Appendix F Archaeological Survey Report

BIOSIS
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An archaeological survey of proposed upgrade works, Woy Woy Waste Management Facility, New South Wales

October 2006

Melanie Thomson &
Chris Lewczak

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Report for URS

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- Chani Lokuge (URS)
- Brian Leslie (Woy Woy Waste Management Facility)
- David Gordon (DEC)
- Jodie Cameron (Darkinjung Local Aboriginal Land Council)
- Jamie Reeves and Robert Suansri (Biosis Research Pty. Ltd.)

ABBREVIATIONS

AHC	Australian Heritage Council
AHIMS	Aboriginal Heritage Information Management System
ATSIC	Aboriginal and Torres Strait Islander Commission
BP	Before Present
DEC	Department of Environment and Conservation
DIPNR	Department of Infrastructure, Planning and Natural Resources
DEH	Department of Environment and Heritage
ICOMOS	International Council on Monuments and Sites
LEP	Local Environmental Plan
MGA	Map Grid of Australia – unless otherwise specified all coordinates are in MGA
NPWS	National Parks and Wildlife Service (now part of DEC)
REP	Regional Environmental Plan
RNE	Register of the National Estate

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SUMMARY

Biosis Research Pty Ltd has been commissioned by URS to undertake an archaeological assessment of proposed upgrade work at the Woy Woy Waste Management Facility. The project involves the development of two areas within the Waste Management Facility. The first area includes a proposed enclosed garden organic processing and composting facility, and a proposed enclosed Alternative Waste Technology (AWT) facility. The second area comprises a Garden Organic Maturation and Storage Facility (Figure 1 and Figure 2; Appendix 2).

This report presents the results of the archaeological field survey, including detailed background research identifying previously recorded historical and Aboriginal archaeological sites, along with an assessment of landforms, and the degree and type of disturbance that has occurred within the study area. These factors all contributed to the development of site prediction models for Aboriginal and historical archaeological sites.

A small number of archaeological assessments have been undertaken within the wider Woy Woy region. The most recent and relevant archaeological assessment report was undertaken along the inner western section of the facility for a landfill extension in 2004.

No Aboriginal archaeological sites were recorded within the study area during the field survey. The sandstone escarpment and a small open hanging swamp area were noted to be of Aboriginal archaeological potential, as a number of plant species within this area are noted to have significance to Aboriginal resource use.

No historical sites were recorded during the field survey, however, the extent of the original volcanic quarry and associated vehicle track were noted. More recently, the development of the Waste Management Facility has resulted in the construction of a number of roads and recent facility structure.

The proposed works are unlikely to impact on any recorded Aboriginal and historic sites; however it may impact on sensitive landforms and significant indigenous vegetation identified within the south eastern portion of the study area.

As a result of the archaeological field assessment, the following recommendations have been developed.

Recommendations

Aboriginal archaeology

No further archaeological work is required within the study area as no Aboriginal archaeological sites or areas of potential are located within the study area.

An area in the south eastern corner of the study comprises relatively undisturbed open swamp which contained two circular features and a number of small sandstone overhangs. According to study area plans, this area will not be impacted by the proposed works. This area also contains a number of indigenous plants that were significant to Aboriginal people.

The Darkinjung Local Aboriginal Land Council has requested that:

> *Gosford Council seek the appropriate approvals from the Dept of Environment and Conservation in relation to the sites found just outside the boundary area to ensure they are not impacted upon, and*
>
> *That should any artefact matter be detected that work cease immediately and the appropriate authorities be contacted, that is the land council, National Parks and Wildlife and an archaeologist*

The Darkinjung Local Aboriginal Land Council survey report is located in Appendix 1.

Historic archaeology

No historic sites are located within the present study area therefore no further historic archaeological work is required.

Archaeological reports and the management recommendations contained therein will be independently reviewed by Aboriginal heritage staff of the Environment Protection and Regulation Division of the NSW Department of Environment and Conservation (DEC), the relevant Aboriginal community and the NSW Heritage Office.

Although the findings of a consultant's report will be taken into consideration, recommendations in relation to managing heritage place should not be taken to imply automatic approval of those actions by the DEC , the Aboriginal community or the NSW Heritage Office.

1.0 INTRODUCTION

Cultural heritage legislation protecting Aboriginal and non-Aboriginal heritage places applies in New South Wales. These places are an important part of our heritage. They are evidence of more than 40,000 years of occupation of New South Wales by Aboriginal People, and of the more recent period of settlement by non-Aboriginal people.

Heritage places can provide us with important information about past lifestyles and cultural change. Preserving and enhancing these important and non-renewable resources is encouraged.

It is an offence under sections of legislation to damage or destroy heritage sites without a permit or consent from the appropriate body (see Appendix 4 for a complete discussion of relevant heritage legislation and constraints).

When a project or new development is proposed, it must be established if any cultural heritage places are in the area and how they might be affected by the project. Often it is possible to minimise the impact of development or find an alternative to damaging or destroying a heritage place. Therefore, preliminary research and survey to identify heritage places is a fundamental part of the background study for most developments.

The first stage of a study usually incorporates background research to collect information about the land relevant to the proposed development project (the study area). A second stage often involves a field inspection of this area.

Possibly the most important part of the study involves assessing the cultural heritage significance of heritage places in the study area. Understanding the significance of a heritage place is essential for formulating management recommendations and making decisions.

The subject matter of this report involves the use of a number of technical words and terms with which the reader may be unfamiliar. An extensive glossary has been included at the end of the report and reference to this may be of assistance.

1.1 Project Background

Biosis Research Pty Ltd has been commissioned by URS to undertake an archaeological assessment of proposed upgrade work at the Woy Woy Waste Management Facility. The project involves the development of two areas within the Waste Management Facility. The first area includes a proposed enclosed garden organic processing and composting facility, and a proposed enclosed Alternative Waste Technology (AWT) facility. The second area comprises a Garden Organic Maturation and Storage Facility (Figure 1 and Figure 2; Appendix 2).

A small number of archaeological assessments have been undertaken within the wider Woy Woy region. The most recent and relevant archaeological assessment report was undertaken along the inner western section of the facility for the extension of waste dumping area by Peter Kuskie in 2004.

The excavation of a basalt quarry in the early 1900s has significantly disturbed one proposed development area at the southern end of the Waste Management Facility. A small dam is now situated in this area, along with a number of roads and track, constructed in association with the quarry and more recently for waste management. The eastern most section of this area however has not been disturbed and consists of sandstone overhangs and the edge of an open hanging swamp.

The other area in which the composting facility is proposed has also been heavily disturbed by current use underlying which appears to be a significant amount of fill. This area was probably filled to create level ground following the completion of the basalt quarry and the commencement of the Waste Management Facility.

1.2 Aims

The major objectives of the project are as follows:

- to collate data relating to previously recorded historical and Aboriginal archaeological sites within or close to the study area;
- to develop a site prediction model for the study area based on existing archaeological data and landforms;
- consultation with the relevant Aboriginal stakeholders including participation in the field survey;

- completion of a field survey to identify any Aboriginal and historical archaeological sites and features within the study area;

- to identify and assess potential impacts of the proposed construction areas on Aboriginal and historic heritage values; and

- to recommend appropriate management measures to minimise potential adverse impacts on Aboriginal and historical heritage values and any additional assessment requirements.

1.3 Consultation with the Aboriginal Community

The study area lies within the administrative boundary of the Darkinjung Local Aboriginal Land Council (DLALC). The Administration manager for the DLALC at the time of the survey is Roger Sentence. A representative for the DLALC involved in the field survey to identify Aboriginal cultural heritage sites was Jodie Cameron.

A map of the study area and a brief background of the proposed project were forwarded to Jodie Cameron prior to the field survey. A draft report was forwarded to the Darkinjung Local Aboriginal Land Council for comments. A report from the DLALC was forwarded commenting on the outcomes of the survey and a statement of recommendations regarding the management of cultural heritage within the study area (see Appendix 1).

2.0 BACKGROUND INFORMATION

2.1 Environmental Background

The environmental background to the study area is provided in order to give a context to the archaeological assessment. The environmental aspects of an area will influence the type of archaeological remains that are likely to be present.

Firstly the environmental conditions of the study area may have influenced the land use by people in the past and secondly conditions will also affect the processes by which sites are preserved. Environmental values of an area can also contribute to the cultural significance and attachments people have to a place.

The following background is a brief summary of information relevant to the current assessment of archaeological values of the study area. The study area is within the Brisbane National Park region, south west of Woy Woy.

2.1.1 Geology & Landforms

The study area is situated on the geological formation known as Hawksbury Sandstone, part of the early Triassic Narrabeen Group (Branagan & Packham 2000:58). The Narrabeen Group generally contains lithic and quartz sandstones, conglomerates, siltstones and olive green and reddish brown claystones that are of volcanic origin. The 1:250,000 Sydney geology map indicates the presence of more recent volcanic activity to the south of the study area on Patonga creek, consisting of basalt, dolerite and volcanic breccia.

Hazleton & Tille (1990) have defined two soil landscapes within the study area. Each soil landscape has distinct morphological and topological characteristics. This results in each landscape having different archaeological potential. Because they are defined on a combination of soils, topography, vegetation and weathering conditions, soil landscapes are essentially terrain units that provide a useful way to summarise archaeological potential and exposure.

There is one residual landscape and one colluvial landscape in the study area. Residual soil landscapes are characterised by areas where soils are derived from the long-term, in situ weathering of parent materials. Examples of these types of soil landscapes are flats and plains, with poorly defined drainage lines. Colluvial soil landscapes are dominated by areas where mass movement is the principal agent of parent material accumulation. Cliffs, scarps, and steep slopes are examples of colluvial soil landscapes.

The colluvial landscape includes the Hawkesbury landscape, situated on the western, southern and eastern margins of the study area. The Hawkesbury soil landscape is described by Hazelton and Tille (1990:45) as 'steep, rugged sandstone slopes and ridges' with local relief between 100 – 200m and slope grades between 20% and 70%. Rock outcrops and surface rocks are abundant, occurring as sandstone benches, broken scarps and boulders, with the scarps being up to 10m high. The soils in this landscape are shallow, discontinuous and generally sandy. The sandstone formations of this landscape provide overhangs with suitable surfaces for rock art making this landscape archaeologically sensitive. These shelters can also contain small accumulations of cultural deposits; although the potential for deep, stratified archaeological sites are very limited. Previous archaeological work in the region has demonstrated an abundance of rock art associated with this landscape, and the steep gorges and gullies are where most archaeological survey has been focused. Due to its ruggedness this landscape has not been cleared of vegetation, and there is a possibility that scarred trees and open stone artefact sites to also occur here.

The Hornsby landscape is the residual landscape, situated in what was an open valley, running through the study area prior to quarrying and waste disposal activities. This landscape consists of gently undulating rises to steep weathered basaltic breccia, with local relief to 70 metres with slope grades ranging from 3% to 65%. It is generally associated with the volcanic activity often located in sandstone valley floors (Chapman & Murphy 1989:34). This type of landscape is often used for quarrying blue metal. It is also used as rubbish disposal sites, parks and playing fields. Soils on this landscape are generally sandy loams, sandy clays and clays (Chapman & Murphy 1989:35).

In the wider region, quartz is the most readily available raw-material type suitable for tool manufacture. This would be in the form of pebbles derived from the Hawkesbury sandstone. Within the study area, the former volcanic outcrop that has been quarried, would have been a source of stone for the manufacture of larger tools such as axes and hammer stones.

2.1.2 Climate

The climate at Gosford (2.3 kilometres north of the study area) generally consists of mild summers with an average maximum of 27.5 degrees and minimum of 16.6 degrees in January, and cold, wet winters with an average minimum of 4.5 degrees and a maximum of 17.4 degrees in July (Bureau of Meteorology 2004). Recorded rainfall readings taken in 2004 indicate an average annual rainfall of 1320.8 millimetres.

2.1.3 Flora and Fauna

The vegetation originally would have comprised a combination of Sydney Coastal Dry Sclerophyll Forest and Sydney Coastal Heaths (Keith 2004).

The Sydney Dry Sclerophyll Forest grows on sandstone landscapes in areas below 700m elevation, where average rainfall varies from 1000 to 1300 millimetres (Keith 2004:146). This vegetation type encompasses a wide range of related forest and woodland communities. The eucalypt canopy includes Sydney red gum, red bloodwood and Sydney peppermint, brown stringybark, broad-leaved scribbly gum and old man banksia (Keith 2004:146). The prominent and diverse sclerophyll shrub understorey is shorter and more open on ridges than in gullies, while the open ground layer is dominated by sclerophyll sedges. On the eastern margin of the study area, where the drainage might be slightly impeded, this vegetation type grades into Sydney Coastal Heaths.

The Sydney Coastal Heaths generally comprise a small overstorey of sparse red bloodwood, heart-leaved stringybark and yellow-top ash (Keith 2004:179). The low shrubby vegetation comprises a diverse array of sclerophyllous genera, and are interspersed with an equally rich complement of sedges and herbs, and a small number of grasses.

Various plant species within the study area were exploited for food, seeds, nectars, fruits, roots and tubers. For example, various species of native lilies with small tuberous roots were collected and eaten. The flower-cones of the Banksia were soaked in water in bark or wooden containers to extract the nectar to make sweet drinks. The hearts of the Grass Tree stems were eaten and the nectar from the spike flowers was also collected and eaten. They could also be utilised for making tools such as spears, shafts and handles for stone implements, as well as carrying vessels of bark and woven fibre, digging sticks and a variety of other items utilitarian and non-utilitarian. The dry flower-stems of the smaller Tree Grass species were used for spears.

The study area would have provided an abundance of native animals for not only as a food source, but for a number of other materials. Mammals such as kangaroos and wallabies and arboreal mammals such as possums can be used as a food source and also for tool making. For example, tail sinews are known to have been used as a fastening cord, whilst ‘bone points’ which would have functioned as awls or piercers are an often abundant part of the archaeological record. Ethnographic observations of early European settlers coming in contact with Aboriginal people noted the use of a variety of animal parts; claws, talons, bone, skin, teeth, shell, fur and feathers were all used for a variety of tools and

non-utilitarian functions. The nearby coastline would have provided an abundance of marine resources, including eels, fish, shellfish and birds.

In summary, the study area would have provided a variety of resource and suitable climatic conditions for year round occupation by traditional Aboriginal groups inhabiting the study area.

2.2 Aboriginal History

2.2.1 Ethnohistory

It is generally accepted that people have inhabited the Australian landmass for at least 50,000 years. Dates of the earliest occupation of the continent by Aboriginal people are subject to continued revision as more research is undertaken. The timing for the human occupation of the Sydney Basin is still uncertain. Whilst there is some possible evidence for occupation of the region around 40,000 years ago, the earliest undisputed radiocarbon date from the region comes from rock shelter sites, on Mangrove Creek, approximately 25 kilometres north west of the present study area. Of the excavated shelters, thirty-one shelters yielded dates, the oldest which was 11,050 BP (Attenbrow in Lourandes 1997: 208-210).

Our knowledge of the social organisation of Aboriginal people prior to European contact is, to a large extent, reliant on documents written by European people. Such documents are necessarily affected by the inherent bias of the class and cultures of these authors. They can, however, be used in conjunction with archaeological information in order to gain a picture of Aboriginal life in the region.

Many of the documented details of different social units and information relating to language groups in the greater Sydney region were not recorded until the late 19th century, by which time significant disruptions to the pre-existing societies had already taken place.

According to Tindale (1974) the study area was once inhabited by the *Darkinjang*, bordered closely by the *Kuringai* tribe who inhabited the land between them and the coastline. These two groups were on friendly terms, unlike the *Awabakal* groups that inhabited the region to the north. A number of historical accounts describe ritual warring and subsequent injury (Drew 1994).

The *Darkinjang* lands roughly extended from the Hawksbury River northwards

to Wollombi and the southern drainage of the Hunter River (Tindale 1974).

Information gathered by R.H Matthews provides a valuable insight into the lives of the *Darkinjang* people, although this information was recorded within an already disjointed and decimated community. He stated that all members of the *Darkinjang* community were segregated into two moieties *Dilbi* and *Kuparthin*, and each moiety was further divided into two sections (Matthews 1897 in McDonald 1994:39). On the basis of these moieties and sections, totemic affiliation and marriage relations were determined. Totems consisted of animals or inanimate objects, such as animals, plants, heavenly bodies, the elements or seasons.

It has been suggested that the *Darkinjang* would move to the coast, within *Kuringai* territory during summer months, to exploit the abundant coastal resources, and the reveres was true for the *Kuringai* who moved inland during winter months to participate in ritual kangaroo hunts (Vinnicombe 1980).

2.2.2 Previous Archaeological Work

A search of the NSW Department of Environment and Conservation's Aboriginal Heritage Information Management System (AHIMS) was conducted. The search showed there are over 30 previously recorded Aboriginal archaeological sites within the vicinity of the study area (Figure 3). The majority of these sites were recorded in the bounds of the Brisbane Water National Park. None of these sites are recorded within the present study area, although twenty nine are within 1 kilometre of the study area, the details of which have been summarised in Table 1 below.

DEC REGISTER NO.	**Site Type**	**Location**
45-6-0151	Rock engraving; Stone arrangement	Located on a weathered sandstone platform on top of ridge, 500 metres west of the study area
45-6-0183	Rock engravings	Located on the east side of the creek on a small sandstone rock, 1 kilometre south west of study area
45-6-0204	Rock engraving and Grinding Grooves	Located on open flat sandstone rock in centre of swamp, on south side of ridge, 200 metres south west of study area
45-6-0778	Shelter with Art	Located on the south side of creek line, 350 metres south of study area
45-6-0782	Stone arrangement	Located on large sandstone platform on top of ridge, 800 metres south of study area
45-6-0783	Engraving	Located 400 metres north east of study area

DEC REGISTER NO.	Site Type	Location
45-6-0787	Engraving; Stone arrangements	Located on top of ridge line, 350 metres east of study area
45-6-0788	Engraving; Grinding grooves	Located on top of ridge, 350 metres east of study area
45-6-0791	Engraving; Grinding grooves	Located 450 metres west of the study area
45-6-0797	Engraving; Grinding grooves	Located 450 metres west of the study area
45-6-0798	Engraving	Located 800 metres north east of study area
45-6-2363	Engraving	Located 900 metres south of the study area
45-6-2364	Engraving	Located 900 metres north west of the study area
45-6-2379	Engraving	Located on mid slope overlooking creek line, 500 metres west of study area
45-6-2388	Stone arrangement	Located 950 metres east of the study area
45-6-2433	Grinding grooves	Located in creek line on open sandstone platform, 450 metres east of the study area
45-6-2434	Stone arrangement	Located on mid slope of scarp, 500 metres south east of study area
45-6-2435	Engraving	Located on ridge top, 900 metres south of study area
45-6-2436	Engraving	Located on ridge top, 900 metres south of study area
45-6-2437	Grinding groove	Located on small creek line, 1 kilometre south of study area
45-6-2438	Grinding groove	Located on small creek line, 1 kilometre south of study area
45-6-2439	Grinding groove	Located on upper ridge slope, 350 metres south east of study area
45-6-2440	Grinding groove	Located adjacent to rock hole on top of ridge, 900 metres south of study area
45-6-2530	Grinding groove	Located on mid slope on creek, 700 metres south west of study area
45-6-2616	Engraving	Located on top of ridge on open sandstone platform, 800 metres east of study area
45-6-2617	Engraving	Located on top of ridge on open sandstone platform, 800 metres east of study area
45-6-2618	Grinding Groove	Located on large open sandstone platform, 800 meters east of the study area
45-6-2619	Grinding Groove	Located on the southern slope of a large sandstone boulder, 800 meters east of the study area
45-6-2639	Stone Arrangement	Located on top of ridge, 400 metres south east of study area

Table 1: Previously recorded Aboriginal archaeological sites within or near the study area.

The majority of these sites comprise rock engravings, some recorded by Fred McCarthy in 1947 and 1954, Ian Sim between 1961 and 1976, with most

being recorded by Warren Bluff in 1995. A smaller number of stone arrangements, grinding grooves and shelters with art have also been recorded. More recently recorded sites have been identified as a result of specific archaeological assessments for proposed development works within the Woy Woy region.

Vinnicombe (1980) completed an archaeological survey of the Gosford/Wyong region to determine site type and location patterns. The large scale assessment involved systematic survey of 10 km² locations within the estuarine zone; however this initial work did not consider a number of environments and landforms also the coast and consequently further areas were surveyed. This survey work resulted in the recording of a number of middens, engravings and rock shelters.

The assessment findings clearly identified a regional patterning for site types within the surveyed areas. These findings indicate seasonal exploitation of resources along the coast during the summer months and through the hinterland during the winter months.

Dallas & Bickford (1985) undertook an archaeological study of the main northern railway tunnel project at Woy Woy. The study area was surveyed in full and two prehistoric sites were identified as a result. The sites comprised one engraving site and one open campsite. The emu engraving are a common occurrence in the Gosford-Woy Woy region.

Effenburger (1992) completed an archaeological assessment and survey of the proposed fibre optic cable, Wagstaff Point to Woy Woy Breakoff. No Aboriginal archaeological sites were identified during their field assessment.

Drew (1994) conducted an archaeological assessment of the emergency operations centre on Woy Woy Road, Kariong. The assessment involved the reassessment of a number of previously recorded sites and a survey for any new sites. One new Aboriginal archaeological sites was recorded. This site is acknowledged as a mythological site associated with Aboriginal tradition, in particular, with ceremonial occasions although there is no physical evidence of this within the landscape. All sites that were located within the study area were considered to be of scientific and cultural value.

Witter (1999) completed an archaeological survey of the proposed fibre optic cable line between Brooklyn and Woy Woy. Detailed background information on previously recorded sites was used to develop a site prediction model for the occurrence of Aboriginal sites within the proposed fibre optic cable route. Sites

recorded during the field survey comprised primarily rock engravings, as predicted based on previous work within the region.

Witter (1999) indicates that recorded multiple engravings are highly confined to a small portion of extensive rock surfaces. Historical information indicates a ritual context for the engraving sites. Many of the more substantial engravings sites are situated on prominent places, along the top of ridge lines and hills. The presence of stone arrangements is also considered to be culturally significant, indicating considerable ceremonial activity along the ridge system overlooking Broken Bay, and along other ridgelines offering similar regional views.

A number of engraving sites are also associated with stone arrangements. Associated with the engraving and stone arrangement sites are curtilage areas, or a surrounding area, that are part of a large significant place where significant ritual activity occurred, what would be considered a sacred site (Witter 1999:34).

> 'These areas presumably were restricted areas depending on sex and stage of initiation. Hunting, food gathering, and travel may have been under particular protocols to avoid these areas'.' (Witter 1999:34)

Restricted access to these sites may account for the apparent lack of flaked stone artefacts in these areas.

The regional model that will account for previously recorded site types would include a summer/coastal – winter/inland pattern for resource exploitation and occupation (Dave Lambert, pers. com in Witter 1999: 5).

Kuski (2004) undertook the most recent and relevant archaeological assessment within the Waste Management Facility, immediately adjacent to the present study area. During the field survey, no Aboriginal archaeological sites or areas of Aboriginal archaeological potential were identified.

2.2.3 Discussion and Site Prediction Model

Regional trends are dominated by engravings, grindings grooves and shelters with art, reflection of the sandstone landscape in which they are situated. Much of the Brisbane Waters National Park has been the subject of a moderate level of archaeological investigation. The sandstone escarpment and dissecting water lines would have provided resources utilised by Aboriginal peoples. The majority creek and gully line within the wider region would have provided a relatively easy transport route throughout the undulating landscape, and between hinterland and the coastal zone. Along these routes, grinding grooves can

be located, while along the tops of the ridges, engravings and stone arrangements can be found. Many of these stone arrangements and engravings are indicative of ceremonial sites. It is also likely that Aboriginal campsites were situated along open sections of water lines.

The following broad predictive model is suggested for the study area/region:

- Engravings are most likely to occur within the sandstone landform where open areas of sandstone platform occur;
- Grinding grooves are likely to be located close to water, along creek lines and drainage lines;
- Stone arrangements are most likely to occur along ridge tops;
- Rock shelters with either art or deposit are likely to be the most prevalent site types in the escarpment area where suitable geological features exist;
- Artefact scatters are most likely to occur on level, well-drained ground adjacent to sources of freshwater and wetlands;
- Isolated finds are likely to occur anywhere in the landscape;
- Burial sites will only occur in landforms characterised by relatively deep profile of soft sediments such as sand and alluvium and are likely to be found in occupation sites such as middens.

Specifically, the environmental context and regional patterning suggest that the study area was likely to have been visited by Aboriginal people, and this visitation to have left observable records/marks. Aboriginal site types are discussed in the following section, with particular regard to the potential for such sites within the study area.

Grinding Grooves

Grinding grooves are often found on large open and relatively flat areas of sandstone shelving and outcrops in close proximity to water. As the study area is in close proximity to water, grinding grooves may be identified in areas of suitable outcropping stone.

Engravings

Engravings are often found on large open sections of sandstone platform throughout the region. A number of these areas will occur within the study area. It is therefore likely that these may occur within the study area.

Aboriginal Ceremony and Dreaming Sites

These types of highly significant sites tend to occur at places where the connections and pathways between the three spheres of the world are realised. These places are in contrast to their surroundings and may be marked in a number of ways. Generally they are located away from habitation sites, although this is likely to require further testing when more of such site types are recorded. Given that a number of ceremonial stone arrangement sites have been previously recorded within the wider region, there is some potential that such ceremonial or dreaming sites may occur within the study area.

Aboriginal Places

Aboriginal *places* may not have any "archaeological" indicators of a site, but are nonetheless significant to Aboriginal people. They may be places of cultural, spiritual or historic significance. Often they are places tied to community history and may include natural features (such as swimming and fishing holes), places where Aboriginal political events commenced or particular buildings. Often these places are significant in the living memory of a community. There is high potential that Aboriginal places of spiritual and cultural significance will be found in association with the study area, as indicated by the Darkinjung LALC.

Rock shelters with art and/ or deposit

Rock shelters with art and/or deposit are the most frequently recorded site types within the study area. These sites generally occur within specific geological and topographical landscapes comprising sandstone exposures, shelving and overhangs. Suitable sandstone exposures or overhangs and cavities possessing sufficient sheltered space to contain potential archaeological deposit/art have been documented within the AHIMS search area.

Shelter sites generally occur on, or next to, sloping ground as characterised by the steep cliff lines bordering the escarpment in the west. Such topographical features are found within the study area and there is some potential that undocumented shelter sites are located within the study area.

Open campsites, artefact scatters and isolated finds

These sites represent the prevalent site type identified in the coastal plain region, especially on level, well-drained land topographies and are thus likely to occur within the current study area. Based on previous archaeological work identifying relatively few of these sites, it is considered that there will be low potential for these to occur within the study area.

2.3 Post-Contact History

2.3.1 Regional History

The Woy Woy/Brisbane Water District was first explored very early on after the initial settlement at Port Jackson. The area was noted by Captain Cook in 1770 and Governor Phillip was curious about the waterways to the north of the main settlement area. The Hawkesbury River and several branches were explored and noted for the timber that was present and the arable soil present (Strom 1982:6).

Settlers first moved into the Brisbane Waters District in the 1820s. At this stage there were very few land grants, however, people had moved into the area and began cultivating crops along the alluvial flats. It was not until 1833 with the completion of the Great North Road did people have easier access to the Hunter Valley region, and with that, tracks were make to the east towards the coastal area. Land was set aside along the Brisbane Waters for small farming areas that the Governor granted to free immigrants, ex-convicts and retired military men (Strom 1982:8).

An early site for a township was selected due to the sea access to the site and the anchorage present and was called Gosford (Strom 1982:10). The township allotments were sold in 1830s and East Gosford was surveyed and sold in 1840s. The location of the town was also established to service the farm settlement and trades that were established in the region. Buy the establishment of the township, other industries had moved into the Brisbane Waters District. Most notably was shipbuilding that had begun in the area in 1823 when James Webb, who primarily ran cattle on his grant, was also a shipbuilder by trade (Strom 1982:18). The natural timbers and water frontages along the Brisbane River lead to other shipbuilders establishing dockyards, which by 1880 made the Brisbane Waters area the second biggest shipbuilding area in the Colony, the biggest outside of Sydney Harbour. The natural resources also brought timber getters who were sent to supply the Sydney colony with the building timbers it required for the expansion of the Port Jackson settlement.

The township of Woy Woy was not established formally until 1 August 1928. The Village of Woy Woy was established after the railway was built. The

original railway line ran from Newcastle to Gosford, as there was no bridge that could cross the Hawkesbury River at the time. It was not until 1889 when the Hawkesbury River Bridge was constructed and the railway line continued to Sydney (Strom 1982:21). The railway allowed for expansion of land and people into the region. The increase for arable land, and the Governors Model Farms Act allowed for smaller, 40 acre, land grants to be commissioned, that had the effect of establishing smaller regional centres. Woy Woy was a popular location as it became the first station on the northern side of the Hawkesbury River (Strom 1982:25). Woy Woy became a popular tourist destination for Sydney residence because of this fact, and lead to the establishment of many guest houses and hotels.

2.3.2 Site Development

The two allotments that constitute the waste disposal area, and the proposed development area were first granted to Charles Fredrick Dillon on 5th April 1900 (Vol 5033 Fol. 72). There are no records land during this time, however, Dillon also owned several larger blocks of land adjacent to these and within the village of Woy Woy itself.

In 1924 the northern portion of the allotment was sold to James Warrick Brown. By this time there is a dirt road that leads through both properties, however, there are not records of any houses on the property. Brown leased his property between December 1927 and September 1928 to the Basalt Quarries Limited (Vol 3267 Fol. 224). It is believed that the quarry that happened in the area was mostly for exploration work as the company were only on the property for less than a year (Vol 3267 Fol. 224) (Figure 6).

The land was then sold and the mortgage is transferred from James Brown to Maude Newbury Brown. Maude was the wife of Arthur Newbury Brown who was a Medical Practitioner in Sydney. It is not known whether Maude Newbury Brown ever lived on the site or used it, however, Maude remained in control of the land until she died on 21 July 1930. The land remained in the control of solicitors until the land was eventually Resumed by Woy Woy Council in 1933 (Vol 4097 F147). The council used the site as a waste management facility.

2.3.3 Previous Archaeological Work

In general, historical archaeological survey work is undertaken concurrently with Aboriginal archaeological survey.

More recently, as part of **Dallas and Bickfords** (1985) Main Northern Railway Woy Woy Tunnel Project, the historic assessment made mention of the Woy Woy Tunnel Railway Workers Camp. The report noted that this site is a most significant item of Australia's cultural heritage as it is one of the few surviving 'navvies' camp from the 19th century in NSW (Dallas and Bickford 1985: 22). The site possesses high scientific significance value as it is an extensive site within well preserved remains.

Within the present study area, **Kuskie (2004)** undertook an archaeological assessment within the Waste Management Facility, immediately adjacent to the present study area. No historical sites or areas of historical potential were identified.

2.3.4 Discussion and Site Prediction Model

Extensive archaeological work that has been undertaken within the region indicates that no registered historic sites within the present study area. The remains of the Woy Woy Tunnel Railway Workers Camp are situated to the immediate north of the study area and the former basalt quarry site is located within the southern section of the study area.

There is some potential for associated historic rubbish dump sites to occur in association with the operation of the former basalt quarry. It is most likely however that any remains will be heavily disturbed as a result of the current land use practices.

3.0 ABORIGINAL SITES

3.1 Survey Methods

Previous archaeological work has provided intensive survey coverage of much of the Brisbane Waters National Park, surrounding the present study area. The sandstone escarpment and open sandstone platforms have been identified as archaeologically sensitive for rock engraving sites, grinding grooves and sandstone shelters and overhangs with rock art.

The small size of the study area allowed for the entire area to be surveyed in detail. As the Waste Management Facility and former basalt quarry had previously disturbed much of the study area, the survey focused on undisturbed areas of sandstone escarpment and open sandstone platform. Both of these sensitive undisturbed landforms occurred at the southern end of the Waste Management Facility.

The survey methods employed were to:

- conduct transect and targeted surveys in those parts of the study that have not been previously disturbed

The survey teams consisted of one team of two people. Along the sandstone escarpment, team members walked along the upper and lower levels along the slope. In other areas pedestrian survey involved members walking evenly spaced transects. Areas with particularly good exposure and large open areas of sandstone platform were targeted and intensively block surveyed by individual teams.

All records were made on specifically designed recording forms. Survey transect information was similarly recorded on project specific forms, with all location data logged on a hand-held GPS receiver, using MGA coordinates. The locations of beginning and end points of transects and features were recorded as GPS 'waypoints' whilst automatically recorded GPS 'tracks' were used to record the location and distances of the transects (these are rounded to the nearest 10m in the discussions below). All photography was done using digital cameras.

As no previously recorded sites occur within the study area, no sites were targeted for relocation.

Transect Survey –

The size of the study area and the type of development allowed for almost 100% survey coverage of the site. Although the majority of the study area was surveyed, a number of transects were determined, surveyed and detailed noted recorded along each one. Each transect was determined in order to sample a range of landforms/landscape units within the study area. Information recorded during the survey included the geology of the area, exploitable resources, identifiable land-use impacts and any archaeological sites present in the study area. This information was also used to assist in the identification of areas of archaeological potential.

Factors that influence the effectiveness of the survey include:

Ground Surface Visibility:

Ground Surface Visibility (GSV) is an average amount of the physical ground that could be viewed at the time of survey, and is expressed as a percentage. The primary effect on GSV is vegetation cover, however modern cultural material, such as concrete, rubble, rubbish or land fill can also hamper GSV.

Disturbance

Physical ground disturbance that occurs within the area has been noted and mapped. Ground disturbance includes events such as natural erosion and impacts from historical land-uses such as farming and construction. Ground disturbance can often result in areas of better GSV, therefore making it easier to identify sites, however, such sites tend to have been impacted by the disturbance event.

Limitations

Other limitations to the survey were also noted. Such limitations might generally include restricted access to private lands, or areas that were considered unsafe to survey.

3.2 Survey Results

The archaeological field survey of the study area was conducted by Melanie Thomson (Biosis Research) accompanied by Jodi Cameron (Darkinjung Local Aboriginal Land Council) on 10 August 2006.

There were five main survey transects completed for the study area (Figure 4). Each transect sampled a wide variety of terrain within the identified landscapes. The surveyed transects focussed on archaeologically sensitive landforms and areas that had not been previously disturbed. Along the sandstone escarpment

within Transects 2, 3 and 5, a number of small overhangs were noted and previously cur tracks were both assessed for cultural material (Plate 1).

No survey transect was completed on the smaller section of the study area, as this had been significantly disturbed and no longer contained any original ground surfaces or features within the landscape unit.

A major limitation to archaeological survey noted during the fieldwork was a lack of visibility and exposure, and high levels of disturbance. The Hawksbury landscape was generally covered in thick grass and organic material, while most to the Hornsby landscape was highly disturbed and turned over. Within the Hornsby landscape, very little of the original ground surface remains due to the excavation of the basalt quarry. A number of tracks running through this landscape were also examined for exposed cultural material (Plate 2).

The majority sites in the wider region have been recorded within the Hawksbury Landscape, although a reasonable number have also been identified within the Hornsby.

PLATE 1: SURVEY TRANSECT 3, FACING EAST ALONG ROAD RESERVE

PLATE 2: SURVEY TRANSECT 4, FACING WEST BACK ACROSS LARGE SWAMP

The results detailed in Table 1 below suggest that the identification of sites directly related to the amount of ground surface visibility within surveyed landforms. While this is a significant factor in the identification of Aboriginal archaeological sites, it is more likely that high levels of previous ground disturbance accounts for the lack of identified Aboriginal archaeological sites.

Although there were a number of small sandstone overhangs identified during the survey, none of these sites contained Aboriginal cultural material of visible art. No obvious grinding grooves or engravings were identified either, although a number of concentric circles were evident on the edge of a large sandstone

platform, located within the marked area of Aboriginal archaeological potential (Figure 5).

Transect	Landscape	Land unit	Landform elements	Dimensions (L x W)	Survey coverage	Visibility	Exposure	Effective coverage		Archaeology
1	Hornsby landscape	Hanging swamp	Open swamp above creek	260x15	3900m	60	5	12m	1%	-
2	Hawksbury landscape	Sandstone escarpment	Sandstone overhangs and platforms	180x15	2700m	40	10	108m	4%	-
3	Hawksbury landscape	Sandstone escarpment	Sandstone overhangs and platforms	210x15	3150m	50	5	79m	2.5%	-
4	Hornsby landscape	Low lying drainage	Volcanic deposit	380x15	5700m	60	15	513m	9%	-
5	Hawksbury landscape	Sandstone escarpment	Sandstone overhangs and platforms	425x15	6375m	50	10	159m	2.5%	-

Table 1: Survey Transects completed during the field survey.

Despite reasonable survey coverage of the entire study area, no Aboriginal archaeological sites were recorded.

3.3 Archaeological Survey – Interpretation and Discussion

Despite numerous Aboriginal archaeological sites, including stone arrangement, grinding grooves, engraving and rock art shelters, being previously recorded within the immediate region, no sites were identified during the field survey. This is as a result of the highly disturbed nature of the entire study area. Although some areas have remain intact, ground surface visibility in these areas was poor and only a small number of sensitive landforms were identified, including sandstone overhangs and sandstone platforms with possible cultural modification. Only a small number of mature trees are located within the study area. All of these were inspected and no Aboriginal scarring or modification was evident.

It is most likely that the original basalt outcrop located within the study area may have been a source of raw material for those Aboriginal people once

inhabiting the study area. Unfortunately, quarrying works that occurred in the 1920s has destroyed all possible evidence of this.

The lack of Aboriginal archaeological sites that were expected to occur based on the predictive modelling, can be attributed to the relatively small size and highly disturbed nature of the study area. The results of this small scale survey do not suggest the need to alter the current site prediction modelling for the region.

3.3.1 Aboriginal Archaeological Sites – Assessment of Significance

An assessment of archaeological site significance involves a range of heritage criteria and values. The heritage values of a site or place are broadly defined as the 'aesthetic, historic, scientific or social values for past, present or future generations' (Marquis-Kyle & Walker 1992). This means a place can have different levels of heritage value and significance to different groups of people.

Archaeological sites can tell us about past lifestyles and people. They are most commonly assessed in terms of historical and scientific values. There is an accepted procedure for determining the level of significance of an archaeological site. The following discussion summarises these procedures. Please see Appendix 3 for a comprehensive discussion of the significance assessment procedures.

3.3.2 Scientific Significance Assessment

The scientific values of Aboriginal archaeological sites are assessed using three main criteria: site contents (cultural material, organic remains and site structure), site condition (degree of disturbance of a site), and representativeness (the regional distribution of a particular site type). The site-contents criteria are not applicable when the site is a scarred tree.

3.3.3 Aboriginal Cultural Significance

Aboriginal sites and areas of land under the custodianship of a local Aboriginal community usually have a special significance for Aboriginal people.

All pre-contact (pre-European settlement) sites in the study area are considered to have cultural significance to the Darkinjung Local Aboriginal Land Council The sites are evidence of past Aboriginal occupation and use of the area, and are a main source of information about the Aboriginal past. The consultants cannot

comment directly on such cultural significance —– comment can only be made by the Aboriginal community.

Recorded (and unrecorded) pre-contact sites also have cultural significance because they are rare or, at least, uncommon site-types. In particular, many sites in the greater Sydney area have been destroyed by land clearance and land-use practices in the historic period.

Specific details about cultural significance should be dealt on a case-by-case basis with the Aboriginal community. Following the completion of the field survey, the Darkinjung identified the immediate area being used in an annual way in conjunction with the other surrounding areas as part of a learning path to the Somersby and surrounding area (Appendix 1). Numerous ceremonial and spiritual sites have been identified within the Brisbane Waters National Park.

3.4 Statutory Regulations

The following discussion summarises legislation that applies to Aboriginal sites. The statutory regulations that affect the heritage places identified and recorded during this survey are detailed in Appendix 4.

3.4.1 New South Wales Aboriginal Cultural Heritage Legislation

Aboriginal heritage management in NSW is provided for by two pieces of legislation: the *National Parks and Wildlife Act* 1974 and the *Environmental Planning and Assessment Act* 1979. These acts provide protection for all material relating to the past Aboriginal occupation of Australia. This includes individual artefacts, scatters of stone artefacts, rock art sites, ancient camp sites, human burials, scarred trees, ruins and archaeological deposits associated with Aboriginal missions or reserves. The *National Parks and Wildlife Act* also establishes administrative procedures for archaeological investigations and the mandatory reporting of the discovery of Aboriginal sites. The NSW Department of Environment and Conservation administers the *National Parks and Wildlife Act*. The *Environmental Planning and Assessment Act* is administered by The Department of Infrastructure, Planning and Natural Resources (formerly Planning NSW).

The NSW Department of Environment and Conservation also provides guidelines for archaeological survey and reporting (NSW NPWS 1997) which this assessment follows.

Any queries or applications to excavate or disturb an Aboriginal archaeological site for purposes of archaeological fieldwork should be made in to the Cultural Heritage Unit Manager at the relevant DEC Aboriginal Heritage Division regional office. The contact details for the regional office responsible for the area covered by this survey are:

Central Cultural Heritage Unit
Aboriginal Heritage Division
NSW Department of Environment and Conservation
Level 6 / 43 Bridge St
HURSTVILLE NSW 2220

Ph: (02) 9585 6690
Fax: (02) 9585 6325

3.4.2 Commonwealth Aboriginal Cultural Heritage Legislation

The Commonwealth *Aboriginal and Torres Strait Islander Heritage Protection Act* 1984 provides protection for Aboriginal cultural property.

Whereas the State Act provides legal protection for all the physical evidence of past Aboriginal occupation, the Commonwealth Act deals with Aboriginal cultural property in a broader sense. This cultural property includes any places, objects and folklore that 'are of particular significance to Aboriginals in accordance with Aboriginal tradition'. There is no cut-off date and the Act may apply to contemporary Aboriginal cultural property as well as older sites.

4.0 HISTORICAL ARCHAEOLOGICAL SITES

4.1 Archaeological Survey – Methods

The NSW *Heritage Act* 1977 protects all non-Aboriginal archaeological sites in NSW older than 50 years. A wide range of archaeological site types are protected by this Act, including below-ground features (such as building foundations, wells and artefacts) and above-ground features (such as the standing remains of buildings, machinery, fence posts and exotic vegetation). These may be single sites or complexes made up several related parts. The survey methodology aims to locate archaeological features in the study area.

The small size of the study area allowed for the entire area to be surveyed in detail. Part of the Waste Management Facility was part of a former basalt quarry and therefore this area was targeted for historic archaeological features.

The survey methods employed were the same as those used for Aboriginal archaeological sites. These were to:

- conduct transect and targeted surveys in those parts of the study that have not been previously disturbed

The survey teams consisted of one team of two people. Along the sandstone escarpment, team members walked along the upper and lower levels along the slope. In other areas pedestrian survey involved members walking evenly spaced transects. Areas with particularly good exposure and large open areas of sandstone platform were targeted and intensively block surveyed by individual teams.

All records were made on specifically designed recording forms. Survey transect information was similarly recorded on project specific forms, with all location data logged on a hand-held GPS receiver, using MGA coordinates. The locations of beginning and end points of transects and features were recorded as GPS 'waypoints' whilst automatically recorded GPS 'tracks' were used to record the location and distances of the transects (these are rounded to the nearest 10m in the discussions below). All photography was done using digital cameras.

As no previously recorded sites occur within the study area, no sites were targeted for relocation.

4.2 Archaeological Survey – Results

No historical sites were recorded during the field survey. However, the former basalt quarry was clearly visibly at the southern most end of the Waste Management Facility.

PLATE 3: HISTORIC BASALT QUARRY CUTTING, UPPER WEST SECTION

PLATE 4: HISTORIC BASALT QUARRY CUTTING, LOWER WEST SECTION

A number of cut roads and tracks were also identified along the escarpment leading along the edge of the former quarry, most probably associated with extraction access. Along the western most track cutting, debris including plastic, ceramics and glass were noted; however none of the material was considered to be older than 30 years or associated with the quarry while it was operating.

No other major features or sites were identified that may have been associated with the construction and operation of the basalt quarry.

4.3 Archaeological Survey – Interpretation and Discussion

The site of the former quarry, which operated during the 1920s, has been significantly altered due to its current use as a waste management facility. The eastern and western cuttings from the basalt quarry are clearly visible at the southern end of the Woy Woy Waste Management Facility. The quarry site has been significantly altered by the current land use practices of the Woy Woy Waste Management Facility. Due to the significant disturbance already caused by the current land use practices, the remains of the quarry are not considered to be of historic significance.

4.4 Historical Archaeological sites – Assessment of Significance

An assessment of archaeological site significance encompasses a range of heritage criteria and values. The heritage values of a site or place are broadly defined as the 'aesthetic, historic, scientific or social values for past, present or future generations' (Marquis-Kyle & Walker 1992). This means a place can have different levels of heritage value and significance to different groups of people.

Archaeological sites are most commonly assessed in terms of historical and scientific values, particularly by what a site can tell us about past lifestyles and people. There is an accepted procedure for determining the level of significance of an archaeological site. The following discussion is a summary of these procedures. For a detailed discussion, please see Appendix 3.

The scientific values of historical archaeological sites are assessed using three main criteria: site contents (cultural material, organic remains and site structure), site condition (degree of disturbance of a site), and representativeness (the regional distribution of a particular site type). The site-contents criteria are not applicable if the site is a scarred tree, such as a surveyor's blaze.

4.4.1 Cultural Heritage Significance

The NSW Heritage Office is the state government body responsible for protecting non-Aboriginal heritage places in New South Wales, including buildings, gardens, shipwrecks and historical archaeological sites. The NSW Heritage Council, through the Heritage Office, administers the *Heritage Act* 1977, and has provided a detailed set of criteria for assessing cultural heritage significance. These are divided into two categories: nature of significance and comparative significance. The criteria are detailed in the *NSW Heritage Manual* (NSW Heritage Office 1996) and are listed in Appendix 4.

The Heritage Council also has a set of criteria to determine if a heritage place should be considered for addition to the NSW State Heritage Register.

Historical archaeological sites, as with other heritage places, can be considered for addition to the State Heritage Register if they have State significance. However, *all* historical archaeological sites are given statutory protection, irrespective of their level of significance. It is planned that known sites will be included on the State Heritage Inventory, a data base of statutory listed heritage items that also includes the State Heritage Register and items protected by heritage schedules of local environmental plans (LEPs) and regional environmental plans (REPs).

4.5 Statutory Regulations

The following discussion is a summary of the legislation that applies to historical archaeological sites. For a comprehensive discussion about the statutory regulations that affect the heritage places identified and recorded during this survey please see Appendix 4.

Heritage Act 1977

The NSW *Heritage Act* 1977 details the statutory requirements for protecting historic buildings and places, historical archaeological sites, and historic shipwrecks. The Act is administered by the NSW Heritage Council, through the NSW Heritage Office. The *Heritage Act* protects all historical archaeological sites, places and relics in NSW older than 50 years, regardless of their level of cultural heritage significance.

An excavation permit is required for any works, excavations or activities, associated with an archaeological site. Excavation permits are issued by the Heritage Council of New South Wales in accordance with sections 60 or 140 of the *Heritage Act*. It is an offence to disturb or excavate land to discover, expose or move a relic without obtaining a permit. Excavation permits are usually issued subject to a range of conditions. These conditions will relate to matters such as reporting requirements and artefact cataloguing, storage and curation.

The State Heritage Register is a list of places and items with State heritage significance endorsed by the Heritage Council and the Minister. The Register came into effect on 2 April 1999. The Register was established under the *Heritage Amendment Act* 1998. It replaces the earlier system of Permanent Conservation Orders as a means for protecting items with State significance. The processes of listing and monitoring the conservation and protection of items are essentially the same. A permit may be required from the Heritage Council of NSW for works or activities associated with a registered place or object.

General queries about site issues and permit applications can be made to the archaeological officers at the Heritage Office. The contact details are:

NSW Heritage Office
3 Marist Place
Parramatta NSW 2150

Ph: (02) 9873 8500
Fax: (02) 9873 8599

Consultation with the NSW Heritage Office should begin well before lodging an application for a Permit to destroy a historic archaeological site.

5.0 MANAGEMENT ISSUES AND RECOMMENDATIONS

5.1 Introduction

Cultural heritage places provide us with evidence of past human activity. Heritage places may be confined to a small area, or represented by a complex of features, including a cultural landscape. Places of human activity in the past are affected by the actions of the present, particularly urban expansion and agricultural processes. This means cultural heritage places are a diminishing resource.

Cultural heritage places are valuable, not only for the scientific records of the past they provide, but also for their social significance. Many Aboriginal places, for example, have a special significance to Aboriginal communities as places where traditional life has continued and places that may have sacred or symbolic significance.

Many heritage places may also be outstanding examples of artistic and creative achievement. Heritage places are valuable to Australians — and the rest of the world — as they not only provide a link with a culturally rich past, but they can contribute to recreational and community life.

Heritage places may also have economic potential (Pearson & Sullivan 1995: 15). These values should, where possible, be protected and handed on to future generations. We all have some degree of social, spiritual, ethical — and legal — obligation to see that this happens.

5.2 Aboriginal Sites

5.2.1 Potential Impacts

There will be no impacts to Aboriginal archaeological sites within the study area.

5.2.1.1 Archaeological Sites

There are no Aboriginal archaeological sites recorded within the study area.

5.2.1.2 Areas of Potential Archaeological Sensitivity

There is a small area of Aboriginal archaeological potential in the south eastern corner of the study area which comprises undisturbed sandstone escarpment and open swamp area. This contains many plants that were used by the Aboriginal people who once inhabited the study area.

5.3 Historical Archaeological Sites

5.3.1 Potential Impacts

There will be no impacts to historical archaeological sites within the study area.

5.3.1.1 Archaeological Sites

No historical archaeological sites are recorded within the present study area.

5.3.1.2 Areas of Potential Archaeological Sensitivity

There are no areas of potential historical archaeological sensitivity within the study area.

5.4 Management Recommendations

Aboriginal archaeology

No further archaeological work is required within the study area as no Aboriginal archaeological sites or areas of potential are located within the study area.

An area in the south eastern corner of the study comprises relatively undisturbed open swamp which contained two circular features and a number of small sandstone overhangs. According to study area plans, this area will not be impacted by the proposed works. This area also contains a number of indigenous plants that were significant to Aboriginal people.

The Darkinjung Local Aboriginal Land Council has requested that:

> *Gosford Council seek the appropriate approvals from the Dept of Environment and Conservation in relation to the sites found just outside the boundary area to ensure they are not impacted upon, and*

That should any artefact matter be detected that work cease immediately and the appropriate authorities be contacted, that is the land council, National Parks and Wildlife and an archaeologist

The Darkinjung Local Aboriginal Land Council survey report is located in Appendix 1.

Historic archaeology

No historic sites are located within the present study area therefore no further historic archaeological work is required.

5.5 Report Lodgement

This report has been distributed to:

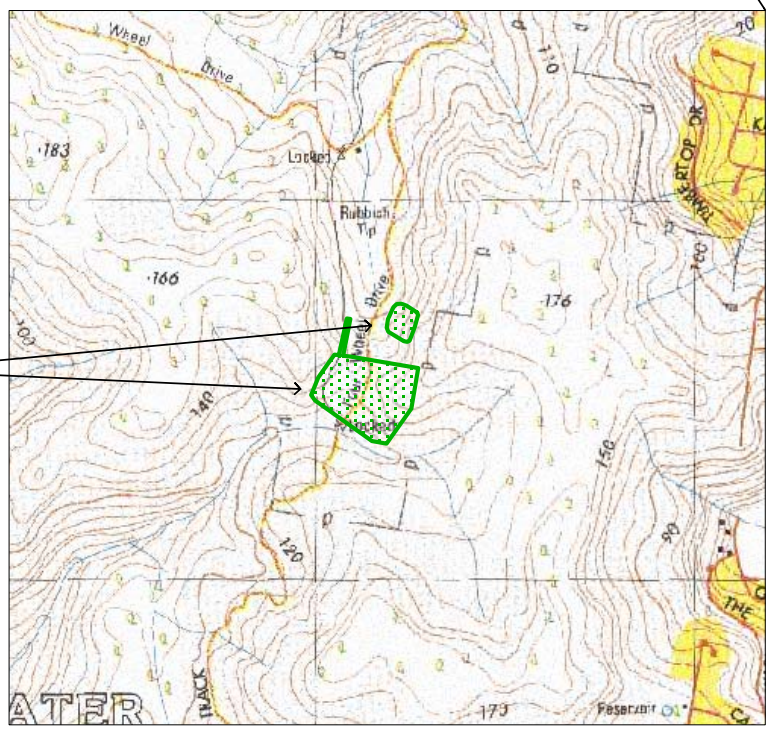
- URS (one copy)
- DEC (two copies)
- Darkinjung LALC (one copy)

5.6 Independent Review of Reports

Archaeological reports and the management recommendations contained therein will be independently reviewed by Aboriginal heritage staff of the Environment Protection and Regulation Division of the NSW Department of Environment and Conservation, the relevant Aboriginal community and the NSW Heritage Office.

Although the findings of a consultant's report will be taken into consideration, recommendations in relation to managing a heritage place should not be taken to imply automatic approval of those actions by the Department of Environment and Conservation, the Aboriginal community or the Heritage Office.

FIGURES



Acknowledgements: NSW Department of Lands 1:25000 topographic map series (1969-91)
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15 - 17 Henrietta Street
Chippendale
NEW SOUTH WALES 2008

Figure 1: Location of the Study Area in a regional context.

DATE: 13 December 2006

Checked by: CL/MT | File number: S4445

Location:-...4000\4400s\4445\Mapping\S4445 F1_locality.WOR

Scale: 0 0.2 0.4 0.6 0.8 kilometres

N W E S

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Chippendale
NEW SOUTH WALES 2008

Figure 2: Proposed Plan

DATE: 13 December 2006

Checked by: CL | File number: S4445

Loc:.4000\4400s\4445\Mapping\S4445 F2 layout.WOR

Scale: 0 50 100 150 200 metres

N W E S

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Chippendale
NEW SOUTH WALES 2008

Figure 3: Previously recorded Aboriginal archaeological sites listed on the AHIMS register at DEC within the wider Woy Woy region.

DATE: 13 December 2006
Checked by: MT
File number: S4445
Location:-..4000\4400s\4445\Mapping\S4445 F3_AHIMS.WOR

Scale: 0 75 150 225 300 375 metres

N W E S

Figure 3: Previously recorded Aboriginal archaeological sites listed on AHIMS, within the wider Woy Woy region.