

# Appendix 5

---

## CULTURAL HERITAGE ASSESSMENT

---

**The archaeological investigation for sites of  
Indigenous cultural significance  
on the site of the proposed**

**CANYON EXTENSION**

**TO**

**WHITEHAVEN OPEN CUT COAL MINE  
North of Gunnedah, Northern NSW**

**APRIL 2004**

**John Appleton  
ARCHAEOLOGICAL SURVEYS & REPORTS PTY LTD**

**Proponents:**

Whitehaven Coal Mining Limited  
Ground Floor  
895 Anne Street  
PO Box 2440  
FORTITUDE VALLEY BC QLD 4006

**Copies of this report to:**

**Archaeologist**

NPWS Western Region  
PO Box 1007  
Dubbo 2030  
02 6883 2262

**The Chairperson**

Red Chief Local Aboriginal Land Council  
26 Chandos Street  
PO Box 745  
Gunnedah 2380  
02 6742 3602

**All inquiries in regard to this report should be addressed to:**

John Appleton  
Archaeological Surveys & Reports Pty Ltd  
16 Curtis Street  
Armidale 2350  
Tel. 02 6772 6512 Fax. 02 6772 4567  
Mobile: 0428 651 789  
Email. [japples@northnet.com.au](mailto:japples@northnet.com.au)

## **COPYRIGHT**

© Archaeological Surveys & Reports Pty Ltd 2004

All intellectual property and copyright reserved.

Apart from any fair dealing for the purpose of private study, research, criticism or review, as permitted under the Copyright Act, 1968, no part of this report may be reproduced, transmitted, stored in a retrieval system or adapted in any form or by any means [electronic, mechanical, photocopying, recording or otherwise] without written permission.

Enquiries should be addressed to Archaeological Surveys & Reports Pty Ltd

## TABLE OF CONTENTS

	Page
EXECUTIVE SUMMARY .....	v
1.0 INTRODUCTION .....	1
1.1 Background to the Investigation.....	1
1.2 The Survey Area .....	1
1.3 Potential Impact of the Proposed Coal Mine.....	1
2. ABORIGINAL CONSULTATION.....	5
3. THE ENVIRONMENTAL CONTEXT .....	5
3.1 The General Geology and Topography .....	5
3.2 Vegetation.....	6
3.3 Water Resources .....	6
3.4 Stone Resources .....	6
3.5 Previous Impacts .....	7
4. THE ARCHAEOLOGICAL RECORD.....	7
5. MODELS FOR SITE LOCATION.....	7
5.1 Site Types and Their Location .....	7
5.2 A Predictive Model for the Study Area.....	9
6. THE SURVEY .....	10
6.1 The Survey Strategy .....	10
6.2 Details of the Survey.....	10
6.3 Site Recording .....	10
6.4 Effectiveness of the Survey Technique.....	11
6.5 Effective Coverage.....	11
7. THE RESULTS .....	18
8. DISCUSSION .....	18
9. SIGNIFICANCE ASSESSMENT.....	19
9.1 Cultural Significance .....	19
9.2 Research Potential.....	19
10. RECOMMENDATIONS .....	19
GENERAL GLOSSARY:.....	21
SOIL SCIENCE TERMS.....	25
BIBLIOGRAPHY.....	27

## TABLE OF CONTENTS

Page

### APPENDICES

Appendix 1	Site types.....	31
Appendix 2	Correspondence from Red Chief LALC .....	35
Appendix 3	Site Register Search 1999 .....	39

### TABLES

Table 1–	Table showing the Effective Survey Coverage.....	12
----------	--	----

### FIGURES

Figure 1	Topographic Map of the general area .....	2
Figure 2	Detail from aerial photographs of the survey area.....	3
Figure 3	Plan of the Project Site .....	4
Figure 4	Plan of the effective survey coverage .....	13
Figure 5	Looking eastwards from the western boundary of the survey area.....	14
Figure 6	Looking southwards across the western end of the survey area .....	14
Figure 7	Looking eastwards from the northern bank of the western dam .....	15
Figure 8	Looking southwards across the central section of the survey area.....	15
Figure 9	Looking north-westwards towards the western dam ... the artefact location at “Whitehaven 4” .....	16
Figure 10	Looking westwards along one of the ‘inner’ tracks to a test-drill site .....	16
Figure 11	Looking eastwards on the slopes in the south-eastern corner of the survey area .....	17
Figure 12	Looking north-westwards towards Whitehaven Coal Mine from the eastern dam .....	17

## EXECUTIVE SUMMARY

The investigation was performed for Whitehaven Coal Mining Limited, who are investigating prospective coal measures immediately to the south to the existing Whitehaven Open Cut Coal Mine, north of Gunnedah, Northern New South Wales. The proposed new mine is referred to as the 'Canyon Extension'.

The survey area was previously surveyed in May 1999 (Appleton 1999) as part of a much larger area in the investigation for the Whitehaven Open Cut Coal Mine, but was resurveyed because of the time that has elapsed since then.

The scope of the work was for Archaeological Surveys & Reports Pty LTD (ASR) to conduct an archaeological investigation of the project area with the assistance of a representative/s of the Red Chief Local Aboriginal Land Council, and to identify any Aboriginal sites and relics that might be present. 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.

A fragment of a flake was recorded as an isolated artefact, and a Site Recording Form for the site will be forwarded to NPWS for listing on the Aboriginal Heritage Information Management System.

The Red Chief LALC has assessed the site to be of no cultural significance and recommended that there are no constraints to the proposed coal mine on cultural grounds.

It will be necessary for Whitehaven Coal Mining to obtain Consent to Destroy for the isolated artefact site before they can proceed with further work at that location.

In addition Whitehaven Coal Mining Limited are advised of the following provisions: All developers, contractors, subcontractors and their employees are bound by the provisions of the National Parks and Wildlife Act 1974 as amended, which was in part designed to mitigate impact to the Indigenous archaeological record.

Under the provisions of the National Parks and Wildlife Act 1974, all earthmoving contractors and operators should be instructed that in the event of any bone or stone artefacts, or discrete distributions of shell, being unearthed during earthmoving, work should cease immediately in the area of the find, and the Red Chief Local Aboriginal Land Council, and officers of the National Parks and Wildlife Service, informed of the discovery. Work should not recommence in the area of the find, until those officials have inspected the material and permission has been given to proceed. 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.

In the event that a relic or item is discovered during earthworks details of the discovery should be communicated to: The Archaeologist, Western Region, and to The Chairperson, Red Chief Local Aboriginal Land Council (addresses at the front of this report).

## 1.0 INTRODUCTION

### 1.1 Background to the Investigation

The investigation was performed for Whitehaven Coal Mining Limited, who are investigating prospective coal measures immediately to the south to the existing Whitehaven Open Cut Coal Mine, north of Gunnedah, Northern New South Wales. The proposed new mine is referred to as the 'Canyon Extension'.

The survey area was previously surveyed in May 1999 (Appleton 1999) as part of a much larger area in the investigation for the Whitehaven Open Cut Coal Mine, but was resurveyed because of the time that has elapsed since then.

The scope of the work was for Archaeological Surveys & Reports Pty LTD (ASR) to conduct an archaeological investigation of the project area with the assistance of a representative/s of the Red Chief Local Aboriginal Land Council, and to identify any Aboriginal sites and relics that might be present. 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.

### 1.2 The Survey Area

The survey area is an irregularly shaped area located within property owned by Whitehaven Coal Mining Limited, approximately 25 km to the north of Gunnedah, and 18 km east-south-east of Boggabri.

**Figure 1** is a topographical map of the general region showing the area surveyed in 1999, and the site of the Canyon Extension outlined, and **Figure 2** is an aerial photograph of similar coverage. **Figure 3** shows the relationship of the Canyon Extension to the existing Whitehaven workings.

### 1.3 Potential Impact of the Proposed Coal Mine

The potential impact of the proposed coal mine would be to destroy any archaeological contexts that might be present, either as a consequence of direct or peripheral mining activities.

As a consequence of this survey it is unlikely that the same area will ever be surveyed again – unless NPWS (Department of Environment and Conservation: DEC) determines that a further survey is required. Thus from an archaeological perspective, this was the only 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.

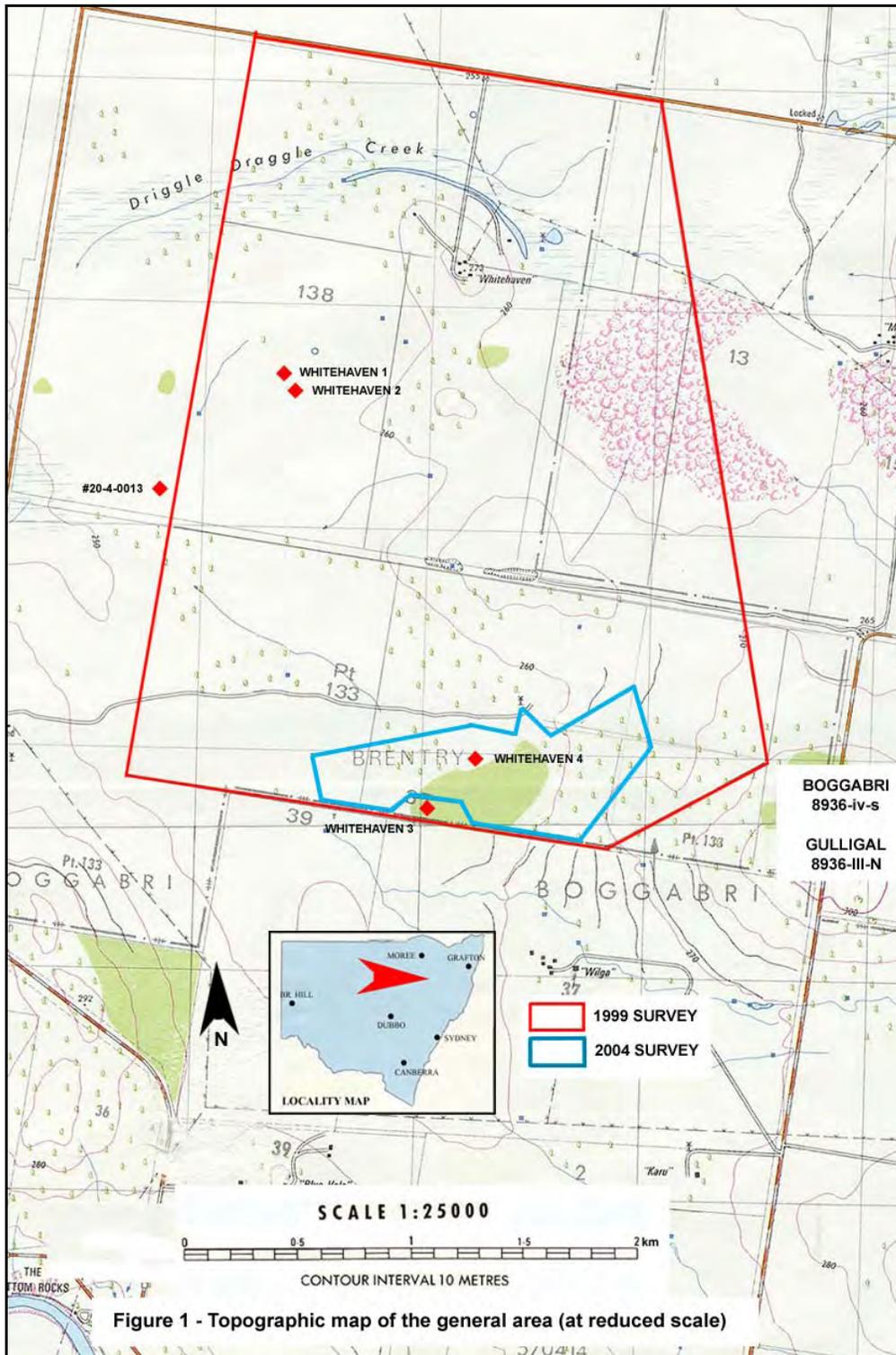


Figure 1 - Topographic map of the general area (at reduced scale)





## 2. ABORIGINAL CONSULTATION

Prior to the investigation contact was made with the Red Chief Local Aboriginal Land Council (LALC), to confirm that the study area fell within the Red Chief LALC management area, and to arrange for a Site Officer/s to assist with the investigation. As a consequence Les Field and Gary Griffiths, Aboriginal Sites Officers, assisted Appleton (ASR) in the investigation, which was performed on 21<sup>st</sup> April 2004.

Both Les and Gary are experienced field workers and are regularly employed in the ongoing monitoring of the stripping of surface deposits at Whitehaven Coal Mine. Neither of them was aware of any specific Aboriginal associations with the survey area other than an isolated artefact, an artefact scatter, and a scarred tree, all of which were recorded in the 1999 survey.

Both prior to and during the survey Les, Gary and Appleton discussed the potential for particular site types to be present, and the particular environments in which they might occur. They also constantly reviewed the survey strategy, and discussed the results as each section was completed. At the conclusion of the survey the results were discussed in general, and Les and Gary agreed to provide ASR with a copy of a letter conveying their recommendations on behalf of the Red Chief LALC, a copy of which is included in the appendices.

## 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 survey areas occurs in the Sydney-Bowen Basin, a major structural basin which extends from Batemans Bay, New South Wales, in the south, to Collinsville, Queensland to 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 has been divided (Bembrick *et al*, 1973) into two lower category structural basins, the Sydney Basin and the Gunnedah Basin (Menzies 1984, 455).

The Gunnedah Basin is one of the major coalfields of New South Wales. In terms of its resources it is second only to the Hunter Region, but current production is quite small. The eastern half of the region (which contains the survey area) contains substantial resources of low-ash, high-energy, high-volatile, low-phosphorous, thermal coal, with some high-volatile, high fluidity, soft coking coal. These coals are contained in some twelve major seams in the Maules Creek Formation (Mineral Resources 1985).

The survey area occurs on the western lower slopes of a low ridge which runs north/south to the east of the survey area. The survey area slopes from slopes east to west, from 268 m AHD on the eastern boundary, down to 252 m AHD on the western boundary, the first 10 m of drop occurring within the first 250 m from the eastern boundary.

The surface soils in the survey area generally consists of coarse-grained, to fine-grained weathered soils with a minor lag deposit of conglomerates at the base of the slope in the mid-section of the survey area.

### 3.2 Vegetation

As can be seen from the Topographic map, **Figure 1**, and the photographic record, much of the study area has been cleared, and where there is woodland much of it consists of regrowth. Vegetation in the western two-thirds of the survey area can generally be described as being open dry sclerophyll woodland dominated by Pilliga Grey Box (*Eucalyptus pilligaensis*), but ironbarks (*E. melanophloia* & *E. crebra*) occur on the lower eastern slopes, and there are stands of cypress (*Callitris* sp.) on the slopes towards the eastern boundary.

Prior to partial clearing, the landscape throughout the survey area probably supported an open dry sclerophyll woodland dominated by box, but with pockets of cypress on the slopes, with less densely wooded areas interspersed with grassland in low-lying, poorly drained areas.

### 3.3 Water Resources

The profile of the landscape within the study area is typical of downs country with gentle slopes and low rises, broad, shallow, flood-prone swales and drainage lines. The only clearly defined watercourse in the vicinity of the study area is Driggle Draggie Creek, which as its name implies, is an aimless drainage line that meanders around the base of the slopes to the north-west of the study area. The drainage line consists of a few dammed stretches and swamps, but prior to damming, would seldom have held much surface water, and would have been a grassy dry drainage depression, with grassy swamps in low-lying areas and with a few dried mud pans where animals came to drink.

Aboriginal use of the country was probably therefore restricted to periods immediately following rain when there was surface water, and after the rain had stimulated growth in the vegetation and increased the variety and numbers of other potential food resources, such as macropods, birds, snakes, goannas, bats and insects etc., which were attracted to the revitalised vegetation.

### 3.4 Stone Resources

As referred to previously there were minor exposures of lag conglomerates at the base of the main slope in the eastern section, and as observed in the 1999 survey, lag conglomerates on the western mid slopes to the north-west of the survey area, and on the base of the ridge to the north of Whitehaven Coal Mine.

All conglomerates have the potential to include silicified material suitable for knapping into stone tools.

### 3.5 Previous Impacts

As described above there is some evidence of past low-impact logging in the study area, probably for fire-wood and/or strainer-posts. However the major impact has been from grazing, which has reduced the ability of the woodland to regenerate, and so there is no understorey, and little regrowth, and what there is appears to be mostly cypress.

## 4. THE ARCHAEOLOGICAL RECORD

In 1999 a search of the Aboriginal Heritage Information Management System (AHIMS) was made for an area 9 km wide (west to east) and 10 km long, centred on the Whitehaven Coal Mine. The result showed that there were three known sites in the area of the map coverage in **Figure 1**, two of which occur in the one location. One of the sites, an "Open Camp Site" (which in the absence of a fireplace should more correctly be described as an Open Scatter) occurred just to the west of the area surveyed in 1999. A copy of the AHIMS listing is included in the appendices. The Red Chief Sites Officers advised me that they were not aware of any other surveys having been undertaken in the area during the intervening period between 1999 and the present.

Three additional sites were recorded during the 1999 survey (Appleton 1999). An isolated artefact and an artefact scatter some sixty metres away were recorded 1,000 m to the north-west of the current study area, and a scarred tree was recorded on the edge of the woodland included in the current survey.

As a consequence of the recording of the scarred tree, and the recommendations that the tree should be avoided by future development Whitehaven Coal have stated that they will not mine, or cause any impacts within 40 m of the scarred tree. As **Figure 3** shows the southern boundary of the proposed mine extension skirts around the site ("Whitehaven 3").

## 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 given in the appendix.

## 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 are no shelters or overhangs, and no defined drainage line, but which occurs in an area with a known archaeological record.

- Isolated artefacts may be present and visible in erosion features, particularly in the vicinity of the lag conglomerates.
- Low-density artefact scatters may be present and visible in erosion features, particularly in the vicinity of the lag conglomerates, 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.

- In the absence of any shelters there will be no art sites.
- There will be no engravings, or grinding grooves.
- There will be no shell middens.
- There will be no intact occupation deposits.
- There are no known Mythological sites.
- There will be no stone quarries.
- There will be no visible evidence of burials.
- There will be no surviving Bora rings.
- There will be no surviving stone arrangements.

## **6. THE SURVEY**

### **6.1 The Survey Strategy**

Prior to the investigation it had been decided that as the survey area was quite small a full survey could be undertaken.

The boundary of the extension area was clearly defined by surveyors' vehicle-tracks, and as they had exposed the ground surface it was decided that the entire track would be surveyed. While one person concentrated solely on the track the other two walked roughly parallel to the first at about 40 m distance apart, thus covering a swathe approximately 90 wide, but targeting all erosion features and mature trees visible within the swathe. In addition, the innermost person, having travelled the least distance zig-zagged the central section to provide full coverage. The only section not surveyed was part of a paddock under deep agricultural grasses to the north of a line between the two dams – see **Figure 4** which shows the effective survey coverage.

### **6.2 Details of the Survey**

The survey was performed by Appleton (ASR), assisted by Les Field, and Gary Griffiths, Aboriginal Sites Officers, Red Chief LALC. The survey of all surfaces was made entirely on foot, in dry conditions under a sometimes cloudy sky, but in light ideal for observing any artefactual material present and observable.

### **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 C-3030 Zoom Digital Camera, to record the character of the survey area, and to witness survey conditions.

## 6.4 Effectiveness of the Survey Technique

There was a dense grass cover in most cleared areas but there was sufficient ground surface exposure in the tracks, under tree-driplines, and in erosion features, and in environments in which artefactual material was most likely to be present if at all, for an effective sampling of the survey area. In addition to the more obvious ground surface exposures some areas contained minor erosion features, which provided samples of those environments least likely to contain artefactual material. Also, there was direct access to the few extant old growth trees and so the survey in respect of identifying scarred or carved trees was highly effective.

The survey technique was the most appropriate one to use in the circumstances, and the results are believed to be generally representative of the archaeological record in the survey area, in which it was predicted there would be very little artefactual material. Although the entire area was sample surveyed, the groundcover was a constraint to the effectiveness of the survey.

## 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** 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 photographs on the following pages show several aspects of the survey area.

Area	Description	Project Site (approx. areas)	Rock/soil	Vegetation	Average surface visibility	Exposures	Approx area surveyed on foot	Average arch. visibility of exposures	Archaeology
1	Open grassland at the western end of the survey area	125,000 sqm	Weathering metasedimentary soils	Cleared	< 5%	Track	80%	80%	Nil
2	Open dry sclerophyll woodland in the central section	350,000 sqm	Weathering metasedimentary soils with minor conglomerate lag deposits	Box, ironbark woodland with some open grass areas	15%	Driplines and sheetwashed surfaces, and tracks	80%	95%	"Whitehaven 4" isolated artefact
3	Mixed woodland on slopes at the eastern end of the survey area	320,000 sqm	Weathered sedimentary soils	Ironbark, cypress woodland	10%	Driplines and sheetwashed surfaces, and tracks	80%	95%	Nil
4	Cleared paddocks to the north of the central and eastern sections	20,000 sqm	Weathering metasedimentary soils	Cleared pasture under high grass	0	None	0%	N/A	Nil

Table 1 - Table showing the Effective Survey Coverage

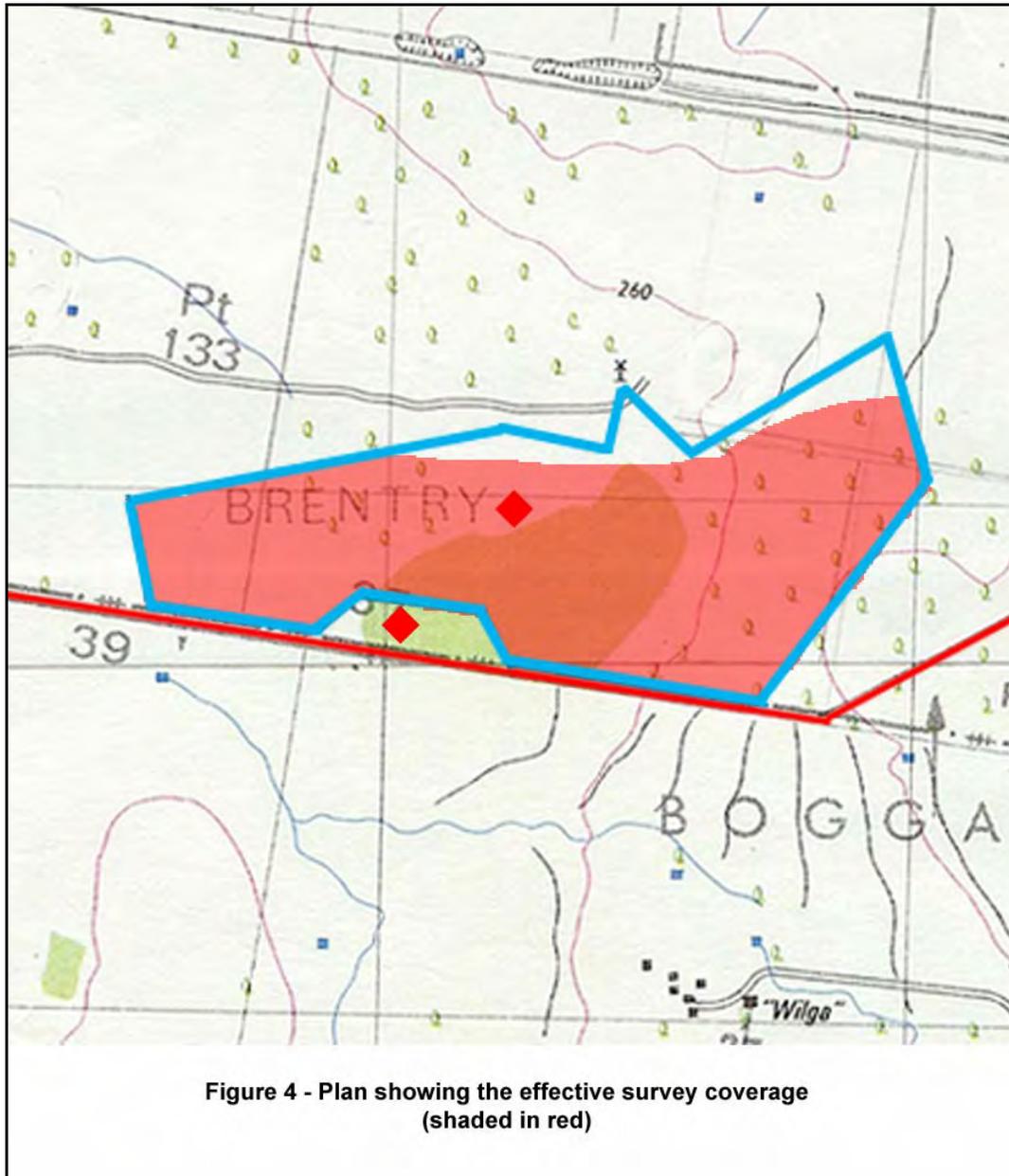




Figure 5 – Looking eastwards from the western boundary of the survey area, with the ‘boundary track’ in the foreground.



Figure 6 – Looking southwards across the western end of the survey area.



Figure 7 – Looking eastwards from the northern bank of the western dam.



Figure 8 – Looking southwards across the central section of the survey area.



Figure 9 – Looking north-westwards towards the western dam. Les and Gary are standing at the artefact location at "Whitehaven 4" (marked by the bag).



Figure 10 – Looking westwards along one of the 'inner' tracks to a test-drill site (white PVC pipe) in the mid-section of the survey area.



Figure 11 – Looking eastwards on the slopes in the south-eastern corner of the survey area.



Figure 12 – Looking north-westwards towards Whitehaven Coal Mine from the eastern dam.

## 7. THE RESULTS

An isolated artefact was recorded some 40 metres to the south-east of the western dam.

Site name: 'Whitehaven 4'

Reference: AMG 229250 6594910 Boggabri 8936-IV-S,  
1: 25,000 scale Topographic map.

Site type: Isolated artefact

Artefact type: Proximal fragment of a flake

Material: Dark red silicified material (probably chert)

Features: Overhang removal.

Location: Level area within 10 m of a drainage line

Archaeological visibility in findspot: 95%

General archaeological visibility: 75%

Context: Generally minor conglomerate lag on weathered sedimentary.

Land use: Cattle grazed.

## 8. DISCUSSION

The presence of this and other previously recorded sites in the area, indicate that Aboriginal people visited the area in the past, although the absence of a reliable water source might suggest that the visits were transitory. The presence of a scarred tree in one of only very few remnant stands of woodland would also suggest that there were many more scarred trees prior to clearing. From the size of the scar the bark was probably used for constructing a gunyah, which would have required additional strips of bark from other trees.

In summary, the survey area contains clear evidence of Aboriginal activity in the past. Few would doubt that over a sixty thousand year period or more there would be little of the Australian landscape that had not witnessed Aboriginal activity of some kind. For the most part, however, few sites have been recorded in areas other than in those subject to surveys undertaken as a necessary prerequisite to obtain development approval for mining, commercial development, resource exploitation, tourism, or providing transportation and communication links. The significance of the results of this investigation, and other recent investigations in the region such as at "Whitehaven" (Appleton 1999) and "Belmont" (Appleton 2002) is that they show that there is surficial evidence of past Aboriginal activities in some of the less likely environments regardless of the scarcity of a reliable water source, and that they serve to remind us that nowhere where there is relatively undisturbed or undeveloped landscape can it be presumed that artefactual evidence will not be found.

## 9. SIGNIFICANCE ASSESSMENT

The NPWS 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 the proposed development can proceed as proposed, but also to provide Cultural Resource Managers with the information for future management of the area.

### 9.1 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, both Les Field and Gary Griffiths, experienced Aboriginal Sites Officers, Red Chief Local Aboriginal Land Council, considered the flake fragment to be insignificant and did not pose a constraint to the proposed mine. Following the investigation Les and Gary provisionally recommended that the site could be destroyed under Consent to Destroy, providing the site was recorded on the AHIMS site register.

Correspondence was subsequently received from Red Chief LALC setting out their comments and recommendations, which confirmed the provisional recommendations of the Sites Officers. A copy of the correspondence is included in the appendix.

### 9.2 Research Potential

The site, and the survey area as a whole, is assessed to be of low research potential.

## 10. RECOMMENDATIONS

As a consequence of this investigation it is recommended that there are no archaeological or cultural constraints to the proposed Canyon Extension, but Whitehaven Coal Mining Limited are required under the National Parks & Wildlife Act 1974 (as amended) to obtain Consent to Destroy from NPWS (Department of Environment and Conservation) before any work can proceed in the area of the artefact findsite "Whitehaven 4". Red Chief LALC have indicated that it will support the application.

In addition the proponents are advised of the following standard provisions for development: All developers, contractors and their employees are bound by the provisions of the National Parks and Wildlife Act 1974 as amended, which was in part designed to mitigate impact to the Indigenous archaeological record.

Under the provisions of the National Parks and Wildlife Act 1974, all earthmoving contractors and operators should be instructed that in the event of any bone or stone artefacts, or discrete distributions of shell, being unearthed during earthmoving, work should cease immediately in

the area of the find, and the Red Chief Local Aboriginal Land Council, and officers of the National Parks and Wildlife Service, informed of the discovery. Work should not recommence in the area of the find, until those officials have inspected the material and permission has been given to proceed. 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.

In the event that a relic or item is discovered during earthworks details of the discovery should be communicated to: The Archaeologist, NPWS Western Region, and to The Chairperson, Red Chief Local Aboriginal Land Council (addresses at the front of this report).

## 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).

**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) Eraillure: 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 resharpen 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) 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.
  - 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 Eraillure.

**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.
  - iii) 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' (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

(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.

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

**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.

**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.

**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.

**RILL :** A small channel cut by concentrated runoff through which water flows during and immediately after rain.

**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.

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.

## BIBLIOGRAPHY

- Appleton, J. 1999. The report of the investigation for archaeological relics and sites at the site of a proposed Open Cut Coal Mine, "Whitehaven", north of Gunnedah, Northern NSW. Unpublished report for R.W. Corkery & Co. Pty Limited, on behalf of Whitehaven Coal Mining Pty Ltd.
- Appleton, J. 2002. The archaeological investigation of the site of a proposed Open cut coalmine, "Belmormt", Wean Road north of Gunnedah, Northern NSW. Unpublished report for Whitehaven Coal Mining Pty Ltd.
- Banks, R.G. 1995. *Soil landscapes of the Curlewis 1:100,000 sheet*. Department of Conservation and Land Management.
- Bates, R.L., and J.A. Jackson (Eds). 1980. *Glossary of Geology*. Second Edition. American Geological Institute, Virginia.
- Clark, I.F., and B.J. Cook. 1986. *Geological Science: Perspectives of the Earth*. Australian Academy of Science, Canberra.
- Cook, D., and W. Kirk. 1991. *Field Guide to the Rocks and Minerals of the World*. Kingfisher Books, London.
- Department of Mineral Resources. 1985. *Coal in New South Wales* (Brochure).
- Department of Mineral Resources. 1987. Metallogenic Series Sheet SH 56-6, Grafton.
- Department of Mineral Resources. n.d. Information Sheet : Sedimentary Rocks.
- Department of Mines. 1973. *Minerals and their Characteristics*. Geological Survey of New South Wales, Number 141.
- Desen, J.L., and J. Peterson. 1992. Mapping the Australian Duricrusts: can Distribution be derived from Terrain Maps. *Australian Geographical Studies*, 30(1): 87-94.
- Dortch, C. 1984. *Devil's Lair: a study in prehistory*. Western Australian Museum.
- Dunnell, R.C. 1971. *Systematics in prehistory*. Free Press, New York.
- Fairbridge, R.W. 1968. Induration. *Encyclopaedia of Geomorphology, Encyclopaedia of Earth Science Series*, Vol. III, pp.554-55. Reinbold Book Corporation, New York.
- Flenniken, J.L., and L.P. White. 1985. Australian flaked stone tools: a technological perspective. *Records of the Australian Museum*, 36: 131-51.
- Gentili, J. 1968. Duricrust. In R.W. Fairbridge (Ed.), *The Encyclopaedia of Geomorphology, Encyclopaedia of Earth Science Series*, Vol. III, pp.296-7. Reinbold Book Corporation, New York.
- Geography Dictionary*. 1985. Longman Group, Harlow.

- Meehan, B. 1982. *Shell bed to shell midden*. Australian Institute of Aboriginal Studies, Canberra.
- Simpson, B. 1966. *Rocks and Minerals*. Pergamon Press, Oxford.
- Triggs, B. 1985. *Mammal tracks and signs: a fieldguide for southeastern Australia*. Oxford University Press, Melbourne.
- Walker J., & M.S. Hopkins. 1990. Vegetation. In R.C. McDonald, R.F. Isbell, J.G. Speight, J. Walker & M.S. Hopkins (Eds), *Australian Soil and Land Survey*, pp. 58-86. Inkata Press, Sydney.
- Whittow, J. 1984. *Dictionary of Physical Geography*. Penguin, London.

# **APPENDICES**

- Appendix 1: Site Types**
- Appendix 2: Correspondence from Red Chief LALC**
- Appendix 3: Site Register Search 1999**

# **APPENDIX 1**

## **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.

# **APPENDIX 2**

## **Correspondence from Red Chief LALC**



**RED CHIEF**  
**LOCAL ABORIGINAL**  
**LAND COUNCIL**

PO BOX 745  
GUNNEDAH NSW 2380

Phone: 02 6742 3602  
Fax: 02 6742 3815

Email: [redchief@mcsonline.com.au](mailto:redchief@mcsonline.com.au)

Attention  
Mr John Appleton  
Archaeological Surveys & Reports Pty Ltd  
10 Roslyn Street  
ARMIDALE NSW 2350

**CANYON EXTENSION**

**TO**

**WHITEHAVEN OPEN CUT COAL MINE**

***DATE OF SURVEY:*** 21 April 2004

***ATTENDANCE:*** Les Field - Aboriginal Sites Officer  
Gary Griffiths - Aboriginal Sites Officer  
John Appleton - Archaeologist

***SURVEY RESULTS:*** An isolated artefact was located within the survey area.

***CULTURAL SIGNIFICANCE:*** Being just one isolated artefact found within the proposed Canyon extension to Whitehaven mine, we feel this to be of little or no significance to the Red Chief Local Aboriginal Land Council.

**RECOMMENDATIONS:**

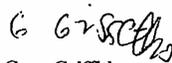
As a result of only one isolated artefact found during the survey, we recommend the following:

- \* To support the development application by Whitehaven Mine.
- \* To support the recommendations and report compiled by John Appleton (Archaeologist) .
- \* To support an application for consent to destroy from NPWS (Department of Environment and Conservation).
- \* That Whitehaven have monitors on site when doing ground disturbance work.
- \* If during development, any other artefacts or items are unearthed, work should cease and Red Chief LALC be notified.

If you should require any further information, please do not hesitate to contact us.



Les Field  
Aboriginal Sites Officer



Gary Griffiths  
Aboriginal Sites Officer

# **APPENDIX 3**

## **Site Register Search 1999**



NSW  
NATIONAL  
PARKS AND  
WILDLIFE  
SERVICE

26 May 1999

John Appleton  
10 Roslyn Ave  
ARMIDALE NSW 2350

Our Ref: ASR#6148

Dear John,

**RE: Aboriginal sites search, For an Area E: 225000-234000, N: 6591000-6601000, near Gunnedah.**

Reference is made to your recent enquiry in respect to whether any Aboriginal sites are registered at the above location.

A search of the National Parks and Wildlife Service's (NPWS) Aboriginal Sites Register database has shown that 5 known Aboriginal sites is currently recorded in or near the proposed development area (refer attached report for any site details).

The following qualifications apply to the Aboriginal Sites Register database;

- The database only includes recorded sites.
- Large areas of New South Wales have not been the subject of systematic survey or the recording of Aboriginal history. These areas may contain sites which are not currently listed on the Aboriginal Sites Register.
- Site records come from a variety of sources and are variable in their accuracy. When a database search identifies sites in or near the area it is recommended that the exact location of the sites be determined by relocation on the ground.

You should be aware that all Aboriginal sites are protected under the *National Parks and Wildlife Act 1974*, regardless of their inclusion on the Sites Register, and it is an offence to damage or destroy them without the prior permission of the Director-General of the NPWS.

In determining development applications under the *Environmental Planning and Assessment Act 1979*, local councils must include matters relating to Aboriginal heritage in the decision making process. As part of this process, the NPWS may be asked for advice on whether an area proposed for development should be subject to Aboriginal heritage assessment. NPWS advice is broadly based on the following criteria;

1) The NPWS would normally recommend an Aboriginal heritage assessment under the following circumstances:

- the Sites Register identifies sites in or near the development area, and these could be impacted during or after the development (this includes indirect impacts, such as increased runoff, sedimentation, changes in visitation, etc).

49 Bridge Street  
PO Box 1967  
Hurstville NSW  
2220 Australia  
Tel: (02) 9585 6444  
Fax: (02) 9585 6555  
[www.npws.nsw.gov.au](http://www.npws.nsw.gov.au)

Australian-made 100% recycled paper

- the proposed development is likely to impact areas of bushland or undisturbed ground.
- the proposed development is likely to impact areas containing sandstone outcrops (greater than 1m<sup>2</sup>), rock shelters and overhangs, old growth trees, sand bodies, and ground adjacent to creeks, rivers, lakes and swamps.
- the proposed development is likely to impact an area of importance to the Aboriginal community not included in the above (eg. story places, buildings, missions, etc)

2) The NPWS would **not** normally recommend an Aboriginal heritage assessment under the following circumstances:

- the proposed development is within land previously subject to intensive ground disturbance, such as quarrying, repeated market gardening, earthworks for pipelines, roads, sports fields etc. However it should be noted that sites could still occur in these context for example, ploughing generally impacts the top 20cm of ground and there is potential that *undisturbed archaeological deposit may occur* in areas where soil depth exceeds 20cm. *Scarred trees* may be located within road reserves and adjacent sport fields, etc.
- the development is within an existing residential or industrial area, or the redevelopment of an existing building is proposed, and the above criteria (listed in section 1) do not apply.

An Aboriginal heritage assessment would provide you with information about the location and significance of sites or sensitive areas, as well as advice on appropriate management options for these areas. It is recommended that an Aboriginal heritage assessment be carried out by a person qualified in undertaking Aboriginal heritage assessments. It is also recommended that the Aboriginal community (Local Aboriginal Land Council, Tribal Council etc) is contacted and its views sought on possible impacts to Aboriginal heritage.

If the proposed development area is found to contain an Aboriginal site, reference should be made to the NPWS requirements for Aboriginal heritage under the Integrated Development Approval Process (*Environmental Planning & Assessment Amendment Act 1997*).

If you wish to discuss this further, please contact Archaeologist, Phil Purcell, on (02) 6883 5324.

Yours faithfully



Paul Houston  
Aboriginal Sites Registrar  
Cultural Heritage Service Division

**ASR Site Search Criteria**

SiteID (like)  Zone:   
 AMGE  to   
 AMGN:  to   
 Name (like):   
 Recorder:   
 Date from:  to   
 LGA:   
 Local ALC:

District   
 SiteType1:   
 SiteType2:   
 SiteTypes:   
 SiteType4:   
 SiteTypes:

**ASR Standard Site List - 6148**

18/05/1999 11:26:33

SiteID:	SiteName:	Location:	Zone:	AMGE:	AMGN:	Check Method:	Site Type:	Recorder:	Record Date:	Assoc. Report:
20-4-0008	Wilga;		56	227300	6592500		Open Camp Site	Flick	1/01/1981	
20-4-0009	Wilga;		56	229000	6591000		Axe Grinding Groov	Flick	1/01/1981	
20-4-0009	Wilga;		56	229000	6591000		Open Camp Site	Flick	1/01/1981	
20-4-0013	Whitehaven;Driggle Driggle Creek;		56	227800	6596200		Open Camp Site	Flick	1/01/1981	
20-4-0014	Greenwood Creek;		56	230900	6593900		Open Camp Site	Flick	1/01/1981	
20-4-0014	Greenwood Creek;		56	230900	6593900		Scared Tree	Flick	1/01/1981	
20-4-0018	Driggle Draggie Creek;		56	231900	6598400		Open Camp Site	Flick	1/01/1981	
20-4-0018	Driggle Draggie Creek;		56	231900	6598400		Scared Tree	Flick	1/01/1981	

NSW National Parks and Wildlife Service

\*\*\* End of Report \*\*\* Site Count: 5

This report is not guaranteed to be free from error or omission

Page: 1