Huntley Eco-Park, Aboriginal Archaeological Assessment, New South Wales

March 2007
Sarah Burke and Helen Cekalovic
Huntley Eco-Park, Aboriginal Archaeological Assessment, New South Wales.

March 2007

Sarah Burke and Helen Cekalovic

Project no: s4453
ACKNOWLEDGMENTS

Biosis Research acknowledges the contribution of the following people and organisations in preparing this report:

- Allan Carriage  (Wadi Wadi Coomaditchie Aboriginal Corporation)
- James Davis, Sheryl Davis (Wodi Wodi Elders Corporation)
- Sharralyn Robinson (Illawarra Local Aboriginal Land Council)
- Sam Moody, Rob Suansri (Biosis Research Pty. Ltd.)
- Peter Chrystal (TCG Planning)
- David Tregonning (Huntley Heritage Pty. Ltd)

Cover Plate: View of Mullet Creek, facing west.

ABBREVIATIONS

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

ACKNOWLEDGMENTS.......................................................................................................................... I

ABBREVIATIONS..................................................................................................................................... I

SUMMARY OF RECOMMENDATIONS........................................................................................................ 3

1.0 INTRODUCTION.................................................................................................................................. 6
  1.1 Project Background ............................................................................................................................ 6
  1.2 Aims ................................................................................................................................................. 7
  1.3 Consultation with the Aboriginal Community ....................................................................................... 8

2.0 HERITAGE STATUS AND PLANNING DOCUMENTS .................................................................. 11
  2.1 Commonwealth Registers .................................................................................................................. 11
  2.2 State Registers ................................................................................................................................... 12
  2.3 Management Documents .................................................................................................................... 13

3.0 ENVIRONMENTAL BACKGROUND ......................................................................................... 15
  3.1 Geology & Landforms ....................................................................................................................... 15
  3.2 Hydrology ......................................................................................................................................... 18
  3.3 Climate ................................................................................................................................................ 19
  3.4 Flora ................................................................................................................................................... 19
  3.5 Fauna ................................................................................................................................................... 21
  3.6 Resource Statement ............................................................................................................................. 22
  3.7 Historic Land Use Background ........................................................................................................... 24

4.0 ABORIGINAL HISTORY .................................................................................................................. 26
  4.1 Tribal Boundaries ............................................................................................................................... 26
  4.2 Ethnohistory & Contact History ......................................................................................................... 27
  4.3 The Archaeological Record ................................................................................................................. 31
  4.4 Predictive Statement and Discussion .................................................................................................. 38

5.0 SURVEY RESULTS ....................................................................................................................... 43
  5.1 Archaeological Survey – Methods ...................................................................................................... 43
  5.2 Archaeological Survey – Results ....................................................................................................... 44
  5.3 Effective Survey Coverage ................................................................................................................. 53
  5.4 Archaeological Survey – Interpretation and Discussion ........................................................................ 54

6.0 SIGNIFICANCE ASSESSMENT ..................................................................................................... 58

7.0 IMPACT ASSESSMENT .................................................................................................................. 65

8.0 MANAGEMENT ISSUES AND RECOMMENDATIONS. ............................................................ 66

INDIGENOUS COMMUNITY COMMENT ......................................................................................... 78

LEGISLATION............................................................................................................................................. 79

REGISTERED AHIMS SITES IN THE LOCALITY.................................................................................. 88

GLOSSARY .............................................................................................................................................. 93

REFERENCES ........................................................................................................................................... 98
TABLES
Table 1: Rainforest resources utilised by Aboriginals (source: Mills and Jakeman 1995:24) ................................24
Table 2: Ethnographic accounts of Aboriginal resource use ......................................................................29
Table 4: Details of Aboriginal site located within 200 m of the study area ..................................................38
Table 5: Survey Coverage of sample areas ................................................................................................54
Table 6: Overall survey coverage of study area ..........................................................................................54

FIGURES
Figure 1: Regional context of the study area ...............................................................................................72
Figure 2: Huntley Colliery Site, proposed development footprint ...............................................................73
Figure 3: AHIMS registered Aboriginal archaeological sites in the area .....................................................74
Figure 4: Study area and areas of Aboriginal archaeological sensitivity .................................................75
Figure 6: Study area incorporating areas of Aboriginal archaeological sensitivity and planned development footprint ........................................................................................................................................76
Figure 6: Huntley Colliery Site, Planning Vision: Concept Plan (EDAW 2007) ...........................................77
Figure G1: Terminology used for categories of heritage places ..............................................................93
Figure G2: Stone artefact types/categories ...............................................................................................94
SUMMARY

Biosis Research have been commissioned by TCG Planning, on behalf of Huntley Heritage Pty Ltd to undertake an Aboriginal archaeological assessment for the proposed rezoning and development of a parcel of land previously known as the Huntley Colliery site. This report comprises the Aboriginal Heritage component of the HIA, a separate Historic assessment is currently being undertaken by Biosis Research.

The study area consists of approximately 420 hectares of land situated to the south of West Dapto, in the foothills of the Illawarra Escarpment (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 10 x 9 km search of the greater area located 32 sites. A 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: axe grinding grooves, open camp sites and isolated finds.

The environmental context of the study area would have been attractive to Aboriginal populations. There was a varied resource base associated with the different ecological zones within the wider locale. The presence of a rich archaeological record in the district, providing physical evidence of the activities of Aboriginal occupants-specially located around Lake Illawarra, the flood plains and gentle foot slopes - combined with available resources suggests that the greater area was a focus for Aboriginal activities during prehistoric times. Less is known of the steeper area bordering the Illawarra Escarpment, within which part of the current study area is located.

The sparsity of recorded sites along this corridor may be a reflection of the small number of archaeological assessments conducted below the Illawarra Escarpment, as well as the general use pattern of this area. Given the steep slope leading up to the escarpment along the western extent of the study area, it is possible to determine that these areas were not used intensively for any purposes and as such the archaeological potential for these areas is likely to be low. It is likely that flatter ridge and spur lines may have provided easy access routes across the surrounding landscape between the resource zones of the coast and hinterland, they may have been of ceremonial value and also provided excellent look out points. On the other hand the lower relief sections in the eastern part of the study area, particularly any raised sections along the creek lines would have allowed easier movement between environmental zones and would have been suitable for camping and more frequent use.

A pedestrian survey of all impact areas was undertaken as part of this project. The survey included participation of representatives of the Wodi Wodi Elders Corporation (also representing the Illawarra Local Aboriginal Land Council) and the Wadi
Wadi Coomaditchie Aboriginal Corporation (also representing the Northern Illawarra Aboriginal Collective). Consultation was undertaken with each of the groups in the field and areas of cultural heritage significance were noted. A copy of the draft report was sent to each group, including the ILALC and recommendations were discussed. Verbal and written comments were received and have been incorporated into 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 and later the mining industry. 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 sites there will be not likely to be in their original context. More intensive levels of ground disturbance associated with mining activities are also likely to have destroyed any archaeological sites within their landscapes.

The identification of both artefact scatters (Avondale 1 and Avondale 2) during the survey, in the lower relief eastern extent of the study area, along raised areas of land, adjacent to water confluences is comparable to the prediction above, as well as the pattern of known Aboriginal sites located along similar landscapes within the Illawarra.

Several areas have been identified as having moderate archaeological sensitivity (A,B,D,E,F, G and I), including the eastern extant of the study area which has been identified on the Huntley Colliery Site Planning Vision document as the proposed location of a low density residential development, outdoor recreational facilities and a golf course.

Overall, the ground surface visibility at the time of survey was very poor due to the disturbed nature of the survey area and the extent of overgrowth of the exotic weed Lantana. This will have hampered the identification of other Aboriginal sites within the proposed impact zones. For this reason, the predictive model has been the key determinate for assessing inaccessible areas of archaeological sensitivity.

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

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

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:

**Recommendation 1 - Areas of no Aboriginal archaeological sensitivity**

No further archaeological work in regards to Aboriginal heritage is required in these areas.

**Recommendation 2 - Areas of low Aboriginal archaeological sensitivity**

These areas have been identified as containing a low potential for Aboriginal archaeological remains. It is recommended that the proposed development within these areas should be restricted to the building envelopes outlined in the Huntley Colliery Site Planning Vision (EDAW 2007). This will ensure the Aboriginal potential within the remainder of the area is preserved.

**Recommendation 3 - Areas of moderate Aboriginal archaeological sensitivity**

Any proposed development within the areas described as having moderate Aboriginal archaeological potential will require a Section 87 permit from the Department of Environment and Conservation. This permit should be prepared by a qualified archaeologist and will apply to test the potential and integrity and any Aboriginal archaeological remains within these areas. The test exaction will determine the size, extent, density and significance of any Aboriginal archaeological remains present within these areas.

The results of the test excavation will lead to either:

- a) no further archaeological work required;
- b) An application for a Section 90 permit to allow for the proposed works to continue with no further archaeological work;
- c) An application for a Section 90 permit, Consent to Destroy, with a condition to salvage the remaining Archaeological remains.

The test excavation will only occur within the proposed building foot prints and not in areas where no potential development is proposed. An assessment will be made from the test excavation for each proposed building area individually.

It is recommended that project scheduling allow a sufficient time for the preparation and processing of the S87 and S90 permits. An example of timing is as follows: Once the permit is lodged with DEC, processing time can take between 8-12 weeks.
Recommendation 4 - Areas of moderate Aboriginal archaeological sensitivity

This area has been identified by Allan Carriage of the Wadi Wadi Coomaditchie Aboriginal Corporation as being a potential birthing place. Prior to recommendations regarding any further development at this location, consultation with women from the traditional Aboriginal owners groups of the area should be undertaken to confirm the cultural significance of this area.

No proposed development is planned for this area at this stage and the two fig trees are to remain undisturbed.

Recommendation 5 - Areas of high Aboriginal archaeological sensitivity

There are no areas of high sensitivity within the study area.

Recommendation 6 - Avondale 1 Site – artefact scatter

Avondale 1 Scatter is located within the proposed development footprint within an identified area of moderate archaeological potential (A). As well as the three artefacts identified, the immediate area around it is considered to contain potential archaeological deposits (PADs).

A Section 90 permit from the NSW DEC should be prepared by a qualified archaeologist to collect the artefacts on the surface of the site, and to excavate the remainder of the artefacts within the designated potential area. This permit will allow for the adequate recording of the site prior to the development occurring.

Recommendation 7 - Avondale 2 Site – artefact scatter

If this area is to be impacted at any stage, a Section 90 permit application should be made to the NSW DEC to remove and relocate the artefacts located along the road to a designated area away from any potential development or disturbance to the road. The permit should be prepared by a qualified archaeologist.

An area approximately 17 x 10 m around the site should be marked as a do not disturb area, and no site works undertaken within this area.

Recommendation 8 - Part 6 Aboriginal stakeholder consultation

As part of the above permit processes, Aboriginal community consultation will be required. This consultation is required to follow the National Parks and Wildlife Act 1974: Part 6 Approvals Interim Community Consultation Requirements for Applicants (refer to Appendix 3). These guidelines specify the consultation process required when making applications for S87 and S90 permits.

Recommendation 9 – 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 10 - Vegetation clearance and management**

As visibility was very poor during the original archaeological field survey it is recommended that following the clearing of the Lantana weed endemic to the area, an archaeologist and relevant Aboriginal stakeholders be invited to return to the study area and conduct an additional field survey in newly cleared areas of moderate archaeological sensitivity to identify whether any new sites have been uncovered.
1.0 INTRODUCTION

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

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

It is an offence under sections of legislation to damage or destroy heritage sites without a permit or consent from the appropriate body (see Section 2 for a complete discussion of relevant heritage legislation and constraints).

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

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

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

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

1.1 Project Background

Biosis Research have been commissioned by TCG Planning, on behalf of Huntley Heritage Pty Ltd to undertake an Aboriginal archaeological assessment for the proposed rezoning and future development of a parcel of land previously known as the Huntley Colliery site. This report comprises the Aboriginal archaeological assessment; a separate Historic assessment is currently being undertaken by Biosis Research.

The study area is approximately 420 hectares of land situated to the south of West Dapto, in the foothills of the Illawarra Escarpment (Figure 1). A concept for the future development of the site has been prepared by EDAW and preliminary
Discussions have been undertaken with local and State agencies (Figure 2). There are three main Urban/Environmental Design Principles which are to guide the development of the site following rezoning. These include stated principles to re-invigorate the ecology and restore catchment heath, to unlock cultural histories and to develop a community based on sustained energy use.

As well as a planned sub-division of approximately 630 lots over 10 years, the proposed rezoning development concept includes the re-use of the existing mine buildings along the escarpment, as an education and environmental tourism centre, with tourist accommodation, restaurant and walking/cycling trails. A golf course and other associated recreational facilities are also proposed for the lower eastern section of the site. It is intended that clustered residential allotments will be developed adjacent to the golf course and form part of the Huntley Village Centre. Restaurants and services facilities will also form part of this village centre. The majority of housing is to be contained within the eastern extent of the property. Larger detached dwelling allotments will also be placed at selected areas across the site.

The current concept plan indicates that where possible, this development will be focused within previously disturbed areas of the site, so as to minimise any possible environmental impacts.

The site is part of the now closed Huntley Colliery and incorporates the mine site, waste management area, and surrounding rural lands. At the time Biosis undertook this survey the waste management area was undergoing rehabilitation in preparation for its conversion into a golf course. Avondale Colliery is also situated within the southern area of the study area. This colliery is currently undergoing preparation for its reopening and as such access was limited around the mine portal and its access roads.

The privately owned homestead, Rosehill and its surrounding grazing lands (located within the centre of the study area), was not part of this archaeological survey.

As the next step in this process Huntley Heritage Pty Ltd intends proceeding with a rezoning application for the future development of the site to Wollongong City Council.

1.2 Aims

The following is a summary of objectives for the Aboriginal cultural heritage assessment:

- Review all previously recorded indigenous archaeological and cultural heritage items listed on the DEC AHIMS database.
- Identify any and all previously recorded sites that are located within the proposed development area.
- Undertake consultation with DEC (NPWS) as necessary.
• Identify and consult with all relevant Aboriginal groups.
• Carry out a field survey to relocate any previously recorded archaeological sites; as well as identify and record any new sites that may be present within the development application area.
• Determine the extent and severity of the impact the proposed development will have on any archaeological or heritage site within the proposed development area.
• Provide a written report detailing all findings in accordance with the DEC guidelines for Aboriginal archaeological assessments, and all other relevant planning instruments, as well as present mitigation options and recommendation based on these findings.

1.3 Consultation with the Aboriginal Community

As advised by the Department of Environment and Conservation (DEC) 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 (ILALC)
• Wodi Wodi Elders Corporation (WWEC)
• Wadi Wadi Coomaditchie Aboriginal Corporation (WWCAC)
• Northern Illawarra Aboriginal Collective (NIAC)
• Korewal Elourea Jerrungarugh (KEJ)

James Davis from the Wodi Wodi Elders Corporation, also representing the interests of the ILALC and Alan Carriage at the time representing the Wadi Wadi Coomaditchie Aboriginal Corporation and the Northern Illawarra Aboriginal Collective, indicated their interest in participating in the fieldwork and consultation process. No response was received from the ILALC and KEJ. Fieldwork was undertaken with the respondent groups over six days (17-28 July 2006) and consultation regarding the Aboriginal cultural values of the area was also carried out with each group whilst on site. Areas identified by the groups as being significant have been recorded in this report.

At the time the initial assessment was undertaken, the ILALC was temporarily not in operation. The Land Council is now functioning and the assessment findings were discussed with Sharralyn Robinson (Coordinator) on 19 March 2007.

All Aboriginal stakeholders were sent a copy of the draft report to review and provide additional information regarding the cultural heritage values of the study area. A covering letter sent with the report identified the unavoidably tight deadline for feedback from Aboriginal stakeholder groups and stressed that if no response was received by the indicated deadline it will be assumed that the groups agreed with the report and
recommendations. Contact via telephone was also made with each of the groups to discuss the report and identify any further issues relating to cultural heritage values within the study area. Comments received have been incorporated into the final report and copies of written correspondence are attached in Appendix 1.

The ILALC (22 March 2007) and WWEC (20 March 2007) provided written correspondence. Both groups identified the Escarpment as a significant place and stressed the importance of participating in any further assessments required prior to development occurring on site. A telephone conversation was also undertaken with Robyn Carriage of the WWCAC (19 March 2007) to confirm receipt of the report and ask for feedback prior to 26 March 2007. It was discussed and agreed that if no comments were received by this date it will be assumed that the group agreed with the report. At the time of finalising this report no comments have been received from the WWCAC.

Allan Carriage was contacted via telephone on three separate occasions (19, 21, 23 March 2007) to discuss the project and the tight deadline for feedback was stressed; however it was not possible to obtain specific information regarding the assessment from him. Mr Carriage did identify the Escarpment as very significant and stressed that further consultation with him and the other groups represented by NIAC is necessary before any decisions regarding the development of the site can be made (pers. comm. 23 March 2007). It was explained that this assessment was for the rezoning application and the assessment highlights areas of archaeological sensitivity and further archaeological work required (including further Part 6 Community Consultation) before any development can occur and this will involve the participation all Aboriginal stakeholder groups (pers. comm. 23 March 2007). Given the tight timeframe available to finalise the assessment in order to meet Wollongong City Councils rezoning application deadline, it was not possible to meet Mr Carriage in person as was requested. This was also not considered necessary as to face consultation with Mr Carriage had already taken place during the field assessment and a number of requests were made to discuss the project via the telephone.

A phone conversation was also held with Chris Illert (Chairperson) of NIAC to explain the project context and findings and ask Mr Illert to pass this information (including the report) on to Mr Carriage (22 March 2007). A faxed response was received from NIAC (signed by Mr Illert) directly following this conversation. This correspondence has been included in this report but is not considered the response from the traditional owner, Mr Carriage, as the information discussed with Mr Illert does not appear to have been forwarded to Mr Carriage. A conversation with Mr Carriage on 23 March 2007 confirmed that he had not yet discussed the project with Mr Illert. Previous consultation with DEC has concluded that correspondence must contain the signature of the traditional owner before any information regarding Aboriginal cultural heritage values can be recognised.
Consultation with Tania Koeneman of DEC confirmed that the level of consultation undertaken with the Aboriginal stakeholder groups was sufficient for the current archaeological assessment (in response to a rezoning application) (pers. comm. 26 March 2007). This report recommends further archaeological work in areas of archaeological significance, prior to any development taking place on this site. The involvement of all Aboriginal stakeholder groups will be sort during the next phases of the project.
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 (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 include 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 compile the Register of the National Estate, 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**

The study area does not contain any items listed/registered on the National Heritage List, the Commonwealth Heritage List or the Register of the National Estate.

2.1.2 National Native Title Register

The Commonwealth *Native Title Act* 1993 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. Native title claimants only have the right to negotiate over certain types of future acts. 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.
APPLICATION TO THE STUDY AREA – National Native Title Register listings

A search of the National Native Title Tribunal registers (lodged 03/03/06) identified the following Native Title Claimants within the Wollongong Local Government Area (LGA):

<table>
<thead>
<tr>
<th>Register Type</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>National Native Title Register</td>
<td>Nil</td>
</tr>
<tr>
<td>Register of Native Title Claims</td>
<td>NC98/23</td>
</tr>
<tr>
<td>Unregistered Claimant applications</td>
<td>Nil</td>
</tr>
<tr>
<td>Register of Indigenous Land Use Agreements</td>
<td>Nil</td>
</tr>
</tbody>
</table>

NC98/23 is Native Title Claim lodged by the Cubbitch Barta Clan of the Dharawal People #3. The area the claim applies to is not within the current study area.

2.2 State Registers

2.2.1 National Parks and Wildlife Act Registers

The Department of Environment and Conservation (DEC) maintains two registers of heritage sites under the auspices of the NSW National Parks and Wildlife Act 1974. All Aboriginal sites in NSW are required to be registered on the Aboriginal Heritage Information Management System (AHIMS) register. Historic heritage places within lands managed by DEC (lands such as National Parks) are listed on the Historic Heritage Information Management System (HHIMS).

AHIMS: A search of the AHIMS register was undertaken at the commencement of the project. The AHIMS database is maintained by the Department of Environment and Conservation and contains a list of all Aboriginal objects, Aboriginal places and other Aboriginal heritage values in NSW that have been registered as required under the NSW National Parks and Wildlife Act 1974.

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 may be expected to be found within the study area.

APPLICATION TO THE STUDY AREA – AHIMS Database

A search of the AHIMS Database completed on 22/06/06 identified 32 previously recorded Aboriginal sites within a 9 x 10 km search area centred on the study area (see Appendix 3). No sites were located within 200m of the study area.

2.2.2 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.

APPLICATION TO THE STUDY AREA – Wollongong LEP 1990 Schedule 1

No items of Aboriginal cultural heritage were identified within the study area are listed in the heritage schedule of the Wollongong LEP 1990 or Wollongong LEP No. 38.

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 Local Government Area. The Illawarra Regional Environmental Plan (1986) No. 1 applies to the Wollongong, Shellharbour, Kiama, Shoalhaven and Wingecarribee local government areas and 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 IREP identifies the Illawarra region as possessing unique characteristics worth preserving and distinguishes items of cultural heritage associated with the escarpment and its environs.

APPLICATION TO THE STUDY AREA – Illawarra REP No 1

No items of Aboriginal cultural heritage significance were identified in the Illawarra REP No. 1 within the study area.

2.3 Management Documents

Several Heritage Management documents have been commissioned by the Wollongong LGA and surrounding Councils. From a review of the known Aboriginal cultural heritage in the region, as well a predictive model of the types of sites most likely to found within the different landscapes of the Illawarra, these documents provide recommendations on planning and policy that should be adopted via each council.

- Aboriginal Heritage Planning Study
  
  Dallas & Sullivan (1995)

Mary Dallas (1995) prepared an Aboriginal heritage planning study of the Wollongong LGA. This document describes the landforms of the Wollongong LGA and
specifies the site type likely to be encountered in each landform unit. Recommendations were made regarding the specific planning policies that Wollongong City Council should adopt to protect Aboriginal cultural heritage within the LGA.

- **Shellharbour City Council Area Aboriginal Heritage Study** Navin Officer (2000)

  The study area is located north of the Shellharbour LGA and predictive models within this report are also applicable to the current study area. Navin Officer examine background information to generate predictive site modelling for Aboriginal Cultural heritage in the Shellharbour LGA.

- **Wollongong Technical Policy No. 00/5 Indigenous Heritage DCP**

  Wollongong City Council has also indicated that there is an Indigenous Development Control Plan (Technical Policy 00/5). This document is unavailable to the public as it has not been finalised and approved by Council (Joel Thompson *pers. comm.* 03/03/06).
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 Physiography / Topography

There are three broad physiographic units in the Illawarra region:

- the Plateau (tableland) including the Woronora Plateau and the Moss Vale Tableland (Hazelton 1992) with sub-units of the Barren Grounds and Budderoo Plateaus (Fuller & Mills 1985);

- the Illawarra Escarpment and Slopes, running in a north-south direction and ranging in altitude from c. 300 metres ASL in the north to c. 600 metres ASL in the south; and

- the Coastal Plain, formed mainly by the western recession of the Plateau in central Illawarra (Bowman 1971). The Coastal Plain is widest at the points where Macquarie Rivulet has entrenched into the Plateau at Macquarie Pass and where other catchments of Lake Illawarra, such as Duck and Mullet Creeks, have carved into the Escarpment (Bowman 1971).

The study area is situated within the Coastal Plain physiographic unit, which may be described as a mosaic of foothills, ridges, spurs, hillocks and floodplains with slopes varying from very gently inclined to steep with the occasional low cliff. The immediate environment of the study area is characterised to the west by high steeply inclined to gently inclined slopes with broad benches, while the eastern section shows low level relief with gentle slopes and alluvial plain, marking the transition from the high relief edges of the Illawarra Escarpment through to the alluvial plains below which eventually connect with Lake Illawarra.
3.1.2 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.

Five geological units within the study area have been identified from the Sydney Basin 1:500,000 Geological Series Sheet. The geology of the area is predominantly Permian-aged sediments of the Shoalhaven Group (Rose 1966).

The uppermost unit in the Shoalhaven Group, Budgegong Sandstone, underlies the area along the base of the Escarpment. ‘The Budgegong Sandstone comprises lithic sandstone with minor thin siltstone and lenticular conglomerate beds. It also contains tabular latite (a generally fine-grained volcanic rock) bodies that comprise most of the Gerringong Volcanic facies’ (Connell Wagner 2004:5).

Berry Siltstone (also of the Shoalhaven Group) underlies a portion of the study area. The oldest geological unit exposed in the study area, it is comprised of dark-grey siltstone and very fine felspathic litharenite. The Berry siltstone matrix includes pebbles up to 20mm in diameter. These pebbles include quartzite, reef quartz and basic igneous material. Berry Siltstone is found on the exposed low-lying parts of the study area, along drainage channels (AMBS 2004:9).

To the east the Permian aged Illawarra Coal Measures are comprised of interbedded quartz/lithic sandstone, siltstone, claystones, clay laminate and the Dapto Latite Member. This unit is found in the western section of the study area underlying the steep hill slopes and broad colluvial benches leading from the Illawarra Escarpment (Dallas and Sullivan 1995:15). In the western edge of the study area, the Illawarra Escarpment is comprised of Triassic aged Hawkesbury Sandstone (quartz sandstone with some shale). Quaternary Alluvium is found deposited along drainage lines in the low-lying eastern sections of the study area. These deposits form part of the swamp landscape along the eastern edge of the study area (AMBS 2004:10).

3.1.3 Soils

Soils of the study area consist of a combination of the Fairy Meadow swamp landscape, the Albion Park and Cambewarra erosional landscapes, the Wattamolla Road depositional landscape and the Illawarra Escarpment colluvial landscape (Hazelton 1992).

• 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 in the western section of the current study area.

• **Albion Park (ap)**
Albion Park is an erosional landscape, generally found on short steep upper slopes grading into long gently inclined footslopes. The underlying geology is often Berry formation. Relief is between 60-100m, upper slopes 15-50% and footslopes are generally 5-15%. Moderately deep (50-100cm) Brown Podzolic soils occur on crests, Yellow Podzolic soils on mid slopes and Soloths on foot slopes (Hazelton 1992:41). This unit has been extensively cleared though some strands of tall open forest remain.

Water logging, seasonably high water table, shrink-swell, hard setting (top soil), low wet bearing strength (subsoil) and high available water holding capacity (top and subsoils) are characteristic of the Albion Park soil landscape (Hazelton 1992:41).

Albion Park soils are located in two north east and south east pockets along the gentle foot slopes running eastward from the current study area.

• **Cambewarra (ca)**
The Cambewarra landscape is erosional and is characterised by steep to very steep hills with broad colluvial benches on latite and Illawarra Coal Measures on the Illawarra Escarpment. The relief is 100-200m and gradient slopes are >30%. Drainage lines are closely spaced and deeply incised. Deep (>150cm) Red Solonetzic soils or Krasnozems occur on upper slopes and benches. Lithosols occur on basanite outcrops (Hazelton 1992:46). Deep soils support lowland subtropical rainforests over most of the area.

Steep slopes, mass movement and rock fall hazards, extreme water erosion hazards, shallow soil, rock outcrops, stoniness, low available water holding capacity (top soil), low wet bearing strength (subsoil) and sodicity are characteristic of the Cambewarra landscape (Hazelton 1992:46).

Cambewarra soils are located along a north-south corridor of steep slopes leading from the Illawarra Escarpment in the western portion of the study area.

• **Wattamolla Road (wt)**
Wattamolla Road landscape is depositional and is characterised by long gently to moderately inclined slopes and undulating to rolling hills with broad benches on Budgong Sandstone. Relief is <200m and slope gradients range from 5-15%
Moderately deep (50-100cm) Red Pozolic Soils are found on upper slopes and benches and Yellow Podzolic Soils are found on mid and lower slopes. Largely cleared undulating hills with some open forest.

Rock outcropping, run-on, localised mass movement, hardsetting, high organic matter, low wet bearing strength strong acidity and sodicity are characteristics of this landscape (Hazelton 1992:85).

A large portion of the study area contains the Wattamolla Road soil landscape. Running north to south of the current study area; this soil landscape is found on the moderately inclined slopes between the steeper slopes of the Illawarra Escarpment and Cambewarra landscape to the west and the eastern coastal plain before Lake Illawarra.

- **Illawarra Escarpment (ie)**

Illawarra Escarpment landscape is characterised by steep to very steep long slopes on Quaternary Talus. The Local relief is 100-500m and gradients range from 20-50% with rock and colluvial benches. Large surface and subsurface sandstone boulders (2-25m wide) are common place. Below the escarpment bedrock outcrop is absent, and large land slips are very common (Hazelton 1992:35). Deep colluvial Red Podzolic soils and Brown Podzolic soils occur on slopes. Lithosols occur where talus is recent.

Mass movement and rock fall hazard, extreme water erosion hazard, low wet bearing strength (subsoils) and low soil fertility are common with this landscape.

This landscape exists along the steep slopes and cliffs of the weathering Illawarra Escarpment and runs north to south along the western section of the study area.

The characteristics of each soil landscape can influence the location and survival of archaeological materials. Fairy Meadow (swamp) and Wattamolla Road (depositional) are both aggrading landscapes characterised by the retention of parent materials and the deposition of transported soil materials (AMBS 2004:21).

### 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. A series of small billabongs/wetlands surround the current study area and include Settlement Pond and Summit Tank.

The Mullet Creek catchment covers a large portion of the current study area. 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).
Solomons Creek is the principal tributary to Mullet Creek. A second order stream, it flows in an east to northeast direct from the Illawawarra Escarpment, converging with Mullet Creek at the base of the flood plain, within the eastern section of the study area (Dickson Rothschild 2004:22). A number of smaller ephemeral tributaries flow into Solomons Creek along a series of drainage lines covering the proposed Huntley development site.

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 of the study area (Webb, Mckeown & Associates 1987). The introduction of flood mitigation measures such as off-line flood detention basins within the development site will need to take into consideration possible impacts on cultural heritage items located within the study area.

Duck Creek, Macquarie Rivulet and Marshall Mount Creek are permanent creeks located to the south of the study area, flowing into Lake Illawarra. All are classified as third order streams. Duck Creek has aggraded since historic occupation patterns have increased sediment loads in the water.

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 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 sclerophyll forest and woodland and estuarine and swamp communities. Lantana and other weeds are widespread through the study area.

The study area is situated within easy distance of several vegetation communities and is likely to have been located in sclerophyll forest and woodlands. The drier areas
of the region would have been dominated by extensive stands of melaleucas, including *Melaleuca decora* (White Honeymyrtle), *Melaleuca styphelioides* (Prickly-leaved Paperbark) and *Eucalyptus longifolia* (Woolly Butt). Open forest communities within the area include Thin Leaved Stringybark *Eucalyptus eugenioides*, Forest Red Gum *E. terebinthus*, Scribbly Gum *E. haemastoma*, Bloodwood *E. gunnifera*, Black Ash *E. siderifolia* and Rough Barked Apple *Angophora floribunda* species (Fuller and Mills 1985:49, Robinson 1988:5).

The study area was nearby to both estuarine and swamp environments and vegetation communities. Nearby the Frazers Creek Wetland largely contains dense reedlands. Indigenous vegetation of this ecotone includes *Acacia mearnsii* (Black Wattle), *Potamogeton crispus* (Curly Pondweed), *Potamageton ochrobus* (Blunt Pondweed), *Kennedia rubicunda* (Dusky Coral Pea), *Phragmites australis* (Common Reed), *Alternanthera denticulata* (Lesser Joyweed), *Juncus usitatus* (Common Rush), *Eleocharis sphacelata* (Cumbungi), *Typha orientalis* (Tall Spike-rush), *Schoenoplectus validus* (River Club-rush), *Lomandra longifolia* (Spiny-headed Mat-rush), *Alisma plantago-aquatica* (Water Plantain), *Rumex brownii* (Swamp Dock), *Triglochin procerum* (Water Ribbons) and *Casuarina glauca* (Swamp Oak) (Chafer 1997:74).

The estuarine environments around Lake Illawarra are characterised by *Casuarina glauca* (Swamp she-oaks), *Avicennia marina* (Mangroves) and limited saltmarsh species such as *Sarcocornia quinqueflora*, *Sporobolus virginicus* (Saltwater couch), *Juncus kraussii* (Sea rush) and *Cyperus laevigatus* (sedge) and saltgrasses such as *Zostra capricorni* (Eelgrass), *Ruppia megacarpa* (Sea tassel) and *Halophila ovalis* (Paddle weed) (Chafer 1997:44).

Detailed regional ecological assessments by Mills (1988, 1989) and Mills & Jakeman (1995) identified three major contiguous areas of rainforest in the Illawarra region. The study area is located at the northern extent of the *Illawarra Brush*, located in the central Illawarra between Gerroa, Jamberoo and Shellharbour. The *Illawarra Brush* occurred primarily on the coastal Permian volcanics, but also occurred on a range of geological substrates, mainly between Albion Park and Gerringong. Rainforest areas in the foothills are mostly situated west of the rolling hills and floodplains of the main creek systems west of and draining into Lake Illawarra (Dallas and Sullivan 1995:33).

Characteristic tree species in the Illawarra subtropical rainforest complexes include *Adiantum formosum* (Black Stem Maidenhair), *Alcetria subcinereus* (Bird’s Eye), *Alphitonia excelsa* (Red Ash), *Balogha inophylla* (Brush Bloodwood), *Brachychiton acerifolius* (Illawarra Flame Tree), *Cassine australis* (Red Olive Plum), *Cayratia clematidea* (Slender Grape), *Celastrus australis* (Australian Staff Vine), *Cissus antarctica* (Kangaroo Vine), *Citriobatus pauciflorus* (Orange Thorn), *Dendrocnide excelsa* (Giant Stinging Tree), *Diospyros pentamera* (Myrtle Ebony), *Diploglottis australis* (Native Tamarind), *Doodia aspera* (Prickly Rasp Fern), *Ehretia acuminata* (Koda Tree), *Guioa semiglauca* (Wild Quince), *Hibiscus heterophyllus* (Native Rosella), *Legnephora moorei* (Round Leaf Vine), *Maclura cochinchinensis* (Cockspur...

### 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**

  **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 (*Pseudocheirus 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**

  **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 Chafer 1997:77 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 (Chafer 1997:43, reference should be made to this work for a more complete list of fish species found within Lake Illawarra).

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

- **Swamp**

**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 (Chafer 1997:75). A more complete list of birds identified from Frazers Creek Wetlands is contained in Chafer 1997.

### 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 nearby the study area in the bed of Robins Creek (Sefton 1990:4).

A number of edible plant species would have been available within proximity of the current study area. The general area includes several distinct ecotones including open forest, estuarine lagoon, alluvial swamp and rainforest communities. Each ecotone hosted different floral and fauna species, many of which would have been utilised according to seasonal availability. Aboriginal inhabitants of the Dapto area 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 (Moody 2006).
Both floral and faunal species would have provided many resources in addition to food. 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 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).

Rainforests to the south of the current study area would have provided a rich and varied source of plant and animal resources; however, the extent to which these were utilised by Aboriginal peoples is not yet fully understood. Mills and Jakeman note:

The rainforest, with its abundance of fleshy-fruited plants and its many animals, would have been an attractive site for collecting food. However, the notion that the rainforest contained an abundance of food resources should be tempered by the fact that the rainforest can be a wet and cold place, and that hunting in the dense canopy and undergrowth would be very difficult. Perhaps the edges of the rainforest provided a more pleasant and rewarding location for the hunting and gathering of food and other resources.

(Mills & Jakeman 1995:23)

It is worth noting that rainforest species collected by Aboriginal populations (refer to Table 1) were probably used in more open areas outside or adjacent to the rainforest. Given this, it is likely that the interfaces of ecotones were preferred places to collect resources, because they provided a richer variety of resources. Areas where the vegetation was easier to move through appear to have been desirable locations for the preparation and processing of resources.

Vegetal resources within rainforest communities used by Illawarra Aboriginal populations include:

<table>
<thead>
<tr>
<th>Plant Species</th>
<th>Part Used</th>
<th>Purpose</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ironwood (Acacia excelsa)</td>
<td>Wood</td>
<td>Making boomerangs</td>
</tr>
<tr>
<td>Red Ash (Alphitonia whiteii)</td>
<td>Leaves</td>
<td>Used to stupefy fish in pools</td>
</tr>
<tr>
<td>Slender Grape (Cayratia dematidea)</td>
<td>Roots &amp; berries</td>
<td>Eaten after preparation</td>
</tr>
<tr>
<td>Tree Ferns (Cyathea sp.)</td>
<td>New shoots, trunk</td>
<td>Roasted and eaten</td>
</tr>
<tr>
<td>Settlers’ Flax (Gymnostachyus anceps Araceae)</td>
<td>Leaves</td>
<td>Stripped and used for string</td>
</tr>
<tr>
<td>Cabbage Palm (Livistona australis)</td>
<td>Young Leaves, heart, gum</td>
<td>Eaten</td>
</tr>
</tbody>
</table>
### Table 1: Rainforest resources utilised by Aboriginals (source: Mills and Jakeman 1995:24)

<table>
<thead>
<tr>
<th>Snake Vine (<em>Hibbertia scandens</em>)</th>
<th>Stems and leaves</th>
<th>Fish poison</th>
</tr>
</thead>
<tbody>
<tr>
<td>Water Vine (<em>Cissus sp.</em>)</td>
<td>Stems</td>
<td>含水</td>
</tr>
<tr>
<td>Plum Pine (<em>Podocarpus elatus</em>)</td>
<td>Berries</td>
<td>Eaten raw</td>
</tr>
<tr>
<td>Orange Thorn (<em>Citriobatus pauciflorus</em>)</td>
<td>Fruit</td>
<td>Eaten raw</td>
</tr>
<tr>
<td>Bolwarra (<em>Eupomatia laurina</em>)</td>
<td>Fruit</td>
<td>Eaten raw</td>
</tr>
</tbody>
</table>

#### 3.7 Historic Land Use Background

The Illawarra region was settled by Europeans during the early nineteenth century. The land use practices they brought with them have had a dramatic impact on the environment, including vegetation clearance, residential, industrial and commercial development.

Land clearing began with the development of small lot agriculture by tenant farmers. Initially, wheat farming was the main commercial activity in the region. However after a severe rust infestation of crops in the mid nineteenth century, farmers turned to dairying, which developed into a considerable regional industry by the turn of the century. Dairying and cattle grazing appear to have been the main initial land use practice within the present study area. An area now known as the ‘Chinese market gardens’ also indicates that other agricultural practices were taking place within the property (David Tregonning *Pers. comm.* 17/07/06).

On 4 October 1834, a grant of 600 acres was issued to Alfred Elyard. This property later became known as Avondale and was sold to Henry Osborne of Marshall Mount in the 1840’s. He also acquired a considerable area on the mountain slopes adjacent to this grant, which encompassed the western extent of the current Huntley property. Osborne’s Marshall Mount property included a grant of 2560 acres (1036 ha) near the present town of Dapto. Henry Osborne had a large number of cattle by the 1840s and was known as one of the aristocracy of early dairying in the Illawarra. 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 (http://www.wollongong.nsw.gov.au/library/localinfo/dapto/history.html).

As well as vegetation clearing for pasture, other land disturbances are associated with the development of the Huntley and Avondale Collieries. Huntley Colliery is located below the Illawarra Escarpment and was first opened as a small hand worked mine from the outcrop in the Tongarra seam of the Illawarra Coal Measures by the Waugh
Bros. (Phil, Frank and William) in 1946 (http://www.illawarracoal.com/huntley.htm). It was then purchased by the Joint Coal Board on 27th July, 1951 and by the Electricity Commission of NSW on 15th June, 1955 to service the requirements of the newly constructed Tallawarra Power Station on the western shores of Lake Illawarra. In January, 1967 a dense media washery was commissioned to produce a high fluidity coking coal.

Coal exited the mine via the Tongarra seam after passing through a 1000 tonne inter-seam bin from the Wongawilli seam. A Bradford Breaker was installed at seam level prior to a crushing plant from where it descended by overland conveyor to the coal preparation plant at the base of the foothills. Coking and fuel coal products were transported by road to either Pt. Kembla or Tallawarra Power Station, the rejects being transported by conveyor and then truck to one of several stockpiling areas or utilised in the making of tailings dams on site (http://www.illawarracoal.com/huntley.htm).

The Colliery was closed in 1982 after a decline in the world demand for high quality coking coal and a downturn in power generation requirements led to a sequence of rationalisation to cope with the reduced demand. Neighbouring Avondale Colliery closed in 1983 and was purchased by Huntley, incorporating it into their leasehold. Avondale Colliery is currently being prepared for reopening.
4.0 ABORIGINAL HISTORY

The Wollongong area is rich in Aboriginal cultural heritage. Cultural heritage sites exist as extant features - such as rock shelters and historic buildings - as archaeological sites which are more difficult to observe, and as significant places remembered in oral histories.

It is generally accepted that people have inhabited the Australian landmass for at least 60,000 years. Dates of the earliest occupation of the continent by Aboriginal people are subject to continued revision as more research is undertaken.

4.1 Tribal Boundaries

Our knowledge of the social organisation of Aboriginal people prior to European contact is, to a large extent, reliant on documents written by early European arrivals recording their impressions. The inherent bias of the class and cultures of these authors necessarily affect such documents. They were also often describing a culture that they did not fully understand – a culture that was in a heightened state of disruption given the arrival of settlers and disease. Early written records can, however, be used in conjunction with archaeological information in order to gain a picture of Aboriginal life in the region. Oral histories from members of the Aboriginal community also provide valuable information.

Early recorders of tribal arrangements along the east coast of Australia were compelled to ‘try and find major units in Australia of the kinds familiar to the people of Europe’ (Tindale 1974:156). The existence of small, autonomous Aboriginal tribes did not conform to the European sensibility of “nationhood”, and resulted in the amalgamation of tribal groups into larger, collective groupings more easily understood in a European context. By the early to mid-twentieth century, researchers were cognisant of the historical biases inherent in such broad groupings. Consequently, the concept of Aboriginal nations has gradually been replaced with a more detailed understanding of tribal structures.

Aboriginal populations are generally grouped in several ways. The largest-scale grouping is by shared linguistic affiliation (or by language group), although smaller groupings, such as tribal and band arrangements are just as important.

Language groups were not political or social units. Instead, land custodianship and ownership centred on the smaller named groups that comprised the broader language grouping. These groups are often called ‘clans’ or ‘local descent groups’, however as Wesson (2000: 8) points out, they are better described as ‘named groups’ as the membership structure and degree of division from other groups could vary. Groups were delineated by physical boundaries within the landscape, such as watercourses.
and the boundaries of particular varieties of vegetation. Group members were usually united by common dialect, descent, history, and a shared 'Dreaming' ancestor, with each group led by influential individuals; primary allegiance was owed to this named group, although this could vary according to context and location.

These groups in turn are generally assumed to have been made up of small local extended family groups (often called bands). It is assumed that such bands were made up of one or two adult males and their ‘wives’ and dependants (McDonald 1992).

The Illawarra area is within the Tharawal (also Dharawal, Darawal, Carawal, Turawal, Tharawal) linguistic group. The named groups (often referred to as ‘clans’, ‘bands’ or ‘tribes’) belonging to the Tharawal/Dharawal language group were the following: Gweagal, Norongerraga, Illawarra, Threawal, Tagary, Wandeandega, Wodi Wodi and Ory-ang-ora (Tindale 1974). In his overview of Australian Aboriginal tribal boundaries, Tindale (1940:194-195, 1974:199-201), places the Illawarra area within the territories of the Wodi Wodi tribe (or ‘named group’). Tindale describes the Wodi Wodi named group as occupying the area north of the Shoalhaven River to Wollongong (1940:194-195). Many of the town and place names of the Illawarra are derived from the Dharawal language.

4.2 Ethnohistory & Contact 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 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.

<table>
<thead>
<tr>
<th>Date</th>
<th>Location</th>
<th>Subject</th>
<th>Comment</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>29 Oct 1818</td>
<td>Illawarra</td>
<td>Seed</td>
<td>Fetilo ? longorilus – a large spreading tree. Rivulet banks etc – the red arella? of the seed of this tree is eaten by the natives</td>
<td>Cunningham 1816-19, cited in Sullivan 1982: Table 4</td>
</tr>
<tr>
<td>1845</td>
<td>Illawarra</td>
<td>Bark Canoes</td>
<td>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.</td>
<td>Wilkes 1845:193, cited in Sullivan 1982: Table 6</td>
</tr>
<tr>
<td>1825</td>
<td>Illawarra</td>
<td>Bark Huts</td>
<td>‘At Illawarra, their huts were made by 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’</td>
<td>Wilkes 1845:184-185, cited in Sullivan 1982: Table 6</td>
</tr>
<tr>
<td>1825</td>
<td>Illawarra</td>
<td>Torches</td>
<td>‘they make torches of bundles of bark, beaten and tied up’</td>
<td>Field 1825:467, cited in Sullivan 1982: Table 6</td>
</tr>
<tr>
<td>24 Oct 1818</td>
<td>Illawarra</td>
<td>Fishing Lines</td>
<td>‘…my native guide was [?] himself with long pieces of the stringy tough bark of Curragon (Hibiscus tethenphyllus) for fishing lines’</td>
<td>Cunningham 1816-19, cited in Sullivan 1982: Table 6</td>
</tr>
<tr>
<td>26 Oct 1818</td>
<td>Illawarra</td>
<td>Water Bucket</td>
<td>‘I yesterday observed they had their [?] water in buckets made of the leaf scheccutes of some palm, which they call Baugla [?] which they informed me grew under the mountain’</td>
<td>Cunningham 1816-19, cited in Sullivan 1982: Table 6</td>
</tr>
</tbody>
</table>
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

<table>
<thead>
<tr>
<th>Year</th>
<th>Location</th>
<th>Species</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1825</td>
<td>Illawarra / Shoalhaven</td>
<td>Water Bucket</td>
<td>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’</td>
</tr>
<tr>
<td>1843</td>
<td>Kiama / Dapto</td>
<td>Kangaroo</td>
<td>the females had their hair ornamented with kangaroo teeth’</td>
</tr>
</tbody>
</table>

Table 2: Ethnographic accounts of Aboriginal resource use

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. 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.

Later ethnographic accounts describe the blend of Aboriginal and European accoutrements employed by those Aboriginal people 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 Aboriginal parties, 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, for example there a description of a death spear barbed with pieces of glass (Backhouse 1843:433-444).

Closer to the current study area there is some 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 south of the current study area. Henry Osborne and his family settled at Marshall Mount in 1831 and from the 1840’s also owed a large portion of the western extent of the current Huntley property.

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).

Another account describes how Cabbage Tree Palms were used by the local Aboriginal people as foot bridges over creek lines. One crossing describes the following account:

*The Mullet Creek where we passed it must have been nearly five and thirty feet wide; and the bridge was one of those slender cabbage trees grown on the bank and flung by some bushman or black across the creek with his axe, either with the view to using it as a bridge or for the sake of the interior part of the head...a favourite article of food with many* (Organ 1990:163).

Early accounts of Mullet Creek also provide some clues into the Aboriginal tool kit. In 1888, John Brown, a local settler in the region noted some earlier activities of the settlers around Lake Illawarra:

*He (Mr George Brown) had always taken a deep and active interest in the Lake and its islands, and also in Mullet Creek, down which he had made his first trip in a boat in 1837, blackfellow canoes then being the order of the day...* (Organ 1990:348).

Further accounts describe ceremonial activities taking places nearby. Alexander Stewart, a boot maker who had settled near Dapto Road at Spring Hill in 1828 recalled a gathering of around 100 local Aboriginal people nearby his house. The events that followed included the punishment of one of the Aboriginal men for taking the wife of another:

*The man whose wife had been taken was the man who threw the spears. The culprit was allowed a shield behind which he could nearly hide himself. The thrower had his spears – nearly a dozen – slung on his back. They were a sort of reed, pointed with stone or iron* (Stewart referenced in Barwick – Hooke 1988:48).

The arrival of European colonists wrought swift and catastrophic change to the Aboriginal people of the Illawarra region. 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, these industries continued to bring more and more non-Aboriginal people into the area resulting in restricted access to the traditional hunting grounds of the Tharawal and Wodi Wodi. 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.

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.

4.3 The Archaeological Record

4.3.1 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
  Curracurang).
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.
- 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.

• 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.

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.

4.3.2 Localised Archaeological Work

One known archaeological assessment has been undertaken within a section of the current study area. In early 2006 ERM undertook a desktop review of environmental factors for the reopening of the Avondale Coal Mine. This report determined that
no archaeological sites were recorded in the study area around the mine portal. It was concluded that as the land had been previously cleared and utilised for mining, the integrity of any open artefact scatters within the immediate zone of the study area and along the adjoining access road had already been previously destroyed. ERM state that potential for disturbance of unrecorded cultural material is low and recommend that no further archaeological investigations be carried out prior to the commencement of works and ground disturbance works be minimised during the construction of an access track (ERM 2006:33).

Conversations with Huntley Heritage Pty Ltd site manager David Tregonning suggest that another Aboriginal archaeological assessment may have been undertaken within the current study area (pers. comm. 17/07/06). Unfortunately, although attempts were made to track this report down, Biosis Research was unable to obtain any further information on who wrote this report or when it was undertaken. There is no record of this report at DEC or with the current developers.

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 3). As discussed previously, work has also recently started to consider the forested hinterland as a significant contributor to Aboriginal resource procurement.

Unfortunately, few archaeological surveys have been conducted in the hinterland – where land use remains predominantly rural. As a result, less is known about the Aboriginal heritage resource use in this area. In their Aboriginal heritage study of the Shellharbour City Council Navin Officer (2000) note that there has been very limited archaeological survey work conducted west of Princes Highway. While a small number of ethno-historical and oral based reports exist for this area, there are no confirmed recordings of archaeological sites. Subsequently, the majority of inland topographies within the study area are unrepresented and untested by any form of site inventory analysis which also limits the identification of site distribution patterns and predictive trends (Navin Officer 2000:50).

While there has been little major survey work conducted on ridgeline complexes in the Shoalhaven/Wollongong region, considerable survey and recording of equivalent ridgeline complexes 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 adjacent to the current study area and several reports have been commissioned to address the Aboriginal archaeological cultural heritage within this area and its subsequent management.

These include, most recently, the Aboriginal Heritage Management Plan: West Dapto Release Area commissioned by the Wollongong City Council (Russell 2006). This comprehensive study addressed the Aboriginal archaeological and cultural heritage values for the West Dapto Release Area (WDRA). 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 100m² area (100 x 1m² 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 through out 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).

The following investigations have also been undertaken within a similar landscape to the current study area:

Silcox (1993) undertook an archaeological survey and assessment of a 20ha 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 (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 spurlines 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 affecting site detections; 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 (PADs) were noted. These included the main
northern spurline and small locally elevated areas adjacent to the main (northern) study
area creekline.

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.

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 1982:12-13). 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 1982). 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. These records have often included
oral histories (refer to Section 4.2) and 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.

### 4.3.3 Registered Aboriginal Sites

A search of the NSW Department of Environment (DEC) Aboriginal Heritage
Information Management System (AHIMS) database in June 2006 identified 32 known
sites within a 9 km x 10 km search encompassing the study area and its surrounds (52-5-
0398 and 52-5-0409 appear to be duplicates bringing the number to 32). No sites were
recorded within 200 m of the study area. Details of registered sites within the greater
search area and along the Coastal Plain region have been provided in Appendix
3. 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 32 sites identified in the greater search area, artefact occurrences are predominant, comprising 14 sites. Within this overall grouping, there were 8 registered open camp sites in the area, 2 camp sites with potential archaeological deposits (PADs), 3 shelters with PADs and 1 isolated find.

Art sites were the next most frequently occurring sites identified in the greater search area, with a total of 7 recorded. 4 of these sites are recorded as shelters with art and 3 are shelters with art and PADs. The remaining total of registered sites include 5 scarred trees, 4 grinding grooves and 1 site described as a stone arrangement.

A detailed Aboriginal archaeological assessment and management plan of the West Dapto Release Area has recently been completed by AMBS (2006). At the time of writing this report AMBS were in the process of finalising this document and as such the located sites have not yet been processed by AHIMS. As the planned Huntley Eco Village is adjacent to the West Dapto Release Area it was considered appropriate to consider these sites within this report. Only one open camp site was located within 200m of the border of the current study area:

<table>
<thead>
<tr>
<th>Site ID No</th>
<th>Site Name</th>
<th>Site Type</th>
<th>Site Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>52-5-0070</td>
<td>WDRA_AX_06</td>
<td>Open camp site, 4 chert artefacts recovered from excavation.</td>
<td>In paddock adjacent to creek line. Near junction between Cleveland and Avondale Roads</td>
</tr>
</tbody>
</table>

Table 4: Details of Aboriginal site located within 200 m of the study area

4.4 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 DEC 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 predictive model has taken into account disturbance levels within the study area given the recent
historic and industrial use of much of the area. Major infrastructure associated with the Huntley Colliery has also been considered.

4.4.1 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.

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 or Solomons 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.

**Rock shelters with art and/or deposit**
Rock shelters with art and/or deposit are the most frequently recorded site types within the escarpment region of the study area. These sites generally occur within specific geological and topographical landscapes comprising sandstone exposures, shelving and overhangs.

− Due to the topography, suitable sandstone exposures or overhangs and cavities possessing sufficient sheltered space to contain potential archaeological deposits and/or art are limited to the Escarpment zone within the study area.

**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.

**4.4.2 Landscapes**

There is the possibility that archaeological sites may occur throughout all land forms within the study area –although at varying site and artefact densities- and subsequently all parts of the study area are considered to have some archaeological potential. However, 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, in the form of hearths and artefact scatters. As most of the waterways in the study area are intermittent, it unlikely that these were long-term campsites.

**Ridge and spurlines**

Ridge and spurlines which afford effective through-access may contain the remains of short-term campsites, especially at viewpoints. The crests of low relief spurs 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 are a number of flat ridge crests within the study area that may have been used for this purpose.
**Escarpment and steep slopes**

The steepness of the Escarpment would suggest that while it was no doubt traversed by Aborigines it would not have been a focus of permanent occupation. Within the current study area Aboriginal sites are unlikely to be found on steep slopes, unless artefacts have been transported via natural processes such as water run off down the slope.
5.0 SURVEY RESULTS

This project required that Aboriginal sites be located and recorded, and any areas of Aboriginal archaeological sensitivity to be defined within the study area. Before the field survey the National Parks and Wildlife Service site registry was searched to assess whether any sites had previously been recorded in the study area and allow a site prediction model to be formulated. No previously recorded registered Aboriginal archaeological sites were located within the study area (see Section 2.2).

5.1 Archaeological Survey – Methods

A survey of the study areas took place over six days (17 – 28 July 2006). Participants included James Davis (Wodi Wodi Elders Corporation), Allan Carriage (Wadi Wadi Coomaditichie Aboriginal Corporation), Sarah Burke and Helen Cekalovic (Biosis Research Pty. Ltd.).

During the survey, the weather was mainly fine, with some rain at times. The weather did not hamper the survey. Access to the entire property was hampered by the presence of large thickets of lantana, and steep thickly wooded slopes, which prevented access to many areas. Foot survey was possible in areas cleared of bush vegetation and grazing paddocks, along access tracks and along some animal tracks.

All areas that could be accessed were surveyed on foot. Details of field conditions, ground surface visibility, vegetation cover and the degree of and agents of disturbance were recorded during the survey. A photographic record of the general field conditions and all recorded sites was taken. Areas were identified as being either:

- **No potential for Aboriginal archaeological remains** - Areas where the original ground surface and landscape has been severely altered or the topography was unsuitable for use. There is no possibility that any archaeological sites would have survived.

- **Low potential for Aboriginal archaeological remains** - Areas that have been identified as having specific locations where there has been a high degree of disturbance since 1770, where the impact has been to the extent where no intact or remnant soil deposits are believed to be present. Areas may include steep slopes or plains away from water sources. Artefacts found in this area are likely to be isolated.

- **Moderate potential for Aboriginal archaeological remains** - Areas where minor post 1788 disturbance has occurred; the area is located along minor creeks and waterways where short term campsites may have been present. Artefact scatters are likely to vary in density, but are concentrated in small areas.
• **High potential for Aboriginal archaeological remains** – Areas located along major creek lines or adjacent to other natural resources, where there has been minimal disturbance to the specific area and it is believed that an intact remnant landscape exists in the area. Artefacts remains within these areas are likely to be dense and large in size.

### 5.1.1 Constraints to Survey

**Ground Surface Visibility**

There are a number of factors that hinder the identification of Aboriginal archaeological sites. One of these is ground surface visibility. Ground surface visibility per square metre was variable throughout the study area. In the majority of the study area, ground surface visibility was less than 5% per square metre as thick pasture grasses; lantana and leaf litter obscured the soil. A small percentage of the surveyed areas, on tracks and where vegetation had been recently cleared, contained exposures that provided up to 100% per square metre visibility of the ground surface.

**Disturbance**

Disturbance in an area can also influence whether or not sites are found. Disturbed terrain is identified in areas where human activity has impacted on soils to a depth of at least 100 cm. Disturbed terrain can therefore be identified in different topographies and is generally associated with the original soil being either removed, greatly disturbed or buried (Hazelton 1992:107). This type of activity can remove archaeological sites completely or uncover them.

The presence of Huntley and Avondale Collieries within the study area has considerably altered and disturbed the original context of many parts of this landscape. For example, in the eastern section of the property an area of approximately 600m² originally used as the coal storage and washing area for the Huntley mine has now been completely cleared and modified. No natural features remain. A number of adjacent slopes were also recorded as having been recently cleared of all vegetation and ground surface has been modified.

Other disturbance in the study areas includes flood damage including scouring and erosion, animal scratchings, road and track construction, stock disturbance, fence and building construction and market gardens.

### 5.2 Archaeological Survey – Results
Within the study area, several areas (A, B, D-I) were identified as having a moderate potential for containing Aboriginal archaeological sites (Figure 4). Areas A and E also contain Aboriginal archaeological sites (Avondale 1 and Avondale 2 respectively). Each area and site is summarised below. Other areas were identified as having low or no sensitivity for Aboriginal sites (C, Avondale colliery portal and the Huntley coal wash area).

The tables below present the results of the targeted study area inspections for this project. Survey areas were grouped according to landform features and levels of disturbance.

### 5.2.1 Area A

**Sensitivity:** MODERATE

**Proposed Impact:** Recreational space – Golf Course

<table>
<thead>
<tr>
<th>Landform</th>
<th>Context</th>
<th>Disturbance</th>
<th>Exposure %</th>
<th>Visibility %</th>
<th>Archaeology</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alluvial floodplain and terraces around Mullet Creek</td>
<td>Rural pasture, currently used for cattle grazing.</td>
<td>Moderate: land clearance, rural activity, fence line and posts, cattle scour, creek bank erosion</td>
<td>20%</td>
<td>50% in exposure</td>
<td>Avondale 1 artefact scatter and PAD</td>
</tr>
<tr>
<td></td>
<td></td>
<td>High: localised around “Dans Place” Rotary Park</td>
<td></td>
<td>10% overall</td>
<td></td>
</tr>
</tbody>
</table>

**Notes**

Located north of Avondale Road, Mullet Creek bisects this area (Figure 4). It comprises cleared grazing land, floodplain and terraces of Mullet Creek and its tributaries. Part of the area is located within a Rotary Park, which has manicured lawns and recreation areas. The creek is lined with vegetation, which is thick in some places. Ground surface visibility is poor in this area. The grazing paddocks contain little to no ground surface visibility. Along the creek and in eroded areas where there are cattle tracks or where they have massed, ground surface visibility is improved. Vertical scoured sections along the banks of the creek are visible in some locations.

Davis Tregonning noted that this area has been impacted by large floods in the past and scouring has occurred, the floods may have also disturbed soil deposits around the banks of Mullet Creek (*pers. comm.* 26/03/07).

Within Area of Sensitivity A, a small Aboriginal archaeological site was identified (Avondale 1 artefact scatter). It is located on an exposure on a cattle track on a slope (15°) at the base of a ridgeline, approximately 20 metres from the confluence of Mullet Creek and a tributary. One chert flaked piece was identified, as well as a flaked piece made from rhyolite and a manuport of unknown stone origin, possibly volcanic.
Issues and Recommendations

Notify DEC of the location and details of the Avondale 1 artefact scatter.

This area is likely to contain further Aboriginal archaeological sites. The moderate sensitivity of this area and the presence of Avondale 1 provides an Aboriginal Cultural heritage constraint.

Avondale 1 Scatter - This area is likely to be impacted by the construction of residential housing. A section 90 permit from DEC to salvage this site before it is destroyed will be required prior to any works occurring in this area. Conditions on disturbing this site may include collecting the artefacts and monitoring the location during any earth disturbance works in order to identify any further artefacts or features of the site.

A program of further subsurface testing (via a section 87 permit from DEC) within any development footprint located in this area will assist in determining if there are any further Aboriginal sites located here. This will be required if any ground disturbance work (including creek bank modification) associated with the planned development is to take place at this location.
5.2.2 Area B

**Sensitivity:** MODERATE (flat ridge top), LOW (slopes)

**Proposed Impact:** None specified

<table>
<thead>
<tr>
<th>Landform</th>
<th>Context</th>
<th>Disturbance</th>
<th>Exposure %</th>
<th>Visibility %</th>
<th>Archaeology</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ridgeline crest</td>
<td>Rural pasture, currently used for cattle grazing</td>
<td>Moderate: land clearance rural activity, fence line and posts, cattle scour</td>
<td>0%</td>
<td>0%</td>
<td>PAD</td>
</tr>
</tbody>
</table>

**Notes**

This area of sensitivity is located at a viewpoint on the edge of the foothills overlooking the coast. This area may have been used as a lookout for small groups. Presently, it is grassy with no ground surface visibility. Previously it may have been covered with more bushy vegetation, but due to its location, could have been used as a lookout and there is the possibility that low density artefact scatters or isolated finds may be located here. The area is at the top of a ridge that leads down to Mullet Creek.

**Plate 3:** View of grassy top of Area of Moderate Sensitivity D, facing south.

**Issues and Recommendations**

Areas of moderate sensitivity are likely to contain Aboriginal archaeological sites which may present an Aboriginal Cultural heritage constraint.

If any ground disturbance work is to take place at this location a program of further subsurface testing (via a section 87 permit from DEC) of this area will assist in determining if there are any Aboriginal sites located here. Subsurface testing should be limited to the development footprint.
5.2.3 Area C

Sensitivity: LOW

| Proposed Impact: Low density residential development, outdoor recreational facilities |
|------------------|------------------|------------------|------------------|------------------|
| Landform         | Context          | Disturbance      | Exposure %       | Visibility %     | Archaeology      |
| Alluvial flat and lower gentle foot slopes | Rural pasture, currently used for cattle grazing | Moderate: land clearance rural activity, fence line and posts, cattle scour, vehicle track access | 10% | Associated with stock scour and access track | 50% in exposure 5% overall | None identified. |

Notes
Located south of Avondale Road and Mullet Creek (Figure 4). It comprises cleared flat to moderately sloping grazing land dissected by two drainage lines. Ground surface visibility is poor in this area. The grazing paddocks contain little to no ground surface visibility. Along areas where there are cattle tracks or where they have massed, ground surface visibility is improved. Pockets of regrowth vegetation and lantana occur along the eastern section of this area along a small tributary of Mullet Creek.

Issues and Recommendations
There is a low possibility for Aboriginal remains to be present within this area. Work should be restricted to the proposed building envelope leaving the remainder of the area undisturbed and designated as low potential.

Contractors working on the project should be made aware of the possibility of Aboriginal sites in the area and provided a set of protocols to assist them in dealing with any that are found.

5.2.4 Area D

Sensitivity: Moderate

| Proposed Impact: Recreation space-outdoor facility |
|------------------|------------------|------------------|------------------|------------------|
| Landform         | Context          | Disturbance      | Exposure %       | Visibility %     | Archaeology      |
| Ridgeline crest  | Cleared land with overgrown grasses, vehicle access track. | Moderate: land clearance, vehicle access along track | 40% along track | 90% of exposure 36% overall | PAD |

Notes
This area is located on a ridgeline near the eastern boundary. It is a small area that has been dissected by tracks and there is good surface visibility on the tracks. A large cobble flake was found in this area, although as it was found on the edge of a track, its identification as an Aboriginal artefact is uncertain. It has ripple marks, but an unclear striking platform.
Plate 4: Cobble flake of unknown origin.

Issues and Recommendations

The moderate sensitivity of this area provides an Aboriginal Cultural heritage constraint as this area is likely to contain further Aboriginal archaeological sites.

A program of further subsurface testing (via a section 87 permit from DEC) of this area will assist in determining if there are any further Aboriginal sites located here. This will be required if any ground disturbance work is to take place at this location. Subsurface testing should be limited to the development footprint.

5.2.5 Area E

Sensitivity: MODERATE

Proposed Impact: no proposed development works in this area

<table>
<thead>
<tr>
<th>Landform</th>
<th>Context</th>
<th>Disturbance</th>
<th>Exposure %</th>
<th>Visibility %</th>
<th>Archaeology</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mullet Creek tributary and lower foot slopes</td>
<td>Access track and regrowth vegetation</td>
<td>Moderate: land clearance, vehicle access. Creek tributary blocked.</td>
<td>30% along track and creek bank</td>
<td>50% in exposure</td>
<td>Avondale 2 artefact scatter and PAD</td>
</tr>
</tbody>
</table>

Notes

This area of sensitivity is located on a tributary of Mullet Creek and next to a spring that feeds into a pool in the tributary. A track cuts along the boundary in this area. Numerous stone fragments, including silcrete, chert, quartz, basalt and rhyolite, are found on the track near the pool. Good surface visibility is present along the track.

Whilst the majority of the stone fragments found on the track do not have any diagnostic features that identify them as being Aboriginal in origin, there are three that are artefacts, having scarring typical of knapping marks, such as a bulb of percussion and negative flake scars. The artefacts include a broken silcrete flake, a complete silcrete flake and a basalt flake (Avondale 2 Scatter).
**Issues and Recommendations**

Notify DEC of the location and details of the Avondale 2 artefact scatter.

The presence of Avondale 2 scatter and the moderate archaeological potential of the area - indicating that this area is likely to contain further Aboriginal archaeological sites - presents an Aboriginal cultural heritage constraint.

Avondale 2 Scatter - This site is located close to a natural spring on the boundary of the property. No development is expected to be located here. The creek cuts across a corner of the study area. This corner (a triangle approximately 17 x 10 metres) should be placed in a ‘no works zone’. The track is likely to be utilised and upgraded as a firebreak and access track. Future management of this section of the track should endeavour to disturb as little of the ground surface as possible.

A section 90 permit from DEC to salvage this site will be required prior to any track upgrading works occurring in this area. Conditions on disturbing this site may include collecting the artefacts and monitoring the location during any earth disturbance works in order to identify any further artefacts or features of the site.

5.2.6 Area F

*Sensitivity:* MODERATE

*Proposed Impact:* Recreational trails, bushwalking, cycling tracks

<table>
<thead>
<tr>
<th>Landform</th>
<th>Context</th>
<th>Disturbance</th>
<th>Exposure %</th>
<th>Visibility %</th>
<th>Archaeology</th>
</tr>
</thead>
<tbody>
<tr>
<td>Broad level bench below Escarpment</td>
<td>Previously used as a market garden and for cattle grazing.</td>
<td>Moderate: general area has been cleared for market gardens. Vehicle access tracks have also caused disturbance.</td>
<td>10%</td>
<td>50% in exposure 5% overall</td>
<td>PAD</td>
</tr>
</tbody>
</table>

**Notes**

This area is located in a cleared area known as the Chinese Market Gardens. Presently the location is relatively flat and provides a lookout to the lowlands. The landform slopes sharply to the coast from this location. A non-diagnostic fragment of silcrete was found on a poorly formed track that leads to the lookout point. Ground surface visibility in this area is generally poor. Large pockets of land remain cleared of all vegetation except knee high grass.
Plate 7: Flattened area of the Area of Moderate Sensitivity E, facing south-west

Issues and Recommendations

This area is likely to contain Aboriginal archaeological sites which may present an Aboriginal cultural heritage constraint.

A program of further subsurface testing (via a section 87 permit from DEC) of this area will assist in determining if there is an Aboriginal site located here. This will be required if and ground disturbance work is to take place at this location. Subsurface testing should be limited to any development footprint occurring in this area.

5.2.7 Area G

Sensitivity: MODERATE

Proposed Impact: Recreational space - Golf Course

<table>
<thead>
<tr>
<th>Landform</th>
<th>Context</th>
<th>Disturbance</th>
<th>Exposure %</th>
<th>Visibility %</th>
<th>Archaeology</th>
</tr>
</thead>
<tbody>
<tr>
<td>Solomons Gully</td>
<td>Unutilised, overgrown with exotic vegetation, inaccessible</td>
<td>unknown</td>
<td>unknown</td>
<td>unknown</td>
<td>unknown</td>
</tr>
<tr>
<td>and Tributaries</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Notes

This area is located along Solomons Gully. This area could not be accessed due to thick vegetation, but numerous tributaries feed into this gully and it is likely that this waterway runs intermittently. Short-term campsites may be located along this area.

Issues and Recommendations

If any development impact is planned for this area, further survey fieldwork will be required once the exotic vegetation has been cleared, to determine if there are any Aboriginal sites located here.
### 5.2.8 Area H

**Sensitivity:** MODERATE  
**Proposed Impact:** none specified

<table>
<thead>
<tr>
<th>Landform</th>
<th>Context</th>
<th>Disturbance</th>
<th>Exposure %</th>
<th>Visibility %</th>
<th>Archaeology</th>
</tr>
</thead>
<tbody>
<tr>
<td>Level ridgeline</td>
<td>Unutilised, partly cleared, vehicle and equestrian access tracks</td>
<td>Moderate: general area has been cleared, ground surface altered. Evidence of historical debris</td>
<td>30% around clearances</td>
<td>90% in areas of exposure</td>
<td>None identified</td>
</tr>
</tbody>
</table>

**Notes**

Within this area there are fig trees and a relatively level ridgeline. This ridgeline is located between a number of tributaries of Solomons Gully. It may have been used previously as a short-term campsite and look out. There has been some clearance of vegetation in the area and the ground surface may have been altered. In addition, there are fragments of old china and glass in the area. Ground surface visibility varies over the area of moderate sensitivity and is patchy, from none to 100 percent.

Two of the fig trees at this location have small scars on some branches. Alan Carriage (NIAC) believes these are possibly birthing trees.

**Plate 8:** View of Area of Moderate Sensitivity G, facing east.

**Issues and Recommendations**

This area is likely to contain Aboriginal archaeological sites which may present an Aboriginal cultural heritage constraint. Exclude this area from any potential development.

If any future development is planned within this area then further consultation with the women of the traditional owner groups and dating of the fig trees may be required to determine the connection of these trees to a traditional birthing area. A specialist may also be required to confirm the nature and cause of the scars identified on the fig trees in this area.
5.2.9 Area I

**Sensitivity:** MODERATE

**Proposed Impact:** none specified

<table>
<thead>
<tr>
<th>Landform</th>
<th>Context</th>
<th>Disturbance</th>
<th>Exposure %</th>
<th>Visibility %</th>
<th>Archaeology</th>
</tr>
</thead>
<tbody>
<tr>
<td>Escarpment and Plateau</td>
<td>Native forest</td>
<td>unknown</td>
<td>unknown</td>
<td>unknown</td>
<td>unknown</td>
</tr>
</tbody>
</table>

**Notes**

This area of moderate sensitivity is located on top of the escarpment. This area could not be accessed. There is the potential for sites to be located on the edge of the escarpment as it would have provided an unhindered view of the coast. Any sandstone rock shelters > 1m high with relatively level sandstone platforms located within the area are potentially archaeological sensitive and may contain Aboriginal sites.

The Escarpment has been identified by all groups as being a very significant cultural landscape to the Aboriginal people of the area.

**Issues and Recommendations**

A program of further survey fieldwork within this area will be required if any ground disturbance work is to take place at this location, this will assist in determining if there are any Aboriginal sites located here.

Survey coverage was not undertaken in areas that were inaccessible due to steepness of slope, thick vegetation growth, or areas exhibiting signs of substantial disturbance. Within the study area, disturbed zones are located in the immediate vicinity of the Huntley Colliery complex, coal storage and wash facilities. The Avondale Colliery portal was also identified as being a disturbed zone by ERM (2006). It is likely that these areas no longer retain any archaeological sensitivity. Other areas that were inaccessible during the survey but exhibit zones of potential archaeological sensitivity have been identified above and in Figure 4.

5.3 Effective Survey Coverage

As required by the NSW National Parkes and Wildlife Service Standards and Guidelines Kit, the following table outlining the effective survey coverage attained during the survey has been compiled.

These estimates have been calculated from targeted pedestrian surveys at each of the proposed impact areas.
Table 5: Survey Coverage of sample areas.

An estimate of the overall survey coverage that was achieved as a percentage has been provided below:

<table>
<thead>
<tr>
<th>Sample Area</th>
<th>Length (m)</th>
<th>Width (m) (est average)</th>
<th>Area (m)</th>
<th>Area surveyed (m²)</th>
<th>% of overall area surveyed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total survey area</td>
<td>N/A</td>
<td>N/A</td>
<td>255000</td>
<td>9,550</td>
<td>3.7%</td>
</tr>
<tr>
<td>Effective survey area (m)</td>
<td>N/A</td>
<td></td>
<td>22470</td>
<td></td>
<td>8.8%</td>
</tr>
</tbody>
</table>

Table 6: Overall survey coverage of study area

5.4 Archaeological Survey – Interpretation and Discussion

The study area surveyed for this project is contained within the varied landscape zones of the Illawarra Coastal Plain and Illawarra Escarpment. The topography of the study area is transitional from the high-relief edges of the Illawarra Escarpment through to the low-relief alluvial plains. Moving west to east the study area contains a combination of topographic units including a small portion of the Illawarra Plateau, the steeply inclined slopes of the Illawarra Escarpment, a series of spurs and ridgelines with broad benches, declining to low relief, gentle slopes and eventually alluvial plain.

Within the larger landscape of the study area, and around areas of similar topography between the Escarpment and Coastal Plain there are several registered Aboriginal sites which indicate that these types of landscape were once utilised by Aboriginal
people. Aboriginal use of the area is likely to be evident in stone tool scatters and (prior to vegetation clearance) in the presence of scarred trees. These markers of Aboriginal occupation are most likely to be found along the flat areas of ridgeline crests and along raised areas close to water sources.

The varied landscape zones within the immediate study area and the wider coastal plain is likely to have influenced and/ or limited the movement and activities of Aboriginal groups within the study area. Variations in slope and gradient would have acted as a constraint on some activities such as camping. Given the steep slope of the Escarpment along the western extent of the study area, it is possible to determine that these areas were not used intensively for any purposes and as such the archaeological potential for these areas is likely to be low. On the other hand the lower relief sections in the eastern part of the study area, particularly any raised level sections along the creek lines would have allowed easier movement between environmental zones and would have been suitable for camping and more frequent use. Subsequently these areas are of moderate archaeological potential.

The identification of both artefact scatters (Avondale 1 and Avondale 2) during the survey, in the lower relief eastern extent of the study area, along raised areas of land adjacent to water confluences is comparable to the prediction above, as well as the pattern of known Aboriginal sites located along similar landscapes within the Illawarra.

The stone raw materials found within the study area are of local origin. For example, silcrete is naturally occurring within the immediate environment. It is considered unlikely that the non-diagnostic fragments of silcrete found within the study area are of Aboriginal in origin. Other rocks identified in the study area include petrified wood. This is common in many parts of the study area and is also likely to be naturally occurring. Other stone includes rhyolite, basalt, chert and quartz.

A number of other areas have been identified within the study areas as being of moderate archaeological sensitivity. These all follow the predictive model described within the report. For example areas B, D, F and H are all areas located on ridge line crests or broad flat benches within the study area. The level natural topography of these landscape zones, their easy access to the Escarpment in the west and the view provided from these locations would further indicate that such areas were likely to have been utilised by Aboriginal peoples. Areas A, E and G are located along tributaries systems and alluvial plains within the study areas and as discussed above, raised areas of land adjacent to water confluences are favoured places of repeat occupation for Aboriginal people within the area. Dry elevated and level ground near creek lines often contains the remains of campsites, in the form of hearths and artefact scatters as the creek systems in the region appear to have been used as corridors for movement between the coastal strip and the lake and more elevated regions to the west (Dallas and Sullivan 2005: 67). Area I occurs along the Illawarra Plateau. Art sites, shelters with deposits, grinding grooves and artefact scatters previously identified along the Plateau indicate that this area may
have been used for camping as well as ceremonial purposes and as such it should be considered archaeologically sensitive.

Level surfaces suitable for campsites are more commonly found on flat tops of spurs and ridges or on valley bottoms and river terraces. Ridge and spur tops are eroding landforms and tend to have shallow soils and archaeological material is likely to be present at the surface or just below the surface. Archaeological material within aggrading (depositional) surfaces, along valley bottoms and river terraces and creek margins, is more likely to be covered under a deeper soil deposit and will become visible only through erosion and/or disturbance (Dallas and Sullivan 1995:12).

Previous archaeological surveys have recorded relatively few Aboriginal sites within the western coastal plain and foothill region of the Illawarra. Site types recorded in these areas include artefact scatters, scarred trees, and archaeological deposits and grinding grooves. On top of the Illawarra Escarpment art sites are also common within sandstone shelters. Within the greater landscape the high frequency of sites located around Lake Illawarra, give further weight to the interpretation of a more intensely used, resource rich landscape which was frequented by Aboriginal people. Aboriginal use of the area is evident in middens and stone tool scatters and (prior to vegetation clearance) in the presence of scarred trees.

Although further work within the hinterland zones of the Illawarra coastal plain is required, the results of the survey – a small number of low density sites recorded - confirms existing assumptions developed by Navin Officer regarding site locations and densities within the coastal plain and foothills of the Illawarra region (2002). That is, that although visibility is often uniformly poor in the western within this landscape, the low numbers of Aboriginal sites and the low artefact densities in these sites is a real archaeological pattern.

There are several possible reasons for this east-west imbalance in recorded sites. Firstly, lack of ground surface visibility is a considerable constraint to site detection; secondly, there have also been fewer archaeological surveys within the western corridor of the coastal plain; and thirdly, these areas represent a relatively less economically attractive area than the adjacent coastal and estuarine margins – resource zones which offered the most cost-productive return in terms of food extrapolation (Navin Officer 2002).

There have been considerable levels of ground disturbance to the study area since historic occupation, first by the early settlers practicing dairy farming and later the mining industry. 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 sites there are not likely to be in their original context. More intensive levels of ground disturbance associated with mining activities are also likely to have destroyed any archaeological sites within their landscapes.
Visibility throughout the survey area was generally poor, and based upon the findings of previous studies in similar landscapes it is considered possible that low densities of artefacts remain undetected in the study area particularly on ridge crests and along creek lines. As the poor ground surface visibility across the study area has not assisted in the identification of Aboriginal sites each of the Aboriginal groups consulted for this project has expressed a desire to undertake a watching brief during any ground disturbing works associated with this development.
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 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.
6.2.1 Aboriginal community or cultural values

The NSW DEC recognises that ‘Aboriginal community are the primary determinants of the significance of their heritage’ (NSW DEC 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 relate 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 (including the ridge and
spur lines) has been identified by all the Aboriginal stakeholder groups consulted as
being very culturally significant. As Sharralyn Robinson stated ‘…it is not just the
escarpment or a Mountain but our heritage, part of our existence and therefore must be
protected and nurtured…the whole of the escarpment is a place of significance. It is not
just the material significance but the spiritual and cultural connection to this land that
needs to be considered’ (correspondence 22 March 2007). Allan Carriage also stressed
the importance of the Escarpment and the need to protect this environment from any
development. He identified that people would have used this area for ceremony and
caves found within this landscape would contain rock art. The ridge and spur lines
would have been used by Aboriginal people for access between the Plateau, Escarpment
and the coast. Mullet Creek was also identified by Allan Carriage as an important area.
This landscape would have provided many resources and fresh water and people were
known to have used this creek when settlers arrive (pers. comm. 20 July 2006). It is also
likely that the spring in area E was used by Aboriginal people and Mr Carriage and
James Davies both highlighted its importance (pers. comm. 20 and 17 July 2006). Two
fig trees in area H were identified by Mr Carriage as possibly being birthing trees.
During the next stage of consultation, it will be important to discuss this statement
further with the women of the traditional owner groups in the area, as they would
traditionally be the knowledge holders of information relating to ‘women’s business.

Overall, the Aboriginal communities identified the study area as having high cultural
significance.
6.2.2 Aboriginal archaeological or scientific values

Scientific value 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.

In the past, a consideration of scientific (archaeological) value was the focus of most approvals assessment processes for Aboriginal heritage, and this will still be an important component of most assessment processes. The intent of the DEC Draft guidelines for Aboriginal Cultural Impact Assessment and Community Consultation (2005) is to ensure that these values are incorporated within a broader consideration of Aboriginal heritage significance.

While various criteria for archaeological assessment have been advanced over the years, most can be considered under the heading of research potential. Significance in this case lies in the potential of sites or places to describe past behaviour, rather than the potential to yield artefact collections or the potential to apply a particular analysis. The scientific values of Aboriginal archaeological sites can be used to determine the overall potential for these sites to contribute to existing models. The scientific values of Aboriginal archaeological sites within the present study area are assessed using three main criteria: site contents (cultural material, organic remains and site structure), site condition (degree of disturbance of a site), and representativeness (the regional distribution of a particular site type). The assessment of significance for each recorded Aboriginal archaeological site is detailed in Appendix 5. A summary of this assessment is provided below:

**Statement of Archaeological Significance**

In general, the archaeological sites within the study area possess scientific value based on their potential to contribute to an understanding of Aboriginal occupation and use of the Escarpment and foothills and the wider Illawarra region. As the study area has been subjected to disturbance through land-use practices in previous years, the artefact scatter sites have low to moderate potential to contribute important information regarding the nature of Aboriginal occupation in this region, and specific information concerning stone tool technologies. The location of additional archaeological material in this area can be compared to the current models of Aboriginal occupation, land use patterns and technology in the region, and may serve to augment and validate these models, or perhaps provide additional information or variations to the existing models. Any sites located within the Escarpment zone would be important for increasing the limited archaeological knowledge of this landscape compared with the amount of information known of the coastal region.
Each site is given a score (or rating) on the basis of the above criteria — the overall scientific significance is determined by the cumulative score.

<table>
<thead>
<tr>
<th>Site Name &amp; Number</th>
<th>Site contents</th>
<th>Condition</th>
<th>Representativeness</th>
<th>Scientific significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Avondale 1 Scatter</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>3 (low)</td>
</tr>
<tr>
<td>Avondale 2 Scatter</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>3 (low)</td>
</tr>
</tbody>
</table>

Very few sites have been identified in the foothills below the Escarpment in the Illawarra region. Whilst these sites are considered rare for this aspect, these two sites identified during the survey are in a disturbed context, contain few artefacts, are located along the relief sections of the study area and as a result are not of high scientific significance.

An explanation of the significance assessment rating for each site is summarised below.

**Avondale 1**

*Stone Artefact Scatter*

This site is considered to be of moderate scientific significance as a) the site contains a small number of stone artefacts, of a range of locally sourced raw materials, there is the potential for further intact stratified deposit to exist within the area, b) the site is located within a disturbed context in an exposed area showing signs of cattle treadage c) stone artefact scatters are considered to be a common occurrence within this landscape.

**Avondale 2**

*Stone Artefact Scatter*

This site is considered to be of low scientific significance as a) the site contains a small number of sparsely scattered, stone artefacts with a limited range of raw materials, b) located within a disturbed context on a cleared track and exposure c) and stone artefact scatters are considered to be a common occurrence within this landscape.

### 6.2.3 Aboriginal Sites – Significance Summary

The determination of Aboriginal significance relies on a comprehensive approach to cultural heritage assessments and to the values that are attached to heritage places. Aboriginal heritage significance can be considered to be the importance of a place, site or object arising from the combination of values attributed to it. These values determine the ‘what’ and ‘how’ of conservation and direct management decisions.

The following summary of significance has been based on the results of the
archaeological survey, an understanding of regional Aboriginal sites patterning, and from comment and input from the relevant Aboriginal groups.

<table>
<thead>
<tr>
<th>Site Name</th>
<th>Community or Cultural Values</th>
<th>Archaeological or Scientific Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Avondale 1</td>
<td>High Cultural Value</td>
<td>Low</td>
</tr>
<tr>
<td>Avondale 2</td>
<td>High Cultural Value</td>
<td>Low</td>
</tr>
</tbody>
</table>
7.0 IMPACT ASSESSMENT

The following impacts associated with the proposed redevelopment of the Huntley Colliery site have been identified from the EDAW Huntley Colliery Site: Planning Vision concept plan (Figure 2). Based upon the information provided, impacts are discussed at a broad concept level only. Further archaeological assessment may be required as per the recommendations below (Section 8.0), once a more specific plan has been created with key areas of development and associated impacts identified.

General impacts identified include the following:

- Development and construction works involving any ground modification works – i.e. residential housing and associated infrastructure and recreational spaces including the golf course - in moderate archaeologically sensitive zones have the potential to disturb identified (Avondale 1 and Avondale 2) or potential archaeological sites. Consideration should be given to the recommendations below in order to best mitigate any potential disturbance to any archaeological sites before it actually occurs.

- All creek lines and flat ridgeline crests and benches within the study area have been identified as particularly sensitive. Care should be taken when planning the location of recreational spaces, residential property, access tracks and roads, land clearing, walking or horse riding trails to ensure a minimal amount of disturbance occurs within these areas. Where it is anticipated that the development footprint will disturb these areas, further archaeological assessment may be required to identify the presence of any archaeological sites within the proposed impact zones and develop an appropriate management plan to mitigate any damage to these sites. Use of access tracks from vehicle movements and horse riding may also impact on potential archaeological sites.

- Areas along the Illawarra Escarpment and on top of the Plateau are considered culturally and archaeologically sensitive. However, no development has currently been identified within these landforms and as such there are no direct impacts to these areas.

- Areas where the survey was restricted due to vegetation present should be made available after its clearance to identify whether any new sites have been uncovered. This survey would involve all relevant Aboriginal stakeholders.

- There will be no Aboriginal archaeological impact associated with the location of the proposed Ecotourism accommodation within the disused Huntley administration buildings along the Escarpment.
8.0 MANAGEMENT ISSUES AND RECOMMENDATIONS

8.1 Introduction

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

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

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

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

8.2 Management Recommendations

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:

Recommendation 1 - Areas of no Aboriginal archaeological sensitivity

No further archaeological work in regards to Aboriginal heritage is required in these areas.

Recommendation 2 - Areas of low Aboriginal archaeological sensitivity

These areas have been identified as containing a low potential for Aboriginal archaeological remains. It is recommended that the proposed development within these areas should be restricted to the building envelopes outlined in the Huntley Colliery Site Planning Vision (EDAW 2007). This will ensure the Aboriginal potential within the remainder of the area is preserved.
Recommendation 3 - Areas of moderate Aboriginal archaeological sensitivity

Any proposed development within the areas described as having moderate Aboriginal archaeological potential will require a Section 87 permit from the Department of Environment and Conservation. This permit should be prepared by a qualified archaeologist and will apply to test the potential and integrity and any Aboriginal archaeological remains within these areas. The test exaction will determine the size, extent, density and significance of any Aboriginal archaeological remains present within these areas.

The results of the test excavation will lead to either:

- d) no further archaeological work required;
- e) An application for a Section 90 permit to allow for the proposed works to continue with no further archaeological work;
- f) An application for a Section 90 permit, Consent to Destroy, with a condition to salvage the remaining Archaeological remains.

The test excavation will only occur within the proposed building foot prints and not in areas where no potential development is proposed. An assessment will be made from the test excavation for each proposed building area individually.

It is recommended that project scheduling allow a sufficient time for the preparation and processing of the S87 and S90 permits. An example of timing is as follows: Once the permit is lodged with DEC, processing time can take between 8-12 weeks.

Recommendation 4 - Areas of moderate Aboriginal archaeological sensitivity

This area has been identified by Allan Carriage of the Wadi Wadi Coomaditchie Aboriginal Corporation as being a potential birthing place. Prior to recommendations regarding any further development at this location, consultation with women from the traditional Aboriginal owners groups of the area should be undertaken to confirm the cultural significance of this area. At this stage the two fig trees on this site are to remain undisturbed.

Recommendation 5 - Areas of high Aboriginal archaeological sensitivity

There are no areas of high sensitivity within the study area.

Recommendation 6 - Avondale 1 Site – artefact scatter

Avondale 1 Scatter is located within the proposed development footprint within an identified area of moderate archaeological potential (A). As well as the three artefacts identified, the immediate area around it is considered to contain potential archaeological deposits (PADs).

A Section 90 permit from the NSW DEC should be prepared by a qualified archaeologist to collect the artefacts on the surface of the site, and to excavate the
remainder of the artefacts within the designated potential area. This permit will allow for the adequate recording of the site prior to the development occurring.

**Recommendation 7 - Avondale 2 Site – artefact scatter**

If this area is to be impacted at any stage, a Section 90 permit application should be made to the NSW DEC to remove and relocate the artefacts located along the road to a designated area away from any potential development or disturbance to the road. The permit should be prepared by a qualified archaeologist.

An area approximately 17 x 10 m around the site should be marked as a ‘do not disturb area, and no site works undertaken within this area.

**Recommendation 8 - Part 6 Aboriginal stakeholder consultation**

As part of the above permit processes, Aboriginal community consultation will be required. This consultation is required to follow the *National Parks and Wildlife Act 1974*: Part 6 Approvals Interim Community Consultation Requirements for Applicants (refer to Appendix 3). These guidelines specify the consultation process required when making applications for S87 and S90 permits.

**Recommendation 9 – 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 10 - Vegetation clearance and management**

As visibility was very poor during the original archaeological field survey it is recommended that following the clearing of the Lantana weed endemic to the area, an archaeologist and relevant Aboriginal stakeholders be invited to return to the study area and conduct an additional field survey in newly cleared areas of moderate archaeological sensitivity to identify whether any new sites have been uncovered.
8.3 Report Lodgement

This report has been distributed to:

- Treglown Consulting
- Huntley Heritage Pty Ltd
- Illawarra Local Aboriginal Land Council
- Wodi Wodi Elders Corporation
- Northern Illawarra Aboriginal Collective
- Wadi Wadi Coomaditchie Aboriginal Corporation

Each of these groups has been invited to provide comments on this report. In addition, representatives of the Aboriginal community who provided input during the survey process were asked for comment. Comments received have been incorporated into the final report.

8.4 Independent Review of Reports

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

Although the findings of a consultant’s report will be taken into consideration, recommendations in relation to managing a heritage place should not be taken to imply automatic approval of those actions by the Department of Environment and Conservation, the Aboriginal community or the Heritage Office.
FIGURES
Figure 1: Location of the Study Area in a regional context.
Figure 2: Proposed development

- Education/Conference Centre
- Limited Ecotourism Accommodation
- Low Density Residential Development
- Recreation Space (eg. Golf Course)
- Recreation Space - Outdoor Facilities
- Recreation/Club House
- Water

Key:
- Study Area
Figure 4: Areas of sensitivity and new sites.

**Key**
- **New site**
- **Study Area**

**Sensitivity class**
- Moderate
- Low
- No sensitivity

**Study Area**
- Avondale

**Key**
- **Study Area**
- **New site**

**Legend**

- **Moderate**
- **Low**
- **No sensitivity**

**Map Details**
- Scale: 0 150 300 450 600 750 metres
- **Date:** 18 September 2006
- **Checked by:** SEB
- **File number:** S4453
- **Location:** 40074450/4453 Mapping S4453 Pref. sensitivity WOR

**Study Area**
- Avondale

**Legend**

- **Moderate**
- **Low**
- **No sensitivity**

**Key**
- **Study Area**
- **New site**
Figure 5: Areas of sensitivity and new sites overlayed on the areas of the proposed development.
APPENDIX 1

Indigenous community comment
Dear Sarah

Re: Huntley Eco-Park, Archaeological Assessment, NSW

I would like to Thankyou for forwarding the final Aboriginal Archaeological Assessment of the proposed Huntley Colliery Development rezoning.

I have read through this report and wish to make the following comments:

- All the study area 420 hectares of land situated to the south of West Dapto, in the foothills of the Illawarra Escarpment are of huge significance to Aboriginal people.

- It is not just the escarpment or a Mountain but our heritage, part of our existence and therefore must be protected and nurtured.

- It is unfortunate that the Illawarra Local Aboriginal Land Council was not available to participate in the site work conducted throughout the study. However I would like to express our interest as a key stakeholder in any future consultations, studies or assessments conducted throughout this project.

- I agree with the recommendations of this report and reiterate the importance of a section 87 permit and section 90 Application in the protection of Aboriginal Heritage.

- It is a recommendation of the Illawarra Local Aboriginal Land Council that any work carried out throughout the escarpment must be monitored by Aboriginal Site Officers.

- As clearly identified in this report the whole of the escarpment is a place of significance. It is not just the material significance but the spiritual and cultural connection to this land that needs to be considered.

If you require any further information, please don’t hesitate to contact me on the number listed below.

Yours in UNITY

Sharralyn Robinson
Coordinator
Ph: 42 622978
M: 0410125463
Attention: Sarah Burke, Archaeologist, B.I.O.S.I.S. Research Pty Ltd, 15-17 Henrietta Street, Chippendale, N.S.W., 2577.

Re: Huntley Eco-Park, Aboriginal Archaelogical Assessment, N.S.W.

Dear Sarah,

The Wodi Wodi Elders Council is responding to correspondence dated 9th March, 2007 regarding the final report for the Aboriginal Archaeological Assessment of the proposed Huntley Colliery Development rezoning. James Davis, Site Officer for the W.W.E.C. participated in the Archaeological Assessment which was conducted with B.I.O.S.I.S. from the 17th to the 20th July 2006.

I conferred with James Davis, site officer and representatives of the W.W.E.C. in reviewing and discussing the above mentioned report. The W.W.E.C. concluded that the report is "remarkable" due to the fact that the report was precise and very informative.

The W.W.E.C. identified key objectives in the section outlined "Management Recommendations" (p.60). The ideology in which the W.W.E.C. is founded on plays a significant part in the Protection and Preservation of traditional (W.W.E.C.) Aboriginal Culture and Heritage. Therefore, the W.W.E.C endorse the recommendations outlined in the report.

Please do not hesitate in contacting me if you require any further information.

Yours Sincerely,

Sheryl Davis, Representative, Wodi Wodi Elders Council.

To Sarah Burke, BIOSIS
   re proposed Huntley Eco-Park, Aboriginal Cultural Heritage Assessment —

Dear Madam,

NIAC’s native title member groups have a policy of opposing all development above the 50 metre contour of the Illawarra Escarpment. We have set in motion a Schedule 14 handback of SRA lands, and nominated the Woronora Plateau down to the 50 metre contour of the Escarpment for National Heritage Listing under the EPBC Act. The study was very limited and brief, and we were not supplied with flora and fauna information although they are Traditional Materials too. Two sites were found, and other sites of high likelihood were identified as needing much more careful study by NIAC’s elders before rezoning or any further activities are set in motion. NIAC wishes to be involved in all future planning and assessments. Yours sincerely

Chris Illert
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.

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
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 DEC or the NSW Heritage Council. If a development is likely to impact a heritage item, the consent authority must refer it, to NSW DEC (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 Minister 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.
### APPENDIX 3
Registered AHIMS sites in the locality

<table>
<thead>
<tr>
<th>Site ID Number</th>
<th>Site Name</th>
<th>Site Type</th>
<th>Site Location</th>
<th>Recording &amp; Reports</th>
</tr>
</thead>
<tbody>
<tr>
<td>52-2-0956</td>
<td>Avon Mine 2</td>
<td>Isolated find: a hammerstone of igneous material.</td>
<td>Located on the banks of a creek. Site disturbed by bulldozer activity.</td>
<td>F Wright</td>
</tr>
<tr>
<td>52-2-0974</td>
<td>Avon Mine No 1</td>
<td>Open camp site comprising 7 artefacts in an area 5 x 6 m. Made from chert or quartz.</td>
<td>Located on a hill slope 120 m from drinking water.</td>
<td>F Wright</td>
</tr>
<tr>
<td>52-2-1032</td>
<td>Wongawilli</td>
<td>Open camp site, low density artefact scatter with some PAD. Petrified wood the most common material</td>
<td>Cleared are at foothills and 50 m from a small creek</td>
<td>L Haglund</td>
</tr>
<tr>
<td>52-2-1033</td>
<td>Wongawilli</td>
<td>Open camp site, low density artefact scatter. Petrified wood the most common material</td>
<td>Adjacent to creek on a level surface.</td>
<td>ASRSYS</td>
</tr>
<tr>
<td>52-2-1542</td>
<td>Bong Bong 1</td>
<td>Scarred tree cut with European axe (contact period). <em>Eucalyptus eugenioides</em> (healthy and in good condition). Scar undamaged 1.5 m long x 0.45 wide.</td>
<td>Located 200 m south of Bong Bong hill crest. 700 m from drinking water.</td>
<td>C Sefton</td>
</tr>
<tr>
<td>52-2-1543</td>
<td>Bong Bong 3</td>
<td>Scarred tree, <em>Eucalyptus tereticornis</em>. Scar size 0.95 x 0.40 m. Scar has considerable regrowth.</td>
<td>Located on north side of a gradual hill slope.</td>
<td>C Sefton</td>
</tr>
<tr>
<td>52-2-1544</td>
<td>Bong Bong 2</td>
<td>Open camp site exposed in cow track along creek. Two artefacts a pink silcrete broken flake and yellow siliceous multi-platform core.</td>
<td>Located on creek bank.</td>
<td>C Sefton</td>
</tr>
<tr>
<td>52-2-1688</td>
<td>WD1-1</td>
<td>Open camp site comprising five artefacts.</td>
<td>Located at minor break slope 30 m NE of swampy channel and 80 m north of creek.</td>
<td>P Saunders</td>
</tr>
<tr>
<td>Site ID Number</td>
<td>Site Name</td>
<td>Site Type</td>
<td>Site Location</td>
<td>Recording &amp; Reports</td>
</tr>
<tr>
<td>---------------</td>
<td>----------------</td>
<td>-----------------------------------------------</td>
<td>-------------------------------------------------------------------------------</td>
<td>---------------------</td>
</tr>
<tr>
<td>52-2-1932</td>
<td>Amber 1</td>
<td>Six grinding grooves in groups of four and two.</td>
<td>Located above Escarpment on a small swamp around two potholes at the edge of water flow</td>
<td>C Sefton</td>
</tr>
<tr>
<td>52-2-1977</td>
<td>Amber 11</td>
<td>Shelter with PAD, 8 artefacts located on surface; 5 pebbles, 3 quartz bipolar flakes</td>
<td>Located above the Escarpment, 20 m from northern side of creek under first ridgeline up from creek</td>
<td>C Sefton</td>
</tr>
<tr>
<td>52-2-1978</td>
<td>Amber 12</td>
<td>Shelter with art and PAD. Sandstone overhang. Most art in fair –good condition, artefact scatter, including quartz and black chert flakes and cores, jasper pieces</td>
<td>Located above the Escarpment, under second ridge down from knoll. c. 200m from creek</td>
<td>C Sefton</td>
</tr>
<tr>
<td>52-2-1979</td>
<td>Amber 13</td>
<td>Shelter with art</td>
<td>Located above the Escarpment, SE side of ridge under top ledge</td>
<td>C Sefton</td>
</tr>
<tr>
<td>52-2-1980</td>
<td>Amber 14</td>
<td>Shelter with art, in poor condition</td>
<td>Located above the Escarpment, N side of creek, 50m above the main cliff line above the Avon River</td>
<td>C Sefton</td>
</tr>
<tr>
<td>52-5-0001</td>
<td>Duck Creek 2</td>
<td>Open camp site (stone artefact scatter, including grey chert and siliceous stone flakes).</td>
<td>Located on hillslope c. 40-50 metres from creek.</td>
<td>S McIntyre</td>
</tr>
<tr>
<td>52-5-0056</td>
<td>Duck Creek 3</td>
<td>Scarred trees – one stringy bark with toe holes, and a box eucalypt. Two open camp site (stone artefact scatters).</td>
<td>Two scarred trees and artefact scatter all located within open woodland / forest environment, c. 30-35 metres from creek tributary.</td>
<td>S McIntyre</td>
</tr>
<tr>
<td>52-5-0062</td>
<td>Yallah</td>
<td>Scarred trees</td>
<td>Located on hillslope c. 200 metres from creek.</td>
<td>A Anderson</td>
</tr>
<tr>
<td>52-5-0137</td>
<td>Yallah</td>
<td>Scarred trees (Eucalyptus eugenioides – Thin-leaved Stringybark).</td>
<td>Located on a hillslope c. 75 metres from small creek.</td>
<td>C Sefton</td>
</tr>
<tr>
<td>52-5-0147</td>
<td>Duck Creek 1</td>
<td>Open camp site (stone artefact scatter including chert, quartz and silcrete cores and flakes)</td>
<td>Located on the banks of a small creek / seasonal tributary.</td>
<td>S McIntyre</td>
</tr>
<tr>
<td>52-5-0228</td>
<td>Macquarie Rivulet 2</td>
<td>Open camp site in area 60 x 20 m. Predominantly chert with some mudstone, silcrete and agate.</td>
<td>Site identified in a paddock adjacent to Macquarie Rivulet.</td>
<td>K Navin</td>
</tr>
<tr>
<td>Site ID Number</td>
<td>Site Name</td>
<td>Site Type</td>
<td>Site Location</td>
<td>Recording &amp; Reports</td>
</tr>
<tr>
<td>---------------</td>
<td>--------------</td>
<td>---------------------------------------------------------------------------</td>
<td>-------------------------------------------------------------------------------</td>
<td>---------------------</td>
</tr>
<tr>
<td>52-5-0333</td>
<td>Caddie 4</td>
<td>Shelter with PAD, artefact scatter includes silcrete, and grey chert flakes and 4 bipolar quartz flakes</td>
<td>Located above the Escarpment, under an outcrop 0.7km east of Avon River</td>
<td>C Sefton</td>
</tr>
<tr>
<td>52-5-0334</td>
<td>Caddie 5</td>
<td>Shelter with Art and PAD, includes 3 engravings, chert and mudstone flakes and flaked pieces and quartz bipolar flakes and cores</td>
<td>Located above the Escarpment, on ridgeline c. 2km E of North Pole Swamp</td>
<td>C Sefton</td>
</tr>
<tr>
<td>52-5-0335</td>
<td>Caddie 6</td>
<td>Shelter with PAD, 3 chert flaked pieces, 1 quartz bipolar flake, 1 broken flake with useware and retouch</td>
<td>Located above the Escarpment, under top of ridgeline c. 2km E of North Pole Swamp</td>
<td>C Sefton</td>
</tr>
<tr>
<td>52-2-0338</td>
<td>Amber 10</td>
<td>Shelter with Art, in poor condition</td>
<td>Located above the Escarpment, S of Summit Tank</td>
<td>C Sefton</td>
</tr>
<tr>
<td>52-5-0339</td>
<td>Amber 9</td>
<td>1 grinding groove across the water flow</td>
<td>Located above the Escarpment, at outlet of swamp 0.6 N E of Summit Tank</td>
<td>C Sefton</td>
</tr>
<tr>
<td>52-5-0340</td>
<td>Amber 8</td>
<td>Shelter with PAD</td>
<td>Located above the Escarpment, on N side of a small gully containing the beginning of the Summit Tank creek</td>
<td>C Sefton</td>
</tr>
<tr>
<td>52-5-0341</td>
<td>Amber 7</td>
<td>2 Grinding grooves</td>
<td>Located above the Escarpment, at the head of the large swamp flowing W into Summit Tank</td>
<td>C Sefton</td>
</tr>
<tr>
<td>52-5-0342</td>
<td>Amber 6</td>
<td>Shelter with PAD and art, high density artefact scatter, deposit undisturbed and art in poor condition</td>
<td>Located above the Escarpment, N side of ridge running along S side of small creek. 2km SW of Summit Tank</td>
<td>C Sefton</td>
</tr>
<tr>
<td>52-5-0343</td>
<td>Amber 5</td>
<td>Stone arrangement, consisting of flat stones arranged in the form of a wall</td>
<td>Located above the Escarpment, on ridge top on eastern side of Avon River</td>
<td>C Sefton</td>
</tr>
<tr>
<td>52-5-0344</td>
<td>Amber 4</td>
<td>Shelter with art in poor condition</td>
<td>Located above the Escarpment, under the top cliff line on E side of the Avon river</td>
<td>C Sefton</td>
</tr>
<tr>
<td>52-5-0347</td>
<td>Amber 17</td>
<td>Grinding Groove</td>
<td>Located above the Escarpment</td>
<td>C Sefton</td>
</tr>
<tr>
<td>52-5-0398</td>
<td>Test Pitting Area 19</td>
<td>DUPLICATE ENTRY</td>
<td>DUPLICATE ENTRY</td>
<td>S Huys</td>
</tr>
<tr>
<td>Site ID Number</td>
<td>Site Name</td>
<td>Site Type</td>
<td>Site Location</td>
<td>Recording &amp; Reports</td>
</tr>
<tr>
<td>---------------</td>
<td>--------------------</td>
<td>------------------------</td>
<td>-------------------------------------------------------------------------------</td>
<td>---------------------</td>
</tr>
<tr>
<td>52-5-0409</td>
<td>Test Pitting Area 20</td>
<td>Open camp site &amp; PAD</td>
<td>Located on spur of raised banks of the creek, c. 20-30 metres from creek.</td>
<td>S Huys</td>
</tr>
<tr>
<td>52-5-0412</td>
<td>Test Pitting Area 19</td>
<td>Open camp site &amp; PAD</td>
<td>Located on spur line c. 40-50 metres from creek.</td>
<td>S Huys</td>
</tr>
<tr>
<td>52-5-0433</td>
<td>West Dapto Release Area PAD</td>
<td>PAD</td>
<td>SITE CARD MISSING</td>
<td>M Russell</td>
</tr>
</tbody>
</table>

**WEST DAPTO SITE CARDS FOR REGISTRATION IN AHIMS DATABASE**

<table>
<thead>
<tr>
<th>TBA</th>
<th>WDRA_AX_04</th>
<th>Open camp site, 6 artefacts recovered from excavation. Material includes chert, quartz and silcrete</th>
<th>N side of Avondale rd, on flat adjacent to Mullet Creek</th>
<th>M Russell</th>
</tr>
</thead>
<tbody>
<tr>
<td>TBA</td>
<td>WDRA_AX_05</td>
<td>Open camp site, 4 artefacts including core and flakes. Recovered from excavation, material includes quartz and silcrete</td>
<td>S side of Avondale road on spur crest</td>
<td>M Russell</td>
</tr>
<tr>
<td>TBA</td>
<td>WDRA_AX_06</td>
<td>Open camp site, 4 chert artefacts recovered from excavation</td>
<td>In paddock adjacent to creek line. Near junction between Cleveland and Avondale Roads</td>
<td>M Russell</td>
</tr>
<tr>
<td>TBA</td>
<td>WDRA_AX_20</td>
<td>Open camp site, 17 artefacts recovered from excavation, including chert, quartzite, silcrete and s. tuff flakes and flaked pieces</td>
<td>Located on alluvial flat close to creek line, near Bong Bong rd.</td>
<td>M Russell</td>
</tr>
<tr>
<td>TBA</td>
<td>WDRA_AX_21</td>
<td>Open camp site, 16 artefacts recovered from excavation, including chert, quartz, s. wood and quartzite flakes and flaked pieces</td>
<td>Located on alluvial flat close to creek line, near Bong Bong rd.</td>
<td>M Russell</td>
</tr>
<tr>
<td>TBA</td>
<td>WDRA_AX_23</td>
<td>Open camp site, 3 artefacts recovered from excavation (chert and s.wood flakes and broken flakes)</td>
<td>N side of Cleveland rd on alluvial flat.</td>
<td>M Russell</td>
</tr>
<tr>
<td>TBA</td>
<td>WDRA_AX_24</td>
<td>Isolated find (quartz broken flake), recovered from excavation</td>
<td>N side of Cleveland rd on alluvial flat.</td>
<td>M Russell</td>
</tr>
<tr>
<td>TBA</td>
<td>WDRA_AX_25</td>
<td>Open camp site, 4 artefacts recovered from excavation. Including chert and s.wood flakes and broken flakes.</td>
<td>Located on N side of Marshall Mount rd on mid slope of hill.</td>
<td>M Russell</td>
</tr>
<tr>
<td>TBA</td>
<td>WDRA_AX_32</td>
<td>Isolated find (quartzite flake) recovered from excavation.</td>
<td>Located on N side of Marshall Mount rd on mid slope of hill.</td>
<td>M Russell</td>
</tr>
<tr>
<td>Site ID Number</td>
<td>Site Name</td>
<td>Site Type</td>
<td>Site Location</td>
<td>Recording &amp; Reports</td>
</tr>
<tr>
<td>---------------</td>
<td>-------------</td>
<td>---------------------------------------------------------------------------</td>
<td>-------------------------------------------------------------------------------</td>
<td>---------------------</td>
</tr>
<tr>
<td>TBA</td>
<td>WDRA_AX_33</td>
<td>Isolated find (chert flake) recovered from excavation</td>
<td>Located on S side of Marshall Mount rd on top of hill slope.</td>
<td>M Russell</td>
</tr>
<tr>
<td>TBA</td>
<td>WDRA_AX_34</td>
<td>Open camp site (12 artefacts) recovered from excavation. Chert, Quartz,</td>
<td>Located N side of Marshall Mount rd, on benched terrace elevated from creek.</td>
<td>M Russell</td>
</tr>
<tr>
<td>TBA</td>
<td>WDRA_AX_35</td>
<td>Open camp site. 6 artefacts recovered from excavation including chert,</td>
<td>Located N side of Marshall Mount rd, on strp slope between two stream flow</td>
<td>M Russell</td>
</tr>
<tr>
<td>TBA</td>
<td>WDRA_AX_47</td>
<td>Open camp site. 3 artefacts recovered from excavation, including chert</td>
<td>Located on S side of Bong Bong rd, on flat adjacent to creek.</td>
<td>M Russell</td>
</tr>
<tr>
<td>TBA</td>
<td>WDRA_AS_02</td>
<td>Open camp site. 3 chert artefacts located in erosion exposure on upper</td>
<td>Located on spur of crest between Duck Creek and tributary of Mullet Creek.</td>
<td>M Russell</td>
</tr>
<tr>
<td></td>
<td></td>
<td>hill slope. 1 flake and 2 conjoining broken flakes.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
GLOSSARY

Introduction & terminology

The following list provides definitions of various terms used in this report. Many of the terms have been referenced and the sources included in the reference list at the end of this report.

There is often a degree of confusion about the use of terms such as heritage place, historical site, archaeological site and so on. The definitions of these terms, as used in this report, have been included in the glossary and their relationship outlined in Figure 1 below. The term used most consistently is heritage place and this is defined as follows:

Heritage place: A place that has aesthetic, historic, scientific or social values for past, present or future generations – ‘... this definition encompasses all cultural places with any potential present or future value as defined above’ (Pearson & Sullivan 1995: 7).

For the purpose of discussion in this document ‘heritage place’ can be sub-divided into Aboriginal place and historic place (i.e. a historic place refers more particularly to non-Aboriginal sites).

Archaeological site types

The archaeological site types encountered in Australia can be divided into three main groups:

Historical archaeological site: an archaeological site formed since non-Aboriginal settlement that contains physical evidence of past human activity (for example a structure, landscape or artefact scatter).

Aboriginal historical archaeological site (or contact site): a site with a historical context such as an Aboriginal mission station or provisioning point; or a site that shows evidence of Aboriginal use of non-Aboriginal materials and ideas (for example: artefact scatter sites that have artefacts made from glass, metal or ceramics).

Aboriginal prehistoric archaeological site: a site that contains physical evidence of past Aboriginal activity, formed or used by Aboriginal people either before, or not long after, European settlement. These sites are commonly grouped as follows (further definition of each is contained in the glossary list):
Huntley Eco-Park, Aboriginal Archaeological Assessment, New South Wales. 2007

- artefact scatter
- burial
- hearth
- isolated artefact
- mound
- quarry
- scarred tree
- shell midden
- structures
- rock art
- rock shelter
- rock well

One of the most common artefact types that provides evidence of Aboriginal people are those made from stone. Types and categories are outlined below in Figure 2, with further definition of each in the glossary list.

Figure G2: Stone artefact types/categories.

List of definitions

Aboriginal historical archaeological site (or contact site): either a site with an historic context such as an Aboriginal mission station or provisioning point; or a site that shows evidence of Aboriginal use of European/non-Aboriginal materials and ideas (e.g. artefact scatter sites that contain artefacts made from glass, metal or ceramics).

Aboriginal prehistoric archaeological site: a site that contains physical evidence of past Aboriginal use, formed or used by Aboriginal people either before, or not long after, European settlement.

Alluvial terrace: a platform created from deposits of alluvial material along river banks.

Anvil: a portable flat stone, usually a river pebble, used as a base for working stone. Anvils used frequently have a small circular depression in the centre where cores were held while being struck. An anvil is often a multi-functional tool also used as a grindstone and hammerstone.

Archaeology: the study of the remains of past human activity.

Artefact scatter: a surface scatter of cultural material. Artefact scatters are often the only physical remains of places where people have lived, camped, prepared and eaten meals and worked.

Backed piece: a flake or blade that has been abruptly retouched along one or more margins opposite an acute (sharp) edge. Backed pieces include backed blades and geometric microliths. They are thought to have been hafted onto wooden handles to produce composite cutting tools. Backed pieces are a feature of the ‘Australian small tool tradition’, dating from
between 5000 and 1000 years ago in southern Australia (Mulvaney 1975).

**Bipolar working:** technique used for the reduction of stone, in particular quartz, by placing a core on an anvil and ‘smashing’ with a hammerstone.

**Blade:** a flake at least twice as long as it is wide.

**Burial site:** usually a sub-surface pit containing human remains and sometimes associated artefacts.

**Burin:** a stone implement roughly rectangular-shaped with a corner flaked to act as point for piercing holes in animal skins. The distinguishing feature is a narrow spall, usually struck from the distal end down the lateral margin of a blade, but sometimes across the end of a flake (McCarthy 1976: 38).

**Contact site:** see ‘Aboriginal historical archaeological site’.

**Core:** an artefact from which flakes have been detached using a hammerstone. Core types include single platform, multi-platform and bipolar forms.

**Cortex:** original or natural (unflaked) surface of a stone.

**Edge-ground implement:** a tool, such as an axe or adze, which has usually been flaked to a rough shape and then ground against another stone to produce a sharp edge.

**Edge modification:** irregular small flake scaring along one or more margins of a flake, flaked piece or core, which is the result of utilisation/retouch or natural edge damage.

**Flake:** a stone piece removed from a core by percussion (striking it) or pressure. It is identified by the presence of a striking platform and bulb of percussion, not usually found on a naturally shattered stone.

**Flaked piece:** a piece of stone with definite flake surfaces, which cannot be classified as a flake or core.

**Formal tool:** an artefact that has been shaped by flaking, including retouch, or grinding to a predetermined form for use as a tool.

**Formal tools include scrapers, backed pieces and axes.**

**Gilgai soils:** soils with an undulating surface, presenting as a pattern of mounds and depressions. A possible cause is the alternation of swelling and cracking of clay during periods of wet and dry conditions.

**Grindstones:** upper (handstone) and lower (basal) stones used to grind plants for food and medicine and/or ochre for painting. A handstone sometimes doubles as a hammerstone and/or anvil.

**Hammerstone:** a piece of stone, often a creek/river pebble/cobble, which has been used to detach flakes from a core by percussion. During flaking, the edges of the hammerstone become ‘bruised’ or crushed by impact with the core.

**Hearth:** usually a sub-surface feature found eroding from a river or creek bank or a sand dune - it indicates a place where Aboriginal people cooked food. The remains of a hearth are usually identifiable by the presence of charcoal and sometimes clay balls (like brick fragments) and hearth stones. Remains of burnt bone or shell are sometimes preserved within a hearth.

**Heat treatment:** the thermal alteration of stone (including silcrete) by stone workers to improve its flaking qualities (see Flenniken & White 1983).

**Heritage Place:** A place with aesthetic, historic, scientific or social values for past, present or future generations – ‘... this definition encompasses all cultural places with any potential present or future value as defined above’ (Pearson & Sullivan 1995).

**Historic place:** a place that has some significance or noted association in history.

**Historical archaeological site:** an archaeological site formed since non-Aboriginal settlement that contains physical evidence of past human activity (for example a structure, landscape or artefact scatter).

**Isolated artefact:** the occurrence of one (or a small number as defined by the
survey methodology) of artefacts within a given area. It/they can be evidence of a short-lived (or one-off) activity location, the result of an artefact being lost or discarded during travel, or evidence of an artefact scatter that is otherwise obscured by poor ground visibility.

**Manuport:** foreign fragment, chunk or lump of stone that shows no clear signs of flaking but is out of geological context and must have been transported to the site by people.

**Mound:** these sites, often appearing as raised areas of darker soil, are found most commonly in volcanic plains or on higher ground near bodies of water. The majority were probably formed by a slow build-up of debris resulting from earth-oven cooking; although some may have been formed by the collapse of sod or turf structures. It has also been suggested some were deliberately constructed as hut foundations (Bird & Frankel 1991: 7-8).

**Obtrusiveness:** how visible a site is within a particular landscape. Some site types are more conspicuous than others. A surface stone artefact scatter is generally not obtrusive, but a scarred tree will be (Bird 1992).

**Pebble/cobble:** natural stone fragments of any shape. Pebbles are 2–60 mm in size and cobbles are 60–200 mm in size (McDonald et al. 1984: 78).

**Percussion:** the act of hitting a core with a hammerstone to strike off flakes.

**Platform preparation:** removal of small flake scars on the dorsal edge of a flake, opposite the bulb of percussion. These overhang removal scars are produced to prevent a platform from shattering (Hiscock 1986: 49).

**Pre-contact:** before contact with non-Aboriginal people.

**Post-contact:** after contact with non-Aboriginal people.

**Quarry (stone/ochre source):** a place where stone or ochre is exposed and has been extracted by Aboriginal people. The rock types most commonly quarried for artefact manufacture include silcrete, quartz, quartzite, chert and fine-grained volcanics such as greenstone.

**Retouch:** a flake, flaked piece or core with intentional secondary flaking along one or more edges.

**Rock art:** ‘paintings, engravings and shallow relief work on natural rock surfaces’ (Rosenfeld 1988: 1). Paintings were often produced by mineral pigments, such as ochre, combined with clay and usually mixed with water to form a paste or liquid that was applied to an unprepared rock surface. Rock engravings were made by incising, pounding, pecking or chiselling a design into a rock surface. Rare examples of carved trees occasionally survive.

**Rock shelter:** may contain the physical remains of camping places where people prepared meals, flaked stone, etc. They are often classed as a different type of site due to their fixed boundaries and greater likelihood of containing sub-surface deposits. Rockshelters may also contain rock art.

**Rock-well:** a natural or modified depression within a stone outcrop, which collects water. The most identifiable of these sites have been modified by Aboriginal people, either by deepening or enlarging.

**Scarred tree:** scars on trees may be the result of removal of strips of bark by Aboriginal People e.g. for the manufacture of utensils, canoes or for shelter; or resulting from small notches chopped into the bark to provide hand and toe holds for hunting possums and koalas. Some scars may be the result of non-Aboriginal activity, such as surveyors marks.

**Scraper:** a flake, flaked piece or core with systematic retouch on one or more margins. Scraper types follow Jones (1971).

**Shell midden:** a surface scatter and/or deposit comprised mainly of shell, sometimes containing stone artefacts, charcoal, bone and manuports. These site types are normally found in association with coastlines, rivers, creeks and swamps – wherever coastal, riverine or estuarine shellfish resources were accessed and
exploited.

**Significance:** the importance of a heritage place or site for aesthetic, historic, scientific or social values for past, present or future generations.

**Striking platform:** the surface of a core, which is struck by a hammerstone to remove flakes.

**Structures (Aboriginal):** can refer to a number of different site types, grouped here only because of their relative rarity and their status as built structures. Most structures tend to be made of locally available rock, such as rock arrangements (ceremonial and domestic), fishtraps, dams and cairns, or of earth, such as mounds or some fishtraps.

**Stratified deposit:** material that has been laid down, over time, in distinguishable layers.

**Utilised artefact:** a flake, flaked piece or core that has irregular small flake scarring along one or more margins that does not represent platform preparation.

**Visibility:** the degree to which the surface of the ground can be seen. This may be influenced by natural processes such as wind erosion or the character of the native vegetation, and by land-use practices, such as ploughing or grading. Visibility is generally expressed in terms of the percentage of the ground surface visible for an observer on foot (Bird 1992).
REFERENCES

Publications and Technical Reports


Australia ICOMOS 1999 *Australia ICOMOS Charter for the Conservation of Places of Cultural Significance (the Burra Charter)*, revised edition, Australia ICOMOS, Canberra.

Backhouse, J. 1843 *A Narrative of a visit to the Australian Colonies*. Hamilton, Adams and Co. London.


Chafer, C. J. 1997 *Biodiversity of Wetlands in the Illawarra Catchments; an inventory*. Illawarra Catchment Management Committee, Wollongong.


Knight, T. 1996 *The Batemans Bay Forests Archaeological Project. Site Distribution Analysis*. Technical report to the NSW NPWS.


Mills, K. 1996 *Botanically significant plant species in the coastal Shoalhaven Region, New South Wales*. Coachwood Publishing, Jamberoo, NSW.

Mills, K. & J. Jakeman 1988 *Illawarra’s naturalised trees and shrubs; a field guide*. Woonona, NSW.

Navin Officer Heritage Consultants 2000 *Shellharbour City Council Area Aboriginal Heritage Study*. Report to Shellharbour City Council.


Tindale, N. B. 1974 *Aboriginal Tribes of Australia; their terrain, environmental controls, distribution, limits and proper names*. Australian National University Press, Canberra.


**Maps**


Parish Calderwood 5th ed. 1901, AO Map 20216

**Websites**


[http://www.illawarracoal.com/huntley.htm](http://www.illawarracoal.com/huntley.htm)