BIOSIS
RESEARCH

Illawarra International Health Precinct, Huntley, Archaeological and Cultural Heritage Assessment, New South Wales

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- Sharralyn Robinson and Roy Stuart (Illawarra Local Aboriginal Land Council)
- Jamie Reeves, Rob Suansri and Sarah Tsesmetzis (Biosis Research Pty. Ltd.)

Cover Plate: View of rise situated in middle of Study Area, facing north east

ABBREVIATIONS

AHC	Australian Heritage Council
AHIMS	Aboriginal Heritage Information Management System
CHL	Commonwealth Heritage List
DEH	Department of Environment, Water Heritage and the Arts
GSV	Ground surface visibility
ICOMOS	International Council on Monuments and Sites
LALC	Local Aboriginal Land Council
LEP	Local Environmental Plan
LGA	Local Government Area
MGA	Map Grid of Australia – unless otherwise specified all coordinates are in MGA
NHL	National Heritage List
NNTT	National Native Title Tribunal
NPWS	National Parks and Wildlife Service (now part of DEC)
REP	Regional Environment Plan
RNE	Register of the National Estate
SHI	State Heritage Inventory
SHR	State Heritage Register

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SUMMARY

Biosis Research has been commissioned by La Vie Developments Pty. Ltd., to undertake an archaeological and cultural heritage assessment for the proposed development of a parcel of land at Huntley, NSW. The Study Area consists of a small property approximately 10.5 hectares of land situated south of Dapto, between the foothills of the Illawarra Escarpment and the Coastal Plain (Figure 1). A concept for the future development of the site has been prepared and preliminary discussions have been undertaken with local and state agencies (Figure 2).

No previously recorded Aboriginal sites were identified within the current Study Area. A 5 x 4 km database search of the greater area located 46 previously recorded Aboriginal archaeological sites, including one duplicate. The review of the known sites within a similar landscape along the western extent of the Coastal Plain and the adjacent Illawarra Escarpment identified the following types: open camp sites, open camp sites with shell, scarred trees and isolated finds.

The varied resource base associated with the different ecological zones of the region would have supported the local population of Aboriginal inhabitants. The presence of a rich archaeological record in the district provides physical evidence of the activities of Aboriginal occupants clearly suggest that the greater area was a focus for Aboriginal activities during prehistoric times.

A pedestrian survey of all impact areas was undertaken as part of this project. The survey included participation of representatives of the Illawarra Local Aboriginal Land Council. Consultation was undertaken with Roy Stewart in the field and areas of cultural heritage significance were noted. A copy of the draft report will be sent to the ILALC and recommendations were discussed. Verbal and written comments are yet to be received; but will be incorporated in the final report.

There have been considerable levels of ground disturbance to the Study Area since historic occupation first by the early settlers practicing dairy farming. In areas which have been disturbed by land clearance – dairy farming – all locations that would have been suitable for Aboriginal campsites are probably disturbed and any cultural material is not likely to be in their original context.

Overall, the ground surface visibility at the time of survey was very poor due to the length of the grass on the proposed development area, however, there were a few exposures due to the horse agistment and weathering to the site.

No new Aboriginal archaeological sites were identified during this survey. The rise in the middle of the Study Area was identified as an area of Archaeological potential, however, due to previous land-use and recent infrastructure development through this area, it is considered unlikely that any intact archaeological deposits remain.

SUMMARY OF RECOMMENDATIONS

Based on background research, site survey, statutory obligations and consultation with the Illawarra Local Aboriginal Land Council, the following recommendations are made in relation to the proposed development:

Recommendation 1 – Further Archaeological Work

Based on the results of this study and previous archaeological studies undertaken within the Study Area, no further archaeological work is required.

The Illawarra Local Aboriginal Land Council have requested that a representative from the Aboriginal community be on-site during the initial scraping of topsoil across the rise (area of archaeological sensitivity) to observe if any cultural material is exposed.

Recommendation 2 – Stop work provision: Aboriginal sites

All Aboriginal places and objects are protected under the NSW *National Parks and Wildlife Act 1974*. This protection includes Aboriginal places and objects which have not been identified in this report, but which may be identified during construction. Should any previously unidentified Aboriginal objects or places be identified during excavation and construction, all works must cease in the vicinity of the find and the following be notified:

- NSW Department of Environment and conservation
- A qualified archaeologist
- Aboriginal stakeholders

Recommendation 3 – Human Remains

In the case of skeletal remains the following process will be implemented.

- The find will be reported to police and state coroner
- La Vie Developments Pty. Ltd. and Cardno Forbes Rigby will be notified of the find
- Aboriginal stakeholders will be notified of the find
- NSW DECC will be notified of the find
- If the skeletal remains are of Aboriginal ancestral origin an appropriate management strategy will be developed in consultation with the Aboriginal stakeholders
- The find will be recorded in accordance with the *National Parks and Wildlife Act* 1974 (NSW) and the NSW NPWS *Aboriginal Cultural Heritage Standards and Guidelines Kit*
- This Aboriginal Heritage Plan will be amended to include the newly discovered Aboriginal ancestral remains in the management regime established by the plan.

1.0 INTRODUCTION

Cultural heritage legislation protecting Aboriginal and historic 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 post-contact settlement.

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 2 for a 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 has been commissioned by La Vie Developments Pty. Ltd., to undertake an archaeological and cultural heritage assessment for the proposed development of a parcel of land at Huntley, NSW. This development involves the construction of a major private hospital and health care precinct.

The Study Area consists of a small parcel of land approximately 10.5 hectares, situated south of Dapto near Penrose, between the foothills of the Illawarra Escarpment and the Coastal Plain (Figure 1). A concept for the future development of the site has been prepared and preliminary discussions have been undertaken with local and state agencies (Figure 2).

1.2 Aims

The following is a summary of the major objectives.

- Conduct a heritage register search to identify any previously recorded cultural heritage sites within the survey area on the Aboriginal Heritage Information Management System (AHIMS).
- Conduct additional background research in order to recognise any identifiable trends in site distribution and location.
- Consult with the Illawarra Local Aboriginal Land Council.
- Undertake a targeted survey of the Study Area where existing information is limited, Survey coverage should target landforms with high potential for Aboriginal heritage remains, as identified through background research.
- Record and assess sites identified during the survey in compliance with the guidelines issues by the NSW Department of Environment and Climate Change (DECC) and the NSW Heritage Office.
- Identify impacts to all identified Aboriginal and historic cultural heritage sites and places based on potential changes as a result of the proposed development.
- Make recommendations to minimise or mitigate impacts to cultural heritage values within the Study Area.

1.3 Consultation with the Aboriginal Community

As advised by the Department of Environment and Climate Change (DECC) the following Aboriginal organisations and stakeholders of the Illawarra area were contacted by Biosis Research and invited to participate in the archaeological survey, assessment and consultation process:

- Illawarra Local Aboriginal Land Council (Sharralyn Robinson and Roy Stewart)

2.0 HERITAGE STATUS AND PLANNING DOCUMENTS

2.1 Commonwealth Registers

2.1.1 National Heritage Registers

The *Environment Protection and Biodiversity Conservation* Act 1999 (Cth) (EPBC Act) establishes two mechanisms for protection of heritage places of National or Commonwealth significance. The National Heritage List provides protection to places of cultural significance to the nation of Australia. The Commonwealth Heritage List comprises natural, Aboriginal and historical heritage places owned and controlled by the Commonwealth and therefore mostly includes places associated with defence, communications, customs and other government activities.

Nominations to these two lists are assessed by the Australian Heritage Council (AHC), who also compiles the Register of the National Estate (RNE), a list of places identified as having national estate values. There are no management constraints associated with listing on the RNE unless the listed place is owned by a commonwealth agency.

APPLICATION TO THE STUDY AREA – NATIONAL HERITAGE REGISTERS

No items within the Study Area are listed on the National Heritage List or the Commonwealth Heritage List.

2.1.2 National Native Title Register

The Commonwealth *Native Title Act* 1993 (Cth) establishes the principles and mechanisms for the recognition, determination of Native Title for Aboriginal people.

The purpose of searching the register is to identify any Traditional Owner groups will current registered claims close to the Study Area that may identify themselves as relevant stakeholders with traditional knowledge or experience.

APPLICATION TO THE STUDY AREA

A search of the National Native Title Register, Register of Native Title Claims and Register of Indigenous Land Use Agreements was completed for the Study Area and no claims are listed. The search did identify those Traditional Owner groups will current registered claims close to the Study Area who may identify themselves as relevant stakeholders with traditional knowledge or experience.

2.2 State Registers

2.2.1 National Parks and Wildlife Act Registers

The Department of Environment and Climate Change (DECC) maintains a database of Aboriginal sites within NSW under the auspices of the NSW *National Parks and Wildlife Act 1974*. Aboriginal objects and places in NSW are legally required to be registered on the Aboriginal Heritage Information Management System (AHIMS) register.

The area searched on the AHIMS database was larger than the Study Area, as Aboriginal sites recorded within the wider area will provide a regional perspective on the types of sites that maybe expected to be found within the Study Area.

APPLICATION TO THE STUDY AREA **– *AHIMS Database***

A search of the AHIMS Database completed on 09/01/2009 identified 46 previously recorded Aboriginal sites, and one duplicate within a 5 x 4 km search area centred on the Study Area (see Appendix 3). No known sites are registered within 500m of the Study Area.

2.2.2 Heritage Act Registers

The NSW Heritage Office, part of the Department of Planning, maintains registers of heritage and archaeological items that are of significance to New South Wales.

State Heritage Register: The State Heritage Register (SHR) contains items that have been assessed as being of State Significance to New South Wales. The State Heritage Inventory (SHI) contains items that are listed on Local Environmental Plans and/or on a State Government Agency's Section 170 registers. Items on the SHI have been identified as having heritage significance, but have not been included on the SHR.

If an item or place does not appear on either the SHR or SHI this may not mean that the item or place does not have heritage or archaeological significance; many items have not been assessed to determine their heritage significance. An assessment is required for items that are 50 years or older. Items that appear on either the SHR or SHI have a defined level of statutory protection. This is discussed more fully in Appendix 2.

APPLICATION TO THE STUDY AREA

The Study Area contains no items that are listed on the State Heritage Register and no items listed on the State Heritage Inventory.

The NSW Heritage Act 1977 currently affords automatic statutory protection to 'certain relics' that form part of archaeological deposits. Sections 139–145 of the Act prevent the excavation of a relic, except in accordance with a gazetted exception or an excavation permit issued by the Heritage Council of New South Wales. Consultation and discussion with the NSW Heritage Office should

begin well before lodging an application for a permit to disturb or destroy a historical archaeological site.

APPLICATION TO THE STUDY AREA – NSW HERITAGE ACT 1977 RELICS PROVISIONS

There are no identified archaeological sites within the Study Area; however, the relics provisions are applicable to relics regardless of heritage listing. Archaeological sites that may be identified in the Study Area during survey will be protected by the relics provisions of the NSW *Heritage Act 1977*.

2.2.3 Environmental Planning and Assessment Act Registers

The *Environmental Planning and Assessment Act 1979* includes provisions for local government authorities to consider environmental impacts in land-use planning and decision making. Such impacts are generally considered in relation to the planning provisions contained in the Local Environment Plan (LEP) or regional Environment Plan (REP).

Local Environmental Plans: Each Local Government Area (LGA) is required to create and maintain a LEP that includes Aboriginal and historic heritage items. Local Councils identify items that are of significance within their LGA, and these items are listed on heritage schedules in the local LEP and are protected under the *EP&A Act 1979* and *Heritage Act 1977*.

The Study Area is in the Wollongong LGA. The relevant LEP is the *Wollongong LEP Schedule 1990*.

APPLICATION TO THE STUDY AREA – Wollongong Local Environmental Plan 1990.

The Study Area contains no items listed in the heritage schedule of the *Wollongong LEP 1990*.

Regional Environmental Plans: Under the EP&A Act, broad scale regional plans have also been developed that address cultural heritage resources that may extend beyond the geographic limit of one LGA. The following REPs with heritage provisions apply to parts of the current Study Area.

Illawarra REP No 1: The *Illawarra REP No. 1*. applies to the Kiama, Shellharbour, Shoalhaven, Wingecarribee and Wollongong local government areas. The REP provides a planning and decision making framework for how to best use land resources, improve quality of life and protect regional interests and investment. The Illawarra REP identifies the Illawarra region as possessing unique characteristics worth preserving and distinguishes items of cultural heritage.

APPLICATION TO THE STUDY AREA – ILLAWARRA REP 1986 NO 1

No items within the Study Area are listed in the heritage schedule of the *Illawarra REP Plan No. 1*.

2.3 Management Documents

Dallas and Sullivan (1995) also prepared an Aboriginal heritage planning study of the Wollongong LGA. This document describes the landforms of the Wollongong LGA and specifies the site types likely to be encountered in each landform unit. The current Study Area is located just to the south of the Wollongong LGA boundaries and as such the findings from this document are applicable to the current assessment. Based on the mapping of archaeological sensitivity for this study the following management conclusions relevant to this assessment are:

- Ridgeline areas: most likely to require further selected subsurface testing to ascertain the extent of any past Aboriginal occupation.
- Land between ridgelines and identified flood hazards are less likely to require further selected subsurface testing to ascertain the extent of any past Aboriginal occupation

3.0 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.

3.1 Geology & Landforms

3.1.1 Geology

The Illawarra region forms part of the Sydney Basin; a geological basin filled with near horizontal sandstones and shales of Permian to Triassic age overlying older basement rocks of the Lachlan Fold Belt. The Illawarra subregion of the Sydney Basin is characterised by Permian siltstones, shale, sandstones and interbedded volcanics on and below the coastal escarpment (Mills and Jakeman 1995:4).

The geology of the area is predominantly Permian-aged sediments of the Shoalhaven Group, including Gerrigong Volcanics and a small section of Berry Siltstone (Rose 1966). Berry Siltstone is found on the exposed low-lying parts of the Study Area. Permian aged Illawarra Coal Measures are found in the southern section, characteristically underlying the ridge tops, steep hill slopes and broad colluvial benches leading from the Illawarra Escarpment (Dallas and Sullivan 1995:15). Small sections of Quaternary Alluvium have been deposited along drainage lines in the low-lying northern sections of the Study Area.

3.1.2 Soils

Soils of the Study Area consist of a combination of the Fairy Meadow Swamp landscape, and the Shellharbour erosional soil landscape (Hazelton 1992).

- Shellharbour (sh)

Shellharbour (sh) soil landscape is present within the current Study Area. This landscape consists of rolling low lying hills with long sideslopes and broad drainage plains on Budgong Sandstone. The slop gradient of this landscape is commonly characterised as <20%, with broad convex crests and long ridges. The soil which occurs on the crests and upper slopes is deep >150cm Prairies Soils, brown Krasnozems occur on the midslopes; with the soils of the lower slopes and drainage plains being made up of Red Podzolic Soils and Prairie Soils (Hazelton 1992: 58). The

limitations of this soil landscape is that it is a water erosion hazard, with low wet bearing strength and high shrink swell in the sub soils (Hazelton 1992: 58). Similar to the Fairy Meadow soil landscape; which is also present in the current Study Area; the vegetation of this landscape is extensively cleared, with stands of tall open forest and closed-forest remaining in sheltered locations.

- Fairy Meadow (fa)

Fairy Meadow is a swamp landscape present in the alluvial plains, floodplains, valley flats and terraces below the Illawarra Escarpment. Generally, the topography of the Fairy Meadow soil landscape is flat, slopes being <10 m in height and inclined <5%. Fairy Meadow soils consist of moderately deep (50 – 100 cm) Alluvial Loams and Siliceous Sands on terraces. Prairie soils and Yellow Podzolic Soils are present on the drainage plains. The landscape is almost completely cleared, except for a few isolated strands of woodland or open forest. Flood hazard, low wet bearing strength, highly permeable topsoils and high water tables are all characteristic of the Fairy Meadow soil landscape (Hazelton 1992:97). Fairy meadow soils are located immediately west of the Study Area along Mullet Creek and its tributaries.

The characteristics of each soil landscape can influence the location and survival of archaeological materials. Fairy Meadow Swamp (depositional) and Shellharbour (erosional) are both aggrading landscapes characterised by the retention of parent materials and the deposition of transported soil materials

3.1.3 Topography

The geomorphology of the Illawarra region can be divided into three broad classes (Bowman 1971):

(1) the Plateau (tableland) including the Woronora Plateau and the Moss Vale Tableland;

(2) the Illawarra Escarpment and Slopes; and

(3) the Coastal Plain.

The study locality forms part of the western edge of the Coastal Plain situated between the Illawarra Escarpment and Lake Illawarra. This physiographic unit has formed from the gradual recession westward of the Plateau (Bowman 1971). The Coastal Plain is widest at the points where Mullet Creek has carved into the Escarpment, west of the Study Area (Bowman 1971).

The Coastal Plain is characterised as a mosaic of foothills, ridges, spurs, hillocks and floodplains with slopes varying from very gently inclined to steep with the occasional low cliff. Moving south to north the Study Area contains a combination of topographic units including the top of the broad flat ridgeline of Johnstons Ridge (elevation approx 172m ASL). This ridge leads eastward from the Illawarra Escarpment, with steeply inclined northern slopes (with drainage lines), declining to low relief, gentle slopes and eventually alluvial plain. The topography marks part of the transition from the high relief edges of the Illawarra Escarpment through to the alluvial plains below which

eventually connect with Lake Illawarra to the north east of the present Study Area.

3.2 Hydrology

Streams and creeks on the gently sloping coastal plains are unconfined by topography and have extensive floodplains. The topography of the area, combined with the available surface water and a high water table, has created associated swamp/wetland environments.

The Study Area is situated within the Mullet Creek catchment. Mullet Creek is a fast flowing, fourth order creek which drains eastward from the Illawarra Escarpment into Lake Illawarra. The catchment has an area of 73 square kilometres and consists of a series of temporary drainage lines and creeks originating near the base of the Escarpment flowing eastward into Lake Illawarra (Dickson Rothschild 2004:22). The upper reaches of the Mullet Creek catchment are subject to intense rainfall and the resulting runoff can cause serious flooding in the flat lower reaches adjacent to the Study Area (Webb, Mckeown & Associates 1987).

A minor tributary of Mullet Creek is situated north west of the Study Area.

Lake Illawarra is situated to the east of the current Study Area. Lake Illawarra is the largest estuarine lagoon on the south coast of NSW, covering an area of 33 square kilometres and extending over 9 kilometres in length and 5 kilometres in width. It receives salt water from the Pacific Ocean and fresh water from the Illawarra Escarpment (Roy 1984).

3.3 Climate

The climate within the Study Area is generally temperate with a maritime influence. Summers in the coastal regions are generally warm, while winters are mild (in the escarpment areas to the west, winters are cold). 'Moderate to high temperatures, high humidity, onshore winds and peak rainfall' (Hazelton 1992:4) characterise summer and autumn. One third of the mean annual rainfall occurs between January and March, with a secondary rainfall peak in June. Winter winds are predominantly westerly, producing drier, cooler conditions.

3.4 Flora

The margins of the Coastal Plains of the Illawarra region are characterised by mixed warm temperate and subtropical rainforest complexes on rich shale soils and alluvium under the escarpment, interspersed with patches of lowland forest and woodland communities. Therefore, the Study Area is situated within easy distance of several vegetation communities. Thee native plant communities occur within the Study Area including Lowland Woolybutt-Melaleuca Forest, Coastal Swamp Oak Forest and Floodplain Wetland (NPWS 2003).

Lowland Woolybutt-Melaleuca Forest can be characterised by the presence of *Eucalyptus longifolai* (Woollybutt), *E. globoidea* (Narrow Leaf Stringybark), *E. eugenioides* (White Strinybark) a dense subcanopy of *Melaleuca decora* (White Feather Honey Myrtle) and a

grassy understorey. *Eucalyptus tereticornis* (Forest Red Gum) occurs only occasionally. Patchy occurrences of *Eucalyptus pilularis* (Blackbutt) in the canopy represent a minor variation of the vegetation type (NPWS 2003; Robinson 1991).

Coastal Swamp Oak Forest is dominated by *Casuarina glauca*, with a mat of herbs, rushes and sedges covering the ground below, including *Phragmites australis (Common Reed)*, *Juncus kraussii* subsp. *Australiensis (Sea Rush)* and forbs *Atriplex australasica* and *Commelina cyanea* (Native Wandering Jew) are also common (NPWS 2003)..

Floodplain Wetland comprises *Typha orientalis* (Broadleaf Cumbungi), *Phragmites australis* (Common Reed) and *Eleocharis sphacelata* (Tall Spike Rush). Other species might include *Juncus usitatus* (Common Rush), *Triglochin procera* (Water Ribbons) and *Ludwigia peploides* subsp. *Montevidensis* (Water Primrose) (NPWS 2003).

These species would have provided a range of resources for Aboriginal people. Food, tools, shelter and ceremonial items were derived from floral resources, with the locations of many campsites predicated on the seasonal availability of resources.

3.5 Fauna

These vegetation communities supported a range of faunal resources that would have been utilised by Aboriginal peoples. Terrestrial and avian resources were not only used for food, but also provided (and often continue to provide) a significant contribution to the social and ceremonial aspects of Aboriginal life. Several species of animal were utilised including molluscs, fish, birds and terrestrial animals.

Open Forest (Foothills)

- **Mammals** found within open forest communities include swamp wallaby (*Wallabia bicolor)*, long-nosed bandicoot (*Perameles nasuta)*, eastern pygmy possum (*Cercartetus nanus)*, sugar glider (*Petaurus breviceps)*, common ringtail possum (*Pseudocheinus peregrinus)*, Mountain brush-tailed possum (*Trichosurus cunninghamii)* common wombat (*Vombatus ursinus)*, brown antechinus (*Antechinus stuartii)*, bush rat (*Rattus fuscipes)* and grey-headed flying fox (*Pteropus poliocephalus)*.

Estuarine (Lake Illawarra)

- **Birds** of several species have been identified in the Macquarie Rivulet Delta. These include Brown Quail, Australian Shelduck, Great Crested Grebe, Great Cormorant, Great Egret, Black Bittern, Purple Swamphen, Curlew Sandpiper, Sacred Kingfisher, Fairy Martin, King Quail, Australian Pelican, Intermediate Egret, Black-necked Stork, Dusky Moorhen, Whimbrel, Pied Oystercatcher, Caspian Tern, Plumed Whistling-Duck, Pacific Black Duck, Whistling Kite, Red-kneed Dotterel, Crested Tern, Musk Duck, White-fronted Chat, Little Egret, Striated Heron, Straw-necked Ibis, White-bellied Sea-eagle, Common Greenshank, Masked Lapwing, Little Tern, Black Swan, Grey Teal, Pacific Heron,

Royal Spoonbill and Kelp Gull (reference should be made to (Biosis Research 2009:??) for a full list of birds within the Macquarie Rivulet Delta).

- **Mammals** within the estuarine environment of the Macquarie Rivulet delta and the foreshores of Lake Illawarra include water rats (*Hydromys chrysogaster*) the ringtail possum (*Trichosurus vulpecular*), the bush rat (*Rattus fuscipes*) and the short-beaked echidna (*Tachyglossus aculeatus*).

- **Reptiles** found locally within estuarine environments include Eastern Water Skink, Pale Sunskink, Dark Sunskink, Weasel Skink, She-oak Skink, Common Blue Tongue, Red-bellied Black Snake and Black-bellied Swamp Snake.

- **Amphibians** including the Common Eastern Froglet, Brown-striped Frog, Bleating Tree Frog and Peron's Tree Frog are found in estuarine environments.

- **Fishes** found within Lake Illawarra include Yellowfin Bream, Black Bream, Blue Groper, Short-finned Eel, Long-finned Eel, Long-snouted Flounder, Mulloway, Australian Salmon, Silver trevally, Snapper, Stinkfish, Anchovy, Smooth Flutemouth, Whitebait, Sea Garfish, River Garfish, Flat-tail Mullet, Australian Bass, Estuary Perch, Yellow-finned Leatherjacket, Sea Mullet, Sand Mullet, Trumpeter Whiting, Large-toothed Flounder, Small-toothed Flounder, Blue mackerel, Sand Whiting, Black Sole, Yellowtail and Red Mullet (Biosis Research 2009:??).

- **Molluscs** found locally include *Anadara trapezia, Batiillaria australis, Bedeva paivae, Hydrobia buccinoides, Irus crenutus, Laternula tasmanical, Liloa hordeacea, Macoma deltoidalis, Nassarius burchardi, Pyrazus ebeninus, Salinator fragilis and Spisula Trigonella.*

Swamp (low-lying areas of Mullet Creek)

- **Birds** identified within the Frazers Creek Wetlands include Brown quail, Australian Wood Duck, Chestnut Teal, Australian Pelican, Purple Swamphen, and Musk Duck. Mallard, Pink-eared Duck, white-faced heron, Australian White Ibis, Whiskered Tern, Freckled Duck, Pacific Black Duck, Hardhead, Eurasian Coot, Straw-necked Ibis, Black Swan, Australasian Shoveler, Great Egret, Latham's Snipe, Australian Shelduck, Grey Teal, Swamp Harrier and Clamorous Reed-warbler (Biosis Research 2009:??). A more complete list of birds identified from Frazers Creek Wetlands is contained in Biosis Research 2009.

3.6 Resource Statement

The Coastal Plain of the Illawarra region generally provides a number of resources used by Aboriginal inhabitants. Lithic resources would have been accessible in the outcrops of siltstone, shale and tuffaceous sandstones of the Berry Siltstone formation, while coastal rock platforms provided areas where tools might be ground and sharpened and art might be engraved. Angular

cobbles and pebbles of fossilised wood have been recorded near the Study Area in the bed of Robins Creek (Sefton 1990:4).

A number of edible plant species would have been available. The general area includes several distinct ecotones including open forest, woodland, alluvial swamp and floodplain communities. Each ecotone hosted different floral and faunal species, many of which would have been utilised according to seasonal availability. Aboriginal inhabitants of the region would have had access to a wide range of avian, terrestrial and marine fauna and repeated firing of the vegetation would have opened up the foliage allowing ease of access through and between different resource zones.

Both floral and faunal species would have provided many resources in addition to food. For example, animals such as Brush-tailed Possums were highly prized for their fur, with possum skin cloaks recorded by the first settlers in the area. The cloaks were worn fastened over one shoulder and under the other. Kangaroo teeth were incorporated into decorative items such as head bands and beads were made from reeds and teeth. Plant resources were used in a variety of ways. Fibres were twisted into string which was used for a many purposes including the weaving of nets, baskets and fishing lines. String was also used for personal adornment. Barks were used in the provision of shelter, a large sheet of bark being propped against a stick to form a gunyah. Beaten and tied bark was also used to make torches (Field 1825:467, cited in Sullivan 1982 Table 6).

An example of some of the vegetal resources within that once thrived within the present Study Area that were used by Illawarra Aboriginal populations include are listed in Table 1 below.

Plant Species	***Part Used***	***Use***
Eleocharis sphacelata (Tall Spike Rush)	Tubers and rushes	- onion-shaped tubers eaten raw or cooked depending on their age - rushes were soaked in sea water and the liquid was used for treating open wounds
Melaleuca decora (White Feather Honey Myrtle)	Bark, nectar, leaves and stems	- bark peels off in strips and is used for wrapping food for cooking, making bandages and temporary raincoats - nectar rich blossoms can be soaked in water to make a sweet drink - leaves are boiled to make tea or soaked and used as a wash - burning or boiling leaves – steam or smoke inhaled to treat symptom's of cold, flu and sinusitis
Typha orientalis (Broadleaf Cumbungi)	Rhizomes, shoots and flower spikes	- rhizomes are roasted to provide starch and sugars, and the fibres from these can then be used to make string - new white-green shoots are eaten raw - the young flower spikes can be steamed and eaten like sweet corn

Table 1: An example of some vegetal resources utilised by Aboriginals (source: Percival & Stewart 1997)

By the 1870's dairy farming at Dapto and Avondale was being described as better than the standard practised in the rest of the Illawarra. The farms were described as cultivated and properly cared for and managed, the fences good, the pasturage excellent and the homesteads trim and orderly. The Evan's of Penrose contributed to the success of dairying in the area, and this quality filtered down to the smaller farms in the area.

(http://www.wollongong.nsw.gov.au/library/localinfo/dapto/history.html).

4.0 ABORIGINAL HISTORY

Historic accounts of Lake Illawarra and its hinterland which specifically reference the Aboriginal inhabitants are scarce. Some early ethnographic accounts (e.g. research compiled by Sullivan 1992 and Organ 1990) suggest that at the time of European occupation, a highly mobile, largely dispersed Aboriginal population occupied the region. It is thought that there were slightly higher populations near Lake Illawarra given the resource base associated with and accessible at the Lake.

Based on the varied environmental zones along the south coast it is unlikely that consistent, large scale movement from east to west was prevalent. However, Navin Officer note that a common theme within the ethno-historic data of the region describes the movement of people from the coast to the plateau lands, for seasonal, ceremonial commitments or the receipt of Government rations (2000: 35). It is likely that a formalised network of pathways and mountain pathways connecting east to west across the Illawarra escarpment and ranges existed.

The first European explorers in the area were Bass and Flinders when they travelled to Port Kembla in 1796. Flinders wrote about 'Canoe River' in his journal, making reference to the Lake Illawarra entrance. Lake Illawarra also provided a rich variety of food resources. Allan Cunningham, Government Botanist, wrote in 1818:

> *…we came out upon the margin of the Lake, which is extensive, but very shoaly on its expanded surface. Pelicans, ducks and teal and some other aquatic birds were swimming, and in detached parties I observed natives of the Lake…in canoes, spearing fish, which is said to be abundant.*

Unfortunately there is some bias is in the ethnographic record regarding accounts of Aboriginal subsistence patterns. Most accounts describe a coastal economy as described above and there is little discussion of Aboriginal people's use of the forested hinterland in the region. Sullivan notes that rather than this representing an accurate reflection of the true activities of the local groups, to the early settlers it is more likely that individuals or small groups exploiting forested environments were not as obvious as those observed on a bay, fishing in canoes or cooking on the shore (Sullivan 1982:12).

Sullivan in her 1982 synopsis of Aboriginal usage of forest environments collated ethnographic accounts of the material culture and food sources utilised by South Coast Aboriginals. A summary of her listings for the Illawarra area are presented below.

Date	Location	Subject	Comment	Source
29 Oct 1818	Illawarra	Seed	Fetilo ? longorilius – a large spreading tree. Rivulet banks etc – the red arella? of the seed of this tree is eaten by the natives	Cunningham 1816-19, cited in Sullivan 1982: Table 4

1845	Illawarra	Bark Canoes	'The natives who reside upon the coast use canoes…a gum tree with a thick and tough bark is selected. This is girdled and the bark slit so that by care, a piece of it may be stripped from the large tree enough to make the canoe…14 feet long and 7 feet wide…bark charred on the inside…folded in each end…edges are fastened by cords and wooden rivets…they use paddles of different sizes.	Wilkes 1845:193, cited in Sullivan 1982: Table 6
1845	Illawarra	Bark Huts	'At Illawarra, their huts were made be setting two forked sticks upright, on which another was laid horizontally, on the latter, one end of pieces of bark, taken from the nearest gum tree, is laid, while the other end rests upon the ground'	Wilkes 1845:184-185, cited in Sullivan 1982: Table 6
1825	Illawarra	Torches	'they make torches of bundles of bark, beaten and tied up'	Field 1825:467, cited in Sullivan 1982: Table 6
24 Oct 1818	Illawarra	Fishing Lines	'…my native guide was [?] himself with long pieces of the stringy tough bark of Curragon (*Hibiscus tetenphyluss*) for fishing lines'	Cunningham 1816-19, cited in Sullivan 1982: Table 6
26 Oct 1818	Illawarra	Water Bucket	'I yesterday observed they had their [?] water in buckets made of the leaf schecuttes of some palm, which they call Baugla [?] which they informed me grew under the mountain'	Cunningham 1816-19, cited in Sullivan 1982: Table 6
1825	Illawarra / Shoalhaven	Water Bucket	'Here we saw the first seaforthia elegans, a palm equal in size to the cabbage tree, with pinnate, ferny or cocoa-nut leaves, from whose broad membranous leaf-stalks, or spathae of the flowers, the natives make their water buckets, simply by tying up each end, like their bark canoes'	Field 1825:464, cited in Sullivan 1982: Table 6
1843	Kiama / Dapto	Kangaroo	'the females had their hair ornamented with kangaroo teeth'	Backhouse 1943:428, cited in Sullivan 1982: Table 6

Table 2: Ethnographic accounts of Aboriginal resource use

By 1816-1817, free-settlers started arriving in the area. The first land grants in the region were marked out by Surveyor General John Oxley and significant land clearing was soon undertaken. Early European land use predominantly comprised cedar-getting, agriculture and dairying. Conflicts arising from land tenure and occupation occurred, but by this time, diseases such as smallpox, whooping cough, TB and influenza had devastated the traditional structure of Aboriginal society. By the 1850s, a township had been developed around the port of Shellharbour and the lake

catchment had been transformed from forest into grassland and Aboriginal populations had been largely dislocated and dispersed.

Ethnographic accounts of Aborigines following white settlement describe the blend of Aboriginal and European accoutrements employed by Aborigines trying to maintain a traditional, hunter-gatherer lifestyle. The Reverend James Backhouse, in a journey to the 'Shoal Haven' (south of the Study Area) in 1836 met many parties of Aborigines, whom he described as being partly clad in European clothes and subsisting on both traditional and European sources of food. Traditional tools were also modified to take advantage of European materials, with one party of Aborigines carrying a death spear barbed with pieces of glass (Backhouse 1843:433-444).

Closer to the current Study Area there is reference to subsistence use by the local Aboriginal people and some description of their interactions with those Europeans settling in the area. While many practices had been greatly restricted by the increasing presence of the European settlers such early observations can still help to provide information on where Aboriginal people camped during this period of early contact and some of the activities that took place here.

For example, there is reference to the friendly interaction between local Aboriginal people and the Osborne family along Marshall Mount Creek to the north of the current Study Area. Henry Osborne and his family settled at Marshall Mount in 1831.

> *He used to supply them with meat and fruit every Christmas as it was their custom to camp opposite to where the school now stands. They spent their time throwing spears, boomerangs and other forms of sport, although the older settlers told of skirmishes along the banks of Marshall Mount Creek at times (*S. Thompson 1975:13 referenced in Organ 1990:171).

A few other ethnographic accounts exist that describe names, events and places nearby to the current Study Area. They have been included in the Table 3 below:

Location	*Place Name*	*Description*	*Source*
	Marshall Mount Creek	Northern branch of Macquarie Rivulet Marshall Mount Creek known as Johnstons Creek – referred to as *Yarra Yarra*	Campbell in Organ 1990:465
	Albion Park (Terrys Meadow)	*Tupma, Lupnea, Teeparia, Tupnia*	Organ 1990:463, 485 and 486
29300 617215	Bushgrove Aboriginal Camp	Aboriginal encampment during period of early European settlement on the 'Bushgrove'estate, next to Macquarie Rivulet. General location only. Reported by Archibald Campbell 1898.	Campbell reference in Organ 1990:466

29540 617305	Johnstons Meadow possible location of 1818 Macquarie Rivulet vigilante attack	This area of river flat grasslands may have been the location of an attack on local Aborigines by a European vigilante group in 1818. Contemporary police records indicate this incident occurred after the Aborigines were encountered at 'Johnston's Meadow' on the Macquarie Rivulet and that a boy 'native of MineMura' was shot in the head but subsequently survived. General location only. Some contemporary groups believe this incident occurred at Shellharbour ('Ararinjong') swamp	1818 incident ref Organ 1990:101-104
29438 617200	Albion Park Aboriginal Camp	Aboriginal camp at Albion Park during early settlement of Macquarie Rivulet valley, reported by Archibald Campbell to be on the river banks on the hillslope west of the town churches, and by Stan Thomas as 'opposite to where the school now stands'.	Campbell in Organ 1990:466 Thomas 1975:13
29570 617250	1840s Battle between the Illawarra and Broughton Creek tribes	A frequently cited battle of more than 400 individuals between king Hooka's Illawarra tribe and the Broughton Creek Tribe in around 1842 occurred somewhere in the area between Albion Park railway station and Albion Park township.	Young in Organ 1990:375, Dollan in Organ 1990:492&494, Thomas 1975:12
28730 617190	Tullimbar	Reported name of the territorial centre, or focus, of the tribe which occupied the Macquarie Rivulet valley, an area known as Tongarar. General location only. The tribal territory was said to include all land along the Macquarie Rivulet to the foot of Wingecarribee Mountain (Maquarie Pass). 'Tullimbar' (or Tullumbar) was the recognised leader or 'great warrior' of the local tribe numbering several hundred in the first half of the nineteenth century.	Campbell in Organ 1990:465, Thomas 1975:11-12

Table 3: Ethnographic accounts of places of Aboriginal significance (source: Navin Officer 2000)

The arrival of European colonists wrought swift and catastrophic change to the Aboriginal people of the Illawarra region. Europeans began appearing in the region before the end of the eighteenth century, and by the first decades of the nineteenth century a forestry industry had begun. Other industries began to become more prevalent in the region, including pastoralism and dairying, bringing more and more non-Aboriginal people into the area resulting in restricted access to the traditional hunting grounds of the Tharawal and Wodi Wodi. Conflict, disease and dispossession took a terrible toll on the Wodi Wodi and Tharawal peoples. In 1820, approximately 3000 Aboriginal people were living in the Illawarra, but by 1899 their numbers had declined to only 33 people of non-mixed descent. Today many Wodi Wodi and Tharawal people continue to live in the Illawarra.

4.1 The Archaeological Record

4.1.1 Regional Background

Numerous archaeological investigations have been conducted along the south coast corridor of New South Wales in the past 30 years. Studies have predominantly focused on coastal and estuarine zones, however in recent years the focus has widened and knowledge of forest hinterland zones is also expanding.

The majority of south coast sites date to the last 6000 years when the sea-level stabilised (the Holocene stillstand). Prior to this, sea-levels were lower and the coast-line was located approximately 14 km to the east. Sites older than 6000 years are rare, as most would have been inundated by the rising sea. Pleistocene-aged Aboriginal sites in the south coast include those at Bass Point, dated at 17,010+-650 BP (ANU-536) (Bowdler 1976:254); Burrill Lake Rockshelter, dated at 20,830+-810 BP (ANU-138) (Lampert 1971:122); Bulee Brook 2 Rockshelter, dated at 18,810+-160 BP (ANU-9375) (Boot *pers. comm*. 1/06).

A variety of Aboriginal sites have been identified during the course of archaeological investigations along the coastal plains, foreshores, foothills and escarpments of the Illawarra region. These included artefact scatters, isolated finds, coastal, intermediate and estuarine middens, rock shelters with art and/or deposit, scarred trees, ceremonial sites, grinding grooves, burial sites and potential archaeological deposits.

From these findings, several studies of site patterns and distribution have been completed for the South Coast. Lampert (1971:114-130) identified three basic groups of site types:

- Specialised foreshore sites focused on exploitation of coastal resources such as fish, shellfish and marine birds (e.g. Durras North, Wollumboola and Wattamolla). Specialised fishing equipment including spears tipped with bone points and shell fish hooks were used at such sites.

- Specialised estuarine sites focussed on the exploitation of inland resources (e.g. Shoalhaven Creek and Bomaderry Creek). These sites contain evidence of estuarine fish and shellfish exploitation.

- Combination sites located beside creeks or estuaries near the sea shore where a mix of inland and coastal resources was exploited (e.g. Burrill Lake, Currarong and Curracurrang).

More recently, further research in surrounding areas has resulted in archaeological sites being identified in a greater diversity of areas. For example, the use of forest hinterland resources has now been documented as a result of studies by Poiner (1976), Byrne (1983), Boot (1994, 2002) and Knight (1996).

Several regional patterns have also been identified in the Aboriginal cultural heritage record in the Illawarra region. In 2001 Navin Officer prepared the Shellharbour City Council Aboriginal Heritage Study incorporating similar landscapes directly south of the present Study Area.

Based on examination of background variables, Navin Officer generated a predictive model for site locations (2000:51-52):

- Sites are likely to occur at varying densities in all broad topographic zones; however, a range of micro-topographic variables can effectively predict topographies which are archaeologically sensitive. These include: relatively level ground without significant surface rock, proximity to a freshwater source and locally elevated and well-drained ground.

- Sites tend to be situated at or close to ecotones – the areas where different environments meet.

- Artefact occurrences, detected as isolated finds or surface scatters of artefacts and/or subsurface archaeological deposits, are likely to be the most common site type within the City Council area. Isolated finds can occur anywhere in the landscape and may represent the random loss, deliberate discard of artefacts, or the remains of dispersed artefact scatters.

- Artefact scatters (also termed open camp sites), are most likely to occur on level, well-drained ground, either adjacent to sources of freshwater and wetlands, or along the crests of spurs and ridgelines.

- Ridge and spurlines which afford effective through-access and relative to the surrounding landscape will tend to contain more and larger sites.

- The crests of low relief spurs which extend into and across valley floor flats are likely to be a focus for occupation due to their well drained and elevated context in close proximity to a range of exploitable environments.

- Estuarine midden sites are normally located close to the estuarine environment, on elevated ground.

- Coastal middens are frequently located on or near rocky headlands or rock platforms, adjacent to a creek mouth or hind-dune water sources. Smaller and lower density middens comprising sandy-shore shell species are frequently exposed in hind dune swales.

- Sites containing both midden shell and lithic material are likely to occur on elevated ground adjacent to wetlands or valley floor drainage corridors. The following topographies fall into this category: low gradient basal colluvial slopes, terminal spurline crests, alluvial terraces, and valley-floor sand bodies.

- Burial sites are generally found in landforms characterised by a relatively deep profile of soft sediments, such as aeolian sand and alluvium. Burials characteristically occur in the deposits of occupation sites such as middens.

- Scarred trees may occur in all topographies where old growth trees survive, either as isolated trees or part of remnant or continuous forest.

- Rock shelters are likely to contain evidence of Aboriginal occupation if they are relatively dry, have a level floor with a significant proportion consisting of sediment rather than rock, are at least 1 m high, and are close to a water source or major ridgeline. Shelters with larger internal spaces which comply with these criteria are more likely to have occupation evidence than smaller shelters. In topographies where rock overhangs are rare, even small sheltered spaces may have been occupied. Occupation evidence may be in the form of occupation deposit, pigment art on the wall and ceiling, grinding grooves and (rarely) engraved art.

- Engraving sites in open contexts (not in a rock shelter) are very rare in the southern Illawarra region. Sites of this type may occur on relatively level sandstone platforms, situated either on crests or on streambed rock exposures. Rock types which weather to form a smooth and even surface are favoured for engravings.

- Grinding grooves may occur singly or, more commonly, in groups and are typically situated close to or within a local water source, such as a streamline or pothole. Grinding grooves typically occur on fine grained, relatively level sandstone platforms in the upper catchments of streamlines. However, in topographies where sandstone is scarce, any suitable surface exposure may be utilised, regardless of its proximity to water.

In their Aboriginal Heritage Planning Study of the Wollongong LGA Dallas and Sullivan (1995) describe the local landforms and specify the site types likely to be encountered in each landform unit. The current Study Area is located within the Wollongong LGA boundaries and as such the findings from this document are applicable to the current assessment. The following conclusions based upon their mapping of archaeologically sensitivity landforms which are relevant to this assessment include:

- Ridgeline areas: most likely to require further selected subsurface testing to ascertain the extent of any past Aboriginal occupation.

- Land between ridgelines and identified flood hazards are less likely to require further selected subsurface testing to ascertain the extent of any past Aboriginal occupation.

4.2 Regional Overview

Within the greater Wollongong area a number of heritage assessments have been undertaken. These are either development-driven consultancy reports or are research and site-management based investigations. Historically, investigations have been biased towards the coastal area and the occupation sites that frequently occur there. This is reflected in the location and pattern of sites recorded in the region (Figure 2). As discussed previously, work has also recently started to consider the forested hinterland and escarpment foot hills as a significant contributor to Aboriginal

resource procurement.

A growing number of archaeological surveys have been conducted between the hinterland and the coast as a result of increased development activities, including the present Study Area. Considerable survey has been undertaken along the coastal plain of the mid and far NSW south coast have produced the following results (Byrne 1983, 1984, ANU Archaeology honours student research program):

- Significant densities of artefact scatters can occur on major ridgelines
- Ridgelines may have been used as preferred or convenient travel routes along and across the resource zones of the coast and hinterland

From these findings Navin Officer conclude that the ridgeline complexes in the Shellharbour LGA formed an important access corridor between the resources of the coastal plain and the inland sandstone plateau (2000: 51).

Furthermore, as requirements for new housing and industry increase in the region pockets of undeveloped or farming land - in particular the foothills and flats towards the Escarpment – are now being targeted for rezoning and development and more archaeological assessments are being undertaken. The West Dapto release area, scheduled for development by the Wollongong City Council is located near by the current Study Area and several reports have been commissioned to address the Aboriginal archaeological cultural heritage within this area and its subsequent management.

The following investigations have also been undertaken within a similar landscape to the current Study Area:

Sefton (1980) undertook an archaeological survey of the proposed transmission line routes in the west Dapto-Yallah Area of the city of Wollongong. During this survey two archaeological sites were identified. Registered site 52-5-0123 consisted of one isolated artefact made from fossilised wood and site 52-5-0122 included a sparse scatter of seven artefacts made from chert, jasper and rhyolite.

Haglund (1983) carried out an archaeological survey and inspection of test pits excavated by back-hoe at the proposed Wongawill Emplacement site for Longworth and McKenzie on behalf of Australian Iron and Steel Pty. Ltd. This excavation identified two previously unregistered archaeological sites; both were stone artefact scatters.

McIntyre (2005) undertook an archaeological survey of a proposed coal transport route from Huntley Colliery to Tallawarra power station. This survey involved looking at two proposed routes for transport and the area between these two routes. Five isolated artefacts and three open sites were found, one of which had two scarred trees associated with it (2005:11) Due to limited visibility Haglund suggests that there is a possibility that other similar artefacts may still exist in the area.

Sefton (1990) was commissioned to undertake and archaeological survey of the West Dapto Stage One Release Area. The objectives of this study were to review the West Dapto Archaeological Potential study and other relevant archaeological studies post 1984 as well as to undertake field work to identify any areas of potential archaeological deposit or remains. During this survey three previously unregistered sites were identified. These sites consisted of two scarred trees and an artefact scatter.

Silcox (1993) undertook an archaeological survey and assessment of a 20 ha subdivision site at West Dapto, to the south of Bong Bong Road. Due to poor ground surface visibility no Aboriginal sites were located during the initial survey, however, three areas of archaeological sensitivity were identified. All were elevated, drained areas adjacent to a Mullet Creek tributary. Silcox noted that any artefacts located in these areas may have been buried by post-depositional sediment movement. The spur crest above the creek line was also highlighted, however it was noted that artefacts originally located here are likely to have moved down slope from landform erosion.

A subsequent excavation of three areas of potential archaeological sensitivity identified by Silcox (1993) was undertaken by Saunders for Navin Officer (1993) and five Aboriginal artefacts were recovered from one location (WD1), though they were not considered to be in-situ. No artefacts were identified in Area WD2 and area WD3. Within the tested areas the potential for archaeologically significant sites or deposits was considered to be low and it was recommended that a Consent to Destroy application for the identified materials be submitted.

Koettig (1992) conducted an assessment of Aboriginal sites for the electrification of the Dapto to Kiama railway line. The study location was to the east of the present area and landforms surveyed included the low lying coastal plain and foothills. No sites were located.

Navin Officer (1993) completed an archaeological investigation of a proposed residential subdivision on the southern side of Bong Bong Road, West Dapto. This investigation follows on from Silcox's 1993 recommendation that the site had three areas of potential archaeological sensitivity. Area WD1 was divided into five transects which were then sampled with a 35 test pits. Five artefacts were located in this area. WD 2 had a single transect running through it with a total of five test pits being excavated, again no new artefacts were located. The final area WD 3 was only subject to three test pits as it has a similar topography as WD 2, again no new artefacts were identified.

Navin Officer (1997) undertook an archaeological investigation of proposed residential subdivision Lot 1 in DP253917, Mount Brown road in South Dapto. During this survey there were no new archaeological sites identified in the proposed development site.

Navin Officer (2002) conducted an Indigenous heritage assessment for the Smiths Lane, Wongawilli rezoning application. The Study Area was located within the east-facing slopes of the Illawarra Range and the topography consisted of moderate to low gradient, roughly northwest-southeast oriented, descending spur lines meeting the fluvial corridor and associated valley floor of the Mullet Creek catchment area. Navin Officer note that the possible paucity of sites in this region can be attributed to lack of ground surface visibility hindering site detection; as well as the

likelihood that these areas represent a relatively less economically attractive area than the adjacent coastal and estuarine margins (2002: 9). No Aboriginal sites were identified. However several areas of limited archaeological potential (PAD) were noted. These included the main northern spur line and small locally elevated areas adjacent to the main (northern) Study Area creek line.

Dallas and Navin carried out large-scale subsurface testing in an area of ridgelines and alluvial flats in Western Illawarra (1987) and concluded that the most likely site type to be encountered in the foothills and ridges of the Illawarra are low density artefact scatters. Based on the similarities in landforms to the current Study Area it is possible to extrapolate a predictive model based upon these previous findings.

Biosis Research (2006) completed an archaeological sub-surface testing of Tallawarra pipelines 1 & 2 in Yallah, NSW for TRUenergy. This program involved the manual excavation of 36, 1 x 0.5 m test pits along the proposed pipeline route. A total of 136 artefacts were recovered from this process. The higher densities of artefacts were recovered from two sites along the proposed Tallawarra pipeline no. 2. These areas are both on elevated positions close to the aggraded Duck Creek channel and suggest an area that would have been good for frequent occupation and utilisation. The main function of this area appears to be stone tool production due to the presence of cores, cortical flakes, waste flakes and retouched tools. Based on the tool types described other activities that may have occurred at these sites include: hunting, wood or hide working and food processing.

AMBS (2006) completed an Aboriginal Heritage Management Plan for the West Dapto Release Area (WDRA). This study was commissioned by the Wollongong City Council (Russell 2006). From the initial survey program 24 archaeological sites – 13 open camp sites, 6 isolated finds, 5 scarred trees - were located within the boundaries of the WDRA Study Area. These were positioned on all landforms including creek lines (6), alluvial flats (3), spanning creek lines and alluvial flats (3), hillslopes (8) and spur crests (4). A second stage of subsurface testing of a $100m^2$ area (100 x $1m^2$ test pits) was undertaken across all representative landforms of the Mullet, Duck and Marshall Mount Creeks catchment area. A third stage of testing was carried out at Darkes Road Town Centre and Bong Bong Road Town Centre.

A total of 425 artefacts (353 from within < 20cm of deposit) were uncovered from the following landscape contexts:

- Hillslopes (158, of which 146 were from one test pit)
- Alluvial flats -Pleistocene and Holocene terraces more than 10m away from stream channels (118)
- Streams- edges of Pleistocene and Holocene terraces within 10 m of stream channels (86)
- Spur crests (63)

A range of raw materials were uncovered including, chert, quartz, silicified wood, quartzite, silcrete, silicified tuff and fine-grained siliceous. Artefact types included broken flakes,

flakes, flaked pieces and cores. The range of raw materials and artefact types is considered characteristic of the region.

Russell concluded that from the known site patterning it is likely that additional archaeological sites may occur throughout all land forms of the WDRA –although at varying site and artefact densities- and subsequently all parts of the Study Area are considered to have some archaeological potential. The report recommended further investigation and management of those areas considered to have higher archaeological potential, including a number of spur crests within the Mullet Creek corridor, the benched footslopes within the Escarpment foothills adjacent to creek lines and the lower tributaries of major creeks (Russell 2006: X). These landforms would have provided camping sites, functioned as travel routes or provided a range of resources.

Areas of cultural value highlighted by the Aboriginal stakeholders throughout the development of this report are closely related to the archaeological record and the natural environment (Russell 2006: VIII). All archaeological sites were identified as having value, with the connection between cultural and natural values being emphasised. Large scatters and scarred trees were considered of higher significance, as were those sites retained within a natural setting. Conservation of important archaeological sites and natural areas such as creek lines and vegetated areas was a common theme identified among the Aboriginal stakeholder comments (Russell 2006).

Biosis Research (2007) was commissioned by Daly International on the behalf of Telstra to conduct a cultural heritage assessment for proposed Calderwood Telecommunications compound at Shellharbour, NSW. No previously recorded Aboriginal sites were identified within a 5 km x 4 km search area encompassing the predicted impact areas associated with this proposal. A wider search of known sites within the area identified the following types; axe grinding grooves, open camp sites, isolated finds. During this survey one flaked artefact was identified on a raised exposed area between two dry creek beds.

Biosis Research (2009) undertook an Aboriginal cultural heritage assessment for Connectland Pty. Ltd. for the proposed Illawarra Employment and Teaching Centre West Dapto, City of Wollongong. There were four previously recorded archaeological sites located in a 5 x 4 km radius around the Study Area, these sites consisted of isolated artefacts and open camp sites. During the field survey one isolated flaked artefact was identified.

A number of other reports have identified the following archaeological characteristics within similar landscape zones to the present assessment. Sefton (1984) concluded that small artefact scatters are likely to be found on level areas of spur ridges and adjacent to creeks in the foothills. Byrne suggested that ridgelines provided an access route through rugged hinterland and that flat areas and saddles were more favoured as site locations for longer term or repeated visits than slopes > 15° (Byrne 1983:12-13). He also argues that the forests were used infrequently by small groups operating from base camps in adjacent environments such as the woodlands, coast or estuaries and not for camping and longer term stays (Byrne 1983). Navin (1987) concluded that artefact scatters are typically small and sparse and are located on dry level ground both on ridgelines in the foothills and on the coastal plain and usually located within 50m of drainage lines.

In addition to academic and consultancy reports, local Aboriginal communities have become increasingly active in recording their cultural remains. These records have the added benefit of identifying *places* and landscapes of value to Aboriginal people. Aboriginal *places* may not have any archaeological (physical) indicators, yet remain a significant component of contemporary Aboriginal understanding of heritage value.

4.2.1 Registered Aboriginal Sites

A search of the NSW Department of Environment and Climate Change (DECC) Aboriginal Heritage Information Management System (AHIMS) database on 9 January 2009 identified 46 known sites within a 5 km x 4 km search encompassing the Study Area and its surrounds (52-5-0398 and 52-5-0409 appear to be duplicates bringing the number to 46). No known sites are registered within 500 m of the Study Area. Details of specific site locations are considered sensitive and have not been included in this report.

The AHIMS database reflects Aboriginal sites that have been officially recorded and included on the list. Large areas of NSW have not been subject to systematic, archaeological survey. As such AHIMS listing may reflect previous survey patterns and should not be considered a complete list of Aboriginal sites within a given area.

Of the 46 sites identified in the greater search area, open camp sites with artefacts occurrences are predominant, comprising 35 sites. Within this overall grouping, there were four registered open camp sites with artefacts and shell, four open camp sites with shell, one open camp site with Potential Archaeological Deposit (PAD), two scarred trees, one isolated artefact and one open camp site with scarred tree.

Site ID No	*Site Name*	*Site Type*	*Site Location*
52-5-0070	WDRA_AX_06	Open camp site, 4 chert artefacts recovered from excavation.	In paddock adjacent to creek line. Near junction between Cleveland and Avondale Roads

Table 4: Details of Aboriginal site located within 200 m of the Study Area

4.3 Predictive Statement and Discussion

A review of the AHIMS database and registered sites indicates that a large number of sites have been identified on the lower footslopes and alluvial plains of the coastal strip between the Illawarra Escarpment and Lake Illawarra. Limited studies have been carried out in the pocket of land directly below the Escarpment. Finds to date have been sparse to absent.

Based on background environmental information, data compiled from the DECC Aboriginal Heritage Information Management System, in conjunction with the results of Aboriginal archaeological investigations conducted within the wider region, a broad predictive model for the current Study Area can be provided. This predicative model has taken into account disturbance

levels within the Study Area given the recent historic and industrial use of much of the area.

4.3.1 Sites

Open campsites, artefact scatters, isolated finds and PAD

These sites represent the prevalent site type identified around the Study Area, especially on level, well-drained topographies and thus could potentially occur within the current Study Area. However, due to the predicted levels of site disturbance through European occupation, settlement and development, the probability of such sites surviving is moderate to low.

Open campsites (artefact scatters) are likely to be the most prevalent site types.

- Artefact scatters are most likely to occur on level, well-drained ground adjacent to sources of freshwater such as the creeks and tributaries dissecting the Study Area.
- They are also more likely to be identified on older soil deposits rather than more recent alluvium.
- Isolated finds are likely to occur anywhere in the landscape.
- Potential archaeological deposits may be found in areas where intact soil profiles remain. There is moderate potential for Aboriginal objects to be identified in the Study Area and a moderate to low potential for these to be contained in stratified soil units depending on the level of disturbance in the area.

– It is likely that isolated finds will occur within the Study Area

Middens

Middens are also among the most common Aboriginal sites identified in the Illawarra coastal plains region. Within the Illawarra, sites containing both midden shell and lithic material have been known to occur on elevated ground adjacent to wetlands such as low gradient basal colluvial slopes, terminal spur line crests and alluvial terraces, or valley floor drainage corridors and sand bodies such as beach dune systems.

– It is unlikely middens will be identified in the Study Area given the topography of the area and its distance from Lake Illawarra.

Scarred Trees

Scarred trees can be expected to occur in all landscapes where stands of old growth timbers remain. There is a low likelihood of such stands remaining within the Study Area given rural development in the district. Any isolated remnant trees may preserve evidence of Aboriginal scarring. There is low to moderate potential for scarred trees to be present within the Study Area.

- Scarred trees are likely to occur in all topographies where old growth trees survive. Given the land clearing and general ground disturbance that has occurred in the Study Area it is unlikely that such trees remain within the Study Area.

Burials

Aboriginal burial sites in the Illawarra region are generally situated within deep, soft sediments such as Aeolian (wind) sand or alluvial (river deposited) silts. Several burials have been identified around Lake Illawarra in midden deposits on the northern foreshore / lake entrance area and Windang peninsula. Burials tend to become visible where there has been some disturbance of sub-surface sediments or where erosion processes have exposed them.

- Burials may occur within the current Study Area where deep deposits of alluvial soils have been identified along major creek lines such as Mullet Creek.

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.

Aboriginal Ceremony and Dreaming Sites

These types of highly significant sites tend to occur at places where the connections and pathways between the physical and spiritual worlds are realised. They tend to be associated with unusual or distinct features in the landscape. They may not have any archaeological indications of significance and may be preserved through oral traditions and living memory.

- Distinct landscape features such as ridge tops and waterholes found within the Study Area may have represented ceremonial sites; such sites can be determined through onsite Aboriginal consultation.

Post-Contact Sites

These are sites relating to the shared history of Aboriginal and non-Aboriginal people of an area. Many of these sites can hold special significance for Aboriginal people and may include places such as missions, massacre sites, post-contact camp sites and buildings associated with post-contact Aboriginal use. This site type is usually known from historical records or knowledge preserved within the local community.

- It is considered unlikely that any additional, unregistered post-contact sites will be present 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.

– Aboriginal places of cultural significance in the current Study Area can be determined through onsite Aboriginal consultation.

4.3.2 Landscapes

Based upon the predictive site modelling above it is possible to identify landscapes within the Study Area as having potential higher aboriginal archaeological sensitivity including a number of flat ridge crests, the benched foot slopes within the Escarpment foothills adjacent to creek lines and the lower tributaries of major creeks These landforms would have provided camping sites, functioned as travel routes or provided a range of resources

Creeks and water sources

The creek systems in the region appear to have been used as corridors for movement between the coastal strip and the lake and uplands' (Dallas and Sullivan 2005:67). Dry elevated and level ground near creek lines may contain the remains of campsites, such as hearths and artefact scatters.

Ridge and rolling hills

Ridge and rolling hills which afford effective through-access may contain the remains of short-term campsites, especially at viewpoints. The crests of moderate foothills; which extend into and across valley floor flats are likely to be a focus for short term occupation due to their well drained and elevated context in close proximity to a range of exploitable environments. There is one moderate rise above a water course within the Study Area that may have been used for this purpose.

5.0 SURVEY RESULTS

5.1 Survey Methods

Survey methods for Aboriginal sites have been designed in consultation with the local Aboriginal community. They have been designed to locate archaeological sites within the Study Area with reference to the following information:

- Areas of potential as identified by the background research predictive model (regional site patterns as compared to the physical environment of the Study Area, or items identified in historic plans)
- The proposed development footprint

The survey was conducted exclusively within the Study Area and has used the following method:

Targeted survey –

A targeted field method was employed for the survey of the site. The survey targeted areas within the impact area of the proposed development, as well as landforms and areas identified in the predictive modelling as having high likelihood for the presence of sites. In general, sensitive features, such as drainage features, ridges lines and remnant vegetation were surveyed.

5.1.1 Survey Effectiveness

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.

5.2 Aboriginal Participation

Roy Stewart from the Illawarra Local Aboriginal Land Council has participated in the cultural

heritage survey.

5.2.1 Existing Condition of the Study Area

The Study Area is bounded on the eastern side by Goolagong Street. The southern end of the site is defined by Huntley Road, and the north western boundary is Avondale Road.

PLATE 1: VIEW ACROSS TOP OF GRASSED HILL, FACING WEST.

The area has been cleared of all but a few trees of the lowland Woollybutt-Melaleuca Forest; which are dispersed along the western boundary of the Study Area and is now used for horse agistment. These paddocks consist of pastoral grasses.

Disturbances associated with the Study Area include; the original land clearance and pastoral use, construction of Avondale Road, Goolagong Street and Huntley Road which bound the Study Area; the emplacement of the powerlines which run from the south eastern boundary of the site through to the north western boundary, along with the Moomba-Sydney Gas pipeline easement.

5.2.2 Discussion

During the field survey no new Aboriginal Archaeological artefacts were identified. It was predicted during desktop investigations that isolated artefacts or Open Camp sites would have been the most likely sites to be identified; as Open Camp Sites, are mostly likely to occur on

level, well-drained ground, either adjacent to sources of fresh water and wetlands. The sites close proximity to Mullet Creek and a within the coastal swamp oak forest and floodplain wetland native plant communities further highlights that there would have been a number of natural resources that local aboriginal communities would have used within the Study Area.

Cattle grazing, horse agistment and the emplacement of bounding streets and roads and power and gas infrastructure would have caused a large amount of disturbance to any remaining cultural heritage on the site. It is likely that any cultural material present within the study area would have be identified during archaeological investigations undertaken at the time of their construction.

6.0 SIGNIFICANCE ASSESSMENT

6.1 Introduction to the Assessment Process

Heritage assessment criteria in NSW fall broadly within the significance values outlined in the Australia ICOMOS Burra Charter (Australia ICOMOS 1999). This approach to heritage has been adopted by cultural heritage managers and government agencies as the set of guidelines for best practice heritage management in Australia. These values include:

- historical significance (evolution and association) refers to historic values and encompasses the history of aesthetics, science and society, and therefore to a large extent underlies all of the terms set out in this section. A place may have historic value because it has influenced, or has been influenced by, an historic figure, event, phase or activity. It may also have historic value as the site of an important event. For any given place the significance will be greater where evidence of the association or event survives in situ, or where the settings are substantially intact, than where it has been changed or evidence does not survive. However, some events or associations may be so important that the place retains significance regardless of subsequent treatment.

- aesthetic significance (Scenic/architectural qualities, creative accomplishment) refers to the sensory, scenic, architectural and creative aspects of the place. It is often closely linked with social values and may include consideration of form, scale, colour, texture, and material of the fabric or landscape, and the smell and sounds associated with the place and its use.

- social significance (contemporary community esteem) refers to the spiritual, traditional, historical or contemporary associations and attachment that the place or area has for the present-day community. Places of social significance have associations with contemporary community identity. These places can have associations with tragic or warmly remembered experiences, periods or events. Communities can experience a sense of loss should a place of social significance be damaged or destroyed. These aspects of heritage significance can only be determined through consultative processes with local communities.

- scientific significance (Archaeological, industrial, educational, research potential and scientific significance values) refers to the importance of a landscape, area, place or object because of its archaeological and/or other technical aspects. Assessment of scientific value is often based on the likely research potential of the area, place or object and will consider the importance of the data involved, its rarity, quality or representativeness, and the degree to which it may contribute further substantial information.

The significance of Aboriginal and historic sites and places will be assessed on the basis of the significance values outlined above. As well as the ICOMOS Burra Charter significance values guidelines, various government agencies have developed formal criteria and guidelines that have application when assessing the significance of heritage places within NSW. Of primary interest are guidelines prepared by the Commonwealth Department of Environment and Heritage (DEH) and

the NSW Department of Environment and Conservation (DEC) and Heritage Office and. The relevant sections of these guidelines are presented below.

6.2 Aboriginal Sites – Assessment of Significance

The following Aboriginal significance assessment is based on Part 1 of the *DECC Guidelines for Aboriginal Heritage Impact Assessment* (2006). These guidelines state that an area may contain evidence and associations which demonstrate one or any combination of the ICOMOS Burra Charter significance values outlined above in reference to Aboriginal heritage. Reference to each of the values will be made when evaluating Aboriginal significance for sites and places.

In addition to the previously outlined heritage values, the *DECC Guidelines* also specify the importance of considering cultural landscapes when determining and assessing Aboriginal heritage values. The principle behind a cultural landscape is that 'the significance of individual features is derived from their inter-relatedness within the cultural landscape'. This means that sites or places cannot be 'assessed in isolation' but must be considered as parts of the wider cultural landscape. Hence the site or place will possibly have values derived from its association with other sites and places. By investigating the associations between sites, places, and (for example) natural resources in the cultural landscape the stories behind the features can be told. The context of the cultural landscape can unlock 'better understanding of the cultural meaning and importance' of sites and places.

Although other values may be considered – such as educational or tourism values – the two principal values that are likely to be addressed in a consideration of Aboriginal sites and places are the cultural/social significance to Aboriginal people and their archaeological or scientific significance to archaeologists. The former is discussed in greater depth below, as it is more comprehensively addressed in the Guidelines for Aboriginal Impact Assessment. However we note here that it is best practice for archaeologists when undertaking significance assessments to keep in mind that scientific assessments are part of a larger picture.

The determinations of Aboriginal significance for sites and places will then be expressed as *statements of significance* that preface a concise discussion of the contributing factors to Aboriginal cultural heritage significance. Nomination of the level of value—high, moderate, low or not applicable—for each relevant category will also be proposed and presented in a summary table.

6.2.1 Aboriginal community or cultural values

The NSW DECC recognises that 'Aboriginal community are the primary determinants of the significance of their heritage' (NSW DECC 2004). Biosis Research recognises that our role in the cultural heritage assessment process is to provide specialist skills, particularly in regard to archaeological and heritage management expertise. These specialist skills can be articulated and enhanced through consultation with the Aboriginal community, with the aim of providing a comprehensive assessment of cultural heritage significance.

The heritage assessment criteria outlined above that relate to community or cultural values include social, historic and aesthetic value. Social and aesthetic values are often closely related. Social value refers to the spiritual, traditional, historical or contemporary associations and attachment that the place or area has for the present-day Aboriginal community. Aesthetic values related to Aboriginal sites and places that may contain particular sensory, scenic, architectural and creative values and meaning to Aboriginal people. Historic value refers to the associations of a place with a person, event, phase or activity of importance to the history of an Aboriginal community. Gaining a sufficient understanding of this aspect of significance will often require the collection of oral histories and archival or documentary research, as well as field documentation. Places of post-contact Aboriginal history have generally been poorly recognised in investigations of Aboriginal heritage, and the Aboriginal involvement and contribution to important regional historical themes is often missing from accepted historical narratives.

These aspects of heritage significance can only be determined through consultative processes with one or more Aboriginal communities. In terms of Aboriginal communities, heritage places – including those that are otherwise defined as 'archaeological sites' – will always attract differing values. These may include custodianship obligations, education, family or ancestral links, identity, and symbolic representation. History and traditions are important: this generation has an obligation to future generations to retain certain things as they are currently seen and understood. This includes retaining alternative understandings to those that come through scientific assessments. Heritage places are often more complex than is identified through the scientific determination of value. Cultural and social values can be complex and rich - the past is a vital component of cultural identity. Feelings of belonging and identity are reinforced by knowledge of the existence of a past, and this is further reinforced and maintained in the protection of cultural heritage.

Statement of 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 Aboriginal community. The sites are significant as they provide 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 developed areas such as Wollongong have been destroyed by land clearance and land-use practices.

The importance of preserving the remanent natural environment within the Study Area was also stressed by each of the groups. For Aboriginal people, cultural values and knowledge are associated with the environment as part of a holistic system. They perceive an ecological, social and spiritual relationship with the word around them. Heritage is often expressed as much more than an accumulation of 'sites', rather it is an enduring and inseparable relationship with the land

and waterways expressed through a range of associations, perspectives and life experiences. Heritage is 'country'. The concept of country embraces all the values, places resources, stories and cultural obligations associated with a geographical area.

The significance of the landscape surrounding the Escarpment and along the Coastal Plain (including the ridge and spur lines) has been identified by members of the Illawarra Local Aboriginal Land Council as being culturally significant.

6.2.2 Aboriginal archaeological or scientific values

The determinations of archaeological significance for sites and places are expressed as *statements of significance* that preface a concise discussion of the contributing factors to archaeological significance. Nomination of the level of value—high, moderate, low or not applicable—for each relevant category are also be proposed and presented in a summary table.

Archaeological significance (also called scientific significance) refers to the value of archaeological objects or sites as they relate to research questions that are of importance to the archaeological community, including indigenous communities, heritage managers and academic archaeologists. Generally the value of this type of significance will be determined on the basis of the potential for sites and objects to provide information regarding the past life-ways of people (Burke and Smith 2004: 249, NPWS 1997). For this reason, the NSW NPWS summarises the situation as 'while various criteria for archaeological significance assessment have been advanced over the years, most of them fall under the heading of archaeological research potential' (NPWS 1997: 26). The NPWS criteria for archaeological significance assessment are based largely on the Register of the National Estate Criteria, and under the heading of 'research potential' include the following aspects and definitions (NPWS 1997):

General site considerations, including factors such as:

- *Site intactness or integrity:* This includes the state of preservation of archaeological objects, as well as the stratigraphic integrity of the site, the taphonomic processes acting on the site, the impact of past artefact collections made at the site.

- *The connectedness* of the site to other sites – when considered as part of a larger assemblage or landscape the site may have greater research potential than if it was simply considered in isolation.

- *Chronological potential* refers to the potential of a site to provide a dateable framework extending back into the past. The potential antiquity of a site is also an important consideration, as older sites are relatively less common than younger sites. In many cases stratified, dateable artefact bearing deposits are sufficiently rare to be a very valuable resource.

Representativeness

Representativeness refers to the ability of a site or object to serve as a representative example of sites in the same class. This aspect of value is only meaningful when considered in conjunction with a conservation goal, and must be determined against the archaeological record at various scales of consideration - local, regional and continental for example. It takes into account site and object variability, connectedness and a consideration of what is already, and likely to be, conserved. Burke and Smith (2004: 247) define representativeness as 'an assessment of whether or not a place is a good example of its type, illustrating clearly the attributes of its significance.'

Rarity

Rarity is, of course, closely related to representativeness (if a site is rare, it is likely to have high representative value), and will include a consideration of those issues discussed under general site considerations. In many ways, the determination of rarity is a summation of exceptional research potential, or a representative of a small class of sites or objects. Burke and Smith further describe rarity as 'an assessment of whether the place represents a rare, endangered or unusual aspect of our history or cultural environment that has few parallels elsewhere' (2004: 247).

Research Potential

Research potential is essentially a summation of the above values in the general, representativeness and rarity criteria (NPWS 1997). Pearson and Sullivan note that Aboriginal archaeological sites are generally of high research potential because 'they are the major source of information about Aboriginal prehistory'(1999: 149). Indeed, the often great time depth of Aboriginal archaeological sites gives them research value from a global perspective, as they are an important record of humanity's history. Research potential can also refer to specific local circumstances in space and time – a site may have particular characteristics (well preserved samples for absolute dating, or a series of refitting artefacts, for example) that mean it can provide information about certain aspects of Aboriginal life in the past that other less or alternatively valuable sites may not (Burke and Smith 2004: 247-8). When determining research potential value particular emphasis has been placed on the potential for absolute dating of sites.

In addition to the research potential related value factors, the NSW NPWS (1997: 32) also discuss *Educational Potential* and *Aesthetic Significance*, as items that may be included in scientific significance. The NPWS general advice is that archaeologists should give careful consideration prior to attempting to determine educational and aesthetic values (NPWS 1997: 32). We make no attempt to determine educational potential of sites under scientific assessment, but do consider educational value as a contributing factor that may be included in an assessment of social significance by the Aboriginal community.

Aesthetic values

There is a diverse yet accessible literature regarding identifying aesthetic values and determining aesthetic significance (Burke and Smith 2004: 248-9, Kerr 1996: 15-16, Pearson and Sullivan 1999: 134-8). It is generally agreed that aesthetic values are an important part of cultural heritage significance, however they are dependent on an individual's sensory response, which

means determining aesthetic value is fraught with difficulty, and should be applied on a case-by-case basis as it is not always a value applicable to archaeological sites (Burke and Smith 2004: 248). However, when dealing with some types of sites aesthetic values and landscape context are an important consideration. The question 'does the place have a relationship between its parts and the setting which reinforces the quality of both', while originally proposed in an architectural context (Kerr 1996: 15), is relevant also for many sites in a local setting—such as in forests, deserts, coastlines or indeed wetlands—where there is often an important relationship between the cultural site and natural environment, which contribute to the values of a 'sense of place'.

The following sections provide statements of significance for all Aboriginal archaeological sites recorded during the Wetlands Project. The significance of each site follows the assessment process outlined above. This includes a statement of significance based on the categories defined in the Burra Charter. These categories include social, historic, scientific, aesthetic and cultural (in this case archaeological) landscape values. Nomination of the level of value—high, moderate, low or not applicable—for each relevant category will also be proposed. Where suitable the determination of cultural (archaeological) landscape value will be applied to both individual sites and places (to explore their associations) and also, to the Study Areas as a whole. The nomination levels for the archaeological significance of each site are summarised below.

6.2.3 Aboriginal Sites – Assessment of Significance

The following Aboriginal significance assessment is based on Part 1 of the DEC Guidelines for Aboriginal Heritage Impact Assessment (2006). These guidelines state that an area may contain evidence and associations which demonstrate one or any combination of the ICOMOS Burra Charter significance values outlined above in reference to Aboriginal heritage. Reference to each of the values will be made when evaluating Aboriginal significance for sites and places.

In addition to the previously outlined heritage values, the DEC Guidelines also specify the importance of considering cultural landscapes when determining and assessing Aboriginal heritage values. The principle behind a cultural landscape is that 'the significance of individual features is derived from their inter-relatedness within the cultural landscape'. This means that sites or places cannot be 'assessed in isolation' but must be considered as parts of the wider cultural landscape. Hence the site or place will possibly have values derived from its association with other sites and places. By investigating the associations between sites, places, and (for example) natural resources in the cultural landscape the stories behind the features can be told. The context of the cultural landscape can unlock 'better understanding of the cultural meaning and importance' of sites and places.

Although other values may be considered – such as educational or tourism values – the two principal values that are likely to be addressed in a consideration of Aboriginal sites and places are the cultural/social significance to Aboriginal people and their archaeological or scientific significance to archaeologists. The former is discussed in greater depth below, as it is more comprehensively addressed in the Guidelines for Aboriginal Impact Assessment. However we note

here that it is best practice for archaeologists when undertaking significance assessments to keep in mind that scientific assessments are part of a larger picture.

The determinations of Aboriginal significance for sites and places will then be expressed as statements of significance that preface a concise discussion of the contributing factors to Aboriginal cultural heritage significance. Nomination of the level of value—high, moderate, low or not applicable—for each relevant category will also be proposed and presented in a summary table.

As no archaeological evidence was identified within the present Study Area, no assessment of scientific significance will be required.

7.0 IMPACT ASSESSMENT

7.1 Proposed Development

Impacts on remaining cultural heritage associated with the proposed development works include the following:

- La Vie Developments Pty. Ltd. is proposing to develop a major private hospital and health care precinct. This will include the construction of a number of large scale buildings; as well as underground parking and accommodation.

7.2 Potential Impacts

As discussed above, the proposed development requires a certain level of disturbance within the Study Area. This disturbance may impact the physical remains and significance of archaeological sites in the following ways:

- The redevelopment of the entire site will result in the removal of any remaining cultural heritage that could still remain on the site.

8.0 RECOMMENDATIONS

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.

This obligation also relies on adopting approaches that recognise the existence of different knowledge systems, which are a reflection of Australia's rich indigenous and multi-cultural society. There is an imperative to implement collaborative endeavours that engage with a form of interaction and integration across cultures that acknowledges parallel, co-existing but different 'ways of knowing' (Jackson et al.. 2005: 108).

Based on background research, site survey, statutory obligations and consultation with the Aboriginal community, the following recommendations are made in relation to the proposed development:

8.1 Recommendations

Recommendation 1 – Further Archaeological Work

Based on the results of this study and previous archaeological studies undertaken within the Study Area, no further archaeological work is required.

The Illawarra Local Aboriginal Land Council have requested that a representative from the Aboriginal community be -site during the initial scraping of topsoil across the rise (area of archaeological sensitivity) to observe if any cultural material is exposed.

Recommendation 2 - Stop work provision: Aboriginal sites

All Aboriginal places and objects are protected under the NSW *National Parks and Wildlife Act 1974*. This protection includes Aboriginal places and objects which have not been

identified in this report, but which may be identified during construction. Should any previously unidentified Aboriginal objects or places be identified during excavation and construction, all works must cease in the vicinity of the find and the following be notified:

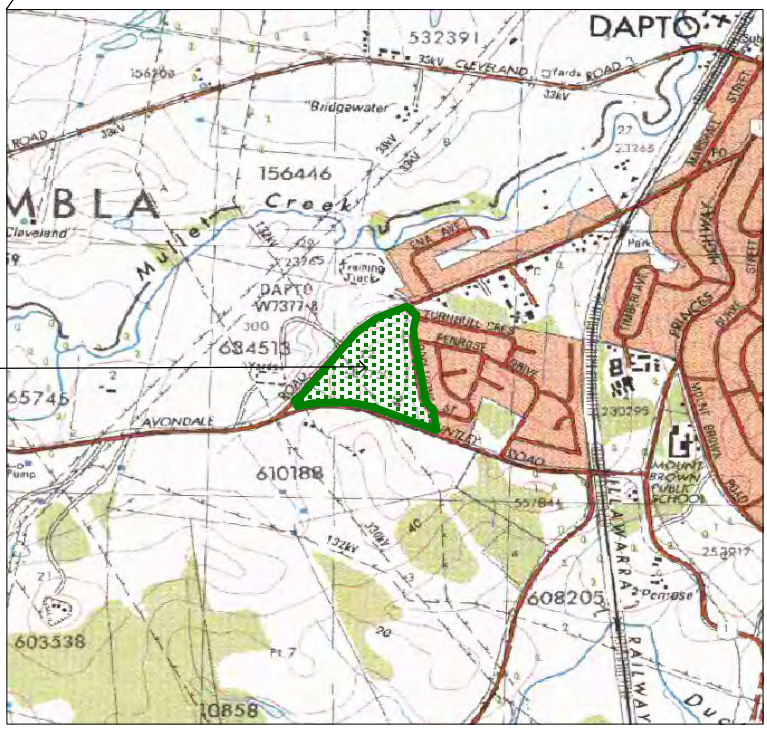
- NSW Department of Environment and conservation
- A qualified archaeologist
- Aboriginal stakeholders

Recommendation 3 – Human Remains

In the case of skeletal remains the following process will be implemented.

- The find will be reported to police and state coroner
- La Vie Developments Pty. Ltd. and Cardno Forbes Rigby will be notified of the find
- Aboriginal stakeholders will be notified of the find
- NSW DECC will be notified of the find
- If the skeletal remains are of Aboriginal ancestral origin an appropriate management strategy will be developed in consultation with the Aboriginal stakeholders
- The find will be recorded in accordance with the *National Parks and Wildlife Act* 1974 (NSW) and the NSW NPWS *Aboriginal Cultural Heritage Standards and Guidelines Kit*
- This Aboriginal Heritage Plan will be amended to include the newly discovered Aboriginal ancestral remains in the management regime established by the plan

FIGURES



Topographic image from Department of Lands 1:25000 topographic map series (2006)
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BIOSIS RESEARCH Pty. Ltd.

8 Tate St
WOLLONGONG
NEW SOUTH WALES 2500

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

Date: 3 February 2009
Checked by: MT | File number: S5248
Location:-.5000\5200s\5248\Mapping\S5248 F1_region.WOR

Scale: 0 0.5 1.0 1.5 2.0 kilometres

N W E S

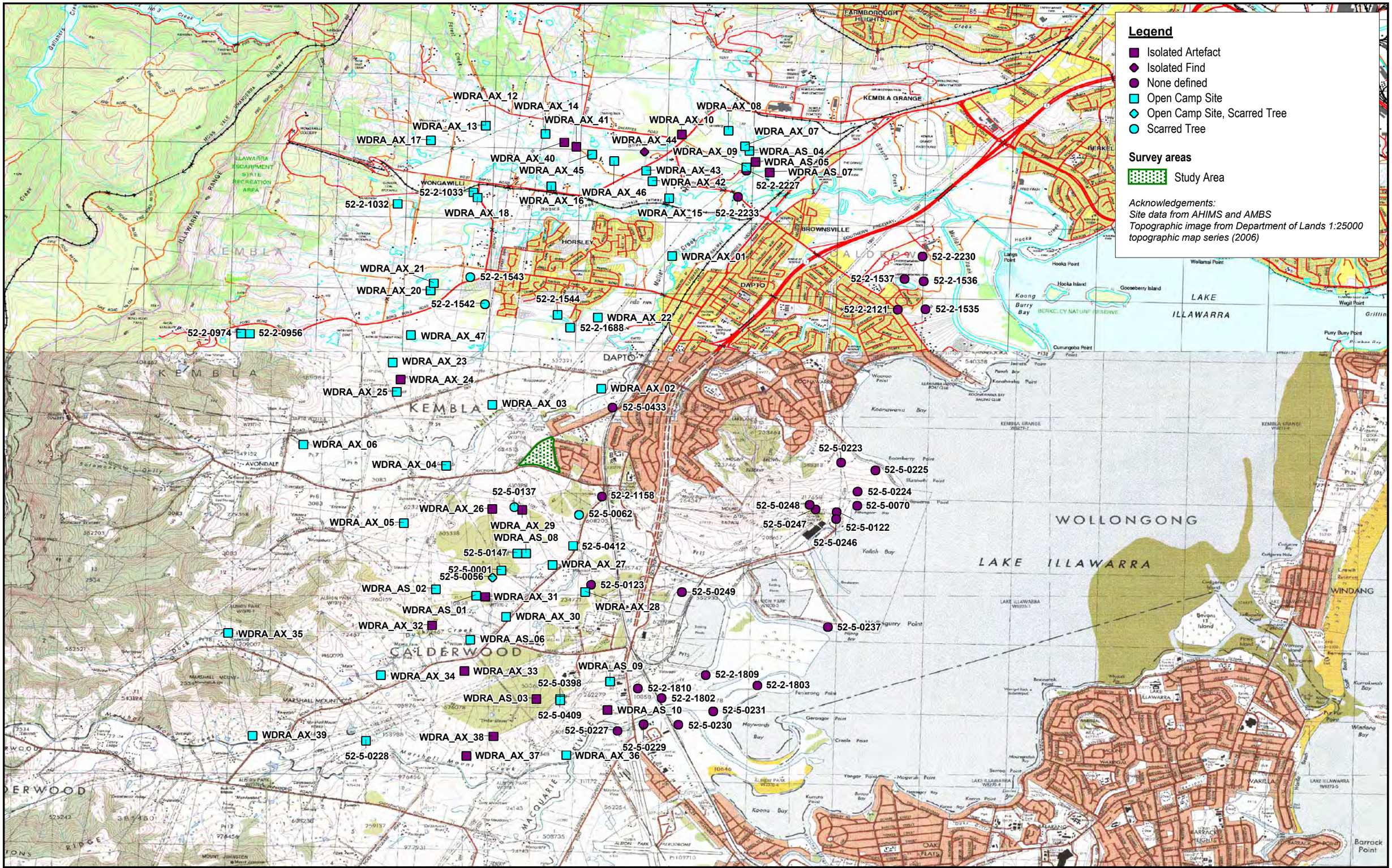

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Figure 2: AHIMS registered Aboriginal archaeological sites in the area.

Date: 3 February 2009
Checked by: MT
File number: S5248
Location:-5000\5200s\5248\Mapping\S5248 F2_AHIMS.WOR

Scale: 0 0.4 0.8 1.2 1.6 2.0 kilometres

Figure 2: AHIMS registered Aboriginal archaeological sites in the area.

Legend

Survey Transect

Study Area

Acknowledgements:
Aerial image from Cardno Forbes Rigby

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NEW SOUTH WALES 2500

Figure 3: Survey areas from previous archaeological assessment and survey transects from current survey assessment.

Date: 3 February 2009

Checked by: MT | File number: S5248

Location:-..5000\5200s\5248\Mapping\S5248 F3_transects.WOR

Scale: 0 25 50 75 100 125 metres

N W E S

Figure 3: Survey areas from previous archaeological assessment and survey transects from current survey assessment.

Legend

Area of Aboriginal sensitivity

Study Area

Acknowledgements:
Aerial image from Cardno Forbes Rigby

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Figure 4: Study area and areas of Aboriginal archaeological sensitivity

Date: 3 February 2009

Checked by: MT | File number: S5248

Location:-..5000\5200s\5248\Mapping\S5248 F4_sensitivity.WOR

Scale: 0 25 50 75 100 125 metres

N W E S

Figure 4: Study area and areas of Aboriginal archaeological sensitivity

APEENDICIES

APPENDIX 1
Indigenous community comment

APPENDIX 2
Legislation

COMMONWEALTH LEGISLATION

ENVIRONMENT PROTECTION AND BIODIVERSITY CONSERVATION ACT 1999

In January 2004 the Commonwealth *Australian Heritage Commission Act 1975* was repealed and in its place amendments to the EPBC Act were made. The amendments were contained in three new pieces of Commonwealth Heritage Legislation. The three new Acts are the:

1. Environment and Heritage Legislation Amendment Act (No. 1) 2003 which:

   (a) amends the Environment Protection and Biodiversity Conservation Act 1999 to include 'national heritage' as a new matter of National Environmental Significance and protects listed places to the fullest extent under the Constitution

   (b) establishes the National Heritage List

   (c) establishes the Commonwealth Heritage List

2. Australian Heritage Council Act 2003 which establishes a new heritage advisory body to the Minister for the Environment and Heritage, the Australian Heritage Council, and retains the Register of the National Estate.

3. Australian Heritage Council (Consequential and Transitional Provisions) Act 2003 which repeals the Australian Heritage Commission Act, amends various Acts as a consequence of this repeal and allows for the transition to the new heritage system.

Any place that has been nominated and assessed as having cultural heritage significance at a national level can be added to the National Heritage List.

Under the *Environment Protection and Biodiversity Conservation Act* 1999 (EPBC Act) an action requires approval from the Federal Environment Minister if the action will, or is likely to, have a significant impact on a matter of national environmental significance. Matters of national environmental significance relating to cultural heritage are:

- World Heritage Places, and
- National Heritage Places.

An action includes a project, development, undertaking, activity, or series of activities.

Actions that are likely to have a significant impact on the environment of Commonwealth land (even if taken outside Commonwealth land), and actions taken by the Commonwealth that are likely to have a significant impact on the environment anywhere in the world, may also require approval under the EPBC Act.

NATIVE TITLE ACT 1993

The Commonwealth Native Title Act establishes the principles and mechanisms for the preservation of Native Title for Aboriginal people.

Under Subdivision P of the Act, *Right to negotiate*, native title claimants can negotiate about some proposed developments over land and waters (known as 'Future Acts') if they have the right to negotiate. Claimants gain the right to negotiate if their native title claimant application satisfies the registration test conditions.

The right to negotiate applies over some proposed developments or activities that may affect native title. These are known as future acts under the Native Title Act 1993. Native title claimants only have the right to negotiate over certain types of future acts, such as mining. Activities such as exploration and prospecting on the land do not usually attract the right to negotiate.

The right to negotiate is not a right to stop projects going ahead — it is a right to have a say about how the development takes place. In some situations, the right to negotiate does not apply. In these circumstances, claimants may have the right to be notified, to be consulted, to object and to be heard by an independent umpire.

The right to negotiate is triggered when a government issues a notice to say that it intends to allow certain things to happen on land, such as granting a mining lease. This notice is called a 'section 29 notice.

People who claim to hold native title in the area, but have not yet made a native title claimant application, have three months from the date given in the section 29 notice to file a claim if they want to have a say about the proposed development. To get the right to negotiate, the claim must be registered within a month after that.

If the right to negotiate applies, the government, the developer and the registered native title parties must negotiate 'in good faith' about the effect of the proposed development on the registered native title rights and interests of the claimants.

The parties can ask the National Native Title Tribunal to mediate during the negotiations.

If the negotiations do not result in an agreement the parties can ask the Tribunal (no sooner than six months after the notification date) to decide whether or not the future act should go ahead, or on what conditions it should go ahead.

The National Native Title Tribunal administers the future act processes under the Commonwealth legislation. The Tribunal's role includes mediating between parties, conducting inquiries and making decisions (called 'future act determinations') where parties can't reach agreements.

When the Tribunal receives a future act determination application, it must conduct an inquiry (an arbitration) in order to determine whether the future act can be done and if so whether any conditions should be imposed.

A member of the Tribunal (or a panel of three members) will be appointed to conduct the inquiry, and will initially hold a preliminary conference and set directions for the parties to provide submissions and evidence. Members who have mediated a particular matter are not usually appointed as inquiry members. Inquiry members conduct hearings, receive submissions and evidence from the parties and take into account matters set out in section 39 of the Native Title Act such as:

- the effect of the future act on the enjoyment by the native title party of their registered native title rights and interests; their way of life, culture and traditions; the development of their social, cultural and economic structures; their freedom of access to the land and freedom to conduct ceremonies and other cultural activities; and the effect of the future act on any area or site of particular (special) significance to the native title party;
- the interests, proposals, opinions or wishes of the native title party;
- the economic or other significance of the future act;
- the public interest; and
- the presence of any existing non-native title rights and interests and use of the land by other persons (for instance, pastoralists).

ABORIGINAL AND TORRES STRAIT ISLANDER HERITAGE PROTECTION ACT 1984

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 wider sense. Such 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 ancient sites.

PROTECTION OF MOVABLE CULTURAL HERITAGE ACT 1986

Australia's movable cultural heritage is protected at both Commonwealth and State levels. This web site only provides information on the Commonwealth laws.

In 1970 the United Nations Educational, Scientific and Cultural Organisation (UNESCO) adopted the UNESCO Convention on the Means of Prohibiting the Illicit Import, Export and Transfer of Ownership of Cultural Property. Australia ratified the convention by passing the *Protection of Movable Cultural Heritage Act 1986* (the Act), giving the 1970 Convention force in Australian law.

The Act regulates the export of Australia's significant cultural heritage objects. It is not intended to

restrict normal and legitimate trade in cultural property and does not affect an individual's right to own or sell within Australia.

It implements a system of export permits for certain heritage objects defined by the Act as 'Australian protected objects'. Australian protected objects are objects which form part of the movable cultural heritage of Australia and which meet the criteria established under the National Cultural Heritage Control List. The Control List is located in the Regulations to the Act, and divides Australian protected objects into two classes:

- Class A objects which may not be exported
- Class B objects which may be exported if granted a permit under the Act.

A person wishing to export a Class B object is required to apply for a permit in writing. Applications are processed in accordance with the legislative process established under section 10 of the Act.

Certificates of Exemption, granted under section 12 of the Act, allow Australian protected objects that are currently overseas to be imported into Australia and subsequently re-exported. This includes Class A objects.

The Act also includes provisions that allow Australia to respond to an official request by a foreign government to return movable cultural heritage objects that have been illegally exported from their country of origin.

The *Protection of Movable Cultural Heritage Act 1986* is administered by the Minister for the Environment and Heritage. This responsibility was transferred from the Minister for Communication, Information Technology and the Arts in November 2001.

The Movable Cultural Heritage Unit in the Department of the Environment and Heritage provides the Secretariat to the National Cultural Heritage Committee

STATE LEGISLATION

NATIONAL PARKS AND WILDLIFE ACT 1974

The *National Parks and Wildlife Act 1974* provides for the protection of Aboriginal objects (sites, relics and cultural material) and Aboriginal places. Under the Act (S. 5), an Aboriginal object 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.*

This includes individual artefacts, scatters of stone artefacts, rock art sites, ancient camp sites,

human burials, scarred trees, and ruins and archaeological deposits associated with Aboriginal missions or reserves.

Aboriginal places (areas of cultural significance to the Aboriginal Community declared by the Minister) are protected under Section 84 of the Act.

Aboriginal objects (any material evidence of the Aboriginal occupation of NSW) are protected under Sections 86, 87 and 90 of the Act. Section 86 of the Act identifies that a person, other than the Director-General or a person authorised by the Director-General in that behalf, who:

> *(a) disturbs or excavates any land, or causes any land to be disturbed or excavated, for the purpose of discovering an Aboriginal object*

is guilty of an offence under the NPW Act.

The *National Parks and Wildlife Act* requires that a permit from the Director General be obtained before archaeological fieldwork involving disturbance to an Aboriginal site is carried out. Consent is granted under section 87 and 90 of the Act. Queries and applications to excavate or disturb an Aboriginal archaeological site for purposes of archaeological fieldwork, should directed to the relevant Planning and Aboriginal Section Manager at the appropriate Environment Protection and Regulation Branch office. For this study the relevant branch office is at Sydney metropolitan.

Section 91 of the Act requires the mandatory reporting of the discovery of Aboriginal objects, and establishes a mechanism for interim protection orders that may be used to protect objects. Identified Aboriginal objects and sites are registered with the NSW Department of Environment and Conservation (DEC) on the Aboriginal Heritage Information Management System (AHIMS). DEC administers *the National Parks and Wildlife Act 1974*.

HERITAGE ACT 1977

The *Heritage Act 1977* details statutory responsibilities for historic buildings and gardens, historic places and objects, historical archaeological sites, and historic shipwrecks. The Act is administered by the Heritage Council of New South Wales, through the NSW Heritage Office.

The aim of the Act is to conserve the 'environmental heritage' of the state, which includes items such as buildings, works, relics, moveable objects or precincts significant for historical, scientific, cultural, social, archaeological, architectural, natural or aesthetic values. A 'Place' is defined as an area of land, with or without improvements and a 'Relic' is defined as any:

> *deposit, object or material evidence:*
>
> *(a) which relates to the settlement of the area that comprises New South Wales, not being Aboriginal settlement, and*
>
> *(b) which is 50 or more years old.*

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 from the NSW Heritage Council.

> *139 Excavation permit required in certain cases*
>
> *(1) A person must not disturb or excavate any land knowing or having reasonable cause to suspect that the disturbance or excavation will or is likely to result in a relic being discovered, exposed, moved, damaged or destroyed unless the disturbance or excavation is carried out in accordance with an excavation permit.*
>
> *(2) A person must not disturb or excavate any land on which the person has discovered or exposed a relic except in accordance with an excavation permit.*

Excavation permits are usually issued subject to a range of conditions that will relate to matters such as reporting requirements and artefact cataloguing, storage and curation. 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 and discussion with the NSW Heritage Office should begin well before lodging an application for a permit to disturb or destroy a historical archaeological site.

ENVIRONMENTAL PLANNING AND ASSESSMENT ACT 1979

The *NSW Environmental Planning and Assessment Act* will have relevance for all development projects because it requires that environmental impacts are considered in land-use planning and decision making. The definition of 'environment impacts' includes impacts on the cultural heritage of the project area. The Act has three relevant parts: Part III, which governs the preparation of planning instruments; Part IV, which relates to development where consent is required under an environmental planning instrument (EPI); and Part V, which relates to activity where development consent is not required but some other government approval assessments are needed.

Under the Act, local government authorities and The Department of Infrastructure, Planning and Natural Resources (formerly Planning NSW) prepare local and regional environmental planning instruments (LEPs and REPs) to give statutory force to planning controls. These may incorporate specific provisions for conserving and managing archaeological sites.

Integrated Development Assessment (IDA) was introduced under the *Environmental Planning and Assessment Act* so that all matters affecting a development application would be considered by the consent authority in an integrated way.

Integrated Development is one which requires development consent as well as one or more approvals from different government agencies. Such agencies may include NSW DECC or the NSW Heritage Council. If a development is likely to impact a heritage item, the consent authority must refer it, to NSW DECC (for Indigenous objects) or the NSW Heritage Council (for sites listed on the State Heritage Register) prior to approval determination.

Part 3A Major infrastructure and other projects

Under Part 3A of the EP&A Act refers to projects within NSW that, in the opinion of the Minister, is of State or regional environmental planning significance; or major infrastructure or other development that is an activity for which the proponent is also the determining authority (within the meaning of Part 5) and that, in the opinion of the proponent, would (but for this Part) require an environmental impact statement to be obtained under that Part (s75B). A project can also be assessed under Part 3A under s75C, a critical infrastructure project if it is of a category that, in the opinion of the Minister, is essential for the State for economic, environmental or social reasons (s75 1).

As a Project assessed under Part 3A, no authorisation (permit) is required in relation to s87 and s90 of the *National Parks and Wildlife Act 1974*, or approval under Part 4 or s139 of the *NSW Heritage Act 1977*. The Minster of the Department of Planning has delegated authority to issue any permit requirements for projects assessed under Part 3A.

The Local Government Act 1993

Under the State Local Government Act, councils can prepare local approvals policies that set out specific matters for consideration in relation to applications to demolish, build or undertake works. Archaeological sites could be considerations under such policies

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