

Aboriginal Heritage Study of the Mosman Local Government Area

NSW National Parks and Wildlife Service, Sydney Harbour
Federation Trust, Mosman Council and Metropolitan Local
Aboriginal Land Council

Final Report Volume 4: Public Document

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Endorsement

The Mosman Aboriginal Heritage Study report (Volumes 1-4) has been reviewed and approved by each of the four contributing organisations, NSW National Parks and Wildlife Service, Mosman Council, Sydney Harbour Federation Trust and Metropolitan Local Aboriginal Land Council.

Endorsement

This project has been a cooperative venture combining the resources of the Department of Environment and Conservation (DEC), the Metropolitan Local Aboriginal Land Council (MLALC), the Sydney Harbour Federation Trust (SHFT) and Mosman Council to undertake an Aboriginal heritage Study of the whole Mosman Local Government Area.

The DEC, as the agency responsible for Aboriginal cultural heritage in NSW, commissioned this study in conjunction with the above stakeholders. The aim has been to provide a greater understanding of Aboriginal sites and occupation of the Mosman area as part of a more coordinated approach to the planning and management of Aboriginal heritage in the Sydney Harbour area.

The extensive coastline of Mosman with its varying habitats and existence of relatively undeveloped areas of National Park and former defence lands, have provided a diverse range of sites. In total 92 sites were reconfirmed and 15 new sites identified. The analysis of these findings has provided exciting new information that will enable more informed interpretative and educative material to be produced in conjunction with MLALC. This will form a basis for recommendations for conservation and management measures for the whole LGA.

The four contributing agencies have combined to help produce this study, the first of its kind incorporating local, state and federal levels of government. It has set a benchmark for the management and conservation of Aboriginal heritage and provided a sound basis and framework for similar projects to be undertaken in Council areas around Sydney Harbour. These will add to our existing knowledge and help to refine and extend the model of occupation and behaviour of Indigenous harbourside people developed by this study.



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Metropolitan LALC representatives that contributed greatly throughout the field surveys:

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Adam Madden
Amona Murry

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It should also be acknowledged that much of the information presented in this report regarding historical accounts of Aboriginal people in and around Mosman has been drawn from the extensive research of Dr Val Attenbrow, Senior Research Scientist within the Division of Anthropology at the Australian Museum. This information (particularly included in Section 6 of this report) reflects her ongoing research into the Aboriginal history and archaeology of the Sydney region, recently published in Sydney's Aboriginal Past: Investigating the archaeological and historical records (Attenbrow 2002). This information has been used with Dr Attenbrow's permission.

Acronyms and Abbreviations

List of Acronyms and Abbreviations used throughout the Mosman Aboriginal Heritage Study report

TERM	DEFINITION
AHC	Australian Heritage Commission
AHIMS	Aboriginal Heritage Information Management System
AHS	Aboriginal Heritage Study
AM	Australian Museum
AMBS	Australian Museum Business Services
AMG	Australian Map Grid
BP	Before Present
CA	Correspondence Analysis
DEC	Department of Environment and Conservation
DCA	Detrend Correspondence Analysis
DLA	Data Licence Agreement
GPS	Global Positioning System
LGA	Local Government Area
MAHS	Mosman Aboriginal Heritage Study
MC	Mosman Council
MLALC	Metropolitan Local Aboriginal Land Council
NPWS	National Parks and Wildlife Service
PAD	Potential Archaeological Deposit
SHFT	Sydney Harbour Federation Trust

Executive Summary

A study of the Aboriginal heritage of the Mosman Local Government Area (LGA) was requested by the NSW National Parks and Wildlife Service (NPWS), Metropolitan Local Aboriginal Land Council (MLALC), Mosman Council and Sydney Harbour Federation Trust (SHFT). The Aboriginal Heritage Study (AHS) was a cooperative, jointly funded initiative, aimed at providing each of the organisations with a baseline understanding of the Aboriginal heritage of the Mosman area and their management responsibilities. Australian Museum Business Services (AMBS) was commissioned to undertake the study of the Mosman LGA.

The Mosman AHS is part of the broader government initiative of the Sydney Harbour Dreaming Project. The report is the first of its kind and provides a foundation for future heritage management strategies. It is also envisioned that future heritage management studies will emulate the successful cooperative nature of this study.

This study was designed to bring together archaeological values (identified through background research and survey) and cultural values (identified through consultation with the Aboriginal community and oral history) in a holistic assessment of Mosman's Aboriginal landscape. The archaeological assessment proved to be very informative, and the oral histories, despite a low level of broader Aboriginal community participation, provided connections with several places around Mosman.

Mosman LGA is exceptional in its Aboriginal archaeological heritage. Evidence of Aboriginal occupation can be found in all landforms across the municipality, especially in areas where little development has taken place. The rock art found around Mosman exhibits an impressive range of engraved and painted figures including hand stencils, whales, fish, macropods (kangaroos) and ancestral beings. Shell middens are virtually everywhere around Mosman's foreshore, offering us glimpses into the past. There are very few areas in metropolitan Sydney where it is possible to view such a magnificent concentration of Aboriginal heritage.

Volume 1 of this report provided a baseline assessment of the archaeological sites. NPWS records list 92 sites in the Mosman LGA. The current AHS conducted the most comprehensive survey to date of the foreshore, public spaces and government lands in Mosman. The survey found a further 15 sites. Volume 2 contains a detailed recording for every site in Mosman and Volume 3 contains maps showing site locations. Volume 4 is the public access version of the report. Volume 4 contains all of the information found in Volume 1, excluding only the site details required to remain confidential.

Volume 1 synthesises previous historical and archaeological assessments. The archaeological data was put into a data matrix suitable for detailed statistical analysis. The matrix was designed so that future heritage studies of adjoining LGAs could incorporate Mosman's data with their own, for a greater understanding of the archaeological landscape of Port Jackson.

The analysis identified several trends related to the distribution of archaeological sites. These trends suggest that various places around Mosman were associated with different activities including major campsites and a range of special activity camps (e.g. bachelor, initiation, craft, fishing, art). Some of these places may have had a ceremonial purpose.

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1 Introduction

A study of the Aboriginal heritage of the Mosman Local Government Area (LGA) was requested by the NSW National Parks and Wildlife Service (NPWS)¹, Metropolitan Local Aboriginal Land Council (MLALC), Mosman Council and Sydney Harbour Federation Trust (SHFT). The Aboriginal Heritage Study (AHS) was a cooperative, jointly funded initiative, aimed at providing each of the individual organisations with a baseline understanding of the Aboriginal heritage of the Mosman area and their management responsibilities. Australian Museum Business Services (AMBS) was commissioned to undertake the study of the Mosman LGA.

The Mosman AHS is part of the broader government initiative of the Sydney Harbour Dreaming Project. The report is the first of its kind and provides a foundation for future heritage management strategies. It is also envisioned that future heritage management studies will emulate the successful cooperative nature of this study.

Aboriginal sites have been recorded in the Mosman LGA since 1847 giving the area one of the longest histories of recorded archaeological sites in Sydney. Previous heritage assessments of the Mosman LGA have recorded over 90 sites. Recorded Aboriginal site types include rock engravings, rock shelters with art, rock shelters with archaeological deposit and shell middens.

The Sydney region has one of the richest suites of archaeological sites of any major world city. These sites contain a wealth of different artefacts and materials which provide the invaluable and essential data that are part of any research into the life and customs of the original inhabitants of the Sydney region (Attenbrow 2002:8).

This study was designed to develop the understanding of the Aboriginal heritage of Mosman by identifying its present cultural values and integrating this with the archaeological information. In this respect, it was also envisaged that the study will be able to be used as a model for similar studies of other local government areas in Sydney, in order to develop a broader picture of the Aboriginal use of the whole of Sydney Harbour. It is therefore a unique and pioneering project, involving all three levels of government (Local, State and Federal).

It should also be noted that NPWS is responsible for the protection of all Aboriginal objects (sites) and declared Aboriginal Places throughout NSW under the *National Parks and Wildlife Act 1974*. This project was designed to instigate better management of Aboriginal heritage and values of the Mosman LGA. However, the report on the project provides a high level of detail regarding these sites and values. In order to ensure that the Aboriginal sites and values identified within the Mosman LGA are not compromised, the specific site locations and details provided in Volumes 1, 2 and 3 of the AHS report are considered confidential. Therefore, this document (Volume 4) was produced, excluding confidential information, which is suitable for the public domain.

¹ The NSW National Parks and Wildlife Service (NPWS) has been integrated into the recently established Department of Environment and Conservation (DEC). All references to NPWS throughout this report (Volumes 1-4) should now be read as DEC.

2 Study Aims

The broad aim of the Aboriginal Heritage Study was to provide a greater understanding of the Aboriginal heritage of the Mosman area, including both social/cultural values and physical evidence of past occupation.

In order to meet this aim, the objectives of the study were to:

- establish and describe an appropriate project methodology;
- evaluate the known archaeological sites within the Mosman LGA;
- ground truth these sites;
- survey 'gap' areas and record any previously unrecorded Aboriginal sites;
- talk with Aboriginal people about the sites, places, values and Aboriginal uses of the Mosman LGA;
- provide an understanding of the Aboriginal heritage of the study area including:
 - archaeological values and the extent of surviving Aboriginal heritage, objects and places;
 - contemporary Aboriginal social and community values; and
 - historical values.
- consider the findings in relation to the broader Sydney region;
- make recommendations about site management (both for individual sites and broader areas within the LGA); and
- provide a plan for the effective management of Aboriginal heritage, including the environmental and social context of cultural values as well as the archaeological sites and heritage items.

Through consultation with Aboriginal people about the Mosman area, the study aimed to:

- incorporate the views and values of the contemporary Aboriginal community;
- identify the Aboriginal communities requirements for Aboriginal involvement and participation in the management of Aboriginal heritage in the Mosman LGA;
- provide information to the Aboriginal community about heritage values and places in the study area for their own purposes; and
- provide information and recommendations for the integration of Aboriginal heritage conservation and presentation into the management of the study area and an understanding of how the Aboriginal community wishes to present the significance of Aboriginal heritage and culture of the LGA.

Each of the four agencies contributing to the project also had specific aims, which were to be addressed in the Aboriginal Heritage Study.

NPWS required the following information:

- the exact location of sites to assist in the enforcement of legislation and to address conservation and site protection issues;
- an assessment of site condition and recommendations for management (including both short and long term protection);
- the collection of a comprehensive oral history to provide information and a greater understanding of the history of Aboriginal occupation and use of the Mosman area as part of the broader Sydney Harbour;

- a description of the social history of Aboriginal use and occupation and the identification of Aboriginal landscapes and places within the Mosman area, within the broader Sydney Harbour; and
- information and recommendations on how to address public interest on the broader scale (i.e. which sites, if any, are appropriate for public interpretation; how the relevant agencies can cooperate to allow direct public access – with appropriate interpretation and management).

The requirements of Mosman Council were to:

- ground truth the data they have obtained from the NPWS AHIMS (i.e. data currently held by Mosman Council provided under licence from NPWS, however, note that AMBS provided an updated AHIMS search as part of this project);
- accurately map locations of Aboriginal sites;
- ensure that no sites are inadvertently destroyed through Council activities or Council approved developments;
- survey of other areas within Mosman LGA to identify any previously un-recorded sites and to identify areas of archaeological potential or places of Aboriginal heritage value;
- identify conservation and protection works (Council understands this is to be undertaken in conjunction with NPWS and MLALC) and also management priorities for sites within Council areas; and
- provide information on the history of Aboriginal occupation in the Mosman area for the purposes of generating public appreciation of Aboriginal culture in Mosman and increasing awareness and understanding through interpretation opportunities, where this is considered appropriate by the local Aboriginal community.

The Sydney Harbour Federation Trust, as a federal agency established to effectively manage a number of Commonwealth lands around Sydney Harbour, required the project to:

- provide information on the location of Aboriginal sites, areas of archaeological potential and areas of Aboriginal heritage value and accurately map these to ensure that all sites and areas are considered and adequately addressed in any redevelopment options for Trust lands and to ensure that no sites or areas are inadvertently damaged or destroyed through redevelopment activities;
- provide advice on possible archaeological investigation of suitable sites;
- achieve a “whole of Harbour” perspective in order to integrate all of the Trust’s management areas within Sydney Harbour;
- obtain information on the history of Aboriginal occupation for the purposes of generating public appreciation of Aboriginal culture on Trust estate and increasing understanding through interpretation opportunities;
- identify conservation works required for the ongoing preservation of sites; and
- obtain recommendations about how consultation with the Aboriginal community can be undertaken for the development of Plans of Management and their implementation.

The Metropolitan LALC requirements for the project included:

- the desire to have an “active” involvement in the Aboriginal Heritage Study;
- maintain an advisory role over any site conservation works;
- request that Council and NPWS provide training and employment opportunities for Aboriginal people wherever possible, and preferably on a permanent basis; and
- that the Aboriginal Heritage Study should tie in and correlate social use history with physical evidence (sites) to provide a real understanding of the nature of past Aboriginal occupation of this part of Sydney Harbour.

3 Scope of Works

The Aboriginal Heritage Study was able to address most of the study aims and requirements of the four contributing agencies. These included:

- developing an appropriate methodology;
- evaluating the known archaeological sites within the Mosman LGA;
- ground truthing sites;
- surveying 'gap' areas and recording 'new' sites (i.e. previously unrecorded and/or not listed on the NPWS AHIMS register of Aboriginal sites);
- discussing the sites, places, values and uses of the Mosman area with Aboriginal people (mostly through the Metropolitan Local Aboriginal Land Council);
- carrying out a review of historical information regarding Aboriginal people in the Mosman area;
- considering the results in the broader context of Sydney Harbour;
- integrating environmental, historical and archaeological information;
- identifying management recommendations for specific sites as well as general areas; and
- incorporating views and recommendations of the local Aboriginal community.

Specifically, the study was able to:

- reconfirm the location of known Aboriginal sites and provide accurate location details (grid references with GPS and using aerial photography to accurately pinpoint site locations);
- provide updated information on site details;
- accurately map locations of all sites known to occur within the Mosman LGA;
- assess the condition of these sites (compared to previous site records);
- survey selected areas within Mosman LGA and identify previously unrecorded sites and areas of archaeological potential or places of Aboriginal heritage value;
- consult with the local Aboriginal community (mostly through the Metropolitan Local Aboriginal Land Council) on the Aboriginal sites, places and values of the Mosman area, within the broader context of Sydney Harbour;
- provide some historical information on the use and occupation of the Mosman area by Aboriginal people;
- make recommendations for management of sites and areas;
- identify sites appropriate for public interpretation and provide some ideas for management of those sites in terms of their potential use for visitor access;
- provide guidance to the agencies to ensure that they are aware of the sites on their lands and to ensure that sites are considered in terms of potential future development and that no sites are inadvertently destroyed through NPWS, Council or Trust activities or development works;
- identify conservation priorities;
- provide advice on possible options for further archaeological investigations, such as test excavation; and
- identify methods for continuing consultation with and involvement of the local Aboriginal community in Aboriginal heritage management within the Mosman LGA.

The study was unable to achieve the following project aims (as stated in the Project Brief):

- the collection of a comprehensive oral history to provide information and a greater understanding of the history of Aboriginal occupation and use of the Mosman area as part of the broader Sydney Harbour; and
- a detailed description of the social history of Aboriginal use and occupation and the identification of Aboriginal landscapes and places within the Mosman area, within the broader Sydney Harbour.

The reasons for this are discussed in Sections 4 and 6.

The Aboriginal Heritage Study comprised seven main components:

1. Consultation – with Aboriginal community and Steering Committee;
2. Data review – including AHIMS search under a Data Licence Agreement (DLA) issued by NPWS;
3. Fieldwork – including ground truthing known sites and survey in identified ‘gap’ areas;
4. Evaluation of site data and development of management recommendations;
5. Preparation of a site description volume (Volume 2) – with details on site name, location, type, condition, any specific management recommendations (this volume is aimed to be a working/reference document);
6. Preparation of a main report detailing the process and findings of the Aboriginal Heritage Study (Volume 1) and associated maps (contained in Volume 3); and
7. Production of a document suitable for public access (Volume 4).

4 Consultation

4.1 Aboriginal Community Consultation

The project team aimed to consult with relevant local Aboriginal community groups and provide them with the opportunity to inspect and comment on the Mosman LGA, be involved in the heritage assessment process, and identify the Aboriginal cultural heritage values within the LGA. Through this consultation process, it was envisaged Aboriginal heritage values and recommendations for management would be integrated into the Mosman Aboriginal Heritage Study.

The consultation with the Aboriginal Community was done in accordance with NPWS guidelines (Cultural Heritage Community Consultation Policy 2002).

The Mosman LGA falls within the boundaries of the Metropolitan Local Aboriginal Land Council (MLALC). Consultation with the MLALC was carried out throughout the project, including their participation in all fieldwork stages and in subsequent discussions. MLALC were also a contributing organisation to the study and as such, were represented on the Steering Committee and involved in decision making regarding the study.

The various draft reports have been provided to the Metropolitan LALC as part of the consultation process. Their comments have been integrated following their review and consideration of the report. Any documentation supplied by the Land Council should be included in Appendix A.

As the study aimed to involve and consult with any Aboriginal people who have a connection with the study area, a search of the Register of Native Title Claims, the Register of Indigenous Land Use Agreements, the National Native Title Register and the Applications Summary was undertaken through the National Native Title Tribunal. There were no entries in these Registers or Applications Summary for the Mosman LGA.

In addition, a flyer was prepared and sent out to 30 Aboriginal organisations. 200 copies of the flyer were delivered to NPWS Central Aboriginal Heritage Unit (CAHU) on 17th September 2003 to distribute to Aboriginal organisations and contacts as agreed at the Steering Committee Meeting (Meeting No. 6, held Tuesday 9th September 2003). A copy of the flyer is attached as Appendix B. NPWS CAHU has a record of all groups the flyer was sent to, however, this list was not provided to AMBS.

In an attempt to contact a broader audience, media releases were proposed to appear in the Koori Mail and Indigenous Times. Publication of the media article was confirmed by the NPWS Media Unit as published in the Indigenous Times, but did not appear in the Koori Mail. An article did appear in the Mosman Daily (June 2003) also seeking responses from people with information regarding the area. The article is contained in Appendix C.

As a result, Aboriginal community consultation throughout the project involved:

- working with the Metropolitan LALC;
- undertaking a Native Title Claimant search for any registered claimants or Indigenous Land Use Agreements in the Mosman LGA; there were no entries;
- contacting the NPWS CAHU Aboriginal Heritage Officer (initially Tanya Koeneman and subsequently, Glenda Roberts) and Aboriginal Sites Officer for the Sydney area (Brad Welsh);
- discussions with Susan Moylan-Coombs (an Aboriginal teacher at TAFE) about being involved in the oral history component of the project. She was born in Darwin but has lived on the northern beaches for 35 years (July 2003);
- attempts to contact the Guringai Tribal Link representatives, including Warren Whitfield, a descendant of Bungaree, and their Sydney representative, Ashley Rose;
- contacting Dave Watts, Aboriginal Heritage Manager for four local Councils on the north shore - North Sydney, Willoughby, Warringah and Lane Cove, as he has extensive knowledge of Aboriginal sites around the Sydney region;
- review of information and comments provided by the Sydney Harbour Federation Trust Aboriginal Issues Committee (SHFT AIC), especially representatives Norma Ingham and John Moriarty. Bob Clark, SHFT representative on the Steering Committee, provided updates to the SHFT AIC and also provided them with a copy of the draft report for their review and comment. Bob Clark reported what the AIC had to say about the project to the Steering Committee.

Apart from contacts that the Steering Committee and project team already had with the Aboriginal community, no other individuals or organisations came forward with stories during the Aboriginal heritage study. This does not mean that the stories and connections with the landscape of the Mosman LGA do not exist, just that they were not shared or obtained during the timeframe of this particular study. The information that has been gathered during this study has been documented and considered along with the archaeological information so as to provide a broader understanding of the Aboriginal landscape of the Mosman LGA.

4.2 Steering Committee Consultation

The Steering Committee, comprising members from each of the contributing organisations, guided the study throughout the project. This was achieved through organised steering committee meetings and general correspondence conducted via phone, fax and email.

Throughout the project, AMBS attended eight Steering Committee Meetings (Meetings 2-9)², listed in the table below. Some points of discussion from the Steering Committee Meetings include:

- options for production of information brochures or a booklet, interpretive signs or tours, following from the AHS, to be considered;
- press release to promote the cooperative nature of the study and hopefully obtain information from local residents and Aboriginal community;

² Meeting No. 1 was the initial meeting of the Steering Committee, to which AMBS was not invited to attend. Also note that a number of additional meetings of the Steering Committee were held following completion of the draft report, to further direct finalisation of the report and launch.

- opportunity for research, conservation and interpretation, such as at Middle Head;
- results of the key findings of the survey, including that new sites were recorded, and interesting artefacts and sites found;
- most sites had been re-located during the survey. Two known sites could not be accessed as they were on private property and access was not granted to the survey team. NPWS followed up with letters to the residents requesting access, which was gained to one property;
- conservation and management issues included graffiti and general accessibility to some sites;
- additional survey work in areas of interest and identified 'gap' areas would produce a more fully comprehensive report that would benefit all the stakeholders;
- site mapping to a very detailed level;
- Australian Museum rock art expert, Dr Paul Taçon, participated in the recording of a number of the significant rock art sites;
- NPWS to arrange the media release for the Koori Mail and Indigenous Times and also for an A4 flyer to be distributed to Aboriginal organisations in an attempt to get more Aboriginal people coming forward with stories or associations with the Mosman area;
- presentation and format of the final document, due to issues of Data Licence Agreement and confidentiality of information;
- protocols regarding use of and access to the information contained in the report;
- suggestion of an official launch;
- Steering Committee members comments on the various stages of the draft report;
- conservation of rock art sites as a priority; and
- that it is hoped that this report will be a benchmark and would stimulate other Councils to undertake similar studies.

4.3 Mosman Community Consultation

In an attempt to obtain stories or images of Aboriginal use of sites within the Mosman LGA from the general public, a media release was organised, as had been suggested by the project Steering Committee. An article was prepared jointly by the Steering Committee and AMBS, with particular input from the media units of NPWS and SHFT, as well as the Public Relations Division of the Australian Museum. Julie Bourne (NPWS) and Alison Nightingale (AMBS) met with a journalist from the Mosman Daily.

An article (by Jane Igoe) appeared in the Mosman Daily on Thursday 12th June 2003, page 4 (Appendix C). The article summarised the key aspects of the project and invited "long-time Mosman residents who remember Aboriginal sites or even better, who have photographs of them" (Teresa Gay, NPWS, quoted in the article) and anyone with information or recollections about the area to contact the study team at AMBS.

It was hoped that this article would create local interest in the project and that residents with information would come forward. It was also hoped that people with sites on their properties that may not have previously been recorded would come forward.

The article did generate some interest and three local residents contacted the study team. All information provided by local residents was followed up however, none of the contacts identified new sites. The article also meant that residents who saw the project team out and about on survey felt comfortable in coming up to talk about what we were doing. It was interesting talking to the local community about the Aboriginal heritage of their area.

A number of people likely to have specific information relating to Mosman were also targeted for consultation, including:

- Mosman Library's Local History librarian – regarding both their Local Studies Collection and Image Collection (which contains images from 1789 – 1966) and their ongoing oral history program;
- John Moriarty of the Sydney Harbour Federation Trust Aboriginal Issues Committee;
- Dave Watts, Aboriginal Heritage Manager for North Sydney, Willoughby, Warringah and Lane Cove Councils; and
- Gavin Souter, historian, author and expert on Mosman Local History.

These people were advised of the study and invited to participate in site visits, if they desired. Any information provided or comments made by these contacts were considered in the preparation of the AHS.

5 Mosman LGA

5.1 Study Area

The study area covers the entire Mosman LGA, the boundaries of which are shown in Figure 1. Mosman LGA is located on the northern side of Sydney Harbour and extends part way up Middle Harbour. It comprises a number of areas managed by a variety of Government agencies including:

- 850 hectares of parks, reserves and miscellaneous developed areas including commercial and private property under the jurisdiction of Mosman Council, NPWS, Sydney Harbour Federation Trust and HMAS Penguin;
- 97 hectares gazetted as Sydney Harbour National Park in 1979 and managed by NPWS;
- 47 hectares of recently vacated military lands managed by the Sydney Harbour Federation Trust;
- 28 hectares of Taronga Zoo, managed by the Zoological Parks Board; and
- 10 hectares of HMAS Penguin military area managed by the Royal Australian Navy.

Most of the study area has been developed and includes residential and retail areas and infrastructure which has effectively disturbed or obscured much of the evidence of past Aboriginal occupation of the area. However, a number of areas of relatively intact natural vegetation remain throughout the LGA. These include the urban recreational parks managed by Mosman Council, bushland areas of the Sydney Harbour National Park and Sydney Harbour Federation Trust, and lands contained within Taronga Zoo and HMAS Penguin. It is likely that the pre-contact Aboriginal landscape has survived in these areas, which may therefore retain remnant bushland and relatively intact evidence of past Aboriginal occupation of the area. Developed and remnant bushland areas within Mosman LGA are shown on Figure 2.

5.2 Environmental Background

Knowledge of the environmental resources and characteristics of a region is important to the investigation of past Aboriginal land and resource use. Information about sources of stone materials, as well as plant and animal foods, can indicate activities that may have been carried out in the area. Further, review of environmental processes and land use history enables an understanding of the survival and current distribution of archaeological materials. This section outlines the underlying geology, soil landscapes, terrain units, flora and fauna, and land use history of the Mosman LGA.

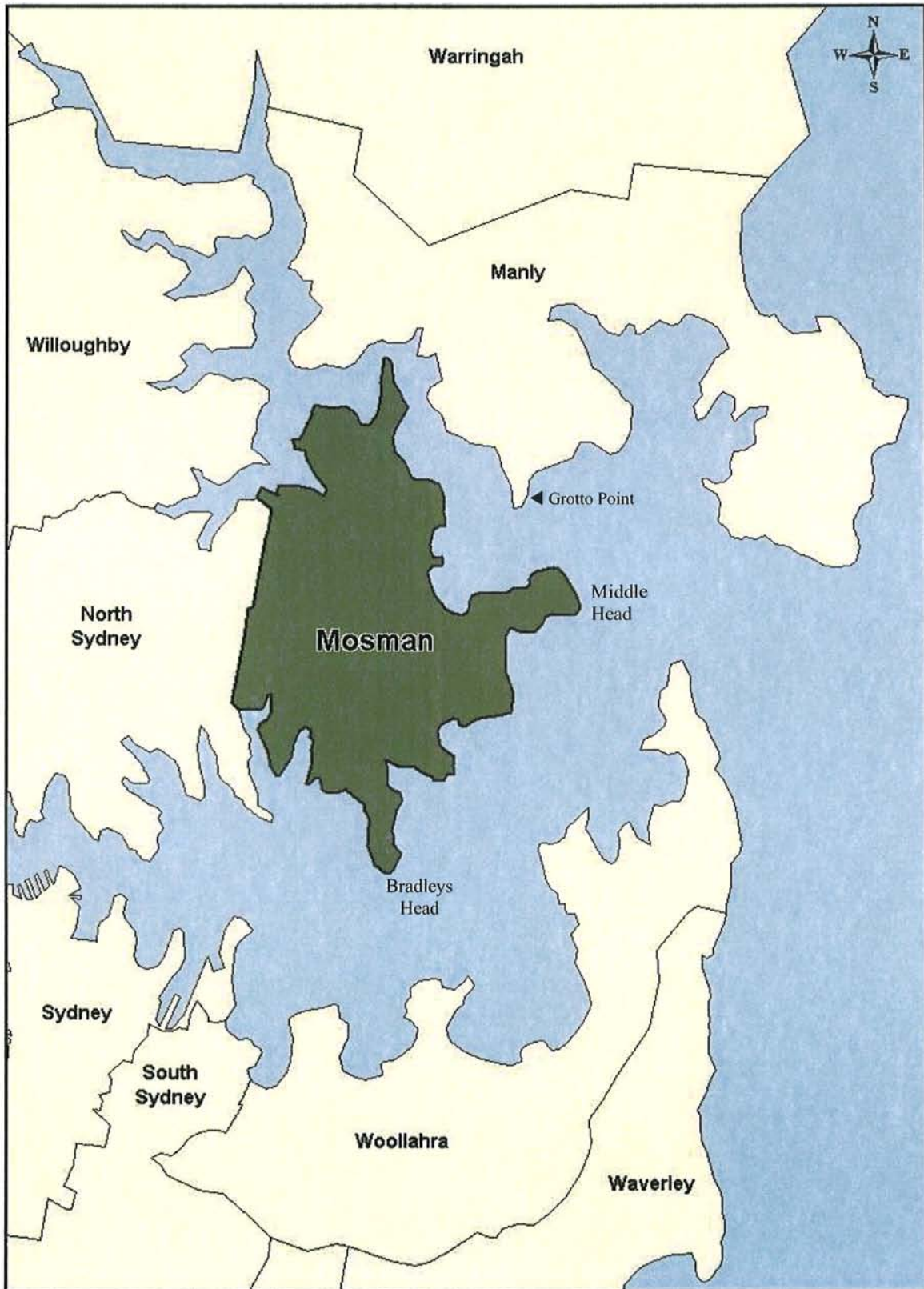


Figure 1: Mosman LGA

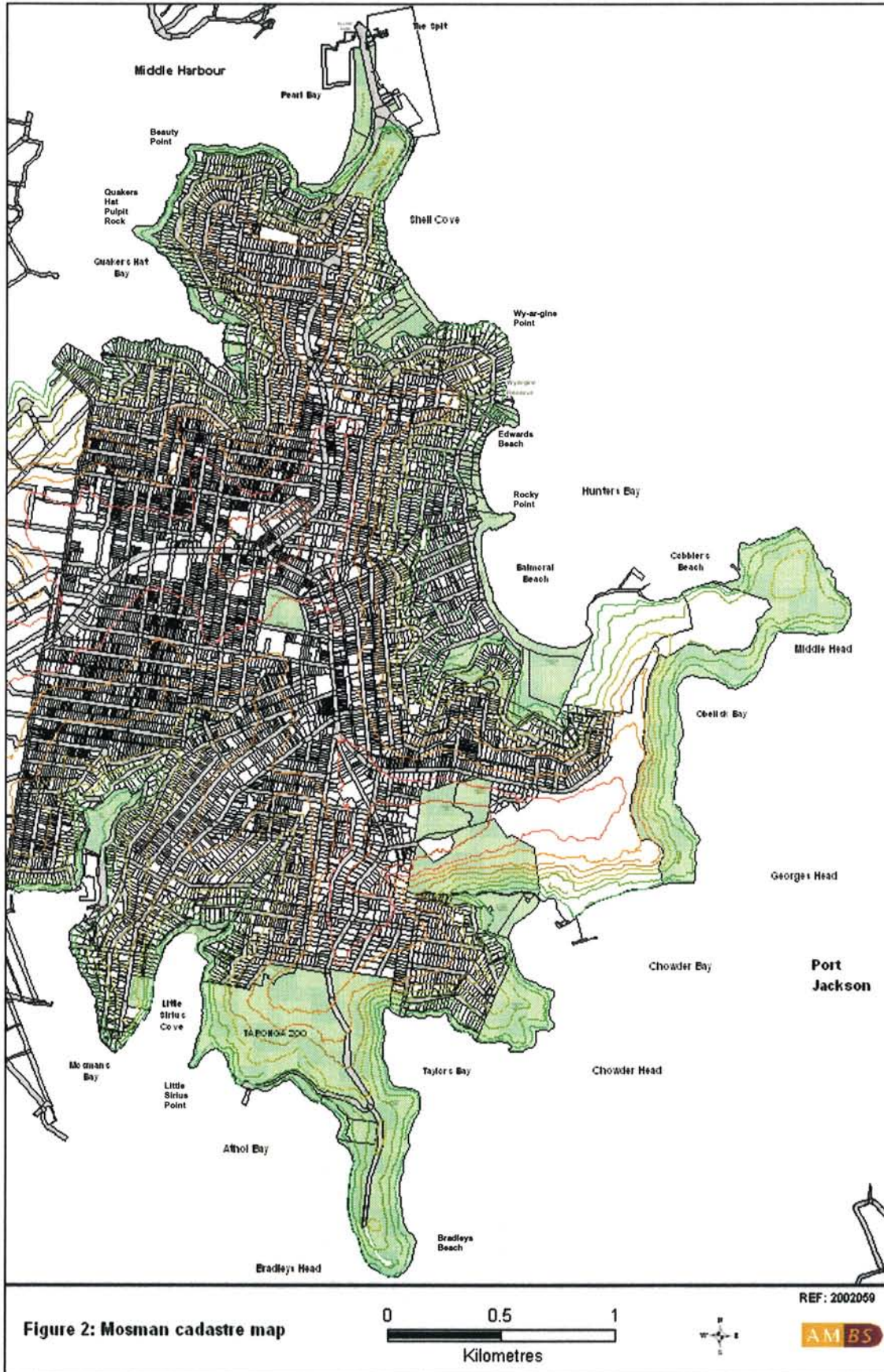


Figure 2: Mosman Cadastre Map

5.2.1 Geology

The three main geological formations of the Sydney region are Triassic Hawkesbury Sandstone, Wianamatta Group shales, and Narrabeen Group of sandstone and shales³ (Herbert 1983:116; Sydney and Penrith 1:100 000 geology mapsheets). The hinterland Cumberland Plain formed principally on Wianamatta Group shales, while the surrounding uplifted plateaux⁴ are mainly Hawkesbury Sandstone. Hawkesbury Sandstone dominates much of the Sydney region, particularly along the coast. On the northern side of Port Jackson, Wianamatta shales occur along the top of the major ridgelines between the Cumberland Plain and Middle Harbour. They also occur on the higher lands between Port Jackson and Botany Bay as far east as Paddington. Narrabeen Group rocks underlie the Hawkesbury Sandstone, but they are exposed only at the base of the coastal cliffines between North Head and Barrenjoey Head and the lower slopes around Pittwater and Broken Bay at the mouth of the Hawkesbury River. In Port Jackson they occur below present sea level, except for a small area at North Head. Small isolated areas of intrusive volcanic rocks occur across the region. More recent alluvial sediments cover the sandstones and shales in some areas.

The underlying geology of the area around Mosman and the north shore of the Harbour is Triassic Hawkesbury Sandstone (Chapman and Murphy 1989).

Minor quantities of Wianamatta Group shales occur along the plateau of Georges Head. These shales slightly enrich the otherwise nutrient poor sandy soils along the ridge. The result of the richer soils is that the shale areas are the more heavily wooded and various types of heath dominate the infertile sandy soils.

A minor volcanic dyke runs north south between Cobblers Beach and Obelisk Bay. Currently there is only limited surface evidence of the dyke and no direct evidence that Aboriginal people exploited the dyke. Minor quantities of volcanic material have been documented in the excavation of the shell midden in a shelter at Balmoral Beach, however, the source of it remains unknown (Attenbrow 1992b, Attenbrow pers. comm. 2004).

The geological formations of the Sydney region provided a range of resources that were essential in the daily lives of the local Aboriginal people. The sandstone bedrock of the plateaux provided overhangs and rockshelters that provided shelter and protected people from the weather. It was also a surface on which engraved and pigment images were illustrated and on which ground-edged implements, such as hatchet heads, were shaped and sharpened. Rock holes that form in the sandstone platforms also provided reservoirs of freshwater.

In addition to sandstone, the Sydney region has other geological formations and sediments that contain several rock types used to make stone tools. These stone types include silcrete, chert, tuff, quartz, quartzite and basalt. Access to these rock types by people in different parts of the region was governed by the distribution of the geological formations as well as the relationships between groups with rights to certain land (Attenbrow 2002:43).

³ Wianamatta Group is the most recent. Hawkesbury Sandstone and Narrabeen Group are the oldest formations.

⁴ The surrounding plateaux are Hornsby Plateau to the north and north-east, the Blue Mountains Plateau to the west, and the Woronora Plateau to the south and south-east.

The main locations where people gathered these stone materials are the gravel beds and palaeo-channels associated with the Nepean-Hawkesbury and antecedent river systems and their tributaries, the conglomerate pebbles found in Hawkesbury Sandstone and the volcanic formations (diatremes/volcanic necks or pipes/dykes). The western half of the Sydney region (the Cumberland Plain) appears to have a greater number and wider distribution of stone raw material sources as well as a greater range of stone types (which are suitable for making stone tools) than the coastal zone. Knowledge of source locations for materials suitable for stone tool manufacture, particularly if they are restricted in their distribution, is important in determining people's movements, trade and exchange patterns (Attenbrow 2002:43). This is important in terms of discussions about trade of axes, and the lack of grinding grooves in Mosman LGA and their general paucity in the broader coastal Sydney region.

Stone raw material resources in the coastal part of the Sydney region include silcrete and basalt, as well as the sandstone quartz conglomerates. However, the distribution and abundance of silcrete appears to be more limited here than on the Cumberland Plain (Attenbrow 2002:43; Byrnes 1982a, 1982b; Chesnut 1982). A potential silcrete source was identified in 1980 in Newtown. Silcrete blocks were found between two and five metres below the ground surface during excavation for the construction of a new telephone exchange. It is not known whether the silcrete would have been exposed originally on the land surface, therefore, it is uncertain as to whether this was in fact a source of raw material to Aboriginal people. However, small pieces of silcrete have been found in nearby Camperdown cemetery, which has been considered to suggest that it may have been accessed by Aboriginal people in the past (Corkill 1999:73). The extent of these silcrete bodies, and therefore how great a stone resource it potentially was, has also not been determined. More recently, a silcrete source has been identified at Homebush Bay (Corkill 1999).

Volcanic materials may have been obtainable from the small number of volcanic diatremes, dykes and other intrusions that occur across the Sydney region, including at Prospect, Dundas, Minchinbury, Erskine Park, Hornsby, Barrenjoey, Long Reef, North Head and Bondi (Herbert 1983:93-105). These sources are principally basalt, dolerite, picrite or breccia. Many have a tuffaceous matrix and occasionally there are pebbles of jasper, quartz and porphyry. The quality of the accessible rock is variable, most are deeply weathered and would not have been suitable for making ground-edged tools. Eroded volcanic materials are also available as pebbles and cobbles at some places, such as Barrenjoey Head as well as the Nepean - Hawkesbury River gravels. It has been suggested that collecting pebbles was the main way of obtaining volcanic materials, rather than quarrying bedrock outcrops, given the predominance of ground pebbles amongst the stone hatchet-heads in museum collections (Attenbrow 2002:44).

Dominant features of the Sydney region are its deep and extensive estuaries and the surrounding sandstone plateaux with their steep forested ridgesides, spectacular clifflines and outcrops. The Mosman LGA has some spectacular natural landscape features, particularly Middle Head, Bradleys Head and The Spit (which is the narrowest part to cross Middle Harbour).

The waterways that bound the peninsula include two primary aquatic zones: ocean influenced and estuarine. The estuarine zones are those west of The Spit and Bradleys Head and the ocean influenced zones are east of The Spit and Bradleys Head. In terms of the archaeological record, this means that the range of aquatic resources differs between the eastern and western portions of the peninsula. There are no significant inland waterways or water bodies within the LGA.

5.2.1 Terrain

The Mosman LGA is situated along a sandstone ridge, which forms a peninsula between Middle Harbour and Sydney Harbour (southern Port Jackson). The ridge is relatively broad, and rises to a rocky plateau of around 80 metres above sea level. Two headlands, Middle Head and Georges Head, dominate the end of the sandstone peninsula and are characterised by steep slopes with rocky cliffs. Slopes within the area can be inclined up to 20 per cent, and are often associated with small hanging valleys. Sandstone bedrock occurs as outcrops throughout the landscape, and are between 10 to 100 metres wide with broken scarps one to four metres in height. The foreshore is a rugged mixture of sandstone boulders, rock platforms and sandy beaches.

Prominent terrain features include the headlands, bays and beaches of The Spit, Parriwi Head, Chinamans Beach, Wy-ar-gine Point, Edwards Beach, Rocky Point (which once existed as an island), Balmoral Beach, Cobblers Beach, Middle Head, Obelisk Bay, Georges Head, Chowder Bay, Chowder Head, Taylors Bay, Bradleys Head, Athol Bay, Little Sirius Cove, Mosman Bay, Quakers Hat Bay and Beauty Point.

5.2.2 Flora and fauna

The natural vegetation of the Mosman LGA and adjacent areas in Sydney as it would have been at 1788 is classed as Sandstone Heaths, Woodlands and Forests (Benson and Howell 1990). These vegetation types are associated with the Hawkesbury Sandstone landscape. A number of groupings of plant communities related to habitats have been recognised (Benson and Howell 1990:23-25). These include heath and scrub on shallow or poorly drained soils, woodlands on ridge tops and exposed upper slopes, open forest on exposed hillsides, open forest on sheltered hillsides and creekside scrub and forest.

The central ridge of the Mosman LGA, which is followed by Military, Spit and Bradleys Head Roads, and on the more sandy soil extending down to the harbourside slopes would have had eucalypt woodland with the Bangalay (*Eucalyptus botryoides*), Sydney Peppermint (*Eucalyptus piperita*), and the smooth barked apple (*Angophera costata*). Areas with shallow sandy soils would have had woodland with trees including Scribbly Gum (*Eucalyptus haemastoma*), Red Bloodwood (*Eucalyptus gummifera*) and *Banksia serrata* (Benson and Howell 1990:118).

The journal of William Bradley, First Lieutenant of the First Fleet flagship HMS *Sirius*, after whom Bradleys Head was named, provides detailed descriptions and illustrations of Sydney Harbour's shores as they were in 1788. Bradleys Head retains this woodland vegetation as it is part of Sydney Harbour National Park. The wooded slopes of Mosman Bay, on the other hand, were affected by residential development

as ferries and trams made access to this area easier (see Benson and Howell 1990:120).

The Bradley Bushland Reserve (formerly part of Rawson Park) is situated on Middle Head Road. The reserve honours Eileen and Joan Bradley, local Mosman residents, who instigated bushland management in the early 1970s by advocating the selective removal of exotic weed species and avoiding unnecessary disturbance (Benson and Howell 1990:120-121). As a result, the Reserve has an interesting remnant of the heath vegetation once common on the exposed sandstone ridges around Sydney, but which is now largely replaced by housing. The characteristic large scrubby heath species *Banksia ericifolia*, *Kunzea ambigua* and *Allocasuarina distyla* are present, as well as the rare low growing *Rulingia hermanniifolia*, seen only after a fire in a long unburnt area stimulated seed germination and growth (Benson and Howell 1990:121).

The Mosman LGA has retained large areas of its bushland, particularly along its harbour foreshores. This is rare in Sydney, with many other LGAs, particularly on the southern harbour foreshores and the lower Georges River, having been mostly built out. It is ironic that because they were required for military installations in the past, many of Mosman's bushland areas have survived relatively unscathed, being transferred to the State government to become part of Sydney Harbour National Park in 1979 when they were no longer required for defensive purposes. On Middle Head, Chowder Head, Bradleys Head and in Ashton Park, pathways through the bushland lead directly past derelict military relics. The Sydney Peppermint and *Angophera* canopies have regrown to obscure the sightlines of the nineteenth century gunners. As a result, many of these areas retain harbourside bushland much as it would have been at the arrival of the First Fleet. A variety of *Acacia*, *Banksia*, *Leptospermum* and other shrub species are present. However, changes in drainage and fire frequency have allowed weed species such as privet and lantana to invade many of the wetter gullies, which has led to a considerable amount of localised deterioration in the eucalypt canopies (Benson and Howell 1990:121).

The native fauna of the Mosman LGA at the time of contact can be estimated by studies of nature reserves around the harbour. Within 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 animals found in archaeological excavations in the Mosman LGA, including a midden in a shelter at Balmoral Beach, show that kangaroos, wallabies, wombats, koalas and dingos were present in the area in the past. Approximately 150 species of birds have been recorded within the Park, including: great cormorant, white breasted sea eagle, nankeen kestrel, masked lapwing, thornbill, heron, egret and rock warbler. Penguins are also native to the Harbour, with an endangered colony of little penguins still residing near Manly (DEC 2004a). A variety of snakes and lizards are also known within the Park. Sydney Harbour is also home to a number of marine animals, including sea dragons, seahorses, sharks, octopus and migratory whales. Numerous fish species are local to the area, including snapper, trevally, whiting, bream, flounder and flathead.

5.3 Past Land Use

This section outlines the post-contact history of the Mosman area and the impacts of European settlement on the landscape. This analysis is important to the archaeological assessment of the study area, through identifying areas where materials may have been removed or destroyed by subsequent land use, and conversely, areas that may be of archaeological integrity.

European history of the Mosman LGA dates back to 1788, when its shoreline was mapped, and 1789 when the HMS *Sirius* was careened at Mosman Bay, which was originally known as Great Sirius Cove. The bay was chosen as it provided a sheltered cove on the north shore (Mosman Municipal Council Library 2002).

Mosman was a key location in Sydney's early defence installations, with construction dating as early as 1801. In this year, a single rock-cut battery was built at Georges Head facing the entrance to Port Jackson. This was constructed in fear of invasion by the French, in the context of the Napoleonic wars at the start of the nineteenth century. The battery was not actively garrisoned and fell into disrepair within a few years as the threat of French attack faded. In 1839, convict labourers built a battery on Bradleys Head, and a circular parapet was installed a few years later. This was prompted by the undetected arrival of American warships in Sydney Harbour. New defences were built throughout Sydney Harbour in the 1870s, following withdrawal of British garrison troops from Australia. These new defences were located at Outer and Inner Middle Head, Georges Head, South Head, Steel Point and Bradleys Head, being built to defend the inner harbour (DEC 2004b). Many of these defence structures still remain.

Maritime industry and trade was the primary economic focus of Sydney's early development, and is prominent in the history of Mosman. During the 1820s, whaling became the primary industry of the Mosman area, with Chowder Bay being used as anchorage by American whalers. In the early 1830s, land grants were made to Archibald Mosman and John Bell to establish a whaling station in Great Sirius Cove (Mosman Municipal Council Library 2002). Mosman's four acres included the site of the present ferry wharf and Bell's four acres extended south along the foreshore. Within a few years, the station and Mosman's home, "The Nest", were constructed. Mosman later expanded this land grant to 108 acres, with property reaching back towards what is now Military Road. The whaling industry flourished, and Mosman sold the business at its height in 1838 and moved to northern New South Wales. Exports from the whaling station were shipped to Britain and at this time seal and whale products formed Australia's main exports although wool sales overseas were increasing.

Whaling activities in Sydney declined in the 1840s, reflecting broader global trends. In the 1850s the demand for whale oil dropped and hunting became focused on whales that offered whalebone. Consequently, whaling moved offshore and areas around Tasmania and the Antarctic Circle were targeted. Although the Mosman whaling station was no longer operational, the bay was still maritime in focus, with Mosman Bay used for overhauling ships.

Although agriculture was not the primary industry during its early history, land in Mosman was also being cultivated. The first known farm in the Mosman area was established around 1811 at Balmoral. In 1815, Governor Macquarie established a farming community on Middle Head, with the aim of acculturating a group of sixteen Aboriginal families. Macquarie selected a well-known Aboriginal figure named Bungaree to be in charge of the farm. Bungaree had become famous for circumnavigating Australia with the Flinders expedition in 1802. Historically he was also a famous intermediary between colonists and Aborigines in the early days of Sydney. Although Bungaree appears to have lived at least intermittently on the farm for some time, most of the other Aboriginal families deserted the farm fairly quickly in favour of other places of residence (L. Macquarie 1822). After Bungaree's death in 1832 the farm appears to have been abandoned for good. The exact location of Bungaree's Farm is unknown but the best assessment to date places it near the shale outcrop (better soils) of Georges Head (Rosen 2002). No archaeological remains of Bungaree's Farm have ever been found. (Further detail on Bungaree's farm is provided in section 6.10 below).

Following this early grant others were taken up. A notable early resident was Oswald Bloxsome who built "The Rangers" in 1844, an Elizabethan style mansion on 40 acres overlooking Mosman Bay. Richard Hayes Harnett Senior was a major influence in Mosman, who purchased Archibald Mosman's 108 acres in 1859 and over the next 30 years was responsible for building many roads, a horse drawn bus service and ferry services linking the city to Mosman (Mosman Municipal Council Library 2002).

Despite the foundation of these early estates, the rugged terrain and its inaccessibility limited settlement of Mosman. A foot track ran from North Sydney to Middle Head in the 1840s, but it was not until 1860 that the first proper road in Mosman was constructed. This was Avenue Road, which ran from Mosman Bay to Mosman Junction. Military Road, Middle Head Road and Bradleys Head Road were constructed 10 years later (Mosman Municipal Council Library 2002). Light railways were also important in connecting Mosman to other areas of the Harbour, specifically for the movement of goods such as sandstone quarried at Mosman Bay from the 1870s. Longworth (2000:1) identified the following railways within the Mosman area:

- Chowder Bay: a light railway ran from the harbour up the side of a hill to a military warehouse. A railway line carried anti-submarine mines from the shore out along the jetty (1890s).
- Bradleys Head: a 3'6" gauge line ran along the stone pier to a flat area (store shed?) on the shore.
- Mosman: an inclined tram carried feed from the wharf up to the animal quarantine station (1901). A 3-railed incline from Harnett's sandstone quarry ran down the hill to the wharf (1878-1889).

With the area increasingly more accessible, the 1880s and 1890s were characterised by increased urban development. During this time, the Mosman Public School opened, the Congregational Church held its first service, postal and telegraph services began, the water supply commenced and an electric tram service for commuters started operation (Mosman Municipal Council Library 2002). In 1893, the Mosman

municipality was created and the current LGA boundaries defined. At this time, there were 1600 Mosman residents.

With more people coming to the area, recreation areas were defined along the Mosman foreshores. Pleasure grounds and picnic resorts sprang up around the foreshore to cater for the visitors who consequently flocked here. Athol Gardens was used for recreational purposes, apparently being utilised as a pleasure ground. Residents were attracted to the area by its bushland setting, and in response, the Council focussed on the maintenance of public parks and reserves (Mosman Municipal Council Library 2002).

Development continued in the early twentieth century, with Taronga Park Zoo opened in 1916 and a bridge crossing The Spit constructed in 1925, replacing the existing steam punt (Mosman Municipal Council Library 2002). Development slowed from the 1930s to the 1950s, as a result of the Depression and both World Wars. However, some works continued, such as the construction of the Band Rotunda and Balmoral Promenade at Balmoral.

The post-contact history of Mosman has transformed the landscape. Urban development has involved extensive earthworks to create the level surfaces required, including bulldozing and the cutting and filling of slopes. The ridge crest and sides between Hunters Bay and Chowder Bay, developed for military installations, has been significantly modified through bulldozing of the ridge crest, cutting and filling of slopes, masonry of exposed rock surfaces, excavation of underground infrastructure and installations, and the explosive demolition of the ridge sides. Another area subject to intensive earthworks is the Taronga Zoo site. The Soil Conservation Service of NSW has mapped the bay beneath Clifton Gardens and the junction of Military and Spit Roads as "Disturbed Land". In these areas, landscape modification has been severe, resulting in the removal or cover of the natural soil profile. However, despite the urbanisation of the Mosman area, large areas of natural bushland have been retained within the LGA. These include the urban recreational parks managed by Mosman Council, bushland areas of the Sydney Harbour National Park and Sydney Harbour Federation Trust and lands contained within Taronga Zoo and the HMAS Penguin.

6 Aboriginal People in Mosman

6.1 Aboriginal Clans of the Port Jackson Area

When Captain Arthur Phillip and the First Fleet landed in January 1788, first in Botany Bay and then in Port Jackson (Sydney Harbour), he was met by people who had lived in this land for many thousands of years. At least 1500 people lived in the area between Botany Bay and Broken Bay (Phillip 15 May 1788[1892:133]; see also 9 July 1788[1892]:153 and 10 July 1788[1892:177]). The early colonists attempted to document the various names and territorial affiliations of these Aboriginal groups, but the complexities of their social organisation, affiliation and differentiation remained elusive. As a result of incomplete and sometimes conflicting historical evidence, it has been difficult to reconstruct the tribal affiliations and social networks of the Aboriginal people inhabiting the Sydney region at the time of British colonisation.

Ethnographic accounts, linguistic data, observations of traditional Aboriginal economies and customs have been offered in support of several tribal reconstructions (Tindale 1974, Capell 1970, Ross 1988, Kohen 1993). Most of these studies date from the 1960s onwards, and at times disagree in their interpretations of the observations and records of the late 1700s and early 1800s.

Differing views have been expressed on the broader Aboriginal language groups of Sydney and surrounding regions. While the first British colonists did not mention any group names that would have encompassed several clans in the Sydney region (the equivalent of language groups), they did record variations in the languages or dialects spoken by people in different parts of the Sydney region. On the basis of these observations, it has been suggested that two main languages were spoken in the Sydney region – Darug and Tharawal. The Darug language had two main dialects – one spoken along the coast and the other in the hinterland (west of present-day Parramatta). The coastal Darug dialect appears to have been spoken on the Sydney Peninsula, north of Botany Bay, south of Port Jackson and west to Parramatta, as well as the country to the north of Port Jackson, possibly as far as Broken Bay. The hinterland Darug dialect was spoken on the Cumberland Plain from Appin in the south to the Hawkesbury River in the north and west of the Georges River, Parramatta, the Lane Cove River and Berowra Creek. Tharawal (alternatively Dharawal) was spoken from the south side of Botany Bay, extending south as far as the Shoalhaven River; from the coast to the Georges River and Appin, and possibly as far west as Camden. In addition, the Gundungurra language group was located on the southern rim of the Cumberland Plain west of the Georges River, as well as the southern Blue Mountains (Attenbrow 2002:34).

There has also been much debate about the use of the term Eora for the Aboriginal people of Sydney (Attenbrow 2002:35). The term Eora has been used to refer to the original inhabitants of the area between Port Jackson and Botany Bay or sometimes to the people of the whole of the Sydney region. The Eora have been described as occupying the northern shores of Port Jackson, extending north to the Hawkesbury River and south to Botany Bay and the ‘St. George River’ (Tindale 1974:193). However, the early colonial accounts and the late nineteenth century anthropologists and linguists did not use the term in this manner. Earliest references to this term are

in word-lists compiled by First Fleet officers William Dawes, David Collins, Philip Gidley King and Daniel Southwell, and in Vocabulary. A number of written forms and translations of the word were provided. Dawes (1790-91:798) wrote it as *Eeōra* with the meaning being 'Men, or people'. Collins (1798[1975:508]) listed *Eo-ra* as being 'the name common for the natives'. King (in Hunter 1793[1968]:408-411) provided *Eo-ra* for 'Men or People' and *Yo-ra* for 'a number of people'. Southwell (1788a[1893:697]) wrote *E-ō-rāh* meaning 'People' and the Vocabulary listed both *Eō-ra* and *E-ō-rāh* for 'People' (Vocabulary c.1790-92:354). However, neither the word lists nor the contexts in which the term *eora* is used in these early accounts, suggests the word was associated with a specific group of people or a language (Capell 1970:20).

People belonged to small groups (territorial clans) through which they were spiritually related to specific tracts of land. These clans included the Cadigal, Wanngal, Gamaragal, Wallumedegal and Boromedegal. The suffix 'gal' denotes 'people of' (Collins 1798[1975:453]), thus, for example, the Cadigal were the people of Cadi (also spelled Gadigal and Gadi respectively).

Many of the early accounts of the colonists' include the names of groups that were associated with certain areas of land or to which certain people belonged. However, these have been the cause for debate (Attenbrow 2002:22). Names for several groups were described by David Collins, Governor Phillip, Philip Gidley King and Watkin Tench, each being associated with a particular area of land around Port Jackson:

Each family has a particular place of residence, from which is derived it's distinguishing name. This is formed by adding the monosyllable Gal to the name of the place; thus the southern shore of Botany Bay is called Gwea, and the people who inhabit it style themselves as Gweagal. Those who live on the north shore of Port Jackson are called Cam-mer-ray-gal, that part of the harbour being distinguished from others by the name of Cam-mer-ray (Collins 1798[1975:453]).

About the north-west part of this harbour there is a tribe ... The district is called Cammerra; the head of the tribe is named Cammerragal, by which name the men of that tribe are distinguished. A woman of this tribe is called Cammerragaleon. ... From the entrance of the harbour, along the south shore, to the cove adjoining this settlement the district is called Cadi, and the tribe Cadigal; the women, Cadigaleon. The south side of the harbour from the above-mentioned cove to Rose Hill, which the natives call Parramatta, the district is called Wann, and the tribe Wanngal. The opposite shore is called Wallumetta, and the tribe, Wallumedegal. The other tribes which live near us are those of Gweagal, Norongerragal, Boragegal, Gomerrigal, and the Boromedegal (Phillip 13 February 1790[1892:309]).

Parramatta, Gwèea, Càmeera, Càd-i, and Mèmel, are names of places. The tribes derive their appellations from the places they inhabit: thus Càmeeragal, means the men who reside in the bay of Cameera; Càdigal, those who reside in the bay of Cadi; and so of the others (Tench 1793:201-202[1979:292]).

The tribe of Camera inhabit the north side of Port Jackson. The tribe of Cadi inhabit the south side, extending from the south head to Long-Cove; at which place the district of Wanne, and the tribe of Wanngal, commences, extending as far as Par-ra-mata, or Rose-Hill. The tribe of Wallumede inhabit the north shore opposite Warrane, or Sydney Cove, and are called *Walumetta*. I have already observed, that the space between Rose-Hill and Prospect-Hill is distinguished by eight different names, although the distance is only four miles [6.4 km] (King in Hunter 1793[1968]:412).

Each clan distinguished itself from other clans in having different designs and decorations on their tools and weapons. They also distinguished themselves with different body decorations, for example painted designs worn during certain rites and ceremonies, scarification during initiation rites or distinctive hair styles (Collins 1798[1975]:457, 467, 487–8). The southern clans at Botany Bay used some different words to those spoken at Port Jackson.

6.2 Aboriginal Clans in Mosman

The area now known as Mosman included the country of Cammeray. The people who lived here were the Cammeragal, alternatively Cam-mer-ray-gal or Gamaragal. Historical accounts refer to the Cam-mer-ray-gal, inhabiting Cam-mer-ray, located on the north shore of Port Jackson (Collins 1798[1975:453]); the Cammerragal/Cammerragalleon, inhabiting Cammerra, described as about the north-west part of this harbour (Phillip 13 February 1790[1892:309]); and the Camera-gal/ Cameragal-leon (King in Hunter 1793[1968]:411), inhabiting Càmèera, the bay of Cameera (Tench 1793:201[1979:292]), Camerra, the north side of Port Jackson (King in Hunter 1793[1968]:412). Dawes (1790-91:00812) makes reference to the Kamarigal and Tench (1793:201[1979:292]) refers to the Càmèeragal, but neither provides a location for the group.

The neighbouring group on the north shore of Parramatta River (west of the Gamaragal) was the Wallumedegal. Wallumede was described by King (in Hunter 1793[1968:412]) as the north shore opposite Warrane, or Sydney Cove; and as Wallumetta, the opposite shore, by Phillip (13 February 1790[1892:309]). Other spellings for the place and the people include Walumetta (King in Hunter 1793[1968:412]), Wallume-de-gal and Wallume-degal-leon (King in Hunter 1793[1968:411]) and Wallumedegal (Phillip 13 February 1790[1892:309]).

Another group, the Borogegal, may have been located east of the Gamaragal, constrained to the western side of Middle Harbour, on the north side of Port Jackson. The Borogegal were probably associated with the place named Booragy/Burogy (present day Bradleys Head) and the surrounding country, although no locality is given by Phillip or in the Vocabulary (Attenbrow 2002:24). Various spellings in historical documents include Borogegal (Phillip 13 February 1790[1892:309]), Borogegal Yuruey (Vocabulary ca 1790-92:365) and Borogegal-yurrey/Borogegal-leon (King in Hunter 1793[1968]:411).

Dawes (1790-91:817) referred to 'Booragy' as Bradley's Point, rather than Bradleys Head, while Larmer (1832[1898:229]) recorded 'Búrroggy' as the name recorded for Bradleys Head. On the basis of early historical reports, this area has often been referred to as being part of the country of the Gamaragal. However, it is possible that the country of the Gamaragal did not extend as far east as Bradleys Head (Booragy) and that the headland was part of a larger area on the western side of Middle Harbour that was the country of the Borogegal (Attenbrow 2002:27).

Souter's interpretation of the historical texts led him to the conclusion that the Mosman area was home to the Borogegal, rather than the Gamaragal. In addition, the Mosman landscape supports this in that "the ridge of Borogegy [Bradleys Head] – on the opposite side of Mosman peninsula to Balmoral, but only two miles away from it

– was a clearly defined entity. It was a peninsula in itself, virtually surrounded by a rocky shoreline” (Souter 1994:5-6).

The accounts of Russian visitors to the area in the 1820s refer to a group whose camp was on the north shore of Port Jackson, as Burra and Burra Burra (Bellingshausen 1820 in Barratt 1981:38; Simonov 1820 in Barratt 1981:47-48). [Although note that Simonov’s account seems to indicate Burra Burra was a person’s name]. It is probable that this group was Bungaree and his family who came from Broken Bay in 1814 to live on the north shore of Port Jackson (also refer to Section 6.10 below). Bungaree’s camp was visited and referred to by many of the early colonists and visitors to Port Jackson including the Russians (Bellingshausen 1820 in Barratt 1981:35). The origin of the name Burra is not clear. It may have come from the association of this group with the area around The Spit, which is recorded as being called Burrabrú and Burrabri (Larmer 1832[1898:229]; *Aboriginal names and meanings* 1911:193), or it may have derived from Booragy/Búrroggy. It is not known whether Bungaree’s camp included Borogegal, who originally inhabited that area, as well as people from other places. References in historical documents to the Borogegal and Gamaragal become infrequent well before Bungaree’s camp was established.

6.3 Aboriginal Place Names in Mosman

Aboriginal names for places and landmarks on the northern side of Port Jackson in and around Mosman have been described in historical records (see Attenbrow 2002:9-13). These include:

- Middle Harbour (Warrin gá or Warringà) (Larmer 1832[1898:229], Mitchell ca 1848?:420);
- The Spit, Middle Harbour (Burra-brú or Burrabru) (Larmer 1832[1898:229], Mitchell ca 1848?:420);
- Parriwi Head, The Spit (Parriwi), which is described in the text as being the point east of the Spit (Larmer 1832[1898:229], Mitchell ca 1848?:420);
- Middle Head (Kuba Kaba, Caba-caba or Ca-ba Ca-ba) (Dawes 1790-91:817, *Vocabulary ...* ca 1790-92:361, Collins 1798[1975]:513);
- Chowder Bay (Koreé or Koree) (Larmer 1832[1898:229], Mitchell ca 1848?:420);
- Chowder Head (or possibly inner North Head) (Gurugal or Gurrugal) (Larmer 1832[1898:229], Mitchell ca 1848?:420) as both sources refer to it as West Head;
- Between Bradleys Head and Middle Head (Taliangy or Tal-le-ongi-i) (Dawes 1790-91:817, *Vocabulary* c.1790-92:362), note that Dawes refers to it as [illegible] water (on list between Bradley’s Point and Middle Head) while the other reference states Bradley Point;
- Bradleys Head (Booragy, Búrroggy, Burròggy or Broggy) (Dawes 1790-91:817, Larmer 1832[1898:229], Mitchell ca 1848?:420) (historical sources refer to both Bradley’s Point and Bradley’s Head); and
- Mosman Bay (Goram bullagong or Gorambùllagong) (Larmer 1832[1898:229], Mitchell ca 1848?:420) with the sources referring to the location as Sirius Cove and Mosman’s Whaling Establishment (Attenbrow 2002:9).

Lists of Aboriginal words and place names are provided by a number of early published documents, including those of the judge-advocate Captain David Collins, Lieutenant Philip Gidley King (who later was governor between 1800 and 1806), as

well as letters by Master David Blackburn and Midshipman/Lieutenant Daniel Southwell, all of whom had arrived with the First Fleet in January 1788 (Attenbrow 2002:13). However, the most comprehensive list of Aboriginal place names is provided in two unpublished manuscripts by Lieutenant William Dawes (dated to 1790-91) (Dawes 1790, 1790-91) and a third manuscript which is thought to contain lists compiled by Governor Phillip, Collins and Captain John Hunter (Vocabulary c.1790-92; Troy 1993:45, 1994a:14-15; Attenbrow 2002:13).

6.4 The Land and its Resources

People living around Port Jackson lived by catching fish and a variety of other marine animals; hunting land animals, birds, and reptiles; and gathering plants, shellfish, birds' eggs and other small animals. Around Mosman, the land and its waters – the estuaries and rivers – supplied a wide range of plants and animals from which they gained their foods and medicines as well as raw materials used to make their tools, weapons, shelters and body decorations. The part that each of these activities (hunting, fishing and gathering) played in the lives of the people varied according to where they lived and the resources available. For example, around Port Jackson fishing provided a greater part of the diet of the people living near the harbour mouth than in the upper reaches of the estuaries. In the hinterland (west of Parramatta, Liverpool) hunting was more important than fishing, and land animals such as wallabies and possums, formed a greater part of the diet.

Movements throughout the country would have been organised to take advantage of seasonally available resources as well as to meet ceremonial and other social obligations. There were both food and raw material plant resources, as well as many animal species, which would have attracted people to the sandy and sandstone areas and coastline of the study area and surrounds.

Knowledge about the geology and soils of a region, as well as the vegetation communities, is important in investigating past Aboriginal land and resource use in an area. The formation, survival and current distribution of Aboriginal sites is very much associated with the distribution of particular geological and geomorphological formations. Information about sources of stone materials, as well as plant and animal foods can indicate activities that may have been carried out in the area.

The Gamaragal were one of the coastal groups who were fishers, hunters and gatherers, and who were described as:

'...wholly depend for food on the few fruits they gather; the roots they dig up in the swamps; and the fish they pick up along 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 a subsistence'. (Tench 1789:80-81[1979:48]).

Fish is their chief support. (Collins 1798[1975:461-462]).

Other animals were also hunted as reported by Bradley in October 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 put 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 from which I suppose they get into these Trees to seek or wait for any thing that may come in their way. (Bradley 1786-1792[1969]:133-134).

6.4.1 *Animals*

Animal species that are likely to have inhabited the woodland and forest communities in the Sydney region, and that would have been hunted by Aboriginal people, include kangaroos, wallabies, possums, gliders, echidnas, bandicoots, fruit bats (grey-headed flying foxes), as well as birds, snakes, goannas and other lizards. Birds eggs would also have been a good resource in the past.

Resources would also have been obtained from the sea, including fish, eels, seals, turtles, beached whales, crustacea (crabs and crayfish) and shellfish. Shellfish were available in both rocky shore and freshwater contexts.

Port Jackson is one of the largest estuaries along the NSW coast. The vast estuarine areas and their freshwater tributaries have 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, crustacea, marine mammals, marine turtles, tortoises and water birds (Attenbrow 2002:40). In addition, the vegetation communities and aquatic environments would have supported a large number of different land and marine animals. Most species of birds and land animals that would have been present in the Sydney region would have been found right across the region. These include kangaroos, wallabies, possums, gliders, bandicoots, wombats, quolls, fruit bats (often called flying foxes), echidnas, native rats and mice, emus, ducks, tortoises, snakes and goannas. The presence of particular animal species and their abundance in a specific area would have been more influenced by the vegetation type (heath versus forest versus open woodland) than distance from the coast or estuary. In contrast to land animals, aquatic fauna (including platypus and water rats) vary from coast to hinterland depending on the nature of the waterways. In particular, fish, shellfish and crustacea differ in both abundance and species along the estuaries, moving upstream from the saltwater estuary mouth to freshwater (Attenbrow 2002:42).

Shellfish are generally more abundant at the saltwater end of the estuary. Near estuary mouths and along the ocean coastline, larger marine animals are present, including sharks, marine turtles, dolphins and seals. In addition, larger animals such as whales and dugongs were sometimes beached and so provided a resource.

There are many historical references to fishing and shellfish gathering. Around Port Jackson, fish and shellfish were the food items most often noted by Captain Cook, Joseph Banks and by the first British colonists (Banks 1770 in Beaglehole 1963:59; Bradley 1786-92[1969]:75, 76, 113, 133; Clark 1787-92 in Fidlon and Ryan 1981:109-110, 267; Collins 1798[1975:461, 495]; Cook 1770 in Beaglehole 1955:306, 309, 312; Extract from a letter ... 18 November 1788[1892:222]; Hunter 1793[1968]:63, 65, 80; Phillip 15 May 1788[1892:132], 28 September 1788[1892:192], in Stockdale 1789[1950]:102; Tench 1789:80-81, 1793:125, 195 [1979:48, 233, 287]; White 1790[1962:160]; Worgan 1788[1978:16-17]).

Fishing was most often described as the main food source of the Aboriginal people of Port Jackson (Attenbrow 2002:63). 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 (Worgan 1788[1978:21]). Bradley (1786-92[1969]:132) listed 'Jewfish, Snapper, Mullet, Mackrel [sic], Whiting, Dory, Rock Cod, leather jackets and various others' as being present in Port Jackson. Tench (1789:128-129; 1793:176[1979:69, 272; 117 ed. n 28]) described the range of fish as being 'from a whale to a gudgeon', mentioning 'sharks of monstrous size, skait [sic], rock-cod, grey-mullet, bream, horse-mackarel [sic], now and then a sole and john-dory and innumerable others unknown in Europe' as well as bass, leather-jacket and snapper (which they called 'light horseman'). The country of the Gamaragal was described by Watkin Tench as possessing 'the best fishing ground' (Tench 1793:193[1979:285]).

Large marine mammals, such as whales, seals and dolphins, were also regular visitors to Port Jackson. Historical records show that beached whales were eaten and on such occasions, large numbers of people gathered to feast on it. Two occasions were documented, including one on the coast near Botany Bay in August 1788 (Bradley 1786-92[1969]:120, 135; Phillip 28 September 1788[1892:192], in Stockdale 1789[1950]:135), and one at Manly Cove at the end of July 1790 (Collins 1798[1975:109]).

There is also archaeological evidence of dugongs having been acquired. Dugong bones were found at Sheas Creek in St Peters in the 1880s. Cut marks and scars on the bones suggest that the animals were butchered for food (Etheridge 1905:18; Etheridge, David and Grimshaw 1896).

Possible seal bones were among the faunal remains recovered from the archaeological excavation of a shelter site at Balmoral Beach (Attenbrow 2002:66). Seal bones have been found at other excavated sites around the Sydney region, including coastal middens at Curracurrang, Wattamolla, Inscription Point, Bate Bay and Angophora Reserve. The archaeological evidence therefore indicates that seals were eaten, although there is a lack of documented historical observations of seals being eaten in the Sydney region (compared to the south coast of NSW) (Attenbrow 2002:66).

Along the coast, the number of documented historical observations of hunting and/or eating land animals is much smaller than those of fishing and gathering shellfish. The fact that other types of animals, besides fish and shellfish, were eaten by the people around Port Jackson was commented on by several of the early writers (Bradley 1786-92[1969]:110, 133-134; Hunter 1793[1968]:60-61; Tench 1789:88[1979:51]). Bradley recorded in May 1788 that a kangaroo they killed at North Head was found to have a spear broken inside it, and he commented that it was 'a proof that the Natives seek other food besides fish' (Bradley 1786-92[1969]:110; Tench also mentions this incident 1789:88[1979:51]).

Bones of land animals have been found in middens along the ocean shoreline or near the estuary mouths. In Port Jackson, excavated archaeological sites at Balmoral Beach and Vacluse have relatively large bone assemblages compared to the small amounts recovered from sites at Cammeray, Sugarloaf and Balls Head (Attenbrow 2002:71). Despite the small number of faunal remains at some sites, these findings indicate that land animals were hunted by coastal people and that this appears to be under-represented in the historical literature (Attenbrow 2002:71).

At Balmoral Beach macropods and gliders/possums were the most abundant land animal remains (Attenbrow 2002:71). Dingo bones have been found in many Sydney region sites. They were recovered during excavation of the Balmoral Beach site, in levels dating back to about 3000 years ago (Attenbrow 2002:71). This places them among some of the earliest dingo bones found in sites in Australia (refer to Flood 1999:228, 289).

Other animal food resources identified in archaeological sites and historical literature include birds, reptiles, frogs, insects (ants, moths, butterflies, beetles, bees, cicadas, worms and grubs), honey produced by native bees and insect eggs (Collins 1798[1975:462-463]; Barrallier 1802[1975:16 n 25, 44]; Wordman 1808:2). However, these food sources appear to have formed a greater part of the diet of hinterland people as opposed to those living along the coast (Attenbrow 2002:76).

The types of resources and their use in the Mosman LGA can be considered in light of the findings of the archaeological excavation of the occupation site within a rockshelter site at Balmoral Beach (Attenbrow 1994; Attenbrow 2002). The excavation of the shelter revealed the use of a number of different resources, most of which have been interpreted as being food resources. The range of remains includes fish, shellfish, crustacea, other marine animals, mammals, reptiles, birds and amphibians.

6.4.2 Shellfish

Port Jackson has abundant shellfish resources, with many hundreds recorded (Bennett 1992:3). However, most of these species are very small and would not have been part of the diet of the Aboriginal people of Port Jackson. In February 1788, Bradley described Port Jackson as having 'a great quantity of shellfish in the Coves that have Mudflats at the bottom, Oysters very large' (Bradley 1786-92[1969]:79-80). Later, in October 1788 he stated that '[w]e found vast quantities of Oysters & other shellfish in the Harbour & Oysters of an amazing size in the uppermost Coves' (Bradley 1786-92[1969]:133). Large oysters were also observed by Captain Cook in 1770 in Botany Bay, and documented as being the largest he had ever seen (Cook 1770 in Beaglehole 1955:306). These would have been mud oysters (*Ostrea angasi*).

Rock platforms, estuarine mud flats with mangroves, and sandy beaches around the foreshores of the estuaries provide habitats for a large number and variety of edible shellfish. Each of these environments would have a different although overlapping range of species. The types of shellfish able to be collected at any one time or place would therefore depend on the locality at which they were being collected. However, a number of shellfish are available at most locations around the estuaries, including rock oysters (*Saccostrea glomerata*), hairy mussel (*Trichomya hirsuta*) and Sydney cockle (*Anadara trapezia*) (Attenbrow 2002:66-67).

The ocean shoreline of the estuary mouth provides a greater range of species than further up the estuaries, including limpet (*Cellana tramoserica*), black nerita (*Nerita atramentosa*), cartrut (*Dicathais orbita*) and the turbans (*Turbo torquata* and *Turbo undulata*). Edible mussel (*Mytilus edulis planulatus*) occurs much less frequently around Port Jackson than further south along the NSW coast, however, they appear to be more abundant in Port Jackson now than in pre-contact times (Bowdler 1971:121).

Several of the earliest writers commented that shellfish formed part of the diet of the people around Port Jackson. Shellfish were observed being collected from the rocks and out of the sand and mud in shallow water, as well as people diving for them. Historical accounts also record them being cooked or eaten and scattered around the huts (Banks 1770 in Beaglehole 1963:59; Blackburn 1788 in Neville 1975:148; Bradley 1786-92[1969]:75, 76, 113; Clark 1787-92 in Fidlon and Ryan 1981:109-110, 267; Cook 1770 in Beaglehole 1955:306, 309, 312; Hunter 1793[1968]:63, 65, 80; Parkinson 1773[1972]:135; Phillip 15 May 788[1892:132]; Tench 1793:195[1979:287]).

Oyster, cockle, mussel and limpet are the only shellfish named in the accounts (Bradley 1786-92[1969]:75, 76; Clark 1787-92 in Fidlon and Ryan 1981:109-110; Cook 1770 in Beaglehole 1955:306, 309, 312; Phillip 15 May 788[1892:132]; Worgan 1788[1978:16]).

The most visible archaeological sites around the estuarine foreshores of Port Jackson are the hundreds of shell middens that represent the remains of past meals of shellfish. However, this abundance of shells and shell middens has the potential to over-emphasise the role that shellfish played in the diet of Aboriginal people. Their prominence in the archaeological record is generally due to their ability to survive better than other food remains, particularly plant remains (Attenbrow 2002:67).

In Port Jackson, inside the estuary mouth where ocean species occur, the predominant midden species are rock oyster, hairy mussel, limpet and black nerita, with Sydney cockle, cartrut and tritons (*Cabestana spengleri*) also relatively common. Shell middens in the middle and upper estuarine reaches generally have rock oyster, Sydney cockle, and hairy mussel as the predominant species, with mud oyster and Hercules club whelk (*Pyrazus ebeninus*) relatively common (Attenbrow 1991:49; 1992:Table 3; 2002:68).

6.4.3 *Plants as food*

The vegetation communities of Sydney include over 200 species with edible parts, such as seeds, fruits, tubers/roots/rhizomes, leaves, flowers and nectar (Attenbrow 2002:76).

The Mosman LGA would have contained many plants that offered a wide range of nutritious foods. Plant collecting in the woods and forests was not clearly visible to the British colonists who did not appear to appreciate the range of plants utilised by Aboriginal people:

The woods, exclusive of the animals which they occasionally find in their neighbourhood, afford them but little sustenance; a few berries, the yam and fern-root, the flowers of the different banksia, and at time some honey, make up the whole vegetable catalogue (Collins 1798[1975:461-462]).

Many Sydney region plants produce prolific nectar – *Banksia* spp., bottlebrushes *Calistemon* spp., spider flowers *Grevillia* spp., mountain devil *Lambertia formosa*, paper barks *Melaleuca* spp., waratah *Telopea speciosissima*, grass trees *Xanthorrhoea* spp. Flowers with abundant nectar were collected and soaked in water to produce a sweet drink. The Russian Bellingshausen (1820 in Barratt 1981:35) recorded that

women collected *Banksia* blossoms for their nectar, soaked them in water and then drank the sweet liquid.

Aboriginal names for several plants that produced honey 'in sufficient quantity to render them notorious to the natives', were recorded by Dawes (1790-92b:48):

Watanjál, Durumarádyi, Wiyigalyán, Konamêa, Waratá, Kamaran, Burudun, Mirrigalyán

Unfortunately, Dawes did not provide a British name or description for these plants. The only identifiable plant is *Telopea speciosissima* whose Aboriginal name *Warata* or *War-ret-tah* (Dawes 1790-1792b:48 and Anon 1790-1792:63 respectively) we have adopted in English as Waratah. The early colonists called it The Sceptre flower (Anon 1790-1792:63).

Mizooboore, the Native Cherry of the first colonists, was one of the first edible plants to be noted during Captain Cook's visit in 1770:

... several trees which bore fruit of the Jambosa kind, much in colour and shape resembling cherries; of these they eat plentifully and brought home also abundance, ... (Banks in Beaglehole 1963:59).

Many other fruits and berries were noted as the 1788 colonists got to know the foods eaten by the people around Port Jackson:

'Several fruits peculiar to the country were now in season [November 1790]: that which was supposed to be the fruit Captain Cook calls a cherry, the natives call mizooboore; the taste of it is insipid, and it differs little from another fruit similar in its appearance, but something smaller, and which, as well as the former, is found in great abundance (Phillip in Hunter 1793[1968]:478-479).

Dawes (1790-1792b:48) listed '*Takūba*, the Acajou-like cherry' amongst his 'Names of Fruits in N.S. Wales'. Troy (1993:59) identifies this as *Szygium paniculatum*.

The palm-like *buruwang* (Burrawang, *Macrozamia* sp.) has:

... a Kernel which they prepare & give their Children, I have seen them eat it themselves, they are a kind of Nut growing in bunches somewhat like a pine top & are poisonous without being properly prepared, [Bradley 1786-1792[1969]:92]

'the natives soak it in water for seven or eight days, changing the water every day; and at the expiration of that time they roast it in the embers; but the kernel is taken out of the hard shell with which it is enclosed, previous to its being put into the water: it is nearly equal to the chesnut [sic] in goodness.' [Phillip in Hunter 1793[1968]:478-479].

Cabbage Tree Palms were originally a common feature of the Sydney Harbour landscape and grew along small streams. Holes worn in the base of canoes were patched:

... with Gum & sometimes ... the leaves of the Cabbage trees with it (Bradley 1786-1792[1969]:132) [see also Phillip in Hunter 1793[1968]:496]

and

The [fishing] line appears to be made from the inside bark of the Cabbage tree, it is laid of two strands well twisted & strong. (Bradley 1786-1792[1969]:133).

The tubers, roots and rhizomes (swollen roots) of many ferns, orchids and lilies were eaten. These were eaten more often in winter than other times of the year.

... they were frequently found gathering a kind of root in the woods, which they broiled on the fire, then beat it between two stones until it was quite soft; they this chew until they have extracted all the nutritive part, and afterwards throw it away. This root appears to be a species of the orchis, or has much of its nutritive quality. I believe there were not less than three or four acres of ground all in a blaze; we then conjectured that these fires were made for the purpose of clearing the ground of the shrubs and underwood, by which means they might with greater ease get at those roots which appear to be a great part of their subsistence during the winter. [July 1788 - Hunter 1793[1968]:80-81].

We have seen them roast and chew the fern-root. [Hunter 1793[1968]:65].

I have several times met with small parties of them seeking roots the Fern & some other roots they prepared by moistening & beating between two stones a considerable time before they use it ... [October 1788 - Bradley 1786-1792[1969]:134-135].

Families and species of ferns, orchids and lilies reported to have been eaten include: *Arthropodium milleflorum*, *Blechnum* spp, *Burchardia umbellata*, *Caladenia* sp, *Denbrobium speciosum*, *Dianella caerulea*, *Dioscorea transversa*, *Diuris* spp, *Eustrephus latifolius*, *Pteridium esculentum*, *Prasophyllum* spp, *Pterostylis* spp, *Thelymitra* sp and *Thysanotus tuberosus*.

Acmena smithii lilly pilli fruits were probably what Banks referred to as 'fruit of the Jambosa kind ... resembling cherries' (Banks 1770 in Beaglehole 1963:59).

Blechnum cartilagineum, *B. indicum* and *Pteridium esculentum* may be some of the ferns referred to by Bradley (1789-1792[1968]:107, 134-5), Hunter (1793[1968]:65), Collins (1798[1975:462-3, 588) and Worgan (1788:11).

Blechnum cartilagineum, *B. indicum*, *Eleocharis sphacelata*, *Phragmites australis*, *Triglochin microtuberosum*, *T. rheophilum*, and *Typha orientalis* may have been amongst the 'roots they dig up in the swamps' that Tench (1789:80-81[1979:48]) included in his list of foods.

Exocarpus cupressiformis, Native cherry, may be the fruit described by Phillip (in Hunter 1793[1968]:478-9) as 'another fruit, which, when ripe, is of a transparent red colour, about the size of a currant, and shaped like a heart: it has an agreeable flavour, leaving an astringency on the palate'.

Ficus rubiginosa, Port Jackson fig, may be the small fruit 'about the size of a cherry, it is yellow when half grown, and almost black when ripe ... good deal the taste of a fig...' (Hunter 1793[1968]:65).

Leptomeria acida, Native currant, is probably the plant Phillip (in Hunter 1793[1968]:478-9) referred to as 'the acid berry, which is about the size of a currant and grows on a tree, the leaves of which resemble the broom'.

Estuarine plants which may have been sources of food include *Phragmites australis*, and of raw materials include *Casuarina glauca*, Swamp She-oak, which is probably one of the trees from which bark was taken to make canoes.

The Australian Museum Ethnographic Collection contains a botanical specimen from Mosman. The specimen comprises three Candle Nuts in a jar (registered as three separate entries - E.09336, E.09337 and E.09338). They were collected on 3rd May 1900 and donated to the Australian Museum by C. Hedley. All three are stored in the original storage container, in flammable liquid. They form part of a much larger collection of botanical specimens from around Port Jackson, donated to the Museum's Ethnographic Collection because of their believed or observed use by Aboriginal people. Unfortunately, in the case of the Mosman specimens, there was no additional documentation attached indicating a connection with the Aboriginal people of the area.

6.4.4 *Plants as raw material*

Plants were also used as raw materials. Grass trees *Xanthorrhoea* spp. provided many different products that were used as food and raw materials, as well as body adornment during ceremonies. The long flowering stems were used for shafts in multi-component spears:

'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 [sic] ...'(Tench 1793:190[1979:283]).

Resin from the grass-tree was used as an adhesive for hafting, for example, in fitting handles to edge-ground stone axe heads, fastening pieces of shell/bone/stone/glass into spears as barbs, fixing shells and stone to the end of spear-throwers (Collins 1798[1975]:487; Hunter 1793[1968]:53; Phillip in Hunter 1793[1968]:496; Tench 1793:68[1979:187]; White 1790[1962]:152; Worgan 1788[1978]:12). Damaged or leaking canoes were patched with yellow-gum (*Xanthorrhoea* sp.) and sometimes the leaves of the cabbage tree palm (Phillip in Hunter 1793[1968]:496; Bradley 1786-1792[1969]:132).

The 'yellow gum' was generally dug out from the soil under the plant, and not collected from the plant itself (Phillip in Stockdale 1789[1950]:60).

In terms of body adornment, the base of the fronds or 'slips' were used in the 1795 Farm Cove initiation ceremony as part of the initiate's head-dresses (Collins 1798[1975]:481, Plate 8).

The papery bark of *Melaleucas*, which the colonists called 'tea-trees' or 'ti-trees', were used for many purposes. One of the many uses of this bark was as a blanket:

Bannelong's wife was now very near her time, which gave our colonists an opportunity of seeing the preparations the women of New South Wales make on these occasions: she had two nets hanging from her neck, one of which being new, Governor Phillip was desirous of obtaining, and it was given him, after she had taken a large piece of the bark of the tea-tree out of it, nicely folded up, and which was intended to lay her infant upon; this seems to be the only preparation which is made by lying-in women in that country [Phillip in Hunter 1793[1968]:544-545].

The bark of the tea-tree is thick in proportion to the size of the tree, and is composed of a great number of layers of very thin bark, in appearance not unlike the bark of the birch-tree; but it is so very soft, that nothing this country affords can be better calculated for the purpose for which it was intended: Bannelong, however, desired to have a blanket for the child, which was given him, and the next day, a net made in the English manner, which appear more acceptable to his wife than the one she had parted with. [Phillip in Hunter 1793[1968]:544-545].

Angophora costata (Smooth barked apple) was probably the tree from which the bark around gnarls was used to make containers (Smith and Wheeler 1988: Plate 50 inscription; White 1790[1962]:157).

6.4.5 *Stone as raw material*

The three principal geological formations of the Sydney region are Hawkesbury Sandstone, the Wianamatta Group shales and the Narrabeen Group of sandstone and shales. On the northern side of Port Jackson, Wianamatta shales occur along the top of the major ridgelines between the Cumberland Plain and Middle Harbour. They also occur on the higher lands between Port Jackson and Botany Bay as far east as Paddington. Narrabeen Group rocks underlay the Hawkesbury Sandstone, but they are exposed in the coastal cliff lines between North Head and Barrenjoey and the lower slopes around Pittwater and Broken Bay at the mouth of the Hawkesbury River. In Port Jackson they occur below present sea level. Small isolated areas of intrusive volcanic rocks occur across the region.

More recent alluvial sediments cover the sandstones and shales in some areas. Tertiary alluvium (in remnant ancient river channels or palaeo-channels) extends over a relatively large area in the north west of the Cumberland Plain and in association with the Georges River south of Liverpool. Quaternary alluvium occurs principally along the freshwater reaches and tributaries of the major rivers (Parramatta, Nepean-Hawkesbury and Georges Rivers, South and Eastern Creeks) and around Botany Bay. Around the estuaries, small areas of Quaternary alluvium occur at the head of small bays and at the mouth of small freshwater creeks and gullies, where usually it has been substantially disturbed and/or modified by European activities.

The sandstone bedrock of the plateaus was of direct importance to the local inhabitants as it provided overhangs and rock shelters that protected people from the weather. It was also a surface on which engraved and pigment images were depicted and on which ground edged implements, such as hatchet heads, could be shaped and sharpened. In addition to sandstone, the Sydney region has other geological formations and sediments which contain several rock types used to make stone tools – rocks such as silcrete, chert, tuff, quartz, quartzite and basalt. Access by people in different parts of the region to these rock types was governed by the distribution of the geological formations as well as the relationships between groups with rights to certain land.

Stone artefacts are one of the most common objects found in archaeological sites across Australia. Stone was used to make the point or cutting edge in many implements such as spears, adzes and hatchets/axes. In contrast to the generally accepted widespread use of stone in Aboriginal tool kits over most of Australia, a 1970s archaeological study maintained that stone was rarely used in the implements of coastal Sydney (Ross 1976). This study also argued that there were limited stone materials suitable for making flaked stone artefacts in the coastal zone. More recent studies (Corkill 1999) are changing these views, particularly with regard to the distribution and availability of silcrete, one of the two most common materials from which stone artefacts in the region are made.

Ochres and white pipeclay are found as pockets and lenses within sandstone and shale beds. They were used for decorating people's bodies as well as implements and weapons, and for creating pigment images in rock shelters. Ochre occurs in colours ranging from yellow (limonite) to red (iron oxide). A soft white or greyish clay, which usually occurs beneath lateritic deposits, is exposed in some railway cuttings and quarries to the north of Port Jackson (Browne 1972:11).

6.4.6 *Drinking water*

There are no historical references to the use of fresh water sources or their influence on life in the Sydney region. However, it is likely that the presence of permanent water would have influenced the location of sites that could be interpreted as overnight campsites or base camps, such as the shelter at Balmoral Beach. At around 4000 years ago, when the shelter at Balmoral Beach was first occupied, there was a small freshwater creek running down what is now Botanic Road. Later, there was also a freshwater swamp that developed from a small lagoon in the area that is now the oval at the end of The Esplanade (Hashimoto 1993; Attenbrow 1994, 2002:79).

6.5 **Material Culture**

Many different tools and weapons were used in the daily life of the Gamaragal to obtain food and raw materials, carry small items, make tools, weapons and equipment, prepare food and for defensive and offensive purposes.

6.5.1 *Fishing*

Fishing gear used by the coastal people 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. There were two types of fishing spears, a large one with four prongs, *Cal-larr* or *Ca-la-ra*, and a smaller one called *moo-ting* or *moo-tang* (Collins 1798[1975:510; King in Hunter 1793[1968]:408). In contrast to the men, women used hooks and lines while in bark canoes. This division of labour between men and women and the different modes of fishing extended along the New South Wales coast from only Port Stephens to the NSW/Victorian border. Canoes were essential, not only for fishing, but as transport around the bays and estuaries and along the rivers.

6.5.2 *Hunting*

Men also used a variety of equipment in hunting large and small game, such as barbed and unbarbed wooden spears, spear-throwers, clubs and ground-edged hatchets. A variety of traps and snares were also used to catch birds and other small animals, particularly away from the coast.

Collins (1798[1975:509]) names seven hunting spears (see also Smith and Wheeler 1988:58, Plates 20, 30, 33, 41.1, 43.1, 33, 43.1, 56.4) with only one prong which was sometimes simply pointed or had one or more barbs. The sharp pointed end of some spears was made of very hard wood two or three feet [60 to 90 cm] long and tapered to a point (Bradley 1786-1792[1969]:73,127). Some hunting spear barbs were shaped from the solid piece of wood of which the prong was made or were fastened on with gum. Barbs were also made from sharpened bone (e.g. kangaroo), kangaroo teeth, hardened gum, shell (Bradley 1786-1792[1969]:69, 73, 127; Collins 1798[1975]:486-487, Plate on p.368; Phillip in Hunter 1793[1968]:495-496; White 1790[1962]:151-

152, 200, Plate 37) 'the prickle of the sting ray' (Tench 1793:190[1979:283]) and 'pieces of broken oyster shell' (Collins 1798[1975]:487; see also Hunter 1793[1968]:496, who says 7 or 8 inches [18-20 cm]).

Two forms of spear-thrower were used to assist in delivering spears, the *Wo-mer-ra* and *Wig-goon* (Collins 1798[1975:487, 510]). The *Wig-goon*, which was made of heavy wood, had a hook at one end - the other end was rounded (Collins 1798[1975:487]). The *Wo-mer-ra* differed from the *Wig-goon*, in that it was:

..... a short stick which assists throwing it [the spear]: this stick is about three feet [90 cm] long, is flattened on one side, has a hook of wood at one end, and a flat shell, let into a split in the stick at the other end, and fastened with gum; ...(Hunter 1793[1968]:53; see also Bradley 1786-1792[1969]:69, 74, 127-128; White 1790[1962]:152, 200, Plate 37; Collins 1798[1975:486-487]).

6.5.3 Gathering

Small items such as shellfish and plant foods (berries, yams, nectar-bearing blossoms, leaf vegetables) were collected and carried in net bags or bark baskets. The principal piece of equipment required for gathering plant foods was a wooden digging stick which was used by the women to dig out root vegetables such as fern roots (rhizomes), bulbs from numerous orchid species, and tubers from a variety of vines. One end of the *wiggoon* spear-thrower (i.e. the end opposite that which had the hook) was also used to dig out fern roots and yams (Collins 1798[1975:487]). Some fern roots and yams were prepared for eating 'by moistening & beating between two stones [for] a considerable time' (Bradley 1786-1792[1969]:135, see also p.117 and Hunter 1793[1968]:80), before and/or after being roasted (Bradley 1786-92[1969]:75, 76, 95, 103, 117, 131, 135; Hunter 1793[1968]:64, 80; Phillip 15 May 1788[1892:129], 28 September 1788[1892:192], in Stockdale 1789[1950]:135; Tench 1789:82, 1793:196[1979:48, 287-8]).

6.5.4 Tools and weapons – use of raw materials

Tools, weapons and other objects were made from a range of natural products, including wood, bark, reed and other plant materials, as well as bone, shell, animal skins, sinew and stone. At the time of British colonisation coastal groups used stone as implements less often than hinterland groups (such as those on the Cumberland Plain), and bone or shell was used in its place for items such as spear barbs, adzes and scrapers (Hunter 1793[1968]:519; Collins 1798[1975]:488). Unmodified shells and stones were used opportunistically on some occasions as cutting or adzing tools and missiles.

Objects such as boomerangs, clubs, spear-throwers and some shields (those known as *aragoon*) were made of wood. The shafts of the spears were made from either hardwood or often the flowering stems of the grass tree *Xanthorrhoea*; the prongs, which were from hardwood, were often barbed with bone points. The single piece fish hooks, which were made and used by the women, were made from large turban shells.

Some shields (those known as *ileemon*), canoes and baskets were made of bark. Huts (bark shelters) were made of bark as well as boughs covered with the leaves of Cabbage trees (*Livistona australis*) (Bradley 1786-92[1969]:140). Net bags were made from two-ply vegetable twine often from bark fibres. The bark used for canoes

along the coast was probably Grey (or saltwater Swamp) She Oak (*Casuarina glauca*) (the tree from which the bark came was described by George Worgan as coming from a tree which 'bears Leaves like a Fir' and 'somewhat resembles the Fir in its Growth' (Worgan 1788[1978:11, 17]). In addition, the bark of Bangalay (*Eucalyptus botryoides*) or some stringybarks (*E. agglomerata* and *E. acmenioides*) may have been used for making canoes, as they were in other parts of the east coast (Lampert and Sanders 1973:Table 1 [NSW south coast]; Kamminga 1982:98 [SE Qld]).

Spears, spearthrowers, canoes, stone hatchets/axes, fishing hooks and lines, digging sticks, net bags and a variety of other containers were part of the equipment used in hunting, fishing and collecting the numerous land animals, fish, shellfish and plants that were eaten. Weaponry included clubs, shields as well as spears and stone hatchets.

Historical literature indicates many tools and weapons made of wood. However, the archaeological record is predominantly made up of sites containing objects made of other materials, such as stone, bone or shell, as these are the materials that have not deteriorated.

Shell implements found in archaeological sites in the Sydney region comprise fish hooks, scrapers and shell hafted onto the ends of spear throwers. Fish hooks are the most common shell implement found in sites in the Sydney region. They are only found in coastal locations, usually around bays and estuaries, and have been recovered from shell middens excavated at Port Jackson, including Bottle and Glass Point, Hunters Hill, North Head and Woollahra Point (Australian Museum Archaeological Collections; Attenbrow 1991: 49; Attenbrow 2002:98, 196). The fish hooks known from the archaeological record are mostly made from the Turban shell (*Turbo torquata*). They are found only in levels dating back to about 900 years ago, indicating a relatively recent introduction of shell fish hooks into the coastal tool kit (Attenbrow 2002:98).

The most frequently found bone implements are generally referred to as bone points. They are mostly found in coastal shell middens, but have also been found in hinterland rockshelter deposits. In the Sydney region, they have been found in excavated sites dating up to 2500 to 3000 years old (Attenbrow 2002:99).

Stone implements in archaeological sites in the Sydney region include flaked and ground tools and fish hook files. The hatchet head is the only stone tool that appears in both the archaeological record and historical literature and illustrations (Attenbrow 2002:100). These would have been hafted and, although they are rarely found with the wooden handle, hafting material/resin sometimes remains on the hatchet head. Most stone tools found in archaeological sites in the Sydney region are flaked, rather than ground. The most distinctive flaked stone tools are the backed artefacts (Bondi points, Elouera and geometric microliths). However, the majority of stone artefacts found in archaeological sites are debris from making tools, rather than tools themselves. Stone artefacts have been found in all levels of excavated sites on the coast. Their presence in the uppermost levels indicates that stone artefacts were made at and used in these locations in recent times, even though the early historical documentation does not portray stone implements being made or used to a large degree, compared with the use of other materials such as wood.

6.6 Where People Camped

In hunter-gatherer societies, locations for campsites were usually chosen to provide comfort and shelter from the weather, as well as access to plant and animal foods and raw material resources (Binford 1982; Meehan 1982:26-31, 66-67; Sullivan 1976). Campsites may represent places at which family groups stayed several days, or perhaps weeks, and carried out numerous activities. However, other locations within the landscape were used for different activities. People may have camped at some places only a single night on journeys to obtain raw materials or to organise ceremonies. Other locations may represent where they stopped during the day while out fishing, shellfishing, hunting or plant gathering.

Historical documents provide some evidence for the way people made use of particular parts of the country in the Sydney region. The use of the foreshores and riverbanks can be seen in the written accounts and artistic depictions made by the colonists. Late eighteenth century and early nineteenth century images by artists such as 'The Port Jackson Painter', Thomas Watling, Charles Alexandre-Lesueur and Louis Philippe Alphonse Bichebois (Louis PA Bichebois in National Library of Australia, Accession Nos: PIC S11039/30 and 32; Peron & Freycinet 1824:Plate 31) show people camping, eating and fishing on open shoreline locations around the estuaries and along river banks, as well as the use of rockshelters (Attenbrow 2002:46-47).

However, this evidence is biased to some extent as the written accounts appear to indicate that most of the earliest encounters between the British and Aboriginal people took place along the estuarine shorelines of Botany Bay and Port Jackson, as well as Pittwater in Broken Bay (e.g. Banks 1770 in Beaglehole 1963:53-60; Bradley 1786-92[1969]:65-77, 119; Cook 1770 in Beaglehole 1955:304-312; Hunter 1793[1968]:52-55; White 1790[1962:156-160]).

The early British colonists documented Aboriginal people using various forms of shelter, including rockshelters that form in the sandstone cliffs and outcrops around the harbour as well as small structures, usually referred to as huts, which were constructed out of sheets of bark, branches, bushes and cabbage tree leaves, with branches being used as the frames (Blackburn 1788 in Neville 1975:134, 148, 159; Bradley 1786-92[1969]:74, 82, 89, 99, 103, 107, 140; Collins 1798[1975:460]; Cook 1770 in Beaglehole 1955:305; Extract from a letter ... 18 November 1788[1892:222]; Hunter 1793[1968]:59-60, 80; Phillip 30 October 1788[1892:208]; 16 November 1788[1892:214]; Southwell 1788b[1893:689]; Tench 1789:80, 1793:196[1979:47-48, 287-288]; White 1790[1962:157]; Worgan 1788[1978:16]).

The construction of huts and the use of rockshelters is provided in early accounts by George Worgan, Daniel Southwell and David Collins:

... they take up their Lodgings for a Day or two in a miserable Wigwam, which they make of the Bark of a Tree ... these are dispersed about the Woods near the Water, 2.3.4. together... (Worgan 1788[1978:16]).

When they have caught enough [fish] for a Meal, and feel hungry, The Men, call the Women on shore, and haul up the Canoes for them, They then gather up a few dry Sticks, light a Fire under a shelving Rock, (if there is one near,) or a Wigwam, here they sit down and broil their Fish ... (Worgan 1788[1978:16-17]).

They live in small whigwhams ... they are chiefly near the water, for the convenience, no doubt, of catching fish, the principal part of their subsistence (Southwell 1788b[1893:689]).

On the sea-coast the huts were larger, formed of pieces of bark from several trees put together in the form of an oven with an entrance, and large enough to hold six or eight people. Their fire was always at the mouth of the hut, rather within than without. Beside these bark huts, they made use of excavations in the rock; and as the situations of these were various, they could always choose them out of the reach of wind and rain (Collins 1798[1975:460]).

First Fleet officer David Blackburn wrote that:

They go in tribes or families ... and where they find most oysters or the best fishing, there they take up their residence in the hollow of a rock till they have cleared the neighbouring rocks of the oysters and other small shell fish which adhere to them and then seek some other place (Blackburn 19 March 1791 in Neville 1975:159).

It was also documented that people did not live permanently in any one location (Hunter 1793[1968]:59-60; Worgan 1788[1978:15-16]).

Most reports suggest that rockshelters were most commonly used on the coast (Bradley 1786-92[1969]:74, 140; Extract from a letter... 18 November 1788[1892:222]; Hunter 1793[1968]:59-60; Tench 1789:80[1979:47-48]; White 1790[1962:157]), and bark or bough huts were used more often in summer than in winter. A-shaped bark shelters, semi-circular brush shelters and rockshelters all appear in the sketches and paintings (Barratt 1981:Plate IV; Collins 1802[1971]:301; Hunter 1793[1968]; Smith and Wheeler 1988:Plates 38 and 56; Stockdale 1789[1950]:Plate opp. p. 102).

In addition, there are accounts of people sleeping outside of any structures. Sir Joseph Banks observed in 1770 that they 'saw many Indian houses and places where they had slept upon the grass without the least shelter' (Banks 1770 in Beaglehole 1963:57).

Of these various habitation structures, rockshelters are the only ones that continue to survive and can be seen in the archaeological record, being recognised by the presence of cultural material in the deposits on the floor of shelters or as pigment or engraved images on the walls (Attenbrow 2002:106).

6.7 Ceremonies and Spiritual Life

The First Fleet writers recorded very little about the spiritual beliefs of the Sydney people. However, on the basis of a detailed description of an initiation ceremony that took place near Farm Cove (in what is now the Royal Botanic Gardens) (Collins 1798[1975]:466-485) and by extrapolating from information recorded in the late 1800s in adjacent regions, such as on the Hawkesbury River (Mathews 1896, 1897a), around Lake Macquarie to the north (Threlkeld 1825-26 in Gunson 1974 Vol. 1:42, 50-53, 65, Vol. 2:194, 206) and the NSW south coast (Howitt 1904[1996]:516-62, 527-43; Mathews 1904:346) it is understood that there was a rich spiritual life which included a series of rites and initiation ceremonies as well as a belief in ancestral beings *Baiame* and *Daramulan* and other beings that inhabited the land.

David Collins (1798 [1975]) described a large initiation ceremony that was held in 1795 at the head of Farm Cove. Collins attended the ceremony, accompanied by the convict artist Thomas Watling. However, despite his detailed description and many

scenes being drawn which depicted various stages of the ceremony, the underlying beliefs were not revealed.

The spiritual aspect of initiation ceremonies is also suggested by the involvement of the *karadji*, men who had a special role in ceremonies and rituals and who were also known to have healing powers (Attenbrow 2002:60). The *karadjis* of the Gamaragal from the north side of Port Jackson appeared to control the Farm Cove initiation ceremony, even though it was held on the southern side of Port Jackson in Cadi country (Collins 1798 [1975:453]).

The ceremony was not only attended by people from around Port Jackson, including the Cadigal and Gamaragal, but Collins also wrote that “woods” people and other “strangers” not known to the colonists were also present at the ceremony (Attenbrow 2002:131).

The ceremony took place over a number of days, between the 25th January and 3rd February 1795 (Collins 1798[1975:466-485]). The location of the ceremony was at the head of Farm Cove, where people started to gather days before the actual ceremony took place. The initiation ground was described as being an oval area, about 8m by 5.5m, which had been cleared of trees and grass. Collins’ account of the initiation ceremony describes various activities, rites (including tooth avulsion) and dances. Men imitated kangaroos, dingos and other animals and enacted scenes that were to assist the initiates in becoming good hunters and warriors and introduce them to the spiritual beliefs and laws of their people.

Most objects used in the ceremony were commonly used objects including spears, shields and clubs. The special implements were only used by the *karadji* during the tooth avulsion (Attenbrow 2002:133).

Other ceremonies around Port Jackson during the early years of the colony have also been documented and may have been held on Georges Head (Attenbrow 2002:131).

6.8 Art

The Aboriginal people around Port Jackson made paintings, drawings, stencils and engravings on the sandstone that dominates the area. Many of these images remain on the rock platforms and rockshelters in the Sydney region. These images are part of a regional style that essentially covers the extent of the Hawkesbury sandstone, stretching from and including the southern rim of the Hunter Valley in the north, to the Woronora Plateau in the south, and as far west as the Blue Mountains (Attenbrow 2002:146).

There are few early historical references to these images. The pigment images (paintings, drawings and stencils) in rockshelters are not referred to by the first British colonists. The first colonists mention the engraved figures although there are only a few brief descriptive comments in reports of their explorations (Collins 1798[1975:493]; Phillip 15 May 1788[1892:135]; Tench 1789:79[1979:47]; White 1790[1962:123]). They do not appear to have taken much interest in or asked the local people about the engraved figures they saw. If they did, the answers they received were not written down.

However, Governor Phillip wrote one of the two lengthiest descriptions in his letter of 15 May 1788:

In Botany Bay, Port Jackson, and Broken Bay we frequently saw the figures of men, shields, and fish, roughly cut on the rocks; and on the top of a mountain I saw the figure of a man in the attitude they put themselves in when they are going to dance, which was much better done than I had seen before, and the figure of a large lizard was sufficiently well executed to satisfy every one what animal was meant (Phillip 15 May 1788[1892:135], Stockdale 1789[1950]:106-107).

To this description, other comments by John White and Watkin Tench add only that the figures seen included canoes and birds (White 1790[1962:123]; Tench 1798:79[1979:47]).

Further details are provided by later descriptions provided by Angas and Miles in the first half of the 19th century. From the 1840s, George French Angas and W Augustus Miles were interested in the engraved figures, however only made brief comments about the pigment images. Angas referred to 'impressions of hands upon the sides of high rocks' at North Head, as well as to 'outline tracings' in caves in Middle Harbour and Port Aiken [Port Hacking] (Angas 1847[1969] Vol. 2:202, 271). Miles described 'impressions of a "red hand", not with the intervening spaces painted red, but the hand itself is red' (Miles 1854:36).

Angas inspected many of the rock engravings around the Sydney region, including at places such as Camp Cove, Point Piper, 'Mossman's Bay', Georges Head, Middle Harbour, Lane Cove, North Head, 'South Reef Promontory' and 'Port Aiken' (Port Hacking) during this visit to Sydney in the mid-1840s (Angas 1847[1969] Vol. 2:201-203, 271-276, Plates 1 and 2). He wrote:

... I refer to their carvings in outline, cut into the surface of the flat rocks in the neighbourhood, and especially on the summits of the various promontories about the harbours of the coast. Although these carvings exist in considerable numbers, covering all the flat rocks upon many of the headlands overlooking the water ... After examining the flat rocks in every direction, we found sufficient examples of these singular outlines to confirm at once the opinion that they were executed by the aboriginal inhabitants; but at what period is quite uncertain (Angas 1847[1969] Vol. 2:201-203).

He also noted that 'the whole of the subjects represented *indigenous* objects – such as kangaroos, opossums, sharks, the *hieleman* or shield, the boomerang, and, above all, the human figure *in the attitudes of the corobory* [sic] *dances*' (Angas 1847[1969] Vol. 2:203); elsewhere he lists 'birds, flying squirrels, black swans, and various sorts of fish' (Angas 1847[1969] Vol. 2:271).

There is no documented evidence of Aboriginal people being talked to about the images until the end of the 19th century. Two of the most prolific recorders of Aboriginal art sites, RH Mathews and WD Campbell, both spoke to Aboriginal people about specific engraving sites. Despite these consultations, they appear to have gained little insight into the part such places played in the lives of the Aboriginal people (Campbell 1899:6; Mathews 1897b:468; Mathews 1910[1911]:405).

Within the Sydney region (Hawkesbury sandstone country), a range of motifs in both engraved and pigment art have been documented (Campbell 1899; Elkin 1949:150-153; McCarthy 1938, 1972, 1983:407; McDonald 1992:18-19; Mathews 1894[1895], 1895b, 1910[1911]; Mathews and Enright 1895; Stanbury and Clegg 1990:113-115).

The range of motifs include:

- men, women, humans (gender indeterminate), hands, footprints (mundoes⁵). Some engraved human figures have headdresses, belts, necklaces and/or armbands, pubic aprons (skirts); some are holding axes, clubs, spears or fish, or have both arms raised above their heads. Groups of men and women sometimes occur;
- anthropomorphs (human-like/composite figures), many have been interpreted as ancestral beings (also called culture heroes in McCarthy 1961:117, 1959, 1983; Stanbury and Clegg 1990:117) or supernatural beings. These figures often have items of dress and hold various implements as listed above. Some mundoes may represent tracks or routes of ancestral beings;
- macropods (kangaroos/wallabies), dingos, wombats, echidnas, koalas, possums, gliders, macropod tracks and feet;
- fish (including snapper and bream), eels, sharks (including hammerhead), seals, dolphins, porpoise, whales, sunfish, turtles, stingrays, jellyfish, possible octopus;
- snakes, lizards, tortoises, possible spider;
- emus, penguins, lyre birds, brush turkey, other birds, bird tracks; and
- circles, shields, boomerangs, axes, spears (single barbed spear and multi-pronged fish-gig), clubs, dilly bags (baskets), fishing lines, possibly canoes, as well as non-figurative motifs such as tally marks (a series of short parallel lines).

Historic images have been recorded in several sites in the Sydney region, as well as in adjacent areas. These include charcoal drawings of European sailing ships in rockshelters around Port Jackson, along Berowra Creek and in Ku-ring-gai Chase National Park, and engraved outlines of ships at Devils Rock Maroota and Cattai National Park (Attenbrow 2002:150; McDonald 1986; Stanbury and Clegg 1990:96, Figure 62). An engraving of a ship is recorded within Mosman LGA.

A similar range of motifs occurs in rockshelters and on rock platforms (Attenbrow 2002:148). The most common motif is the 'track' (feet and hands) (McDonald 1992:18-20; 1998:321-323). Footprints (as engraved mundoes) are much more frequent on rock platforms than hands, whereas hands (as stencils) occur much more frequently in rockshelters with only occasional stencilled feet (human and macropod). The next most frequent motifs are kangaroos and fish. Marine subjects and material objects are also more common on rock platforms than in rockshelters. Birds and reptiles are rarely depicted.

The number and range of motifs at any one site varies widely. Sometimes several engraved motifs at one site appear to form a linked composition or story, or several adjacent sites may have a common theme (Stanbury and Clegg 1990:2).

However, it is impossible for the uninitiated to understand the exact meaning of the images. Initiated people may understand these images to represent something entirely different to what they appear to depict, depending on their function and context in which they were made (Attenbrow 2002:148, Morphy 1999:13-15; Stanbury and Clegg 1990:1-9, 113, 128-129; Walsh 1997:112). For example, what appear to be depictions of animals, may indicate totems or were made to ensure hunting success.

⁵ This term comes from a local Aboriginal word for foot. Dawes (1790-91:816) comparative list has "mandaouwi" as the Burubira ál (Buruberongal) word for foot and "manaóuwi" as the 'coasters' word. Collins (1798[1975:508]) lists "ma-no-e". Mundoe is used by archaeologists to refer to engravings of feet, including large footprints that have been interpreted as belonging to ancestral beings (Attenbrow 2002:201).

However, it has been suggested that rock art is associated with spiritual or religious aspects of Aboriginal culture. Attenbrow (2002:134-135) also provides comment on ritual or ceremonies and their potential relationship with the archaeological sites that we find around Port Jackson today.

Historical documents that indicate an association between initiation ceremonies and drawn or engraved figures include the accounts of George French Angas, who visited Sydney in 1844. Angas came across several rock engravings and was surprised at the lack of comments about them in earlier writings. He therefore attempted to obtain information about them by speaking to 'Old Queen Gooseberry' who was among 'about a dozen natives of the Sydney and Broken Bay tribes' who were camped beside a small freshwater lake at Camp Cove (South Head). Queen Gooseberry, who was Bungaree's widow, was then the oldest person among the group. At first she was reluctant and said 'such places were all *koradjee* ground, or "priests' ground" and that she must not visit them', but she eventually went with Angas, to several places near North Head and told him 'all she knew and all that she had heard her father say respecting them' (Angas 1847[1969] Vol. 2:202, 272-273). We will never know whether she actually told Angas 'all she knew', or simply all that she was willing to say to them about the engravings. Gooseberry told Angas that no-one lived on the engraving sites as 'Too much dibble-dibble walk about' and that 'mystic dances or festivals' were held on these areas as well as fights and dances (Angas 1847[1969] Vol. 2:272-273). From Gooseberry's statements it seems clear there was a connection between the engravings and the activities of the *karadji* and that other people only visited them when various rites were performed as part of initiation ceremonies (Elkin 1949:125; Layton 1992:135).

The association of certain rock engraving sites in the Sydney-Hawkesbury region with ritual, initiation ceremonies and/or that some figures represented totemic beings is also documented in anthropological and archaeological literature from the late 1800s to recent times. This includes RH Mathews, Robert Etheridge Jr and WD Campbell in the 1890s (Mathews 1897b:466-467; Etheridge 1890:34; 1893:82-84; 1894:60-65; Campbell 1899:1) and several archaeologists and anthropologists from the 1900s (Elkin 1949:125, 128; Enright 1939; McCarthy 1956:55-57, 1961:118, 1972:22; Sim 1966:37; Stanbury and Clegg 1990:129; Vinnicombe 1980:IV:9-10).

Many engraved and pigment figures could be interpreted as having been produced in a spiritual or religious context (including male initiation ceremonies) or reflecting ancestral and supernatural beings and totemic associations (McCarthy 1959:213). This is particularly the case for the anthropomorphic figures, and males with headdresses and/or waistbands, but also applies to animals and other objects that may have been totems (Mathews 1894[1895]:143-144; 1897b:466-467). Males with headdresses and/or waistbands who hold or are superimposed by objects such as clubs may represent initiated men or initiates who are passing through a ceremony (Mathews 1894[1895]:152). The larger-than-life anthropomorphic figures have often been identified as either Baiame or Daramulan (Attenbrow 2002:148).

On the basis of 19th century descriptions of initiation ceremonies it has been proposed that many engraved animals portrayed the totems of clans or individual people (Mathews 1894[1895]:143-144; 1895b:153; 1897b:467; McCarthy 1938:405;

1972:22). In 1936, WJ Enright and anthropologist AP Elkin were told by a Port Stephens *karadji* that this was the case (Elkin 1949:125; Enright 1939:168). Elkin therefore considered that the engraved images were sacred and represented 'great heroes' and 'the chief myths' which were taught only to the initiated and that 'apparent groups of engravings' represented 'mythological, ritual or historical themes by which the individual figures are related' (Elkin 1949 127).

More recently, rock art specialists have proposed that the images may have had more to do with visually representing food prohibitions connected with rituals rather than food preferences and may also have acted as visual aids to remembering tribal lore and reinforcing the rules that governed their society (Vinnicombe 1980:IV:12). Layton (1992:244) proposed that the historical evidence "tends to suggest that the engravings figure in ceremonies which transcended the differentiation of communities into local clans, rather than celebrating clan ownership of estates" (Layton 1992:244).

Therefore, the historical observations in combination with the archaeological evidence appears to suggest that many rock engravings may have been of spiritual and ritual significance and played a role in male initiation ceremonies (Attenbrow 2002:151).

6.9 Historical Observations in Mosman LGA

The first observation of the Aboriginal people of the Mosman 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. We of course landed unarmed, taking care that arms were ready for a moments notice. Having some angles to measure from this point, two of the officers went to the outer part of the rocks for that purpose, the others remained with the Natives who were all much disposed to good humour and pleased with us. On our landing we observed some women at the place the men came 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 there arms extended over their heads, got on their legs and danced till we were some distance, then followed us upon the rocks as far as the boats went along that shore (in Copley 1962:40).

The landing place was probably Koree (Chowder Bay) and the point from which the angles were taken either Gurugal (Chowder Head) or Georges Head for which no Borogegal name was recorded (Souter 1994:7).

The following day Captain Hunter's party was hailed from a cliff top by Aboriginal people who pointed to the best landing spot. This may have been Cobblers Beach on the northern side of the head or the southern end of Balmoral. It was noted that the Aborigines carried only spear throwing sticks ("womras") but a bundle of spears was carried by one man behind the main group. Bradley noted that "the women kept their distance near the man with the spears" and also that:

this mark of attention to the women in showing us that altho they met us unarmed, they had arms ready to protect them, increas'd my favourable opinion of them very much; some of these people having pieces of tape and other things tied about them, we concluded to be some of those people whom the Governor had met here before, these people mixed with ours and all hands danced together.

Hunter's accounts describe the physical appearance of the people observed around the Harbour, likely to have included that Borogegal:

The men in general are from five feet six inches, to five feet nine inches high; are thin, but very straight and clean made; walk very erect and are active. The women are not so tall, or so thin, but are generally well made; their colour is a rusty kind of black, something like that of soot, but I have seen many of the women almost as light as mulatto ... in general they have broad noses, large wide mouths, and thick lips; ... Men, women and children go entirely naked, as described by Captain Cook; they seem to have no fixed place of residence, but take their rest wherever night overtakes them: they generally shelter themselves in such cavities or hollows in the rocks upon the sea shore, as may be capable of defending them from the rain, and, in order to make their apartment as comfortable as possible, they commonly make good a fire in it before they lie down to rest; by which means the rock all around them is so heated as to retain its warmth like an oven for a considerable time; and upon a little grass, which is previously pulled and dried, they lie down and huddle together.

There are historical observations of the effects of small-pox (Gal-gal-la) on the Aboriginal community of the Sydney region, which is of interest given its association with Balmoral as described in oral history accounts (see section 6.11 below). Governor Phillip informed the Secretary of State that as best he could determine, about half the Aborigines around Sydney had perished 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.

At North Harbour, Collins wrote:

At that time a Native was living with us ... and on our 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 in the rock filled with the putrid bodies of those who had fallen victims to 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'.

Barrington (1795:52) wrote that:

It is truly shocking to find coves of the Harbour, which were formerly thronged with numerous families... now strewn with dead bodies of men, women and children.

Within a very short time the remaining Aborigines were also alienated from the land around Port Jackson by the various activities of the European settlers (Willey 1979). By the time the *Sirius* had been careened at Middle Harbour and was towed to the head of Mosman Bay, the landscape of Borgegy had become less inviting. The Borogegal had not only been reduced by small-pox, but tension was rising between the Aborigines and the Europeans. Phillip reported to Lord Sydney that:

Some of the convicts had been killed, and wounded by the natives... but that has I believe never happened but when the convicts have been the aggressors. I have always found the natives friendly, and still retain the opinion I first formed of those people. That they do not betray a confidence placed in them I have reason to believe from their never having attempted to take advantage which has been frequently placed on them by myself and those who have been with me in various excursions, and from the confidence some of them have placed in us; nor do I believe they would have ever been hostile but from having been ill used and robbed, which has been the case, though every precaution that was possible has been taken to prevent it.

Much later in 1815, Governor Macquarie attempted to establish some of the remaining Aboriginal people in a farming community at Middle Head (Cubba Cubba) and there are a number of references to that in the historical literature (refer to Section 6.10 below).

An undated newspaper clipping refers to Aborigines living in the Wy-ar-gine Point area:

Mr Huggett remembered the advent of the Edwards family (which was in the 1820's – Carroll 1949:6) to the Beautiful portion of the Sydney Harbour which is now called Balmoral. He knew the place long before that, when his boyhood delight was to romp about with the Aboriginal children and dip in the briny or fish or explore the great cave which existed there, but which has since been destroyed by the salt spray and falling rocks. The caves were situated between Edwards Beach and Chinaman's Beach and each was capable of accommodating 100 blacks when they sought shelter from the rain or cold (Harnett nd:151).

An article in Town and Country Journal dated 7th October 1871 (p. 468) refers to Aboriginal people around Georges Head, Bradleys Head and Athol Gardens, particularly in relation to the defence-related activities that went on there. The article describes that:

The spot on which the battery (at Georges Head) is constructed has a history attached to it. It was regarded by the Kamilroy tribe of aborigines as their head-quarters on the shores of Port Jackson. This tribe was by far the most powerful and numerous of all the Australian aborigines, and its territory extended, with some interruptions, from this headland to the vicinity of Cape York, a distance of more than 1500 miles.

It is not indicated on what this information regarding the name of the group (Kamilroy were obviously confused with Gammeragal) and the extent of their territory is specifically based, and is considered to be incorrect according to other documentary evidence (e.g. refer to Tindale 1974 for descriptions of group territories). The reference to Kamilroy in this article is especially confusing, as there is a distinct group known as the Kamilaroi that were located to the northwest of the Sydney region. The traditional territory of the Kamilaroi extends northwest from Sydney Harbour to the northwest corner of Wollemi National Park (Taçon pers. comm. 2004).

The article goes on to describe the importance of natural landscape features to Aboriginal people, particularly the spectacular headlands around the harbour, and their use for ceremony and as meeting places. Georges Head was described as an important area, used for gatherings of Aboriginal people, including a reference to Bungaree:

It is a well-known fact that each of the Australian aboriginal tribes attached great importance to some particular headland or bell projecting promontory or point, and that in the vicinity of such spots, where rude carvings and emblems are usually found, they were accustomed to assemble at stated times to practice their ceremonies, settle their disputes, and arrange matters appertaining to the welfare of the tribe. George's Head was often the scene of these meetings of the Kamilroy tribe, under their principal chief, Bungaree ...

The article also discusses the Aboriginal farm at Georges Head, indicating that Macquarie established the farm at Bungaree's request for the exclusive use of the Aboriginal people:

Governor Macquarie, at Bungaree's request, in order to preserve, for their exclusive use, a spot of which the Kamilroy tribe desired to retain uncontrolled possession, formally set apart George's Head and some land in its immediate vicinity, for a little aboriginal settlement under Bungaree's charge.

No reference is made to the Aboriginal use of either Bradleys Head or Athol Gardens, but instead espouses the beautiful natural landscape of these locations and that thanks to military developments, they have been opened up for easy visitor access and holiday-makers.

In terms of land use, these areas have been affected by construction of military facilities, including excavating into solid sandstone to build the fortifications and batteries, the construction of roads and erection of buildings (both for military purposes and holiday, or recreational use. Athol Gardens had been established as a garden for people to visit, with buildings, a hotel (which was described as “a large stone structure”) and established exotic gardens. The article refers to a picnic at Athol Gardens where around 2000 people were in attendance. There were two pavilions erected for “dancing parties”, which were each large enough to hold several hundred people. This is consistent with other Pleasure Grounds, which were established at places around Sydney, including at Como and Nielsen Park.

Later historical records suggest that by the 1860s there were very few of the original inhabitants of the shores of Port Jackson living in Sydney town and adjacent areas. In addition, those that remained were affected in some way into British colonial life. Larger numbers of people remained in other parts of the Sydney region, particularly in the western and southern Cumberland Plain. People were also moving into the Sydney region from other parts of NSW, including the central and south coasts, Blue Mountains and further afield (Attenbrow 2002:16).

6.10 Bungaree's Farm

There has been much debate over the location of Bungaree's Farm. Smith (1992) provides a detailed study of the life of Bungaree, who was given the title “King of the Broken Bay Tribe” by Governor Macquarie. Smith outlines two attempts to establish an Aboriginal farming settlement at Georges Head. The first was in 1815 around the same time as the establishment of the Native Institution at Parramatta where the government decided to board Aboriginal children for education. The second attempt was in the later years of Macquarie's governorship in 1822, where he sought to re-establish the farm, which was later referred to as “King Bungaree's farm”.

It appears that Governor Macquarie was keen to establish the Aboriginal settlement in an area of good agricultural land, which was to be utilised by them as a farm, but also where the Aboriginal people living on the settlement would have access to their traditional way of life. It appears likely that this was at Georges Head (as referred to in the quote below) and Souter (1994:22) suggests that the landing place for Macquarie's party was either Chowder Bay or Obelisk Bay. An article in the Sydney Gazette dated 4th February 1815 states that:

On Tuesday last, at an early hour, His Excellency the Governor and Mrs Macquarie, accompanied by a large party of Ladies and Gentlemen, proceeded in boats down the Harbour to George's Head.

The object of this excursion, we understand, was to form an establishment for a certain number of Natives who had shewn a desire to settle on some favourable spot of land, with a view to proceed to the cultivation of it: - The ground assigned them for this purpose (the peninsula of George's Head) appears to have been judiciously chosen as well from the fertility of the soil as from its requiring little exertions of labour to clear and cultivate; added to which, it possesses a peculiar advantage of situation from being nearly surrounded on all sides by the sea; thereby

affording its new possessors the constant opportunity of pursuing their favourite occupation of fishing, which has always furnished the principal source of their subsistence.

On this occasion, sixteen of the Natives, with their wives and families were assembled, and His Excellency the Governor, in consideration of the general wish previously expressed by them, appointed Boongaree (who has been long known as one of the most friendly of this race, and well acquainted with our language), to be their Chief, at the same time presenting him with a badge distinguishing his quality as "Chief of the Broken Bay Tribe," and the more effectually to promote the objects of this establishment, each of them was furnished with a full suit of slop clothing, together with a variety of useful articles and implements of husbandry, by which they would be enabled to proceed in the necessary pursuits of agriculture: - A boat (called the boongaree) was likewise presented to them for the purpose of fishing. About noon, after the foregoing ceremony had been concluded, His Excellency and party returned to Sydney, having left the Natives with their Chief in possession of their newly assigned settlement, evidently much pleased with it and the kindness they experienced on the occasion.

A general reference to the location of the settlement on the northern shore of the Harbour is made in a letter from Governor Macquarie to Earl Bathurst dated 24th March 1815 (HRA Vol. VIII, p.467). Macquarie writes:

I have already succeeded in getting Sixteen Adult Natives of this part of the Colony to settle permanently on a small Farm on the Northern Shore of the Harbour of Port Jackson about Six Miles from the Town of Sydney, where I have had Comfortable Huts built for them, and they and their families appear to be perfectly Contented. I established these Sixteen families on their New Farm on the 31st of January last, and furnished them with some Slops, Agricultural Tools, and a Boat for Fishing, of which latter Occupation they are very fond; they have already made some little progress in Cultivating the ground, and by giving them some trifling assistance now and then from the Government in the way of Slops and Provisions, I doubt not that they will become Industrious, and set a good Example to other Native Tribes in the Vicinity of Port Jackson.

Despite the farm being established by the government, there is little evidence as to its exact location. Smith (1992) indicates that there are two early maps (from 1828 and 1841) which show it marked on the headland of Middle Head, although they are in slightly different places and the locations of any of the buildings are not specifically indicated. The earlier map places it in the area of what is now the Mosman Oval, HMAS Penguin and Australian Defence Administration Buildings. The later map places it closer to Georges Heights. Smith suggests that both locations are possible as the beach could be Chowder Bay, Obelisk Beach or Cobblers Beach.

What is known about Bungaree's Farm is that it was established by Governor Macquarie in an attempt to establish more sedentary habits among the Aboriginal people around Sydney. Sixteen Aboriginal families were set up in the settlement, with Bungaree being viewed as their leader. It seems that the Aboriginal people who lived on the farm were probably also from the "Broken Bay tribe", or from the Kuring-gai language group. Macquarie established a small settlement at Georges Head, consisting of huts, a boat and a garden that contained a peach tree. The government also supplied clothing and agricultural tools and convicts were provided to teach them basic farming practices, and an account from the Russian astronomer Simonov also mentions cattle that were eaten (Barrett 1981:50). The farm does not appear to have been successful in terms of the government utilising its produce, but the peach tree apparently survived and Bungaree was to sell its fruit. The Russian accounts, as well as other evidence, suggest that the Aboriginal groups associated with Bungaree remained closer to the Sydney Cove settlement, near Kirribilli.

A Russian account from 1820 indicates that the Aboriginal people of the settlement had returned to their traditional way of life, with only Bungaree and his family maintaining and making money from the farm:

The Government endeavoured to prevent the complete disappearance of the aborigines, and consequently set apart for them certain reservations in the vicinity of towns, where they might settle down. This measure became law on February 16th 1815. Land was granted to sixteen families. They received agricultural implements and clothing, and convicts were appointed to teach them agriculture. At first they worked with great zeal, but soon began to find it irksome, sold off their implements and returned to their former way of life. Boongaree was given a garden, specially laid out for him by a European. He still owns it, and gains a little money for the peaches which grow so abundantly in it (Bellingshausen 1820 in Debenham 1945:337).

It should be noted that the Russians' visits to Bungaree's camp in the 1820s occurred in the period between the two occasions when Governor Macquarie built the huts on the farm at Georges Head for Bungaree and his group. Huts were erected on the farm at Georges Head for Bungaree and his followers in 1815, although they were not permanently occupied, as Governor Macquarie would have liked, and fell into disrepair not long after their construction (Smith 1992:77-79). In 1822, Macquarie once again built huts at Georges Head and provided a fishing boat and net for Bungaree and his group (Smith 1992:118-121). However, this settlement also gradually fell into disuse (Attenbrow 2002:107).

Macquarie and parties visited the farm on a number of documented occasions, which indicates he appeared to be impressed with its location and the settlement. One such account in Macquarie's diary entry for 11th February 1822 indicates that he took Sir Thomas Brisbane:

...on a water excursion in the Government Barge to "George's Head" for the purpose of witnessing our setting Boongaree and his Tribe of the Pittwater Tribe of Black Natives on their former farm for the second time at that pretty place: Barney Williams having put the farm in very neat order for them, built good huts for their residence and made a most excellent and romantic road from the landing place to the village.

Souter (1994:31) asserts that Barney Williams may have been an error by Macquarie and it was in fact Barney Kearns, who requested to become the overseer of the settlement in 1822. The Memorial of Barnard Kearns dated 3rd June 1822 (contained within the Colonial Secretary's Papers 1788-1825 Main Series Letters Received, March – June 1822, held at the State Records of NSW) states his request to be made overseer of the settlement:

From his knowledge of the Aborigine Black of this Colony and the desire of Bungaree, a Native Chief that a European should be placed over these natives whom reside at George's Town in the cove of Sydney – to instruct them in the various branches of agriculture as well as during their occasional absence to protect the huts erected there.

A note on the back of the letter states "Bernard Kearns to be made overseer of Natives at George town".

A second Memorial by Barnard Kearns dated 2nd July 1822 (contained within the Colonial Secretary's Papers 1788-1825 Main Series Letters Received, March – June 1822, held at the State Records of NSW) states:

That your memorialist having some time ago presented through the medium of Bungaree, a Native Chief a Memorial to your Excellency soliciting the appointment of Overseer over the Native Aborigines at George's Town – which your Excellency was pleased should be taken into consideration.

Your memorialist again represents to your Excellency through the same medium that from recent robberies of the bark which thatches their huts and the destruction for want of cultivation and attention to a quantity of young fruit trees growing there, the solicitation of Bungaree for the preservation of the same induces your memorialist to be thus bold again in soliciting an appointment over them.

Research has recently been carried out by Sue Rosen & Associates (2001 and 2002), commissioned by the Sydney Harbour Federation Trust, in an attempt to identify the location of Bungaree's Farm and Road. Sue Rosen & Associates (2001) comment that a sketch by Surveyor Larmer dating to 1834 shows that Kearns' property was located near Hunter's Bay, just west of Thomas O'Neil's land, which would be closer to Middle Head, rather than on Georges Head.

Several references clearly place the settlement at Georges Head. This includes a Memorial by Thomas Rice dated 15th October 1824 (contained within the Colonial Secretary's Papers 1788-1825 held at the State Records of NSW) which references a boundary mark for Bungaree's Farm at Georges Head in his request for a ticket of occupation to depasture stock:

...from Mr Barton's boundary mark at Bradley's Heads to the Black Native's boundary mark at George's Heads.

A return letter to Thomas Rice dated 5th November 1824 (contained within the Colonial Secretary's Papers 1788-1825, Letters Sent 1808-1825, held at the State Records of NSW) grants him permission for temporary occupation of:

600 acres of land in a circle around your stock yard to be erected between the boundaries of Mr Barton's farm and Bradley's Head at the Black Native Settlement at George's Head, for the use of your herd ...

Sue Rosen & Associates (2002) research concluded that the most likely location of Bungaree's farm was in the Georges Heights area, consistent with the location of the farm shown on the 1841 map. The most useful information in locating Bungaree's farm was the Court of Claims Case 281 concerning Thomas O'Neil's land. O'Neil owned land at what is now Balmoral (refer to Figure 3 - sourced from Rosen & Associates, 2002, Attachment 7). In O'Neil's letter to the Surveyor General dated August 1829, he states that his land was bounded on the southeast by Bungaree's Farm. In other correspondence, O'Neil quotes from an affidavit provided by a surveyor who worked on the 1815 survey of O'Neil's land, which refers to Bungaree's Farm sharing a boundary with O'Neil's land. O'Neil also writes that Governor Macquarie and his party inspected his farm after their visit to Bungaree's Farm in 1815.

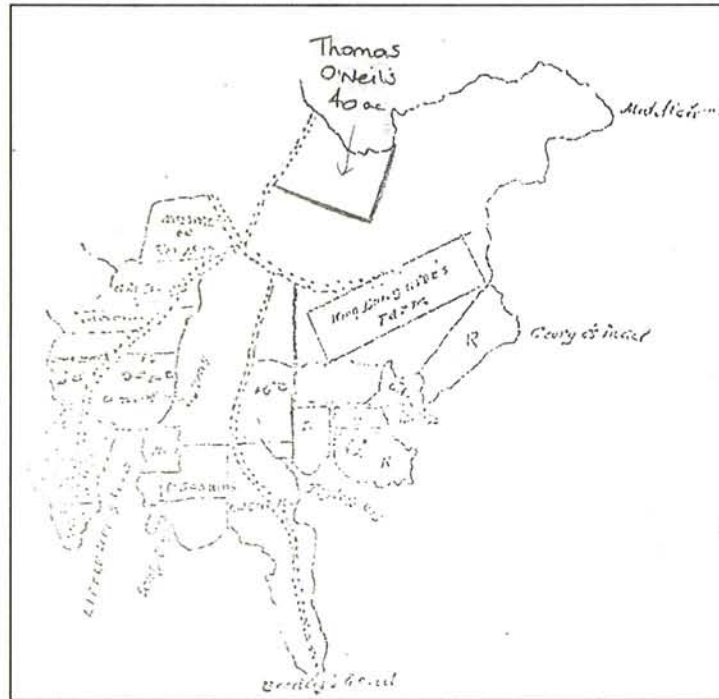


Figure 3: Location of O'Neil's land shown on map dated 1841 (source: Rosen & Associates, 2002, Attachment 7)

The NSW Court of Claims Case 281 (held at the State Records of NSW) involved a dispute between Thomas O'Neil and Charles Beiby over the ownership of 40 acres of land at Middle Harbour. The land, located at what is now known as Balmoral (and shown on Figures 3 and 4) had been gifted to Thomas O'Neil by Governor Macquarie in 1811.

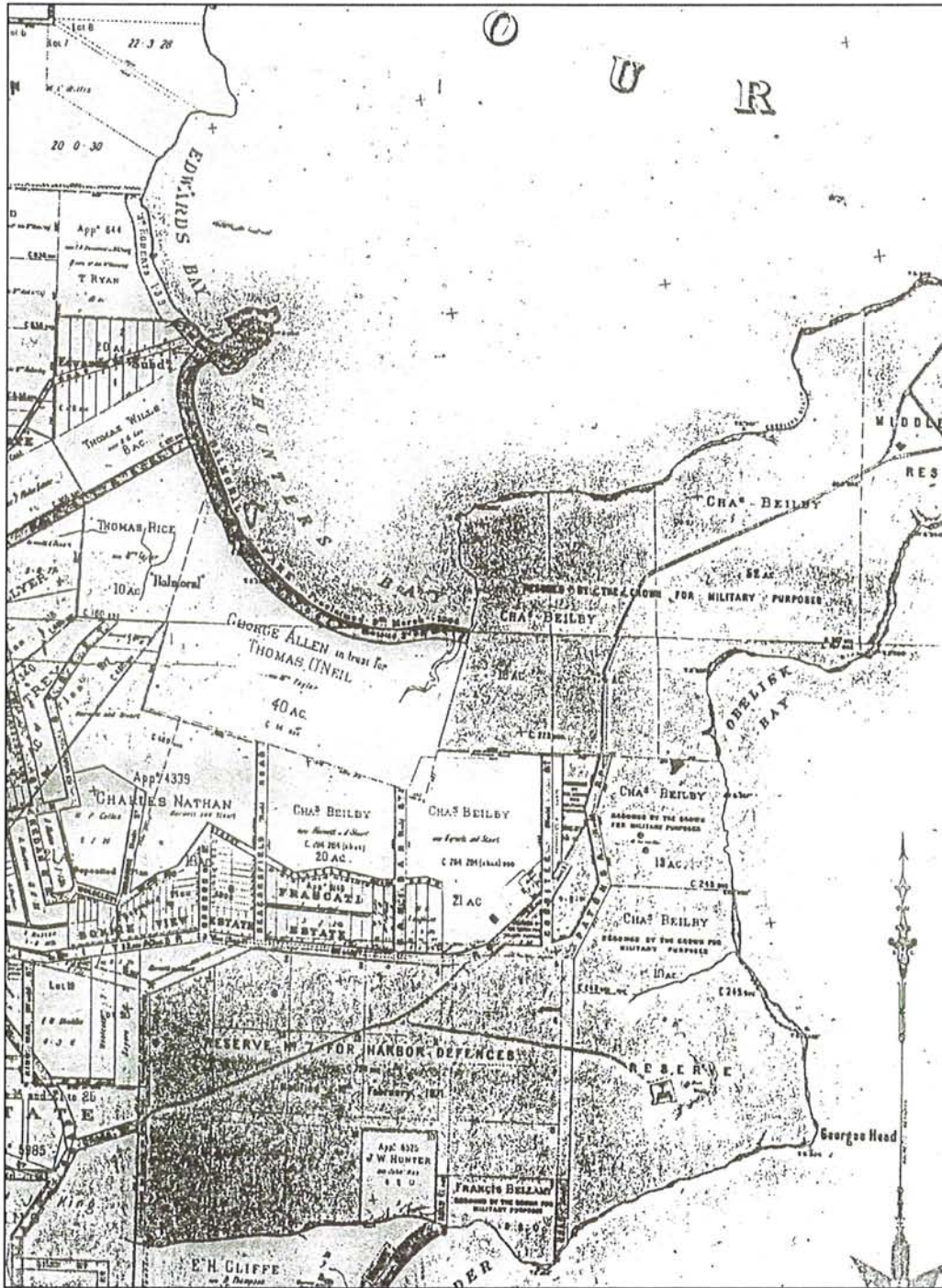


Figure 4: Real Estate Map (undated) showing the location of the O’Neil and Beilby Properties (source: Rosen & Associates, 2002, Attachment 8)

Letters contained in the case papers were useful in establishing the location of Bungaree's Farm. Relevant sections are quoted below:

O'Neil's letter to the Surveyor General dated 16th August 1829 states that his 40 acre farm was:

bounded on the South East by Bungarees Farm at Georges Head on the north by the waters of Middle Harbour, 35 chains by the sea shore towards the island or farther. On the west by ground promised to Mr Troupp (sic.) who lives now at the Derwent. On the South West by Government land between my farm and Port Jackson.

O'Neil's letter dated 29th May 1829 refers to the problems he encountered in the official survey of his land. Surveyor Meehan has surveyed the land in 1815, however the property was not charted at that time due to ongoing boundary disputes. However, O'Neil states that the surveyor who led the chain during the survey swore an affidavit that O'Neil's farm:

contained 35 chains in front from Georges Head rocks (or?) Bungarees farm toward Mr Trups toward the island.

Rosen & Associates (2002) suggest that as this measurement refers to the waterfrontage along the Balmoral shore, Bungaree's farm must have extended along the eastern boundary of the O'Neil land. A rough sketch of the area, which appeared to be attached to the letter, showed 'Bungarys farm' to the east of O'Neil's farm. "The sketch is not in proportion and it is unknown whether it was part of the official documentation of the period or a later addition" (Rosen & Associates 2002) as it was found in Gavin Souter's file of research material from his Mosman History (1994) which he donated to Mosman Library's Local History Collection and the page appeared to be a duplicate of the last page of O'Neil's letter.

O'Neil's letter of 29th May 1829 also referred to Macquarie's visit to Bungaree's Farm in 1815, stating that the party visited his property at the same time. He writes that:

when the Governor came ... to Georges Head to give Bungaree the title of Chief of Broken Bay Tribe, the Governor then with his company came to see my improvement which pleased him for so short time. But told me I was to blame for not getting better ground as you could chuse where you pleased.

O'Neil's letter dated 15th September 1831 again mentions Macquarie's visit to Bungaree and the measurement of his land:

In the year 1811 his Excellency Governor Macquarie gifted me a farm of land in Middle Harbour. In 1815 he came down to give Bungaree his meddle then came to view my farm said I should pick out better ground but seeing it a very narrow strip of land he ordered Mr Mein the surveyor to measure by the sea 35 chains as the rocks behind left me but about 7 acres in the whole.

The map dated to 1841 (refer to Figure 3 above and Attachment 7 in Rosen & Associates 2002) was contained in Gavin Souter's file on Bungaree (held at the Mosman Library's Local History Collection). This map shows King Bungaree's Farm over the Georges Heights area, which accords with the statements made by O'Neil that the farm bounded his land on the southeast. By comparing the 1841 map with the Real Estate Map (Figure 4, and Attachment 8 in Rosen & Associates 2002), which shows O'Neil's land, Bungaree's Farm is located in an area approximately covering some of Charles Beilby's land and the area marked 'Reserve No. 7 for Harbour Defences' notified in February 1871'.

Given all this information, Rosen & Associates (2002) concluded that:

Bungaree's Farm was located to the south-east of O'Neil's land. The 1841 map of uncertain origin, also locates it in that area, over Georges Heights, rather than at Middle Head, however the exact boundaries of the farm are uncertain. The surveyor's measurements taken along the waterfrontage at Balmoral refer to the 'Georges Head rocks or Bungaree's Farm', suggesting that the farm also extended to the east of O'Neil's grant, up towards Balmoral.

The 1841 map is reproduced in Smith (1992), which shows "King Bungaree's Farm" at George's Head. Smith (1992:121) states that this places the farm in an area now covered "by Suakim Drive and George's Heights Oval south of Middle Head Road, not far from Rawson Park". Rosen & Associates (2001) states that there is uncertainty over the origin of the 1841 map, particularly given the date of the map is late in relation to when the farm was in existence. From the detail reproduced in Smith's book, they do not consider it to look like an original map, suggesting that it may have been redrawn at a later time.

Documentary evidence suggesting Bungaree's Farm was located at Middle Head rather than Georges Head has provided some confusion and debate over the location of the settlement. This evidence includes two maps by T. Florance, the first dating to 1828 which was the Trigonometric Survey of Port Jackson & Trace of the Intervening Heights to Port Jackson (AO Map 4752 held at the State Records of NSW) which shows "King Bungaree's Farm" marked on Middle Head. The second, dated 1834, is a Map of Sydney Harbour (Map Z M2 811.15/1834/1 held at the Mitchell Library) which shows "King Bungaree's Land" marked at Middle Head (Rosen & Associates 2001).

The use of George's Head as a ceremonial area has also been suggested. A letter by W.H. Huntingdon to the Northern Suburbs Echo in 1873 (reproduced in the *Science of Man* in 1910) noted:

In the twenties [1820's] Georges Head was set apart for the aborigines [sic] as King Bungaree and his predecessors had represented that the *locality* was a *sacred ground* for the performance of the Bora rites by the Cammera and other *tribes*. [italics added]

No further ethnographic or historic references indicate that George's Head was used as a ceremonial area, although this may reflect lack of documentation of the ceremonial associations of the locality.

When Macquarie conferred the title of "King of the Broken Bay Tribe" on Bungaree, he also presented him with what is now called a 'breast-plate' or gorget. These were presented to distinguish individuals with whom the British had principally communicated or negotiated, referring to them as 'chiefs'. Attenbrow (2002:61) writes that these individuals were not always the elders that the groups themselves recognised as having authority within their communities or important roles in ceremonial activities. Bungaree was one of the first to receive a breastplate (Smith 1992:80-83). It was inscribed 'BOONGAREE – Chief of the Broken Bay Tribe – 1815' (illustration by PN Mikhaylov in Barratt 1981: Plate III; Bellingshausen 1820 in Barratt 1981:34). The breastplates were styled on regimental gorgets (Cleary 1993:10) and hung around the neck on a chain. They were made of brass and were a crescent shape. They usually had the person's name inscribed on them as well as the

'tribe' or district to which they belonged. Depictions of animals, foliage and lines were also added as decorative motifs.

Bungaree's widow, Gooseberry, received two gorgets, one of which is held in the Anthropology Collection of the Australian Museum (Australian Museum Reg. No. B.8454) (refer to Attenbrow 2002:61, Plate 13). Another is held by the Mitchell Library and is inscribed 'Cora Gooseberry/Freeman Bungaree/Queen of Sydney and Botany' (Historic Houses Trust of NSW 1993: Cat. No. 149; Mitchell Library Acc. No. R.251b).

A wooden club with incised designs, identified as belonging to Bungaree, (Attenbrow 2002:95) is housed in the Pitt Rivers Museum, University of Oxford (Pitt Rivers Museum Acc. No. 1900.55.57, No.1 dated 1823. McBryde 1989:Plate 41; Attenbrow pers. obs. 1995). It is about 75 cm long and has a diameter at its widest point of 8 cm. It is similar to that illustrated by the colonial artist George Raper in his 1792 'Implements of Port Jackson' (Smith and Wheeler 1988:Plate 67.2). Another club of similar length to Bungaree's club but smaller diameter was collected from the 'north shore' of Port Jackson in 1867 (Australian Museum Reg. No. E.52441).

Bungaree died in November 1830 and was buried at Rose Bay beside one of his wives (possibly Matora) (Smith 1992:143-145, 167; Attenbrow 2002:141).

6.11 Present Aboriginal Associations with Mosman

The study intended to gather oral histories from the Aboriginal community in order to identify areas and landscapes of social significance to the Aboriginal people affiliated with the area. It also aimed to identify social significance to reflect the broadening direction of cultural heritage assessment and management (Byrne et al. 2001). This change in emphasis from a purely archaeological assessment ensures that the historical aspects and social values of a place or landscape are considered. Such histories include knowledge of Aboriginal sites, stories relating to the area, historical uses of places and culturally significant places.

Oral history and community consultation was to be carried out in accordance with the guidelines and principles of the NPWS Discussion Paper on Social Significance (Byrne et al. 2001) and the Australian Heritage Commission's recent publication "Ask First: a guide to respecting Indigenous heritage places and values" (AHC 2002).

The aim of talking to people was to allow Aboriginal people to identify their own set of values in relation to the Mosman LGA. These values could then be incorporated into the assessment of the significance of sites and places and taken into account in the formulation of management recommendations.

The assessment may include a range of cultural values and activities associated in the study area, the post-contact and contemporary use of the area (such as the Aboriginal women observed fishing at Bradleys Head during the field survey component of the Mosman LGA Aboriginal heritage study), links with family histories, traditional stories, importance of continued use and access, linkages between places of cultural and natural/biodiversity value and important places or places linked to a specific person, such as Bungaree.

These values were hoped to be identified through oral history and talking with Aboriginal people about the connections, locations and extent of significant places, physical or natural features and stories associated with each place, why they are important and how they should be managed.

Despite contacting various individuals and organisations, media releases and distributing a flyer to 30 Aboriginal organisations, there was no one who came forward to talk about the Mosman LGA. Consultation with the local Aboriginal community was therefore limited to the Metropolitan LALC. The views of the Land Council representatives discussed on site during the fieldwork have been incorporated into the report. Any further correspondence provided from the Land Council regarding the Mosman Aboriginal Heritage Study can be incorporated into the report by inserting it into Appendix A. Metropolitan LALC, as a contributing agency to the project, has endorsed this report (refer to the Endorsement page at the front of the document).

Some oral traditions have been documented for the area around Mosman by Dennis Foley, who describes himself as a descendant of the Gai-mariagal people of the northern harbour and beaches of Sydney (Foley 2001). Foley (2001:1) writes that his book:

is the story of the Gai-mariagal told from the eyes and mind of a descendent of the Gai-mariagal people. ... There is a plethora of publications written by 'experts' on the Eora, the Cammeragals, the Gur-ing-gah and numerous other names, classifications or contrived clans of the Sydney basin. As yet, there is no literature that tells our story from our mouths or is accurate in its representation of our people from our perspective. The reasons are many, no one has asked us and none of us before this book had the ability and contacts to be able to record this information and put it into written form. This is our time to correct this injustice! We are the traditional owners of our land, always were and always will be!

And that:

This is not one individual's story, this is the story of **our** old people (and is the heritage of our young ones). It is my grandmother's and her mother's story, and most of all, my grandmother's grandmother's story. It is the story of my mother's brothers, my aunts and uncles, some Gai-mariagal some Gur-ing-gah. This is their story, this is my story, and this is my children's story. It is told in the truth and accuracy that oral history allows.

Foley (2001:4) also writes that:

Our concept of place and land is a part of our complex religion that is as old as life itself, in a land that was born when life began. Two hundred years of white subjugation since invasion in January 1788, is but a mere hiccup in our history. This history and the contents of this book are heavily edited and contain only a small part of our cultural knowledge.

He describes the Gai-mariagal people as being located within:

the boundaries of the Lane Cove River system on its western boundary, the ridge that commences south of Hornsby and extends to Terrey Hills and Duffys Forest, that meets the coast at Mona Vale on the northern boundary. This then extends south to include all the beaches and hinterland within that area that includes Narrabeen, Dee Why, Curl Curl, Freshwater, Manly and the harbourside areas of Middle Cove, right around to Lane Cove including North Sydney and Chatswood (Foley 2001:7).

Foley writes that the Gai-mariagal northern border is common land with their sister and neighbouring tribe of the Gur-ing-gah people, who share "many commonalities with extensive cultural complexities" and are "often referred to as 'Eora'" (Foley

2001:7). While he does not specifically advocate the name “Eora” as necessarily being a traditional name, Foley (2001:7) does believe that there was:

a loose nation of clans that included the coastal groups of Wangle, Cadigal, Gai-mariagal, Gur-ing-gah and the inland groups extending to the Bidjinal of the Georges River country and the Parramatta tribes, the Wallumattagal and Burrumattagal. This also included the Gweagal to the south. This close-knit group forms the basis that is currently referred to as the Eora.

He writes that the Gai-mariagal and Gur-ing-gah also had close ties with the Awaka to the north and Wonnarua to the north west in the upper reaches of the Hunter Valley (Foley 2001:7).

While not specifically stating his aversion to the view expressed by a number of authors (as well as Aboriginal people claiming native title over the Sydney region), Foley (2001:7) addresses the relationship between Gai-mariagal and Darug. He writes that:

Contrary to popular belief, the Gai-mariagal did not have an openly friendly relationship with the Darug. In fact, friendly communication with these peoples only occurred as recently as the 1930s to the 1990s. Before the invasion, communication between the Darug and Gai-mariagal was done through intermediaries or with finger talk (sign language), such was the distrust and many say hatred between our two groups. This distrust was highlighted in the twelve year war of 1790 to 1802 between our people and the British. We would use Darug spears in fighting the British to shed blame on the Darug in the hope that they would join us in the fight against the Redcoats.

Foley’s oral history documented in his book refers to stories and associations at a number of places within the Mosman LGA, namely The Spit, Balmoral Beach, Bradleys Head and Athol Bay.

The Spit

The narrow sand spit is associated with the Gai-mariagal story concerning the shark, known as the harbour whaler shark, and the dangerous, ‘little hairy people’ known as the *Gubjas*. This is the area of the creation of the harbour whaler shark. Foley (2001:90) writes “the water between Clontarf Beach and Parriwi Head and to the west is evil, all the way to the upper reaches of Forestville. The ridge tops are designated men’s places; the wet gullies are the home of the gitgi, a mischievous spirit that plays games on travellers in this country”. The whaler shark story is important in terms of values and understanding right from wrong (Foley 2001:90). While the story concerns women’s business, it is taught to both men and women, so that it is said that if any man treats a woman badly against her will, retribution occurs at this same spot. The wounded man must swim across the river. If the shark attacks him, his guilt is confirmed and he is never spoken of again (Foley 2001:94-96).

Foley (2001:95) writes that what is now called The Spit was once a much narrower sand spit, where “our people fought a tenacious battle with the Gubja from ridge top to ridge top, and beach to beach between these narrow points. Here the shark was born, the ‘little shark’, the harbour shark. A killer, an evil animal. This is black water, we still do not go in it”.

Balmoral Beach

Balmoral Beach is an important place. This area originally sustained several families and the middens were extensive (Foley 2001:96). Rocky Point was originally covered in engravings of fish and other animals. One of the first (if not the first) Christian

missions was established where the HMAS Penguin now sits (Foley 2001:96). From oral history, it has been suggested that Balmoral Beach was the initial place from which smallpox (*gal-ga-la*) was spread (Foley 2001:96). “The beach at Balmoral was a place where the British used to trade trinkets and axes for fish and other things. It was also the spot where blankets were given out” (Foley 2001:96). “This was once a paradise, now it is a sad place. A place of death and a place where we remember our old people” (Foley 2001:98). Foley (2001:99) reflects with sadness on the way this once beautiful place has been changed as “our freshwater swamp and the extensive midden area have been destroyed. More car parks, more people, more desecration. Yet there are now signs warning you not to swim there, in what was once a paradise”.

Bradleys Head and Athol Bay

The Harbour foreshore around from Balmoral Beach to Obelisk Bay, Chowder Bay, Taylors Bay and Athol Bay comprises bays and beaches filled with middens and the occasional rock painting and engraving (only the remains of what once existed is left). These sheltered bays were once rich with fish and shellfish and were favourite campsites for several families in the summer months (Foley 2001:98). Bradleys Head is associated with the story of the waterspirit, which relates to specific land in creation. “Athol Bay is mentioned in the story of the waterspirit and was treated with much respect due to the strange happenings in the black water of this area. This was also bandicoot country, a term to denote women’s areas. The thick scrub that now chokes the remaining bush gullies was once a tall open forest” (Foley 2001:98).

Foley (2001:98) writes up the story of the waterspirit as:

Off the place now called Bradleys Head, when Tuhbowgule (Sydney Harbour) was once a great river, is where the fresh water mixed with the salt. The area was jealously guarded by an evil old woman, as this was a place of rich food stocks – the bounty of the salt and the richness of the inland water. In time her bitterness killed her, yet she remained in this world and lives under the water. This place is now called Athol Bay, in its depths is a deep hole where she sleeps. She is said to roam the gullies at night and frequent the caves at Mosman in special times.

Foley (2001:117) finishes with the following plea regarding his work:

This book contains the stories of our people. Not all is told and some information is jealously guarded for our people’s ears and eyes only. We trust that you do not judge us on academic interpretation. Accept this publication in the honesty with which it is told. This story is as accurate and as honest as our oral history allows. Please accept and I hope enjoy.

7 The Archaeology of Mosman

7.1 Aboriginal Sites in Mosman LGA

A search of the Aboriginal Heritage Information Management System (AHIMS) for Aboriginal sites within the Mosman LGA (including a 100 m buffer zone) found 92 sites. The Mosman Aboriginal Heritage Study (MAHS) found 15 additional sites.⁶ The table below lists the Aboriginal sites found in Mosman by type. Shell middens are a characteristic feature of Aboriginal sites along the coast and in the Mosman area they are associated with c. 63% of the total number of archaeological sites. Interestingly locations that contain rock art, either engravings or pigment art, are also relatively frequent (c. 35%).

Table 1: Aboriginal sites and PADs recorded in the Mosman LGA (excluding 100 m buffer zone)

Aboriginal Sites and PADs in Mosman		
Site Type / Condition*	Number of sites/PADS	Percentage of total
Engraving	12	11.2%
Engraving/Destroyed	5	4.7%
Engraving/Unprovenanced	1	0.9%
Midden	21	19.6%
Midden/Burial/Destroyed	1	0.9%
Midden/Unprovenanced	1	0.9%
Not an Aboriginal Site	2	1.9%
Shelters with PAD (Potential Archaeological Deposit)	5	4.7%
Shelter with Art	10	9.3%
Shelter with Art/Destroyed	1	0.9%
Shelter with Art/Midden	4	3.7%
Shelter with Art/Midden/Burial/Destroyed	1	0.9%
Shelter with Art/Unprovenanced	3	2.8%
Shelter with Midden	39	36.4%
Shelter with Midden/Burial/Unprovenanced	1	0.9%
Totals	107	100.0%

* Site numbers are derived from the AHIMS database and the MAHS survey accurate as of September 2003.

7.2 Previous Archaeological Research

Aboriginal sites in Mosman have one of the longest histories of research in Australia stretching for over 100 years. W.D. Campbell began systematically recording rock engravings around Sydney during the 1880s and recorded seven sites around Mosman (Campbell 1899). Another surveyor, RH Mathews recorded two sites around Quakers Hat Bay in the late 1890s (Mathews 1898, 1899). The focus for this early research was on rock art sites. No new sites were recorded for Mosman until the 1960s and only then did the numbers of recorded sites slowly begin to grow until heritage studies of the municipality were conducted in 1988 and 1991. By early 1991 some 77 Aboriginal sites had been recorded in Mosman, with the majority of these (44) registered by Michael Guider. Guider added another 15 sites from 1991 to 1992 bringing the total to 92 at the start of the MAHS.

⁶ Descriptions of both previously recorded (AHIMS) and new sites (AMBS sites) are found in volume two of this report (which is a confidential document).

Although Mosman has been the subject of many years of archaeological interest only a relatively small number of systematic surveys have been carried out within the area. Most of these surveys were impact assessments or management plans related to specific portions of land. In addition, two heritage studies of the municipality have been undertaken: a preliminary assessment by Haglund and Rich (1988) and a more thorough assessment by Koettig (1991). None of the early studies have been holistic assessments of the entire Mosman area.

The table below outlines the systematic surveys of the Mosman area.

Table 2: Previous archaeological investigations in the Mosman LGA

Author / Date	Report Title / Study Area	Comments
Rich (1985)	Bradley Bushland Reserve	A survey of a 1.4 hectare study area on the upperslopes of a ridgeline. Sandstone exposures occurred within the study area, no engravings or shelter formations suitable for habitation were observed. The report did not note any archaeological constraints on the study area.
Morris (1986)	Archaeological survey of north Port Jackson	This investigation involved a study of site type distribution on the northern side of Port Jackson. Sample areas measuring 0.25 km ² were surveyed. Four of these sample areas were within the Mosman LGA. These were located at Sirius Park, Rosherville Reserve, Bradleys Head West and Georges Head. The environmental characteristics of each area differed and included thick bushland, dunes, shoreline and rock outcrops. Four Aboriginal sites were recorded, a shelter with midden and an open midden were recorded at Sirius Park, and two shelters with middens were recorded at Georges Head.
Koettig (1986)	Survey within the Chowder Bay and Georges Head area	The study area measured 0.2 km ² and was located on a ridgetop. Much of the study area had been developed for naval installations in the early 1800s. The area is now heavily vegetated and no engravings were observed during the survey, however there were a number of engravings that were historically documented in the area soon after the naval fortifications had been installed when the surface was exposed. Two Aboriginal sites were recorded during the survey, consisting of a shelter with potential occupation deposit and a drawing of a macropod just above the shoreline at Georges Head.
Smith (1987)	Survey of bushland at HMAS Penguin, Middle Head	This study involved a survey of a 3.9 hectare parcel of land to the south of Balmoral beach. A shelter with potential occupation deposit was recorded. It was noted in the report that the farm established at Middle Head for 'King Bungaree' may have extended into the study area, leading to the author suggesting that the study area should be regarded as highly significant.
Rich (1988)	Beauty Point Sensory Foreshore Walk, Archaeological survey for Aboriginal sites	This survey was located on the western side of The Spit. Much of the study area consisted of reclaimed land and no Aboriginal sites were identified.
Haglund and Rich (1988)	Analysis of Aboriginal occupation for a Mosman Heritage Study	This study consisted of a literature review of known sites in the Mosman LGA. 21 Aboriginal sites were identified in the study, of which 11 were engraving sites. The report noted that 3 of these 21 Aboriginal sites had been destroyed, and there was not enough information available on the remaining sites to assess them. Recommendations included that the 19 remaining sites be rerecorded and areas of bushland be targeted for systematic survey to assess whether new sites could be identified.
Ross and Attenbrow (1990)	Aboriginal site survey at Bradleys Head	This survey was conducted at the southern tip of Bradleys Head. One Aboriginal site was recorded, a shelter with midden.

Author / Date	Report Title / Study Area	Comments
Koettig (1991)	Heritage study of Aboriginal sites within the Mosman LGA	Following from the recommendations outlined by Haglund and Rich (1988) as noted above, this study involved the inspection of recorded sites and survey of a number of areas within the LGA. At the time of Haglund and Rich's (1988) study there were 21 recorded Aboriginal sites. At the end of Koettig's (1991) Mosman heritage study there were 77 recorded sites within the LGA. Of these 77 recorded sites, 61% were shelter sites, 21% were open midden sites and 18% were engraving sites. The shelter sites consisted of shelter with midden, shelter with midden and art, and shelter with art. Middens, both open and within shelters, constituted 66% of the 77 recorded sites. It is noted in the report that the findings of this study and others in the wider region, indicate that sites can occur in any part of the landscape. Recommendations include that sites should be preserved and protected within proposed developments, and that adequate investigation occurs in areas that are to be destroyed. It was also recommended that representative samples of sites be preserved and appropriate mitigation works 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	This study involved an analysis of the distribution of 335 middens and 34 deposits within the Port Jackson catchment area. The study also involved site relocation and recording, some of which was conducted in the Mosman LGA. The catchment was divided into smaller sub-catchments and the environmental zones within these were designated. It was found that shell middens occur only in sub-catchments that have ocean and estuarine zones, while archaeological deposit occurs more frequently in freshwater zones. It was found that the majority of recorded sites were located on Hawkesbury sandstone, in either council reserves or undeveloped Crown Lands, and were associated with estuarine and ocean zones. The distributional data was identified as being partially influenced by historical land use and site visibility. The results of this distributional analysis were compared with results from studies of undeveloped areas north of the Hawkesbury River. Comparison of the results led to the suggestion that the general trends in the distribution of recorded sites with middens/archaeological deposit 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' (53).
Attenbrow (1992a, 1992b, 1993, 1994, 1995)	Archaeological excavation of a rockshelter at the southern end of Balmoral Beach, Mosman	This study involved excavation of shell midden both inside and outside a rockshelter at Balmoral Beach. Excavation of the midden revealed a deep deposit 'with abundant stone artefacts and animal remains as well as hearths' (Attenbrow 2002: 166). The existing shell deposit within the shelters extends to a depth of approximately 2 m. Radiocarbon-dated shell from the uppermost undisturbed layer of deposit indicated this layer was around 2500 years old. Approximately 1 m depth of midden was removed during the 1960s for landscaping and car park construction, removing evidence of around 2500 years of Aboriginal occupation at the site. Shell material was mostly located within the top 65 cm of deposit. There were eighteen different species of shellfish identified within the deposit, most of these were rock platform species. Stone artefacts were also identified within the deposit, the predominant raw material type was silcrete.

7.3 Chronology

The Sydney region's prehistory most likely begins more than 40 000 years ago (Nanson et al. 1987; Stockton and Nanson 2004). Evidence suggesting this age was found along the Nepean River at the foot of the Blue Mountains. These early dates for activity in the Sydney region, tantalising as they may be, are not conclusive. More conservatively, occupation in the region is firmly dated from 14 000 years ago

(Attenbrow 2002). The majority of sites within the Sydney region date from c. 2500 years ago.

Several dates exist for sites around Port Jackson. The oldest dates for the Port Jackson is c. 6000 years ago (Attenbrow 2002:18). This date is consistent with the settling of sea levels to their current position at about 6000 years ago. Around 18 000 years ago during the last glacial maximum the coastline was approximately 15 km further west and Port Jackson was a deep valley in a low inland plateau (Herbert and Helby 1980; Chappell 1982). Most of the Port Jackson foreshore we see today therefore would have been the mid-slope of the plateau ridge sides. In short, Mosman's foreshore areas are a relatively recent topographic feature that formed around 6000 years ago.

Mosman itself is lucky in that it has one rock shelter which has been excavated (Attenbrow 1992). The rock shelter located just behind Balmoral Beach yielded a date close to 4000 years old (ibid.). Interestingly, the last 3-4000 years saw an increase in the amount of material present in many archaeological sites across Australia. There are several hypothesised reasons for this increase in the archaeological record such as changing demographics, social customs, environmental factors, geomorphologic processes, resource and land use patterns (e.g. Lourandos 1983, Attenbrow 1987).

7.4 Descriptions of Archaeological Sites

Archaeological sites are generally described by topographic context and material attributes. Topographic context is where sites are found in the landscape (e.g. near a river, on a hill, in a rock shelter) and material attributes are the kinds of artefacts contained in the sites (e.g. stone tools, shell, rock engravings). The topographic context gives us information about the place where artefacts are found and an artefact's attributes give us information about what people did or may have done at the site.

7.4.1 Site context

Aboriginal archaeological material is primarily located in two types of context:

- on open ground or rock (referred to as open sites); and
- in closed contexts (shelter sites).

Open sites include scatters of artefacts⁷ which are exposed on the surface of the land and shelter sites (or rock shelters) are naturally formed hollows or overhangs found in a vertical rock face (ridge edge, boulder, outcrop) that contain artefacts (e.g. stone tools, shell, rock art). In the Sydney region there are around 4500 sites recorded in the AHIMS database and approximately 60% of those sites are located in an open context and the remaining 40% are shelter sites. Site context is directly related to the environmental characteristics of the area. Within the Sydney region, open artefact scatters dominate areas of shale geology such as the Cumberland Plain and rock shelters are numerous along the coast where the sandstone formations have weathered into rock overhangs. Within Mosman where the geology is principally sandstone, shelter sites are the dominant (c. 60%) site context (see Table 1).

⁷ Artefacts are objects made or modified by a person, such as stone tools, shell refuse or art.

7.4.2 Site types – site attributes

Archaeological site types are defined by a series of descriptive attributes, which broadly categorise sites. The attributes pertinent to the current study are the following:

- shell middens;
- archaeological deposits;
- engravings;
- pigment art;
- burials;
- grinding grooves; and
- potential archaeological deposits (PADs).

Archaeological sites may have more than one attribute. For example, a shelter site may contain engravings, pigment art and a shell midden.

7.4.2.1 Shell middens

A shell midden is a prehistoric deposit primarily composed of shell discarded after the flesh was removed. The midden itself represents an accumulation of the shell material through time. Shell middens can range in size from a few shells within a small area to several thousands of shells spread over a large area and over a great depth. While shell is the dominant material in a shell midden it does not have to be the only archaeological material. It is not unusual for shell middens to contain stone artefacts, animal bones, ochre, charcoal or even human remains. Sometimes even large numbers of stone artefacts are found in shell middens, as was the case with Balmoral Beach. Shell middens can be related to a single activity such as a mealtime event or can be related to several activities such as a campsite where multiple activities took place such as craft, art or tool making.

Shell middens are located in both open and shelter context. The distribution of shell middens is closely linked to the type of aquatic zone and geologic location in which they are found. In the Sydney region Attenbrow (1992, 1994) has found that shell middens only occur in estuarine and ocean influenced zones especially where this is more exposed sandstone as middens survive better on sandstone surfaces. In addition, the range and quantity of edible shellfish is greater in estuarine and ocean zones than it is in freshwater zones. Furthermore, as Attenbrow (2002:51) has commented the majority of shell middens occur on undeveloped public lands which have not suffered the impacts related to the development of private lands.

7.4.2.2 Archaeological deposit

An archaeological deposit is any sediment (sand, silt, soil) which contains materials related to archaeological activities such as stone artefacts, charcoal, ash, ochre, animal bones, human remains and plant remains. Shell material can also be related to cultural activity, but where it is generally the dominant material it qualifies as a special type of deposit (see shell midden above). Archaeological deposits are located in both open and shelter context, but are generally better preserved in rock shelters. The sizes of archaeological deposits vary greatly between context. In open locations archaeological deposits (e.g. artefact scatters, open campsites) can range from a few

artefacts clustered together to thousands of artefacts spread over several metres. In some instances the surface material is an indication of a subsurface deposit (cf. McDonald et al 1994). However, the subsurface material associated with open deposits is often the result of a concentration of deflated sequences (erosion) through time, which result in a loss of stratigraphic (temporal) information. In other words several different layers of archaeological deposit can become mixed into a single layer. In a shelter context the materials in an archaeological deposit can also dramatically range in density but the horizontal spatial distribution is more confined. Shelter deposits are often far more stratigraphically complex with good differentiation between layers (i.e. little deflation) and due to better preservation of the sediments.

7.4.2.3 Engravings

An engraving or *rock* engraving is an image which has been carved or pecked into a rock face. The images carved into rock faces can vary dramatically in both size and motif. Some images can be several metres long and depict very detailed figures, while other images can be small simple geometric shapes. Engravings are usually found in open locations on horizontal expanses of Hawkesbury Sandstone however engravings can sometimes be found on vertical surfaces, such as cliff faces, the walls of a shelter or on standing stones in the open.

Engravings tend to be located in very selective topographic and geologic locations. In the Sydney region engravings tend to be located on the tops of Hawkesbury Sandstone ridges where vistas occur. Unusual or prominent natural features which draw attention and create a junction point in the landscape also have a high percentage of engravings. Nonetheless, engravings can also be found in low lying, isolated locations so long as appropriate sandstone is available. The different types of locations where engravings occur may relate to a behavioural difference. Two studies in the Sydney Basin have found that the engravings in elevated positions tend to be more formal than those in low lying areas (Kelleher 2003; McDonald 1994). Formal art means that it is relatively uniform. The formality of art is determined by several factors such as: consistency and repetitiveness in relation to the structure of the art motifs and their context. Formal depictions are likely to relate to more restrictive behaviours such as ceremonial activities, while the less formal images may reflect more mundane or domestic activities.

7.4.2.4 Pigment art

Pigment art describes images that were created using either wet or dry pigments such as ochre, charcoal or pipeclay. Various techniques used when creating pigment art include: painting, drawing, stencils and printing. Pigment art can be applied to several mediums (e.g. bodies, wooden implements) but within this report refers only to rock art. Like other forms of rock art, pigment art can vary dramatically in size, colour and composition. For example, some shelters may contain only a single hand stencil, while another nearby shelter exhibits hundreds of multicoloured motifs of varying sizes. Pigment art is generally found only within shelter sites in the Sydney region, because pigment art created in an open context is unlikely to survive. In other more arid parts of Australia pigment art known to be of pre European origin is still visible on exposed rock surfaces (Morwood 2002:195-199; general Layton 1992; Mountford 1976).

In contrast with engravings, the pigment art which has survived in the Sydney region is generally located in areas associated with subsistence activity rather than overtly dramatic topography. Pigment art tends to be found in camping places, while engravings tend to be related to aesthetic qualities such as vistas. The caveat is that this division is based upon a continuum between engraving and pigment art, which while statistically true is unlikely to neatly describe all rock art sites. In short, the differences between rock art techniques are a good *indicator* of past behaviours at specific locations but are in themselves not sufficient evidence to identify the specific behaviour. In other words, just because a place has paintings does not mean it was a secular place and likewise just because a place has engravings does not mean it was a ceremonial location.

7.4.2.5 Burials

Burials are locations where human skeletal remains are located. Bones survive best in alkaline soils and deposits. Some of the sandy coastal geology that rings Mosman is alkaline as are the shell middens. NPWS records officially list three burials in Mosman. The Australian Museum also holds several partial skeletons in its collection from Mosman.

7.4.2.6 Grinding grooves

Grooves which form on a rock surface when a piece of stone, wood, or other material is ground are known as grinding grooves. In the Sydney region such grooves are commonly identified as the result of the manufacture or maintenance of stone tools and rarely the result of food processing.⁸ Grinding grooves can be found in all topographic locations so long as there is an availability of sandstone and water. Recent studies have found that variation exists in the structure (shape) and depth of grinding grooves which are located on the top of ridges as opposed to grooves found in valley bottoms (e.g. AMBS 2002; Kelleher 2003). Although the reasons for the variation are related to many factors including environmental features, there is evidence to suggest that the structural variations in the grooves are the result of different behaviours and not simply the same behaviour at different places. For example, the more formal (patterned) spatial structure of the grooves on some ridge tops is indicative of the internally restrictive spatial movements often associated with ceremonial behaviour (Kelleher 2003). By definition ritual behaviour is repetitive, and repetitive activity in the archaeological record appears restrictive. In relative terms, the distribution of archaeological material is segregated (spatially restricted) when it is related to ritual behaviour. People are generally more precise and careful in their actions when performing a ritual than they are in daily life (Renfrew 1985:18-20).

Grinding grooves indicate where people spent time. They identify cultural places which may have rather limited archaeological attributes because of their exposed location. Variation in groove location, structure and size indicates possible differences in human activity (cf. Attenbrow 1987:117; Attenbrow and Negerevich

⁸ Three main categories of grinding grooves have been identified in the Sydney Basin (cf. Attenbrow 1987:117).

1. Narrow grooves = spear sharpening grooves (finger-like)
2. Average grooves = axe grinding grooves (lozenge-like)
3. Outsized (or broad) grooves = plant or other material processing (e.g. shell grinding)

1981; McCarthy 1955; Stockton 1993; Vinnicombe 1980). Like lithics, however, grinding grooves should be thought of in general terms as multifunctional and trying to be too exact in ascribing specific uses to specific groove measurements should be attempted only with care (cf. Evans 1980).

No grinding grooves of any type have been found in the Mosman area.

7.4.2.7 Potential archaeological deposit

Potential archaeological deposits (PADs) are deposits which have an appearance consistent with identified Aboriginal occupation sites but do not contain visible archaeological material. All PADs in Mosman are found in rock shelter locations with sandy floors.

7.4.3 *Distribution of archaeological material*

Aboriginal sites can be found in all parts of the environment. The probability of sites being located in a specific part of the environment is dependent upon the appropriateness of the geology and the quality and quantity of subsistence resources to support a specific activity. Some archaeological site types (activities) are only found in association with specific geologic features. In the Sydney region for example, pigment art, engravings and axe grinding all require sandstone and are not found in shale areas. The majority of Mosman is located on Hawkesbury Sandstone and only a small fraction is Wianamatta Shale, so from a geologic perspective most of Mosman could contain Aboriginal art and/or grinding sites.

The high percentage of Hawkesbury Sandstone also makes the presence of shelter sites very probable and the likelihood of finding open artefact scatters very low. This is not to say that open deposits never existed in Mosman, undoubtedly they did, they are just more difficult to find or occurred in locations more amenable to development. Open middens, however, are common.

Although it is possible for all of Mosman to contain archaeological sites, in reality the topography of the area makes certain places more suitable/probable than others. Certain types of activities will likely favour certain topographic locales over others. In order to understand how the Mosman landscape functioned as a whole it must be analysed as a single unit.

To understand the distribution of archaeological material in Mosman it is easiest to separate Mosman's archaeology into two categories.⁹

- shell middens (all sites containing shell); and
- rock art (all sites exhibiting art: pigment art and/or engraving)

The two categories offer us a way to compare separate zones of activity.

As previously discussed the distribution of these categories (sites) are related to a number of factors but in Mosman:

⁹ Inevitably some overlap exists between the categories but the overlap is relatively small (6 sites or c. 5.0% of the total). In this report any site with rock art will be classified as an art site.

- rock art exists in sandstone areas; and
- middens exist where shellfish are readily available.

At one level therefore the environment strictly determines the distribution of the two categories. The environment however is not the only factor influencing the presence of archaeological sites. The probability of archaeological sites existing in certain environmental settings can be successfully modelled (McDonald 2000a), but it is not possible to predict the specific occurrence or frequency of sites within a small area (such as municipality). This is because the selection of sites is linked in part to human perceptions of the environment (Renfrew 1994). One of the aims of this report is to examine how human perceptions of the landscape and environmental features of the landscape may have influenced the distribution of activities in Mosman. In other words, why some places have certain types of archaeological sites while other places with similar environmental features do not have archaeological sites.

At this stage it is useful to discuss some background information regarding the two primary archaeological categories.

7.4.3.1 Shell middens

Middens are a category of archaeological evidence, which offer archaeologists information about past peoples' economy, diet and land use. Midden analysis offers archaeologists an invaluable backbone when trying to flesh out sociocultures. Without a basic understanding of the subsistence foundation of a culture it is unlikely that we will be able to successfully interpret past society.

Occurrence and Preservation

The distribution of shell middens in the Port Jackson catchment is best described by Attenbrow's (1990, 1994) Port Jackson project. Attenbrow investigated the relationship between middens and the variations in aquatic zones as well as landforms. Some of the pertinent findings for middens are listed below.

- Middens occur in only ocean influenced and estuarine aquatic zones.
 - The Mosman foreshore is split between these two zones.
- Middens most commonly occur on Hawkesbury Sandstone.
 - The geology of Mosman is mostly Hawkesbury Sandstone.
- Middens tend to be found in undeveloped bushland.
 - A large percentage of Mosman's foreshore area is national park or council reserve land.

These three points mean that middens have a strong possibility of being found in Mosman.

Location

Attenbrow also examined the spatial location of middens and highlighted some general trends. These trends allow us to understand where middens are likely to be located within specific landform units.

- Over half (c. 61%) of all middens in the Port Jackson catchment are located in rockshelters.

- This is consistent with the Mosman figures of c. 66%.
- Over half (c. 60%) of all middens are within 10 m of the foreshore.
 - The Mosman figures are again consistent c.69%.
- Less than 25% of all middens occur on ridgetops in the Port Jackson study.
 - The figures for Mosman are consistent at c. 27% but suggest a trend towards even a greater percentage as most of the new shelters/middens found during the MAHS were on the hillslope.
- A total of three middens were recorded on the ridgetop in Attenbrow's study, which amounted to less than one percent of all middens in the Project.
 - Mosman also has three ridgetop middens, which indicate a higher but still overall low percentage for elevated midden sites.

Table 3: Middens in Mosman by topographic location

Midden topographic location	Number	Percentage
Foreshore	46	68.7%
Ridgeside	18	26.9%
Ridgetop	3	4.5%
Totals	67	100.0%

Interpreting the distribution of Port Jackson middens is straightforward as environmental factors strongly influence the results. In short, shell middens are close to shellfish and therefore close to salt water. This is not to say that other factors have not influenced the distribution. For example, the greater number of middens found on undeveloped lands may indicate that a large number of middens have been destroyed around Port Jackson. Related studies have however indicated that the Port Jackson trends (i.e. the percentages) are real and only marginally effected by recent human action (Vinnicombe 1980; Koettig 1988). It is unlikely that new research will result in a dramatic shift in Attenbrow's results: most middens are found along the shore and then diminish in quantity up the slopes, and very few are found at elevated positions. The results of the MAHS survey in relation to Attenbrow's finding are examined in the results section.

7.4.3.2 Rock art

Rock art is a body of archaeological evidence that offers not only functional, distributional information but it also indicates something about the more social side of material culture (McDonald 1994; Taçon 1990, 1999). Stylistic variation in rock art relates to social diversity (Maynard 1965; Smith 1983; Wobst 1977). It indicates something about the importance of place. While all artefacts offer some social information, this is often interpreted as the result of unconscious actions (e.g., discarding waste such as shell). Rock art on the other hand was deliberately placed at select locations (e.g., Nash 2000:9). In most cases this action is assumed to be purposely linked to the place (e.g., Bradley 2000:70; Taçon 1994:40). This assumed conscious linkage with the land is perhaps why rock art is often described with emotive language such as sacred or special (e.g., Arndt 1962; McCarthy 1961; Zvelebil 1997).

One of the primary aims of the MAHS is to bring together the archaeology and social history of Mosman. One of the ways this can be achieved is by looking for trends in the archaeology and social history, which relate to the perception and use of specific

places. One of the best methods for doing this is to understand the distribution of rock art. Understanding rock art means that we need to understand its place within a holistic archaeological framework and the special qualities of the art itself. For example how variations in the distribution of rock art motifs may relate to the distribution of middens.

In the absence of traditional knowledge, or good, relevant ethnography, an analysis of rock art needs to relate to a wide context to determine its function within material culture. Specifically formal methods and analogy offer a systematic understanding of Mosman's rock art (cf. Taçon and Chippindale 1998:7–8; e.g. Clegg et al. 2001; Kelleher 2003). As Wobst (1977:319) stated, if archaeologists wish to understand how 'stylistic' behaviour (i.e. rock art) operates within and as part of culture we have to explain it in accordance with a broad cultural model (i.e., the MAHS data matrix), not in isolation.

As long as we do not know more about the functions of stylistic behavior, in terms of its systematic articulations, the use of stylistic variability in archaeological research rests on shaky foundations. This knowledge will not be accumulated as a by-product of traditional stylistic analysis. Rather it will be generated only by means of problem directed research in which stylistic behavior is the explanandum, and in which style is more realistically integrated into the systemic matrix of which it forms a part. (Wobst 1977:319)

In other words, What are the general groupings of art and how do these categories relate to each other and the other site types and variables? Do engravings and paintings differ significantly in their extended relationships with other archaeological features such as lithics, middens and/or environmental features? These questions will be addressed in the analysis (section 8.9). The following section sets the stage for this analysis by outlining the basic attributes of Mosman rock art and tentatively placing it into a regional model.

Mosman rock art corresponds to Sydney region rock art as described in regional analyses by McCarthy (1941–1946, 1983, 1988), Maynard [McMah] (1965, 1976), Layton (1992) and most recently and comprehensively by McDonald (1994).

The two main Aboriginal art bodies within the Sydney region are rock engravings and pigment art (shelter art). Both of these bodies of art are represented in Mosman and conform to the larger Sydney regional 'simple figurative' genre (cf. Maynard 1976, McCarthy 1988). Simple figurative rock art whether engraved or painted, constitutes plain silhouettes of easily discernible animal or human models. It could be described as an outline of the model, although this tends to oversimplify some examples. Simple figurative motifs are often depicted lying on either their left or right side (Stanbury and Clegg 1990:123).

Chronologically, simple figurative rock art appeared during the last phase (c. 3000 BP) of McDonald's (1994) Bondaian art sequence.¹⁰ This phase can be considered as

¹⁰ Chronology for the Sydney regional art sequences has been investigated by McDonald (1994:335–336) who has outlined a useful regional sequence:

1. Pecked *Panaramitee* style engraving of simple geometric shapes such as tracks and circles represent the pre-Bondaian art style, before c. 5000 BP.
2. Red paintings and red or white stencils occurring sometime after c. 5000 BP.

a relatively contemporaneous single body of rock art, without significant change through time. In other words, the techniques and depiction seem to be relatively stable throughout the last 3000 years. Therefore, similar to the perceived proliferation of shell middens in the last 3000 years the majority of the region's rock art appears to coincide with other changes in Aboriginal life over the last 3000 years which may relate to changes in population size, changing social organisation, and/or changing resource and land use patterns.

Interestingly, Sydney regional art is unique in that both pigment art and engravings appear to have occurred together, which is unusual in Australia (Layton 1992:342-244). The dual techniques, are quantitatively similar, although pigment art motifs (drawings and paintings) are usually much smaller than engraved motifs.

The similarity of style between the two techniques however does not translate into a similarity of subject. As McDonald (1998:323) concludes:

the two extensive regional art bodies have shown that they do represent different manifestations of the same art tradition – while demonstrating inherently distinctive stylistic traits [e.g. motif selection] because of their techniques.

Pigment art and engraving may be similar in style but appear to be being used for different purposes. The purpose that is related to any specific art site however, is not easy to interpret. Generalised functional models for Sydney rock art such as: All engravings are ceremonial, or All paintings are secular, simply do not hold up to scientific scrutiny. And no ethnographic information is available on the function of Sydney's rock art. Interpreting each art site requires a careful consideration of the entire known archaeological landscape.

Distribution

The distribution of rock art in Port Jackson is best described by McDonald's (1994) study of variation in the rock art of the Sydney Region. McDonald investigated the relationship between rock art motifs, technique and landforms in an attempt to understand the function of rock art. The pertinent findings are outlined below in relation to the Mosman data.

Pigment Art (all recorded)

- The dominant motif for pigment art in the Sydney Basin is the hand stencil. Hand stencils (including hand stencil variations such the forearm) account for just under half of the motifs (c. 49%).
 - The proportion of the recorded hand stencils is much higher for the Mosman area at over 80% (n=62).

3. A range of colour combinations and techniques mark the middle of the Bondaian period c. 3000 BP with the simple figurative motifs possible beginning late in this period. These dates from McDonald's (1994) work are taken from a range of rock shelter excavations where motifs were uncovered in deposit layers or could be extrapolated from ochre in datable deposits.

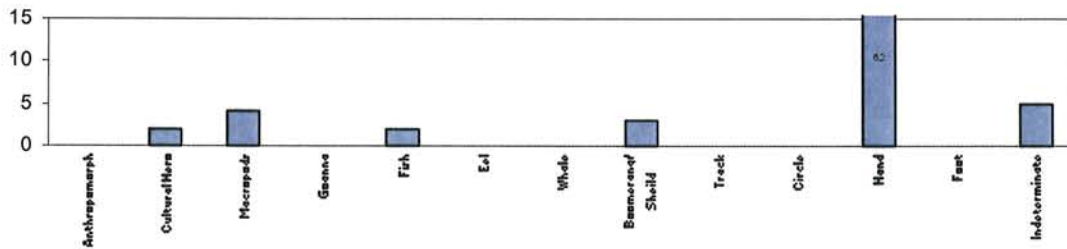


Figure 5: Frequency of pigment art motifs recorded in the Mosman LGA

- After hand stencils, macropods and anthropomorphs are the next most common (c. 9 % and 7 % respectively) for the region.
 - Mosman again follows the regional trend as macropods are the next most common c. 6%, though no anthropomorphs have been recorded.
- Low frequency regional pigment art motifs include marine animals and material object such as boomerangs.
 - The remainder of the pigment art motifs for the Mosman area fall into this infrequent category. The percentage of fish depictions is somewhat higher but understandable due to Mosman's coastal position.
- Pigment art in the Sydney region is predominantly found on hillslopes (c. 70%) where large shelters provide a good medium.
 - Around c. 80% of Mosman's pigment art sites are found on the hillslope (including the base of the slope).

Engravings (all recorded)

- Engraved tracks (such as bird or animal footprints) dominate the engraved assemblages c. 32% at the regional level.
 - Mosman contained only one observed track (or c. 1% of the total assemblage).
- After tracks marine animals are the next most common (c. 20%) for the region, then land animals 14%, anthropomorphs and material items (e.g. shields) both at 12%.
 - Marine animals (fish, eels, whales) account for c. 65% (n=51) of the recorded assemblage. No anthropomorphs have been recorded, and only two material items are recorded.

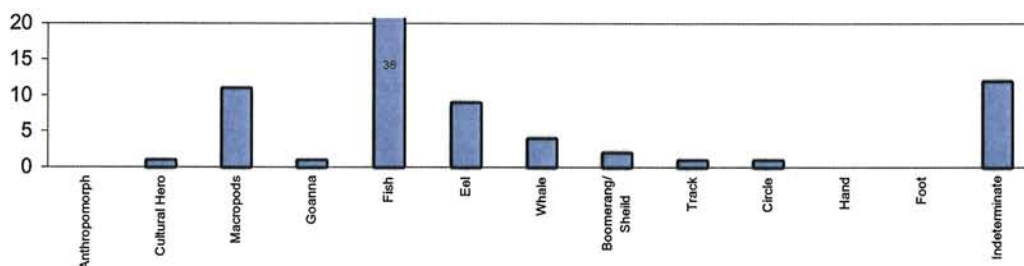


Figure 6: Frequency of engraved motifs recorded in the Mosman LGA

- Engravings in the Sydney region predominantly occur on ridgelines (c. 60%) where large rock platforms offer a good and expansive medium and tend to have panoramic views.
 - Mosman engraved art sites are also predominantly on ridgelines or primary contours in elevated positions with panoramic or dramatic views.
- McMahan (1965) and McDonald (1994:215) have found that the motif selection for engravings varies across the region. General environmental trends can be observed in the data, for example more depictions of fish are found in the coastal areas.
 - Mosman is consistent with these trends and the dominance of marine animals (especially fish) in the Mosman engraved assemblage reflects its coastal position.

Regional Placement (Mosman Rock Art)

According to McDonald's (1994) analysis Mosman falls within the Guringai style boundary. This area, north of Port Jackson and south of the Hawkesbury River has a high number of fish and mudoes (tracks). Mosman's clear focus on fish and lack of mudoes, however, means that it actually fits better with McDonald's Eora style that favours fish over tracks. Her Eora covers the area south of Port Jackson and north of the Georges River. It is apparent in McDonald's analysis that the differences between style areas are normally clinal in nature (tapering off) rather than sharp boundaries. As Mosman is located on the boundary between the two areas it is logical that it should have influences from both areas. Add to this the obvious environmental influence of Port Jackson, and Mosman can be seen to be perfectly placed within the coastal influenced areas of the Sydney regional rock art genre.

Function and Perception

When comparing the two media, McDonald (1994) found that the pigment art and engravings differed in terms of the formality of their motifs. It should be understood that while similar, the motif selection of shelter art is more heterogeneous and open engraving more homogeneous (McDonald 2000b:61). McDonald's extensive research concluded that the amount of variation within and between engraving motif divisions was more limited than within and between pigment art (ibid.:60). Although the potential for heterogeneity may appear greater for pigment art, as the assemblage sizes are greater (3x) than those of engravings, the actual numbers of motifs used per site/media indicate that the standard deviation for motif categories is roughly similar (3.8 rock paintings, 4.0 engravings) (McDonald 1994:341–343, 2000b:57–58). In short the subject selection for engravings was more formal (limited) than that of the pigment art. This basic division has socio-artistic and sociocultural underpinnings, which prove valuable later in the analysis.

McDonald (1994:333) found that basic dualities underlie rock art distributions: high-low (elevation); public-private (attention-focusing); cluster-spread (topography). These dualities primarily relate to variations between pigment art and engraving techniques, which by definition have different medium preferences (i.e. pigment art favouring shelters and engravings favouring open platforms). The densities of each art technique primarily relate to the presence of the appropriate medium (cf. Attenbrow 1987:174; Clegg et al. 2001). The degree of motif homogeneity within an art assemblage is also an indicator of rock art formality – the public-private duality.

This means that differences in Mosman rock art may be reflecting the separation of social activities (cf. Elkin 1949; McCarthy 1961; Layton 1992; Stockton 1993). As McDonald (1994:158) noted Sydney rock art in different contexts (shelter or open), primarily relates to technique, but can also fulfil different functions. The more public associations an art assemblage has the more social it is; conversely the more spatially restricted the art the more private it is. This turns out to be likely in terms of both 'style' and environmental context (e.g., d'Arragon 2000:43). The more homogenous the 'style' the more private the location and vice versa.

Summary

So what does this mean for Mosman's rock art? The most telling aspect of Mosman's rock art may be its context (landform) and its level of formality. Formal art assemblages have uniform motifs, such as sites with all fish motifs as opposed to less formal sites with a mixture of motifs (circles, fish, macropods). Rock art is specifically placed at select locations. Therefore by investigating the relationship between rock art and other archaeological attributes (like middens) we may begin to understand how Aboriginal people perceived, as well as used, the landscape. Likewise the greater the formality a rock art assemblage exhibits the more likely it is related to restricted behaviours. Again this trend should be evident not only in the formality of the art motif but also in the way other archaeological sites/attributes relate to the art. In other words, if a place was important in the past then both the art and the other types of archaeology linked to that place should display a relatively greater level of formality in their distribution.

8 Mosman Aboriginal Heritage Study

8.1 Survey

The Mosman Aboriginal Heritage Study (MAHS) survey was divided into two parts – Survey I Verification and Survey II Systematic Survey.

Survey I Verification

Inspection of known sites, i.e. sites listed on the AHIMS or other heritage registers, or known to the Aboriginal community.

The primary aim of the first survey was to create a baseline assessment of all the known archaeological sites in Mosman. It is anticipated that this baseline will form the foundation of future assessments and plans of management. For this reason the entire peninsula needed to be surveyed as a single unit. Areas investigated included: Mosman Municipality, National Parks, Sydney Harbour Federation Trust, Taronga Zoo and Defence Department lands.

Specific tasks for Survey I included:

- site inspection to confirm site details, especially the exact location of each site and to update records where necessary;
- assess the condition of each site and to outline general management recommendations;
- create an accurate map of all sites; and
- compile a complete photographic record of all rock art sites in Mosman.

Survey II Systematic Survey

Survey of areas without known archaeological sites but exhibiting high archaeological potential.

The primary aim of Survey II was to target places where gaps were present in existing records. One of the primary aims for the MAHS was to create a holistic archaeological record for the area, which logically necessitated the most complete analysis possible. It became apparent after examining the results from Survey I that certain undeveloped places had either not been surveyed or were underrepresented by previous researchers.

Places targeted for investigation included:

- the foreshore and hillslopes around Cobblers Beach/Bay;
- the foreshore, hillslope and ridgetop of Middle Head and Obelisk Beach; and
- the foreshore, hillslope and primary contours around Wy-ar-gine Point, Taylors Bay/Bradleys Head and The Spit/Beauty Point/Quakers Hat Bay.

Fifteen new sites were recorded including new engravings on Middle Head and around Quakers Hat Bay. Brief descriptions of each site as well as plans and photographs of the sites are found in Volume 2 of this report (confidential document), which also includes previously recorded sites.

8.2 Fieldwork Strategy

The fieldwork for Survey I was carried out over 12 days from the 3rd to the 19th of March 2003. Survey areas were selected from previously recorded sites. Survey I was designed to target the exact location of known sites. A team of at least four personnel attended each day of survey – two archaeologists from AMBS and two representatives from the MLALC. Known sites were verified and the immediate area (c. 20 - 30 m) around each site was inspected, which also included the pathways into each site. The area around each site was inspected for two reasons: to verify the extent of each site and to look for additional sites. In the case of foreshore areas, this generally meant the survey crew would walk the entire foreshore between sites, the same being true for hillslope sites along primary contours and ridgetop sites along open platforms. Each site was re-recorded in detail by dual handheld GPS, photography, planning and mapping. Rock art was photographed during the final days of Survey I by rock art researcher Paul Taçon from the Australian Museum.

Fieldwork for Survey II was conducted over four days from the 14th to the 17th of July 2003. Survey areas were selected by their proximity to known archaeological sites and/or their high environmental potential (e.g. undeveloped bushland within 100 m of water or large expanses of sandstone). Survey II was designed to be a systematic survey of often rugged and densely vegetated locations. A minimum team of four persons (identical to Survey I) conducted each survey in teams of two. Contour and trail transects were used in each area. The same method for recording sites during Survey I was used for Survey II.

Features investigated Survey II:

- All exposed areas were inspected, this comprised areas of significantly reduced vegetation. Such areas generally occurred along ridgelines or primary contours. The surface of the ground was inspected for the presence of shell and/or stone artefacts. Regardless of the presence or absence of artefacts, the size, type of exposure, landform and basal sediment of each exposure were noted in an attempt to estimate the effective survey coverage.
- All rock platforms and outcrops of smooth sandstone were inspected. All large sandstone platforms were inspected in detail. Regardless of the presence of artefacts (e.g. stone tools, shell, engravings), the size, sandstone matrix, landform, and surface cover of major platforms were noted in an attempt to estimate the effective survey coverage.
- All rock overhangs were inspected. If there was any deposit in an overhang this was closely inspected for signs of Aboriginal occupation in the form of shell and/or stone tools. To a limited degree, the slope or open area directly in front of each overhang was also inspected, which generally meant parting significant amounts of leaf litter. It was noted that on rare occasions shell had visibly eroded out of the shelters and down the slope. The walls of each overhang were inspected for rock art. If possible, the area above the overhang was inspected for Aboriginal markings, such as grinding grooves.
- All foreshore areas were inspected. Deposits found along the foreshore were closely inspected for: numbers/size of shell species, presence/percentage of

charcoal, burnt shell or other material, marine shell grit and pumice, or any stone artefacts.

- All creeks were inspected for evidence of grinding grooves and any eroded areas on the banks were inspected for signs of Aboriginal occupation in the form of shell or stone artefacts.
- Mature trees were inspected for evidence of bark removal, however very few mature trees were found in the areas surveyed.

8.3 Fieldwork Personnel

All fieldwork was carried out under the direction of Matthew Kelleher (AMBS). Survey I was coordinated in the field by AMBS personnel: Matthew Kelleher, Alison Nightingale and Andrew Collis. MLALC representatives Allen Madden and Adam Madden participated in the field survey. Allen Madden's knowledge of the area and familiarity with the sites in Mosman greatly sped up the process of relocating several sites. Val Attenbrow (Australian Museum) participated in one day of survey around the Balmoral Beach area. Her expert knowledge of the area added great insight. Paul Taçon took photographs of all the rock art in Mosman during that last two days of Survey I.

Survey II was designed and carried out by Matthew Kelleher and Alison Nightingale. MLALC representatives Allen Madden, Adam Madden and Amona Murry participated in the field survey. Adam Madden's tireless efforts proved invaluable after he found a new double fish engraving on Middle Head during the last hour of survey time (see Plate 4). Sydney region rock art expert John Clegg participated in one day of the second survey and offered valuable insights into the weathering of sandstone engravings and the styles and techniques associated with contact art. (Several places around Mosman such as Wy-ar-gine are dotted with contemporary engravings, which are often wrongly associated with Aboriginal art.)

8.4 Site Location

One of the primary tasks of the MAHS was to update the location data for all known Aboriginal sites listed in the AHIMS register. Existing coordinates were compared against dual handheld GPS (Global Positioning System) instruments and then precisely plotted using aerial photographs and digital maps. The new locations obtained by AMBS during the study are highly accurate and are based on the Australian Map Grid 1984 (AMG 84).

Since 1998 the differential correction usually necessary to gain precise locations (> 3 m) using handheld instruments has not been necessary. However, since almost all the locations for Mosman sites were recorded prior to 1998, an error of 15 m was not uncommon. In some instances, grid references for previously recorded sites were in error by several hundred metres. For sites recorded without the aid of a GPS the error rate was exceptionally high, often placing sites in the harbour. This was mostly due to the compounding of errors throughout the years as coordinate systems changed from imperial to metric and the use of different map scales by various researchers. The location data supplied by NSW NPWS was in most instances not very accurate.

8.5 Site Planning

Plans were drawn of all Aboriginal shelter and engraving sites. Plans were created using a centreline tape and compass, whereby the distances of features at right angles to the centreline were measured then plotted. Each field plan was then redrawn in the office by an archaeological draftsman, Agnes Dubost (AMBS).

Rock shelters, which contained pigment art, had additional plans and sketches drawn of the art motifs. The location of each motif was also recorded on the two dimensional plan. In most instances pigment art was found on the walls or ceiling of the shelter and this is indicated on the 2D plans.

Drawings were made of rock platforms which contained engravings. The locations of the engravings were noted on the platform as well as patches of vegetation or unusual features. The engravings themselves were also drawn to scale. In cases where the engravings had been destroyed the previously documented evidence was used to draw the image.

Sketches and plans for all sites will be lodged with the NSW NPWS. Copies will also be held by AMBS.

8.6 Photography

All archaeological sites were photographed. Every officially recorded site in Mosman, regardless of the quality of the site, had a photograph taken. In most instances several photographs were taken of each site from different angles. Because of production costs, not all photographs appear in the site index (Volume 2). As a guide, photographs were included in the index if they offered value to the site description.

Digital copies of photographs of all sites will be lodged with the NSW NPWS. Print, slide and digital copies will also be held by the Australian Museum.

Photographs of the rock art were taken with and without scales. Some rock art depictions were photographed at different times of the day to obtain the best possible result.

All horizontal engravings were photographed using the red wool technique (see Plates 1 and 2). In these instances red wool (yarn) was lightly moistened and then placed along the engraved lines. Within the report, where possible, both the red wool outlined image and the non enhanced image are placed side by side. The juxtaposed images allow the best representation of the engraving. By using the red wool technique, rock art researchers are able to thoroughly and safely document engravings. Each researcher can place the wool in the image they 'see', which allows different people to 'see' what each person 'sees' on the rock surface. Engravings are often very faint and several interpretations may be possible. In addition, the technique does not harm the engraving and allows changes to engravings to be monitored through time.

In the case of vertical engravings photographic shades were used to block the direct rays of the sun (see Plate 13). Vertical surfaces cause harsh shadows and/or strongly reflect light often making it difficult to photograph well. It is also not possible to use the red wool technique because of the vertical slope. On rare occasions the rock surface was lightly sprayed with water and flash photography was used in order to highlight the engraved surface.

8.7 Survey Limitations

The surface visibility of the study area for both Survey I and II was relatively poor. Certain factors limited the ability of the surveys to detect archaeological sites and/or the full extent of known sites.

Table 4: Table of primary survey limitation for sites

Limitation (Primary)	Number*
Covered Platform	22
Vegetation	41
Private Land	17
Poor Light	18
Other	9
Total	107

*Sites may have more than one limiting feature.

8.7.1 Vegetation and covered platforms

In some places the density of the vegetation was so thick that it was impossible to see the ground and in some cases severely restricted the efficiency of the survey. Effective coverage in densely vegetated areas was less than 0.5 m². For instance, a dense covering of lantana and grass made it almost impossible to find the Five Fish engraving near Obelisk Beach.

8.7.2 Poor light

Engravings on rock platforms can often be very faint and are easily missed during daylight hours. Direct light on rock platforms actually makes it very difficult to see and/or photograph engravings because, without some degree of shadow, grooves lack visible texture. Likewise overcast conditions make it difficult to detect marks on the surface for similar reasons. The best conditions are either early in the morning or late afternoon when the light is at oblique angles and casts shadows into the grooves. In one instance, it took four hours to find the Kangaroo engraving on Bradleys Head because it was so faint and covered by lichen that without proper lighting it was impossible to see. Allen Madden (MLALC) and Matthew Kelleher (AMBS) actually looked directly at the rock containing the engraving for several minutes on day one and did not notice the engraving. On day two the sun was at a different angle and the engraving emerged from the rock surface within seconds. A similar problem was encountered when the engraving was scheduled to be photographed and it proved necessary to erect a complex shade canopy (see Plate 3).

Night Recording

Rock art researchers often find that by using oblique lighting such as the light of a torch held at a low angle, sufficient shadow can be cast across the rock surface

making it possible to detect faint engravings difficult to discern even by touch. The same method is useful when trying to detect grinding grooves. One engraving discovered during Survey II was in fact only visible in oblique light conditions. After the discovery of this engraving, two areas Wy-ar-gine Point and the main platforms on Middle Head were re-inspected during the night by torch. Unfortunately no additional markings were found.

8.7.3 Private land

The areas surveyed in the MAHS did not include privately owned lands. In some instances however, several members of the local Mosman community offered assistance by informing AMBS personnel about possible Aboriginal sites on their property. These sites were inspected by AMBS archaeologists. No new sites were located on private property. On occasions where it was necessary, some Mosman residents allowed AMBS to re-record known sites on private land. Only one known site was not revisited because of objections by the landowner. In addition, some previously recorded sites abut private land and it was not possible to extend the survey into those lots. Elsewhere it was not uncommon for privately constructed gardens and lawns to have encroached upon recorded or potential archaeological sites.

8.8 Survey Results

8.8.1 Survey I and Survey II

This section summaries the results of the verification (Survey I) and systematic (Survey II) survey. This section outlines all of the observed archaeological sites in the Mosman LGA (n=91). Special comments and summary tables are included for new sites (Survey II).

The complete record of each site is found in Volume 2, which includes site descriptions, plans and photographs. Volume 2 also contains the detailed analytical breakdown of each site (MAHS data matrix).

Relocating AHIMS Sites

One of the primary directives for the MAHS was the verification of existing archaeological data for the Mosman area. For this reason 12 days (over 50 person days) of field time was dedicated to this portion of the survey program. This is a substantial allocation of resources and the results reflect this commitment with a 99%¹¹ success rate (finding previously recorded sites).

Sites Relocated

The number of recorded sites in Mosman has steadily grown from a handful of sketchy Australian Museum records in the 1960s to the 107 detailed records contained in this report. Most systematic surveys of the Mosman area have found new sites. It is very likely that more sites are yet to be found.

This section summaries the sites which have been provenanced. Provenanced sites are sites which have been verified through observation. Currently 91 sites have been provenanced in Mosman. The verification portion of the MAHS relocated 90 of these

¹¹ Percentage does not include destroyed or historically unprovenanced sites (see section below, Sites not relocated).

sites. The remaining site is on private land and the current owner refused access. It was not possible to determine the condition of the site. However, Koettig recorded the site in 1990 and its location is well documented. The remaining 14 sites have either been destroyed or remain unprovenanced (see section 8.8.2 Sites not relocated below).¹²

Provenanced Sites

The majority of Mosman's provenanced sites are found in rock shelters (c. 64%). Middens constitute c. 74% of the occupational deposit within these shelters. Rock art makes up c. 29% of the existing sites within Mosman. Only a small fraction of art sites (c.15%) have visible occupational deposit.

Table 5: Summary table of provenanced sites in Mosman (destroyed or unprovenanced sites, equalling 16, are not included in this table.

Site Type	Number of sites Surveys I and II	Percentage of provenanced sites in Mosman
Engravings	12	13.2%
Midden (Open)	21	23.1%
PAD (Potential Archaeological Deposit)	5	5.5%
Shelter with Art	10	11.0%
Shelter with Art/Midden	4	4.4%
Shelter with Midden	39	42.9%
Totals	91	100.0%

8.8.1.1 Engravings

Mosman has 82 recorded engraved motifs at 17 sites, however only 31 motifs (38%) were observed during the MAHS. Several of the destroyed engraving sites contained multiple motifs, the largest having 14 motifs. The numbers of motifs for provenanced sites ranges from 1 – 11.

Table 6: Percentage of provenanced engraving sites in Mosman not including destroyed or unprovenanced engravings

Site Type	Number of sites	Percentage of provenanced sites in Mosman
Engraving	9	9.9%
New Engraving	3	3.3%
Totals	12	13.2%

The three new engravings are exciting finds and strongly suggest that more engravings are likely to be found in Mosman. The 'double fish' engraving on Middle Head is particularly interesting because it shows that the historic development of the head has not eliminated the possibility of finding new engravings. The two engravings around Quakers Hat Bay are found on very small exposures of sandstone. The bulk of the platforms around the bay are currently covered by turf and maintained

¹² Two sites have been reclassified by the NPWS as 'Not an Aboriginal Site' and remain on the AHIMS database to limit any future confusion.

by the local residents. From a heritage management perspective, it would be prudent to assume that additional engravings may be present on these covered rock platforms.

Survey II was designed to be a systematic analysis of selected places but was limited by various factors (e.g. time, density of vegetation). Places such as the sandstone platforms on top of Middle Head and Quakers Hat Bay are continually being exposed and then recovered by vegetation. New surveys in the forthcoming years will likely be able to see different exposures than were visible in 2003.

Mosman’s coastal position seems to be influencing the selection of motifs. Marine animals (fish, eels, whales) account for c. 39% of observed motifs (see graph below.)

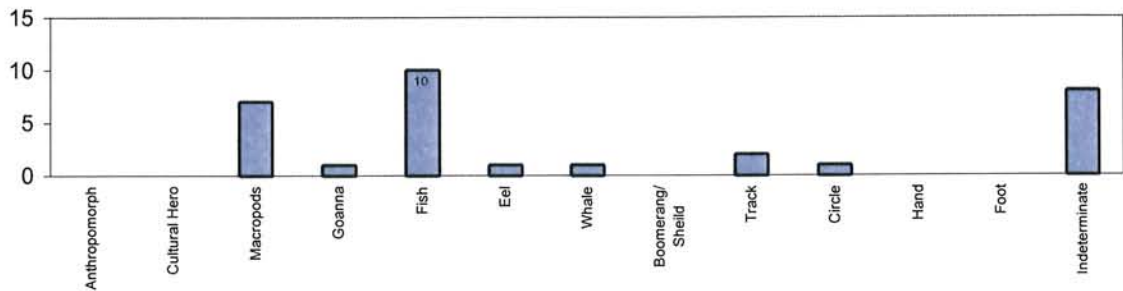


Figure 7: Frequency of engraved motifs observed in the Mosman LGA (total=31)

An interesting observation made during the MAHS was the fact that the majority of aquatic motifs (primarily fish) were found on the ridgetop and not the foreshore or ridgetop. Statistically the survey sample is small but the trend is interesting and may prove significant with the addition of more data from the surrounding area.

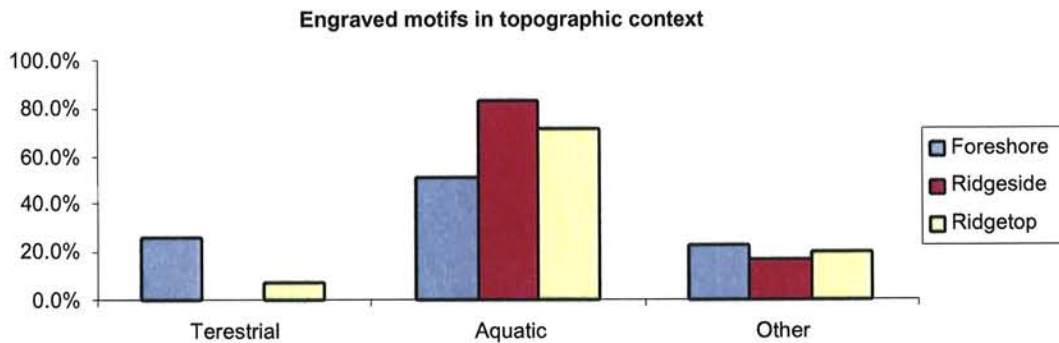


Figure 8: Percentage of engraved motifs in topographic context



Plate 1: Engraving of an eel at Beauty Point. Insert (right) shows the low fence currently used to protect the engraving.

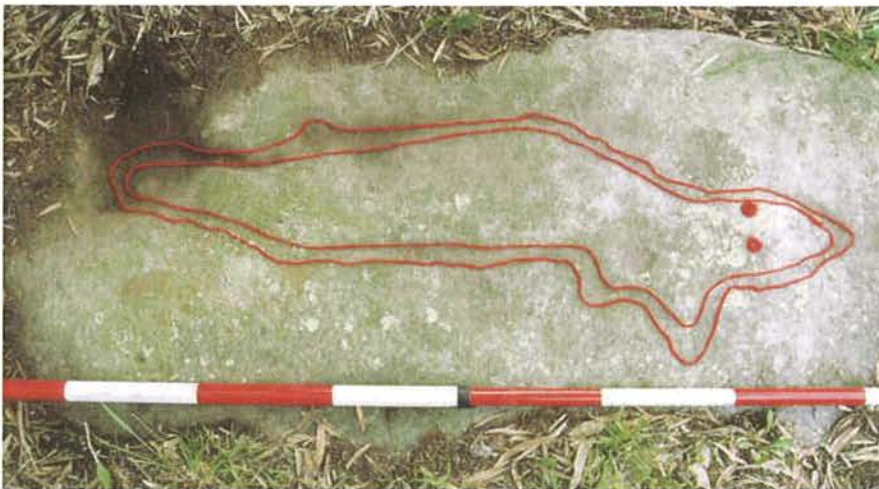


Plate 2: Engraving of the eel (Plate 1) with red wool outline.



Plate 3: Engraving of a macropod (kangaroo) found at Bradleys Head. Insert shows the engraving being photographed as part of the MAHS.



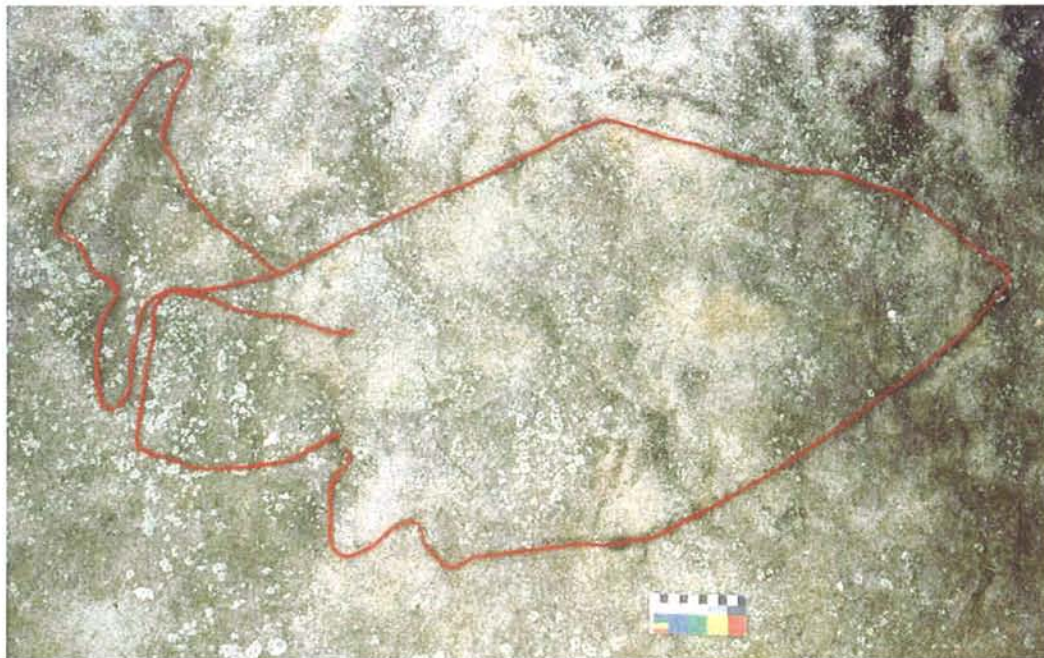


Plate 4: New 'double fish' engraving located during the MAHS survey. Insert (right) shows location of the engraving.

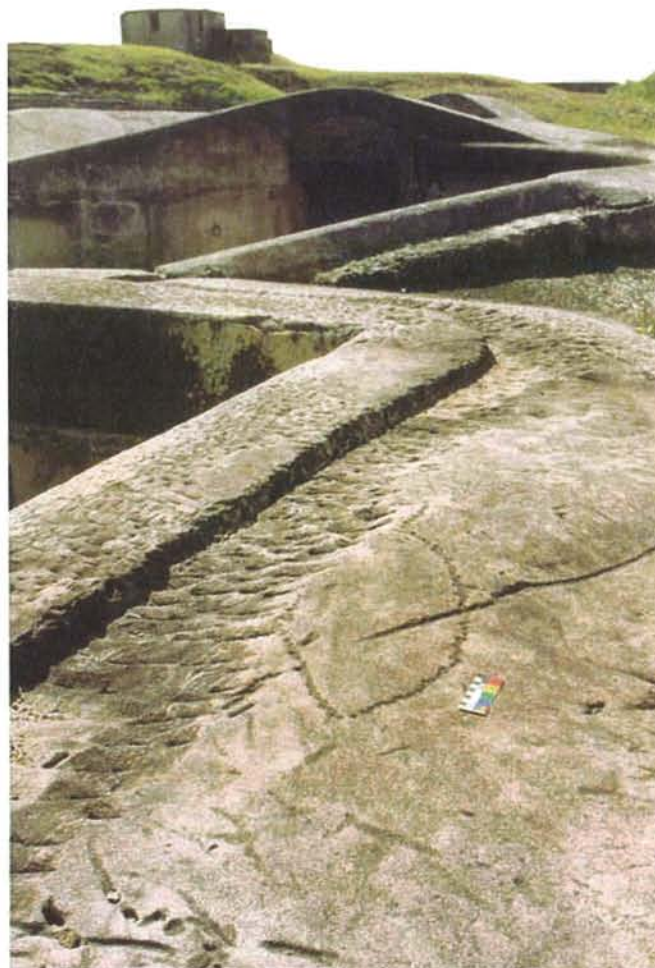


Plate 5: Engraving of a fish at Middle Head fortification.

8.8.1.2 Shelters with art

Mosman has 78 recorded pigment art motifs, 50 of these motifs (64%) were observed during the MAHS. Several pigment art sites contain multiple motifs. Many of the pigment art sites have suffered some form of vandalism (Plate 6 and 7). The largest assemblage was a group of 19 motifs in a site which is now destroyed (see below, Sites not relocated). The numbers of motifs for provenanced sites ranges from 1 – 15.

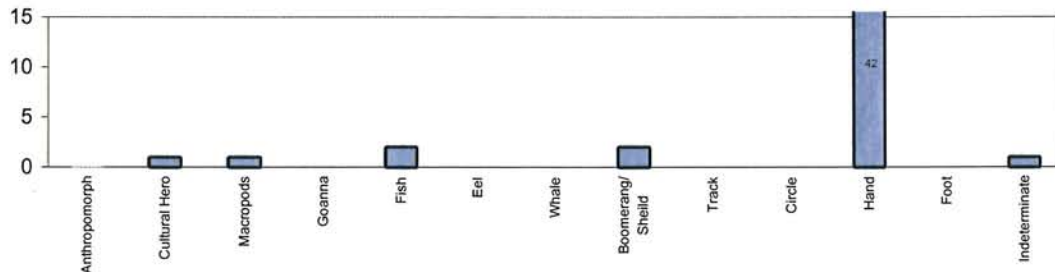


Figure 9: Frequency of observed pigment art motifs recorded in the Mosman LGA (total=50)

Hand stencils are the most numerous motif in Mosman ($n = 42$, 84%). Three sites account for 67% ($n = 28$) of the stencils. Interestingly all three of the shelters are found high on the ridgeline and have *only* hand stencils (no other archaeological attributes have been observed). This is interesting because the analysis (section 8.9) indicates that elevated sites are statistically occurring in between heterogeneous (nondescript) pigment art sites and homogenous (structurally uniform) engraving sites. Furthermore, the physical location of these sites in themselves may be an indicator of a transitional zone. The high ridgeside location of the three stencil sites is physically between sites on the ridge (engravings) and sites on the foreshore (middens). We explore this idea in the discussion (section 9).

Most of the hand stencils are white. Red stencils make up just over 10%, and the majority of those are found at just one of the elevated sites (see Plate 8). Although it has yet to be proven the prevalence of white stencils may indicate that the bulk of Mosman's art sites are of fairly recent origin (cf McDonald 1994:335-336). Macropods are the next most common (c. 6%) motif. A variety of colours (red, white, black, yellow) were used in creating the macropods. In most cases each depiction was drawn/painted using a single colour. Some motifs appear to have been outlined or infilled with a different colour or shade at another time.

Table 7: Percentage of provenanced shelter sites with art in Mosman

Site Type	Number of sites	Percentage of provenanced sites in Mosman
Shelter with Art	10	11.0%
Shelter with Art/Midden	4	4.4%
New Shelters with Art	0	0.0%
New Shelters with Art/Midden	0	0.0%
Totals	14	15.4%

Several sites have indeterminate dark lines. In some cases these have been interpreted as partial charcoal drawings. Apart from one site on Quakers Hat Bay, no indeterminate charcoal motifs were present. It is likely that most of the dark lines recorded are simply natural stains in the sandstone.

Two pecked fish (vertical engravings) were recorded at a site above Quakers Hat Bay. These motifs are not of Aboriginal origin. The pecking appears to be of recent origin and the motif is unlike other Aboriginal motifs for the Sydney region.



Plate 6: Large pigment art motif of an 'ancestral being' in a rockshelter on Mosman's foreshore. The insert (above right) shows that the shelter has been damaged by graffiti.



Plate 7: Vandalism has impacted rock art in Mosman. The pigment art motifs have been cut out of the back wall of this Mosman rockshelter.

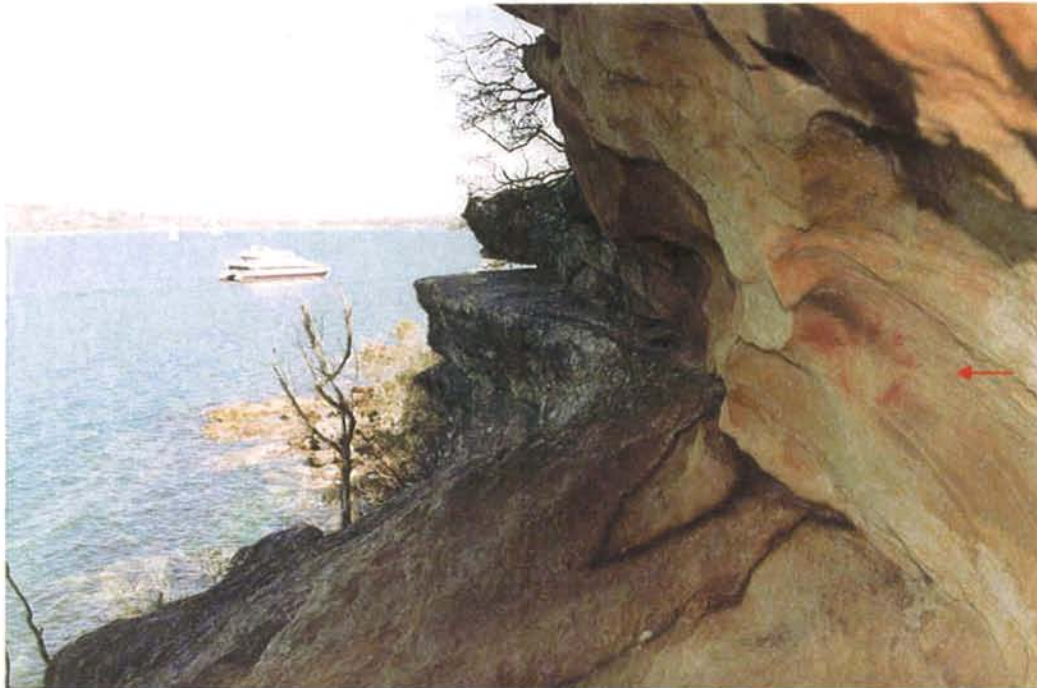


Plate 8: Rockshelter with hand stencil art (red arrow) overlooking the entrance to Port Jackson.



Plate 9: Image of a red fish found along the foreshore in Mosman. Insert (above right) shows the location of the fish.

8.8.1.3 Open middens

The bulk of the open midden deposits in Mosman are located on the foreshore. Most middens are found on slightly elevated ground just above the water. Several middens have been found around the edges of former embayments that have since been reclaimed (e.g. Clifton Gardens). Some of the largest middens have been found behind the current beaches in the dune deposits that represent Holocene beaches. Open middens tend to be oriented toward the nearest foreshore and do not have a preference for a cardinal direction.

The sizes of midden deposits vary greatly from less than 0.5 m² to several hundred square metres. As a general rule it is difficult to estimate the size of open middens because the ones that survive tend to be covered by vegetation or sediment. It is likely that small surface middens located in proximity to each other and at similar levels represent one large midden. The depth of open midden deposits is also difficult to determine without probing the ground. In some instances the edge of the midden has been eroded and the depth can be measured. On average the middens with exposed faces range from 20 to 40 cm. At particularly sandy locations, a midden depth of over one metre is not impossible.



Plate 10: Midden deposit exposed on path.

The range of shellfish species contained in middens relates directly to the aquatic zone (cf. Attenbrow 1994). Open middens found in estuarine zones have on average four shellfish varieties and are comprised predominantly of rock oyster or mussels. Middens that are found in ocean influenced zones have on average more than six species and are primarily comprised of Sydney cockle.

Table 8: Percentage of provenanced open midden sites in

Site Type	Number of sites	Percentage of provenanced sites in Mosman
Middens (open)	20	22.0%
New Middens	1	1.1%
Totals	21	23.1%

One new open midden was identified during the survey. This midden was just above the foreshore on top of a large boulder. A recorded midden is located beneath the boulder.

8.8.1.4 PADs (Potential Archaeological Deposits)

Archaeological evidence in rock shelters and in open contexts can become easily obscured by recent or past activity. Occupational deposit (such as shell or stone artefacts) may not always be visible on the surface. For management reasons, it is important to document these high potential places. Four new PADs were recorded during the MAHS, which also inspected a previously recorded PAD.¹³

Table 9: Percentage of observed PADs in Mosman

Site Type	Number of sites	Percentage of provenanced sites in Mosman
PAD (Potential Archaeological Deposit)	1	1.1%
New PADs	4	4.4%
Totals	5	5.5%

The four new PADs recorded during the survey are interesting because they are all located high on the ridgeside, which is a landform with few recorded archaeological sites in Mosman. All of the PADs are located near Aboriginal or historic sites.

8.8.1.5 Shelters with midden

Shelters with midden are primarily located within 10 m of the foreshore (c.68%) although a growing percentage of shelters are being found on hillslopes over 100 m from the foreshore (see below). Some shelters are set back behind current beaches, but most are found just above the rocky foreshores which dominate the Mosman coastline. By definition all contain shell deposit but stone tools have been recorded at four. (Stone artefacts can be difficult to see on the surface of shell middens.) Interestingly the shelters high on the hillslope tend to have more stone tools on the surface. This observation may or may not reflect a real trend, only a series of excavations would be able to shed light on the issue.

Shelter middens, like all of the archaeological sites in Mosman, are oriented along the natural topographic axis. Shelters face all directions, and there is no discernible trend towards a specific direction. Shelters which face north tend to be drier because they capture the sunlight better, but the south facing shelters are more cavernously weathered shelters and are larger on average.

Table 10: Percentage of provenanced shelters with middens in Mosman

Site Type	Number of sites	Percentage of provenanced sites in Mosman
Shelter with Midden	32	35.2%
New Shelters with Midden	7	7.7%
Totals	39	42.9%

¹³ Because of time constraints, two additional PADs recorded on SHFT lands at Georges Head during a separate survey (ref AMBS 2002105) were not included in the MAHS. This had a nominal effect on the data analysis.



Plate 11: Artefacts (fish hook file, stone flake) and shell found in a Mosman rock shelter.

Similar to the open midden deposits, the range of shellfish species contained within the shelters relates directly to the aquatic zone. Estuarine zones have on average less than four shellfish varieties and are comprised of predominantly rock oyster, while the shelters found in ocean influenced zones have on average more than six species and are dominated (visually) by Sydney cockle. These results correspond well with Attenbrow's (1994) Port Jackson study.

Seven additional shelter sites were found during the survey. One shelter site (AMBS 1) contained a stone file also referred to as a "fish hook file" – a rare stone artefact (see Plate 11). In addition, the shelter midden deposits are interesting because five (c. 70%) of these new sites were located on hillslopes not the foreshore. The general trend for Port Jackson is for middens to be located within the foreshore zone. However, Attenbrow (1994) and Koettig (1991) have speculated that the seemingly high percentage of middens along the lower slope may be related to a combination of recorder bias and the impact of development rather than representing the actual distribution. The new middens found during this survey, which often targeted the hillslope rather than the well-documented foreshore, tends to support the idea that the slope was more utilised than is currently indicated by the numbers. Further targeted surveys around Port Jackson may add clarity to this issue.

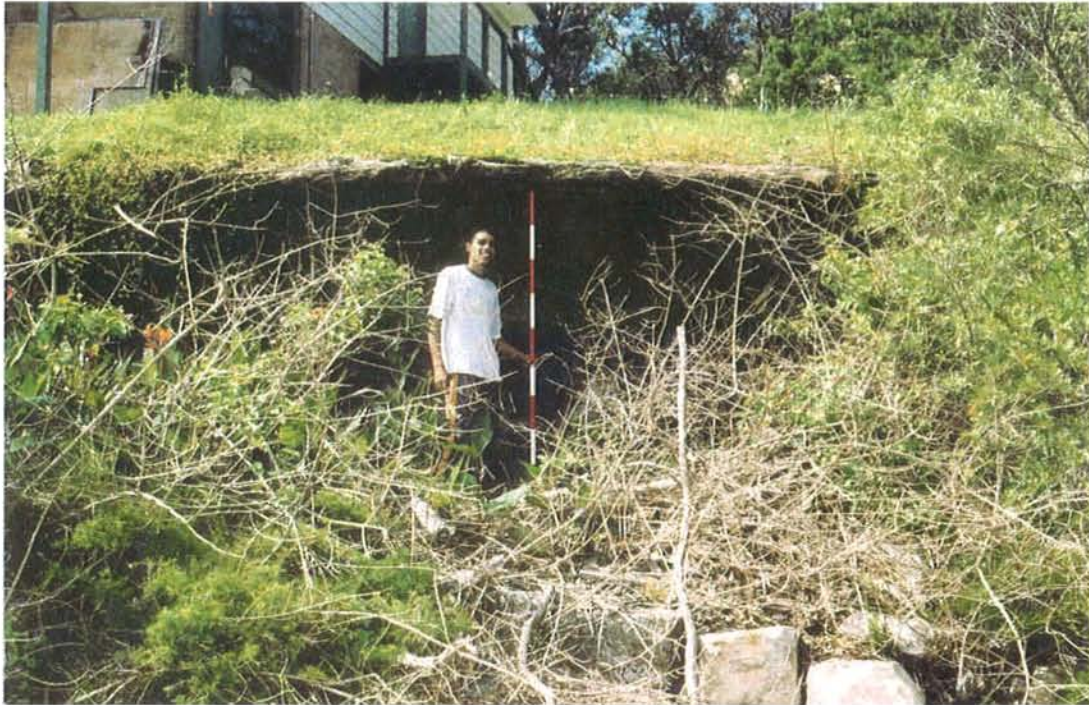


Plate 12: Rockshelter found around the foreshore of Mosman.

8.8.2 Sites not relocated

Fourteen sites were not relocated during the MAHS survey. Eight sites are known to have been destroyed and it was not possible to verify their recorded location. A further six sites are unprovenanced. The records related to the latter sites are often sketchy and in most cases it is likely that if the sites exist they are not located in Mosman.

8.8.2.1 Engravings

Five engraving sites have been destroyed in Mosman. One engraving site is unprovenanced having never been relocated during the past 100 years. WD Campbell (1899) recorded four of the destroyed sites and the unprovenanced site. Campbell was a government surveyor at the turn of the century and although the style of his recordings is sometimes confusing (i.e. sketches from different locales are often amalgamated on a single page) his documentation in general is solid and has been verified several times (e.g. McCarthy 1967, 1983; Stanbury and Clegg 1990). It is reasonable to assume that Campbell's information is correct. Furthermore, it is likely that Campbell's unprovenanced recording of engraved eels near Edwards Beach has also been destroyed due to the development of the area, but currently no record exists of its destruction. Sim's record (NPWS site card) of the destruction of the 'Burrens Eels' is well documented in the local newspaper.

Table 11: Percentage of destroyed or unprovenanced engravings in Mosman

Site Type* / Condition	Number of sites	Percentage of total sites in Mosman (107)
Engraving/Destroyed	5	4.7%
Engraving/Unprovenanced	1	0.9%
Totals	6	5.6%

8.8.2.2 Open middens

Two open midden deposits have been destroyed or significantly disturbed in Mosman. One site located along Balmoral Beach was not salvaged during trenching works near the beach. (However, some animal bone was retained by NPWS staff and is now in the Australian Museum collections). It is possible that some midden deposit may still remain beneath the road pavement. Another midden site currently has building rubble dumped over the top of its location. It was not possible to determine if the shell deposit is still present or the extent of possible disturbance to the deposit.

Table 12: Percentage of destroyed or unprovenanced middens in Mosman

Site Type / Condition	Number of sites	Percentage of total sites in Mosman (n=107)
Midden/Burial/Destroyed	1	0.9%
Midden/Unprovenanced	1	0.9%
Totals	2	1.90%

8.8.2.3 Shelters with art/midden

The deposits, walls and ceilings of two shelters near Clifton Gardens have been destroyed, but enough remains of the overhang for people with previous knowledge of the sites to verify their location.

Four shelter sites with art are unprovenanced. The AHIMS database lists the historically documented sites as being located in Mosman although none of the actual records give precise details of their location. Because the sites exist in the database they are included in this section. However, if any of these four sites exist, none are likely to be located in Mosman. In addition, pigment art sites which were not relocated were not used in the analysis (section 8.9).

Table 13: Percentage of destroyed or unprovenanced rock shelters in Mosman

Site Type* / Condition	Number of sites	Percentage of total sites in Mosman (107)
Shelter with Art/Destroyed	1	0.9%
Shelter with Art/Midden/Burial/Destroyed	1	0.9%
Shelter with Art/Unprovenanced	3	2.8%
Shelter with Midden/Burial/Unprovenanced	1	0.9%
Totals	6	5.6%

8.9 Analysis

One of the prime archaeological directives for the MAHS was to create a systematic way of connecting ethnohistorical places with archaeological sites. The method had to be transparent and replicable because it was deemed to be a pilot for future heritage studies.

For many reasons it is difficult to directly link archaeological sites with oral histories or ethnographic information for the Sydney region. The solution to the problem was to create an indirect link between archaeological and historical places. Archaeologically it is possible to show a relationship between Aboriginal people and specific places in Mosman. Section 6 discussed the historical link between Aboriginal people and places around Mosman. The multivariate analysis undertaken for this project looks at the archaeological link between Aboriginal people and places in Mosman. Specifically, the analysis examines the relationship between Aboriginal archaeological objects and the places they are found.

The results presented in this volume are only a summary of the very technical analysis contained in the confidential version (Volume 1) of this report (see NPWS for access to this document).

8.9.1 Summary

Within this analysis we have taken the first step towards understanding the importance of place for Aboriginal people as it relates to the current archaeological record. We have been able to show how places, which contain archaeological materials, were used in the past by showing the basic relationship between different types of archaeological sites (see figure below). Furthermore, we have highlighted some trends within the material record which indicate that some places, such as those associated with elevated engravings, may have had special uses which went beyond a purely environmental interpretation.

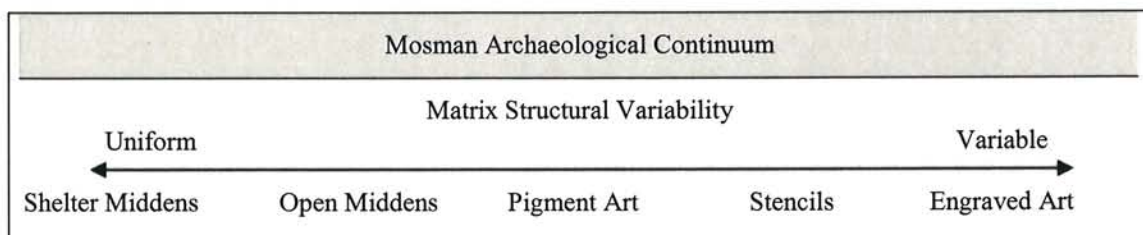


Figure 10: Mosman archaeological continuum by site type

The Mosman archaeological continuum (above) shows the degree of variability for site types as they relate to the variables contained in the data matrix. In other words, it shows the basic relationship between archaeological sites. Highly variable sites (right side of continuum) have few matrix variables in common, while highly uniform sites (left side of continuum) will have many matrix variables in common. The matrix is simply a data table containing all of Mosman's archaeological information.

The following summary outlines the results of the statistical analysis.

Summary of MAHS Correspondence Analysis

- The most comprehensive analysis (i.e. general CA, Correspondence Analysis) that utilises all of the archaeological material in a single analysis found that the separation of archaeological material in Mosman is closely related to distribution of natural resources. Shell middens are located near water and art sites are found on suitable sandstone surfaces. In general, the geography of Mosman is determining the location of archaeological sites. With this said, it is apparent that the distribution of some sites is not solely dependent upon the environment. Vertical and horizontal engravings were found in distinctly different environments. Likewise stencil and figurative motifs displayed subtle differences which indicated that a similar medium requirement (sandstone) did not rigidly translate into a similar selection of place. Some places were evidently better suited for specific activities even though their environmental features could facilitate a wider range of activities.
- The comprehensive analysis (general CA) indicated variation in Mosman's rock art which went beyond the basic separation of techniques (engraving, pigment art). A geographic analysis found three different zones of rock art. Each zone was associated with different geographic features (ridge top, ridge sides, foreshore). Furthermore, each quadrant also represented different motif selections. (Motifs are the images in the art.) The variation in motifs and techniques across Mosman may relate to a variation in behaviour at each site. For instance, the heterogeneous motifs associated with foreshore art sites (e.g. vertical engravings and painting site) indicate a less formal activity than for the more homogeneous ridge top sites (e.g. horizontal engravings and stencil sites). Heterogeneous motifs arise when the art assemblage reflects images of a different nature (circles, macropods, fish, tracks) while homogeneous motifs are from assemblages which are similar (all aquatic, all geometric). In short, the differences between art techniques relates to a changing topography (i.e. different techniques more suited to some mediums) but the differences may also relate to a variation in behaviour, which may be reflected by the choice of motifs.
- Analyses aimed at specific site types (i.e. targeted DCA, Detrend Correspondence Analysis) were used to investigate the possible variation in activities related to rock art. These analyses examined one site type in isolation. The analysis of engravings found that discrete groups of engravings were located in specific places around Mosman. The engravings in each of these locations (northwest, east, southeast, inland) were more closely related to each other than to other groups. This tells us that although the environment is dictating the technique, it is not rigidly dictating the artistic context (such as the selection of motif). In other words, the same activity is not simply being recreated at different places; instead the behaviour associated with the activity itself is changing in response to different places.
- Pigment art sites were also examined as a single group. Unlike the engraving analysis, the results for the pigment art sites indicate a relatively homogeneous site type. Pigment art tends to remain relatively uniform across the Mosman area, while engravings tend to change in structure (i.e. the selection and organisation of

motif) in relation to the place they are found. The structural uniformity associated with pigment art may be the result of a 'standard' behaviour.

- Shell middens were also examined as a single group. Middens were found to be very similar to each other. Differences between middens were found to relate to variations in their environment. Similar to the findings for pigment art, shell middens functioned in a specific way and are the result of a uniform activity (i.e. the processing of shellfish). What this means is that the middens in Mosman are the result of a single activity being repeated across the area – multiple occurrences of the same activity.

9 Discussion

9.1 Mosman Archaeology

Land is intrinsic to Aboriginal people. The relationship between Aboriginal people and the land forms the crux of Aboriginal culture (Berndt and Berndt 1965, 1970; Kelleher 2003; Mountford 1976; Morphy 1995; Stanner 1965; Swain 1993). Mosman's archaeological record tells us how people use the land. Furthermore, trends within the archaeology offer us clues about how Aboriginal people may have perceived the land in Mosman. Trends in the archaeological record act as indicators of past behaviour.

What are the trends and what do they tell us about past land use and behaviours?

In the previous section, an archaeological continuum for Mosman was identified (refer to figure below). This continuum is a simplified model displaying the general archaeological trend for Mosman. The continuum is a big picture guide. It allows us to visualise the dynamic relationship between different types of archaeology. More importantly, for this report, the continuum allows us to visualise the dynamic relationship between people and places. It shows how different archaeological site types fit together to create a cultural landscape, in the same way that jigsaw puzzle pieces fit together to create a larger picture.

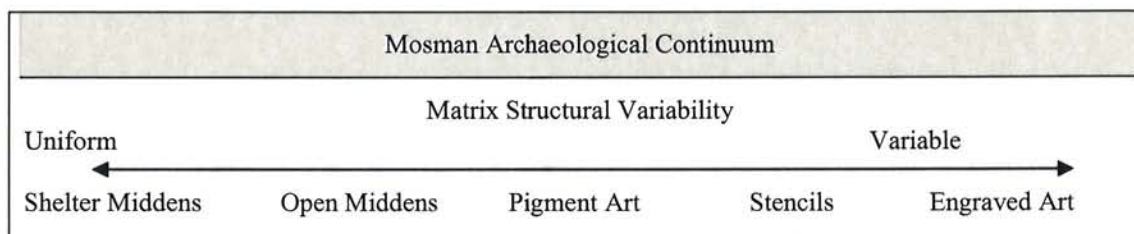


Figure 11: Mosman archaeological continuum by site type

Mini trends are also apparent within each site type. These small trends offer us information about the role of each site type within Mosman. Some sites represent opposing poles of the continuum (e.g. middens and engravings) while other sites represent links between the poles (e.g. stencils). Each part of Mosman's archaeology plays an important role in structuring a landscape.

Perceptions impact on behaviour. In order to function in the world, humans have to organise their understanding of it. That organised understanding of the universe is called the cosmos. People organise their material culture to conform to their cosmos. The way people organise their material culture links their physical reality to their perceptual reality (cf. Kelleher 2003; Renfrew 1982, 1985, 1994, 1998). Everything people do, including their material culture and the way it is organised, are conditioned by both their cosmos and the physical and perceptual worlds, and as such contain information about them (cf. Childe 1949:6–8; Rappaport 1967:237). People are not simply products of their environment, they actively engage socially with their surroundings.

In short, the trends we see in the archaeology are the product of people's organisation of their world. The organisation of activities at places tells us about behaviour. Behaviour in turn is related to perceptions. Thus, the trends in Mosman's archaeology, both large and small, allow us to see the prominence of place in Aboriginal culture.

9.1.1 Organisation of the discussion

The discussion is organised in two parts:

- I. Archaeological Sites (small trends)
- II. Cultural Landscape (general trend)

Part I

In the first part of this discussion we look at each of the principal site types in Mosman, in order to understand the often subtle nuances related to different types of site related behaviour. Each site type is placed into a general archaeological framework (i.e. continuum). Individual discussions also include selective examples of each site type.

The categorisation of sites by type, however is a purely heuristic method of organisation. Each archaeological site represents one component of a much larger and more intricate system of movement and activity (i.e. a cultural landscape).

Part II

The second part of the discussion outlines Mosman's archaeological big picture. In this section, we weave Mosman's archaeology into a general cultural landscape.

9.2 Part I Archaeological Sites

9.2.1 Middens

Middens (shelter and open) represent one side of the archaeological continuum. In themselves they display the least amount of variation for any site type in Mosman. (Granted, the analysis was limited because it used only visible midden material). The activities associated with middens are more uniform and strongly relate to the environment they are found in. For instance, the dominant shellfish species found in middens changed according to the salinity of the water. Middens are found distributed all around the foreshore and are increasingly being found on the slopes of ridges. Some open middens appear to be quite large (e.g. near Pulpit Rock, Bradleys Head and Balmoral Beach). These factors show how common and important it was to collect shellfish.

The distribution of middens around Mosman appears to be an accurate reflection of where people camped (i.e. suggesting that the foreshore areas and shelters were used frequently – as reflected in historical literature) and not merely a result of the amount of development in the areas away from immediate shorelines (cf. Koettig 1991). Furthermore the new surveys conducted as part of the current heritage study indicate that Mosman's archaeological picture is less influenced by recent human activity than previously thought (cf. Koettig 1991). The numbers and locations of middens around

the foreshore and in shelters are comparable with findings from other larger scale studies.¹⁴ In this regard, Mosman's archaeological heritage is well represented.¹⁵

The occupational deposit found in the middens exhibits a range of archaeological objects: fish hook files, backed artefacts, stone axes, shell and animal debris, bone tools, possible hearths and even human remains. One midden at Balmoral Beach which has been excavated yielded a basal date of 3780+/-140 BP (Attenbrow 1992).

Selected Midden Sites

The large open middens at Pulpit Rock and Bradleys Head are of particular interest. The two open middens represent opposite sides of Mosman and different aquatic zones:

- Pulpit Rock on Quakers Hat Bay is an estuarine zone located in the north western portion of the LGA; and
- Bradleys Head (east side) is an ocean influenced zone representing the southern most point in Mosman.

Both open middens are located near several other archaeological sites. The complex of sites surrounding the middens represents the full range of archaeological sites and attributes found in Mosman. The exact size of the middens has not been determined, but each is likely to spread over 100 m². It would be useful to excavate a portion of these middens in order to compare the results with Attenbrow's (1992) excavation of a shelter with midden at Balmoral. These excavations would give Mosman a unique scientific perspective on its Aboriginal past. They would potentially be able to address a range of scientific and management issues:

- the possibility of two separate Aboriginal clans occupying Mosman;
- the change in use of resources through time;
- the difference between open and shelter midden deposits;
- the difference between ocean influenced (Bradleys Head) and estuarine deposits (Pulpit);
- chronology for each site;
- gradation of the deposit (erosion and deposition); and
- protection of the deposit.

The results of the excavation could also be compared to the findings in this report. The excavations would further advance our chronologic understanding of the Aboriginal landscape in Mosman.

Midden Places

Several places around Mosman have concentrations of middens. Some of these places have Aboriginal stories associated with them, including Balmoral Beach and the Harbour foreshore from Balmoral Beach to Obelisk Bay, Chowder Bay, Taylors Bay and Athol Bay. Documented oral history indicates that Balmoral Beach was an area which originally sustained several families (section 6.11) evidenced by the extensive middens. The urban development surrounding Balmoral Beach has

¹⁴ Compare the increase in ridgeside middens noted during the MAHS surveys with Vinnicombe's (1980) results for Bouddi.

¹⁵ In contrast, artefact scatters which are not easily visible and occur away from the shoreline are likely to have been more heavily impacted and are less represented in Mosman.

changed the nature of the freshwater swamp and destroyed the extensive midden area. It is still, however, an important place to Aboriginal people.

The middens situated along the Harbour foreshore from Balmoral Beach to Obelisk Bay, Chowder Bay, Taylors Bay and Athol Bay represent the locations where several families camped in the summer months and fished and collected shellfish, both rich resources of these sheltered bays (section 6.11).

9.2.2 Pigment art

Pigment art sites (excluding stencils) are the next site type along the continuum. According to the CA, pigment art sites in Mosman operated as an extension of midden sites. This means the internal consistency of pigment art sites makes them similar to shelter middens. Both site types exhibit similar matrix variables (outside of the art itself) in relation to their deposit and location. In addition, the archaeological deposit found in both pigment art and midden sites is directly reflective of their environment. When the environment changes, so to does the archaeological deposit (e.g. saltwater shellfish species found in ocean influenced environments, estuarine shellfish species found in estuaries).

The internal consistency of pigment art sites in terms of archaeological deposit and site location however, does not translate into a consistency in terms of motif selection. According to the analysis, the range of motifs within pigment art sites appears ad hoc and less formal. This is an indicator of less rigidly controlled behaviour often associated with individuals rather than groups (Wobst 1977:329). The trend however, is not strong and sample size is very small (8 observed motifs, 16 recorded). Nevertheless, the trend towards motif heterogeneity within pigment art sites for the Sydney region is well documented (Kelleher 2003; McDonald 1994). The Mosman data conforms to this regional model of heterogeneity (ibid.). In short, pigment art sites in Mosman are uniform in how they use the land and in their lack of artistic focus. Pigment art sites in Mosman appear to operate as domestic camps where past people carried out a range of subsistence activities and decorated walls of the shelter with personal imagery.

Selected Pigment Art Sites

Five Fingers Cave found in a foreshore shelter was the dominant pigment art site in Mosman (Plates 6-7). The tunnel-like shelter is located a few metres above the high water mark and contains a sparse midden deposit. The site had 19 motifs when it was originally recorded by RH Mathews in 1898. Today, only one large 'cultural hero' motif and a partial hand stencil are still visible. Some of the images may have weathered away, although a large portion of the cave is covered by graffiti and large panels have been cut out in an apparent attempt to steal the art.

Mosman's best surviving pigment art image is a red ochre fish painting (Plate 9). The shelter is located just above the highwater mark and has associated midden deposit. The area is an excellent spot to collect rock oysters. The infill painting is exceptional because it is particularly clear. However, this painting is in immediate danger of destruction as the sandstone panel on which it resides is rapidly being undercut by erosion.

Places associated with Pigment Art

Some pigment art places have Aboriginal stories associated with them. The rock paintings around Bradleys Head and Athol Bay have been commented on (section 6.11) particularly in association with the middens along the foreshore, described above.

9.2.3 Stencils

Hand stencils represent the middle ground in the Mosman landscape. Hand stencils also represent the middle ground in the archaeological continuum. In other words, stencils are situating themselves both physically and statistically in between engravings and pigment art / middens. This is especially true of stencil-only-sites (art sites where no other archaeological attributes are present). Stencil-only-sites tend to be found relatively high on the ridgesides, often in shelters with commanding views. Statistically, stencil only sites ordinate themselves in a buffer zone between engravings and (non-stencil) pigment art.

The physical and statistical position of stencil-only-sites in the middle ground (between middens and engravings) is interesting because it suggests that the activities and places where the sites occur are transitional. Stencil sites in Mosman indicate where different activities begin and end. Large scale studies of art assemblages have found that stencil sites tend to represent the middle ground between residential sites (middens and paintings) and selective engravings. (This is perhaps related to the relative ease in which stencils can be made.) David (1992:159-163) and Kelleher (2003:210-212) outline a similar distinguishing between sites with and without stencils, where different activities are likely to be associated with the change in the distribution of art.

Placing stencil sites in the middle of our continuum therefore illustrates both their physical position and their cultural position within the landscape.

The trend for stencils to become a select art category ('stencils only') may be what Witter and English (2001) identify as a specialised camp (e.g. bachelor, initiation, ceremonial, craft). Specialised camps are sites for segregated activities. Such camps are found near the main domestic camps, but sufficiently isolated from the main domestic camps to achieve a sense of separation from the utilitarian norm (cf. Stockton 1993:77). Within Mosman, the location of stencil-only-sites away from (often above) the foreshore is showing a preference for a non-domestic association (assuming the foreshore middens represent the subsistence base). Again, however, the frequencies are too low to draw any real conclusions. The trend nevertheless does gel with larger studies (cf. David 1992; Kelleher 2003; Witter and English 2001) and may be worth investigating for other LGAs around Port Jackson.

Selected Stencil Sites

Three stencil-only-sites are of prime interest. All three sites are distant enough from other archaeological sites to suggest that they were in some way 'outside' of the routine activities, yet near enough to be seen as linking different activities (i.e. transitional places?).

- The first group of stencils is found on the west side of a ridge overlooking Quakers Hat Bay inside a large hollowed out boulder. The site has four red and

12 white stencils. The site is near three engraving sites. Numerous shell middens line the foreshore, including a very large open midden. The site has a northwest aspect and commanding views of the bay area. The location and artistic homogeneity of the site are indicative of a selective activity area, perhaps functioning as a refuge or staging area (cf. Witter and English 2001). The Quakers Hat Bay area was clearly an important place for Aboriginal activity.

- The second site is located high on a southern slope overlooking Athol Bay. The eight white hand stencils in this cavernous shelter are on average smaller than most stencils in Mosman. Small stencils are often thought to be stencils of a child's hand (or possibly a small adult?). The presence of the child-like stencils in the cave could be interpreted as a transitional (special) place for women and children (cf. McIntyre 1990).
- The third site overlooks the entrance to Port Jackson (see Plate 8). The commanding view of the three headlands from this site cannot be overemphasised – it is truly superb. The five red hand stencils are of adult size. Two engraving sites and one pigment art site are also found near this stencil-only site. One of these engraving sites is the extremely rare assemblage of vertical engravings.

Stencil-only-sites in Mosman are an indicator of change. The analysis demonstrated that these sites are statistically occurring in between pigment art sites and engraving sites. The stencils therefore are acting as cognitive separators – between formal (engravings) and less formal (pigment art) uses/perceptions of the land. Furthermore, the physical location of these sites indicates that they are also operating as physical (spatial) separators between the more domestic foreshore and selective ridgetop sites.

9.2.4 Engravings

Rock engravings represent the most selective side of Mosman's archaeological continuum. In the statistical analysis, rock engravings represent the archaeological attribute least influenced by the economic environment. In this regard, engravings as a site type are very different from the rest of the archaeology in Mosman. Within the Mosman matrix, the location and character (range of objects, orientation, spatial layout, and motif selection) of other site types is generally very closely tied to the local environment (see middens above). Engravings represent a subtle but firm departure from this overall trend. Engravings are intimately oriented to the visual aesthetics of a place (e.g. dramatic, distinctive or unusual features) more than any economically geared environmental feature (cf. Bradley 2000:39). Engravings are related to the place they are found, but they are not simply products of the place.

The analysis also indicates that engravings, as a site type, exhibit significant internal variation. Engraving sites differ from each other. For example the motif selection of vertical engravings in Mosman is very different from horizontal engravings. This internal variation suggests engraving sites are the result of a dynamic behaviour, as it relates to artistic activities. In other words, although the action of engraving is the same for each site the behaviour related to the action may vary between sites (e.g. doodling, ritual, graffiti, ceremonial).

Motif selections show engravings in Mosman are split between low lying (principally vertical) engravings and elevated engravings. The low lying engraving motifs are

generally more heterogenous (mixture of images) while the elevated engravings are more homogeneous (similar/consistent images). Statistically significant and ethnographic studies have shown such artistic divisions relate to a change in site related behaviour.¹⁶ In very general terms, heterogeneous art forms indicate likely individualistic tendencies, while homogeneous form indicates communal or integration tendencies (Wobst 1977:327). Therefore, engraving sites likely relate to a range of behaviours, with the elevated sites representing group social behaviour and low lying sites representing individual actions (cf. McDonald 2000a:61).

In Mosman, four zones of engraving activity are evident (northwest, southeast, east, and inland). Each of these zones is different. The northwest zone (around Quakers Hat Bay) and southeast zone (Bradleys and Chowder Heads) are the most dominate zones. These two zones indicate a dual focus for Mosman engravings. Interestingly, at the time of European contact two different Aboriginal clans are recorded to have occupied Mosman. Historic records (section 6.2) suggest that the Borogegal occupied Bradleys Head (Dawes 1790-91:817) and the Cammeragal occupied the north shore of Port Jackson, specifically the northwest part of the harbour (Phillip 13 February 1790[1892:309]). The variations detected between the northwest and southeast engraving zones may be showing a subtle 'style' boundary between the two clans, as is evident in other parts of the Sydney Basin (cf. McDonald 1994).

The most unique collection of engraving sites is found in the eastern zone. This eastern zone centred on Middle Head represents the most homogeneous selection of motifs (all aquatic), the most isolated collection of engraving sites (i.e. no other site types recorded on Middle Head) and is the most visually dramatic and aesthetic placement of engravings in Mosman. A recent study by Kelleher (2003) found that similar combinations of archaeological and topographic features relates to ceremonial behaviour. Although the archaeological information regarding Middle Head is not statistically significant the trend is interesting. Middle Head is likely to contain many yet to be discovered sites and as more information comes to light, it will be interesting to see the direction the trend develops.

In short, engraving sites in Mosman may be indicators of a more selective activity and land use.

Selected Engraving Sites

The following three sites are representative of engravings in Mosman. The sites are important because they exemplify rare vertical orientations, high quality simple figurative images and aesthetic locations, and demonstrate an increased potential for discovering new sites in the Mosman area.

The first site is the largest collection of vertical engravings in the Sydney Basin. Eleven motifs, ranging from macropods to fish, are located on vertical slabs of sandstone just above the foreshore. The figures are in a good state of preservation and appear to have suffered little recent erosion (cf. Taplin 1963). The figures' composition and artistic technique makes them appear to be closely related in time, but this is not possible to verify at present.

¹⁶ Sydney Basin: compare McDonald 1994; Kelleher 2003; General: compare Gunn's (2000) analysis of Central Australian Arrente rock-art; Knight's (1986:677-679) analysis of Native American motifs variation; Wright's (1994:58-59) analysis of Mycenaean decorative columns; Morphy's (1989, 1991) analysis of Yolunga geometric art.

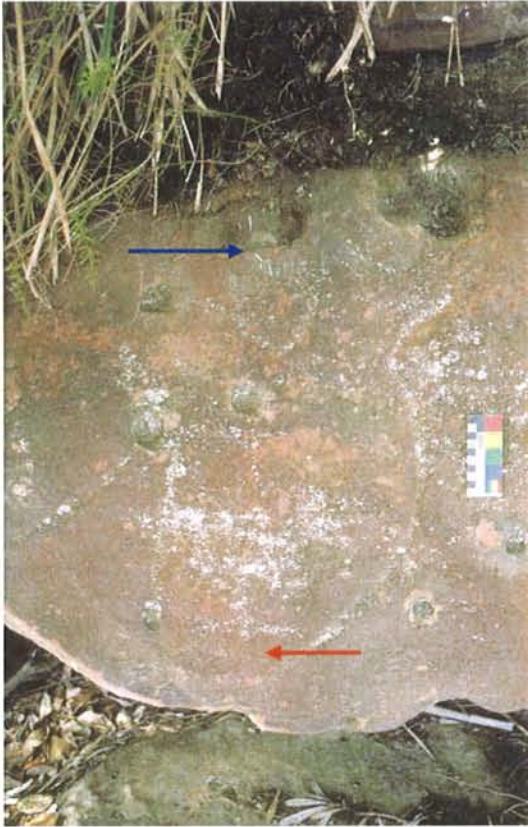


Plate 13: Vertical engraving of a fish. Red arrow points to the head and blue arrow points to the tail. Archaeologist shown photographing the motifs in the insert (at right).



Plate 14: Vertical engraving of a macropod (likely a kangaroo) in this photograph shows evidence of the site's reuse with the eyes (red arrow) being added at a later date. The image has been defaced with graffiti depicting the letters 'VB'.

The second engraving site is situated on an outcrop of sandstone just behind the beach in the southern part of Mosman. The engraving is of a single macropod (kangaroo?) and is a beautiful example of a simple figurative motif, which characterises Sydney Basin rock art (see Plate 3).

The third selected engraving is the previously unrecorded Middle Head engraving located as part of the MAHS survey (Plate 4). The images are the silhouettes of two fish. The engraving is situated on an exposure of sandstone with a north vista. This engraving has resulted in two important insights:

1. it suggests that Middle Head has a consistent motif theme (9 simple figurative aquatic motifs); and
2. it highlights a relative concentration of engravings.

The aesthetic nature of Middle Head is likely to have attracted a specific type of behaviour in the past, which may be represented in the engravings. Cultures that evolve in specific landscapes are likely to have an appropriate response to it (Peatfield 1994:21). People seek out and are influenced by what is distinctive in their landscape. The natural topography of Middle Head serves to demarcate the area as special (e.g. Kelleher 2003:61).

The discovery of the new engraving also increases the probability that other engravings will be found on Middle Head. Historical sources have documented several engravings for the area (see Angas 1847; Campbell 1899) although the location of these historically documented engravings is not known today. The newly discovered engraving does not match any historic record.

9.3 Part II Cultural Landscape

The Aboriginal archaeology of Mosman tells us much about how people used the land and it offers us hints about how Aboriginal people perceived their landscape.¹⁷

The MAHS was designed as a holistic assessment of the entire panorama of Aboriginal heritage information. The best reconstructions of the past synthesise this wide range of information. Within this synthesis the archaeological analysis forms the foundation of the landscape interpretation.

Movements

Understanding the way people moved around Mosman in the past allows us to increase our understanding of the organisation of Aboriginal culture on the peninsula. Places all over Mosman show signs of Aboriginal occupation. Aboriginal sites are found in all landforms: foreshore, lower slope, ridgeside and ridgetop. The distribution of sites, according to the current archaeological information, however suggests that some landforms were more heavily utilised than others. Some places in Mosman were more heavily occupied than other places. The frequency analysis (sections 7 and 8) and the multivariate analysis (summarised in section 8.9) outlined two clear findings:

¹⁷ Landscape is the result of ordinary and extraordinary activities and perceptions (Derks 1997:129). The environment in which people live is not the environment of physical reality, it is a product of imagination and reality (cf. Childe 1949:6–8). Landscape is a much more inclusive term than simple land use models allow as it encompasses a strong sociocultural dimension as well as material dimensions (cf. Barrett 1991a:8; Bradley 1997:219; Crumley 1994:6).

- highest frequencies of archaeological sites are around the foreshore; and
- lowest frequencies of archaeological sites occur on interconnecting ridgetops.¹⁸

The majority of sites are located in the foreshore/lower slope area. Aboriginal sites are distributed heavily around the foreshore, and then decrease in frequency further inland as the elevation (distance from water) increases.

If the distribution of middens around Mosman is an accurate reflection of where people spent time, then the focus for Aboriginal daily activity is related to the resources found along the foreshore (cf. Attenbrow 2002:51-52). Not surprisingly, people appear to have spent a considerable amount of their time in Mosman around the pleasant and fruitful foreshore environment. Evidence of cultural activity is less frequently found on the upper slopes and ridgetops. The changing range of activities away from the foreshore indicates that different places were being used for different activities (see below).

Likewise, the sparse occupation of the ridgetop indicates these areas were likely used as transit sites or for the exploitation of specialist resources (such as sandstone). People were likely moving into and around Mosman via the most convenient and direct routes along the ridgetops (cf. McIntyre 1990:26-27). Transit sites are where people spent relatively small amounts of time when en route to other places.

Historical sources document that canoes were used for transportation and fishing (e.g. Bradley 1786-92[1969:98-99; Worgan 1788[1978:37-38]. The extent to which water transport influenced the distribution of archaeological sites is unknown.

Topographically, the ends of the interconnecting ridges exhibit the greatest concentrations of archaeological features. The ridgetops and foreshore areas are natural end points off the main ridge. They provide the easiest access from the ridgetop down to the foreshore resources and tend to be associated with sources of freshwater (such as minor creeks). Conversely, they provide access from the foreshore to the sandstone platforms, vantage points and access routes found along the ridgetops. Prominent places around Mosman are (from north to south, see Figure 2):

- Quakers Hat – Beauty Point;
- Wy-ar-gine Point;
- Middle Head;
- Chowder Head;
- Bradleys Head;
- Little Sirius Point; and
- Mosman Bay.

At the macro scale, the main ridge facilitates movements of people around Mosman towards specific places within the environment. Interestingly the main ridge also facilitates a natural separation between its opposite sides, topographically dividing the northwest portion from the south. Elsewhere, the topography also facilitates travel to Middle Head. As the first Europeans found during the construction of Military Road,

¹⁸ The backbone of Mosman's topography is a single ridge with several minor branch ridges extending off the main ridge. These branches interconnect via the main ridge and are therefore labeled 'interconnecting ridges'.

the natural lie of the land directs movements towards the prominent headland. This is also true for The Spit and Bradleys Head roads.

The topography and distribution of sites in Mosman offers us clues about Aboriginal cultural organisation. Analysing patterns of movement distinguishes differences in the use of the land. Some areas are relatively easy to access and offer a good selection of resources. These areas also display a relative concentration of archaeological sites. The distribution of sites and topography indicate two primary areas of Aboriginal occupation (Northwest and Southeast). A comparison of these select areas (below) will enable us to highlight sociocultural organisation.

Social Spatial Organisation

The clan was the basic unit of Aboriginal social organisation in the Sydney region (Mathews 1896:327; Mathews and Everitt 1900:262-265). Clan membership was inherited and derived from a common ancestral being. Territorial clan members have rights and responsibilities for a specified area of land, although they are able to spend considerable amounts of time in other clan areas. Historical information (see section 6.2) suggests two clans occupied different parts of Mosman at the time of European contact. The two clans are the Boroegal (Bradleys Head) and the Cammeragal (North Shore). Archaeological evidence that supports the existence of two clans is:

- subtle distinctions between the Northwestern engravings versus the South eastern engravings:
 - concentration of vertical engravings in the Southeast;
 - a foreshore placement of engravings in the Southeast and a ridgetop placement in the Northwest;
 - two selections of different motifs, Southeast: circles, kangaroos, fish; Northwest: 'goanna', eels, tridents;
- dominant use of white pigments for hand stencils in the Northeast and red pigments in the Southeast; and
- a relative concentration of archaeological sites in two topographic zones (Northwest: Quakers Hat Bay and Southeast: Taylors Bay to Chowder Bay).

This small amount of evidence is not statistically sufficient to identify two distinct social groups. Nevertheless, it is interesting that two independent sources of information (history and archaeology) have hinted at a dual clan occupation of Mosman. It is also interesting to note that both the Northwest and Southeast are associated with the seemingly transitional stencil-only-sites. This reinforces the idea that such sites represent social outposts – both within social groups (e.g. male camps, neophyte camps) and perhaps between social groups (clans). Future studies may be able to uncover more information.

Ceremonial

Religion is the dominant feature in Aboriginal society (Berndt and Berndt 1964; Berndt 1969, 1974; Eliade 1973; Mountford 1976; Myers 1986; Stanner 1984; Swain 1993; Swain and Trompf 1995). Every aspect of life was somehow intertwined with religion. Furthermore, space, or as is more often the case *places in space*, where Dreaming events were actualised or objectified, form the core principle of Aboriginal religions. As Stanner (1964) concluded in his landmark collection of articles *On*

Aboriginal Religion, religion for Australian Aboriginals in general is not based on the workings of a god; it is intertwined directly with a sacred concept of the land.

Places where ceremonies were undertaken therefore are likely to have a central importance in Aboriginal social organisation. Such places would highlight the strong connection between Aboriginal people and the land. However, the archaeological identification of ceremonial places is difficult. Very little direct evidence specifically related to ceremonial activity exists. Most religious activities are an extension of daily activities, and do not require the use of specific religious paraphernalia. The distinction of ordinary artefacts from ritual artefacts is most likely to be in the context in which the artefacts are encountered. Hence, distinguishing the appropriate context for ceremonial behaviour appears to be the key in identifying ceremonial grounds. Currently, no ceremonial places in the Sydney area have been identified on the basis of physical evidence.

Contemporary ethnography and oral history for Mosman indicate that some places are special and distinct to Aboriginal people. Nevertheless, there is generally an ambiguity surrounding the specific locales. Historical documents have roughly identified the approximate location of some ceremonial places around Sydney (e.g. Angas 1847[1969] vol.2:202, 273-273; Collins 1798[1975:466-485]). However, even the best examples are again lacking detail about the precise location and should only be interpreted as indicating a general locality. Only one late 19th Century historic source refers to the ceremonial use of the Georges Head area:

In the twenties [1820s] George's Head was set apart for the aborigines [sic] as King Bungaree and his predecessors had represented that the *locality* was a *sacred ground* for the performance of the Bora rites by the Cammera and other tribes¹⁹ [italics added]

If the Georges Head area was a ceremonial area then the archaeological trends associated with this *area* may offer us behavioural information. The archaeology of Middle Head, which is found in the *locality* of Georges Head appears to be separating itself from Mosman's archaeological norm. We examine this in detail below.

As seen in previous sections, trends in Mosman's archaeology highlight differences in the way specific places around Mosman were being used. These trends tell us about the way people moved around the land and where they spent time. Some places in Mosman have a decidedly different archaeological footprint than other places. For example, the concentration of middens and rock art motifs around Quakers Hat is different than that of Middle Head. Merely citing variation in the archaeological record, however, which could result from almost limitless factors, is not sufficient for identifying ceremonial places.

What is needed is a means of distinguishing the specific archaeological trends related to ceremonial behaviour. Fortunately comparative studies of the spatial behaviour of religion have been able to achieve this result – identifying the archaeological correlates of religious behaviour (e.g. Flannery 1976; Levy 1982; Richards and Thomas 1984; Renfrew 1985; Bradley 2000). Moreover, a recent archaeological study in the Blue Mountains has identified five possible ceremonial places through the use of physical evidence (Kelleher 2003). The identification was based on modelling

¹⁹ Letter to the editor of the Northern Suburbs Echo citing a chart prepared by WH Huntingdon in July 1873. Reprinted in 1910. Port Jackson Aboriginal Names, *Science of Man* 12(2):34-35.

the context of ritual behaviour. In general terms, people tend to modify their behaviour to coincide with their environment. Some places are better suited than other places in accommodating specific behaviours.

Kelleher acknowledged that a range of indicators is associated with ceremonial places (ibid.:90):

- **Liminal Geography** – ceremonial places generate a sense of separation by being different from their surroundings. Creates a special feeling about a place. Liminal places are doorways or thresholds between sacred and mundane places.
- **Formal Distributions** – activities associated with rituals result in a strongly partitioned context. The relatively formal separation between activities generates a sense of respect for a place.
- **Attention-Focusing** – indicates clearly quantifiable (presence or absence) aesthetic values (geographic, architectural) function to attract or direct participants attention. Creates a sense of purpose for a place.
- **Selective Iconography** – religious iconography is abstract and ambiguous in form, homogeneous in association, and clinal in distribution. Basically this means that the motifs require specialist knowledge within the community to interpret and are organised to express a sense of respect and purpose.

Using Kelleher's indicators as a guide it is possible to identify places, which are likely to relate to ceremonial activity.²⁰ If the historical reference for the ceremonial use of Georges and Middle Head is correct, then the archaeology for the area should exhibit very specific trends.

Liminal Geography

The archaeological continuum indicates that engraving sites are found in the most separate and distinct locations. According to the analysis of engravings, four areas differentiate themselves in Mosman. The four areas are: northwest, east, southeast and inland. These areas relate to a concentration of archaeological sites (middens and stencils) and statistical groupings of the engraved art. According to the analysis, the most unique grouping is the eastern engraved assemblage found on Middle Head. The eastern area is also one of the most topographically isolated being the end of a peninsula. In addition, dramatic high cliffs surround Middle Head and help create a sense of awe (a unique feature of the locale). The top of the headland is capped by large elevated sandstone platforms, which reinforce the natural vistas. Middle Head, being the eastern most point, geographically represents a transitional point for people moving from the west – a precipice of land over the water. These topographic features generate a sense of separation through their changing geologic structure.

Liminal geography occurs where a transition or doorway exists between one place and another. In Mosman, Middle Head may represent a liminal portal.

²⁰ A caveat is necessary at this stage. Many places in Mosman may have contemporary or prehistoric religious significance. Archaeology can only identify places, which have at least some artefactual association. Archaeology's ability or inability to identify sacred places does not supersede the belief in the sacred. In this way, archaeology can be used to underscore a belief, but it cannot negate a belief. If someone believes a place is sacred, then it is, regardless of archaeology's ability to verify the claim.

Formal Distributions

The more reverence people have for a locality, the more careful they are with their actions. All religious behaviour is primarily related to the ordered movement between points and places (Parkin 1992:12). Unfortunately, identifying a formal distribution of archaeological sites/artefacts requires more data than is currently available for Mosman. Nevertheless, as we have seen throughout the analysis, Mosman's archaeological data does match with the findings of other large scale regional studies (section 7.4.3). In this regard, the distribution of Aboriginal archaeology on Middle Head does appear relatively formal with its concentration of aquatic engravings, light concentration of middens and lack of pigment art. Moreover, all the shell middens are found on the western portion of the headland, away from the engravings, indicating a possible formal graduation in the use of space. In other words the eastern edge (engraving side) is different from the western side (middens). In the analysis, we have seen that middens and pigment art are associated with domestic activities and that engravings, especially the homogeneous engravings can be interpreted as being associated with selective (special) activities.

Many factors can contribute to the distribution of archaeological sites. For example, the geography of Middle Head suits engravings over other site types. Middens will survive best in the sheltered locations around the west of the headland, as opposed to the exposed eastern cliffs. People are more likely to camp or stop to eat shellfish in the more sheltered western locations. There are few sheltered places where people could have camped on and around the headland. For these reasons alone, the mere fact that few middens are present and engravings exist does not mean the area was a ceremonial ground. Nevertheless, Middle Head does display a consistent, albeit limited, archaeological theme in terms of attributes and spatial organisation.

Attention Focusing

The headlands around Port Jackson are focal points in the geography. Each headland exhibits quantifiable aesthetic value. This means that the headlands are sufficiently different from their surrounds to influence attention – by their very nature they draw attention (cf. Bradley 2000:87). Quantifying attributes, which are more likely than not to represent some sort of aesthetic value is not as difficult as one would imagine. The basic assumption is that perceptions of the environment are based on a collective, allocentric, view (section 2.5; Donald 1998:182; Knight 2000:194) which generates a similarity of response to environmental conditions (section 3.3.1.2.1; Peatfield 1994:21). Therefore if a specific structure (natural or built) has an ability to attract or focus attention now, it is likely that this is true in the past (Kelleher 2003:77-79).

The topographic backbone of Mosman is a ridge that funnels people along a logical path which leads people to Middle Head as well as The Spit and Bradleys Head. Middle Head being surrounded by a precipice, is arguably the most topographically dominant of these locations. The use of the elevated rock platforms around Middle Head for engravings suggests the place had important consideration for Aboriginal peoples and possibly the visual aesthetic was part of this attraction. In this location the rock platform may have served as the ultimate focus point.

Selective Iconography

Social behaviours are often underwritten by iconography. Variation in iconography relates to the messages it transmits (see section 7.4.3.2). The iconography of Mosman indicates general and specific divisions. The general division separates pigment art and engravings. Pigment art is more heterogeneous (informal) and engravings are more homogeneous (formal). This basic division likely relates to a behavioural division between domestic (informal) and specialised (formal) activities (e.g. McDonald 1994). Visual iconographic cues, which are related to religious behaviour, stem from their ability to generate uniform (formal) responses (Wobst 1977:329).

As we have seen in the analysis, Mosman's engravings exhibit a relatively formal array of motifs – a uniform structure. This is especially true of the engravings found on Middle Head, although there are few of them. These engravings are all aquatic motifs and are situated in similar topographies. The Middle Head engravings represent the most statistically and geographically isolated collection of rock art in Mosman. In terms of stylistic communication, the transmission of a message, the Middle Head engravings are indicating a selective rather than arbitrary pattern.

Interpretations

The question is: Are the trends associated with Middle Head the result of ceremonial activity? There are several ways to answer this question.

1. The short answer is no. Archaeologically, there is simply not enough data to identify statistically sound distribution patterns. More sites will likely be found with additional surveys, however, even with exhaustive research, there may never be enough archaeological information for an indisputable identification.
2. The archaeological trends associated with Middle Head, which suggest it was a special place could be unrelated to ceremonial activity. The trends may be related to another sociocultural behaviour. The true nature of these trends may be masked because the telltale archaeology has not survived.
3. Alternatively, if we assume that the Mosman data is a subset of the wider Sydney regional archaeological picture (including the Blue Mountains data) then the information from Middle Head is more positive if still tenuous.
 - Middle Head is topographically selective which allows a liminal transition (between the mundane and sacred).
 - The archaeology on Middle Head is relatively graduated and formal, indicating a greater segregation between activity areas. This results in an increasingly formalised use of space.
 - The organisation of archaeological and topographic features suggests a clear focus of attention (both aesthetic and physical). This increases the selectivity of the place.
 - The rock art on Middle Head is relatively formal in its spatial and motif associations. This suggests that the art was being used to transmit a very selective message.

In this way, the archaeology of Middle Head conforms to the general model for identifying ceremonial places. The identified trends do not tell us about past beliefs, but they do identify a location. The trends suggest a special nature for Middle Head.

Summary

Archaeology tells us how people use places. Variations in the archaeological record tell us that some places around Mosman were being used differently from one another – the archaeological continuum. The close connection between land and Aboriginal culture tell us that the different ways people use the land are likely to relate to how they perceive their world. Mosman's Aboriginal landscape is a combination of this use and perception.

The distribution of archaeological sites indicates a relatively systematic level of movement and organisation existed in Mosman. For the most part, geography plays a dominant role in this organisation – deciding where and how people travel and camp. Subtle variations in the rock art record however, suggest that social differences may also underlie this organisation. Elsewhere, the intrinsic connection between people and places offer us insights into past perceptions of Mosman. The data currently available suggest Middle Head is more selective archaeologically than other places in Mosman's landscape.

10 Management of Mosman's Aboriginal Heritage

10.1 Statutory Controls

All Aboriginal archaeological sites are protected by Commonwealth and State statutory controls relating to heritage, as described below. These controls need to be considered by the various landholders in Mosman LGA in relation to any works or activities on their lands, including SHFT and NPWS, and by Mosman Council when determining Development Applications as well as works on Council land. The management strategies presented below and in Volume 2 have been developed in consideration of these statutory controls.

10.1.1 Commonwealth legislation

The *Aboriginal and Torres Strait Islander Heritage Protection Act 1984* is the principal Commonwealth legislation protecting Aboriginal heritage. The Act complements state legislation and is intended to be used only as a 'last resort' where state laws and processes prove to be ineffective. Under this Act the responsible Minister can make temporary or long-term declarations to protect areas and objects of significance under threat of injury or desecration. The Act also encourages heritage protection through mediated negotiation and agreement between land users, developers and Aboriginal people. On 17th December 1998 responsibility for administration of the *Heritage Protection Act* was transferred by Administrative Arrangement Orders from ATSIC to the Environment and Heritage portfolio and the Act is now administered by Environment Australia.

The Burra Charter (ICOMOS Australia 1999) also provides guidance for the conservation and management of places of cultural significance (cultural heritage places). The Charter was adopted by Australia ICOMOS (the Australian National Committee of ICOMOS) in 1979 with recent revisions adopted in 1999. The Charter sets a standard of practice for those who provide advice, make decisions about, or undertake works to places of cultural significance, including owners, managers and custodians.

10.1.2 State legislation

The *National Parks and Wildlife Act 1974* and the *Environmental Planning and Assessment Act 1979* are the primary statutory controls protecting Aboriginal heritage within New South Wales. Both are discussed below.

National Parks and Wildlife Act 1974

In New South Wales, items of Aboriginal heritage are protected under the *National Parks and Wildlife Act 1974*.

Under the Act, an "Aboriginal object" (formally known as "relic") is defined as "any deposit, object or material evidence (not being a handicraft made for sale) relating to the Aboriginal habitation of the area that comprises New South Wales, being habitation before or concurrent with (or both) the occupation of that area by persons of non-Aboriginal extraction, and includes Aboriginal remains".

Aboriginal objects are therefore limited to physical evidence and may also be referred to as 'Aboriginal sites', 'relics' or 'cultural material'. Aboriginal objects can include pre-contact features such as scarred trees, middens and artefact scatters, as well as physical evidence of post-contact use of the area such as Aboriginal built fencing or stockyards, fringe camps.

All "objects" are protected under Section 90 of the Act. It is an offence for a person to destroy, deface, damage or desecrate an Aboriginal object or place without the prior issue of a Heritage Impact Permit (formerly referred to as a "Consent to Destroy") from NPWS.

The NPW Act does not provide protection for spiritual areas or natural mythological areas that have no physical remains of Aboriginal occupation, unless they have been declared an Aboriginal Place under section 84 of the Act. An Aboriginal Place is a place which has been declared as such by the Minister for the Environment because it has been shown that the place is or was of special significance to Aboriginal culture. It may or may not contain physical relics. Aboriginal Places are also protected under Section 90 of the NPW Act.

The Act also provides for stop-work orders under Section 91AA if an action is likely to significantly affect an Aboriginal object or Aboriginal place. The order may require that an action is to cease or that no action is carried out in the vicinity of the Aboriginal object or Aboriginal Place for a period of up to 40 days.

It is also an offence under Section 86 of the NPW Act to disturb or excavate land for the purpose of discovering an Aboriginal object, or disturb or move an Aboriginal object on any land, without first obtaining a permit under Section 87 of the NPW Act.

Environmental Planning and Assessment Act 1979

The *Environmental Planning and Assessment Act* (EP&A Act) requires that consideration be given to environmental impacts as part of the land use planning process. In NSW, environmental impacts include cultural heritage impacts. Part 3 of the Act relates to planning instruments including those at local and regional levels, Part 4 of the Act controls development assessment processes and Part 5 of the Act refers to approvals by determining authorities.

Under Part 4 of the Act, approvals by State government agencies can be linked to the development consent process. Development applications that require specified approvals from State agencies are referred to as Integrated Development Approvals (IDA). NPWS is an approval body in the IDA process when a development will impact on an Aboriginal object or Aboriginal place, thereby requiring a Heritage Impact Permit pursuant to Section 90 of the NPW Act. Under the IDA process, applicants are required to provide NPWS with sufficient information to allow them to provide general terms of approval, prior to development consent being granted.

Part 4 also requires that in reaching a decision to grant development consent, a consent authority is to take into consideration the likely impacts of that development, including environmental impacts on both the natural and built environments, and social and economic impacts in the locality. This requires the consent authority to consider the impact on all Aboriginal heritage values, including natural resource uses

or landscape features of spiritual importance, as well as the impact on Aboriginal objects and Aboriginal Places.

10.2 Management Objectives

The aim of the Mosman LGA Aboriginal Heritage Study was to provide a greater understanding of the Aboriginal heritage of the Mosman area, and provide guidance to NPWS, SHFT and Mosman Council on the management and conservation of Aboriginal cultural heritage values. Management of the known and potential Aboriginal cultural heritage of the Mosman LGA is crucial in future land use planning. Conservation strategies for Aboriginal objects, places and areas of archaeological or cultural sensitivity are necessary to retain this finite and valuable resource. Management of Aboriginal cultural heritage in the development process is also required to ensure identification and management of Aboriginal heritage issues, and incorporation of conservation outcomes into land use planning and development.

This study has investigated the material evidence of Aboriginal cultural heritage (archaeological values), and addressed the issue of social and cultural significance of places within the Mosman LGA. Investigation of the archaeology of Aboriginal heritage has demonstrated that archaeological sites occur across the LGA. Areas of Aboriginal social and cultural significance within the Mosman LGA can only be identified by the Aboriginal community. While this study aimed to identify these values in detail, continued consultation will be required to establish places and issues of social and cultural significance, and how to manage those social and cultural values.

Developing a framework for identifying and managing Aboriginal cultural heritage values of the Mosman LGA was a key objective of this study. A number of management strategies have been formulated to achieve this objective, which aim to provide NPWS, SHFT and Mosman Council with a framework for managing Aboriginal cultural heritage.

General management objectives include:

- protection of the known Aboriginal archaeological sites;
- protection of any identified cultural values or places of social significance;
- protection of areas of archaeological potential;
- Aboriginal sites and potential archaeological deposits (PADs) which are being affected by natural processes or which are to be destroyed through development or other activities should be adequately investigated or salvaged;
- active mitigation measures should be implemented at sites which are deteriorating but have been determined to be significant with respect to archaeological or cultural values; and
- identification of interpretation or educational opportunities within the Mosman LGA.

10.3 Management Strategies

Aboriginal cultural heritage is a finite and valuable resource to be protected. This section outlines strategies to conserve known Aboriginal archaeological sites, and areas of archaeological or cultural sensitivity, within the Mosman LGA. Individual recommendations for conservation of known sites are provided in Volume 2, as this was aimed at being a management tool/reference, and collated in a table in Volume 1.

10.3.1 Management of known Aboriginal sites

Conservation of Aboriginal cultural heritage is the preferred management strategy. Known sites are to be actively conserved and maintained.

The known archaeological sites of the Mosman LGA have been identified by this study and their locations shown in the Figures in Volume 3 of this report. The accurate location information for all known sites within Mosman LGA assists in the management of these sites.

All Aboriginal archaeological sites are protected under Section 90 of the *National Parks and Wildlife Act 1974*, regardless of their significance or land tenure. Conservation for all known sites is the preferred management strategy of all contributing organisations to this study.

The locations of the sites within the Mosman LGA should be considered by NPWS, SHFT and Mosman Council in relation to the proposed use, activities, works and future development of their lands. Under the current statutory controls, responsibility for conservation of an archaeological resource usually rests with the owner of the site locality, and is achieved through lack of impact and active conservation measures. Appropriate conservation measures will vary between sites, but may include erosion control measures, site clean-up measures, including removal of graffiti, or measures to prevent human interference.

Prior to the implementation of any conservation measure, consultation should be undertaken with the local Aboriginal community, through the Metropolitan Local Aboriginal Land Council.

Evidence of both natural impacts and human disturbance was observed at most of the sites visited as part of the Mosman AHS. Around 95% of sites in the Mosman LGA were disturbed either through the process of natural erosion or acts of vandalism. The level of disturbance at some sites was very high, however this does not necessarily mean that the site is no longer significant. Scientifically, for instance, the spatial distribution of sites is important in understanding past uses and perceptions of the landscape. The social significance of sites does not necessarily relate to a scientific measure. Types of impacts and disturbance to Aboriginal sites within the Mosman LGA are described in Volumes 1 and 2.

10.3.2 Site specific management recommendations

Specific recommendations for the management of each site recorded within Mosman LGA are provided as part of the Site Descriptions presented in Volume 2. A summary of management recommendations is provided in the restricted version of this report (Volume 1).

Volume 2 of the MAHS presents information for all known Aboriginal archaeological sites and areas within the Mosman LGA. For each site, the following characteristics are described: site type; site location; major topographic features; spatial dimensions; deposit/ geologic characteristics; vegetation; artefacts and existing condition. All sites are listed by the AHIMS (Aboriginal Heritage Information Management System) site number, or for sites identified during the MAHS, by an AMBS survey number (e.g. AMBS 1, SHFT 1).

Detailed management strategies for all known sites are also outlined in Volumes 1 and 2, with the aim of recommending appropriate mitigation strategies and works to conserve known sites. More broadly, the management strategies also aim to increase the awareness of Aboriginal heritage and archaeology within the Mosman community, specifically land owners and managers whose properties contain Aboriginal cultural materials.

Of the 107 known sites and areas, 46 did not require active conservation and/or impact mitigation works, and no management strategies were formulated.

In summary, the management strategy found seven main categories of management recommendations for known archaeological sites and areas within the Mosman LGA. These are:

1. increase community awareness of archaeological sites and areas, and provide advice regarding statutory controls and responsibilities of land owners;
2. monitor the condition of known sites and areas to identify future threats from human action and/or erosion;
3. assessment of threats to rock art sites by a qualified specialist, and provision of management advice;
4. erosion stabilisation works;
5. identify archaeological sites and areas that may require further conservation and/or mitigation works should they be impacted by human action and/or erosion;
6. listing of archaeological sites on 149 Certificates; and
7. archaeological excavation programs to investigate and/or salvage sites and areas under threat from human action and/or erosion, which cannot be successfully conserved.

10.3.3 Management of areas of cultural significance

Areas of Aboriginal social and cultural significance within the Mosman LGA can only be identified by the Aboriginal community. These areas may not contain any physical evidence of Aboriginal associations, but may include places of spiritual, traditional, historic or contemporary cultural significance. Throughout the duration of the project, consultation was undertaken with the Metropolitan Local Aboriginal Land Council. A number of other individuals were contacted and all interested people were invited to provide input into the study in order to identify and integrate the social values and places of cultural significance with the archaeological information.

Despite not being able to achieve a comprehensive oral history of the Mosman LGA during the preparation of this study, a number of places of cultural value have been identified, including The Spit, Balmoral Beach, Bradleys Head and Athol Bay, which also have archaeological values. The cultural significance of and connection to these places should be considered. Continued consultation with the local Aboriginal community in relation to any proposed works at these locations should ensure that the values and significance of these places is not affected. Opportunities for integrating cultural and archaeological values for interpretation of these locations could be considered. Education and public awareness and understanding may also have a positive effect on the recognition of cultural values.

10.3.4 Detection of additional Aboriginal archaeological sites or objects

While the Mosman Aboriginal Heritage Study has been able to provide an accurate list and locational information of Aboriginal sites within the LGA, this is only accurate at the time of this study. Additional sites are likely to occur within the LGA which are currently unknown or are not registered on the AHIMS or listed in this report.

Under Section 91 of the *National Parks and Wildlife Act*, NPWS must be informed upon the identification of any Aboriginal objects. Therefore, if any previously unrecorded sites or objects are discovered within the Mosman LGA, the NPWS should be notified. It is also considered appropriate to advise the Metropolitan LALC. Records should be updated accordingly, including site locations and maps, and these sites be considered in relation to any proposed activities, works or development applications.

10.3.5 Opportunities for further investigation

A number of sites within the Mosman LGA have been identified through the MAHS as having potential for further research. These include open shell midden sites, pigment art sites, stencil sites and engraving sites. In addition, the potential for further oral history gathering has been acknowledged and is recommended to further enhance our understanding of the complete picture of the Aboriginal heritage of the Mosman LGA.

Midden Sites

The large open middens at Pulpit Rock and Bradleys Head are considered to be of archaeological scientific research potential. The two open middens represent opposite ends of Mosman and different aquatic zones. Pulpit Rock, on Quakers Hat Bay, is in

an estuarine zone located in the north western portion of the LGA. The midden at Bradleys Head is on the eastern side in an ocean influenced zone, at the southern most point in the Mosman LGA.

Both open middens are located near several other archaeological sites. The complex of sites surrounding the middens represents the full range of archaeological sites and attributes found in Mosman. The exact size of the middens has not been determined, but each is likely to spread over 100 m². It would be useful to excavate a portion of these middens in order to compare the results with Attenbrow's (1992) excavation of the midden in the shelter at Balmoral. These excavations would give Mosman a unique scientific perspective on its Aboriginal past. In particular, it is envisaged that results from these open midden sites would be able to address a range of scientific and management issues, including:

- the difference between open and shelter midden deposits in the Mosman area;
- the difference between ocean influenced (Bradleys Head) and estuarine deposits (Pulpit) in the Mosman area;
- chronology for each site and the Aboriginal use of the broader Mosman landscape;
- the change in use of resources through time;
- erosion and deposition of the deposit;
- possible identification of two separate clans within the Mosman area;
- protection of the remainder of the deposit and for other open midden sites; and
- further refine the results of the MAHS.

Pigment Art Sites

Mosman's best surviving pigment art image is a red ochre fish painting (Plate 9). However, this painting is in immediate danger of destruction as the sandstone panel on which it resides is rapidly being undercut by erosion. NPWS rock art specialist, Dave Lambert, should be immediately consulted on appropriate methods for preserving the art.

Stencil Sites

Three stencil-only-sites are of prime interest within the Mosman LGA. The first site is located in the northeast and comprises four red and 12 white stencils, situated inside a large hollowed out boulder. This site is located in private property. The land owner and resident should be advised of its significance and their management obligations. Council should list this site on the 149 certificate (if not already listed). Any works within this or the neighbouring property (which is immediately adjacent the site) should be assessed to ensure the site is not impacted (directly or indirectly).

The second stencil site is located high on a southern slope overlooking Athol Bay, comprised of eight white hand stencils which were generally smaller than most stencils in Mosman. Small stencils are often thought to be stencils of a child's hand. The presence of these small stencils in the cave could be interpreted as special places for women and children. The site should therefore be conserved. People working in the area should be advised of the existence of the shelter to ensure against accidental damage.

The third site overlooking Port Jackson has a commanding view of the three headlands, contains five red hand stencils of adult size. This site is easily accessible, and is regularly visited because of its view. There is presently graffiti in the shelter.

Dave Lambert (NPWS) should be contacted regarding appropriate methods of removing the recent (i.e. non-historic) graffiti. It is anticipated that removal of graffiti will assist in preventing future graffiti.

Engraving Sites

There are a number of important engraving sites in the Mosman LGA, as they exemplify rare vertical orientations, high quality simple figurative images, and aesthetic locations. They also demonstrate an increased potential for discovering new sites in the Mosman area.

One site in Mosman exhibits the largest collection of vertical engravings in the Sydney Basin. Eleven motifs, ranging from macropods to fish, are located on vertical slabs of sandstone just above the foreshore. The figures are in a good state of preservation and appear to have suffered little recent erosion. The site, however, is threatened by local residents mooring their boats on the rock platform adjacent to the vertical engravings. In addition, some residents have placed rings into the rock to tie their boats to. These activities have the potential to damage this significant site. Council and/or NPWS should notify the local residents and property owners of the location and uniqueness of this site, as well as their legislative obligation to not impact on the Aboriginal site. Ongoing monitoring of site condition is also recommended.

The second engraving is of a single macropod situated on an outcrop of sandstone just behind a beach on Bradleys Head. While no immediate action is recommended, ongoing monitoring of the site's condition is suggested to address any impacts.

The third selected engraving is the previously unrecorded engraving at Middle Head. The images are the silhouettes of two fish. The engraving is situated on an exposure of sandstone with a north vista. The finding of this engraving resulted in two important insights:

1. that Middle Head has a consistent motif theme (9 simple figurative aquatic motifs); and
2. it highlights a relative concentration of engravings.

The aesthetic nature of Middle Head is likely to have attracted a specific type of behaviour in the past, which may have been associated with the engravings. Cultures that evolve in specific landscapes are likely to have an appropriate response to it (Peatfield 1994:21). People seek out and are influenced by what is distinctive in their landscape. The natural topography of Middle Head serves to demarcate the area as special (cf. Kelleher 2003:61).

The discovery of the new engraving also indicates the probability that other engravings will be found on Middle Head. Historical sources have mentioned several engravings for the area (Angas 1847; Campbell 1899) although the location of these historically documented engravings is not known today. The newly discovered engraving does not match any historical record.

Another suggestion for further work relates to the known engravings at Middle Head, near the outer fortifications. Options discussed throughout the MAHS included the excavation and interpretation of the area around this engraving site. In addition, as

this is already an area of high visitor use, any proposed alteration to land use, such as pathway construction, needs to be mindful of the location of the Aboriginal engravings and the potential for further engravings to exist on the rock platform below the grass cover or filled areas.

Oral Histories

It is anticipated that further stories about sites and places, and people with associations to the Mosman landscape will come to light in the future, in addition to those already expressed by Dennis Foley (2001). It is therefore recommended that contact with the Aboriginal community be continued to try to understand this further and integrate this with the information obtained through the MAHS.

Aboriginal Heritage Studies of other LGAs around Sydney Harbour

The results for the Mosman LGA Aboriginal Heritage Study support further studies of this nature in adjoining LGAs. The information from future studies can be combined with the Mosman findings to increase our understanding of the Aboriginal heritage of Sydney and Middle Harbours. The trends apparent in the archaeological record of the Mosman LGA (see section 9) provide information about social organisation and past perceptions of pre-contact Aboriginal life in Port Jackson. Future studies have the potential to further explore and expand on the findings of this report.

10.3.6 Education and interpretation opportunities

While active measures to prevent physical impact to sites can be recommended and implemented, education and interpretation can also have benefits in relation to the management of Aboriginal heritage. Given much of the Mosman LGA is accessible to the public, education of the general public is one of the strongest ways to assist in the long-term preservation of these sites. In addition, the interpretation of selected sites can have the effect of limiting people accessing other sites. Education and interpretation of sites must ensure a balance between recreational uses of the landscape and site preservation.

The Mosman LGA lends itself to education and interpretation of Aboriginal heritage. One possibility for recognising and promoting this is to create an interpretive walk to allow visitors to see Mosman's Aboriginal landscape. Mosman is exceptional in its archaeological heritage. Evidence of Aboriginal occupation can be found in all landforms across the municipality, especially in areas where little development has taken place. Moreover, the foreshore around Mosman exhibits an almost continuous collection of archaeological objects wherever the land was suitable for occupation.

This type of management approach is a proactive management strategy. Such walks guide people through the archaeological and social importance of Mosman's Aboriginal past. The construction of paths directs people towards specific learning places and away from the more sensitive sites.

A walk from Taronga Zoo along the coast to Middle Head passes 30 archaeological sites. Several of these sites are unique or outstanding examples of Aboriginal paintings, engravings, stencils and middens. There are very few areas of metropolitan Sydney where it is possible to view such a magnificent concentration of Aboriginal

heritage. (Several of the places along the walk also include native flora and historical material.) Highlights of the walk include:

- Athol Bay shelter at the base of Taronga Zoo has stencils and drawing in a cave alongside historic graffiti;
- Athol Bay red ochre fish painting which offers a superb example of pigment art and unobstructed view of the city;
- Bradleys Head midden which is one of the largest surviving open middens in Port Jackson and is still an area utilised by Aboriginal people today;
- Bradleys Beach kangaroo engraving is an excellent example of the quality and fragility of engravings;
- Taylors Bay vertical engravings are unique in the Sydney Basin as the largest collection of vertical engravings;
- Red Hands Balcony on Chowder Head is the most 'dramatic' stencil site in Port Jackson with its elevated view of all three headlands;
- Five Fish engraving above Obelisk Bay is an interesting example of the 'action' associated with engraved images because the fish are depicted swimming upstream;
- Middle Head Fish have an association with historic military fortifications where works have cut through a section of two fish; and
- Middle Head Double Fish illustrate recent additions being located only in 2003, their location again offering exceptional views of engraving sites around Middle Harbour (e.g. Grotto Point and Wy-ar-gine Point).

Many of these locations are already places open to the public and which attract visitors. Interpretation of the Aboriginal heritage of these places will integrate this with the other aspects of the natural environment, which is generally what attracts visitors to these places. Interpretation of Aboriginal heritage will therefore enrich people's experience of these places. Those places with historical features, such as the fortifications at Middle Head and at Bradleys Head, also provide opportunities to interpret overlapping histories and the continuum of use of these significant landforms.

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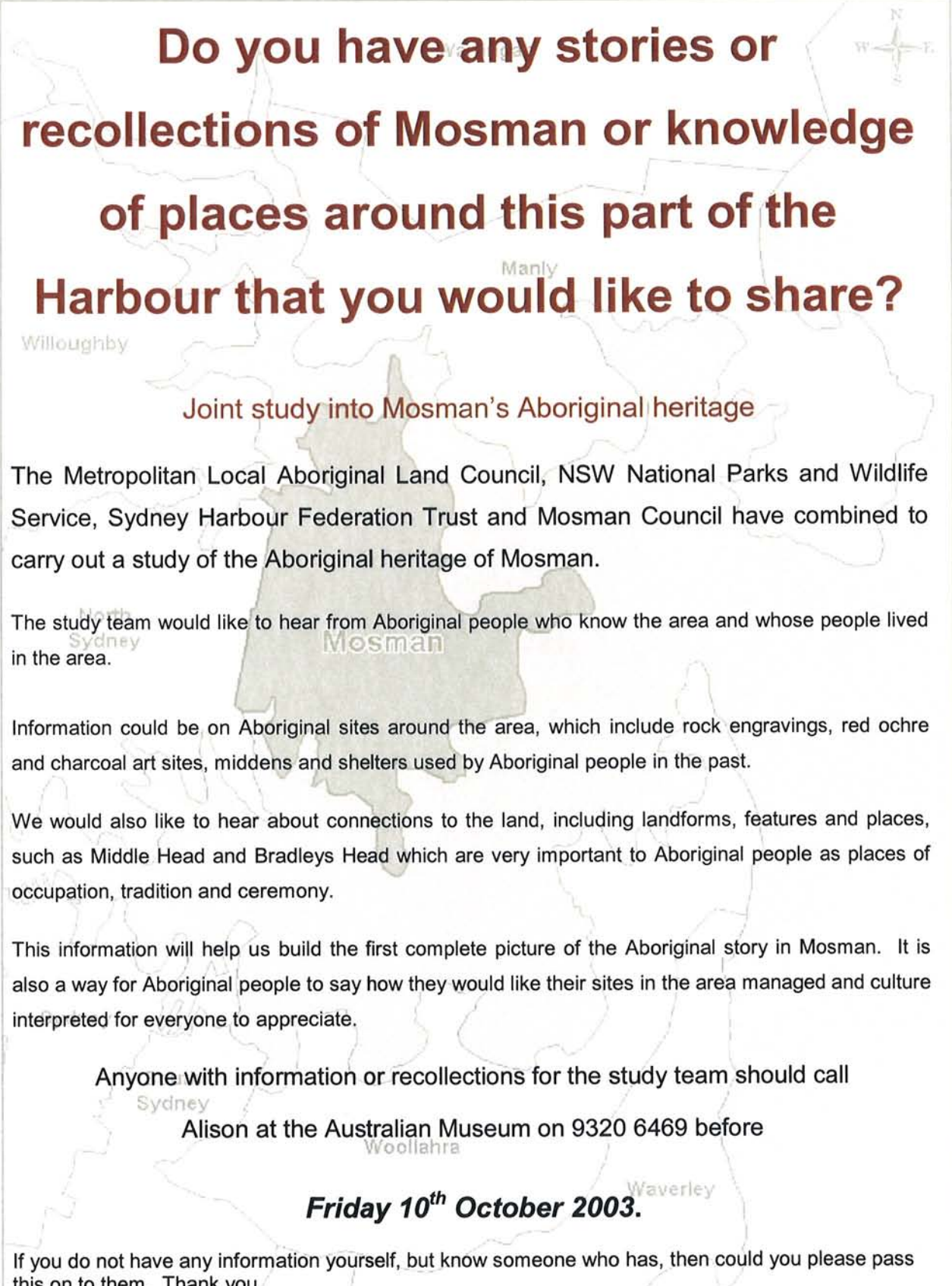
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Appendix A Metropolitan LALC letter

Correspondence from the Metropolitan Local Aboriginal Land Council regarding the Mosman Aboriginal Heritage Study can be inserted into this Appendix.

Appendix B Flyer



Do you have any stories or recollections of Mosman or knowledge of places around this part of the Harbour that you would like to share?

Joint study into Mosman's Aboriginal heritage

The Metropolitan Local Aboriginal Land Council, NSW National Parks and Wildlife Service, Sydney Harbour Federation Trust and Mosman Council have combined to carry out a study of the Aboriginal heritage of Mosman.

The study team would like to hear from Aboriginal people who know the area and whose people lived in the area.

Information could be on Aboriginal sites around the area, which include rock engravings, red ochre and charcoal art sites, middens and shelters used by Aboriginal people in the past.

We would also like to hear about connections to the land, including landforms, features and places, such as Middle Head and Bradleys Head which are very important to Aboriginal people as places of occupation, tradition and ceremony.

This information will help us build the first complete picture of the Aboriginal story in Mosman. It is also a way for Aboriginal people to say how they would like their sites in the area managed and culture interpreted for everyone to appreciate.

Anyone with information or recollections for the study team should call Alison at the Australian Museum on 9320 6469 before **Friday 10th October 2003.**

If you do not have any information yourself, but know someone who has, then could you please pass this on to them. Thank you.

Appendix C Mosman Daily Article

In search of Aboriginal heritage

by JANEIGOE

MIDDLE Head has been the site of gun fortifications for more than 100 years but the area may yield other long-lost secrets which are about to be discovered.

An Aboriginal rock engraving of a fish – lying adjacent to 1870s battlements – is a potent reminder that this area is the scene of some of Australia's rich history.

The site, along with many others in Mosman, is about to be documented with additional oral histories done by archaeologists from the Australian Museum.

These shared tales and recollections will be a first for any Sydney suburb and will

contribute to an Aboriginal heritage study of the waterfront of the lower north shore.

The fish may have been a carving done by the area's original inhabitants, the Borrogegah Archaeologists say they have already identified more than 90 local sites that contribute to the Aboriginal history of Mosman but they believe there may be more.

Museum project manager Alison Nightingale said: "It's going to be a bit of a hunting game to try to track them all down. "There is a shared history with many of these sites and that's why the oral history is going to be so important."

The study is being carried out by the NSW National Parks and Wildlife Service, Metro-

politan Aboriginal Land Council, Sydney Harbour Federation Trust and Mosman Council.

Teresa Gay from the NPWS said the study would collect oral histories from people who knew the area or whose people lived in the area. "We also want to hear from long-time Mosman residents who remember Aboriginal sites or even better, who have photographs of them," she said.

The sites discovered so far include rare rock engravings on vertical cliff faces, ancient ochre and charcoal art sites, large middens and shelter sites.

Anyone with information or recollections for the study team should call 9320 6469.



Alison Nightingale is researching Mosman's Aboriginal history. Photo: VIRGINIA YOUNG

Appendix D Glossary

Glossary of Terms used throughout the Mosman Aboriginal Heritage Study report

Term	Definition
Archaeological Site	A location where physical evidence from past human activities and events survives in or on the land, i.e. stone artefacts, shells, engraved images or grooves. Archaeologists classify sites according to their contents, form or function and sometimes location. Defining archaeological site boundaries may vary with the archaeological and geographic context.
Artefact	Any object or feature created or modified by humans. The term "stone artefacts" includes the pieces used as tools as well as waste product (debitage) from manufacture.
BP	"Before Present". Term used with radiocarbon and radiometric dating of archaeological sites, meaning the number of years before present.
Burials	Burials are seen as part of continuing culture and tradition, as well of offering valuable archaeological information. The dead were sometimes cremated, sometimes placed in trees or rock ledges, and sometimes buried. Burials exist throughout New South Wales and can be uncovered in construction work or become exposed through erosion.
Campsite	Locations at which people slept overnight and carried out a number of activities, including making equipment, and processing and eating food. Also referred to as habitation or occupation sites. They are identified archaeologically by deposits containing cultural materials such as stone artefacts, shells, animal bones, etc. They occur in rockshelters as well as in open locations.
Carved and Scarred Trees	Tree bark was used for constructing canoes, shelters, coolamons and shields. Distinctive scars are left from bark removal and can usually be differentiated from natural scars. Carved trees are more distinctive exhibiting patterns etched into the wood of a tree. They can occur throughout the state, although clearing and forestry practices have greatly reduced numbers.
Ceremonial Grounds	These sites were used for initiation ceremonies, marriages, tribal meetings and other important functions and are of great significance to Aboriginal people. Bora rings, which are one or more raised earth rings, were used for male initiation ceremonies.
Core	A piece of stone off which flakes have been intentionally struck in order to be used as stone tools. A core must have one or more negative or bulbar flake scars, being the concave surface left after a flake has been removed.
Diatreme	Volcanic vent that has formed by explosive action, and can form necks, pipes or dykes. Comprised of varying amounts and types of pyroclastic debris and surrounding country rock.
Flake	A piece of stone detached from the core by striking. Flakes are identified by the presence of diagnostic features such as a striking platform, impact point, ringcrack, bulb of percussion and ventral surface. Broken flakes can also be identified through diagnostic features.
Grinding Grooves	Grooves are located on flat rock exposures close to a stream or rock hole. They vary in size but are generally long (30-40cm in length) and elliptical in shape. Stone axes were ground into the softer stone allowing a working edge to be created or sharpened. Deeper grooves may have been used to work spears or other thin implements.

Holocene	A geological time-scale period lasting from 10 000 years ago to present. It is the last period in the Quaternary, which comprises the Pleistocene (glacial) and Holocene (post-glacial).
In Situ	Undisturbed. Archaeological materials in their original position.
Intaglio	A figure or design incised or engraved; a cutting or engraving in stone or other hard material.
Isolated Find	An item or object found in isolation, being a sufficient distance away from other archaeological materials that it is not considered part of another site.
Liminal	of or relating to a sensory threshold
Lithic	of, relating to, or being a stone tool.
Macropod	Marsupial of the Family Macropodidae - marsupial with large, powerful hind feet, comprising kangaroos, wallabies and relatives.
Material Culture	The physical or material objects produced by a society. May include tools, shelter, clothing, canoes and weapons.
Motif	A form or figure which has a particular arrangement of components, and which is repeatedly drawn, painted or engraved.
Open Camp Sites	These sites are mostly surface and associated subsurface scatters of stone artefacts, sometimes associated with fireplaces. They exist throughout the landscape and are the most common site type. While found in all environmental contexts, larger and denser sites tend to be found on riverbanks and lower slopes facing watercourses, as well as ridgelines and other areas that offer movement routes.
Pleistocene	A geological time-scale period. The last period of the Quaternary, lasting from about 2 million years ago to 10 000 years ago. This period is divided into the Early, Middle and Late Pleistocene.
Post-Contact Sites	Locations that were occupied or used by Aboriginal people after British colonists arrived in 1788, or are associated with events after that date. May include places like reserves, missions, cemeteries, places of battles and massacres. They are often identified only by the presence of European objects or through written or oral histories.
Quarry	Quarry sites usually occur wherever there are outcrops of siliceous or igneous rock. Stone material was used in creating stone tools that in turn were used to work wood and provide people with tools to assist in hunting and gathering activities. Siliceous rock is easily flaked and made useful cutting and scraping tools, where igneous rock was preferred for edge-ground tools, particularly axes.
Raw Material	Natural materials such as stone, bone, shell and plant materials from which items of material culture are made.
Reserve and Mission Sites	Contact period sites. Locations where Aboriginal people were often moved by force and where movement was restricted. These places often became home to many people, and are very important to Aboriginal people today. Historic cemeteries at many reserves and missions are still cared for by the local Aboriginal community.
Rock Engravings	These sites usually occur where there is a suitable exposure of fairly flat, soft rock or rock overhangs. The outlines of motifs were made by hitting the rock surface with a sharp stone to make small holes or pits. Sometimes the pits were joined to form a groove, by rubbing with a stone. People, animal shapes and tracks are common motifs, as well as non-figurative designs such as circles.

Rock Paintings	Aboriginal paintings are found on the ceilings and walls of rockshelters that occur wherever suitable rock surfaces and outcrops exist. Figures include humans, kangaroos, emus, echidnas, grid patterns, animal tracks, boomerangs, axes, hand stencils and other motifs. Paintings are made with white, red, yellow and black pigments. The motifs may be drawn, painted or stencilled, and charcoal drawings are common as well.
Rock Shelters with Archaeological Deposits	In rock outcrops such as of sandstone and granite, overhangs sometimes form creating usable shelters. Sediments from fires, roof fall, discarded stone tools and food remains form a deposit protected within the shelter.
Shell Midden	Occupation Site. Sites are found on the coastline and along edges of rivers and lakes. Site deposit is composed of the remains of edible shellfish and usually contains fish and animal bones, stone tools and campfire charcoal.
Stone Arrangements	These range from simple stone mounds to complex circles and pathways. Arrangements are found throughout New South Wales as well as the coast, where fish traps were sometimes constructed.
Waste Products	Flakes and flaked pieces produced during the knapping process, and which appear to be unused due to absence of retouch and use wear. Also referred to as debitage and debris.

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