

Orchard Hills Waste and Resource Management Facility

Aboriginal Heritage Assessment

Prepared by:

Archaeological Surveys & Report Pty Ltd

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Aboriginal Heritage Assessment

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**This report has been compiled in 'Plain English',
but presented in a format suitable for developing policies
for the management of the cultural resources,
and as a basis for scientific reference
in future research studies.**

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Please Note: All Figures and Plates are presented in colour on the Project CD.

EXECUTIVE SUMMARY

This investigation was performed for R.W. Corkery & Co. Pty Limited (RWC) on behalf of Dellara Pty Ltd ("the Proponent"). The Proponent proposes to establish and operate a waste and resource management facility within Lot 40, DP 738126 (the "Project Site"), the former Erskine Park Quarry, Patons Lane, Orchard Hills, Sydney. The proposed facility would incorporate a waste recycling and recovery centre and ancillary waste emplacement capable of accepting general solid waste (non-putrescible).

This report forms part of the Environmental Assessment is to be prepared in accordance with the provisions of Part 3A, Section 75 of the *Environmental Planning and Assessment Act* 1979. An application for the project was lodged with the Director-General's Department, with Director General's Requirements received on 20th May 2009.

RWC engaged Archaeological Surveys & Reports Pty Ltd (ASR) to undertake an archaeological investigation of the Project Site to identify sites and/or places of Aboriginal cultural significance, and to address the issues raised by the Director-General's Requirements.

The Project Site of approximately 60ha is presently occupied by the former Erskine Park Quarry, Patons Lane, Orchard Hills, approximately 7km southeast of Penrith in western Sydney. The Project Site occurs at 123-179 Patons Lane, on Lot 40, DP 738126, in the Parish of Claremont, in the Penrith Local Government area.

The scope of works was for ASR to consult with Aboriginal stakeholders in accordance with "Guidelines for Interim Community Consultation Requirements for Applicants" (DEC 2005), and to undertake an investigation, with the assistance of representative/s of the Aboriginal stakeholders, to identify any Aboriginal sites and relics that might be present within the Project Site. The results of the investigation were to be presented in a report, which was to include an assessment of the significance of any cultural relics or places identified, an appraisal of the options and opportunities arising from the discoveries, and clear recommendations for the management of those cultural resources. In addition, the report was to address the key issues in the Director-General's Requirements.

In accordance with the "Guidelines For Interim Community Consultation Requirements for Applicants" (DEC 2005), an advertisement was placed in the '*Penrith City Star*' on 21st April 2008, inviting all Aboriginal stakeholders with an interest in the project to register their interest. ASR also wrote to the Office of the Registrar asking whether or not there was an Aboriginal Land Claim on the property. The reply was that there was no Land Claim on the property. ASR also wrote to the Metropolitan Branch, DECCW, requesting that it provide a list of registered stakeholders in the area.

As a consequence of the consultation process, Steve Randall (Deerubbin LALC), Justine Coplin (Darug Custodial Aboriginal Corporation), and Gordon Morton (Darug Aboriginal Cultural Heritage Assessments), assisted John Appleton (ASR) in the field survey which took place on 29th June 2009.

Two isolated artefacts were recorded during the investigation. Site Recording Forms (SRFs) will be lodged with DECCW for their inclusion in the AHIMS Site Register.

Recommendations

The two Aboriginal stakeholder organisations that provided written recommendations stated that the two artefacts were not a constraint to development.

ASR recommends that when the Proponent obtains Part 3A Approval for the project that they should invite the three Aboriginal organisations that participated in the survey for this investigation to return to the sites to salvage any artefactual material in either location. No subsurface investigation is necessary as the artefacts occur on degrading surfaces of weathered B Horizon soils/rock. Salvage therefore should not take more than an hour to perform.

It is suggested that once the Proponent has received Part 3A Approval they should contact the Aboriginal organisations immediately to arrange a date and time when the artefacts might be salvaged. The salvage will not require an archaeologist to be present as the Aboriginal representatives are all experienced fieldworkers and quite capable of identifying artefactual material.

Once the salvage has been completed the Proponent should advise DECCW in writing stating that sites "Orchard Hills ISO 1" and Orchard Hills ISO2" have been salvaged, and who took part in the salvage, and the names of the Aboriginal organisations they represented.

In addition the Proponent is advised the following provisions apply whether or not the project proceeds.

- The owners, and their employees, earthmoving contractors, subcontractors, machine operators and their representatives, whether working in the survey area or elsewhere, should be instructed that, in the event of any bone being unearthed during earthmoving, work should cease immediately in the area of the find.
- In the event that any bone cannot be clearly identified by a qualified archaeologist as being of animal remains the police are to be informed of its discovery, and officials and/or their representatives of the Aboriginal organisations that have participated in the consultation process for this project, and the Archaeologist, DECCW (Dubbo) advised that the bone is subject to police investigation.
- Work should not recommence in the area of the find, until both the police and those officials or representatives have given their permission to do so. Those failing to report a discovery and those responsible for the damage or destruction occasioned by unauthorised removal or alteration to a site or to archaeological material may be prosecuted under the *National Parks and Wildlife Act 1974*, as amended.

1. INTRODUCTION

1.1 Introduction

This investigation was performed for R.W. Corkery & Co. Pty Limited (RWC) on behalf of Dellara Pty Ltd ("the Proponent"). The Proponent proposes to establish and operate a waste and resource management facility within Lot 40, DP 738126 (the "Project Site"), the former Erskine Park Quarry, Patons Lane, Orchard Hills, Sydney. The proposed facility would incorporate a waste recycling and recovery centre and ancillary waste emplacement capable of accepting general solid waste (non-putrescible).

This report forms part of the *Environmental Assessment* prepared in accordance with the provisions of Part 3A, Section 75 of the *Environmental Planning and Assessment Act 1979*.

An application for the proposed project was lodged with the Director-General's Department, and Director General's Requirements were received on 20th May 2009. The Director-General's Requirements included the following in relation to Aboriginal heritage matters.

1. The *Environmental Assessment* should address and document the information requirements set out in the draft "Guidelines for Aboriginal Cultural Heritage Impact Assessment and Community Consultation" involving surveys and consultation with the Aboriginal community.
2. Identify the nature and extent of impacts on Aboriginal cultural heritage values across the project area.
3. Describe the actions that will be taken to avoid or mitigate impacts or compensate to prevent unavoidable impacts of the project on Aboriginal cultural heritage values. This should include an assessment of the effectiveness and reliability of the measures and any residual impacts after these measures are implemented.
4. The *Environmental Assessment* needs to clearly demonstrate that effective community consultation with Aboriginal communities has been undertaken in determining and assessing impacts, developing options and making final recommendations.

RWC engaged Archaeological Surveys & Reports Pty Ltd (ASR) to undertake an archaeological investigation of the Project Site to identify sites and/or places of Aboriginal cultural significance and to address the issues raised by the Director-General's Requirements.

1.2 Scope, Objectives and Report Format

1.2.1 Scope

The scope of works was for ASR to consult with Aboriginal stakeholders in accordance with "Guidelines for Aboriginal Cultural Heritage Impact Assessment and Community Consultation" (DEC 2005), and to undertake an investigation to identify any sites of Indigenous cultural significance within the Project Site with the assistance of representative/s of the Aboriginal

stakeholders, to identify any Aboriginal sites and relics that might be present within the Project Site. The results of the investigation were to be presented in a report, which was to include an assessment of the significance of any cultural relics or places identified, an appraisal of the options and opportunities arising from the discoveries, and clear recommendations for the management of those cultural resources. In addition, the report was to address the key issues in the Director General's Requirements as detailed in Section 1.

1.2.2 Report Objectives

The objectives of this report are to describe the consultation process and the archaeological investigation of the Project Site and to record the archaeological relics and sites that were identified. Further, the report documents the participation of the Aboriginal stakeholders. In addition, the report includes a discussion of the results of the investigation in the context of other known sites in the area. Finally, the report includes a statement as to the recommendations for the future development of the proposed Orchard Hills Waste and Resource Management Facility.

1.2.3 Report Format

The report is presented in the following format.

- i) Executive summary
- ii) Contents

- 1. Introduction
- 2. Aboriginal Consultation
- 3. The Environmental Context
- 4. The Archaeological Record
- 5. Models for Site Location
- 6. The Survey
- 7. The Results
- 8. Discussion
- 9. Significance Assessment
- 10. Recommendations

1.3 The Project Site and Survey Area

The Project Site is presently occupied by the former Erskine Park Quarry, Patons Lane, Orchard Hills, approximately 7km southeast of Penrith in western Sydney.

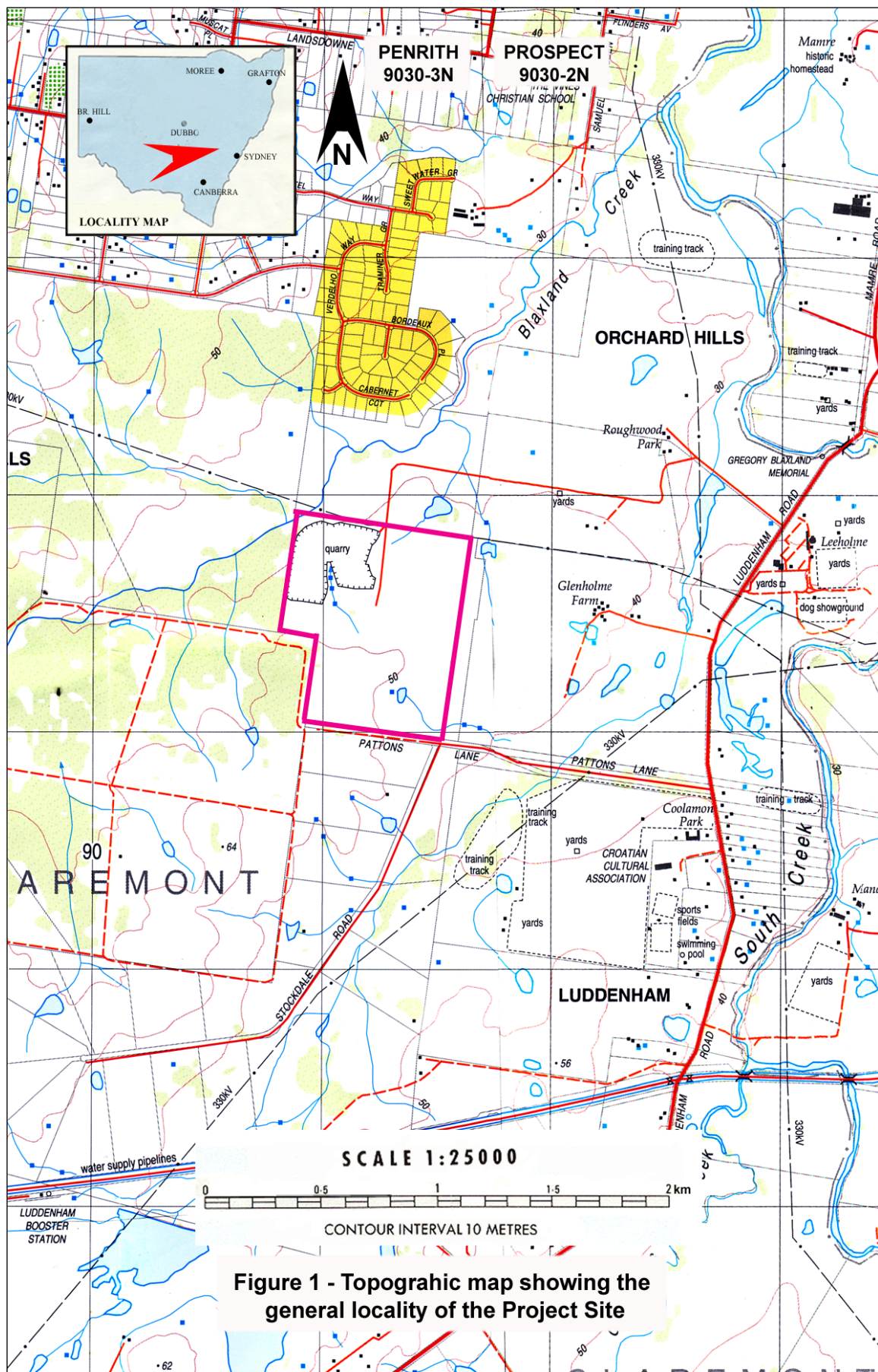
The Project Site occurs at 123-179 Patons Lane, on Lot 40, DP 738126, in the Parish of Claremont, in the Penrith Local Government area. The Project Site is approximately 60ha in area, and approximately rectangular in shape, bounded by property fence-lines to the north, south and east, and Commonwealth land (Australian Defence Force) to the west. Access to the Project Site is via an unsealed road connecting the Project Site with Patons Lane, Orchard Hills.

Figures on the following pages present the local setting of the Project Site. **Figure 1** places the Project Site in its regional context. **Figure 2** shows an aerial photograph of the existing site, and **Figure 3** shows the Project Site Layout.

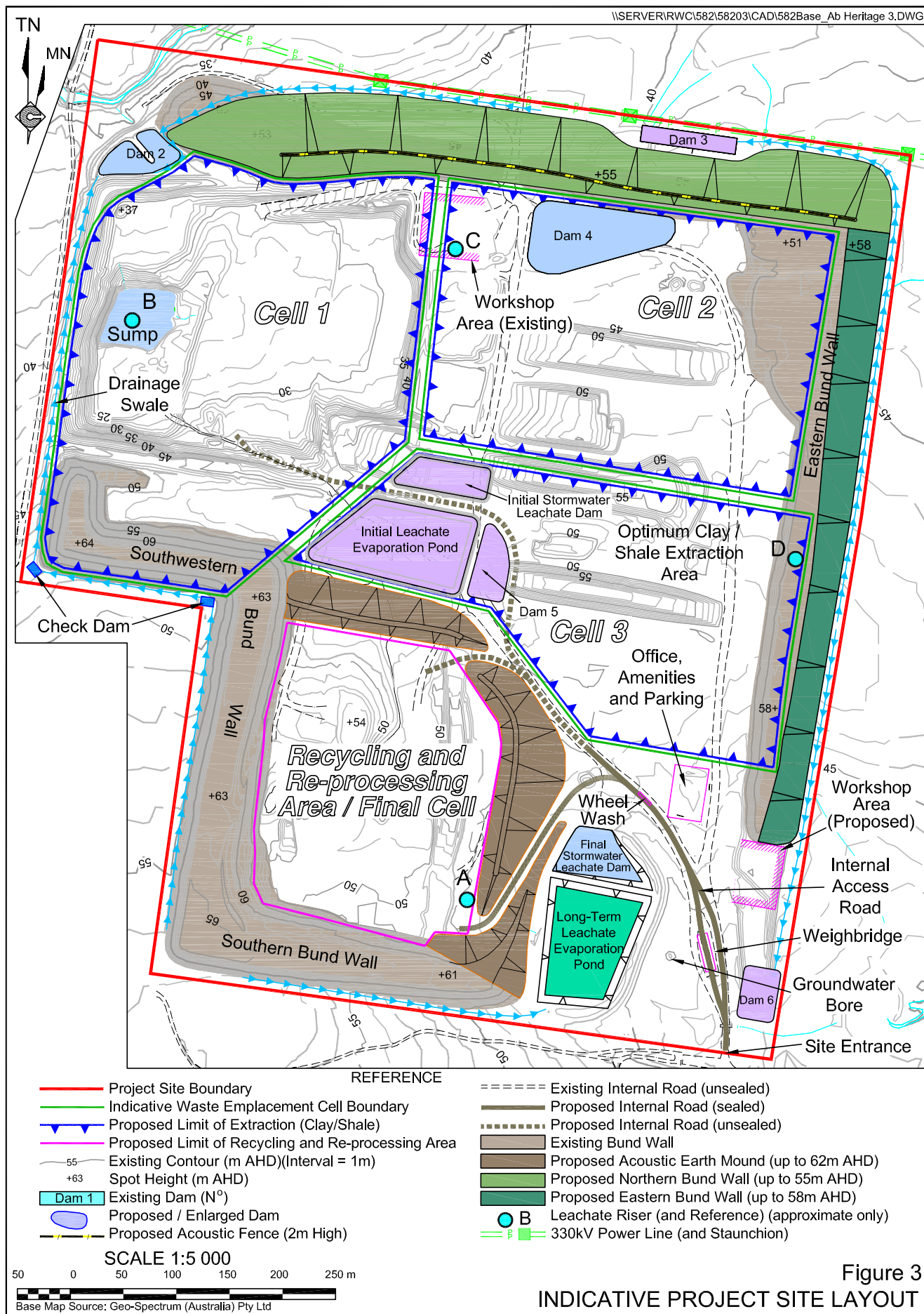
1.4 Potential Impact of the Proposed Development

There is a potential for any archaeological contexts occurring within the footprint of the proposed development, or any new roads or sites of supporting infrastructure, to be severely impacted upon.

As a consequence of this survey, it is unlikely that the same area will ever be surveyed again, thus from an archaeological perspective, this was an opportunity to observe and record any sites that might be present, and to propose a strategy for the management of any known or potential archaeological and/or cultural material in the future development of the area.







Note: A colour version of this figure is available on the Project CD

2. ABORIGINAL CONSULTATION

In accordance with the "Guidelines For Aboriginal Cultural Heritage Impact Assessment and Community Consultation" (DEC 2005), an advertisement was placed in the 'Penrith City Star' on 21st April 2008, inviting all Aboriginal stakeholders with an interest in the project to register their interest. A copy of the advertisement as it appeared in the newspaper is included as **Appendix i**. The only response to the advertisement was from Deerubbin Local Aboriginal Land Council (included as **Appendix ii**). ASR waited a further five days after the 14 days on which the advertisement was published had expired, in case there had been some reasons for the delay in responding, but no other responses were received.

In the meantime ASR wrote to the Office of the Registrar asking whether or not there was an Aboriginal Land Claim on the property. The reply was that there was no Land Claim on the property (a copy of the reply is included as **Appendix iii**). ASR also wrote to the Metropolitan Branch, DECCW, requesting that it provide a list of registered stakeholders in the area. The following stakeholders were listed in the reply, a copy of which is included as **Appendix iv**.

- Deerubbin Local Aboriginal Land Council (DLALC): Kevin Cavanagh
- Darug Custodial Aboriginal Corporation (DCAC): Leanne Watson
- Darug Tribal Aboriginal Corporation (DTAC): Sandra Lee
- Darug Aboriginal Cultural Heritage Assessments (DACHA): Gordon Morton
- Muru Mittigar Aboriginal Cultural & Education Centre (MMACEC): Lesley Edwards
- Darug Land Observations (DLO): Gordon Workman.

Over the following days ASR contacted each of the representatives of the various organisations and advised them of the project, and inquiring as to whether they wished to be consulted, or whether they wished to take part in the field investigation. As a consequence all of the organisations with the exception of MMACEC said that they would send a Sites Officer to assist in the field investigation. However, on 29th June, the agreed date for the investigation, the only representatives to arrive at the site were Steve Randall (DLALC), Justine Coplin (DCAC), and Gordon Morton (DACHA).

Subsequent to the investigation correspondence was received from Deerubbin LALC (included as **Appendix v**); and from Darug Aboriginal Cultural Heritage Assessments (included as **Appendix vi**).

3. THE ENVIRONMENTAL CONTEXT

Any discussion of the likely presence of Aboriginal cultural remains or of the basis why such remains might be discovered must be within the context of the environment and the resources that would have been available to any Aboriginal occupants of the area.

3.1 The General Geology and Topography

The Project Site occurs in the Sydney-Bowen Basin, on a unit known as the *Bringelly Shale*, comprising interbedded claystones, siltstones, laminites, and minor sandstones and carbonaceous units.

The existing quarry produces clay and shale for the brick industry and general purpose fill for building sites.

The natural ground level of the Project Site slopes gently towards the northwest corner where Blaxland Creek briefly cuts through the north-western corner of the site. Elevations in the Project Site descend from a little above 50m AHD along the southern boundary of the site, down to just below 40m AHD in the north-western corner on the banks of Blaxland Creek.

3.2 Vegetation

The Project Site has been fully developed and the only surviving natural vegetation occurs in the riparian zone of Blaxland Creek. The adjacent properties to the north and east have been cleared for pasture, but dense woodland on Commonwealth land to the west retains a significant area of Cumberland Plain Woodland. It is probable that the Project Site supported a similar vegetation regime to that on the Commonwealth land prior to settlement.

3.3 Water Resources

As referred to previously, Blaxland Creek crosses the north-western corner of the Project Site. At the time of the survey there was a steady flow of water in the creek, and it would have been a reliable source of water to the Aboriginal occupants of the area in all but the worst of droughts.

3.4 Stone Resources

As referred to in **Section 3.1** the Project Site occurs on the *Bringelly Shale* unit which would have included siltstone. As Blaxland Creek crosses through the area siltstone as well as other stone types carried down creek from sources elsewhere, would have provided a potential source of stone suitable for knapping into tools and weapons.

3.5 Previous Impacts

As the aerial photograph in **Figure 2** shows there has been significant alteration to the ground surface within the existing quarry, both from quarrying and from the construction of huge surrounding bunds, and from access tracks into the quarry, midway along the northern boundary, and for the site entrance in the south-eastern corner.

The relatively undisturbed areas comprise of a narrow perimeter strip, although it too would have been subject to tree-clearing, harrowing and ploughing in the past before the quarry existed and by vehicular traffic during quarry operations.

4. THE ARCHAEOLOGICAL RECORD

The result of the search of the Aboriginal Sites Register (Aboriginal Heritage Information Management System – AHIMS) for all sites in and in the vicinity of the Project Site, but no sites had been recorded. A copy of the search AHIMS Site Register is included as **Appendix vii**.

The absence of listed sites within the Project Site should not be interpreted as representing the frequency or distribution of sites in the area. Apart from the sites recorded in the mid to late 1970s, after the enactment of the *National Parks and Wildlife Act 1974*, sites are usually only found and recorded during investigations for proposed developments, and as there have been no new developments in the search area since before the 1970s no sites have been found.

Also, unfortunately, many of the site references on the AHIMS Site Register are inaccurate. Since the first sites were recorded on the Sites Register in 1974 the computer programme written for the site register has been rewritten and/or upgraded at least three times, and each time the data was re-entered into the system there were errors, both in site names and in map references.

Also during that time there were considerable changes to the maps available to field workers, firstly from 1:63,360 (inch) scale (Imperial) military Topographic maps, to 1:250,000 military Topographic maps (printed in 1942), and then to 1:250,000 scale Topographic maps (printed at various times), and then to 1:100,000 and 1:25,000 scale Topographic maps (printed in 1983), and then more recently to 1:25,000 scale maps (printed in 2001). Features that were apparent in the earlier maps and may have been used as reference points for provenancing sites were changed or destroyed and the features removed from the maps.

Archaeologists have used various strategies to locate sites on maps, from compass and line-of-site, to sight referencing to topographic features, to using hand-held or vehicle-mounted Global Positioning Systems of varying degrees of accuracy. The current (2001) Topographic Map Series warns that "Satellite (GPS) derived values may be in error by up to 20 metres", but during the late 1980s and 1990s the satellite signals were deliberately 'warped' by the American controllers, to avoid the use of the satellites by enemy forces, and GPS readings during that period were out by as much as two-hundred metres. While there were computer programmes that could correct the warped references very few people went to the trouble to correct them.

5. MODELS FOR SITE LOCATION

5.1 Site Types and their Location

In order to design an investigative strategy, it is firstly necessary to develop a predictive model for site location. This is not to determine where the investigation should be conducted, but to establish a theoretical model for the distribution of archaeological material against which the effectiveness and subsequent analysis of the survey results can be tested, compared and reasoned. The basis upon which the predictive model is derived must, however, be one of consideration of which archaeological material might realistically be expected to not only be present, but also detectable.

The first objective of any archaeological investigation must be to observe and record sufficient of the archaeological record that is present to be able to propose that it is representative of the record as a whole. The investigative strategy is therefore directed and designed to detect that which is representative of the record in the particular study area, and naturally, as different study areas will comprise variations in environment, vegetation, topography, etc., so the investigative strategy must be designed to best suit the circumstances. The objective must be to detect material evidence, and so it is necessary to consider the extent to which artefactual material may be present, and the degree to which it is visible or might be discovered.

There are several factors, which are likely to affect, firstly, where Aboriginal people are most likely to have been, secondly, where they have left evidence of their activities, and thirdly, the degree to which that evidence is observable in the present record.

People visited places mainly to obtain resources, and in general places that were richest in resources were more likely to have been visited by people than those places with fewer resources. Important resources were permanent water, ephemeral water, food resources, stone raw material sources, shelter (from sun, wind, and rain), and perhaps suitable surfaces for rock art, and proximity to mythological natural features. Those resources may have been a factor in the suitability of a location for particular ceremonial activities but cultural boundaries also influenced the choice of ceremonial grounds. Alternatively, sites frequently occurred along preferred access routes and particularly where that route coincided with a watercourse.

However, the attractions of such an environment frequently resulted in the archaeological record becoming discontinuous or significantly disturbed, as stock and vehicles impacted upon it in the post-European contact phase.

Frequency of visits and use of particular locations was also determined by the 'accessibility' or freedom from environmental constraints in the area. For example, whether there were alternative, preferred or easier ways to travel around or over natural barriers, be they geological, geographical, cultural, or imposed by fauna or flora, or whether they were only seasonally accessible, such as mounds on flood terraces, or the availability of water during periods of drought, or whether or not floods, fire or snow hindered access.

Few past Aboriginal activities are represented by surviving material evidence. This in part is because many activities did not leave material evidence (eg. tools were reused), but it is also because very little cultural material survived. An exception to this was shellfish, which was very durable.

The survival of material that is durable was also affected by recent European land use. Cultivation has destroyed many archaeological sites. However, cultivation can also help expose sites that might otherwise be covered. This brings us to the other important point about site distribution, which is that, to a great extent, site distribution recorded by archaeologists reflects the distribution of places where the ground surface is sufficiently eroded to expose artefactual material.

By far, the majority of recorded sites have been stone artefact scatters or isolated stone artefacts, and in the vast majority of sites they were found in one or more of the following contexts.

- i) On or adjacent to deposits containing quartz, quartzite, jasper, silcrete, chert, chalcedony, metamorphosed greywacke, and other indurated or siliceous sedimentary rocks, or redeposited fine-grained volcanics, or
- ii) On river banks or adjacent to river banks where the watercourse contains river pebbles of quartz, quartzite, jasper, silcrete, chert, fine-grained volcanics, basalts, etc., and particularly at the junctions of watercourses, or
- iii) On ridges and spurs overlooking watercourses or on high vantage points affording uninterrupted views of swamps, water holes, saddles, passes, and any other likely access path into the observer's area, or
- iv) In the vicinity of outcrops of suitable raw material such as basalt, silcrete, chert, or other highly silicified sedimentary rock.

Other site types do occur and perhaps because of their lower and less predictable profile, are present in far greater numbers than we are aware of. People die but there are few recorded burials. One reason may be that in many instances the soils are too acid for the preservation of bone, but a far more likely reason is simply that burial frequently entailed subsurface internment, and a surface survey will only discover a burial where there has been erosion of significant disturbance to the surface deposits. As a consequence many burials have only been discovered when exposed by erosion of a sand body or river terrace.

Other site types such as carved trees, scarred trees, stone arrangements, Bora rings, etc., may once have been present, but are unlikely to have survived in easily accessible country from the attention of non-indigenous people. Thus, much of what might have existed is now lost or destroyed, and the archaeological record has become biased by the post-contact utilisation of resources, and by the selective exploitation and preservation of particular environments.

Other factors which affect the degree to which sites are recorded during an investigation include the time of year at which the fieldwork is performed (the seasonality of some vegetation growth) and the conditions under which the survey is performed – (wet, dry, cold, windy, poor light, etc.).

A brief description of site types such as isolated artefacts, open scatters, camp sites, knapping floors, quarries, middens, mounds, hearths, carved trees, scarred trees, stone arrangements, Bora rings, burials, engravings, paintings, grinding grooves, occupation deposits (and PADs), and ceremonial and mythological sites is included as **Appendix viii**.

5.2 A Predictive Model for the Study Area

Based on all of the above, the following model for site distribution was proposed for the Study Area (being the Project Site), in which there had been significant disturbance, and in which there were so few places that were undisturbed that it was unlikely there would be any places where PADs (potential archaeological deposits) were likely to occur. While the creek was a potential source of potable water, and of useful stone material, it appeared unlikely that there would be a large enough surviving area to have supported a camp site.

- Isolated artefacts may be present and visible in erosion features.
- Low-density artefact scatters may be present and visible in erosion features, but it is unlikely that any debitage will be visible
- It is unlikely that there are any surviving trees of more than 150 years old on which there will be deliberately scarred surfaces.
- It is unlikely that there are any surviving trees of more than 150 years old on which there will be deliberately carved surfaces
- It is unlikely there will be any engravings, and/or grinding grooves, which if present, would be in the creek bed.
- It is unlikely there will be any PADs given that there are so few undisturbed areas.
- In the absence of shelters or overhangs there is no potential for shelters to exist and therefore no potential for art sites, and therefore no potential for undisturbed occupation deposits.
- There will be no Aboriginal stone quarries.
- There will be no shell middens
- There will be no visible evidence of burials
- There will be no surviving Bora rings
- There will be no stone arrangements
- There are no known cultural associations with the area.

6. THE SURVEY

6.1 The Survey Strategy

Having studied the aerial photograph the archaeologist determined that the objectives of the investigation were to undertake as full and as comprehensive a survey of the bundwalls and surrounds as possible. There was easy access to all parts of the area that were to be surveyed, and so the only constraints to an effective survey would be any constraint posed by the groundcover to archaeological visibility.

The investigators walked in a clockwise direction around the outer perimeter of the bundwalls as well as the top of the bundwalls – just in case exposed surfaces along the tops of the bundwalls might contain redeposited artefactual material.

An attempt was also made to survey the banks of Blaxland Creek, but the dense grass cover totally concealed the ground surface.

6.2 Details of the Survey

The field survey was undertaken by Appleton (ASR), assisted by Steve Randall (DLALC), Justine Coplin (DCAC), and Gordon Morton (DACHA), on 29th June 2009.

The survey was made on foot, in dry, sunny conditions, in light ideal for observing any artefactual material present and observable. All of the areas shown shaded in blue in **Figure 4** were surveyed on foot.

6.3 Site Recording

All relevant observations as to the topography, vegetation cover, and conditions, were recorded in a field-log, and photographs taken with an Olympus Camedia SP-510UZ Zoom Digital Camera, to record the character of the survey area, and to witness survey conditions.



Note: A colour version of this figure is available on the Project CD

6.4 Effectiveness of the Survey Technique

The effectiveness of the survey in identifying scarred or carved trees was comprehensive, but groundcover in many places along the perimeter was a constraint to a totally effective ground survey. There was no archaeological visibility on the western bank of Blaxland Creek, a location in which artefactual material might have been present.

6.5 Effective Coverage

Table 1 provides an overview of the effective survey coverage and is divided into units delimited by observed topographical features, environments, and/or land use, briefly described in terms of 'horizontal' or map area, soil, and archaeological visibility, and the percentage of the area actually surveyed.

Figure 4 shows the effective survey coverage based on the assumption that most artefactual material if exposed and visible can be observed for up to 5 metres to either side of the path of the observer. Clearly, this would vary significantly between a path walked through dense vegetation, and a path across a claypan, and is given as a guide only.

The photographic record that follows provides a visual reference for the survey conditions and various aspects of past impacts to the Project Site. The series begins at the entrance to the Project Site and continues in a clockwise direction around the area, returning back to the entrance.

Table 1
Table showing the Effective Survey Coverage

Area	Description	Survey area: 60ha (approx. areas)	Rock/soil	Vegetation	Average surface visibility	Exposures	Approx area surveyed on foot	Average arch. visibility of exposures	Archaeology
1	Existing quarry operations	358,750 sqm	Bringelly Shales	Cleared	N/A	N/A	0%	N/A	Nil
2	Existing bundwalls (averaged at 70m wide)	150,000 sqm (Includes batters)	Redeposited overburden	Cleared	30%	Crest of bundwalls	40% (crest only)	95%	Nil
3	Perimeter track (averaged at 30m wide)	90,000 sqm	Weathered sedimentary soils	Cleared	5%	Vehicle wear and minor slopewash	95%	95%	2 isolated artefacts
4	Northern bank of Blaxland Creek	1,250 sqm	Weathered sedimentary soils	Cleared, presently under dense grass cover	0%	None	35%	0%	PAD



Plate 1: Surveying between the southern boundary fence line and the southern bundwall



Plate 2: Looking northwards across the quarry from the southern bundwall



Plate 3: Looking down to the perimeter strip from the south-western bundwall



Plate 4: Looking down to the perimeter track from the step-back of the western bundwall



Plate 5: Looking towards the west along the face of the step-back of the western bundwall



Plate 6: Looking southwards along the top of the western bundwall



Plate 7: Erosion feature along the western perimeter track in the north-western corner



Plate 8: Looking southwards along the western perimeter towards the feature in the preceding plate



Plate 9: Looking north-eastwards across the quarry from the western bundwall



Plate 10: Looking westwards along Blaxland Creek



Plate 11: The western end of the northern perimeter



Plate 12: Looking down onto the northern perimeter from the north-western bundwall



Plate 13: Looking southwards across the quarry from the north-western bundwall



Plate 14: Looking down on the eastern perimeter strip from the eastern bundwall

7. THE RESULTS

Two isolated artefacts were recorded during the investigation. Site Recording Forms (SRFs) will be lodged with DECCW for their inclusion in the AHIMS Site Register. The SRFs will describe the sites as follows.

Site name: **“Orchard Hills ISO 1”**
Location: GDA: 56H E.0291170 N.6256869 ± 5m
Map: Penrith 9030-3N, 1: 25,000 scale Topographic map
Site type: Isolated artefact
Land use: Fallow
Distance from water: 100m (Blaxland Creek)
Archaeological visibility: 85%
Artefact description: Mudstone or tuff proximal fragment of a flake, 33 x 22 x 8mm.
Split cone 8 x 4mm.
O cortex

Site name: **“Orchard Hills ISO 2”**
Location: GDA: 56H E.0291576 N.6256440 ± 5m
Map: Penrith 9030-3N, 1: 25,000 scale Topographic map
Site type: Isolated artefact
Land use: Fallow
Distance from water: 350m (Blaxland Creek)
Archaeological visibility: 85%
Artefact description: Quartzite Backed blade (Bondi Point), 24 x 7 x 4mm.
O cortex

In addition the area to the northwest of Blaxland Creek in the extreme north-western corner of the Project Site was assessed to be a Potential Archaeological Deposit (PAD), but as the location will not be impacted upon by the project (see **Figure 3**) no further investigation was necessary. The PAD location was at GDA: 56H E.029090 N.6256990.

Figure 5 on the following page shows the site locations; followed by photographs of the sites and the Bondi Point.



REFERENCE

- Project Site Boundary
- 55 Existing Contour (m AHD) (Interval = 5m)
- + 64 Spot Height (m AHD)
- = Internal Road (unsealed)
- Groundwater Bore (GW105054)
- ▲ ISO 1 Isolated Artefact Location (and reference)

SCALE 1:5 000

50 0 50 100 150 200 250 m

Photo Source: Geo-Spectrum (Australia) - Date of Photo: 4 August 2007

Figure 5
ABORIGINAL SITE LOCATIONS

Note: A colour version of this figure is available on the Project CD



Plate 15: The bag marks the location of “Orchard Hills ISO 1”



Plate 16: The bag marks the location of “Orchard Hills ISO 2”



Plate 17: The Bondi Point in its find context

8. DISCUSSION

The existence of artefactual material in the Project Site was surprising given that there was such a small area that remained relatively undisturbed. However the Aboriginal representatives informed me that they had personally seen many stone artefacts while performing other surveys in the surrounding area, and particularly on the Commonwealth land to the west of the Project Site.

The plains in the Penrith/Liverpool areas have yielded hundreds of artefacts in previous investigations and so it might be expected that artefacts would have occurred in the Project Site prior to quarrying. There is sufficient evidence from the results of previous investigations to suggest that the plains were frequently occupied by the Aboriginal groups that camped along the river and creek banks. There was an ample supply of fresh-water, there would have been numerous food resources such fish, mussels, yabbies, goannas, skinks, kangaroos, wallabies, echidnas, birds and sugar-bag (native bees' honey), as well as insects, fruits and berries.

Pebble banks in the river bed would have been a ready source of stone material suitable for knapping into tools and weapons, and the woodland would have been a source of bark for roofing gunyahs, or carving into coolamons, shields, bull-roarers and digging sticks. The temperate climate of the plains would also have made life comfortable and there were few reasons why people didn't live there permanently except during times when they were forced to seek safety elsewhere during floods and bush fires.

Given that most sites occur along creek banks there is a potential for the densely grassed area to the northwest of Blaxland Creek to contain artefactual material. However as the project would not impact on the area no further investigation was necessary. But if at some future time the Proponent plans to develop this area then further investigation will be necessary.

Developers prefer to see sites salvaged rather than destroyed, and usually invite the Aboriginal organisation to salvage the archaeological/cultural material. In this instance the Project Site Layout (see **Figure 3**) indicates that "Orchard Hills ISO 1" would be directly impact upon by the proposed works, but that the site of "Orchard Hills ISO 2" would remain undeveloped. However, to ensure that the site will not be impacted upon by any future use of the eastern perimeter track, ASR recommends that both sites should be salvaged.

ASR recommends that when the Proponent obtains Part 3A Approval for the project that they should invite the three Aboriginal organisations that participated in the survey for this investigation to return to the sites to salvage any artefactual material in either location. No subsurface investigation is necessary as the artefacts occur on degrading surfaces of weathered B Horizon soils/rock. Salvage therefore should not take more than an hour to perform. It is suggested that once the Proponent has received Part 3A Approval he should contact the Aboriginal organisations immediately to arrange a date and time when the artefacts might be salvaged. The salvage will not require an archaeologist to be present as the Aboriginal representatives are all experienced fieldworkers and quite capable of identifying artefactual material.

Once the salvage has been completed the Proponent should advise DECCW in writing stating that sites "Orchard Hills ISO 1" and Orchard Hills ISO2" have been salvaged, and who took part in the salvage, and the names of the Aboriginal organisations they represented.

Given that the two isolated artefacts are of such relatively low cultural and archaeological significance against a background of so many sites occurring in the general area, it is likely that the Aboriginal organisations will chose not to take the opportunity to salvage the artefacts, in which case the Proponent should inform DECCW in writing that the company had invited the Aboriginal organisations to salvage the artefacts, and that they had chosen not to, at the same time requesting written confirmation that they could now develop the two site locations.

This investigation was undertaken after extensive consultation with the "registered Aboriginal stakeholders", and with the full participation of all "registered Aboriginal stakeholders".

9. SIGNIFICANCE ASSESSMENT

9.1 Introduction

The DECCW policy to safeguard all sites, Aboriginal places, and archaeological material of significance wherever possible requires that some means of assessing the significance of the sites is necessary. This is not only for the purpose of determining whether sand extraction can proceed as proposed, but also to provide Cultural Resource Managers with the information for future management of the area.

9.2 Cultural Significance

The Aboriginal or cultural significance of Aboriginal relics and sites can only be assessed by the Aboriginal community, and in particular, the Elders. It is the responsibility of the archaeologist to ensure that the Elders or elected representatives of the Aboriginal community are advised of the survey results, and are consulted as to their knowledge and opinion of the significance of the area, and to transcribe and present those expressions in report form.

In this instance the only written recommendations received were from Deerubbin LALC (included as **Appendix v**); and from Darug Aboriginal Cultural Heritage Assessments (included as **Appendix vi**). Neither of the organisations recommended any further investigation, and both agreed that there were no constraints on cultural grounds to the project.

9.3 Research potential

As only two artefacts were recorded on degrading surfaces during the investigation, the two locations are assessed to be of no research potential.

10. RECOMMENDATIONS

This investigation was undertaken after extensive consultation with the “registered Aboriginal stakeholders”, and with the full participation of all “registered Aboriginal stakeholders”. Three of the respondent organisations participated in the field investigation.

As a consequence of this investigation two isolated artefacts were identified. Site Recording Forms for the two sites will be lodged with DECCW for listing on the AHIMS Site Register.

The two Aboriginal stakeholder organisations that provided written recommendations stated that the two artefacts were not a constraint to development.

ASR recommends that when the Proponent obtains Part 3A Approval for the project that they should invite the three Aboriginal organisations that participated in the survey for this investigation to return to the sites to salvage any artefactual material in either location. No subsurface investigation is necessary as the artefacts occur on degrading surfaces of weathered B Horizon soils/rock. Salvage therefore should not take more than an hour to perform.

It is suggested that once the Proponent has received Part 3A Approval he should contact the Aboriginal organisations immediately to arrange a date and time when the artefacts might be salvaged. The salvage will not require an archaeologist to be present as the Aboriginal representatives are all experienced fieldworkers and quite capable of identifying artefactual material.

Once the salvage has been completed the Proponent should advise DECCW in writing stating that sites “Orchard Hills ISO 1” and Orchard Hills ISO2” have been salvaged, and who took part in the salvage, and the names of the Aboriginal organisations they represented.

In addition the Proponent is advised the following provisions apply whether or not development goes ahead with Part 3A Approval.

- The owners, and their employees, earthmoving contractors, subcontractors, machine operators and their representatives, whether working in the survey area or elsewhere, should be instructed that, in the event of any bone being unearthed during earthmoving, work should cease immediately in the area of the find.
- In the event that any bone cannot be clearly identified by a qualified archaeologist as being of animal remains the police are to be informed of its discovery, and officials and/or their representatives of the Aboriginal organisations that have participated in the consultation process for this project, and the Archaeologist, DECCW (Dubbo) advised that the bone is subject to police investigation.
- Work should not recommence in the area of the find, until both the police and those officials or representatives have given their permission to do so. Those failing to report a discovery and those responsible for the damage or destruction occasioned by unauthorised removal or alteration to a site or to archaeological material may be prosecuted under the *National Parks and Wildlife Act 1974*, as amended.

GENERAL GLOSSARY

The definitions that follow are for terms used in this and other reports written by the author, and do not necessarily apply to their use in different contexts.

ADZE: A modified flake with at least one steeply-retouched working edge. While all adzes are generally considered to be wood-working tools it is probable that some also served as cores and others as scrapers. Adzes with a uniform butt were frequently hafted to make a chisel-like tool, but the intended use of the adze determined the size of the adze and whether it was hafted (Flenniken and White, 1985).

AHD: Australian Height Datum

ARCHAEOLOGICAL DEPOSIT:

Sediments which contain evidence of past Aboriginal use of the place, such as artefacts, hearths, burials etc.

ARTEFACT: Any object that has attributes as a consequence of human activity (Dunnell, 1971). In this report 'artefacts' has been used generally to describe pieces of stone that have been modified to produce flakes, flaked pieces, cores, hammerstones, or axes.

BACKED BLADE:

A stone tool manufactured from a flake on which one margin has been modified by the removal of small flakes to blunt the edge or margin opposite the cutting edge.

BORA GROUND:

A ceremonial site comprising of one or two connected circles composed of compacted or mounded earth, or defined by an arrangement of stones, of 2 to 30m diameter, generally used in male initiation rites.

CAMPSITE: A place at which the density of artefacts and the variety of material indicates that people 'frequently' used the place as a stopping or resting place. Such places are also likely to contain or be close to water resources, food resources, or stone material resources. In this report a campsite is used to describe artefact scatters that are associated with hearths or fireplaces, as distinct from scatters that are not associated with hearths or fireplaces, which are described as Open Scatters.

CHALCEDONY:

A form of silica (partially translucent), which occurs as linings in cavities in rocks. When banded it is known as AGATE (Department of Mines, 1973). Chalcedony is uniformly coloured and agate has curved bands or zones of varying colour (Cook & Kirk, 1991).

CHERT: Another name for sedimentary chalcedony. It occurs most frequently in limestones, or in marine sedimentary rock, or as pebbles in sedimentary rock. In its depositional context it is often concentrated in bedding planes. Chert found in deep-water limestones is formed from radiolaria and diatoms (siliceous planktonic micro-organisms) (Cook & Kirk, 1991).

Chert is a form of amorphous or extremely fine-grained silica, partially hydrous, found in concretions and beds. It is classified as a chemical sedimentary rock although it may be precipitated both organically and inorganically (Department of Mineral Resources, n.d.).

CONGLOMERATE:

Naturally cemented gravel. Conglomerate is a coarse-grained clastic sedimentary rock composed of generally rounded fragments of other rock types larger than 2 mm in diameter, set in a fine-grained matrix of sand, silt, or any of the common natural cementing materials (Department of Mineral Resources, n.d.).

CORE: A piece of stone from which flakes have been removed, that cannot otherwise be described as a retouched or modified artefact.

CORTEX: The naturally altered surface of stone – eg. the water-worn surface of river pebbles.

DEBITAGE: The small waste material observed in knapping floors. Generally, waste material is described as all those fragments having a maximum dimension of less than 10mm.

FLAKE: A fragment of stone exhibiting features indicating that it has been deliberately removed from a core piece. These features are evident as:

- i) Platform: Plane or point at which a blow was delivered to remove the flake.
- ii) Bulb of Percussion: Convex surface that occurs on the face or ventral surface of a flake, radiating from the point of impact, produced as a consequence of the force pattern.
- iii) Eriallure: see below.

Other terms:

- i) Dorsal: The back or outer face of a flake as it would have been prior to removal from a core. Frequently either ridged or exhibiting negative flake scars when removed in secondary flaking, with a natural weathered cortex when removed in primary flaking.
- ii) Ventral: The 'chest' or inner face of a flake as it would have been prior to removal from the core. The surface upon which the Bulb of Percussion occurs.
- iii) Platform Preparation: The removal of flakes from a surface to produce a level platform. May be evidenced by retouch scars to the platform.
- iv) Retouch: The removal of small flakes from an edge or margin of an artefact to modify its shape or sharpen its edge.
- v) Proximal: The end of a flake closest to the striking platform.
- vi) Distal: The end of a flake furthest from the striking platform.
- vii) Margin: The edge of an artefact.
- viii) Eriallure: A small circular to elliptical negative flake scar occurring on the surface of the bulb of percussion on flakes of very fine-grained or highly silicified material. It occurs 'naturally' as a consequence of internal forces generated at the time of flake removal.
- ix) Split Cone: Occurs when the flake splits down its axis frequently removing part of the striking platform. Generally believed to be produced by faulty knapping technique, but is also probably a consequence of flawed material.
- x) Transverse Snap: Occurs when a flake snaps across its axis. Generally believed to be caused by post-depositional impacts such as human or stock treadage, or vehicular traffic.

FLAKED PIECE:

A fragment of stone exhibiting flake scars indicating that it is an artefact, but not displaying diagnostic features, such as a Bulb of Percussion, Striking Platform, or an Eriallure.

GREYWACKE:

A type of sandstone, grey or greenish-grey in colour, tough and well indurated and typically poorly sorted (Clark & Cook, 1986).

A generally poorly sorted, dark sandstone containing feldspar and sand-sized rock fragments of metamorphic or volcanic rocks (Department of Mineral Resources, n.d.).

Usually a dark and coarse-grained rock compared to mudstones and siltstones that are much finer-grained and better sorted.

HOLOCENE PERIOD:

The period from 10,000 years ago to the present.

IGNEOUS ROCK:

Rock formed by the cooling and solidification of magma on or below the earth's surface (Geography Dictionary, 1985).

In situ: In its original place – as deposited.

ISOLATED ARTEFACT:

A solitary stone artefact, at least 50m from its nearest neighbour. This is based on NPWS policy that two artefacts within 50m of each other constitute a site.

KNAPPING FLOOR:

A discrete scatter of artefacts in which at least two artefacts are recognisably of the same material, and derive from the same piece of stone. Also described as a stone tool manufacturing site or floor.

LOCATION: The place at which an artefact is found, or a place identified as having either archaeological or Aboriginal significance.

MEASUREMENT:

I) Flake:

- i) Length: Measured along the percussion axis at right angles to the platform.
- ii) Width: The greatest width measured at right angles to the percussion axis.
- iii) Thickness: The greatest thickness measured at right angles to the percussion axis.

II) Flaked piece:

- i) Length: The longest dimension
- ii) Width: The greatest width measured perpendicular to the length.
- ii) Thickness: The greatest thickness measured perpendicular to the length.

III) Core:

- i) Length: The longest dimension.
- ii) Width: The greatest width measured perpendicular to the length.
- iii) Thickness: The greatest thickness measured perpendicular to the length.

MIDDEN: A refuse heap or stratum of food remains, such as mollusc shells, and other occupational debris (Dortch, 1984 – see also Meehan, 1982).

MUDSTONE: A fine-grained detrital rock, usually quite massive and well consolidated. May be black through grey to off-white, browns, reds and dark blues/greens. Frequently found in association with sandstones (Cook & Kirk, 1991).

Identification is often aided by colour variations in layering. A source for stone material tool manufacturing material found as river pebbles in creek beds, and artefacts often display a water-worn cortex.

NEGATIVE FLAKE SCAR:

A concave surface resulting from the removal of a flake, occurring on the surface of the rock from which a flake has been removed.

PLEISTOCENE PERIOD:

The period from about 10,000 years ago to 2 million years ago.

POTENTIAL ARCHAEOLOGICAL DEPOSIT (PAD):

Synonymous with Potentially Archaeologically Sensitive: Having the potential to contain archaeological material although none is visible.

QUARTZITE:

Quartzites are formed by the regional or contact metamorphism of quartz arenites, siltstones, and flints (cherts). They are composed essentially of quartz, and usually have a fine-grained granoblastic (grains are roughly the same size) texture. Generally massive, but may sometimes show sedimentary structures (Cook & Kirk, 1991).

- ROTATION:** The removal of flakes from a core by blows directed at different angles, to different platforms. May be evident on the dorsal surface of a flake as negative flake scars, which do not follow the same direction as the percussion axis of the flake. This may be confused with scars produced during core preparation.
- SCAT:** The solid waste material produced by an animal – dung, droppings, manure (Triggs, 1985).
- SCATTER:** Two or more artefacts occurring within 50 metres. Scatter may also be used in the context of 'background scatter', meaning the general distribution of artefacts across the landscape that cannot be recognised as discrete concentrations.
- SILCRETE:** A near surface or surface siliceous induration (Desen & Peterson, 1992).
A conglomerate consisting of surficial sand and gravel cemented into a hard mass by silica.
A siliceous duricrust (Bates & Jackson, 1980).
Crusts may form as a result of low, infrequent rainfall, on reasonably flat surfaces. These are known as duricrusts – those cemented by silica are known as silcretes (Clark & Cook, 1986), sometimes referred to locally as 'billy' (Gentili, 1968), or 'grey billy'.
Silcrete on the northern tablelands of NSW forms at the surface contact between sediments of the Sandon Beds and the Armidale Beds with overlying basalt, where groundwater (more rich in silica than surficial water) interacts with surficial water and precipitates new quartz as the matrix to the sediments (N.D.J. Cook, Dept. of Geophysics, UNE, pers. Comm.).
In softer formations of quartz sands, groundwater has apparently been responsible for the formation of concretionary layers of silcrete. Under altered climatic conditions, the less competent beds erode away leaving concretions. Since they are often the size of old-fashioned woolsocks and are greyish and white, they are popularly known as gray billy (slang for billy goat) (Fairbridge, 1968).
- SITE:** A discrete area or concentration of artefactual material, place of past Aboriginal activity, or place of significance to Aboriginal people.

SOIL SCIENCE TERMS

(taken from Banks, 1995, and others as referenced).

BEDROCK: Outcrop of in situ rock material below the soil profile.

BENCH: A strip of relatively level earth or rock breaking the continuity of a slope.

BLOWOUT: A closed depression formed in the land surface by wind eroding sands and depositing them on adjacent land.

CHERT: A very fine-grained amorphous silicate sedimentary rock, commonly a layer of chemical precipitate or micro-organism skeletal remains (Milford 1999).

CLAY: Soil material composed of very fine particles less than 0.002 mm size. When used to describe a soil texture group, such a material contains more than 35% clay (Milford 1999).

CLAYPAN: A depression caused by the aeolian deflation of sediments, or by the presence of a prior lake.

CONGLOMERATE:
A poorly-sorted detrital sedimentary rock composed of rounded gravels, stones or cobbles in a matrix of much finer material (Milford 1999).

DUNE: A ridge built up by wind action composed of sands, silts, or sand-sized aggregates of clay.

FLOODPLAIN:
A large flat area, adjacent to a watercourse, characterised by frequent active erosion and aggradation by channelled and overbank stream flow.

GIBBER: A level surface covered by a thick deposit of gravel or broken siliceous pebbles, occurring in the more arid parts of the continent, thought to have been formed from the break-up of a siliceous (silcrete) surface crust, and termed gibber plains (Whittow, 1984) – see also silcrete.

GILGAI: Surface microrelief associated with soils containing shrink-swell clays. Gilgai consists of mounds and depressions, or irregularly distributed small mounds and subcircular depressions varying in size and spacing. Vertical interval usually <0.3m; horizontal interval usually 3-10m, and surface almost level. Sometimes called 'crab-hole' soils.

GREYWACKE:
A tough, well-indurated type of sandstone distinguished by detrital quartz crystals and rock fragments set in a finer-grained matrix (Milford 1999).

GULLY: An open incised channel in the landscape generally greater than 30cm deep and characterised by moderately to very gently inclined floors and steep walls (Milford 1999).

HUMMOCK: A small raised feature above the general ground surface.

LANDFORM ELEMENTS:
Crest: Landform element standing above all points in the adjacent terrain.
Flat: Neither a crest or a depression <3% slope.
Upper slope: Adjacent to and below a crest or flat but not a depression.
Midslope: Not adjacent to a crest, a flat or a depression.
Lower slope: Adjacent to and above a flat or a depression but not a crest.

LITHOSOLS :Shallow soils showing minimal profile development and dominated by the presence of weathering rock and rock fragments.

METAMORPHIC:
Rocks whose composition, texture and/or structure have been altered through tectonic pressure and/or heat (Milford 1999).

METASEDIMENTARY:

Partially-metamorphosed sedimentary rock (Milford 1999).

MUDSTONE: A fine-grained dark-coloured sedimentary rock, formed from lithified mud; similar to shale but more massive (Milford 1999).

pH A measure of the acidity or alkalinity of a soil. A pH of 7.0 denotes neutrality, higher values indicate alkalinity, and lower values indicate acidity. The pH scale is logarithmic, i.e., a pH of 4.0 is ten times as acid as a pH of 5.0, and one hundred times as acid as a pH of 6.0. (DLWC 1999).

RILL: A small channel cut by concentrated runoff through which water flows during and immediately after rain.
A small ephemeral channel, generally no more than 30 cm deep, created by concentrated runoff (Milford 1999).

RUNOFF: That portion of precipitation not immediately absorbed into or detained upon the soil and which thus becomes surface flow.

SCARP/CLIFF:

A steep slope terminating a plateau or any level upland surface.

SCRUB: vegetation structure consisting of shrubs 2-8m tall.

SHEET EROSION:

The removal of the upper layers of soil by raindrop splash and/or runoff.

SOIL PROFILE:

“A HORIZON”: The top layer of mineral soil. This may consist of two parts:

A1 HORIZON: Surface soil and generally referred to as the topsoil.

A2 HORIZON: similar in texture, but paler in colour, poorer in structure, and less fertile.

“B HORIZON”: The layer below the A Horizon. This consists of 2 parts:

B1 HORIZON: A transitional horizon dominated by properties characteristic of the underlying B2 horizon.

B2 HORIZON: typically contains concentrations of silicate clay and/or iron, and/or aluminium and/or translocated organic material.

“C HORIZON”: The parent rock. Recognised by its lack of pedological development, and by the presence of remnants of geologic organization.

“R HORIZON”: Hard rock that is continuous (Charman & Murphy, 1993; 350-1).

SPUR: A ridge which projects downwards from the crest of a mountain as a water-parting (Whittow, 1984).

SUBSOIL: Sub-surface material comprising the B and C Horizons of soil with distinct profiles; often having brighter colours and higher clay contrasts.

SURFACE CONDITION:

Gravelly: Over 60% of the surface consists of gravel (2-69mm).

Hardsetting: Soil is compact and hard.

Loose: Soil that is not cohesive.

Friable: Easily crumbled or cultivated.

Self-mulching: A loose surface mulch of very small peds forms when the soil dries out.

SWALE: A linear level-floored open depression excavated by wind or formed by the build-up of two adjacent ridges.

SWAMP: Watertable at or above the ground surface for most of the year.

TOPSOIL: The surficial layers of the soil profile, typically the A Horizon, which is usually darker, more fertile, better structured and contains more organic matter than underlying soil materials (Milford 1999).

TERRACE: A flat or gently inclined surface bounded by a steeper ascending slope on its inner margin and a steeper descending slope on its outer margin (Whittow, 1984).

TOPSOIL: A part of the soil profile, typically the A1 horizon, containing material that is usually darker, more fertile and better structured than the underlying layers.

UNDERSTOREY:
A layer of vegetation below the main canopy layer.

WEATHERING:
The physical and chemical disintegration, alteration and decomposition of rocks and minerals at or near the earth's surface by atmospheric and biologic agents (Milford 1999).

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APPENDICES

- Appendix i: Advertisement to “interested Aboriginal stakeholders”**
- Appendix ii: Deerubbin LALC response to advertisement**
- Appendix iii: Correspondence from Office of the Registrar,
Aboriginal Land Rights Act 1983 (NSW)**
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- Appendix vi: Recommendations from Darug Aboriginal Cultural
Heritage Assessments**
- Appendix vii: Results of the search of the AHIMS Site Register**
- Appendix viii: Site Types**

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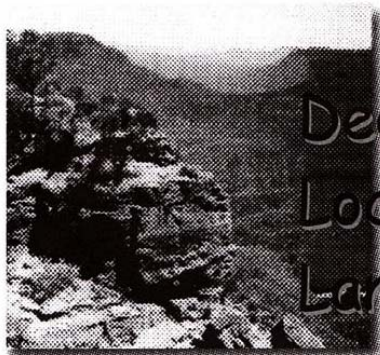
Appendix i:

Advertisement to “interested Aboriginal stakeholders”

Call 13 24 25... That's Fairfax Community Classifieds

Appendix ii:

Deerubbin LALC response to advertisement



Deerubbin
Local Aboriginal
Land Council

5/271 Beames Avenue
PO Box 3184
Mt Druitt Village
NSW 2770 Australia

Ph: (02) 9832 2457
Fax: (02) 9832 2496
Email: Staff@Deerubbin.org.au
Web: <http://www.deerubbin.org.au>

John Appleton
Archaeological Surveys & Reports Pty Ltd
16 Curtis Street
ARMIDALE NSW 2350

4 May 2009

SUBJECT: PROTECTION OF ABORIGINAL CULTURAL HERITAGE

Register of Interest to participate in this project.

- Orchard Hills Waste Recycling Facility
Lot 40 in DP 738126, Patons Lane
Orchard Hills

Dear Mr Appleton,

Deerubbin Local Aboriginal Land Council ("Deerubbin LALC") wishes you to formally register our requirement to participate in the Aboriginal cultural heritage assessment of the abovementioned area.

Should you require any further information please do not hesitate to contact Steve Randall on (02) 98322457 or 0417219174

Yours Faithfully

Per S Randall

Kevin Cavanagh
(Chief Executive Officer)

Appendix iii:

Correspondence from Office of the Registrar, Aboriginal Land Rights Act 1983 (NSW)



11-13 Mansfield Street
Glebe NSW 2037
PO Box 112, Glebe NSW 2037
P. 02 9562 6327 F. 02 9562 6350

John Appleton
Archaeological Surveys & Reports Pty Ltd
16 Curtis Street
Armidale NSW 2350

Dear John

Re: Request - Search for Registered Aboriginal Owners

I refer to a letter received from R.W. Corkery & Cp. Pty Ltd regarding an Aboriginal archaeological investigation at Lot 40 DP738126 Patons Lane, Orchard Hills, NSW.

I have searched the Register of Aboriginal Owners and the subject land does not appear to have Registered Aboriginal Owners pursuant to Division 3 of the *Aboriginal Land Rights Act 1983*.

You should contact the Deerubbin Local Aboriginal Land Council. Their contact details are given below. The land council may be able to assist you with information and contact details for other interested groups.

Mr Kevin Cavanagh
Chief Executive Officer
Deerubbin Local Aboriginal Land Council
PO Box 3184
Mount Druitt NSW 2770

Ph. 02 98322457
Fax. 02 98322496

Regards,

Megan Mebberson
Senior Project Officer
Office of the Registrar, *Aboriginal Land Rights Act 1983*

20 April 2009

Appendix iv:

Correspondence from DECCW

JOHN APPLETON

From: Cooper Kyree [Kyree.Cooper@environment.nsw.gov.au]
Sent: Wednesday, 29 April 2009 2:46 PM
To: japples@northnet.com.au
Cc: Stanborough Cheryl
Subject: Orchid Hills Waste Recycling Facility - Community Consultation / contacts

Good afternoon John,

In correspondence received by DECC dated 24 April 2009 you have requested information on Aboriginal groups / stakeholders in the Orchid Hills area.
Please find attached information as requested.

Organisation Name	Contact Person	Phone
Western Sydney		
✓ Deerubbin Local Aboriginal land Council	✓ Kevin Cavanagh	9832 2457
✓ Darug Custodial Aboriginal Corporation	✓ Leanne Watson	4577 5181 / 0415 770 163
✓ Darug Tribal Aboriginal Corporation	✓ Sandra Lee	9622 4081
✓ Darug Aboriginal Cultural Heritage Assessments	✓ Gordon Moreton	9625 0005 / 0422 865 831
✓ Muru Mittigar Aboriginal Cultural & Education Centre	✓ Ms Lesley Edwards	4730 2774
✓ Darug Land Observations	✓ Gordon Workman	0415 663 763

If there is anything I can further assist with please don't hesitate in contacting me

Regards,

Kyree Cooper | Aboriginal Planning & Heritage Officer | Metropolitan Branch | Planning and Aboriginal Heritage |
Environment Protection and Regulation Group | Department of Environment and Climate Change NSW | p: 9995
6834 | f: 9995 6902 |



Please consider the environment before printing this e-mail

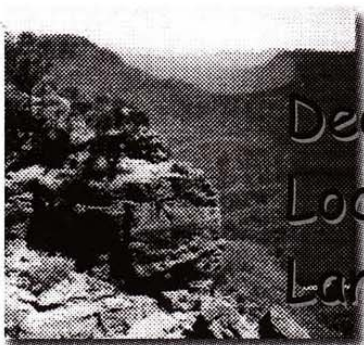
This email is intended for the addressee(s) named and may contain confidential and/or privileged information.

If you are not the intended recipient, please notify the sender and then delete it immediately.

Any views expressed in this email are those of the individual sender except where the sender expressly and with authority states them to be the views of the Department of Environment and Climate Change (NSW).

Appendix v:

Recommendations of Deerubbin LALC



Deerubbin
Local Aboriginal
Land Council

5/271 Beames Avenue
PO Box 3184
Mt Druitt Village
NSW 2770 Australia

Ph: (02) 9832 2457
Fax: (02) 9832 2496
Email: Staff@Deerubbin.org.au
Web: <http://www.deerubbin.org.au>

Dellara Pty Ltd
C/- John Appleton
Archaeological Surveys & Reports Pty Ltd
6 Curtis Street
ARMIDALE NSW 2350

Our Reference: 2020

15 July 2009

SUBJECT: ABORIGINAL CULTURAL HERITAGE ASSESSMENT
Orchard Hills Waste Recycling and Management Facility
Lot 40 in DP 738126
Patons Lane, Orchard Hills

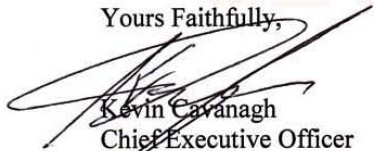
Dear John,

A representative of the Deerubbin Local Aboriginal Land Council (Steve Randall) inspected the proposed Orchard Hills Waste Recycling Facility, Patons Lane, Orchard Hills on 29 June 2009. An Aboriginal cultural heritage assessment was undertaken to evaluate the likely impact that the proposed development has on the cultural heritage of the land.

Our representative reports that, due to the major quarrying activities of the study area, the Aboriginal cultural materials (in the form of stone artefacts, for example) were found in areas of high ground disturbance.

Deerubbin LALC therefore, has no objections to the proposed Orchard Hills Waste Recycling and Management Facility on the grounds of Aboriginal cultural heritage.

Yours Faithfully,



Kevin Cavanagh
Chief Executive Officer

C.c. Lou Ewins, Manager, Planning & Aboriginal Heritage Section, Dept, of Environment Climate
Change
C.c. General Manager, Penrith City Council

Appendix vi:

Recommendations from Darug Aboriginal Cultural Heritage Assessments

Darug Aboriginal Cultural Heritage Assessments

ABN 51 734106483

Gordon Morton & Associates

Mob: 0422 865 831
Fax: 45 677 421

Celestine Everingham
90 Hermitage Rd., Kurrajong Hills, 2758
Ph/Fax: 45677 421
Mob: 0432 528 896

16.7.09

Attention

John Appleton
re Survey of Eskine Park Quarry

Gordon Morton took part in the survey
on the 29th June at 10AM. Visibility was
limited due to grass cover, however
2 artifacts were found; one on the northern
end of the property and one on the eastern
side of the property. The area has been very
disturbed by previous quarry activities.
DACHA has no further interest in this site.

Yours Sincerely,
Gordon Morton

Cultural Heritage - Building respect for the past and Conservation for the future

Appendix vii:

Results of the search of the AHIMS Site Register



Department of
**Environment
and Climate Change (NSW)**



Your reference : Lot 40 Dp 738126
Our reference : AHIMS #26220

Archaeological Surveys and Reports
16 Curtis Street
Armidale NSW 2350

Friday, 19 June 2009

Attention: John Appleton

Dear Sir or Madam:

Re: AHIMS Search for the following area at Waste Recycling Management Facility; Lot 40 Dp 738126

I am writing in response to your recent inquiry in respect to Aboriginal objects and Aboriginal places registered with the NSW Department of Environment and Climate Change (DECC) at the above location.

A search of the DECC Aboriginal Heritage Information Management System (AHIMS) has shown that 0 Aboriginal objects and Aboriginal places are recorded in or near the above location. Please refer to the attached report for details.

The information derived from the AHIMS search is only to be used for the purpose for which it was requested. It is not to be made available to the public.

The following qualifications apply to an AHIMS search:

- AHIMS only includes information on Aboriginal objects and Aboriginal places that have been provided to DECC;
- Large areas of New South Wales have not been the subject of systematic survey or recording of Aboriginal history. These areas may contain Aboriginal objects and other heritage values which are not recorded on AHIMS;
- Recordings are provided from a variety of sources and may be variable in their accuracy. When an AHIMS search identifies Aboriginal objects in or near the area it is recommended that the exact location of the Aboriginal object be determined by re-location on the ground; and
- The criteria used to search AHIMS are derived from the information provided by the client and DECC assumes that this information is accurate.

All Aboriginal places and Aboriginal objects are protected under the *National Parks and Wildlife Act 1974* (NPW Act) and it is an offence to destroy, damage or deface them without the prior consent of the DECC Director-General. An Aboriginal object is considered to be known if:

- It is registered on AHIMS;
- It is known to the Aboriginal community; or

- It is located during an investigation of the area conducted for a development application.

If you considering undertaking a development activity in the area subject to the AHIMS search, DECC would recommend that an Aboriginal Heritage Assessment be undertaken. You should consult with the relevant consent authority to determine the necessary assessment to accompany your development application.

Yours Sincerely



Freeburn, Shannon
Administrator
Information Systems & Assessment Section
Culture & Heritage Division
Phone: 02 9585 6471
Fax: 02 9585 6094



List of Sites (List - Short)

Lot 40 Dp 738126

Grid Reference Type = AGD (Australian Geodetic Datum), Zone = 56, Easting From = 290636, Easting to = 291623, Northing From = 6255739, Northing to = 6256784, Feature Search Type = AHIMS Features

Site ID	Site Name	Datum	Zone	Eastings	Northings	Context	Site Features	Site Types (recorded prior to June 2001)	Recording (Primary)	Reports (Catalogue Number)	State Arch. Box No (for office use only)
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No Site Recorded

Number of Sites : 0

Page 1 of 1

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Appendix viii:

Site Types

Site types associated with Indigenous activities and culture

The definitions that follow are for terms used in this report, and do not necessarily apply to their use in different contexts.

Art sites are defined as places where any medium has been applied to a rock surface either as symbols, characters, drawings, paintings, or any other rendition, recognisable as not being a natural discolouration or feature. They also include markings to a rock surface, either by engraving, abrading, or pecking, and which cannot be identified as being a natural feature.

Bora rings are circles of 2-30 metres diameter of compressed earth (from repeated treading or dancing), or stone arrangements, at which men performed initiation ceremonies, and are the most frequently recorded ceremonial sites. Sometimes they occur as two rings joined by a central track in a barbel configuration. They usually occur on level or low-lying country, which is usually the first topographical unit to be cultivated, or utilised for highways and roads, but they may also occur as circular stone arrangements on elevated rock platforms and hilltops. If they are or were present then they are usually either already known and have been recorded, or they have long since been destroyed.

Carved trees are readily recognised by even the untrained observer. The carving is incised either into the outer bark, or more commonly, into the living wood after removal of a section of the bark. The designs frequently consist of 'diamond cross-cuts', but may also consist of stylised animal motifs. Previously unrecorded carved trees are still discovered in relatively remote or inaccessible areas. Carved trees frequently occur near burial sites and/or Bora rings, but in some regions they may have been tribal boundary markers.

Fish traps may occur either in rivers or on seashores. They are recognisable as unnaturally formed stone arrangements that were constructed to trap fish (or eels or turtles) carried into the enclosure in deep water, and which are left stranded within the enclosure as the water level drops. The fish were then caught by nets, hand, or by spear.

Grinding grooves are usually observed on the surfaces of large sedimentary boulders or exposed shelves and outcrops of sedimentary rock along creek banks and beds, or near water. They have been produced by Aborigines using the rock surface to shape and sharpen the edges of stone to produce ground-edged axes, or to sharpen wooden spears (the latter tend to be narrow and deep). Water was used to lubricate the surface of the rock. The grooves frequently occur as linear abraded depressions in the rock, and may each be between 10 and 50 centimetres long, up to 15 centimetres wide, and 2 to 5 centimetres deep. Some sedimentary rock surfaces may exhibit shallow ground depressions of roughly round or elliptical shape, and these are more likely to be associated with seed grinding, root crushing, or other food preparation.

Middens may be identified variously as beach, lagoon, lacustrine, or estuarine, and are most likely to be observed at or above the water line where erosion, topsoil removal, or mining has exposed the shell. The size of the midden can vary enormously, with the smallest comprising a 'one off', "dinner-time camp" (Meehan. 1982), with as few as two or three shells, or a shallow lens of only a few centimetres. The largest middens may extend for many kilometres and may comprise of a number of lenses and layers of shell and ash up to several metres deep. These large middens may be evidence of continuous exploitation of the resource over many thousands of years. Middens of fresh water mussel shell may be found in eroding creek banks or in eroding terraces, particularly near both existing and defunct water holes.

Isolated shell or fragments may occur on any surface and in any situation. A single shell may have been discarded by a bird, but the presence of use-wear would indicate Aboriginal use of the shell as a tool, which was discarded after use. Such occurrence is likely to be where there is no immediate source of stone material suitable for tool manufacture.

Natural Mythological sites are places of significance to Aborigines, either because they are described in mythological stories or songlines, or because they were used in religious ceremonies. They may occur anywhere and while some are more predictable than others – as for example, permanent water holes, waterfalls, rock promontories, etc., others may have no particularly remarkable features. Seldom is there any recognisable artefactual evidence or anything to distinguish it from similar features in the vicinity. These sites must of necessity be identified by Aboriginal people with an association with the place.

Open sites, campsites, knapping floors, scatters, and isolated artefacts, are most likely to occur on eroded and exposed creek banks, particularly where slope wash or stock trails has removed the humic layer, or on eroded ridges and spurs, particularly near the junctions in watercourses.

Open sites are most likely to be present in greatest numbers near a source of either raw stone material, or potential food resources, or in a natural corridor between two differentially preferred environmental zones, or at the contact between two environmental zones containing different resources.

Artefacts in open scatters are likely to be manufactured from the dominant raw material available; i.e. Greywacke on greywacke-sourced soils, quartz on granite-sourced soils, silcrete and chert on relict sedimentary soils.

Artefact assemblages in open scatters are likely to consist predominantly of discard material, i.e., cores, flakes, flaked pieces, and debitage.

Artefacts exhibiting retouch scars and backing are most likely to occur in sites where secondary activity took place peripheral to the central camp site, although this is a generality and can only be observed where there is sufficient surface visibility to identify peripheral sites. Fragments of flakes with retouch or backing may occur on knapping floors indicating breakage occurring during manufacture, or maintenance areas in which damaged tools have been replaced and discarded.

Isolated artefacts are likely to be most frequently observed where the groundcover obscures all but the larger artefacts, such as cores, and large flakes, or where there is little contrast between the texture of artefactual material and the surface upon which it lies. Artefacts of materials contrasting with the matrix may be visible regardless of size; eg. quartz artefacts may be far more visible than much larger basalt artefacts against a background of dark humic terrace soils.

PADs or Potential Archaeological Deposits are deposits, usually in shelters (but they may also be identified where there are intact deposits in open areas), which although not containing any visible archaeological material, are considered likely to contain archaeological material below the surface. These 'sites' are not recorded as sites on the Aboriginal Site Register, but are identified as places that require subsurface testing to establish whether a site exists or not.

Rock shelters with art or occupation deposits, are most likely to occur where the character of the parent rock is sufficiently massive or consolidated for it to retain a structure that weathers differentially to form shelters and overhangs.

Scarred trees are perhaps the most difficult site type to determine as having been caused by deliberate removal of the bark by humans and not as a consequence of natural events; such as abrasion from falling trees or branches, natural branch attrition, fire damage, or contact from vehicles or stock. They may occur in places wherever there are tree species that produce bark suitable for tool and implement manufacture. While some scars are clearly the consequence of deliberate bark removal by Aborigines (either evidenced by stone axe marks, or identified by Knowledge Holders), some scars were made by settlers, and stockmen, and surveyors who frequently blazed trails and property boundaries by scarring the trees, and by timber men who removed a strip of bark to test the suitability of a tree for logging.

Other site types such as hearths, burials, etc., are less easily predicted, although burials are frequently associated with carved trees, and Bora rings, and hearths with campsites, shelters, and shell middens.

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