



## New Berrima Clay/Shale Quarry

# Cultural Heritage Assessment

Prepared by

Archaeological Surveys & Reports Pty Ltd

August 2010

Specialist Consultant Studies Compendium:  
Part 8





## New Berrima Clay/Shale Quarry

# Cultural Heritage Assessment

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**August 2010**

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## **EXECUTIVE SUMMARY**

This investigation was performed for R.W. Corkery & Co. Pty Limited (RWC) on behalf of The Austral Brick Company Pty Limited (Austral), owner and operator of the Bowral Brick Plant, and the proponent of this project. Austral will be lodging an application for development approval for the proposed New Berrima Clay/Shale project, as a Part 3A (Major Project), and has contracted RWC to prepare the necessary documentation.

RWC has contracted Archaeological Surveys & Reports Pty Ltd (ASR) to consult with Aboriginal stakeholders in accordance with "Draft Guidelines for Aboriginal Cultural Heritage Impact Assessment and Community Consultation" (Department of Environment and Conservation [DEC] 2005), and to undertake an investigation to identify any sites of Indigenous cultural significance within the Project Site.

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

Prior to the investigation, Appleton (ASR) contacted Illawarra LALC to arrange for a sites officer/s to assist in the survey. Sharralyn Robinson, CEO, advised ASR that there were two other Aboriginal organisations that should be included in the investigation, The Wodi Wodi Elders Corporation (Wodi Wodi) and Korewal Elouera, Jerrungarugh (Korewal Elouera). ASR then contacted Sheryl Davis of Wodi Wodi and requested that she organise a Sites Officer to assist in the investigation. However, Sheryl stated that Wodi Wodi did not wish to participate in the field investigation, but would like to receive a copy of the final report of the investigation. ASR then contacted Rueben Brown of Korewal Elouera and requested that he provide a Sites Officer to assist in the investigation. Gordon passed the information onto his son Bart, but unfortunately he was unable to find transport from Figtree to New Berrima. Bart stated that the field investigation should proceed without a representative from Korewal Elouera, but that he would like to receive a copy of the final report. As a consequence, Steven Marsden (Sites Officer, Illawarra LALC) assisted Appleton (ASR) in the survey which was undertaken on 17th September 2008.

No sites or places of archaeological or Indigenous cultural significance or locations of Potential Archaeological Deposits (PADs) were identified in the Project Site.

As a consequence of this investigation no sites of cultural or archaeological significance or places of potential research significance were identified. Illawarra Local Aboriginal Land Council has stated that there are no cultural grounds that would present a constraint to the proposed development. ASR agrees with its recommendations, and concludes that there are no cultural or archaeological grounds that present a constraint to the proposed New Berrima Clay/Shale Quarry. However, the proponents are advised that they are legally obliged to comply with the provisions of the *National Parks and Wildlife Act 1974* (as amended), which

require that 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 or stone artefacts, or discrete distributions of shell, or any objects of cultural association, being unearthed during earthmoving, work should cease immediately in the area of the find. The find should be immediately reported to the Department of Environment, Climate Change and Water (DECCW) and the relevant Local Aboriginal Land Councils.

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 Illawarra Local Aboriginal Land Council, Wodi Wodi Elders Corporation, and Korewal Elouera, Jerrungarugh, and the Archaeologist, DECCW (Wollongong) advised that the bone is subject to police investigation.

Work should not recommence in the area of the find, until both the police (if unidentified bone has been found) 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**

This investigation was performed for R.W. Corkery & Co. Pty Limited (RWC) on behalf of The Austral Brick Company Pty Limited (Austral), owner and operator of the Bowral Brick Plant, and the proponent of this project. Austral will be lodging an application for development approval for the proposed New Berrima Clay/Shale project, as a Part 3A (Major Project), and has contracted RWC to prepare the necessary documentation.

RWC has contracted Archaeological Surveys & Reports Pty Ltd (ASR) to consult with Aboriginal stakeholders in accordance with "Draft Guidelines for Aboriginal Cultural Heritage Impact Assessment and Community Consultation" (Department of Environment and Conservation [DEC] 2005), and to undertake an investigation to identify any sites of Indigenous cultural significance within the Project Site.

## **1.1 SCOPE, OBJECTIVES AND REPORT FORMAT**

### **Scope**

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

### **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, and their recommendations as to the future management of any sites identified during the investigation. 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 New Berrima Clay/Shale Quarry.

### **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.

## 1.2 THE PROJECT SITE AND SURVEY AREA

The Project Site occurs approximately 1.5km east of New Berrima in the Southern Highlands of New South Wales. The Project Site comprises part of Lot 1 DP 414246, "Mandurama", which is 100.2ha in area at 1 Berrima Road, in the Parish of Bong Bong. The Project Site is a roughly rectangular block of 51ha, connected to Berrima Road by a narrow corridor along which there is an existing unpaved road.

The western and southern boundaries of the Project Site are formed by shared property fencelines, and the northern and eastern boundaries are conceptual boundaries of the limit of impact from proposed quarrying activities. The proposed haul road will run from the south-western corner of the Project Site, to the existing entrance to the property, approximately 300m north of the junction of Taylor Avenue and Berrima Road, southeast of the small community of New Berrima.

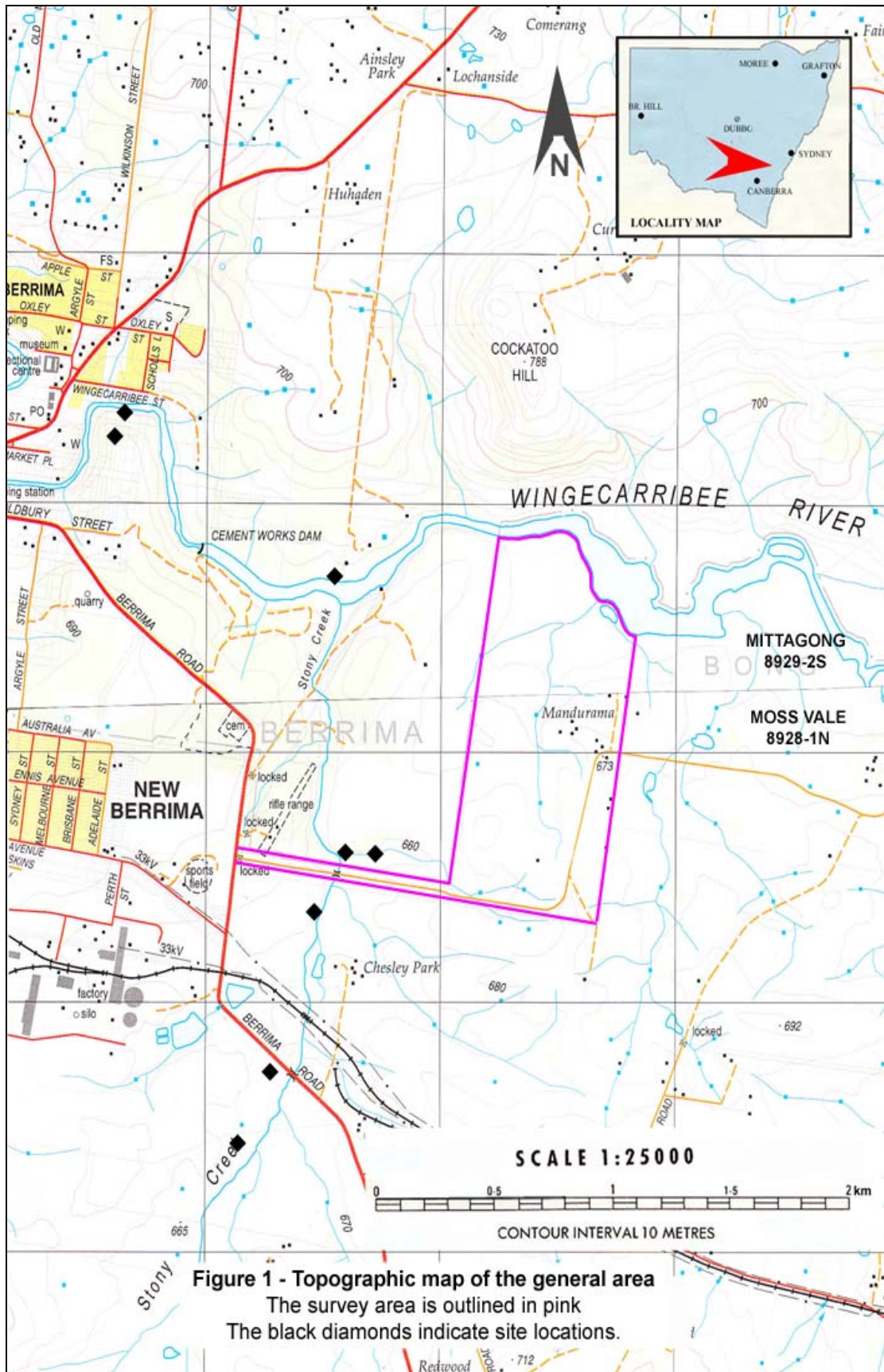
The proposed extraction area is approximately 800m south of Wingecarribee River, and occurs on a low rise, some distance back from the edge of the floodplain.

Figures on the following pages present the local setting of the Project Site. **Figure 1** places the Project Site in its regional context, marked with the locations of known Aboriginal sites in the area. **Figure 2** shows an aerial photograph of "Mandurama", and **Figure 3** shows the proposed Site Layout.

## 1.3 POTENTIAL IMPACT OF THE PROPOSED QUARRY

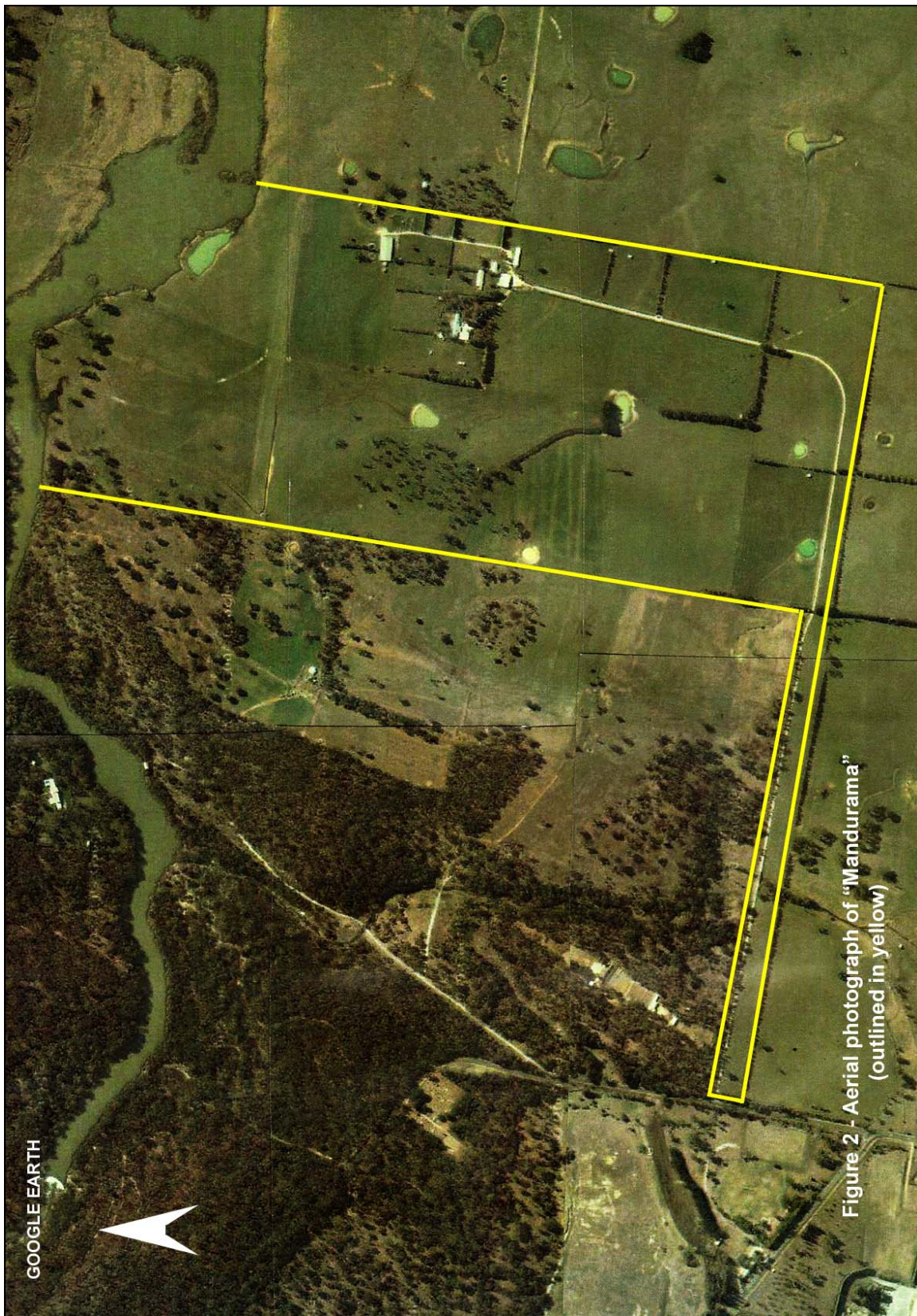
The Project Site incorporates all areas of disturbance associated with the proposed Project-related activities which include the following components.

- A site access road from Berrima Road to the extraction area, a distance of approximately 800m.
- An extraction area of approximately 7.7ha.
- A water storage facility in the extraction area to store surface water runoff and incidental groundwater inflows to the extraction area.

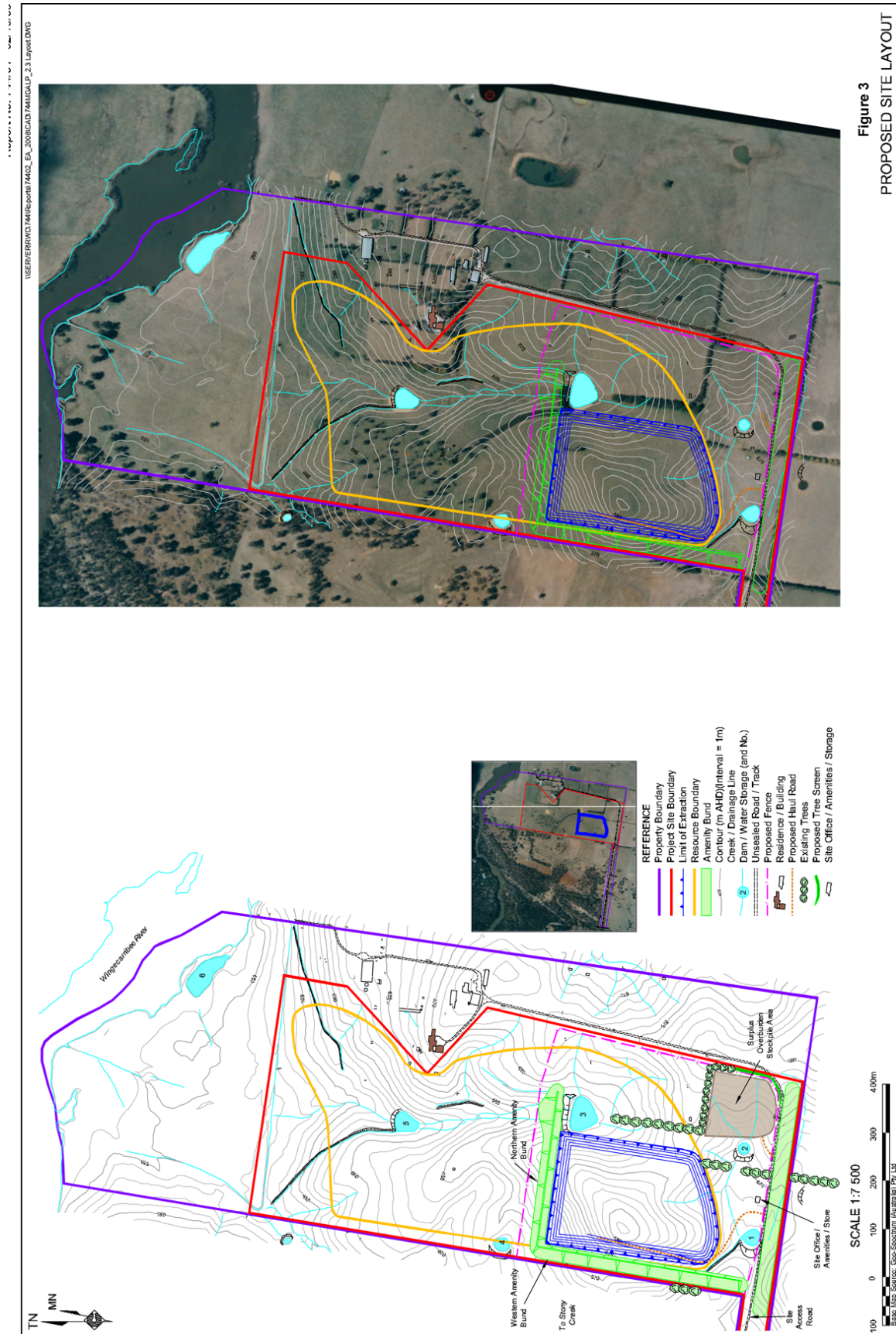


Note: A colour version of this figure is available on the project CD.









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

Redevelopment of two existing dams to serve as sedimentation dams which will capture runoff from disturbed areas outside of the extraction area.

- A transportable lunchroom/amenities building.
- A storage and workshop area located within a shipping container.
- Three perimeter amenity bunds which will minimise visual amenity, noise and dust impacts.
- A surplus overburden stockpile area (SOSA) which would be the storage site for surplus overburden and product clay/shale.

There is a potential for any archaeological contexts occurring within the footprint of the features described above, 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.

## 2 ABORIGINAL CONSULTATION

On 21<sup>st</sup> August 2008 an advertisement was placed in the *Highlands Post* inviting all Aboriginal stakeholders with an interest in the project site to register their interest. A copy of the advertisement as it appeared in the newspaper is included as **Appendix 1**. No response to the advertisement was received from Indigenous stakeholders.

Prior to the investigation, Appleton (ASR) contacted Illawarra LALC to arrange for a sites officer/s to assist in the survey. Sharralyn Robinson, CEO, advised ASR that there were two other Aboriginal organisations that should be included in the investigation, The Wodi Wodi Elders Corporation (Wodi Wodi), and Korewal Elouera, Jerrungarugh (Korewal Elouera). ASR then contacted Sheryl Davis of Wodi Wodi, and requested that she organise a Sites Officer to assist in the investigation. However, Sheryl stated that Wodi Wodi did not wish to participate in the field investigation, but would like to receive a copy of the final report of the investigation. ASR then contacted Rueben Brown of Korewal Elouera, and requested that he provide a Sites Officer to assist in the investigation. Gordon passed the information onto his son Bart, but unfortunately he was unable to find transport from Figtree to New Berrima. Bart stated that the field investigation should proceed without a representative from Korewal Elouera, but that he would like to receive a copy of the final report. As a consequence, Steven Marsden (Sites Officer, Illawarra LALC) assisted Appleton (ASR) in the survey which was undertaken on 17th September 2008.

Both prior to and during the survey, John Appleton (ASR) and Steven Marsden discussed the potential for particular site types to be present, and the particular environments in which they might occur. The survey strategy and results were considered and discussed throughout the survey and at the completion of each survey transect or survey unit. At the conclusion of the survey, the results were discussed as were the recommendation that Steven would present to the Land Council for deliberation.

A copy of the recommendations subsequently received from Illawarra LALC is included as **Appendix 2**.

### **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 within the Sydney-Bowen Basin, a major structural basin, which extends from Batemans Bay in the south, to Collinsville, Queensland in the north. The New South Wales portion of the basin is divided into northern and southern sections by a transverse structural high to the north of Narrabri. The southern section of the Sydney-Bowen Basin has been divided into two lower category structural basins, the Sydney Basin and the Gunnedah Basin (Menzies 1974). The study area occurs at the southern end of the Sydney Basin.

The Project Site occurs on soils associated with Continental-type sedimentation that includes Hawkesbury Sandstone, and the Wianamatta and Narrabeen Groups, comprising sandstone, shale and claystone (Department of Mineral Resources 1972).

The Project Site generally is on a low rise overlooking the Wingecarribee River valley to the north, bracketed by two drainage lines that flow northwards into the river. Elevations in the Project Site descend from a little over 680m AHD on the summit of the rise, down to 640m AHD on the northern boundary.

#### **3.2 VEGETATION**

As can be observed from the aerial photograph in **Figure 2**, almost the entire project Site has been cleared for pasture, all but for the remnants of open eucalypt woodland in the northern section. From the evidence of remnant vegetation elsewhere in the district it is probable that the Project Site supported open dry eucalypt woodland prior to being cleared.

#### **3.3 WATER RESOURCES**

As described two drainage depressions bracket the Project Site, however it is unlikely that either was ever a reliable water source. But as Wingecarribee River and streams were nearby water would never have been a factor as to whether or not Aboriginal people “used” the Project Site, as is evidenced by the distribution of sites adjacent to water courses in the area – see **Figure 1**.

#### **3.4 STONE RESOURCES**

As referred to in **Section 3.1** the Project Site occurs on Hawkesbury Sandstone, and Hawkesbury Sandstone sometimes contains lenses of conglomerate. While no conglomerates

were observed during the field investigation it is probable that there were exposed pebble beds derived from conglomerates up river in Wingecarribee River before they were covered by silts loosened by land clearing, that could have been exploited by the Aborigines for knapping into stone tools or weapons.

### 3.5 PREVIOUS IMPACTS

As the aerial photograph in **Figure 3** shows, the Project Site has been cleared for pasture. Following the felling of the trees the land would have been levelled, harrowed and ploughed, and then regularly ploughed to encourage the growth of pasture grasses. Such farming practices tend to result in the displacement and concealment of artefactual material, which only becomes briefly exposed again when the contexts in which they occur are ploughed.

There are five dams within the Project Site, and midway between them there are the partial remains of the concrete floor of a defunct structure of unknown function – although from its size and location it may once have been the floor of a pump room.

## 4 THE ARCHAEOLOGICAL RECORD

The result of the search of the Aboriginal Sites Register (Aboriginal Heritage Information Management System – AHIMS) for all sites within the references Eastings 254000-262000, Northings 6177000-6185000 resulted in a listing of 39 sites. Only two of the sites occur in the near vicinity of the Project Site, and they were sets of axe-grinding grooves recorded to the north of the proposed haul route corridor in Stoney Creek. Significantly, as **Figure 1** shows, the distribution of sites appears to be directly related to water courses.

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.

The Site Recording Forms (SRFs) for these two sites, for example, have been recorded incorrectly. The SRF for “Stoney Creek 1” shows the map reference for the site as Easting 256635, Northing 6617839, but the sketch in the SRF showing the site location shows it at Easting 2566356, Northing of 6178392, a not inconsiderable difference. The AHIMS print out however shows the correct reference – which suggests that the SRF is not the original and that a transposition error has been made in compiling the SRF.

The SRF for “Stoney Creek 2” does not have a site name entered and yet it shows up on the AHIMS register. Again it appears that a transposition omission has occurred in compiling the SRF.

Also there have been 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 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.

A copy of the results of the AHIMS search is included as **Appendix 3**. Note that the detailed listing has been omitted on instruction from DECCW to preserve site security. Copies of the two SRFs are included as **Appendix 4** (Note the site locations indicated on page 2 of each of the SRFs, which show the sites occurring outside the proposed haul road corridor).

## **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:

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

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

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

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 5**.

## **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, in which there was no reliable water source, no exposures of sandstone bedrock, and no rock overhangs, and which in the absence of both water and shelter, there were unlikely to be any places where PADs (potential archaeological deposits) were likely to occur.

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

There is a potential for trees more than 150 years old to exhibit scarred surfaces

There is a potential for any trees more than 150 years old to exhibit carved surfaces

There will be no engravings, and/or grinding grooves.

There are unlikely to be any PADs.

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 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 Topographic map and the aerial photograph, ASR determined that the objectives of the investigation were to undertake as full and as comprehensive a survey as possible. The Project Site was small, and 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 the groundcover would be to archaeological visibility.

The investigators met Mr Mark Gallagher, Manager of the property, before the survey began, and Mr Gallagher pointed out the area to be surveyed for the Project Site.

Both investigators walked the boundary of the Project Site, paying particular attention to the stock pads around the two largest dams, and a third dam immediately outside the northwestern corner of the proposed extraction area. They then targeted two exposures where soil testing had taken place and a stock pad in a gateway adjacent to the eastern boundary. Finally they inspected the stand of eucalypts to the northwest of the proposed extraction area for scarred and/or carved trees. An inspection was also made around the area adjacent to the bridge over the stream in the road corridor.

### 6.2 DETAILS OF THE SURVEY

The field survey was undertaken by Appleton (ASR), assisted by Steven Marsden (Illawarra LALC). The survey was made on foot, in dry conditions under a cloudy sky. The light was ideal for observing any artefactual material which was present and observable. All of the areas shown shaded in pink in **Figure 4** were surveyed on foot.

### 6.3 SITE RECORDING

All relevant observations regarding 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.

### 6.4 EFFECTIVENESS OF THE SURVEY TECHNIQUE

The pasture-grass ground cover was a constraint to the effectiveness of the survey in terms of the surficial archaeological record; however, the few exposures there were, provided a sample of the likely presence or absence of artefactual material. The survey was fully effective with regard to the presence or absence of scarred or carved trees.

### 6.5 EFFECTIVE COVERAGE

**Table 1** 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 - Aerial photograph showing the effective survey coverage (shaded in pink)



**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 study area. The series begins in the road corridor, and then continues into the south-western corner of the Project Site. From there the sequence follows a clockwise direction around the Project Site, finishing with an overview of the Project Site, and an example of the exposures around the dams.

**Table 1**  
**Effective Survey Coverage**

Area	Description	Survey area (very approx. surface areas)	Rock/soil	Vegetation	Average surface visibility	Exposure	Approx area surveyed on foot	Average arch. Visibility of exposures	Archaeology
1	Road corridor (from entry to homestead)	25 000sqm	Shallow soils on weathered sandstone	Cleared all but for Casuarina along stream banks	95% on road 0% elsewhere	Vehicle tracks	Vehicle tracks	85%	Nil
2	Pasture (Project Site)	75 000sqm	Hawkesbury Sandstone	Cleared	<3%	Minor stock wear	95%	50%	Nil
3	Dams (all five on property)	3 000sqm	Shallow soils on weathered Sandstone	Cleared	95% on exposed banks	Stock wear	95%	95%	Nil
4	Open eucalypt woodland in northern section of the Project Site	80 000sqm	Shallow soils on weathered sandstone	Dry eucalypt open woodland	5%	Driplines and stock pads	50%	50%	Nil



**Plate 1** Looking eastwards along the road corridor from the entrance to the property.



**Plate 2** Looking eastwards across the bridge in the road corridor.



**Plate 3** The stream to the south of the bridge in the access corridor.



**Plate 4** Looking back along the road corridor to the entrance.





**Plate 5** Looking northwards from the access road to the proposed quarry site.



**Plate 6** Looking southwards across the proposed quarry site, towards the viewpoint in Plate 5.



**Plate 7** Looking southwards along the western property boundary fenceline.





**Plate 8** Looking northwards from the proposed quarry site.



**Plate 9** The dam midway along the western section of the property.



**Plate 10** Looking south-westwards across the Project Site from the north-eastern slopes of the property.



**Plate 11** Looking southwards along the central fenceline in the northern section of the property.



**Plate 12** Looking southwards across the edge of the central dam in the northern section.



**Plate 13** Looking north-eastwards across the property from the proposed extraction area.





**Plate 14** Inspecting the exposures around the central dam in the northern section.

## **7 THE RESULTS**

No sites or places of archaeological or Indigenous cultural significance or locations of Potential Archaeological Deposits (PADs) were identified in the Project Site.

## **8 DISCUSSION**

The absence of sites within the survey area was not surprising given that the survey area was located on gently sloping ground, some distance from a reliable water source, and contained no useful resources. Such an environment would not have been a good place for a camp site when the river bank was only 800m away to the north. However, the absence of natural barriers in the survey area might have meant that it was used as a transit corridor to the south, or for the occasional hunting and/or gathering forays. Either way such activities would not have resulted in the deposition of more than an occasional isolated artefact, dropped accidentally in transit, or discarded as no longer useful.

The absence of any stone suitable for knapping into tools or weapons in the survey area meant that there were no quarries where knapping material might have been collected, and it also meant that if there were any artefacts in the survey area that they would be only isolated artefacts or very low density scatters of material sourced from elsewhere.

The Project Site occurs in marginal country with few reliable resources, and while Aboriginal people probably passed through the area in transit to other places, it is unlikely that they would have chosen to occupy the area for any length of time, or that they would leave a lasting archaeological record.

As referred to previously the sites previously recorded in the area are all adjacent to water courses and as there are no water courses in the survey area it is reasonable to assume that there were no camp sites in the survey area, although it is probable that the area was used in transit between the various water courses, or by collectors and hunters seeking resources in

the area. Activities which would have resulted in either very low density artefact scatters of small (<10mm) artefacts, resulting from tool maintenance, or isolated artefacts discarded or lost in transit. Such artefacts would only be observed opportunistically when the deposits are ploughed, or when extreme drought results in scalded bare ground surfaces.

## **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 cultural and/or archaeological significance of the sites is necessary. This is not only for the purpose of determining whether 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 Steven Marsden, Sites Officer, Illawarra LALC, reported the results of the investigation to the land council, and subsequently, ASR received a report from the land council, with the recommendations that there were no constraints on cultural grounds to the proposed New Berrima Clay and Shale Quarry. A copy of the Land Council's report is included as **Appendix 2**.

### **9.3 RESEARCH POTENTIAL**

In the absence of any archaeological sites or places assessed to be of potential archaeological research (PADs), the survey area is assessed to be of no research potential.

## **10 RECOMMENDATIONS**

As a consequence of this investigation no sites of cultural or archaeological significance or places of potential research significance were identified. Illawarra Local Aboriginal Land Council has stated that there are no cultural grounds that would present a constraint to the proposed development. ASR agrees with its recommendations, and concludes that there are no cultural or archaeological grounds that present a constraint to the proposed New Berrima Clay and Shale Quarry. However, the proponents are advised that they are legally obliged to comply with the following provisions of the *National Parks and Wildlife Act 1974* (as amended), which require that 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 or stone artefacts, or discrete distributions of shell, or any objects of cultural association, being unearthed during earthmoving, work should cease immediately in the area of the find. The find should be immediately reported to the Department of Environment, Climate Change and Water (DECCW) and the relevant Local Aboriginal Land Councils.

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 Illawarra Local Aboriginal Land Council, Wodi Wodi Elders Corporation, and Korewal Elouera, Jerrungarugh, and the Archaeologist, DECCW (Wollongong) advised that the bone is subject to police investigation.

Work should not recommence in the area of the find, until both the police (if unidentified bone has been found) 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.

## 11 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:

**PLATFORM:** Plane or point at which a blow was delivered to remove the flake.

**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.

**ERAILLURE:** see below.

Other terms:

**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.

**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.

**PLATFORM PREPARATION:** The removal of flakes from a surface to produce a level platform. May be evidenced by retouch scars to the platform.

**RETOUCH:** The removal of small flakes from an edge or margin of an artefact to modify its shape or resharpen its edge.

**PROXIMAL:** The end of a flake closest to the striking platform.

**DISTAL:** The end of a flake furthest from the striking platform.

**MARGIN:** The edge of an artefact.

**ERAILLURE:** 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.

**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.

**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 Errillure.

**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:**

**Flake:**

**Length:** Measured along the percussion axis at right angles to the platform.

**Width:** The greatest width measured at right angles to the percussion axis.

**Thickness:** The greatest thickness measured at right angles to the percussion axis.

**Flaked piece:**

**Length:** The longest dimension

**Width:** The greatest width measured perpendicular to the length.

**Thickness:** The greatest thickness measured perpendicular to the length.

**Core:**

**Length:** The longest dimension.

**Width:** The greatest width measured perpendicular to the length.

**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' (Gentilli, 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 woolsacks 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

The following terms are 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:

A<sub>1</sub> HORIZON: Surface soil and generally referred to as the topsoil.

A<sub>2</sub> 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:

B<sub>1</sub> HORIZON: A transitional horizon dominated by properties characteristic of the underlying B<sub>2</sub> horizon.

B<sub>2</sub> 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 A<sub>1</sub> 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

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| <b>Appendix 3</b> | <b>Results of the search of the<br/>AHIMS Site Register.</b>           |
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# **Appendix 1**

## **Advertisement to**

### **“interested Aboriginal stakeholders”**

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**PUBLIC NOTICES**

## Rural Fire Brigade

The Wingello RFB would like to express their sincerest gratitude to the following companies for donations of time and materials in completing our FireShed hardstand project.

**BETTER BAR CHAIRS**

**HOME**  
TIMBER AND HARDWARE  
The proper hardware store

**EarthWorks**  
**SMORGON STEEL**

**ADJUVATE**  
"Building on Quality"

**WINGELLO SHIRE COUNCIL**

**LEGAL NOTICES**

**SUPREME COURT  
NEW SOUTH WALES  
PROBATE DIVISION**

14 days from publication of this Notice an application for Probate of the Will dated 11 November 1998 of **NORMAN ALEXANDER**, of Bowral, New South Wales, Psychologist, was made by the Executor, John Hellier. Creditors are required to send particulars of their claims upon his solicitors, **B. BILINSKY & CO.**, Solicitors, 100 Market Street, Bowral, NSW 2576.

**SUPREME COURT  
NEW SOUTH WALES  
PROBATE DIVISION**

14 days from publication of this Notice an application for Probate of the Will dated 11 November 2006 of **JOAN ALLEN WYETT**, of Bowral, New South Wales, Retired, will be made by Antony Edward Cramer-Roberts. Creditors are required to send particulars of their claims upon her Estate to **B. BILINSKY & CO.**, Solicitors, 7/2A Walker Street, Bowral, NSW 2576.

**THE SUPREME COURT  
OF NEW SOUTH WALES  
PROBATE DIVISION**

14 days from publication of this notice an application for probate for the will dated 11 November 2005 of **FRANK HOPE** late of 100 Market Street, Bundanoon NSW 2578 will be made by **ANTHONY VINCENT**. Creditors are required to send particulars of their claims upon his estate to:  
**37 Furlong Street  
Broadbeach Waters  
QLD 4218**

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**37 Furlong Street  
Broadbeach Waters  
QLD 4218**

**DEATHS & FUNERALS**

**CAMERON Madeleine Suzanne**  
Late of Junee, formerly of Moss Vale.  
Adored wife of Oliver (deceased), loving mother of Shirley, Fay, Heather & Patricia and their partners. A loved Gran of her 11 grandchildren and 18 Great grandchildren. A wonderful caring sister to her large family.  
*Rest in Peace.  
Aged 84 years.*  
Family & friends of MADELEINE are invited to celebrate her life by attending her funeral service on Friday 22<sup>nd</sup> August, 2008 at St Johns Anglican Church (corner of Browley & Waite Sts, Moss Vale) commencing at 2pm.

**G BEAVAN FUNERALS**  
*Australian family owned since 1883*  
BOWRAL 4861 2067  
MOSS VALE 4869 4440

**FENNAMORE, Thomas Patrick  
(George)**  
Passed away 15th August 2008.  
At Bowral Hospital. Late of Berrima.  
Loving husband of Pet (Deceased). Much loved father of Beverley, Carolyn, Leigh, Robyn, Peter & Julie. Father in law of Bob, John, Barrie, Kevin, Fiona & Ron. Adored Grandad to his Grand & Great Grandchildren.  
*Aged 90 years*  
The funeral to celebrate GEORGE'S life will be held in G. Beavan Funerals Chapel, 34 Station Street, Bowral, on Thursday 21st August 2008. Commencing at 1.30pm.  
Private Cremation.

**G. BEAVANS FUNERALS**  
*Australian Family Owned since 1883*

**ARCHAEOLOGICAL INVESTIGATION**

Application is to be made for Part 3A Approval for a proposed sand quarry on the "Green Valley" property, 28km south of Berrima, Southern Highlands.

In accordance with "Guidelines for Aboriginal Cultural Heritage Impact Assessment and Community Consultation", Part 6 Approvals of the National Parks & Wildlife Act 1974 (as amended), Aboriginal stakeholders with an interest in the project are invited to register their interest within 14 days, with John Appleton, Archaeological Consultant, Tel 6772 6512, Fax 6772 4567, Mob 0428 651 789

**BUSINESSES FOR SALE**

**NEWSAGENCY**  
**SOUTHERN HIGHLANDS (SHA101)**

An opportunity exists due to family matters to purchase a business with figures still increasing in 2008.

- No Delivery. New shop fit. Excel. Lease.
- Easily run with H & W and one full time.

Nets \$3k p.w. G/W \$315k+F&F+SAV  
**Newstrade 9715 7252**  
[www.newstrade.com.au](http://www.newstrade.com.au)

**POSITIONS VACANT**

**ADDITIONAL WORKER REQUIRED**  
For Local  
**DAIRY FARM**  
Permanent/full-time  
or part-time.  
**Ph: 4868 1491**  
**0419 431 661**

**POSITIONS VACANT**

**SENIOR HAIRDRESSER**  
*Full-time*  
Required For  
**MAREE HAIRDRESSING SALON**  
in Bowral  
**0403 065 466**

"Highland Post" Classifieds, 21st August 2008, p.23

R. W. CORKERY & CO. PTY. LIMITED

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# **Appendix 2**

## **Report from**

## **Illawarra Local Aboriginal Land Council**

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**3 Ellen Street WOLLONGONG NSW 2500    Ph: 42263338 Fax: 42263360**

**ARCHAEOLOGIST: JOHN APPLETON**

**REPORT**

**NEW BERRIMA CLAY/ SHALE PROJECT**

**LOT 1 DP 414246 "MANDURAMA"**

**ABORIGINAL SITE OFFICER  
STEVEN MARSDEN  
WEDNESDAY 17 SEPTEMBER 2008**



**R. W. CORKERY & CO. PTY. LIMITED**



### **SURVEY AIM**

Aboriginal archaeological assessment for Austral brick Company Pty Ltd for the proposed new quarry, to identify Aboriginal sites and to determine whether development will impact on the natural and cultural heritage of the area.

### **SURVEY EXAMINATION**

On Wednesday 17 September an Aboriginal Site Officer accompanied John Appleton (Archaeologist) to conduct a field inspection on foot of the said area.

### **OUTCOME:**

Due to the thick long grass it was very difficult to carry out a visual inspection of the site. Therefore the Aboriginal Site Officer was unable to identify any Artefacts, midden or burial sites on this Development site.

### **RECOMMENDATIONS:**

- Any excavation or construction work carried out on this site will require Aboriginal site monitoring.
- Any excavation or construction work carried out within the buffer zone of the creek line will require Aboriginal Site monitoring.
- Any Aboriginal artefacts identified during construction should remain in their place; if this is not possible then a care and control process should be discussed with the relevant Aboriginal stakeholders.
- The Developer should enter into discussion with the Aboriginal community regarding Employment opportunities created throughout this project.

If you require any further information regarding this report, please don't hesitate to contact me on the numbers listed below.

Yours in Unity

Sharralyn Robinson  
CEO  
PH: 42 26 3338  
FAX: 42 26 3360  
M: 0410 125 463



# **Appendix 3**

## **Results of the search of the AHIMS Site Register**

(No. of pages including blank pages = 4)



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



Your reference : Berrima  
Our reference : AHIMS #23694

Archaeological Surveys and Reports  
16 Curtis Street  
Armidale NSW 2350

Monday, 29 September 2008

Attention: John Appleton

Dear Sir or Madam:

**Re: AHIMS Search for the following area at Berrima;E:254000-262000;N:6177000-6185000**

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 39 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.

PO Box 1967 Hurstville NSW 2220  
43 Bridge Street Hurstville NSW 2220

Telephone (02) 9585 6345  
Facsimile (02) 9585 6094

ABN 30 841 387 271  
[ahims@environment.nsw.gov.au](mailto:ahims@environment.nsw.gov.au)  
[www.environment.nsw.gov.au](http://www.environment.nsw.gov.au)



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

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





# **Appendix 4**

## **Site Recording Forms for Sites #52-4-0196 & #52-4-0197**

(No. of pages including blank pages = 10)



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## Aboriginal Site Recording Form

AHIMS Registrar  
PO Box 1967, Hurstville NSW 2220



### Office Use Only

Site Number 5 2 - 4 - 0 1 9 6

Date received / / Date entered into system / / Date catalogued / /

Entered by (I.D.)

### Information Access

☐ Gender/male ☐ Gender/female ☐ Location restriction ☐ General restriction ☐ No access

### For Further Information Contact:

#### ☐ Nominated Trustee

Title Surname First Name Initials  
Organisation  
Address  
Phone number Fax

#### ☐ Knowledge Holder

Title Surname First Name Initials  
Organisation  
Address  
Phone number Fax

### Aboriginal Heritage Unit or Cultural Heritage Division Contacts

S O U T H E R N A H R

Office Use Only

Client on system

Client on system

### Geographic Location

Site Name S T O N Y C K 1

Easting 2 5 6 6 3 5 Northing 6 6 1 7 8 3 9 AMG GDA AMG

Mapsheet M O S S V A L E 8 9 2 8 2 S

Zone ☐ 54 ☒ 1:25k topographic map ☒ Non differential GPS  
☐ 55 ☐ 1:50k topographic map ☐ Differential GPS  
☒ 56 ☐ 1:100k topographic map ☐ Engineering survey plan or map  
☐ Client GIS or CAD system

### Primary Recorder

Title Surname First Name Initials  
M R M O O R E G R A H A M  
Organisation C H D  
Address P O B O X 6 5 6 M E R I M B U L A  
Phone number 0 2 6 4 9 5 5 0 4 3 Fax 0 2 6 4 9 5 5 0 5 5  
Date recorded 20 / 03 / 07

Client on system

## NPWS Aboriginal Site Recording Form - Site Information

page 2

**CLOSED SITE**

11

## OPEN SITE

Open Site

## Site Context

## Landform

- ☐ Mountainous  
☐ Plain  
☒ Rolling hills  
☐ Steep hills  
☐ Undulating plain

### Landform Unit

- ☐ Beach
- ☐ Coastal rock platform
- ☐ Dune
- ☐ Intertidal flat
- ☐ Lagoon
- ☐ Tidal Creek

- |                          |             |
|--------------------------|-------------|
| <input type="checkbox"/> | Tidal Flat  |
| <input type="checkbox"/> | Cliff       |
| <input type="checkbox"/> | Crest       |
| <input type="checkbox"/> | Flat        |
| <input type="checkbox"/> | Lower slope |
| <input type="checkbox"/> | Mid slope   |

- |                          |             |
|--------------------------|-------------|
| <input type="checkbox"/> | Upper slope |
| <input type="checkbox"/> | Plain       |
| <input type="checkbox"/> | Ridge       |
| <input type="checkbox"/> | Tor         |
| <input type="checkbox"/> | Valley flat |
| <input type="checkbox"/> | Levy        |

- ☐ Stream bank
- ☐ Stream channel
- ☐ Swamp
- ☐ Terrace
- ☐ Terrace flat

### Slope

- degrees

## Vegetation

- ☐ Closed forest
- ☐ Grasslands
- ☐ Isolated clumps of trees
- ☐ Open forest
- ☐ Open woodland
- ☐ Scrub
- ☐ Woodland
- ☒ Cleared
- ☐ Revegetated
- ☐ N/A

## Land use

- ☐ Conservation
- ☐ Established urban
- ☐ Farming-intensive
- ☐ Farming-low intensity
- ☐ Forestry
- ☐ Industrial
- ☐ Mining
- ☒ Pastoral/grazing
- ☐ Recreation
- ☐ Semi-rural
- ☐ Service corridor
- ☐ Transport corridor
- ☐ Urban expansion
- ☐ N/A

## Water

Distance to permanent water source

metres

Distance to temporary water source

metres

Name of nearest permanent water source

Name of nearest temporary water

### Directions for Relocation

see attached map & Preliminary Assessment notes.

### Current Land Tenure

- ☐ Public      National Park / other Government Dept.  
☐ Private

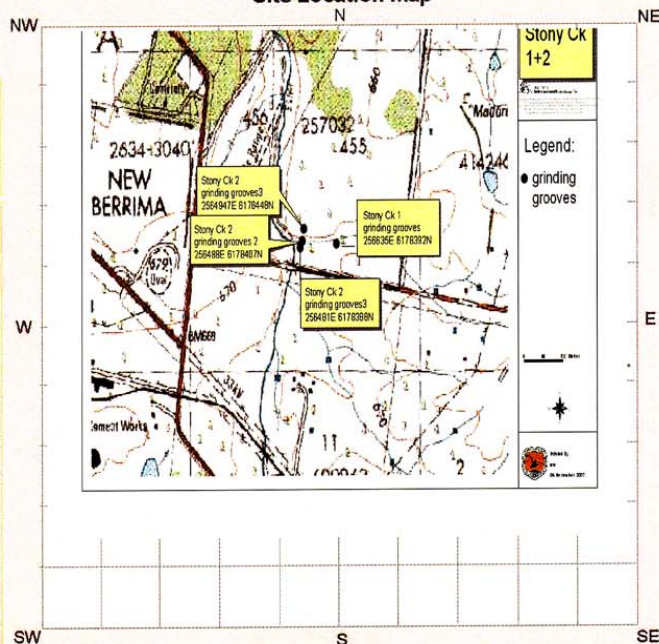
## Primary report

**I.D.**

(I.D. Office Use only)

(I.D. Office Use only)

### Site Location Map





NPWS Aboriginal Site Recording Form - Site Information			page 3
<b>General Site Information</b>			<b>Features</b>
<b>Closed Site</b>  <b>Shelter/Cave Formation</b> <input type="checkbox"/> Boulder <input type="checkbox"/> Wind erosion <input type="checkbox"/> Water erosion <input type="checkbox"/> Rock collapse	<b>Rock Surface Condition</b> <input type="checkbox"/> Boulder <input type="checkbox"/> Sandstone platform <input type="checkbox"/> Silica gloss <input type="checkbox"/> Tessellated <input type="checkbox"/> Weathered <input type="checkbox"/> Other platform	<b>Open Site</b>  <b>Site Orientation</b> <input type="checkbox"/> N-S <input type="checkbox"/> NE-SW <input type="checkbox"/> E-W <input type="checkbox"/> SE-NW <input type="checkbox"/> N/A	<input type="checkbox"/> 1. Aboriginal Ceremony & Dreaming <input type="checkbox"/> 2. Aboriginal Resource & Gathering <input type="checkbox"/> 3. Art <input type="checkbox"/> 4. Artefact <input type="checkbox"/> 5. Burial <input type="checkbox"/> 6. Ceremonial Ring <input type="checkbox"/> 7. Conflict <input type="checkbox"/> 8. Earth Mound <input type="checkbox"/> 9. Fish Trap <input type="checkbox"/> 10. Grinding Groove <input type="checkbox"/> 11. Habitation Structure <input type="checkbox"/> 12. Hearth <input type="checkbox"/> 13. Non Human Bone & Organic Material <input type="checkbox"/> 14. Ochre quarry <input type="checkbox"/> 15. Potential Archaeological Deposit <input type="checkbox"/> 16. Stone Quarry <input type="checkbox"/> 17. Shell <input type="checkbox"/> 18. Stone Arrangement <input type="checkbox"/> 19. Modified Tree <input type="checkbox"/> 20. Water Hole
<b>Condition of Ceiling</b> <input type="checkbox"/> Boulder <input type="checkbox"/> Sandstone platform <input type="checkbox"/> Silica gloss <input type="checkbox"/> Tessellated <input type="checkbox"/> Weathered <input type="checkbox"/> Other platform	<b>Shelter Aspect</b> <input type="checkbox"/> North <input type="checkbox"/> North East <input type="checkbox"/> East <input type="checkbox"/> South East <input type="checkbox"/> South <input type="checkbox"/> South West <input type="checkbox"/> West <input type="checkbox"/> North West		
<b>Site Plan</b> Indicate scale, boundaries of site, features			<b>Site Dimensions</b>  <b>Closed Site Dimensions (m)</b> <input type="text"/> Internal length <input type="text"/> Internal width <input type="text"/> Shelter height <input type="text"/> Shelter floor area  <b>Open Site Dimensions (m)</b> <input type="text"/> Total length of visible site <input type="text"/> Average width of visible site <input type="text"/> Estimated area of visible site <input type="text"/> Length of assessed site area

NPWS Aboriginal Site Recording Form - Site Interpretation and Community Statement

page 4

Aboriginal Community Interpretation and Management Recommendations


Preliminary Site Assessment

Site Cultural & Scientific Analysis and Preliminary Management Recommendations

Site located on Chelsey Park property

Situated near Ingrams on the Berima Rd.

Property Owner : Paul Reddon, Ph 48771234, 200m directly opposite house (Nthly with ck to the West) E 56 256635 N

6178392, 30cm x 6cm in length and width, depth ranges from 3cm - 5cm, 3 grinding grooves.


This section should only be filled in by the Endorsees

Endorsed by: ☐ Knowledge Holder ☐ Nominated Trustee ☐ Native Title Holder ☐ Community Consensus

Title	Surname	First Name	Initials
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
Organisation	<input type="text"/>		
Address	<input type="text"/>		
Phone number	<input type="text"/>	Fax	<input type="text"/>

Attachments (No.)

- ☐ A4 location map  
☐ B/W photographs  
☐ Colour photographs  
☐ Slides  
☐ Aerial photographs  
☐ Site plans, drawings  
☐ Recording tables  
☐ Other  
☐ Feature inserts-No. ☐

Comments


Submit by Email

Print Form





## Aboriginal Site Recording Form

AHIMS Registrar  
PO Box 1967, Hurstville NSW 2220



### Office Use Only

Site Number 5 2 - 4 - 0 1 9 7

Date received / / Date entered into system / / Date catalogued / /

Entered by (I.D.)

### Information Access

☐ Gender/male ☐ Gender/female ☐ Location restriction ☐ General restriction ☐ No access

### For Further Information Contact:

#### ☐ Nominated Trustee

Title Surname First Name Initials  
/ / / /  
Organisation  
Address  
Phone number Fax

#### ☐ Knowledge Holder

Title Surname First Name Initials  
/ / / /  
Organisation  
Address  
Phone number Fax

### Aboriginal Heritage Unit or Cultural Heritage Division Contacts

/ /

Office Use Only

Client on system  
☐

Client on system  
☐

### Geographic Location

Site Name /

Easting 2 5 6 4 8 8 Northing 6 1 7 8 4 0 7 ☐ AMG ☐ GDA AMG

Mapsheet M O S S V A L E 8 9 2 8 1 N / / / /

Zone ☐ 54 ☒ 1:25k topographic map ☒ Non differential GPS  
☐ 55 ☐ 1:50k topographic map ☐ Differential GPS  
☒ 56 ☐ 1:100k topographic map ☐ Engineering survey plan or map  
☐ Client GIS or CAD system

### Primary Recorder

Title Surname First Name Initials  
/ / / /  
Organisation  
Address  
Phone number Fax  
Date recorded / /

Client on system  
☐

## NPWS Aboriginal Site Recording Form - Site Information

page 2

11

**CLOSED SITE**



## OPEN SITE

Open Site

## Site Context

### Landform

- ☐ Mountainous  
☐ Plain  
☐ Rolling hills  
☐ Steep hills  
☐ Undulating plain

## Landform Unit

- ☐ Beach
- ☐ Coastal rock platform
- ☐ Dune
- ☐ Intertidal flat
- ☐ Lagoon
- ☐ Tidal Creek

- ☐ Tidal Flat
  - ☐ Cliff
  - ☐ Crest
  - ☐ Flat
  - ☐ Lower slope
  - ☐ Mid slope

- |                          |             |
|--------------------------|-------------|
| <input type="checkbox"/> | Upper slope |
| <input type="checkbox"/> | Plain       |
| <input type="checkbox"/> | Ridge       |
| <input type="checkbox"/> | Tor         |
| <input type="checkbox"/> | Valley flat |
| <input type="checkbox"/> | Levy        |

- ☐ Stream bank
- ☐ Stream channel
- ☐ Swamp
- ☐ Terrace
- ☐ Terrace flat

### Slope

- degrees

## Vegetation

- ☐ Closed forest
- ☐ Grasslands
- ☐ Isolated clumps of trees
- ☐ Open forest
- ☐ Open woodland
- ☐ Scrub
- ☐ Woodland
- ☐ Cleared
- ☐ Revegetated
- ☐ N/A

### Land use

- ☐ Conservation
- ☐ Established urban
- ☐ Farming-intensive
- ☐ Farming-low intensity
- ☐ Forestry
- ☐ Industrial
- ☐ Mining
- ☐ Pastoral/grazing
- ☐ Recreation
- ☐ Semi-rural
- ☐ Service corridor
- ☐ Transport corridor
- ☐ Urban expansion
- ☐ N/A

## Water

- Distance to permanent water source  
Distance to temporary water source  
Name of nearest permanent water source  
Name of nearest temporary water

metres

metres

Name of nearest permanent water source

Name of nearest temporary water

### Directions for Relocation

See attached map & preliminary Assessment notes.

### Current Land Tenure

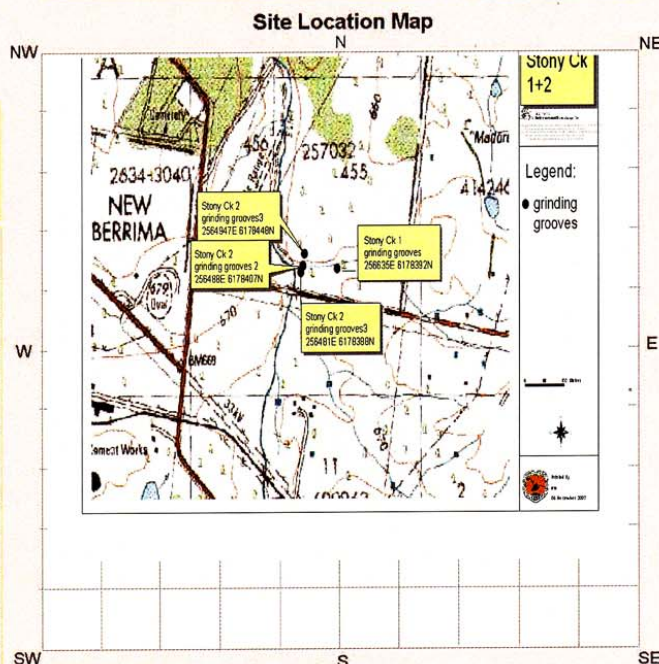
- ☐ Public      National Park / other Government Dept.  
☐ Private

## Primary report

**I.D.**

[illegible]

(I.D. Office Use only)





# NPWS Aboriginal Site Recording Form - Site Information

page 3

## General Site Information

### Closed Site

#### Shelter/Cave Formation

- ☐ Boulder
- ☐ Wind erosion
- ☐ Water erosion
- ☐ Rock collapse

#### Rock Surface Condition

- ☐ Boulder
- ☐ Sandstone platform
- ☐ Silica gloss
- ☐ Tessellated
- ☐ Weathered
- ☐ Other platform

### Open Site

#### Site Orientation

- ☐ N-S
- ☐ NE-SW
- ☐ E-W
- ☐ SE-NW
- ☐ N/A

#### Condition of Ceiling

- ☐ Boulder
- ☐ Sandstone platform
- ☐ Silica gloss
- ☐ Tessellated
- ☐ Weathered
- ☐ Other platform

#### Shelter Aspect

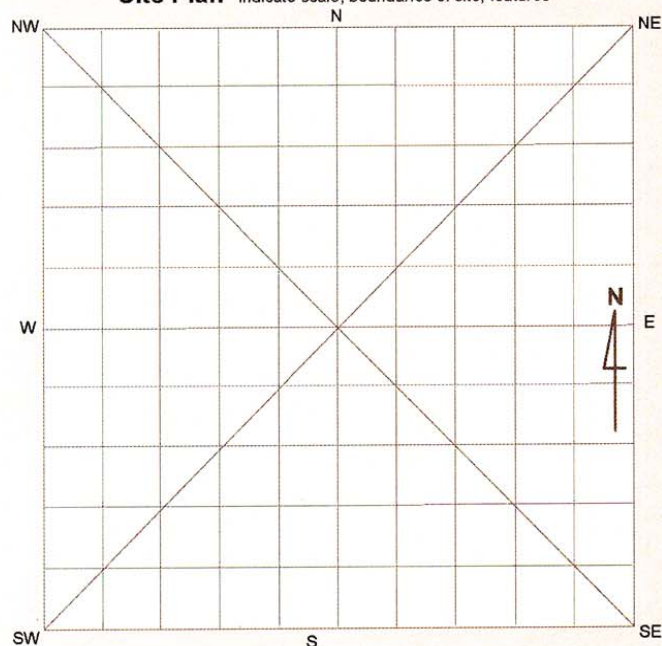
- ☐ North
- ☐ North East
- ☐ East
- ☐ South East
- ☐ South
- ☐ South West
- ☐ West
- ☐ North West

## Features

- ☐ 1. Aboriginal Ceremony & Dreaming
- ☐ 2. Aboriginal Resource & Gathering
- ☐ 3. Art
- ☐ 4. Artefact
- ☐ 5. Burial
- ☐ 6. Ceremonial Ring
- ☐ 7. Conflict
- ☐ 8. Earth Mound
- ☐ 9. Fish Trap
- ☒ 10. Grinding Groove
- ☐ 11. Habitation Structure
- ☐ 12. Hearth
- ☐ 13. Non Human Bone & Organic Material
- ☐ 14. Ochre quarry
- ☐ 15. Potential Archaeological Deposit
- ☐ 16. Stone Quarry
- ☐ 17. Shell
- ☐ 18. Stone Arrangement
- ☐ 19. Modified Tree
- ☐ 20. Water Hole

## Site Plan

Indicate scale, boundaries of site, features



## Site Dimensions

### Closed Site Dimensions (m)

- Internal length
- Internal width
- Shelter height
- Shelter floor area

### Open Site Dimensions (m)

- Total length of visible site
- Average width of visible site
- Estimated area of visible site
- Length of assessed site area

NPWS Aboriginal Site Recording Form - Site Interpretation and Community Statement

page 4

Aboriginal Community Interpretation and Management Recommendations


Preliminary Site Assessment

Site Cultural & Scientific Analysis and Preliminary Management Recommendations

200m westerly from last site [E 56 256488 N 6178407], 16 grinding grooves within a small distance (same site extends for 60m along ck bank western side)

[E 56 250481 N 6178388] 6 grinding grooves 20 - 25cm length 5cm across with a depth of 3 - 4cm. 20m Westerly side up slope from Stoney Ck [E 56 2564947 N 6178448], 4 grinding grooves, 20 - 25cm length, 5 - 6cm across and a depth of 3-5 cm.


This section should only be filled in by the Endorsees

Endorsed by: ☐ Knowledge Holder ☐ Nominated Trustee ☐ Native Title Holder ☐ Community Consensus

Title	Surname	First Name	Initials
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
Organisation	<input type="text"/>		
Address	<input type="text"/>		
Phone number	<input type="text"/>	Fax	<input type="text"/>

Attachments (No.)

- ☐ A4 location map  
☐ B/W photographs  
☐ Colour photographs  
☐ Slides  
☐ Aerial photographs  
☐ Site plans, drawings  
☐ Recording tables  
☐ Other  
☐ Feature inserts-No.

Comments


Submit by Email

Print Form

# **Appendix 5**

## **Site Types**

(No. of pages including blank pages = 5)

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## **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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