanda Atkinson (Director, Austral) for quality assurance purposes.

DAVID MARCUS (B.A. (HONS.) ARCHAEOLOGY, MA. ARCHAEOLOGY)

David has significant experience in both Aboriginal and historical cultural heritage projects. David started his career in archaeology in 2000 and has worked in all roles from field assistant through to project manager. He commenced work for Austral Archaeology in 2010 and has been responsible for all aspects of the day-to-day running of Austral Archaeology. David also has high-level skills in both physical and digital mapping and integration of digital data into GIS. David has completed various Aboriginal archaeological projects and is familiar with the archaeology of the North Shore.

AMANDA ATKINSON (B.A. (ARCH/PALEO), GRAD DIP. ARCH

Amanda Atkinson is a Director of Austral, who began her archaeological career in Australia in 2008 and has extensive experience as a team leader in environments ranging from small business to large companies. Amanda has a specialist interest in the archaeology of the western arid region of New South Wales. She has led the largest archaeological projects in that area to date, as well as handling consultation with Aboriginal stakeholders on high profile and complex projects across the state. She has worked with hundreds of Aboriginal groups around Australia.

SEJAL PANDYA (M.A. Arch, Post-Grad Dip Arch.)

Sejal Pandya has over 7 years' experience working and conducting archaeological fieldwork in India and Australia. She has been working in Australia as a Consultant Archaeologist since 2017 She has experience in the field techniques and research works including report writing, the preparation of CHMPs, artefact analysis, etc., used in the field of Archaeology.

In India, she has worked on different archaeological projects ranging from pre-historic sites to Bronze Age sites, historical/Iron Age, Medieval and modern times. She has a keen interest in Aboriginal Archaeology and Indus Archaeology. She has experience of working in the Federal Government organisations of archaeology in India, i.e., Archaeological Survey of India and working for the National Monument Authority of India for 5 years. She has worked on report writing, preparing dossiers for World Heritage sites, conducting long-term excavations over periods of months, documentation of artefacts, conservation strategies, preservation of monuments, and assessing developmental plans around sites and monuments of national importance.

RICARDO SERVIN (B.A. ARCHAEOLOGY)

Ricardo Servin is an archaeologist with over 6 years of experience in Aboriginal cultural heritage and historical heritage projects across NSW, Victoria and Tasmania. Ricardo has managed sites

of local and State significance and led teams of over 10 archaeologists on both historical and Aboriginal archaeological sites. As a heritage consultant, Ricardo has written several assessment reports as the main author and has been a contributor to large-scale reports. Ricardo has ample experience in lithic artefact analysis with experience in functional analysis.

William Andrews (B. Eng (Surveying)(Hons))

William is a Graduate Archaeologist who has worked with Austral since 2019. William studied Archaeology at the beginning of his educational career before transitioning towards engineering. His honors thesis was completed on digital documentation methods within Archaeology. William also worked as a land surveyor for 2 years before focusing on Archaeology. As such, William specializes in three-dimensional modelling, in-field documentation methods and GIS.

1.8 ACKNOWLEDGEMENTS

Austral Archaeology would like to acknowledge the participation of the following people who contributed to the preparation of the report:

- Lee Jegou Schools Infrastructure NSW

1.9 ABBREVIATIONS

The following are common abbreviations that are used within this report:

AAR	Aboriginal Archaeological Report
ACHA	Aboriginal Cultural Heritage Assessment
ACHDDA	Aboriginal Cultural Heritage Due Diligence Assessment
AHIMS	Aboriginal Heritage Information Management System
AHIP	Aboriginal Heritage Impact Permit
AHPI	Australian Heritage Places Inventory
BOM	Bureau of Meteorology
Burra Charter	*Burra Charter: Australia ICOMOS Charter for Places of Cultural Significance 2013*
CBD	Central Business District
CHL	Commonwealth Heritage List
CoP	Code of Practice
DA	Development Application
DCP	Development Control Plan
DEC	Department of Environment and Conservation
DPC	Department of Premier and Cabinet
DPIE	Department of Planning, Industry and Environment
EESG	Environment, Energy and Science Group (DPIE)
EPA Act	*Environmental Planning and Assessment Act 1979*
EPBC Act	*Environmental Protection and Biodiversity Act 1999*
EPI	Environmental Planning Instrument
GSV	Ground Surface Visibility
Heritage Act	*NSW Heritage Act 1977*
ICOMOS	International Council on Monuments and Sites
IHO	Interim Heritage Order
LEP	Local Environmental Plan
LGA	Local Government Area

NHL	National Heritage List
NPW Act	*National Parks and Wildlife Act 1974*
NPSW	National Parks and Wildlife Service
NSW	New South Wales
PACHCI	Procedure for Aboriginal Cultural Heritage Consultation and Investigation
PAD	Potential Archaeological Deposit
The Proponent	Schools Infrastructure, Department of Education, NSW
RNE	Register of the National Estate
SI	Schools Infrastructure
SHI	New South Wales Heritage Office State Heritage Inventory
SHR	New South Wales Heritage Office State Heritage Register
Study Area	North Sydney Public School, North Sydney, NSW
S90	*Section 90 of the NPW Act*

Aboriginal Stakeholder Abbreviations:

MLALC	Metropolitan Local Aboriginal Land Council

2 ARCHAEOLOGICAL CONTEXT

2.1 REGIONAL ABORIGINAL ARCHAEOLOGICAL CONTEXT

Archaeological investigations of the Lower North Shore of Sydney have been conducted related to the recent urban developments in the region. The early ethnographic records of the settlers and travellers in the region become one of the important sources to understand the region's background. Apart from the early records, the archaeological investigations in the region in response to the recent developments are another source of information of the area.

The major studies which have contributed to our understanding of the Lower North Shore, and those with direct relevance to the study area through their proximity, are outlined below. Reference is made to the main trends garnered from these investigations which serve to provide a broad framework in which to base the current study

Aboriginal occupation of the Sydney region extends back well into the Pleistocene, or 10,000 years ago. Currently, the oldest date for an archaeological site in the Sydney region is a date of approximately 40,000 years from the Cranebrook Terrace on the Nepean River (Attenbrow 2010). However, most samples dated by geochronology are much more recent being less than 15,000 years old and concentrated in the last 2,500 years (DECCW 2011, p.1). The nature of this human occupation has undergone a continuous change through time according to the environmental conditions and the type of society that existed.

POPULATION AND CONTACT HISTORY

The original inhabitants of the north side of Port Jackson were the Cammeraygal, also spelled as Kameragal, who occupied the area of modern-day Cammeray. Their territory extended from north of the harbor to the Lane Cove River in the north-east and toward the coast in the east. The neighbouring tribes were those of the Gweagal, Noronggeragal, Borogegal, Gomerigal and Boromedegal. Towards the south, the area of Milson point was occupied by the Walumedegal or Wallumedegal (Attenbrow 2010, Tindale 1974).

The head of the tribe is named Cammeraygal and women of the tribe were knowns as Cammeraygal (Attenbrow 2010). The Cammeraygal and neighbouring Borogegal tribes shared many similar practices. It should be noted that clan boundaries were not mapped, and due to the indigenous way of life and beliefs regarding ownership and territory, it is difficult if not impossible to ascertain where each group lived exactly (Attenbrow 2010, pp.29–35, Souter 2012, pp.5–6). The social practices of the tribal cultures across the whole of Australia remained largely similar in patterns and the lifeways of Borogegal people occupying the same geographical region as the Cammeraygal clan. Like the Borogegal, the Cammeraygal would have depended on the harbor. During the summer months, they would catch and eat the fish and shellfish that inhabited the area. In the winter months, the people would move further inland to stay warm while gathering and hunting the local flora and fauna to survive (Souter 2012, p.11).

Our understanding of the pre-Contact Aboriginal population is therefore ethnographically informed by observations made predominantly by non-Aboriginal people during the initial period of contact and subsequent settlement. Several such accounts are available about the life, nature of Aboriginals by the travellers and early settlers. These ethnographic works should be studied with caution to understand the Aboriginal culture of pre-contact times. Early estimates of the number of Aboriginal people in the Sydney suggest around 3,000 individuals inhabited the area. However, the pre-contact population numbers for the study area are not known and, due to smallpox and influenza epidemics preceding the arrival of European settlers into the region (Attenbrow 2002:21), it is unlikely that the early European explorers were able to successfully grasp the traditional population size. Following the arrival of European settlers in Australia, the Aboriginal people were forced from their lands, destroying the vital relationship between country, culture, custom and ceremonies. This threw the indigenous way of life into turmoil and, coupled with the local aboriginal people avoiding the Europeans, made any estimates of the local population difficult and most likely inaccurate. While Indigenous people belonged to a clan, in day to day life people lived in small bands with numbers starting from a nuclear family unit, all the way up to groups of 50 people. Gatherings were common, but were usually reserved for important business, such as initiations or funerals (Attenbrow 2010, pp.28–30).

The first observations of the Aboriginal people of the North Sydney area is an encounter between Captain Hunter, Lieutenant Bradley and Henry Waterhouse on 28th January, 1788:

> *"On a point of land in the lower part of the harbour between Middle Head and Bradley Point we saw several of the Natives on the upper part of the rocks, who made great noise and waved to us to come on shore; there being a great surf we could not land at the Point we wished, which they observing, pointed to the best place to land and came down unarmed to meet us... On our landing we observed some women at the place the men down from, they would not come near us, but peered from behind rocks and trees. When the boats set off, the men began dancing and laughing and when we were far enough off to bring the place the women were at in sight, they held their arms extended over their heads, got on their legs and danced til we were some distance, then follows us upon the rocks as far as the boats went along that shore"* (Cobley 1962).

This landing place was probably Chowder Bay, approximately 8 kilometres east of the study area (Australian Museum Business Services 2005, p.44).

In April 1789 an outbreak of smallpox, decimated the Aboriginal population in the Sydney region, as the traditional owners had no immunity against the disease. (Souter 2012, p.11). The survivors were pushed out to the rugged and undevelopable areas of the suburb(Carroll 1963, p.5).

There are historical observations of the effects of smallpox on the Aboriginal population in the local region. Governor Phillip informed the Secretary of State that as best he could determine, approximately half of the population had died as a result and that:

> *"As the natives always retired from the area where the disorder appeared, and which some must have carried with them, it must have spread to a considerable distance, as well inland as along the coast. We have seen traces of it where ever we have been."* (Collins 1795, p.52).

At North Harbour, approximately 3 kilometers south of the study area, Collins wrote that:

> *"At that time a Native was living with us...and on out taking him down to the harbour to look for his former companions, those who witness his expression and agony can never forget either. He looked anxiously around him in the different coves we visited; not a vestige upon the sand was to be found of human foot; the excavations n the rock filled with putrid bodies of those who had fallen victims of the disorder; not a living person was any where to be met with. It seemed as if, flying from the contagion, they had left the dead to bury the dead. He lifted up his hands and eyes in silent agony for sometime; at last he exclaimed 'All dead, All dead*" (Collins 1795, p.52).

This ethnohistory should be employed with caution and Hiscock has recently argued that even very early historical accounts may not be a suitable basis for analogy (Hiscock 2008). As Aboriginal groups had to change their economic, cultural and political practices in order to cope with the social impacts of disease in the historic period, he argues that it is likely that similar drastic changes happened in the past in response to "altered cultural and environmental circumstances" following the arrival of Europeans. Social disruption in the Port Jackson region caused by European settlement pushing Aboriginal people to the fringes of their traditional lands would have caused such drastic changes.

MATERIAL CULTURE

The material culture of the Aboriginal people of the Port Jackson region at the time of European contact was diverse, and utilised materials derived from a variety of plants, birds and animals, as well as stone. Below is only a short summary of the types of material known to have been used by the Aboriginal people of the Port Jackson region.

Fishing tools used by the local population included three or four pronged spears, which were used by the men in shallow waters, from bark canoes, and from rock platforms around the shores. Spears were usually made of a grasstree spike (for the shaft) with a hardwood point. Stone, bone, shell or wood were sometimes used as barbs. In contrast to the men, women used hooks and lines in bark canoes (2005, p.34).

Collins, in his account of the Port Jackson area, provides a description of the hunting spears used by the local Aboriginal population. This included a spear with only one prong, which, according to Collins, was sometimes simply pointed or had one or more barbs. Collins goes onto state that the sharp end of some spears was manufactured from very hard wood two or three foot long and tapered to a point (Collins 1795, p.143). Some hunting spear barbs were shaped from a solid piece of wood of which the prong was made or were fastened on with gum from trees. Barbs were also made from sharpened bone, kangaroo teeth and shell (Collins 1795, p.143). Tench also provides a description of the use of spears in the Port Jackson area:

> *The fish-gigs and spears are commonly (but not universally) made of the long spiral shoot, which arises from the top of the yellow gum-tree, and bears the flower: the former have several prongs, barbed with the bone of kangaroo …* (Tench 1793).

Bark of various types were used for making such diverse items as wrappings for new-born babies, shelters, canoes, paddles, shields and torches. Resin from the grasstree was used as an adhesive for tool and weapon making. Similarly, 'Boomerang' is believed to be a Darug word. Various kinds of boomerangs and clubs were made from hardwoods as were such items as digging sticks (Attenbrow 2010).

Stone artefacts are often the only physical indication of Aboriginal use of an area. The knapping of stone artefacts can indicate one of two things, the knapping of stone to create tools and the discard of these tools once they have been used, or sometimes both. The knapping of stone creates a large amount of stone debris in very little time. Large knapping events tend to occur in proximity to sources of permanent water (Jo McDonald Cultural Heritage Management. 2005). This is probably because the availability and resources made these good places to camp for short periods of time. Small scale knapping events can occur anywhere in the landscape and are associated with the manufacture or maintenance of stone tools as a direct result of a specific need. This implies that locations of sites away from water courses will be more diffuse.

Stone was commonly used for tools and, apart from discarded shell in coastal middens, is the most common material found in archaeological sites of the Sydney region. Stone or stone tools were used for axe heads, spear barbs and as woodworking tools, amongst other things (Australian Museum Business Services 2005, p.36).

Small items such as shellfish and plant foods, such as berries, yams and nectar-bearing blossoms, were collected and carried in net bags or baskets. The principal pieces of equipment required for gathering plant food was a wooden digging stick used by women to dig out root vegetables such as fern roots, bulbs from numerous orchid species, and tubers from a variety of vines (Australian Museum Business Services 2005, p.36).

Shell implements found in archaeological sites in the Port Jackson area comprise of fishhooks, scrapers and shell hafted onto the ends of spear throwers. Fishhooks are the most common shell implement found in sites in the Port Jackson region, and are found most commonly around bays and estuaries. Fish hooks in the Port Jackson area have been recovered from shell middens excavated at Mosman, Hunters Hill, North Head and Woollahra Point (Australian Museum Business Services 2005, p.36). The fish hooks from the archaeological record are mostly made from the Turban shell (Turbo torquata), and are only found in stratigraphic levels dating back to around 900 years ago, indicating a relatively recent introduction of shell fish hooks in the Sydney coastal zone (Australian Museum Business Services 2005, p.36).

Bone implements were also utilised by the local Aboriginal population of the Port Jackson area. The most frequently found bone implements are generally referred to as bone points. They are mostly identified in coastal shell middens, however, have also been found in hinterland rockshelter deposits. In the coastal Sydney region, they have been found in excavated sites dating up to 3000 years old (Attenbrow 2010, p.99).

From about 1,600 year ago, Bondi points and geometric microliths began to drop out of use in the coastal parts of the Sydney region, although the Elouera continued to be used. This is known as the *Late Bondaian* phase. In coastal areas, and possibly through the Sydney Basin, both the use of quartz and the use of the bipolar flaking technique increased through time (Attenbrow 2010).

FOOD

A range of land mammals were hunted for food, including kangaroos, possums, wombats and echidnas as well as native rats and mice Birds, such as the mutton bird and brush turkey were eaten and it is recorded that eggs were a favourite food of the Aboriginal people (Attenbrow 2010).

Resources would have been mostly obtained from the sea, including fish, eels, seas, turtles, beached whales and shellfish. Shellfish were available both in rocky shore and freshwater contexts.

The vast estuaries of Port Jackson as well as the freshwater tributaries within the Catchment contains a great range of variation in their inter-tidal and non-tidal shorelines, including extensive rock platforms, sandy beaches and mudflats as well as mangrove forests and seagrass beds. These diverse habitats are feeding grounds for a wide range of fish, shellfish and marine mammals. Most bird and land animals that would have been present in the Port Jackson area, would have been found across the study area. These include kangaroos, wallabies, possums, gliders, bandicoots, wombats, quolls, fruit bats, echidnas, native rats, snakes and goannas (DECCW 2011, p.12). The presence of particular animal species and their abundance in a specific area would have been influenced greatly by the vegetation type.

Fishing was most often described as the main food source of the Aboriginal people of the Port Jackson region. A large number of fish species are known to inhabit Port Jackson and its tributaries and adjacent ocean coastline. In 1788, the coast and harbours were described as being well stocked with a variety of fish. Tench described the range of fish being 'from a whale to a gudgeon', mentioning 'sharks of monstrous size, rock-cod, grey mullet, bream, mackerel and john-dory and innumerable others unknown in Europe', as well as bass, leather-jacket and snapper (Tench 1793). Tench's description of the subsistence practices of the Aboriginal people of the northern side of the harbour is thus:

> *Wholly depend for food on the few fruits they gather; roots they dig up in swamps; the fish they pick up along the shore, or contrive to strike from their canoes with spears. Fishing, indeed, seems to engross nearly the whole of their time, probably from its forming the chief part of subsistence …* (Flannery 1996, p.72).

The subsistence practices of the local Aboriginal population in Mosman was further documented by Bradley a year earlier in 1788:

> *For a Considerable time after our arrival it was supposed that the food of the Natives was entirely fish, but the winter convinced us, that if they had not had some other resource great numbers of them must perish, as it is they are very hard to push to it when the Fish is scarce; There is no doubt but they lay wait for the kangaroo [sic] & Birds, many of the trees are notch'd that has not had a Canoe taken from them which I suppose they get into these Trees to seek or wait for any thing that may come in their way* (Bradley 1788).

Large marine mammals, such as whales, seals and dolphins, were also common in the Port Jackson area. Historical records show that beached whales were eaten on such occasions, with a large number of people gathering to feast on it. Possible seal bones were among the faunal remains recovered from the archaeological excavations of a rock shelter site at Balmoral Beach, approximately 800 metres east of the study area (Attenbrow 2010, p.66). Within the same site, possums were the most abundant land animal remains, while dingo bones were also recovered.

Attenbrow has noted that 'Sydney vegetation communities include over 200 species that have edible parts, such as seeds, fruits, tubers/roots/rhizomes, leaves, flowers and nectar' (Attenbrow 2010). Observations from the earliest European settlers describe Aboriginal people in the Sydney region roasting fern-roots, eating small fruits the size of a cherry as well as a type of nut and the root of 'a species of the orchid' amongst other types of plant food. As Attenbrow points out, however, the settlers' lack of knowledge of the local plant species make identification of the various plants used difficult (Attenbrow 2010).

The North Shore area would have contained many plants that offered a wide range of nutritious foods. Many fruits and berries were noted as the Europeans arriving in 1788 got to know the foods eaten by the people around Port Jackson:

> *...several fruits peculiar to the country were now in season, that which was supposed to be the fruit Captain Cook calls a cherry, the natives call mizoboore, the taste of it is insipid, and it differs from another fruit similar in appearance, but something smaller and which, as well as the former, is found in great abundance (Bradley 1788, p.122).*

EARLY ARCHAEOLOGICAL MODELS

Early settlement models focused on seasonal mobility, with the exploitation of inland resources being sought once local ones become less abundant. These principles were adopted by Foley (Foley 1981) who developed a site distribution model for forager settlement patterns. This model identifies two distinctive types of hunter and gather settlements; 'residential base camps' and 'activities areas'. Residential base camps are predominately found located in close proximity to a reliable source of permanent water and shelter. From this point the surrounding landscape is explored and local resources gathered. This is reflected in the archaeological record, with high density artefact scatters being associated with camp bases, while low density and isolated artefacts are related to the travelling routes and activity areas (Foley 1981).

The model suggests that people would reside in one general location or locations, probably in proximity to a good source of permanent water and with shelter from the elements, and travel throughout the local landscape to gather resources at known locations. The right hand side of Figure 2.1 shows how this settlement pattern would look in terms of artefact discard. The majority of artefacts are deposited in proximity to the residential base camp, fewer at the various resource locations and a generally low amount throughout the rest of the landscape, mainly while travelling between activity areas and the base camp. The model however, does not take into account the use of more than one base camp in an area or changing preferences of camping areas over time; nor does it account for the movement of resources over time.

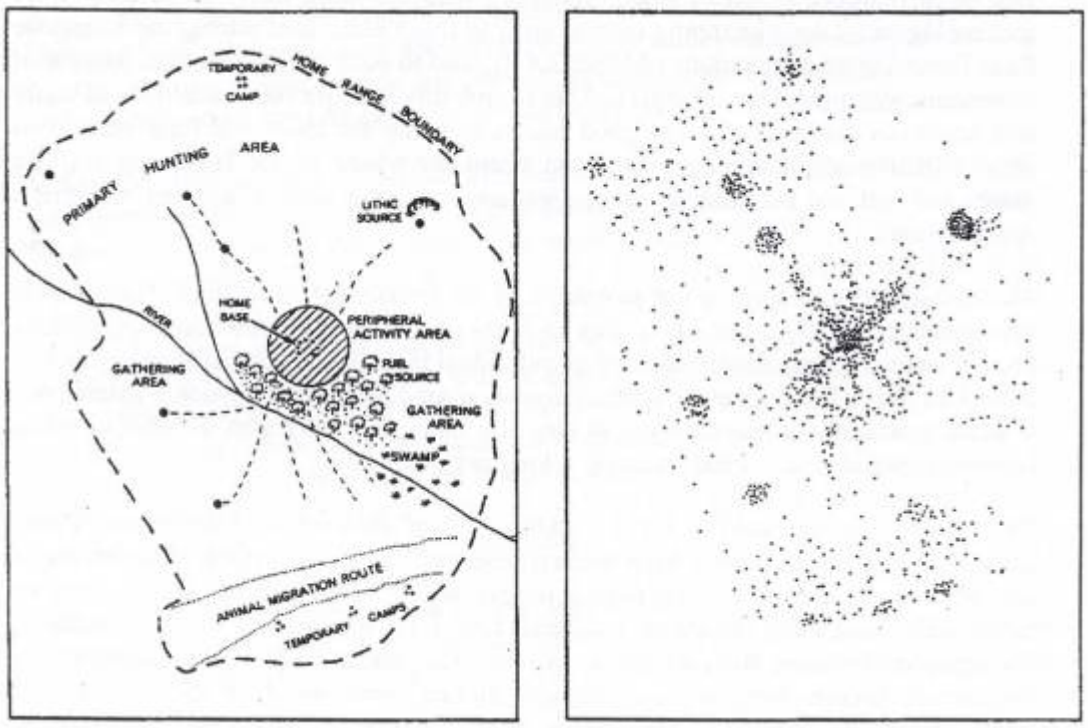


Figure 2.1 Foraging Model (Foley 1981)

The principles behind this model were incorporated into other contemporary predictive models such as that of McBryde (1978). McBryde's model is centred on the utilisation of food resources as a contributor to settlement patterns, specifically with reference to the predictability and reliability of food resources for Aboriginal people within the immediate coastal fringe and/or hinterland zone, with migratory behaviour being a possibility. Resources such as certain species of animals, particularly; small marsupials and reptiles, plant resources and nesting seabirds may have been exploited or only available on a seasonal or intermittent basis. As such, archaeological sites which represent these activities whilst not being representative of permanent occupation may be representative of brief, possibly repeated occupation

STREAM ORDER MODELLING

More recently McDonald has argued that environmental factors, such as stream order, were integral to developing a predictive model for the Sydney Basin (McDonald 1997a). Stream order modelling as a predictive tool can be utilised to anticipate the potential for Aboriginal camp site locations in the landscape based on the order of water permanence. McDonald (McDonald 1997a, McDonald 1997b, McDonald 1999) in particular, has drawn on stream order modelling in order to forecast the potential nature and complexity of sites in the Sydney Basin. These models can also be used to predict the possible range of activities carried out at a particular site and the frequency and/or duration of occupation.

Analysing stream order can allow researchers to locate areas of water permanence, which would have been vital for Aboriginal people. Abundant food and other resources are more likely to occur in areas of water permanence which would in turn attract Aboriginal occupation. McDonald's excavations of open artefact scatter sites at the ADI site in St Marys provided evidence of such a correlation (McDonald 1997b).

According to McDonald, the range of lithic activities and the complexity of the resulting stone assemblage observed at a location of permanent water also differ depending on stream order (McDonald 2000). This is probably because the availability and resources made these good places to camp for short periods of time. Small scale knapping events can occur anywhere in the landscape and are usually associated with the manufacture or maintenance of stone tools as a direct result of a specific need. This implies that locations of sites away from water courses will often be more diffuse.

Overall, artefact scatters in the vicinity of a higher order ranking streams reflect a greater range of activities (e.g. tool use, manufacture and maintenance, food processing and quarrying) than those located on lower order streams. Temporary or casual occupation of a site, reflected by an isolated knapping floor or tool discard, are more likely to occur on smaller, more temporary water courses (McDonald 1997a).

It is therefore possible, McDonald concluded, that stream order modelling could be utilised to make general predictions about the location and nature of Aboriginal sites in the Sydney Basin. Water permanence (i.e. stream order), landscape unit (i.e. hill top, creek flat) as well as the proximity to artefact raw materials can result in variations in the density and complexity of an Aboriginal archaeological feature (McDonald 1997a, McDonald 2000). Site location and duration of occupation predictions therefore relate to stream order in the following ways:

- In the headwaters of upper tributaries (i.e. first-order creeks) archaeological evidence will be sparse and represent little more than a background scatter.
- In the middle reaches of minor tributaries (second-order creeks) archaeological evidence will be sparse but indicate focussed activity (e.g. one-off camp locations, single episode knapping floors);
- In the lower reaches of tributary creeks (third-order creeks) will be archaeological evidence for more frequent occupation. This will include repeated occupation by small groups, knapping floors (perhaps used and re-used), and evidence of more concentrated activities.
- On major creek lines and rivers (fourth-order), archaeological evidence will indicate more permanent or repeated occupation. Sites will be complex, with a range of lithic activities represented, and may even be stratified.
- Creek junctions may provide foci for site activity; the size of the confluence (in terms of stream ranking nodes) could be expected to influence the size of the site.
- Ridgetop locations between drainage lines will usually contain limited archaeological evidence although isolated knapping floors or other forms of one-off occupation may be in evidence in such a location (McDonald 2000).

This predictive model has been refined with focus on the dominant environment and landscape zones of the Cumberland Lowlands, such as the Wianamatta Group Shales, Hawksbury Sandstone, Quaternary alluvium, Quaternary Aeolian and Tertiary alluvium. Attenbrow (2010) discovered that the Quaternary alluvial deposits had a greater concentration of archaeological sites, which is likely the result of these deposits being located towards major creek lines and rivers, such as Eastern Creek, Second Ponds Creek etc. Areas of alluvial deposits were found by Kohen (1993) to contain artefact scatters of a large and complex nature the closer they were to permanent creeks.

Umwelt (Umwelt 2004) have identified similar environmental and archaeological relationships which contribute to the mapping and modelling of archaeological sites of the Sydney coastal region. This includes:

- The pattern of watercourses and other landscape features such as ridge lines affected the ease with which people could move through the landscape.
- Certain landscape features such as crests or gently sloping, well-drained landforms influenced the location of camping places or vantage points that provided outlooks across the countryside.
- The morphology of different watercourses affected the persistence of water in dry periods and the diversity of aquatic resources and so influenced where, and for how long, people could camp or procure food.
- The distribution of rock outcrops affected the availability of raw materials for flakes and ground stone tools.
- The association of alluvial, colluvial and stable landforms affects the potential that sites will survive.
- European land-use practices affect the potential for site survival and/or the capacity for sites to retain enough information for us to interpret the types of activities that took place at a specific location.

2.2 HERITAGE DATABASE SEARCH RESULTS

ABORIGINAL HERITAGE INFORMATION MANAGEMENT SYSTEM SEARCH RESULTS

A search of the Aboriginal Heritage Information Management System (AHIMS) database was undertaken on 21 August 2020 (Client Service ID 529385). The results from the AHIMS search identified 117 previously recorded sites within a 3 kilometre radius of the study area (Figure 2.2, Figure 2.3, Table 2.1). None of these registered sites were located within the boundary of the study area. The details of the previously recorded types of sites are attached in Appendix A.

Table 2.1 AHIMS sites identified within 3 kilometres of the study area.

Site type	Occurrence	Frequency (%)
Aboriginal Resource, Gathering and Shell	1	0.85
Art (Pigment or Engraved)	17	14.53
Art with Shell and Artefact	10	8.54
Art with Grinding Groove	1	0.85
Art with Shell, Artefact and Burial	1	0.85
Artefact	6	5.13
Artefact with Shell/Midden	58	49.57
Artefact with Shell and Aboriginal Ceremony, and Dreaming	1	0.85
Burial with Shell and Artefact	2	3.47
Habitation Structure	1	0.85
Potential Archaeological Deposit (PAD)	1	0.85
PAD with Shell	1	0.85
Shell	14	11.96
Shell with Non-Human Bone and Organic Material	1	0.85

As shown in the table, the majority of sites identified in the vicinity of the study area relate to the presence of shell material (76.94%, n=88). The second most frequent site type relate to rock art (24.77%, n=29), which includes both pigment sites located in rockshelters or engraved sites on sandstone exposures. Rock shelters are again predominantly located along the shoreline, where sandstone overhangs are present which are suitable for occupation.

Of the identified sites, 95.7% are located within 200 metres from either the shoreline or a creekline, meaning that only 5 sites are found at a similar distance from the shoreline as the study area. Sites identified away from the shoreline predominantly relate to rock art sites. However, rock engravings require the presence of sandstone exposures, and there are no suitable outcroppings of sandstone present within the study area.

While two previously recorded sites are located within 300 metres of the study area, neither site is accurately recorded and do not constitute the location of Aboriginal cultural material. One site, 'Darling Walk Midden' (AHIMS #45-6-3678) relates to a shell midden identified at Darling Harbour, on the southern side of the Parramatta River, which is incorrectly mapped, while the other site, 'Myrtle Street' (AHIMS #45-6-0825) is recorded as 'Not an Aboriginal Site' on the AHIMS database.

OTHER HERITAGE REGISTER SEARCH RESULTS

Searches of the AHPI, the RNE, and the SHR were undertaken and did not identify any recorded Aboriginal Objects or Places in or around the development area. No Aboriginal objects or places are listed as present on the North Sydney LEP.

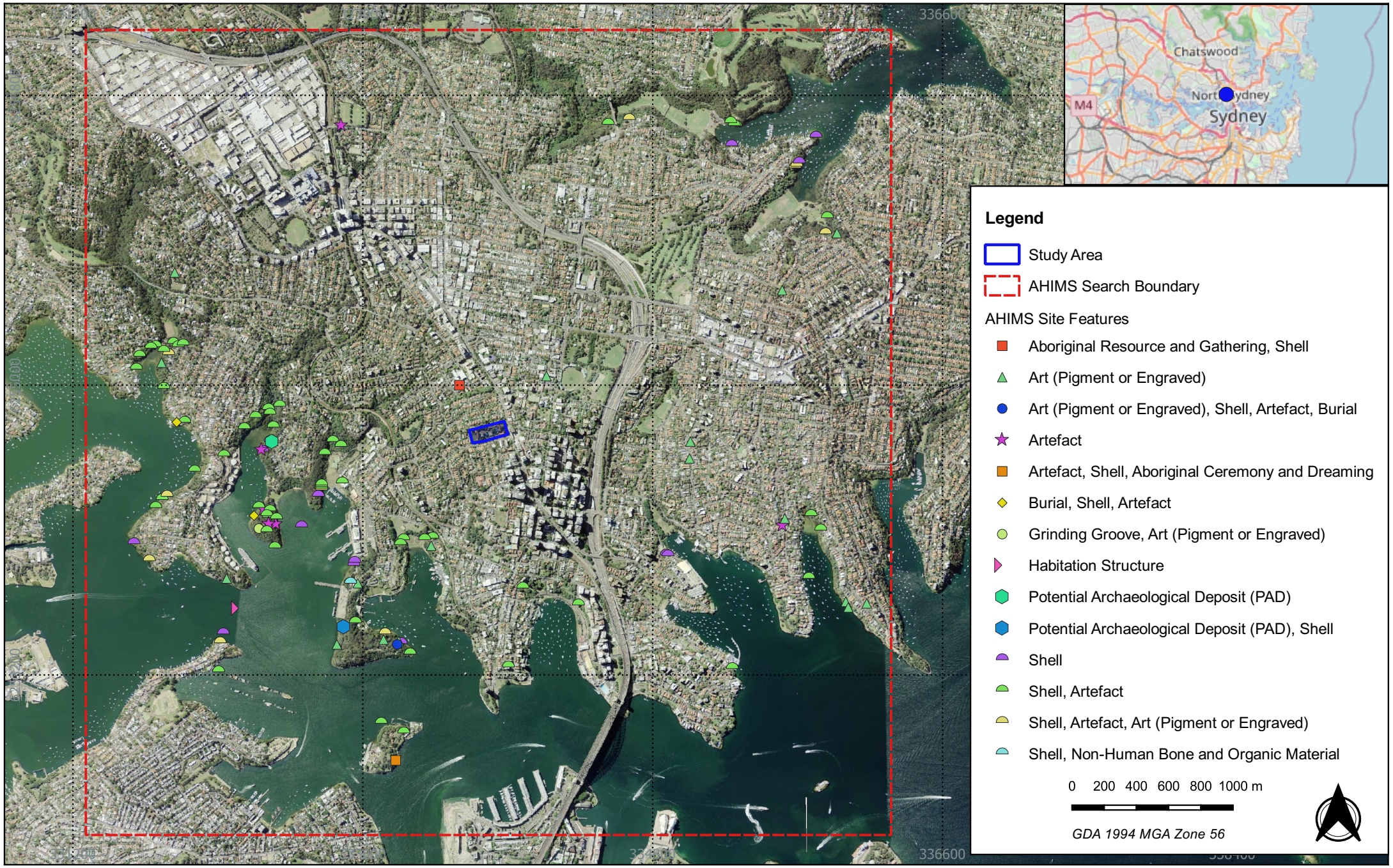


Figure 2.2 AHIMS sites within 3 kilometres of the study area

2055 - North Sydney Public School - Aboriginal Archaeological Report

Source: OSM, NSW DFSI Aerial, AHIMS *Drawn by: WA Date: 2020-08-31*

AUSTRAL ARCHAEOLOGY

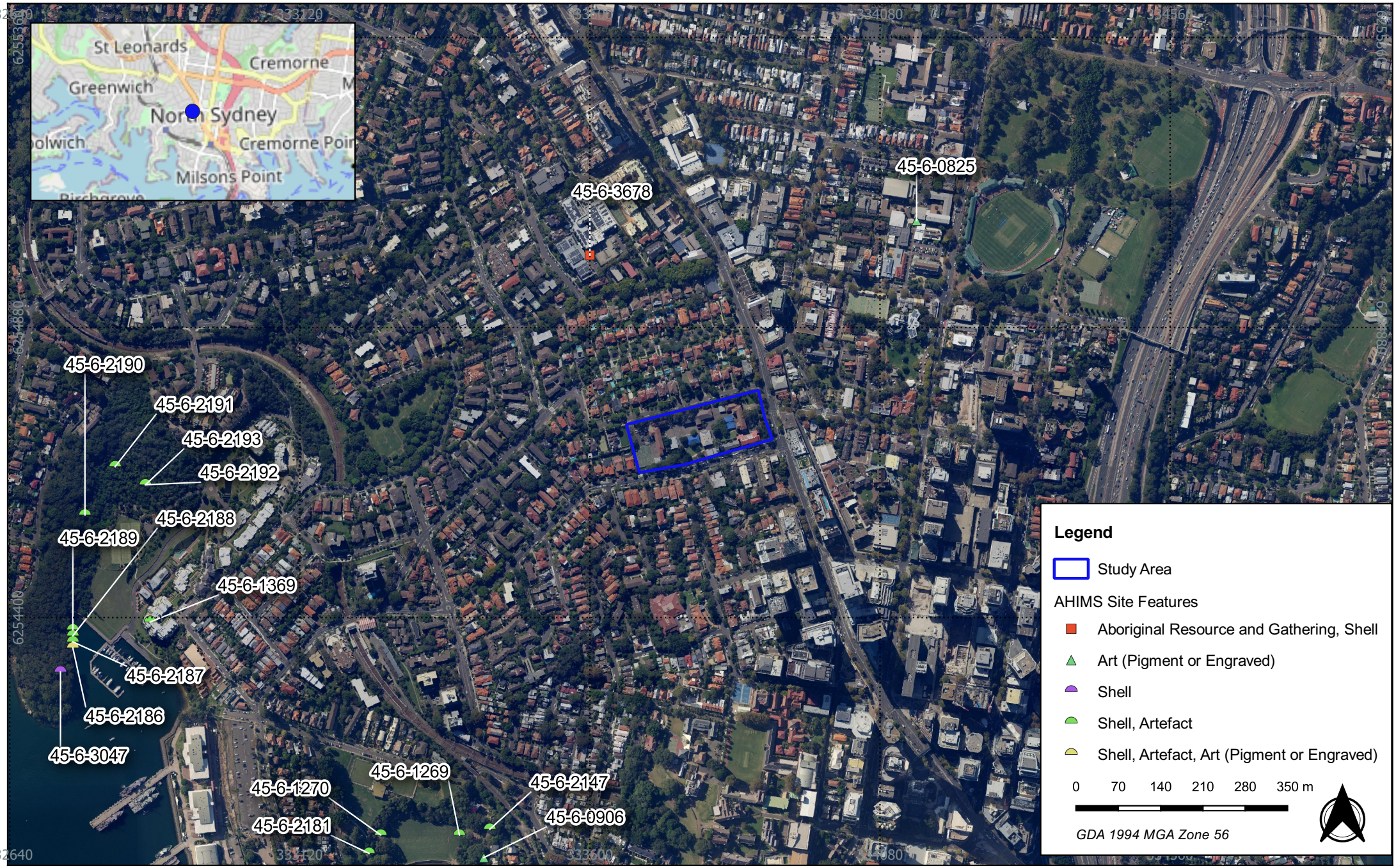


Figure 2.3 AHIMS sites nearby the study area

2055 - North Sydney Public School - Aboriginal Archaeological Report

Source: OSM, NSW DFSI Aerial

Drawn by: WA Date: 2020-08-31

AUSTRAL ARCHAEOLOGY

2.3 PREVIOUS ARCHAEOLOGICAL INVESTIGATIONS

Although European observers recorded various aspects of the lifestyles of Aboriginal people throughout the Port Jackson region from the beginning of European settlement of the area in the late 18th century, it was not until the 20th century that archaeological investigations of Aboriginal archaeological sites were undertaken.

Since then, archaeological sites have been frequently recorded across the region, and hundreds have been excavated. Most commonly, these contain artefact and shell midden sites and engraved or pigmented images within rockshelters.

PREVIOUS ARCHAEOLOGICAL INVESTIGATIONS IN THE LOCAL REGION

The majority of the archaeological investigations in the area were the result of the recent developmental works in the region. **Table 2.2** below outlines the details and results of some relevant archaeological consultant's reports from the region. Please note that this is not a complete list.

Table 2.2 A summary of archaeological consultant reports from the region.

Reference	Study area location/ description	Results	Site distribution/ Conclusions
Oakley (1984)	An Archaeological Survey of Northbridge for Northbridge Golf, located approximately 3.10 kilometres north-east of the study area.	Relocated 3 rockshelters with midden, one rock engraving and one rockshelter with PAD. In addition, 4 open middens and 4 rockshelters with PAD were identified along the shoreline of Long Bay and Salt Pan Creek. The middens were comprised of oyster, cockle, mussel, whelk, pipi and small gastropods, with one flaked quartz artefact noted.	Midden sites are recorded along the coastal area.
Smith (1987)	Survey of bushland at HMAS Penguin, Middle Head, approximately 6.6 kilometres east of the study area. Survey of 3.9 hectares of land to the south of Balmoral Beach	A shelter with a potential occupation deposits was recorded.	The farm established for 'King Bungaree' may have extended into the study area and consequently the study area should be regarded as highly significant.
Rich (1988)	Archaeological Survey at Beauty Point Sensory Foreshore walk, approximately 6 kilometres north-east of the study area.	It was noted in the report that the farm established for 'King Bungaree' may have extended into the study area and suggesting that the study area should be regarded as highly significant.	No further archaeological investigations were recommended.
Haglund & Rich (1988)	Analysis of Aboriginal occupation for a Mosman Heritage Study.	A literature review of known Aboriginal sites in the Mosman LGA. 21 Aboriginal sites were identified in the study. The report noted that 3 of the 21 sites had been destroyed, and there was not enough information available on the remaining sites to assess them	The 18 remaining sites should be re-recorded and areas of bushland be targeted for systematic survey to assess whether new sites could be identified.

Reference	Study area location/ description	Results	Site distribution/ Conclusions
Koetting (1991)	Heritage Study of Aboriginal sites within the Mosman LGA, 5 kilometers east of the study area.	Inspection of recorded sites and survey of a number of sites in the Mosman LGA. 77 recorded sites within the LGA. Of these, 61% were shelters, 21% were open middens and 18% were engraving sites.	Sites should be preserved and protected from proposed development and that adequate investigations occur in areas that are to be destroyed. Representative samples of sites be preserved and appropriate mitigation implemented to prevent further deterioration of Aboriginal sites.
Attenbrow (1991)	Port Jackson Archaeological Project, Stage 1: A study of the prehistory of the Port Jackson catchment.	Analysis of the distribution of 335 midden sites and 34 deposits within the Port Jackson catchment area. Shell middens only occur in sub-catchments that have ocean and estuarine zones, while archaeological deposits occur more frequently in freshwater zones. It was also found that the majority of recorded sites were located on Hawkesbury Sandstone and were associated with estuarine or ocean zones.	The results of this study were compared with results from studies of undeveloped areas north of the Hawkesbury River. Comparisons of the results led to suggestions that the general trends in the distribution of recorded sites with midden/ archaeological deposits within the Port Jackson catchment reflect the original distribution of sites in the area, that is 'more middens and deposits along the shores than on the slopes and very few on the ridgetops.
Australian Museum Business Services (1995)	Aboriginal Heritage study of the Mosman LGA	Analysed several trends related to the distribution of archaeological sites in Mosman. These trends suggest that suite of archaeological sites represent different activities including major campsites and a range of special activity camps, some of which may have had ceremonial purposes.	Management strategies included the need for increased community awareness, monitoring the condition of known sites, erosion stabilisation works of rock art sites, and identifying archaeological sites that may need further conservation.
Jo. McDonald Cultural Heritage Management (2000)	Berry Island, located approximately 2.5 kilometres west of the study area.	Archaeological salvage of a shell midden identified remains of shell fish exploitation, with 5 artefacts also recovered. Human remains were previously identified at the location.	The midden contained shellfish species showing exploitation of estuarine environments and rock platforms. The site was disturbed but was interpreted as being a daytime campsite.

Reference	Study area location/ description	Results	Site distribution/ Conclusions
Dominic Steel Consulting Archaeology (2005)	Aboriginal archaeological test excavations at the Barn Whaling Station, 3c Avenue Road, Mosman, approximately 4 kilometres south-east of the study area	A total of 135 stone artefacts were recovered from test excavations from a total of 30 test pits	It was concluded that the site represented a highly culturally sensitive site for Aboriginal occupation, and it was recommended that certain landforms be preserved in order to retain the original landscape.
Dominic Steel Consulting Archaeology (2006)	Royal North Shore hospital, St Leonards, 3 kilometres north-west of the study area.	An archaeological survey was conducted.	No archaeological sites were found.
Artefact Heritage (2016)	The overall assessment, investigation the region around Crows Nest station, situated approximately 1.5 kilometres north of the study area.	No previously recorded sites were identified in the vicinity of the Crows Nest station location.	The study suggested that the construction of built structures in the area would have likely removed any archaeological deposits. The Crows Nest Station landform, being away from watercourses, suggested overall low potential of the area for Aboriginal cultural material.
Dominic Steel Consulting Archaeology (2017)	Aboriginal archaeological assessment of Taronga Zoo, Mosman.	The survey did not identify any archaeological sites within the study area.	It was concluded that no specific areas of Aboriginal archaeological sensitivity were located within the study area and that there are no constraints to the proposed development.
Coast History & Heritage (2019)	ACHA report for 211, Pacific Highway, St Leonards approximately 3km northwest of the study area.	An archaeological Survey was conducted in the study area.	No Aboriginal objects or sites were identified during the archaeological survey and no areas were seen as undisturbed natural ground.
Jacobs (2020)	Western Harbour Tunnel and Warringah Freeway Upgrade, including the general vicinity of the study area.	Targeted surveys were conducted in 2018 to confirm the location of registered AHIMS sites. Survey included area of Birchgrove, Balls Head and Waverton Peninsulas Leonard Park, North Sydney, Anzac Park, Cammeray, Cammeray Golf Course.	Archaeological potential of the area surrounding the study area was assessed as being low based on levels of development.
Mosman High School, ACHA Austral Archaeology, 2020	Mosman Public School, 5 kilometres east of the study area.	No archaeological heritage was found during the Archaeological Survey conducted for the redevelopment of School Premises.	No Aboriginal objects or sites were identified during the archaeological survey.

PREVIOUS ARCHAEOLOGICAL INVESTIGATIONS IN THE STUDY AREA

The study area has not been subjected to any archaeological assessment previously. However, the region has shown a high number of sites, predominantly shell middens, within a radius of 3 kilometres of the study area. Previous reports in this region demonstrate that Aboriginal occupation of the surrounding area is focussed almost exclusively along the coast, extending inland only along creeklines where water would be readily available.

Where sites are known away from the coast, the ongoing development and construction works are likely to have impacted on any remaining areas of archaeological potential. This is demonstrated through the results of archaeological projects in the area of North Sydney including the North Sydney Metro project (Artefact Heritage Pty Ltd 2016), the Royal North Shore hospital project (Dominic Steele Consulting Archaeology 2006), and the development at 211 Pacific Highway (Coast History and Heritage 2019) that show that most of the natural landscape has been disturbed and no aboriginal cultural heritage was recorded.

It appears that the study area has experienced a wide range of construction and clearance on the site, with no part of the site left untouched. The initial construction works would have highly impacted and destroyed Aboriginal artefacts, and with the level of disturbance evident on the site, there is very little likelihood that any remains exist within the study area.

3 LANDSCAPE CONTEXT

The natural environment plays an important role in the selection of the occupation area by any human being. Similarly, in Aboriginal culture too, the natural environment had the utmost importance while selecting an area for their occupation, temporary or permanent. Studies of the natural environment of the region help us to understand the area selected for occupation by the aboriginal communities in the past.

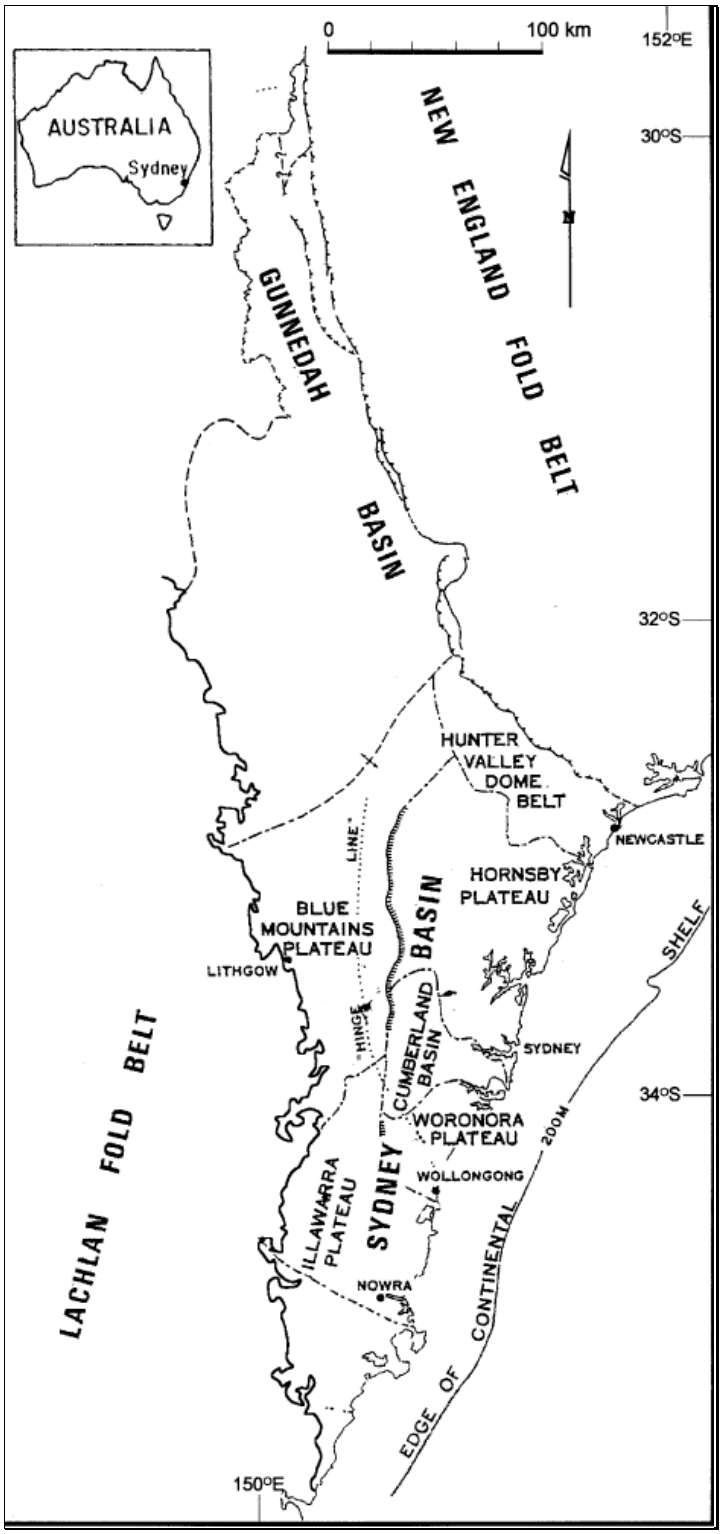
It helps us to understand how the resources are distributed across the region, how they are being used by traditional communities to sustain their activities. These studies not only help us to understand the selection process of a site but also helps us to know any changes that occurred in the site or the geographical region over time since being selected by the traditional communities.

Distribution of sites across the region is greatly influenced by the resources available in any region. The location of different site-types (such as rock-shelters, middens, open campsites) is strongly influenced by the nature of soils, the composition of vegetation cover, and the climatic characteristics of any given region. Equally important is the range of other associated characteristics that are specific to different land systems and their geology. Careful considerations of the above criteriums help us to locate the site and its importance in the geographical region.

Therefore, examining the environmental context of an area is essential in accurately assessing potential past Aboriginal land-use practices and/or predicting site types and distribution patterns within any given landscape, cultural or not. The information that is outlined below is applicable for the assessment of the site potential of the current study area.

3.1 GEOLOGICAL CONTEXT AND SOIL LANDSCAPE

The study area is located in the geological region of the Sydney Basin. Understanding the formation of the Sydney Basin can be helpful to understand the geology of the study area and associated features. The Sydney Basin is a north-south trending basin, containing flat-lying Permian Triassic deposits. It extends over an area of 37,000 kilometres^2 (Bembrick, & Lonergan 1976). It was formed as a result of tectonic upliftment and it is sedimentary in nature. It is filled with Permian and Triassic sediment surrounded by Lachlan Fold Belt in the south and west. In the east, it goes up to the continental shelf. In the north and north-west, it is joined by Hunter valley sequence joining New England Belt and Gunnedah Basin respectively (Figure 3.1).



(Haworth 2003)

Figure 3.1 Sydney Basin in reference to surrounding plains.

It can be further subdivided into several units of structural plateaus, rivers, belts of folds, and one plain of Cumberland in almost centre but more extending towards the western side. Different units which jointly forms the Sydney basin are as follow:

1. Hunter Valley Dome Belt
2. Blue Mountains Plateau
3. Illawarra Plateau
4. Sassafras Plateau
5. Woronora Plateau
6. Hornsby Plateau
7. Boyne Mount Plateau
8. Cumberland Plain
9. Nepean Fault

The Sydney basin is mainly formed of sandstones and shale deposits. The lowest strata of the basin consist of a thick sequence of sandstone and shales of the Shoalhaven series of about 300-900 metres thick. Above the Shoalhaven series, the basin consists of the Illawarra and Newcastle series, which are about 300 metres thick. This is covered by the Narrabeen series of shales and sandstone which is 300-500 metres thick. The Narrabeen series are covered by quartz sandstones and minor shales of Hawkesbury Group which in turn is capped by the thinner strata of the Wianamatta Group consisting of shales with sandstone. The topmost two strata of the Sydney basin, the Hawkesbury Group and the Wianamatta Group, forms the geological surface of Sydney and is present across the harbour (Haworth 2003).

Table 3.1 Showing Sequence of Sydney basin rocks series from top to bottom (Haworth 2003).

Wianamatta Series Group
Hawkesbury Series Group
Narrabeen Series Group
New Castle Series Group
Illawara Series Group
Shoalhaven Series Group

These geological formations of plateaus in the region of Sydney played an important role in the development of Sydney over time. The current study area forms a part of the Hornsby plateau and consists of Hawkesbury sandstone. The sandstone seen in the region is medium to coarse-grained quartz sandstone with minor shale and laminate lenses (Haworth 2003).

The geology of the area, with weathered shale fragments, makes the presence of rock types suitable for knapping unlikely. As such, if artefacts are found, the materials are likely to have been brought into the area from nearby quarry sites.

The study area is located in the Blacktown soil landscape, adjacent to the Gymea soil landscape (Figure 3.3).

Blacktown Soil Landscape:

This soil landscape is characterised by gentle undulations and rises on Wianamatta Group shales and Hawkesbury Shale. It has a local relief to 30 metres and a slope of less than 5%. The Blacktown soil landscape is also characterised by broad rounded crests and ridges with gently inclined slopes. It can be generally seen on the Cumberland Lowlands between the Georges and Paramatta rivers in the south-west, but isolated examples are found north of Parramatta River on the Hornsby Plateau at Chatswood, Crows Nest, Duffy Forest, Dundas, Naremburn, Neutral Bay, St Ives, and St Leonards (Bannerman & Hazelton 2011).

The dominant soil types associated with the Blacktown landscape are (Bannerman & Hazelton 2011, pp.23–24):

- **bt1** - a friable brownish-black loam to clay loam with moderately pedal sub-angular rocky structure and rough-faced porous ped fabric. It can be seen as topsoil (A1 horizon). It is mostly brownish-black (10YR2/2 in colour) but can also be seen in reddish-brown colour (5YR3/2) and dark yellowish-brown (10YR 3/4). The pH of the soil ranges from slightly acid (pH 5.5) to neutral pH 7.0. Rounded shale fragments, with iron indurated, are present in the layer with rare presence of charcoal but roots are very common.
- **bt2** - a hard setting brown clay loam to silty loam layer with apedal massive to weakly pedal structure and slowly porous earthy fabric. It occurs as an A2 horizon under the topsoil. The colour of the layer is generally dark brown (7.5YR 4/3) but also ranges from dark reddish-brown (2.5YR 3/3) to dark brown (10YR 3/3). The pH balance of the layer ranges from moderately acid pH 5.0 to slightly acid pH 6.5. Platy ironstone gravel-sized shale fragments are commonly seen, charcoal and roots very rarely found in the layer.
- **bt3** - a mottled light brown clay layer with a strongly polyhedral or subangular-blocky structure and smooth-faced dense ped fabric. The layer is mostly seen as subsoil B horizon. It is mostly brown (7.5YR 4/6) but may range from reddish-brown (2.5 YR 4/6) to brown (10YR 4/6). The pH of the layer ranges from strongly acid to slightly acid pH 6.5. Coarse grave sized shale fragments are common and occur as stratified bands in layers. Both roots and charcoal fragments are rarely present.
- **bt4** – a light grey plastic mottled clay to heavy clay with moderately pedal polyhedral to the subangular blocky structure. It mostly occurs as deep subsoil B3 or C horizon. It ranges in colour from light grey-10YR 7/1 to greyish yellow-2.5YR 6/2. pH value varies from strongly acid pH 4.0 to moderately acid pH 5.5. Weathered ironstone and rock fragments are commonly seen in the layer with the occasional presence of gravel sized shale fragments and roots. Charcoal fragments are rarely seen.

Gymea Soil Landscape:

The Gymea soil landscape is seen in the area adjoining the study area. It is predominantly characterised by undulating to rolling rises and low hills on Hawkesbury Sandstone. This soil-landscape consists of a local relief of 20 – 80 metres and slopes of 10-25%. The Gymea soil landscape is also characterised by broad convex crests, moderately inclined side slopes with wide benches and localised rock outcrop on low broken scarps (Hazelton & Tille 1990).

The dominant soil types associated with the Gymea soil-landscape are (Hazelton & Tille 1990, pp.72–73):

- **gy1** – a loamy sand to sandy loam with loose, apedal single-grained structure and porous sandy fabric. It occurs as topsoil (Horizon A1). pH generally seen ranges between strongly acid (pH 4.0) to slightly acid (pH 6.0). The colour is a brownish-black (10YR 2/2) in the presence of organic matter. Either **gy2** or **gy3** are present as a B horizon.
- **gy2** – a yellowish-clayey sand with massive apedal structure and porous earthy fabric. It commonly occurs as subsoil over sandstone as a B Horizon. On exposure, it becomes a hard setting compact topsoil with pH ranges between strongly acid (pH 4.0) to slightly acid (pH 6.5). Sandstone and ironstone are commonly seen as fragmentary in the layer. The layer also consists of charcoal fragments, even when the roots are rarely found associated. Colour of the layer is yellowish brown (10YR 6/8) with the presence of an orange mottle.
- **gy3 –** sometimes seen as B or C horizon. It is commonly a yellowish-brown sandy clay loam to sandy clay with a massive apedal structure and an earthy porous fabric. It is generally more sandy clay loam on top but with increasing depth, it becomes more of sandy clay. The pH ranges between strongly acid (4.5) to slightly acid (pH 6.0). The layer commonly contains fragments of weathered sandstone with a colour commonly seen as yellowish-brown (10YR 5/8, 6/6, 2.5Y 5/6, 5/4).

- **gy4** – a yellowish-brown sandy clay to light clay with moderately or strong pedal structure. It generally occurs as a subsoil on shale bedrock. pH ranges between strongly acid (pH 4.0) to slightly acid (pH 6.0). Colour of the soil is generally seen as 10YR 6/6 - yellowish-brown but can also vary from 2.5YR 3/6- dark reddish-brown to light grey 7.5YR 8/1. Red, orange and grey mottles are present at the depth of this layer and it generally contains shale and ironstone fragments

3.2 TOPOGRAPHY AND LANDFORM

Due to widespread development in the surrounding area, the natural landscape of the area has likely changed. It is difficult to ascertain what the original landscape was like with limited historical sources. However, as can be seen in Figure 3.5, the study area is on the edge of a slope at a 5% angle, which is very gentle in nature, and is roughly 80 metres higher than the shoreline. However, it is likely that the Aboriginal people sought out caves and rockshelters along the shoreline to live. This is evidenced in Figure 2.2 where most sites are concentrated around the edges of the bays, where there was food available, and along small waterways where fresh water could be easily found. In fact, in the Port Jackson archaeological project found that 61% of middens and 80% of archaeological deposits were found in rockshelters, with 0.8% of sites found on ridgetops (Attenbrow 2010, pp.51–53).

The soil landscape types that exist around the study area are shown in (Figure 3.3 . The study area and most of the North Sydney area is located within the Pennant Hills Ridges which is characterised by rolling to moderately steep hills on Triassic Shales and siltstones. The region has general elevation of 10 to 90 metres and local relief of 60 metres. It is characterised by benched hill slopes and deep valleys of the coast and consists of rock outcrops with many discontinuous cliffs. On the slopes, it is red and brown to yellow texture soils and slightly harsher in drainage lines (Mitchell 2002, pp.118–119). This makes a perfect area for rock shelters along the shoreline, which explains the high density of sites around these areas.

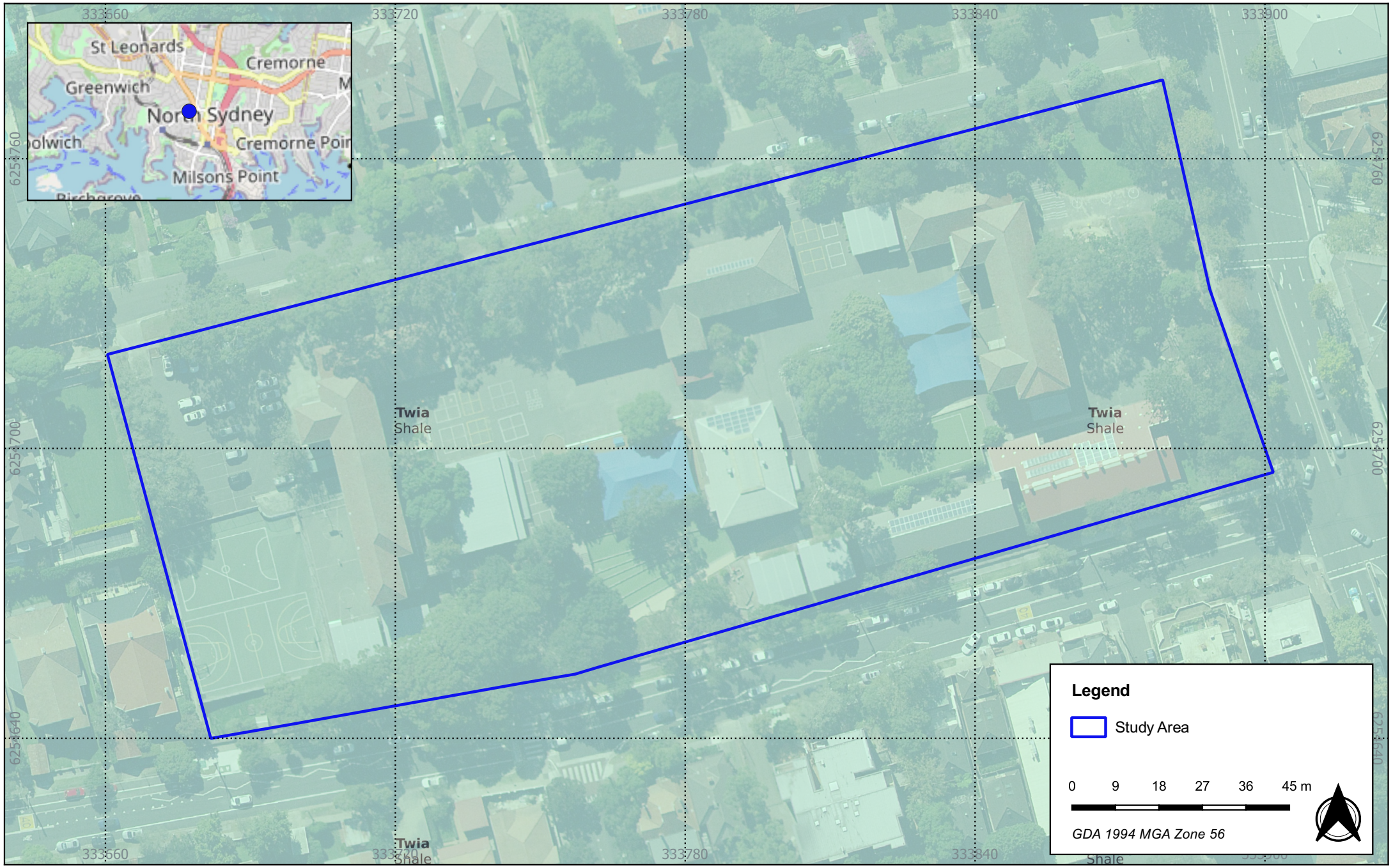


Figure 3.2 Geological landscape associated with the study area

2055 - North Sydney Public School - Aboriginal Archaeological Report

Source: OSM, NSW DFSI Aerial, NSW Seamless Geology

Drawn by: WA Date: 2020-08-31

AUSTRAL ARCHAEOLOGY

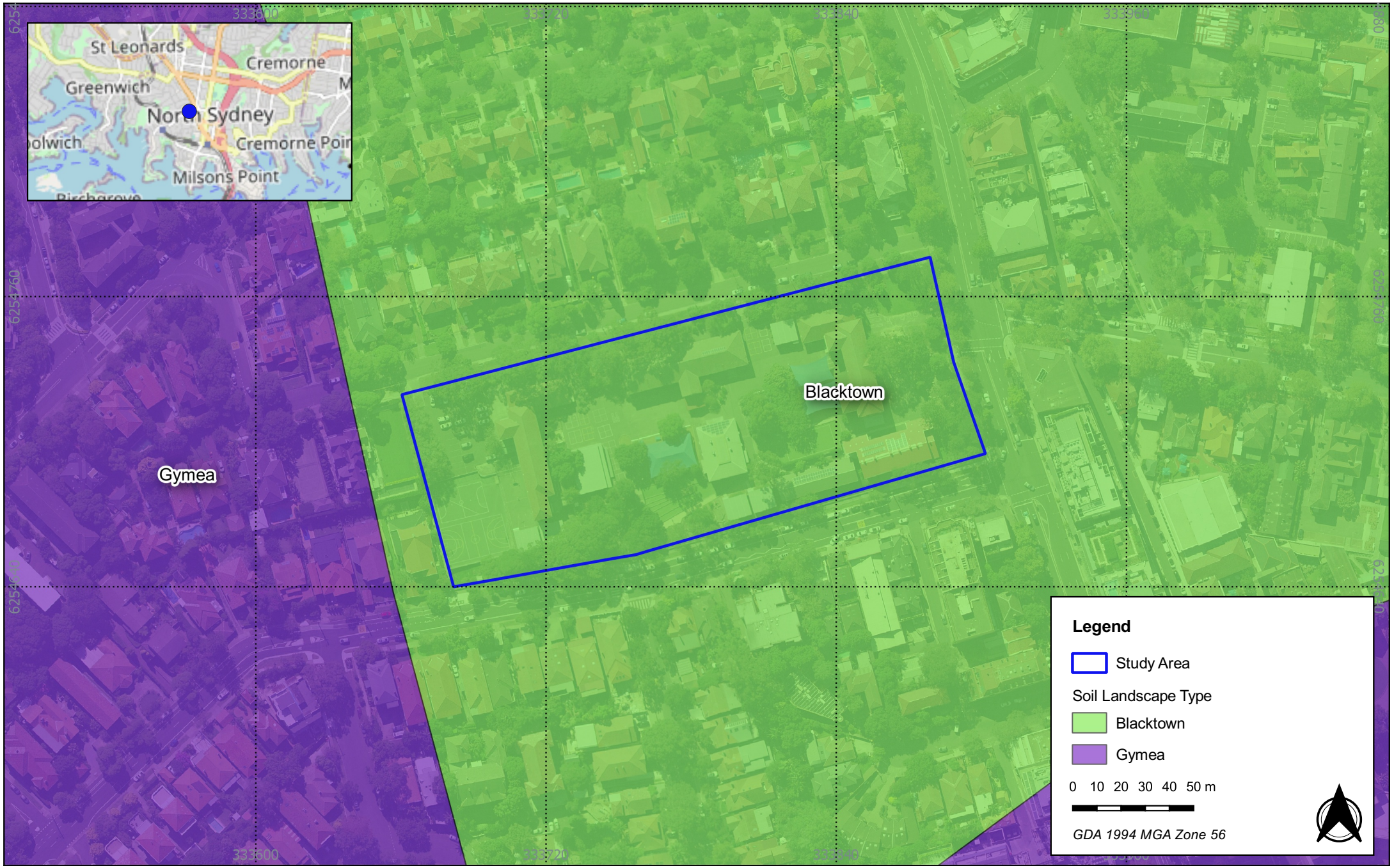


Figure 3.3 Soil landscapes associated with the study area

2055 - North Sydney Public School - Aboriginal Archaeological Report

Source: OSM, NSW DFSI Aerial, NSW Soil Landscapes

Drawn by: WA Date: 2020-08-31

AUSTRAL ARCHAEOLOGY

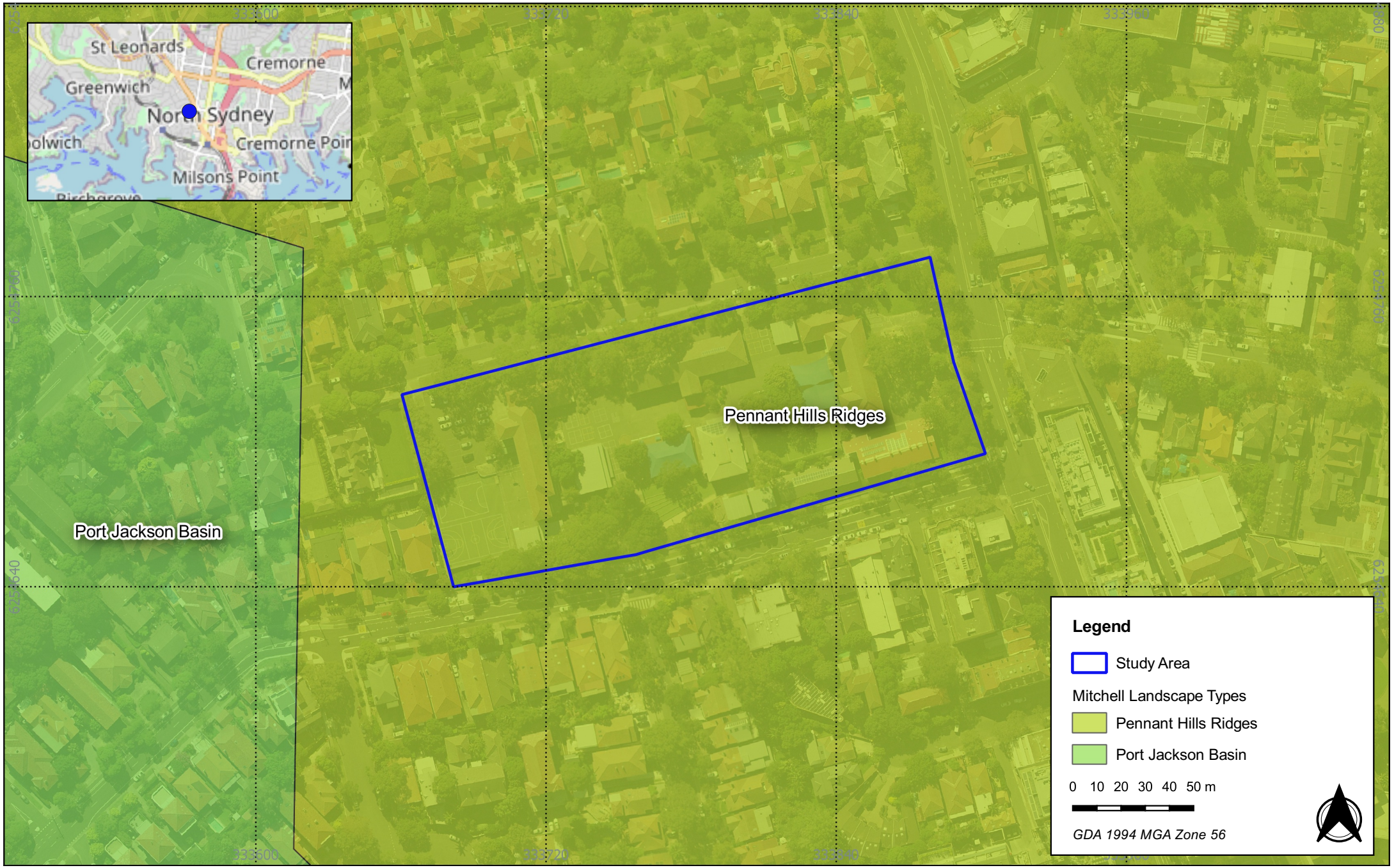


Figure 3.4 Mitchell Landscapes associated with the study area

2055 - North Sydney Public School - Aboriginal Archaeological Report

Source: OSM, NSW DFSI Aerial, Mitchell Landscapes

Drawn by: WA Date: 2020-08-31

AUSTRAL ARCHAEOLOGY

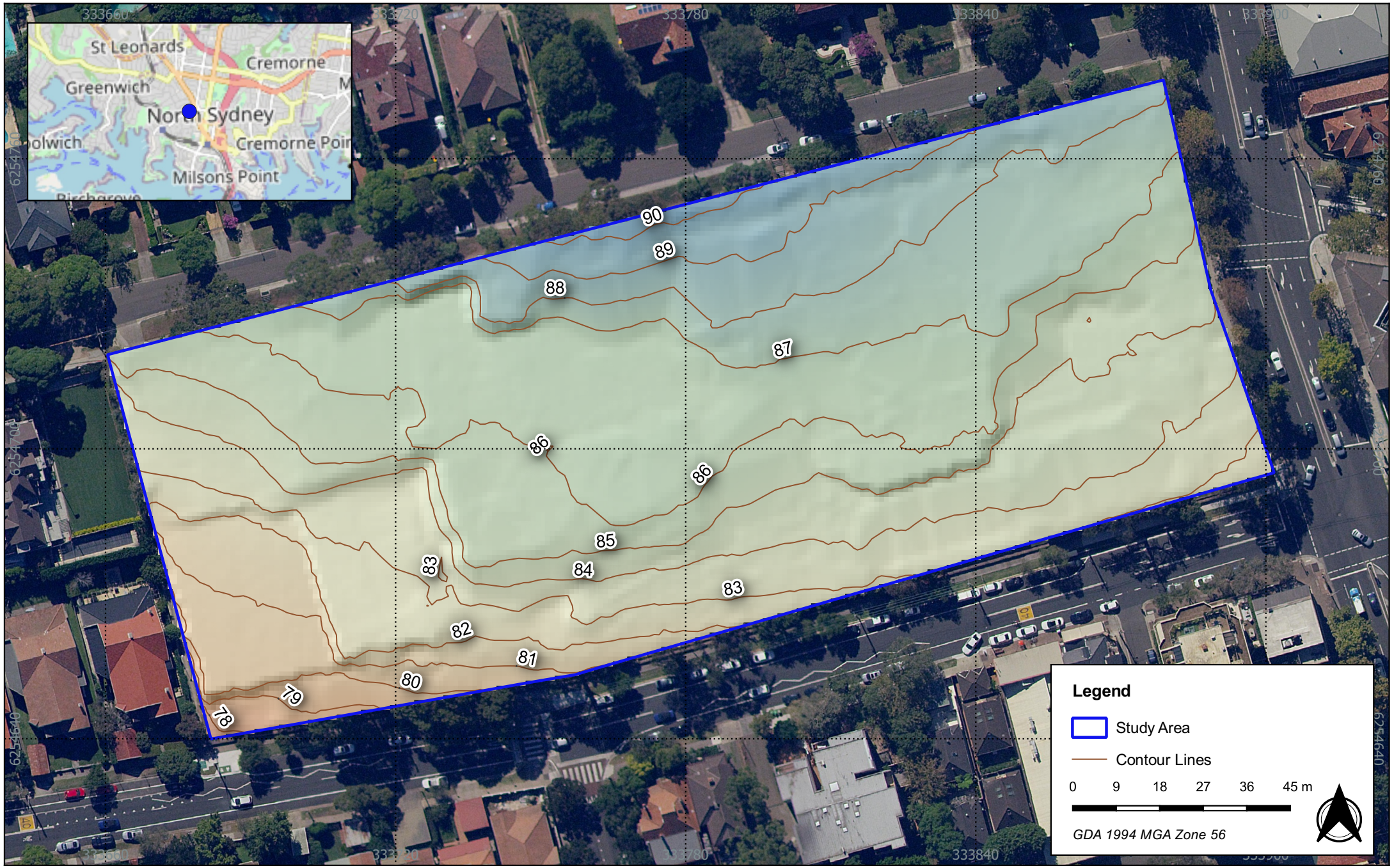


Figure 3.5 AHD Heights / Topography associated with the study area

2055 - North Sydney Public School - Aboriginal Archaeological Report

Source: OSM, NSW DFSI Aerial, ELVIS *Drawn by: WA Date: 2020-08-31*

AUSTRAL ARCHAEOLOGY

3.3 HYDROLOGY

There are no natural streams or rivers in the vicinity of the study area. Harbour waters were saline and not drinkable, meaning that Aboriginal communities would have depended on rain waters or springs in the area. The development in the area has impacted the landscape in general which also would have affected past waterways. It is therefore difficult to determine the existence of past waterways and the possibility of occupation associated with them.

The area has Hawkesbury sandstone and Narrabeen group rocks. Groundwater quality within the upper section of the Hawkesbury Sandstone is commonly poorer than the lower sections due to leakage from overlying shale formations but still would be used by the traditional communities. The important rivers and creeks for the water sources in the area are the Lane Cove River in the west, and Willoughby Creek to the north-east.

Due to the area's small land footprint, it is unlikely that there were any large perennial waterways in the area, as any rain would have quickly drained into the harbour.

3.4 CLIMATE

The climate of North Sydney is warm temperate with a maritime influence, resulting in cool to mild winters and warm to hot summers. The highest temperature is seen in January about 26.0°C and the lowest seen in July during Winter about 8.1°C, with occasional overnight frosts. Rainfall totals are highest in the autumn, with 133.1 millimetres of rainfall (Bureau of Meteorology 2020).

Table 3.2 Statistical Climate Data for North Sydney, from Sydney Observatory centre, 6 kilometres south of the activity area. (Bureau of Meteorology).

Statistics	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual	Years	
Temperature															
Mean maximum temperature (°C)	26.0	25.8	24.8	22.5	19.5	17.0	16.4	17.9	20.1	22.2	23.7	25.2	21.8	162	1859 2020
Mean minimum temperature (°C)	18.8	18.9	17.6	14.8	11.6	9.3	8.1	9.0	11.1	13.6	15.7	17.6	13.8	162	1859 2020
Rainfall															
Mean rainfall (mm)	101.2	119.3	131.6	126.5	117.4	133.1	96.3	80.2	68.1	76.7	83.8	77.1	1213.4	159	1858 2020
Decile 5 (median) rainfall (mm)	78.2	93.6	101.9	95.2	90.2	102.8	72.2	54.7	51.9	55.4	66.8	59.7	1164.0	162	1858 2020
Mean number of days of rain ≥ 1 mm	8.6	9.0	9.9	8.9	8.6	8.8	7.4	7.2	7.1	7.9	8.3	7.9	99.6	162	1858 2020

red = highest value blue = lowest value

3.5 FLORA AND FAUNA

The study area has undergone significant changes due to the developmental projects in the area. Currently, the activity area is devoid of any native vegetation. However, the region of north Sydney in general shows the presence of Dry Sclerophyll Forest near the coastal area in the southwest of the activity area.

The vegetation in the region of North Sydney, before European impact, included the sandstone community types called heath, woodland, and forest. On the central ridge and the more sandy soil extending down to the harbourside slopes, there would have been eucalypt woodland with bangalay (Eucalyptus botryoides), Sydney peppermint (E. piperata) and the smooth-barked apple (Angophora costata). Areas with shallow sandy soils would have been woodland with scribbly gum (E. haemastoma), red bloodwood (E. gummifera) and Banksia serrata (Australian Museum Business Services 2005).

Most of the information about the native fauna that existed in the region comes from the record of early settlers and excavations conducted. The native fauna of the North Sydney area at the time of European contact can be estimated by studies of nature reserves around the harbour. Within the Sydney Harbour National Park, mammals observed in recent times include possums, flying foxes, long-nosed bandicoots, rats, antechinuses, echidnas and bats. The remains of land animal found in Aboriginal archaeological excavations of a Midden shelter site at Balmoral Beach shows that kangaroos, wallabies, wombats, koalas and dingos were present in the area in the past (Attenbrow 1992). Approximately 150 species of birds have been recorded within the Sydney Harbour National Park, including great cormorant, white-bellied sea eagle, nankeen kestrel, masked lapwing, thornbill, heron, egret, and rock warbler. A variety of snakes and lizards are also native within the region, as well as a large number of marine species including sea dragons, seahorses, sharks, octopuses, and migratory whales. Numerous fish species are local to the area, including snapper, trevally, whiting, bream, flounder, and flathead (Australian Museum Business Services 2005).

3.6 PAST LAND USE PRACTICES

The study area is currently used as a school facility and is currently named the North Sydney Public School. The study area has undergone severe changes and the present conditions are not similar to the past use before European contact and after settlement.

As seen by archaeological investigations in the study region, the region has marked the significant presence of the local aboriginal community in the area. The area was occupied by the Cammeraygal people prior to European settlement in the region. There is a range of sites husch as middens and shelters which represent occupational sites seen around the shoreline to the west and south-west of the study area, at locations such as Berry Island, Balls Head, and Gore Cove. There is also a presence of open artefacts and rock engraving sites to the east and north of the study area at Mosman and Cremorne.

It is clear that for many years, the area was used for both the necessities of surviving, like the occupation of rock shelters, fishing and hunting, while surviving engravings at Balls head, Berry Island and rock shelter paintings are evidence that gives us a glimpse of religious and ritual activities which were being undertaken. This has changed significantly over time. The European settlement had severely affected aboriginal living in the region like the other parts of Australia. There was also an outbreak of smallpox disease which also impacted the traditional communities as a result, many of them died and others were dispersed (Attenbrow 2010).

After the European settlement in the North Sydney region, beginning about 1794, the first European occupation consisted of 30 acres of land covering Milsons Point and Kirribilii granted to a convict called Samuel Lightfoot. Lightfoot did not live on the land and returned to England shortly after, with his land being sold on the nascent property market of that time. It was subsequently passed through several early entrepreneurs like Robert Ryan, James Milson, etc. In 1821, about 524 acres of land was given to the merchant and magistrate Edward Wollstonecraft, with his house being the oldest surviving building in the area. The estate came under the ownership of Alexander Berry, who obtained the land from his wife Elizabeth, the sister of Edward Wollstonecraft. Thus, Wollstonecraft estate came to be known as Berry Estate. Berry built the villa known as 'Crows Nest House'. The gates and fencing of his villa are still present within the current study area. Alexander's wife Elizabeth died in 1845 and was buried in the cemetery of St Thomas Church, which Berry granted to the Church and which was the first European burial ground on the Northshore (Parsons 1983).

The current school building is one of the earliest schools constructed in the region, and was first known as the St Leonard Superior Public School when it opened in 1878. This was also known as Greenwood School after its headmaster from 1884 to 1914, Mr Nimrod Greenwood. The Gothic style east wing was designed by an architect named George Allan Mansfield, while the central and western wings were constructed between 1882 and 1893, designed by WE Kemp. The school was first open to 320 children in 1878 and by 1902, another piece of land was purchased near Miller Street. In 1910, the school was renamed the North Sydney Public School, though unofficially it continued to be known as Greenwood School until 1914. It was built of locally quarried Hawkesbury Sandstone with dressed ashlar surrounding to all opening (SHI Database #5045453).

Around 1914, secondary education was added to the school which led to the overcrowding of students and as a result, a separate girls' school built near Lane Cove road, and North Sydney Boys High School was opened in Falcon Street in 1915. Later in 1932, the Infants Department of school was transferred to the existing school building (North Sydney Demonstration School) on the site of Crows' Nest House. The original building of North Sydney Public school was renamed as the North Sydney Technical High School in 1943.

Over the years, the area has significantly changed. Changes included primarily the use of the landscape for urban constructions over time. Currently, the study area is now part of the Waverton suburb, which is part of the North Sydney Local Government Area (LGA). It extends from Balls Head North to pacific Highway in the west. Important localities adjoining the current suburb is of Wollstonecraft, Crows Nest, etc which has seen the presence of Aboriginal heritage in the region.

Figure 3.6 1930 Historic aerial imagery of the study area

2055 - North Sydney Public School - Aboriginal Archaeological Report

Source: OSM, NSW DFSI Aerial, DFSI CAC_05_1182 *Drawn by: WA Date: 2020-08-31*

AUSTRAL ARCHAEOLOGY

Figure 3.7 1943 Historic aerial imagery of the study area

2055 - North Sydney Public School - Aboriginal Archaeological Report

Source: OSM, NSW DFSI Aerial, SIXmaps *Drawn by: WA Date: 2020-08-31*

AUSTRAL ARCHAEOLOGY

Figure 3.8 - 1951 Historic aerial imagery of the study area

2055 - North Sydney Public School - Aboriginal Archaeological Report

Source: OSM, NSW DFSI CCC468_11_008 *Drawn by: WA Date: 2020-08-31*

AUSTRAL ARCHAEOLOGY

Figure 3.9 - 1961 Historic aerial imagery associated with the study area

2055 - North Sydney Public School - Aboriginal Archaeological Report

Source: OSM, NSW DFSI 1048_32_097 *Drawn by: WA Date: 2020-08-31*

AUSTRAL ARCHAEOLOGY

Figure 3.10 - 1978 1978 Historic aerial imagery associated with the study area

2055 - North Sydney Public School - Aboriginal Archaeological Report

Source: OSM, NSW DFSI 2713_15_050 *Drawn by: WA Date: 2020-08-31*

AUSTRAL ARCHAEOLOGY

Figure 3.11 - 1986 Historic aerial imagery associated with the study area

2055 - North Sydney Public School - Aboriginal Archaeological Report

Source: OSM, NSW DFSI 3528_21_074 *Drawn by: WA Date: 2020-08-31*

AUSTRAL ARCHAEOLOGY

Figure 3.12 - 1994 Historic aerial imagery associated with the study area

2055 - North Sydney Public School - Aboriginal Archaeological Report

Source: OSM, NSW DFSI 4244_09_227 *Drawn by: WA Date: 2020-08-31*

AUSTRAL ARCHAEOLOGY

Figure 3.13 - 2009 Historic aerial imagery associated with the study area

2055 - North Sydney Public School - Aboriginal Archaeological Report

Source: OSM, Nearmap *Drawn by: WA Date: 2020-08-31*

AUSTRAL ARCHAEOLOGY

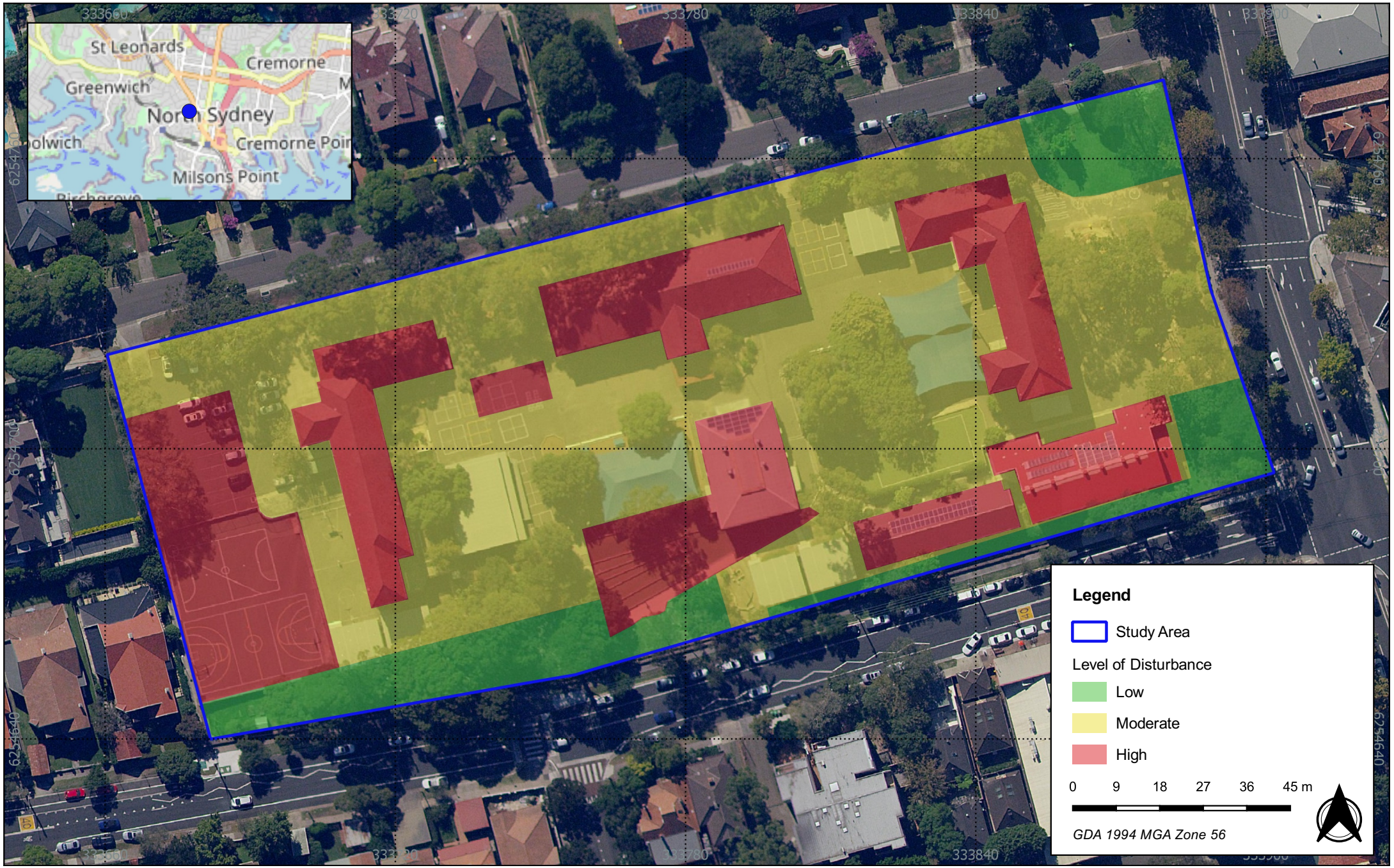


Figure 3.14 Disturbances associated with the study area

2055 - North Sydney Public School - Aboriginal Archaeological Report

Source: OSM, NSW DFSI Aerial *Drawn by: WA Date: 2020-09-22*

AUSTRAL ARCHAEOLOGY

3.7 POTENTIAL LAND USE IMPACTS ON THE ARCHAEOLOGICAL RESOURCE

The main impact on the subject of land is related to extensive land clearing due to the construction of the current North Sydney Public school. Moreover, the adjoining areas are also subject to change and alterations due to the development of residential and road constructions from the early 1870s onwards.

Land clearance would have resulted in soil disturbance and topsoil movement and this activity are commonly destructive to Aboriginal artefacts. The continual development of the study area associated with the operation of the school from the 1930s onwards has caused high levels of impact and disturbance to the natural landscape and has most likely removed any evidence of Aboriginal cultural material that may have existed within the study area.

Table 3.3 Summary of Past Land uses within the study area and the potential impacts on the archaeological resource.

Past Land Uses	Potential Impacts on Archaeological Resources
Historical Land Clearance	Loss of native trees, shrubs and grasses would lead to the potential loss of scarred trees, increased erosion and potential dispersal or disturbance of surface and subsurface artefacts across the study area.
Construction of school buildings and residential houses on Bay road	Moderate to high levels of earth disturbance leading to the potential disturbance and dispersal of artefacts from their stratigraphic context.
Construction of Pacific Highway	Major road construction would have impacted significantly on the original landscape and would have resulted in the loss of passage area for the aboriginal communities, native fauna to move in the area.

4 THE LOCAL AND REGIONAL CHARACTER OF ABORIGINAL LAND USE AND MATERIAL TRACES

The range of environments and landscapes within the region has played a major role in the shaping of the past Aboriginal history in the area. The studies in the Port Jackson region, Berry Island, Gore Cove reserve, etc shows the presence of aboriginal communities using the area in different ways depending upon the resources. As hunters and gatherers, Aboriginal people were dependent on their surroundings to provide food. Their transitory lifestyle affected population size, social interactions and degree of mobility. This can be confirmed in the archaeological record. Ethnographic accounts were once the primary source of archaeological investigation. However, with the recent spread of urban development within NSW, archaeological investigations have increased in frequency.

The Pre-European context of the North Sydney region was originally occupied by a group of a small band of Aboriginal people living hunting and gathering life patterns. The Cammeraygal people are believed to be the traditional owners of the area around the North Sydney Area. Population estimations at the time of contact are difficult to estimate due to several reasons like limitations in records without biases, the perishable nature of the material used by the traditional communities, loss of cultural traits within the communities affected by the colonization, and reduction in population duet to several diseases.

However, through the Dreamtime stories and oral histories, we can have a brief understanding of the social setup of traditional communities. The social structure of pre-European groups was slightly stratified with elders of clans holding decision-making capabilities. Material culture consisted of tools that were made of a variety of materials such as bark, resin, shell, bone, and reeds. Stone raw material that was made into stone tools is the main element of this tool kit to remain in the archaeological record.

The pre-European environment of the North Sydney region provided an extensive resource base associated with the proximity to water sources. These water sources predominantly included the Pacific Ocean as well as estuarine tributaries running off the ocean. Habitats associated with the region would have supported a wide range of animals, fish, birds and mammals, all of which would be rich in proteins and would have been in abundant supply. The Pre-European North Sydney geographical landscape would have been the ideal setting for a variety of human activities. This human activity would have included camping, hunting, gathering, cooking, ceremonies, and other cultural activities associated with semi-permanent settlement sites in the region.

4.1 SUMMARY OF LOCAL ABORIGINAL MATERIAL TRACES WITHIN THE LOCAL REGION

Based upon analysis of information obtained from the AHIMS search, the local and regional archaeological and environmental contexts, the types of sites which occur in the wider region and may occur within the current subject land are considered below.

Artefacts can range from high-density concentrations of flaked stone and ground stone artefacts to sparse, low-density scatter and isolated finds. Stone artefacts have been previously recorded in the region closer to the slopes or in rock shelters. It is highly unlikely that the artefacts if any found would be in their primary context.

Burials can take several forms depending upon the customs of the indigenous inhabitants of the area. Common methods of burial practice used in Australia include inhumation, cremation, desiccation, and exposure. The entire burial process may involve a combination of the above procedures. This type of site is generally not identified by field surveys and is considered rare. It is not seen in and around the current study area.

Ceremonial Grounds (bora rings): Ceremonial Grounds are where initiation ceremonies, marriages and other important social functions were held. They are places of great significance to Aboriginal people. Some are raised earth rings or rings of stone. Generally, they are located in prominent locations. These sites are considered rare.

Grinding Grooves are abrasions in the surface of rocks from the repeated use of the rock surface for sharpening implements of stone, but also may have been used for bone and shell implements. Grinding grooves are generally situated near a water source and may consist of a single groove or several grooves on a sandstone slab. This site type is usually found in open contexts but has also been known to occur within rock shelters. Since the activity area has the dominance of shale in it, the chances are meagre to find Grinding Groves in the region.

Open campsites or isolated finds of durable material of flaked or ground stone that has been discarded across the site may be present. The presence of manuports potentially could occur in the study area. Manuports are stone artefacts of raw materials not naturally occurring within the soil profiles of a given site; essentially, they have been brought onto the site by Aboriginal people from somewhere else.

Rock Shelter Sites are rock overhangs, which have artefacts on the surface of the deposit or within the deposit itself. Other forms of archaeological evidence commonly found within shelter sites are occupation deposits (i.e. stone artefacts, bone, shell, charcoal and artwork).

Scarred trees are the result of the removal of bark and/or wood for manufacturing shelters, canoes, and shields and/or for designs carved into the wood for a range of aesthetic, functional and ceremonial reasons which are currently not fully understood. Evidence for tree scarification is more likely to be observed on large and mature trees (depending upon the species). Unless the tree is at least 100 years old, scarring is unlikely to be of Aboriginal origin.

Shell Middens range from thin scatters of the shell to deep, layered deposits which have built up over time. They are generally found on the coast but can be around inland lakes, swamps, and riverbanks. Shell middens are places where the debris from eating shellfish and other food has accumulated over time.

Stone Arrangements are human-produced arrangements of stone usually associated with ceremonial activities or used as markers for territorial limits or to mark/protect burials. Stone arrangements are considered rare site types across New South Wales but are generally found on escarpments and sandstone outcrops.

5 PREDICTIVE STATEMENT

An Archaeological predictive statement indicates the area in the study area where there are chances of finding aboriginal heritage aspects. It is based on the studies of surrounding environmental data, previous archaeological research and earlier predictive models for Aboriginal occupation. Another essential aspect of predicting the archaeological integrity of a site and something that must be considered is previous land uses and the degree of disturbance across the study area. These are addressed in the following sections.

The North Sydney area has a very high value in terms of natural resources of water and food. This forms the main basis for the region to be of great significance to the traditional communities in the region in the past. The study area lies within a resource base associated primarily with the Pacific Ocean and small tributaries running into the Pacific Ocean. Habitats associated with these water systems would have supported a wide range of flora, animals, fish, birds, and mammals.

Due to the ideal environmental setting, the landscape surrounding the study area would have been subject to a wide variety of human activities. This primarily would have been due to the presence of good resource availability, followed by the possible presence of permanent water sources in the immediate area. Activities would have included camping, hunting, gathering, cooking, ceremonies, and other cultural activities associated with semi-permanent settlement sites in the region. Some of these activities, mainly stone tool knapping, are seen in the archaeological record.

The main trends broadly seen across eastern NSW are that:

- archaeological sites occur on most landforms;
- site frequency and density are dependent on their location in the landscape;
- there is a dominance of low-density surface open artefact scatters and isolated finds;
- there is a noted paucity of scarred trees due to land clearance;
- artefact scatters are commonly located close to permanent water sources along creek banks, alluvial flats and low slopes, largely concentrated within the first 100 meters of the creek line. More complex sites are usually located close to water sources with major confluences being key locations for occupation sites.
- archaeological material is also present beyond the immediate creek surrounds in decreasing artefact densities;
- there may be concentrations of sites occurring on ridge tops and crests that are associated with pathways through the landscape;
- subsurface archaeological deposits are often recovered in areas where no visible surface archaeological remains are evident;
- the dominant raw material used in artefact manufacture is silcrete and fine-grained siliceous material with smaller quantities of chert, quartz and volcanic stone seen;
- artefact assemblages usually comprise a small proportion of formal tool types with the majority of assemblages dominated by flakes and debitage;
- while surface artefact scatters may indicate the presence of subsurface archaeological deposits, surface artefact distribution and density may not accurately reflect those of subsurface archaeological deposits;
- Aboriginal scarred trees may be present in areas where remnant old-growth vegetation exists; and
- PADs are most likely to occur along with valley floors and low slopes in well-drained areas.

Based on the above understanding of sites distribution across eastern New South Wales, the AHIMS search results and a preliminary review of ethnographic, soils, geology, landform, disturbance and resource information pertinent to the study area, Austral has prepared a series of site prediction statements that have been used to inform the project methodology, these are outlined in Table 5.1.

Table 5.1 Aboriginal site prediction statements.

Site type	Predictive statements
Aboriginal ceremony and dreaming sites	Ceremonial grounds are unlikely to be present due to their general rarity within New South Wales.
Aboriginal places	Unlikely to be present within the study area.
Artefact sites	Stone artefacts are unlikely to be present due to the high level of disturbance that was identified across the study area as a result of continual development from the late 19th century onwards.
Axe grinding grooves	Grinding grooves are unlikely to be present due to a lack of suitable geological requirements (exposed bedrock near to a water source).
Burials	Burials are unlikely to be present, due to the lack of deep sandy locations suitable for burial.
Modified trees	Scarred trees are unlikely to be due to be the lack of old growth vegetation within the study area.
Potential archaeological deposits (PADs)	PADs may be highly unlikely to be found in areas with moderate to high disturbance.
Rock Shelters with art and/or deposit	Rock art sites are likely to be present due to a lack of suitable geological requirements (Sandstone overhangs).
Shell middens	Shell middens are unlikely to be present, due to the lack of deep sandy locations suitable for burial.

6 ABORIGINAL ARCHAEOLOGICAL SURVEY

6.1 SURVEY METHODOLOGY

The specific survey methodology developed for this assessment was guided by the survey requirements as set out in the code of practice. The survey methodology was designed to optimise the investigation of areas where archaeological materials may be present and visible, as well as investigation of the broader archaeological potential of the study area. The field inspection of the study area, therefore, paid close attention to areas of favourable landform conditions.

The key survey variables of ground visibility, which considers the amount of ground surface which is visible and not covered by any vegetation; and exposure, which defines areas where dispersed surface soils and vegetative matter afford a clear assessment of the ground, were assessed across the study area and within each landform element. Overall survey coverage and calculated survey effectiveness were recorded. Note that the effectiveness of the field survey was largely dependent on the degree of ground surface visibility.

6.2 SURVEY RESULTS

An archaeological survey of the study area was undertaken on 15 September 2020 by William Andrews (Archaeologist, Austral).

The survey encompassed the majority of the study area, focusing on areas that had been disturbed the least. As most of the school has been paved with a layer of tarmac visibility was zero in most areas of the school ground (Figure 6.1). There was also evidence of large-scale earthworks, especially in the western half of the study area (Figure 6.2, Figure 6.3 and Figure 6.4). The entire study area is located on a sloping landform, which flows from the north to the south. Three areas of possible natural surface were observed, which were located along the south-western, south-eastern and north-eastern boundaries, these areas can be seen labelled in Figure 6.5.

Area 1 in the south-west is a small section of grassed area located on a sloping landform, that appears to be the natural surface (Figure 6.5). However, there is a large sewerage line running down the centre of the grassed area, resulting in a large portion of this section being disturbed. Area 1 did exhibit some exposures, with a brownish-grey silty sand and no Aboriginal artefact identified.

Area 2 in the south-east is another grassed section also on a slope. The western section of this area is located behind the buildings and is off limits to the children (Figure 6.6). As such, this area has received lower levels of disturbance than the large square section in the east. However, the same sewerage pipe that runs through Area 1 disturbs this area also (Figure 6.7 and Figure 6.8). Again, there were exposures (mostly in the east), which demonstrated the same type of soil and also contained no surface artefacts.

Area 3 in the north-east of the study area, and on a higher section of the slope that flows from the north-east to the south-west (Figure 6.8). This area also appears to be relatively undisturbed, however, the grass was thicker here so exposures were at a minimum. No artefacts were identified in this area.

The entire study area has exhibited a high level of disturbance, both from asphalting and the sites use as a primary school. Children are likely to have removed any artefacts that were present on the surface and may have caused minor disturbance from digging. As such, it is difficult to assess if artefacts were present at some stage. However, as the site is located on a moderate slope, this is an unlikely place for any long-term occupation.

A table outlining the effective survey coverage can be seen in Table 6.1 and a map outlining the survey results can be seen in Figure 6.9.

Figure 6.1 **View to the east of the playground area, all areas apart from the play equipment have been fully tarmacked.**

Figure 6.2 **View to the south of sunken area in western section of the study area.**

Figure 6.3 **View to north-west of tiered seating location.**

Figure 6.4 **View to the south-west of sporting area, showing to level this area.**

Figure 6.5 **View to the west of Area 1, small exposures and light earthworks can be seen.**

Figure 6.6 **View to the west of Area 2.**

Figure 6.7 **View to the west in Area 2 of exposures and a drain for the large pipe running through Area 1 and 2.**

Figure 6.8 **View to the east of Area 3.**

Table 6.1 Effective Survey Coverage

Landform Element	Landform Area (m^2)	Visibility %	Exposure %	Effective Coverage Area (m^2)	% of landform effectively surveyed (= area effectively surveyed/ landform x 100)
Slope	19,360 m^2	10	5	96.8	0.5

Figure 6.9 Survey Results

2055 - North Sydney Public School - Aboriginal Archaeological Report

Source: OSM, NSW DFSI Aerial

Drawn by: WA Date: 2020-09-22

AUSTRAL ARCHAEOLOGY

7 CULTURAL HERITAGE VALUES

7.1 INTRODUCTION TO THE HERITAGE ASSESSMENT PROCESS

Cultural Heritage Values of a study area, in a way, is the holistic approach to the site, taking into consideration its position in the geographical landscape. It helps us to ascertain the cultural values that a place, site, or item may have to the community at large. The concept of cultural significance is intrinsically connected to the physical fabric of the item or place, its location, setting and relationship with other items in its surroundings.

Archaeological sites require a different approach towards the significance assessment because the extent of the heritage resource and the degree to which it can contribute to our understanding of the past is not fully known at the outset.

The information established through such assessments gives us an insight into the use of past cultural landscapes by the traditional communities even with the absence of tangible aboriginal heritage seen in the present context.

This assessment also aims to comply with issue 8 of the Secretary's Environmental Assessment Requirements (SEARs), issued on 24 December 2020 (SSD-11869481) for the State Significant Development.

7.2 BASIS FOR ASSESSMENT OF ABORIGINAL SITES

The following assessment criteria for archaeological significance have been developed to deal specifically with archaeological resources and covers the following potentials:

A. **Research Potential.** This criterion is designed to qualify the significance of potential research that may be carried out at a site. Significance is apportioned according to the amount of new information which might be contained in the deposit, rather than the potential to yield a large number of artefacts. A site may have high significance under this criterion if it has an intact stratigraphic sequence and good integrity, the potential to provide a chronology extending into the past, or if it is connected to other sites within the region for intra-site and inter-site studies.

B. Educational Potential. This allows the educational value of a site to be considered as a component of significance. Under this criterion, an archaeologist may assess the potential of a site to educate the general public. Heritage NSW has acknowledged that this criterion is open to misinterpretation by archaeologists who can convey the value of a site to other archaeologists. Heritage NSW recommends that, in cases where significance is determined on educational potential, the onus is on the archaeologist go to the public for an assessment of this value.

C. Aesthetic Significance. Aesthetic significance is not inherent in a place but arises from the response that people have to it. It is pertinent to remember that this response can vary dramatically between cultures and social groups; therefore an assessment of significance based on aesthetic value should incorporate the views of different cultures. It takes into consideration the overall appealing values of the site associated with the surroundings.

For a full description of the assessment procedures, refer to the *Aboriginal Cultural Heritage: Standards and Guidelines Kit* (NPWS 1997)). These criteria have been designed to deal specifically with the archaeological resource; however, they do not provide a framework for the assessment of social significance to the Aboriginal community. For this reason, the criteria for assessment provided in the *Australia ICOMOS Charter for the Conservation of Places of Cultural Significance* (the Burra Charter) are sometimes also used to assess significance as they provide a framework for a more holistic assessment of significance.

ASSESSMENT OF AREAS IDENTIFIED IN THE STUDY AREA

The comments made in this section are a reflection of significance from a scientific perspective only, based on established Heritage NSW approved significance assessment criteria. They are not intended as a reflection of cultural significance. Please refer to stakeholder comments in the main ACHA for relevant views and statements of cultural significance.

Each of the criteria of assessment outlined in the previous section will now be considered in the sub-sections below.

RESEARCH POTENTIAL

The research potential of Aboriginal archaeological sites is based on the amount of new information which might be obtained from a more detailed investigation of the site; the representativeness or ability of the site to demonstrate a type of site or deposit; and, the rarity or distinctiveness of the site in relation to other sites.

The results of the Aboriginal archaeological survey have demonstrated that the majority of the study area shows high levels of disturbance caused by the continuous development of the school from the 1900s onwards. As noted in Section 6.2, much of the study area contains large buildings, including school halls, classrooms, offices, that would have caused large scale impacts to the ground surface. Other disturbances within the study area include the leveling and build-up of the ground surface associated with the laying of the concrete ground surface and landscaping surrounding the school buildings. As a result of these high-level impacts on the ground surface, it is considered very unlikely that the stratigraphy and soil profile that existed prior to European development of the study area remains intact and undisturbed. As such, the likelihood of Aboriginal cultural material being present within the study area is considered is very low.

It is therefore considered that there is a low potential that any archaeological investigations within the study area would recover any significant quantity of Aboriginal cultural material, and if material, including stone artefacts, were present on site they would most likely be present in disturbed stratigraphic contexts and not be *in-situ*. Thus, if any Aboriginal cultural material was present on-site, it would provide limited information on the Aboriginal occupation of the study area, which is a key requirement of the research potential criterion.

In summary, the overall research value of the study area is considered to be very low for the following reasons:

- Low potential for the presence of Aboriginal cultural material
- If present, Aboriginal cultural material within the study area would likely be in disturbed contexts, thus limiting the ability to interpret Aboriginal occupation of the study area

EDUCATIONAL POTENTIAL

The educational potential of the study area is directly related to its value to the general public, the Aboriginal stakeholders, and other researchers. Therefore, the educational potential of the current study area is directly linked to its research potential: what can be learned from further archaeological investigation, and who will be benefitted from that knowledge.

The educational value of a site to the Aboriginal community and the general public is the most important criterion. The educational potential must be linked to something that can add to the public's knowledge of the Aboriginal past of a particular area.

The Aboriginal cultural material contained within the study area is not considered to be of high educational value. The survey undertaken as part of this assessment has considered that a very large portion of the study area has been highly disturbed as a result of the continuous development of the school from the late 19th century. This includes the construction and alterations of a variety of buildings including school halls, classrooms, offices. As such, it is considered unlikely that Aboriginal cultural material is present within the study area, and if present, it would most likely be within a disturbed stratigraphic context.

The perspective of Aboriginal stakeholders is likely to differ from that of the archaeologist and that of the general public: for Aboriginal people, the archaeological record is a component of their oral history and a tangible link to the past. As a non-Aboriginal person, the consultant is only able to offer such a valuation as has been provided in consideration of the general public or other researchers.

The information from the current study area is unlikely to shed new light on Aboriginal people's use of landscape in times past and that the research and education potential may be assessed as low. However, it is appreciated that perspectives do differ and unlike the general public or other researchers, Aboriginal stakeholders may see the compilation of further archaeological data of the same type as a confirmation of their story, which may be of high educational value to them.

Even in the absence of recovery of any aboriginal cultural material, the study area is a school premise, hence, if information about the study area's past is framed as a signage board in the school area, it can form an important tool to disseminate cultural knowledge to students and parents of those students studying in the school. Thus, creating a strong bridge of cultural awareness.

The overall educational value of the study area is therefore considered to be very high.

AESTHETIC SIGNIFICANCE

The concept of aesthetic significance deals with the response that people have to a particular place. This criterion differs from the other two in that it is not so readily quantifiable but takes into account a subjective or emotive response to a particular place.

An archaeologist can have an opinion about the aesthetic significance which can be completely different from an Aboriginal stakeholder solely because of the value it holds to their cultural past. Members of the local Aboriginal community can best advise of the Aboriginal cultural significance of an area or place.

7.3 PRELIMINARY ASSESSMENT OF ABORIGINAL SITES

The historical research of the past land-use practices and European development within the study area has shown that the site has been subject to continuous development from the 1870s onwards. It includes the construction of houses, school structures, roads, etc. The Aboriginal archaeological survey undertaken as part of this assessment has confirmed that the presence of high levels of disturbances associated with the previous developments within the study area. It was noted in Section 6.2, that the construction of the various buildings within the study area would have caused high levels of subsurface impacts, which would most likely have removed any traces of Aboriginal cultural material that were present. Also, subsurface impacts would likely have been caused by the construction of the ground surface, landscaping works and the installation of any services associated with North Sydney Public School.

No Aboriginal objects or sites were identified during the archaeological survey, which was determined to be the case due to the high level of development present across the entirety of the study area. The results of the survey have determined that there is a very low potential for subsurface Aboriginal cultural material to be present due to the high levels of disturbances present that were caused by the development of North Sydney Public School as well as the construction of houses during the late 19th century.

Overall, on the balance of the current evidence, it is considered that the archaeological character of the study area has been sufficiently determined by the survey and that the study area holds very low potential to contain Aboriginal cultural material.

7.4 SPECIFIC ABORIGINAL LANDSCAPE VALUES

Aboriginal cultural values can only be assessed by the Aboriginal community. The Aboriginal ACHA and AAR were therefore sent to all registered Aboriginal stakeholders who registered an interest in the project on 7 July 2021 and given 28 days to review the project. Kadibulla Khan of the the Kamilaroi-Yankuntjatjara Working Group provided this feedback in regards to the cultural significance of the broad social landscape of the study area. In particular the water ways are highlighted as being significant.

> "The study area is highly sensitive and highly significant to us Aboriginal people, as our people lived within the area for thousands of years. We care for mother earth and all that she provides, with her rich flora and fauna that thrives in this area. The water ways in which we have a deep connection to as they provide us with resources and hold spiritual connection to the water and the stories they hold."

Unfortunately, during the course of the survey, no natural water ways were identified to be within the study area. Past tributaries could have possibly lined the landscape, but due to the current impacts of the school, these traces are now lost.

8 THE PROPOSED ACTIVITY

8.1 THE PROPOSED WORKS AND POTENTIAL IMPACTS

The study area currently includes 31 permanent teaching spaces and five demountable classrooms accommodating 857 students. The proposed construction in the area will include the construction of new hall and classroom buildings as well as the installation of associated services and landscaping works. The proposal is projected to accommodate up to 1,012 students.

The proposed impacts are likely to consist of cut and fill works through parts of the study area due to the construction of new buildings, foundations, demolition/renovation works and subsurface excavations for delivery of services.

The proposed development within the study area will include the construction of new hall and classroom buildings as well as the installation of associated services and landscaping works. As such, the proposed impacts are likely to consist of cut and fill works through parts of the study area due to the construction of new buildings, foundations, demolition works and subsurface excavations for delivery of services.

It is understood that construction works will involve:

- Large scale groundworks including extensive earthwork, including extensive subsurface excavation, landscaping and levelling.
- Installation of associated services, including sewer drainage, water supply, and electrical cables as well as landscaping works.

8.2 PREDICTED IMPACT ON THE POTENTIAL ARCHAEOLOGICAL RESOURCE

Following the key aims of the archaeological survey, the Aboriginal archaeological potential of the study area has been determined. The survey has confirmed that the entirety of the study area has been subject to high levels of disturbance caused by continuous development from the late 19th century onwards, associated with the construction of houses and the development in the Waverton region.

No Aboriginal objects or sites were identified during the archaeological survey, and it was determined that the study area contains the low potential for the presence of subsurface Aboriginal cultural material due to the high levels of ground disturbance caused by previous developments. Ity is highly unlikely that further investigation would yield material traces that would provide new information on the Aboriginal occupation of the study area.

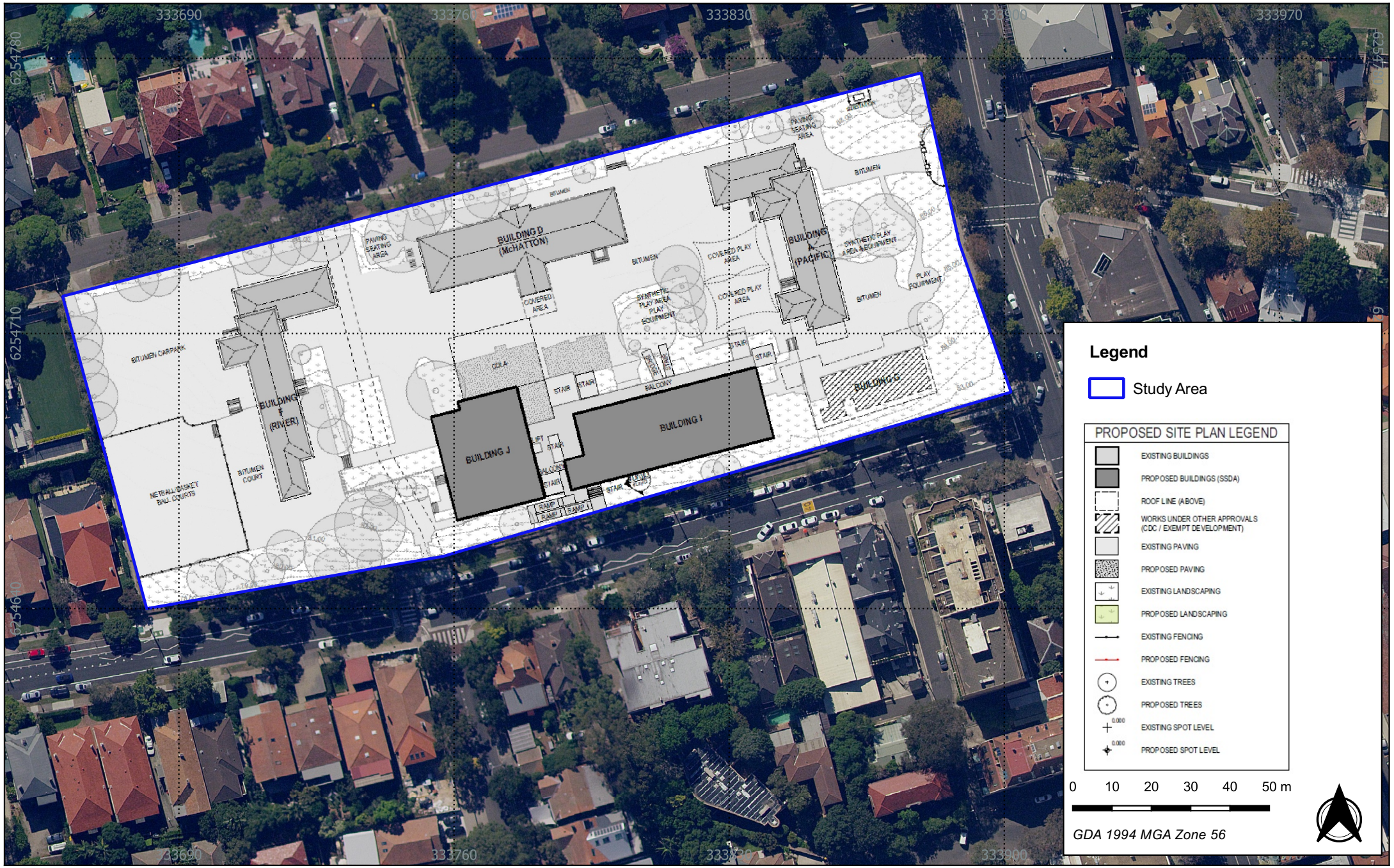


Figure 8.1 Proposed works

2055 - North Sydney Public School - Aboriginal Archaeological Report

Source: Fulton Trotter Architects Pty Ltd *Drawn by: PR Date: 2021-08-13*

AUSTRAL ARCHAEOLOGY

9 AVOIDING AND MINIMISING HARM

9.1 CUMULATIVE IMPACTS AND OPTIONS TO AVOID HARM

The Guide to Reporting requires this AAR to consider the effects of cumulative impacts under the principles of Economically Sustainable Development. In essence, this requires the acknowledgement that while a single development might have a minimal impact, it forms part of a slow urbanisation process which results in the widespread loss of environmental and cultural resources.

The study area forms part of ongoing community development within the North Shore region, where impacts to sites of potential Aboriginal cultural heritage has been considered. While the surrounding area has been developed to a large extent since the early 19th century, previous archaeological investigations within the North Sydney LGA have demonstrated that *in-situ* and culturally significant Aboriginal archaeological sites are present within the region. These studies have lead to a better understanding of Aboriginal land settlement patterns and cultural activities in the area.

Despite the potential Aboriginal heritage material to exist in the wider area, it has been concluded that the current study area has undergone massive ground disturbance since the late 1870's. What Aboriginal heritage material that may have once existed in the study area has been extensively disturbed, and as such the proposed development does not contribute to cumulative negative impacts on the Aboriginal heritage of the area. Conversely, improvement of educational facilities has potential to allow the more effective delivery of curriculum aimed at improving students' understanding of Aboriginal heritage both in local and wider contexts. In this manner, given the proposed development offers no threat to material culture items, it can be seen to have potential to have a positive impact on understanding and promotion of Aboriginal heritage.

Options to avoid harm would have been formulated had the study area contained Aboriginal heritage objects. An ad hoc finds protocol has been embedded in the recommendations of this report to assist the proponent in the unlikely event an Aboriginal heritage object is found during development (see Section 10).

9.2 MANAGEMENT AND MITIGATION STRATEGIES

Following the Aboriginal archaeological survey of the study area, it was determined that the entirety of the study area is considered to be of low archaeological potential to contain Aboriginal cultural heritage. As such, no further archaeological works are required within the study area.

10 RECOMMENDATIONS

The following recommendations have been developed after considering the archaeological context, environmental information, consultation with the local Aboriginal community, the findings of the archaeological survey and the predicted impact of the proposed development on archaeological resources. It is recommended that:

1) No further Aboriginal archaeological works are required to be undertaken.

2) No AHIP is required to proceed as the proposed development will not disturb recorded Aboriginal objects, and there is low potential for it to disturb unrecorded Aboriginal objects.

3) All contractors undertaking earthworks in the study area should undergo an induction on identifying Aboriginal heritage objects; and

4) All contractors undertaking earthworks on-site should be briefed on the protection of Aboriginal heritage objects under the *National Parks and Wildlife Act 1974* and the penalties for damage to these items.

5) A copy of this report should be forwarded to all Aboriginal stakeholder groups who have registered an interest in the project and to the AHIMS Registrar

6) If any object is found during development that is suspected to be an Aboriginal object or material, the proponent must:

    a. Not further harm or move the object;
    b. Immediately cease work at that particular location;
    c. Secure the area so as to avoid further harm to the Aboriginal object;
    d. Notify a qualified archaeologist as soon as possible to inspect, assess and, if necessary, record the object or material.
    e. Immediately notify Heritage NSW if the object or material is Aboriginal cultural heritage material on 131555, providing any details of the Aboriginal object and its location, and;
    f. Not recommence any work at the particular location unless authorised in writing by Heritage NSW.

7) If any object is found suspected to be human remains the proponent must,

    a. Prevent all personnel and vehicular access to or near the object;

    b. Immediately contact NSW Police.

    c. Immediately notify Heritage NSW on 131555, noting potential Aboriginal human remains and providing any details of the object and its location,
    d. Contact the project archaeologist, and;
    e. Not recommence any work at the particular location unless authorised in writing by Heritage NSW.

The proponents, their employees and agents are reminded that the National Parks and Wildlife Act (NSW) 1974 is a strict liability act and under its provisions it is an offence to destroy, deface or otherwise disturb an Aboriginal Object without first obtaining the consent of the Director General of the NSW NPWS.

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APPENDICES

APPENDIX A AHIMS SEARCH RESULTS

Office of Environment & Heritage

AHIMS Web Services (AWS)
Extensive search - Site list report

Your Ref/PO Number : T2020_108
Client Service ID : 529385

SiteID	SiteName	Datum	Zone	Easting	Northing	Context	Site Status	SiteFeatures	SiteTypes	Reports
45-6-2249	Berry Island 11;	AGD	56	332310	6253990	Open site	Valid	Shell : -, Artefact : -	Midden,Open Camp Site	
	Contact	Recorders	Michael Guider					Permits		
45-6-2250	Gore Creek 8;	AGD	56	331610	6255050	Closed site	Valid	Shell : -, Artefact : -	Shelter with Midden	
	Contact	Recorders	Michael Guider					Permits		
45-6-2251	Gore Creek 9;	AGD	56	331510	6254990	Closed site	Valid	Shell : -, Artefact : -	Shelter with Midden	
	Contact	Recorders	Michael Guider					Permits		
45-6-2252	Gore Creek 10;	AGD	56	331490	6254910	Open site	Valid	Shell : -, Artefact : -	Midden	
	Contact	Recorders	Michael Guider					Permits		
45-6-2262	Gore Cove 1;Greenwich;	AGD	56	332160	6254540	Closed site	Valid	Shell : -, Artefact : -	Shelter with Midden	
	Contact	Recorders	Michael Guider					Permits		
45-6-2263	Gore Cove 2;Greenwich;	AGD	56	332230	6254610	Closed site	Valid	Shell : -, Artefact : -	Shelter with Midden	
	Contact	Recorders	Michael Guider					Permits		
45-6-2264	Gore Cove 3;Greenwich;	AGD	56	332310	6254660	Closed site	Valid	Shell : -, Artefact : -	Shelter with Midden	
	Contact	Recorders	Michael Guider					Permits		
45-6-2265	Gore Cove 5;Greenwich;	AGD	56	332380	6254680	Closed site	Valid	Shell : -, Artefact : -	Shelter with Midden	
	Contact	Recorders	Michael Guider					Permits		
45-6-2266	Gore Cove 6;Wollstonecraft;	AGD	56	332340	6254550	Open site	Valid	Shell : -, Artefact : -	Midden	
	Contact	Recorders	Michael Guider					Permits		
45-6-2382	Goat Island 2	AGD	56	333100	6252480	Closed site	Valid	Artefact : -, Shell : -, Aboriginal Ceremony and Dreaming : -		
	Contact	Recorders	Klim Gollan					Permits		
45-6-2273	Gore Cove 4;	GDA	56	332424	6254820	Open site	Valid	Shell : -, Artefact : -	Midden	
	Contact	Recorders	Michael Guider					Permits		
45-6-2287	Yerroulbin Cave	AGD	56	332010	6253210	Closed site	Valid	Shell : -, Artefact : -, Art (Pigment or Engraved) : -	Shelter with Art,Shelter with Midden	
	Contact	Recorders	Michael Guider					Permits		
45-6-2672	Shed Cave - Birchgrove	AGD	56	332125	6253425	Closed site	Valid	Habitation Structure : 1		
	Contact	Recorders	Michael Guider					Permits		
45-6-2962	Gore Cove 9 NSC-065	GDA	56	332379	6254590	Open site	Valid	Shell : -		

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Page 1 of 9

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Extensive search - Site list report

Your Ref/PO Number : T2020_108
Client Service ID : 529385

SiteID	SiteName	Datum	Zone	Easting	Northing	Context	Site Status	SiteFeatures	SiteTypes	Reports
	Contact	Recorders	Mr.Phil Hunt,Aboriginal Heritage Office					Permits		
45-6-2963	Shell Cove Rd NSW NSC-070	GDA	56	335604	6254130	Open site	Valid	Artefact : -		
	Contact	Recorders	Mr.Phil Hunt,Aboriginal Heritage Office					Permits		
45-6-2964	Milray Midden 1 NSC-071	GDA	56	332424	6254650	Open site	Valid	Shell : -		
	Contact	Recorders	Mr.Phil Hunt,Aboriginal Heritage Office					Permits		
45-6-2965	Milray Shelter NSC-072	GDA	56	332434	6254650	Open site	Valid	Potential Archaeological Deposit (PAD) : -		
	Contact	Recorders	David Watts,Aboriginal Heritage Office					Permits		
45-6-2966	Balls Head shelter NSC-073	GDA	56	332879	6253500	Open site	Valid	Potential Archaeological Deposit (PAD) : -, Shell : -		
	Contact	Recorders	Mr.Phil Hunt,Mr.Phil Hunt,Aboriginal Heritage Office					Permits		
45-6-2967	5 Hands Shelter B NSC-074	GDA	56	332134	6253455	Open site	Valid	Shell : -		
	Contact	Recorders	Mr.Phil Hunt,Mr.Phil Hunt,Aboriginal Heritage Office					Permits		
45-6-2968	Berry Island 12 NSC-076	GDA	56	332384	6254230	Open site	Valid	Artefact : -		
	Contact	Recorders	Mr.Phil Hunt,Aboriginal Heritage Office					Permits		
45-6-0640	Mosman-Sydney	GDA	56	335604	6255590	Open site	Valid	Art (Pigment or Engraved) : -	Rock Engraving	
	Contact	Recorders	Michael Guider,Aboriginal Heritage Office					Permits		
45-6-2267	Gore Cove 8 Wollstonecraft	GDA	56	332369	6254600	Open site	Valid	Artefact : -	Open Camp Site	
	Contact	Recorders	Michael Guider,Aboriginal Heritage Office					Permits		
45-6-2961	Balls Head Midden NSC-058	GDA	56	333239	6253395	Open site	Valid	Shell : -		
	Contact	Recorders	Mr.Phil Hunt,Aboriginal Heritage Office					Permits		
45-6-3166	BERRY ISLAND 13. NSC090	GDA	56	332459	6254138	Open site	Valid	Artefact : -		
	Contact	Recorders	Mr.Phil Hunt					Permits		
45-6-2146	Gore Creek Reserve 7 Gore CReek Reserve	AGD	56	331660	6254790	Closed site	Valid	Shell : -, Artefact : -	Shelter with Midden	1809,1911
	Contact	Recorders	Val Attenbrow					Permits		
45-6-2147	Ivy Cliff (Waverton Park)	AGD	56	333330	6253860	Closed site	Valid	Shell : -, Artefact : -	Shelter with Midden	1809
	Contact	Recorders	Val Attenbrow,D Earle					Permits		
45-6-0264	Berry Island;Gore Cove/Crows Nest;	AGD	56	332250	6253920	Open site	Valid	Grinding Groove : -, Art (Pigment or Engraved) : -	Axe Grinding Groove,Rock Engraving	102201
	Contact	Recorders	Michael Guider					Permits		
45-6-0268	Berry Island;	AGD	56	332320	6254030	Open site	Valid	Shell : -, Artefact : -	Midden	

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Page 2 of 9

Office of Environment & Heritage

AHIMS Web Services (AWS)

Extensive search - Site list report

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SiteID	SiteName	Datum	Zone	Easting	Northing	Context	Site Status	SiteFeatures	SiteTypes	Reports
	Contact	Recorders	Michael Guider					Permits		
45-6-0272	Robertson's Point Cremorne	GDA	56	336129	6253645	Open site	Valid	Art (Pigment or Engraved) : -	Rock Engraving	597
	Contact	Recorders	Charles.D Power,Aboriginal Heritage Office					Permits		
45-6-0273	Cremorne Point Shell Cove	GDA	56	335999	6253655	Open site	Valid	Art (Pigment or Engraved) : -	Rock Engraving	
	Contact	Recorders	Charles.D Power,Aboriginal Heritage Office					Permits		
45-6-2055	Lavender bay 2;	AGD	56	333890	6253550	Closed site	Valid	Shell : -, Artefact : -	Shelter with Midden	1809
	Contact	Recorders	Michael Guider					Permits		
45-6-2061	Red Shield Cave;	AGD	56	335910	6253430	Closed site	Valid	Art (Pigment or Engraved) : -	Shelter with Art	1809
	Contact	Recorders	Michael Guider					Permits		
45-6-2068	Shell Cove 2	GDA	56	335784	6254190	Open site	Valid	Shell : -, Artefact : -	Midden	1809
	Contact	Recorders	Michael Guider,Aboriginal Heritage Office					Permits		
45-6-2069	Shell Cove 1	GDA	56	335844	6254100	Open site	Valid	Shell : -, Artefact : -	Midden	1809
	Contact	Recorders	Michael Guider,Aboriginal Heritage Office					Permits		
45-6-2072	Iron works cave; Dalton's Iron Store;(duplicate copy of 45-6-2223)	AGD	56	332050	6253610	Closed site	Valid	Art (Pigment or Engraved) : -	Shelter with Art	1809
	Contact	Recorders	Val Attenbrow,Michael Guider,Mr.Scott Mann					Permits		
45-6-1265	Berry Island;Berry Island 6;	AGD	56	332350	6253800	Open site	Valid	Shell : -, Artefact : -	Midden	
	Contact	Recorders	Michael Guider,K Murphy					Permits		
45-6-1266	Berry Island;	AGD	56	332300	6254000	Open site	Valid	Shell : -, Artefact : -	Midden	
	Contact	Recorders	ASRSYS					Permits		
45-6-0279	Greenwich; Gore Creek Reserve;Unpainted stair ladder cave;	AGD	56	331720	6255070	Closed site	Valid	Shell : -, Artefact : -	Shelter with Midden	1809
	Contact	Recorders	Val Attenbrow,Michael Guider,J Mecader,D Munro					Permits		
45-6-0280	Greenwich; Bicycle Tyre Cave; Gore Creek Reserve; Hole Cave; Gore creek 7;	AGD	56	331690	6255000	Closed site	Valid	Shell : -, Artefact : -, Art (Pigment or Engraved) : -	Shelter with Art,Shelter with Midden	1809
	Contact	Recorders	Val Attenbrow,Michael Guider,Mr.R Taplin					Permits		
45-6-1267	Balls Head Reserve	GDA	56	333294	6253330	Open site	Valid	Shell : -, Artefact : -	Midden	1809
	Contact	Recorders	Val Attenbrow,Michael Guider,Aboriginal Heritage Office					Permits		
45-6-1268	Balls Head Reserve;	AGD	56	333800	6253060	Open site	Valid	Shell : -, Artefact : -	Midden	
	Contact	Recorders	Michael Guider,Mr.Phil Hunt,Aboriginal Heritage Office					Permits		
45-6-1269	Waverton Park Waverton	GDA	56	333384	6254040	Open site	Valid	Shell : -, Artefact : -	Midden	
	Contact	Recorders	Unknown Author,Aboriginal Heritage Office					Permits		

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Page 3 of 9

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AHIMS Web Services (AWS)

Extensive search - Site list report

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Client Service ID : 529385

SiteID	SiteName	Datum	Zone	Easting	Northing	Context	Site Status	SiteFeatures	SiteTypes	Reports
45-6-1270	Waverton Park Waverton	GDA	56	333254	6254040	Open site	Valid	Shell : -, Artefact : -	Midden	
	Contact	Recorders	Unknown Author,Mr.Phil Hunt,Aboriginal Heritage Office					Permits		
45-6-1271	Lavender Bay;Milsons Point	GDA	56	334339	6253635	Closed site	Valid	Shell : -, Artefact : -	Shelter with Midden	
	Contact	Recorders	Michael Guider,Aboriginal Heritage Office					Permits		
45-6-1901	Long Nose Point 1.;Birchgrove;9 Numa Street;	AGD	56	332000	6253030	Open site	Valid	Shell : -, Artefact : -	Midden	
	Contact	Recorders	Michael Guider					Permits		
45-6-1120	Northbridge Golf Links;..	GDA	56	335317	6256610	Closed site	Valid	Shell : -, Artefact : -	Shelter with Midden	597
	Contact	Recorders	Bobbie Oakley,Mr.R.Taplin					Permits		
45-6-1121	Long Bay Cave;Northbridge Golf Links;	GDA	56	335307	6256613	Closed site	Valid	Shell : -, Artefact : -	Shelter with Midden	597
	Contact	Recorders	ASRSYS					Permits		
45-6-0628	Balls Head Reserve Waverton	GDA	56	333129	6253420	Open site	Valid	Art (Pigment or Engraved) : -	Rock Engraving	
	Contact	Recorders	Michael Guider,D Lautrec,Mr.Phil Hunt,Mr.R.Taplin,Aboriginal Heritage Office					Permits		
45-6-0630	Berry Bay Balls Head Reserve; Campbells Cave	GDA	56	333224	6253410	Closed site	Valid	Art (Pigment or Engraved) : -	Shelter with Art	
	Contact	Recorders	W.D Campbell,Michael Guider,Mr.Phil Hunt,Aboriginal Heritage Office					Permits		
45-6-0633	Mosman; Flat Rock Creek;Tunks Park 1;	AGD	56	334550	6256460	Closed site	Valid	Shell : -, Artefact : -, Art (Pigment or Engraved) : -	Shelter with Art,Shelter with Midden	2047,98676
	Contact	Recorders	Michael Guider					Permits		
45-6-0635	Neutral Bay Ben Boyd Rd	GDA	56	335034	6254650	Open site	Valid	Art (Pigment or Engraved) : -	Rock Engraving	
	Contact	Recorders	Michael Guider,Aboriginal Heritage Office					Permits		
45-6-2101	Nameless third visit cave / Gore ck;reserve 2;	AGD	56	331750	6255050	Closed site	Valid	Shell : -, Artefact : -	Shelter with Midden	
	Contact	Recorders	Val Attenbrow					Permits		
45-6-2102	Sandy crumble Gore creek;reserve 5;	AGD	56	331660	6255020	Closed site	Valid	Shell : -, Artefact : -	Shelter with Midden	
	Contact	Recorders	Val Attenbrow					Permits		
45-6-0641	Crows Nest;Neutral Bay;	AGD	56	335516	6253982	Open site	Valid	Art (Pigment or Engraved) : -	Rock Engraving	
	Contact	Recorders	ASRSYS					Permits		
45-6-2141	Little Wonga Road, Cremorne.	AGD	56	335780	6255850	Closed site	Valid	Shell : -, Artefact : -	Shelter with Midden	1809,1911
	Contact	Recorders	Val Attenbrow					Permits		

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SiteID	SiteName	Datum	Zone	Easting	Northing	Context	Site Status	SiteFeatures	SiteTypes	Reports
45-6-2143	Cremorne Point West (duplicate copy 45-6-0273 and 45-2-0274)	GDA	56	335770	6253800	Closed site	Valid	Shell : -, Artefact : -	Shelter with Midden	1809,1911
	Contact	Recorders	W.D Campbell,Aboriginal Heritage Office					Permits		
45-6-1232	Balls Head Unbelievable Cave	GDA	56	332839	6253390	Closed site	Valid	Art (Pigment or Engraved) : -	Shelter with Art	
	Contact	Recorders	Michael Guider,D Lautrec,Aboriginal Heritage Office					Permits		
45-6-1237	Yarra Bay;Captain Phillip Monument;	GDA	56	333294	6253330	Open site	Valid	Shell : -, Artefact : -	Midden	274,102147
	Contact	Recorders	Unknown Author,Mr.Phil Hunt,Aboriginal Heritage Office					Permits		
45-6-2096	Choked up cave /Gore ck reserve 1;	AGD	56	331780	6255060	Closed site	Valid	Shell : -, Artefact : -	Shelter with Midden	1809
	Contact	Recorders	Val Attenbrow,K Cutmore					Permits		
45-6-2167	Manhole;	AGD	56	331650	6254100	Open site	Valid	Artefact : -, Shell : -	Midden,Open Camp Site	1809
	Contact	Recorders	Val Attenbrow					Permits		
45-6-2168	RSYS midden;	AGD	56	335190	6253050	Open site	Valid	Artefact : -, Shell : -	Midden,Open Camp Site	
	Contact	Recorders	Michael Guider					Permits		
45-6-2180	Quarantine Cave;Waverton;	AGD	56	332850	6253335	Closed site	Valid	Shell : -, Artefact : -	Shelter with Midden	
	Contact	Recorders	Michael Guider,Mr.Phil Hunt,Aboriginal Heritage Office					Permits		
45-6-2181	Waverton Park Cave;	AGD	56	333130	6253820	Closed site	Valid	Shell : -, Artefact : -	Shelter with Midden	
	Contact	Recorders	Michael Guider,Mr.Phil Hunt,Aboriginal Heritage Office					Permits		
45-6-2186	WB1 Cave;	AGD	56	332640	6254160	Closed site	Valid	Shell : -, Artefact : -, Art (Pigment or Engraved) : -	Shelter with Art,Shelter with Midden	
	Contact	Recorders	Michael Guider					Permits		
45-6-2187	WB2 Cave;	AGD	56	332640	6254170	Closed site	Valid	Shell : -, Artefact : -	Shelter with Midden	
	Contact	Recorders	Michael Guider					Permits		
45-6-2188	WB3 Cave;	AGD	56	332640	6254180	Open site	Valid	Shell : -, Artefact : -	Midden	
	Contact	Recorders	Michael Guider					Permits		
45-6-2189	WB4 Cave;	AGD	56	332640	6254190	Closed site	Valid	Shell : -, Artefact : -	Shelter with Midden	
	Contact	Recorders	Michael Guider					Permits		
45-6-2190	WB5 Cave;	AGD	56	332660	6254380	Closed site	Valid	Shell : -, Artefact : -	Shelter with Midden	
	Contact	Recorders	Michael Guider					Permits		

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SiteID	SiteName	Datum	Zone	Easting	Northing	Context	Site Status	SiteFeatures	SiteTypes	Reports
45-6-2191	WB6 Cave;	AGD	56	332710	6254460	Closed site	Valid	Shell : -, Artefact : -	Shelter with Midden	
	Contact	Recorders	Michael Guider					Permits		
45-6-2192	Split Roof Cave;	AGD	56	332760	6254430	Closed site	Valid	Shell : -, Artefact : -	Shelter with Midden	
	Contact	Recorders	Michael Guider					Permits		
45-6-2193	Honeycomb Hole Cave;	AGD	56	332760	6254430	Closed site	Valid	Shell : -, Artefact : -	Shelter with Midden	
	Contact	Recorders	Michael Guider					Permits		
45-6-1350	Kings Cave Cremorne	GDA	56	335874	6255940	Closed site	Valid	Shell : -, Artefact : -, Art (Pigment or Engraved) : -	Shelter with Art,Shelter with Midden	
	Contact	Recorders	Val Attenbrow,Unknown Author,Aboriginal Heritage Office					Permits		
45-6-1369	Gore Cove;Wollstonecraft;	AGD	56	332768	6254203	Closed site	Valid	Shell : -, Artefact : -	Shelter with Midden	
	Contact	Recorders	ASRSYS					Permits		
45-6-0760	Neutral Bay;	GDA	56	335029	6254545	Open site	Valid	Art (Pigment or Engraved) : -	Rock Engraving	
	Contact	Recorders	Michael Guider,Aboriginal Heritage Office					Permits		
45-6-0925	Brightmore St Reserve Cremorne	GDA	56	335944	6255945	Closed site	Valid	Art (Pigment or Engraved) : -	Shelter with Art	
	Contact	Recorders	Michael Guider,Aboriginal Heritage Office					Permits		
45-6-1509	Berrys Island;Wollstonecraft;	AGD	56	332360	6253980	Open site	Valid	Shell : -, Artefact : -	Midden	
	Contact	Recorders	D Morrissey					Permits		
45-6-1510	Berry Island 9;Wollstonecraft;	AGD	56	332310	6253950	Closed site	Valid	Artefact : -	Shelter with Deposit	
	Contact	Recorders	Michael Guider,L Bostock					Permits		
45-6-1511	Berry Island 5;	AGD	56	332300	6253900	Open site	Valid	Shell : -, Artefact : -	Midden	
	Contact	Recorders	Tranby College					Permits		
45-6-1512	Berry Island 3	AGD	56	332220	6254000	Open site	Valid	Burial : -, Shell : -, Artefact : -	Burial/s,Midden	97786
	Contact	Recorders	Michael Guider,Tranby College					Permits		
45-6-1513	Berry Island 2;	AGD	56	332250	6254050	Open site	Valid	Shell : -, Artefact : -	Midden	
	Contact	Recorders	B Longbottom					Permits		
45-6-1037	Crows Nest;Greenwich Warf Cave;	AGD	56	331570	6253720	Closed site	Valid	Shell : -, Artefact : -, Art (Pigment or Engraved) : -	Shelter with Art,Shelter with Midden	1809
	Contact	Recorders	ASRSYS					Permits		
45-6-1038	Crows Nest;Greenwich Path;	AGD	56	331610	6254050	Open site	Valid	Shell : -, Artefact : -	Midden	1809

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	Contact	Recorders	ASRSYS					Permits		
45-6-1039	Crows Nest;	AGD	56	331852	6254276	Open site	Valid	Shell : -, Artefact : -	Midden	
	Contact	Recorders	ASRSYS					Permits		
45-6-1041	Crows Nest;	AGD	56	332034	6254371	Open site	Valid	Shell : -, Artefact : -	Midden	
	Contact	Recorders	Mr.R Taplin					Permits		
45-6-1042	Bay Street Park;Crows Nest;	AGD	56	331790	6254580	Open site	Valid	Shell : -, Artefact : -	Midden	1809
	Contact	Recorders	Val Attenbrow					Permits		
45-6-1043	Crows Nest;Wharf Garden Cave; Bay St Wharf Cave;	AGD	56	331740	6254580	Closed site	Valid	Shell : -, Artefact : -, Burial : -	Burial/s,Shelter with Midden	1809
	Contact	Recorders	Val Attenbrow,Michael Guider					Permits		
45-6-0293	Northbridge Golf Links 2;Northbridge;	GDA	56	335285	6256631	Open site	Valid	Shell : -, Artefact : -	Midden	597
	Contact	Recorders	Bobbie Oakley					Permits		
45-6-0885	Mosman; Folly Point;	AGD	56	335710	6256350	Open site	Valid	Shell : -, Artefact : -	Midden	1809
	Contact	Recorders	Val Attenbrow,Michael Guider					Permits	2926	
45-6-0891	Balls Head Reserve 5 Hands Cave	GDA	56	333139	6253455	Closed site	Valid	Shell : -, Artefact : -, Art (Pigment or Engraved) : -	Shelter with Art,Shelter with Midden	
	Contact	Recorders	Michael Guider,D Lautrec,Mr.Phil Hunt,Aboriginal Heritage Office					Permits		
45-6-1957	Goat Island Cave;	AGD	56	333010	6252710	Closed site	Valid	Shell : -, Artefact : -	Shelter with Midden	
	Contact	Recorders	Michael Guider					Permits		
45-6-0906	Waverton Park	AGD	56	333320	6253813	Closed site	Valid	Art (Pigment or Engraved) : -	Shelter with Art	
	Contact	Recorders	Michael Guider					Permits		
45-6-0907	Primrose Park_2;Cammeray;	AGD	56	335580	6256160	Closed site	Valid	Shell : -, Artefact : -, Art (Pigment or Engraved) : -	Shelter with Art,Shelter with Midden	1809
	Contact	Recorders	Val Attenbrow,Michael Guider					Permits		
45-6-0825	Myrtle Street	AGD	56	334036	6254867	Open site	Not a Site	Art (Pigment or Engraved) : -	Not an Aboriginal Site	
	Contact	Recorders	Australian Museum					Permits		
45-6-0026	Whale Rock (Balls Head)	GDA	56	332969	6253770	Open site	Valid	Art (Pigment or Engraved) : -	Rock Engraving	
	Contact	Recorders	D Earle,Michael Guider,D Lautrec,Mr.Phil Hunt,Aboriginal Heritage Office					Permits	2885	
45-6-0027	Balls Head Berry Island	GDA	56	333214	6253390	Closed site	Valid	Art (Pigment or Engraved) : -, Shell : -, Artefact : -, Burial : -	Burial/s,Shelter with Art,Shelter with Midden	

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Your Ref/PO Number : T2020_108
Client Service ID : 529385

SiteID	SiteName	Datum	Zone	Easting	Northing	Context	Site Status	SiteFeatures	SiteTypes	Reports
	Contact	Recorders	Michael Guider,Mr.Phil Hunt,Aboriginal Heritage Office					Permits		
45-6-0908	Primrose Park_1;Cammeray;	AGD	56	335590	6256170	Closed site	Valid	Shell : -, Artefact : -, Art (Pigment or Engraved) : -	Shelter with Art,Shelter with Midden	1809
	Contact	Recorders	Michael Guider					Permits	860	
45-6-2762	Coal Loader 1 (Balls Head)	AGD	56	332820	6253580	Closed site	Valid	Shell : -, Non-Human Bone and Organic Material : -		
	Contact T Russell	Recorders	Mary Dallas Consulting Archaeologists (MDCA),Mr.Phil Hunt,Aboriginal Heritage O					Permits		
45-6-2763	Caltex 2	AGD	56	332840	6253690	Closed site	Valid	Shell : -		
	Contact T Russell	Recorders	Mary Dallas Consulting Archaeologists (MDCA)					Permits		
45-6-2764	Caltex 1	AGD	56	332845	6253710	Closed site	Valid	Shell : -		
	Contact T Russell	Recorders	Mary Dallas Consulting Archaeologists (MDCA),Mr.Phil Hunt,Aboriginal Heritage O					Permits		
45-6-0269	Shell Park;Sanded Fire Cave;Greenwich;	AGD	56	331680	6254120	Closed site	Valid	Art (Pigment or Engraved) : -, Shell : -, Artefact : -	Shelter with Art,Shelter with Midden	1809
	Contact	Recorders	Michael Guider					Permits		
45-6-2539	Suspension Bridge Rockshelter (west)	GDA	56	334524	6256620	Closed site	Valid	Shell : -, Artefact : -	Shelter with Midden	
	Contact	Recorders	Mr.Phil Hunt,M Bennett,Aboriginal Heritage Office					Permits		
45-6-2152	Gore Creek Reserve 6 Gore Creek Reserve	AGD	56	331580	6255040	Closed site	Valid	Shell : -, Artefact : -	Shelter with Midden	1809,1911
	Contact	Recorders	Val Attenbrow					Permits		
45-6-2938	Naremburn Park	GDA	56	332864	6256615	Open site	Valid	Artefact : -		
	Contact	Recorders	Michael Guider					Permits		
45-6-3076	Adderstone Shelter 2 NSC-082	GDA	56	334885	6253945	Open site	Valid	Shell : 1		
	Contact	Recorders	Aboriginal Heritage Office					Permits		
45-6-3077	Adderstone Shelter 1 NSC-081	GDA	56	334895	6253940	Open site	Valid	Shell : 1		
	Contact	Recorders	Aboriginal Heritage Office					Permits		
45-6-3103	BADANGI RESERVE SHELTER 1	GDA	56	332620	6254120	Open site	Valid	Shell : 1		
	Contact	Recorders	Aboriginal Heritage Office,Ms.Viki Gordon					Permits		
45-6-3046	Mortlock Reserve 1	GDA	56	335814	6256540	Open site	Valid	Shell : -		
	Contact	Recorders	Aboriginal Heritage Office					Permits		
45-6-3047	Badangi Reserve Shelter NSC 077	GDA	56	332724	6254310	Closed site	Valid	Shell : -		
	Contact	Recorders	Aboriginal Heritage Office					Permits		
45-6-3049	Greenwich Path 3 LCC092	GDA	56	331579	6254015	Open site	Valid	Shell : -		
	Contact	Recorders	Aboriginal Heritage Office					Permits		

Report generated by AHIMS Web Service on 21/08/2020 for Sejal Pandya for the following area at Datum :GDA, Zone : 56, Eastings : 331573 - 336215, Northings : 6252537 - 6256672 with a Buffer of 0 meters. Additional Info : Research. Number of Aboriginal sites and Aboriginal objects found is 115

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Office of Environment & Heritage

AHIMS Web Services (AWS)

Extensive search - Site list report

Your Ref/PO Number : T2020_108
Client Service ID : 529385

SiteID	SiteName	Datum	Zone	Easting	Northing	Context	Site Status	SiteFeatures	SiteTypes	Reports
45-6-3678	Darling Walk Midden	GDA	56	333600	6255000	Open site	Valid	Aboriginal Resource and Gathering : 1, Shell : 1		
	Contact	Recorders	Comber Consultants Pty Limited,Ms.Jillian Comber					Permits		
45-6-3580	Cowdroy Midden 1 (NSC-085)	GDA	56	335291	6256487	Open site	Valid	Shell : 100		
	Contact	Recorders	Mr.Phil Hunt					Permits		
45-6-3589	Gore Creek 12 Hand Stencil - LLC115	GDA	56	331750	6255140	Closed site	Valid	Art (Pigment or Engraved) : 1		
	Contact	Recorders	Mr.Phil Hunt					Permits		
45-6-0811	Goat Island;Parramatta River;	AGD	56	333150	6252650	Open site	Valid	Artefact : -, Shell : -	Midden,Open Camp Site	
	Contact	Recorders	Elizabeth Rich					Permits		
45-6-3126	Primrose Park 3	GDA	56	335710	6256380	Open site	Valid	Shell : -		
	Contact	Recorders	Mr.Phil Hunt					Permits		
45-6-3341	Greenwich PS KL01	GDA	56	331832	6255700	Closed site	Valid	Art (Pigment or Engraved) : -		
	Contact	Recorders	Ms.Vanessa Hardy,Cultural Heritage Connections Pty Ltd					Permits		

Report generated by AHIMS Web Service on 21/08/2020 for Sejal Pandya for the following area at Datum :GDA, Zone : 56, Eastings : 331573 - 336215, Northings : 6252537 - 6256672 with a Buffer of 0 meters. Additional Info : Research. Number of Aboriginal sites and Aboriginal objects found is 115

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APPENDIX B: GLOSSARY OF TERMS USED IN ABORIGINAL CULTURAL HERITAGE ASSESSMENTS AND ARCHAEOLOGICAL REPORTS

This glossary is an extract from

GLOSSARY OF TERMS USED IN "LITHIC" ANALYSIS

Author: Peter Hiscock, Dept. Archaeology and Anthropology

Feedback: peter.hiscock@anu.edu.au.

Date Last Modified: 28-August-97

URL: http://artalpha.anu.edu.au/web/arc/resources/stonegloss/gloss.htm

And

SYDNEY'S ABORIGINAL PAST

Author: Val Attenbrow

Year Published: 2002

Publisher: University New South Wales Press

Place of Publication: Sydney, NSW, Australia.

ABORIGINAL SITE: Place at which Aboriginal people have undertaken certain activities and special events.

ARCHAEOLOGICAL DEPOSIT: Soil or sediment which contains cultural materials associated with past human activities.

ARCHAEOLOGICAL SITE: A location in which evidence of past human activities exists or has previously existed.

ANGLE OF APPLIED FORCE: The angle at which the force of flaking is applied to a rock.

APPLIED FORCE: The force exerted upon a core or retouched flake.

ARTEFACT: Any object which is physically modified by humans.

ATTRIBUTE: A physical characteristic of an artefact.

BIFACIAL: An artefact which shows evidence of working on two faces.

BULB OF FORCE: The bulb of force is a convex protuberance located at the proximal end of the ventral surface of a flake, immediately below the ring crack. Also called the Positive Bulb of Force or simply 'the bulb'.

BULBAR SCAR: The negative scar that results from the bulb of force.

BURIAL SITES: Locations where people were buried and where skeletal remains have been found.

CAMPSITE: Locations where people slept overnight as well as a place where other domestic activities were undertaken.

CONCHOIDAL FRACTURE: A type of fracture which gives smoothly curved surfaces resembling the form of a bivalve shell.

CONE: Shorthand term for Hertzian cone crack, a cone shaped fracture plane extending from a circular ringcrack as a result of loading from a blunt indenter

CORE: A piece of flaked stone which has one or more negative flake scars but no positive flake scars.

CULTURAL MATERIALS: The products of human behaviour, such as stone artefacts or food debris.

DEBITAGE: Cores and unretouched flakes.

DEBRIS: 1. Any refuse discarded from a cultural system. 2. Debitage.

DISCARD: The movement of an object from its systemic context to an archaeological context.

EDGE: The junction of two surfaces of a body.

EDGE DAMAGE: The removal of small flakes from the edge of an artefact.

ERAILLURE FLAKE: A flake formed between the bulb of force and the bulbar scar. Sometimes the eraillure flake adheres to the core in the bulbar scar. The eraillure flake leaves no scar on the core, but always leaves a scar on the ventral surface of the flake. The eraillure flake is convex/concave (like a meniscus lens), has no distinct features on the "dorsal face", but may contain compression rings on the bulbar face.

FEATHER TERMINATION: A termination of the fracture plane that occurs gradually (ie. there are no sharp bends in the plane), producing a thin, low angled distal margin.

FLAKE: 1. Any piece of stone fractured from a larger mass by the application of an external force. 2. The piece of stone struck off a core. It has a series of characteristics showing that it has been struck off. The most indicative of these features are ringcracks, showing where the hammer hit the core. Also the ventral surface may be deformed in characteristic fashion, for example having a bulb or eraillure.

FLAKING: The process of fracturing stone by the application of an external force.

FORCE: The quantity of energy exerted by a moving body; power exerted; energy exerted to move another body from a state of inertia.

FRACTURE: Irregular surface produced by breaking a mineral across rather than along cleavage planes.

GRINDING STONE: An implement with a smooth, shallow concave surface which was created through use, either to abrade the surface of another artefact or to process food.

HAMMER: A fabricator used to apply a dynamic load.

HINGE TERMINATION: A fracture plane that turns sharply toward the free surface of the core immediately prior to the termination of the fracture. The bend of the ventral surface is rounded and should not be confused with a step termination.

HOLOCENE: A geological time-scale period lasting from 10,000 years ago to the present.

IN-SITU: An undisturbed archaeological feature or deposit.

KNAPPER: A human who creates stone artefacts by flaking.

KNAPPING: The process of striking rocks and causing them to fracture.

LENGTH: The distance from the platform to the termination of a flake or flake scar. Also Percussion Length.

MIDDEN: Cultural deposit in which material, such as shell, are built up in an archaeological site.

NEGATIVE BULB OF FORCE: The concave surface left after a flake has been removed.

OUTREPASSE: 1. A fracture termination where the fracture path curves markedly away from the core face and continues directly into the core, removing the base of the core and giving the flake a J shape in longitudinal cross section. 2. Any flake containing an outrepasse termination.

PLATFORM: Any surface to which a fabricator is applied when knapping.

PLATFORM ANGLE: 1. The angle between the platform and core face on a core. 2. The angle between the platform and dorsal surface on a flake. 3. The angle between the platform and flaked surface on a retouched flake.

PLEISTOCENE: A geological time-scale lasting from 2 million years ago to 10,000 years ago.

POINT OF FORCE APPLICATION: The area of the platform in contact with the indenter during knapping.

QUARRY: A location where stone or ochre has been removed by humans from a source of rock.

PRESSURE FLAKING: The process of detaching flakes by a pressing force. Also Static Loading.

REDUCTION: Process of breaking down stone by either flaking or grinding.

RETOUCHED FLAKE: A flake that has subsequently been re-flaked.

RETOUCHING: The act of knapping a flake into a retouched flake.

RING CRACK: A circular pattern of micro-fissures penetrating into the artefact around the Point of Force Application and initiating the fracture. It appears on the ventral surface usually as a semi-circular protuberance on the edge of the platform.

ROCK SHELTER: A sheltered area within a cliff-line, outcrop or boulder which has formed naturally through weathering or other geological process.

SCAR: The feature left on an artefact by the removal of a flake. Includes negative bulb, negative ringcrack and negative termination.

SCARRED TREE: Trees in which have scars formed by the removal of bark or wood in order to make canoes, shields or baskets.

SILICEOUS: Having a high silica content.

STEP TERMINATION: A fracture plane that turns sharply towards the free surface of the core immediately prior to the termination of the fracture. The bend of the ventral surface is sharp, often a right angle.

STRATIGRAPHY: The layers of sediment and cultural material that are able to be distinguished in a deposit.

TERMINATION: The point at which the fracture plain reaches the surface of a core and detaches a flake.

USE: The performance of a stone artefact in an activity involving non-stone objects.

USE-WEAR: Damage to the edges or working surfaces of tools sustained in use.

VENTRAL SURFACE: The surface of a flake created when it is removed and identified mainly by the presence of a ring crack.