



Plate 17 Looking eastwards along the ridge from the summit of the western hill



Plate 18 Looking eastwards across the central creek line, between the eastern and western hills



Plate 19 **Looking southwards down the central creek**



Plate 20 **Looking southwards down the eastern section of the northern paddock**



Plate 21 Looking eastwards across the northern paddock. The bag on the ground marks the location of 'NISO 1'



Plate 22 Looking southwards in the southern section of the northern paddock. The bag marks the centre of the location for 'NASO 1'

7.0 THE RESULTS

7.1 THE PROJECT SITE

Four sites were recorded within the Project Site. Details and descriptions are as follows:'

Site name: 'NST 1'

GPS Reference: AMG 0227353 6606344 ±10 m (hand-held)
MGA 227448 6606507 (Whitehaven Coal Mining)

Map Reference: Boggabri 8936-4-S, 1: 25,000 scale Topographic map.

Site type: Scarred tree: four possible scars on the one tree, three on the stump and one on the dead trunk lying on the ground

Species: Box. The living stump is 121 cm tall; the main trunk has been felled by wind or storm and lies to the east of the stump

Trunk scar (see **Plate 23**):

Length: 100 cm
Width: 76 cm
Tree girth middle of the scar: 180 cm
Depth of the bark around the scar: 10 cm
Height of scar above ground: approx 260 cm when trunk standing
Aspect: probably southwards
Agency: probably Aboriginal bark removal
Interpretation: bark removed for a shield

Stump scar 1 (see **Plate 24**):

Length: 135 cm
Width: 35 cm
Tree girth middle of the scar: 273 cm
Depth of the bark around the scar: 12 cm
Height of scar above ground: approximately 20 cm
Aspect: southwards
Agency: probably deliberate bark removal. Possible stone axe marks around lower end
Interpretation: bark removed for a shield.

Stump scar 2 (see **Plate 24**):

Length: 20 cm
Width: 15 cm
Tree girth middle of the scar: 305 cm
Depth of the bark around the scar: 3 cm
Height of scar above ground: probably 25 cm
Aspect: south-westerly
Agency: possibly contact from machinery

Stump scar 3 (see **Plate 25**):

Length: 95 cm
Width: 25 cm
Tree girth middle of the scar: 287 cm
Depth of the bark around the scar: 10 cm
Height of scar above ground: approx 260 cm when trunk standing
Aspect: northerly
Agency: possibly natural



Plate 23 **Trunk scar**



Plate 24 **Stump scar 1 on the right, and Stump scar 2 on the lower left**



Plate 25 Stump scar 3

Site name: 'NASO 1'

GPS Reference: AMG 0227022 6607501 ±5 m (hand-held)

Map Reference: Boggabri 8936-4-S, 1: 25,000 scale Topographic map.

Site type: Artefact scatter of four artefacts

Land unit: gentle lower slopes, or undulating plain < 3°

Land use: contour ploughed and harrowed for pasture improvement

Archaeological visibility of site: 90%

Artefact type: Core or scraper/adze

Material: Chert or volcanic

Diagnostic features: 8+ negative flake scars

Cortex: 0

- 5 m away

Artefact type: Core

Material: Volcanic

Diagnostic features: 4 negative flake scars

- 10 m away from first

Artefact type: Core

Material: Volcanic

- 20 m to east of above

Artefact type: Core or scraper/adze

Material: Agate

Site name: 'NASO 2'

GPS Reference: AMG 0228783 6605841 ±4 m (hand-held)

Map Reference: Boggabri 8936-4-S, 1: 25,000 scale Topographic map.

Site type: Artefact scatter of two artefacts

Land unit: gentle lower slopes, or undulating plain < 2°

Land use: cleared and probably harrowed for pasture improvement

Archaeological visibility of site: 70%

Artefact type: Flake and scraper/adze?

Material: Metasedimentary

Diagnostic features: Dorsal ridge, axial termination, broad platform, and retouch to left margin

Cortex: 0

- 15 m away

Artefact type: Flaked piece/scraper?

Material: Volcanic

Diagnostic features: Retouch

Site name: 'NISO 1' (see Plate 26)

GPS Reference: AMG 0227254 6607483 ±6 m (hand-held)

Map Reference: Boggabri 8936-4-S, 1: 25,000 scale Topographic map.

Site type: Isolated artefact

Land unit: gentle lower slopes, or undulating plain < 3°

Land use: contour ploughed and harrowed for pasture improvement

Archaeological visibility of site: 90%

Artefact type: Probable hand-axe or hatchet

Material: Basalt (river pebble), approximate diameter 60 mm.

Diagnostic features: numerous flake scars

Cortex: 55%



Plate 26 **The artefact at 'NISO1'.**

7.2 **THE PROPOSED TRANSPORT ROUTE**

The four sites, the location of which are presented in **Figure 6**, were recorded as follows:

Site Name: 'GGOS 1' (see **Plate 27**)

GPS Reference: AMG 0228499 6605091 ±5 m (hand-held)

Map Reference: Boggabri 8936-4-S, 1: 25,000 scale Topographic map.

Site type: Open scatter of 15-20 artefacts in an area approximately 60 m north to south, by 45 m west to east. GPS reading taken at north centre of area

Land use: Pasture. Large erosion feature with minor lag conglomerates

Archaeological visibility: 95%

Artefacts of chalcedony, volcanics, mudstone, porcellanite and chert.

Maximum artefact density: 4 per sqm.



Site name: 'GGOS 2' (see **Plate 28**)

GPS Reference: AMG 0228345 6604288 ±5 m (hand-held)

Map Reference: Boggabri 8936-4-S, 1: 25,000 scale Topographic map.

Site type: Open scatter of 20-25 artefacts in an area approximately 70 m north to south, by 45 m west to east. GPS reading taken on western edge of scatter

Land use: Pasture. Large erosion feature with moderate density lag conglomerates

Archaeological visibility: 90%

Artefacts of chalcedony, volcanics, mudstone, quartzite, malachite, porcellanite and chert.

Maximum artefact density: 4 per sqm.

Site name: 'GGOS 3' (see **Plate 29**)

GPS Reference: AMG 0228292 6604248 ±5 m (hand-held)

Map Reference: Boggabri 8936-4-S, 1: 25,000 scale Topographic map.

Site type: Open scatter of 8-10 artefacts in an area approximately 15 m diameter. GPS reading taken on eastern edge of scatter

Land use: Pasture. Large erosion feature on loamy soil

Archaeological visibility: 90%

Artefacts of chalcedony, malachite and mudstone.

Maximum artefact density: 3 per sqm.

Site name 'GGOS 4' (see **Plate 30**)

GPS Reference: AMG 0228335 6604163 ±5 m (hand-held)

Map Reference: Boggabri 8936-4-S, 1: 25,000 scale Topographic map.

Site type: Open scatter of 5 artefacts in an erosion feature 9 m west to east, 3 m north to south. GPS taken in center of scatter.

Land use: Pasture. Erosion feature on the edge of a small dam or rabbit warren

Archaeological visibility: 90%

Artefacts of chalcedony

Maximum artefact density: 2 per sqm.



Plate 27 'GGOS 1' viewed from the north. The tree-line follows Gins Gully.



Plate 28 'GGOS 2' viewed from the north. The bag marks the GPS location of the site.



Plate 29 'GGOS 3' viewed from the east. The bag marks the GPS location.



Plate 30 'GGOS 4' viewed from the north. Peter is walking over the site.

8.0 DISCUSSION

The Project Site occurs in an area in which only one site had previously been recorded within the map coverage of **Figure 1**. However, as a consequence of the survey there is now evidence that Aboriginal people frequently used the area before the pastoralists came. The sites were not activity-specific, but appeared to represent a cross-section of site types typically associated with daily sustenance and maintenance. The sites included large scatters (open sites), small scatters, isolated artefacts and scarred trees. Tool types generally consisted of scrapers (or adzes), but there was also a small hatchet or hand-axe, and numerous flakes and flaked pieces, some of which may have been tools, while others were clearly knapping waste. The scarred trees had been scarred by the deliberate removal of bark for shields, coolamons or for gunyah material (to construct shelters).

The absence of water within the Project Site would suggest that this was not a place where camp sites were located, which were probably along watercourses where there were water holes such as those on Gins Gully, and along the banks of lagoons and swamps, and the banks of the Namoi and its tributaries to the south and west. Sites in the Project Site were therefore likely to have been tool manufacturing and maintenance sites, and technically, if as would appear, the stone was sourced from the lag conglomerates, then the pebbles of the conglomerates were also stone quarries.

As referred to previously, in addition to the sites recorded in this investigation, a number of sites have been recorded in the vicinity to the west and north. Giles Hamm recently undertook an investigation to the west and north of the Project Site and recorded a number of sites that appear to be associated with drainage lines and water courses flowing to the north and west (Hamm, pers. comm).

The study area has been significantly altered by clearing and by agricultural activity, and as a consequence little of the ground surface remains unaltered. From an archaeological aspect the combination of a significantly altered ground surface and poor archaeological visibility created a situation in which it was extremely unlikely that any portable stone artefactual material would be observable in its depositional context

Following the investigation programme ASR provided Red Chief LALC and Bigundi Biame with a schedule of details of the eight sites (copy included as **Appendix iv**), indicating which of the sites would be affected by the proposal together with a request that they provide a written statement of their recommendations for the future management of the sites.

9.0 SIGNIFICANCE ASSESSMENT

The DEC 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 two Aboriginal groups were involved in the investigation, and both have provided statements of their recommendations for the management of the sites.

Red Chief LALC (**Appendix iv**) have recommended the following.

- The following sites should remain in situ, and be re-evaluated if they are likely to be affected by any future mine activities: NASO 2, GGOS 1, GGOS 2, GGOS 3, GGOS 4, and NST 1 (the recommendation for NST 1 was dated 21st March 2003).
- That applications for under Section 90 Consents under the *National Parks and Wildlife Act 1974* (referred to as a 'Consent to Destroy') for 'salvage purposes' be lodged with DEC for sites 'NASO 1' and 'NISO 1'.
- That the salvaged artefacts should be relocated to the Cumbo Gunerah Keeping Place
- That all sites should be registered on the Aboriginal Heritage Information Management System (DEC)
- That monitors should be on site for all turf stripping in the Project Site and along the proposed transport route
- That monitors should be on site for any ground disturbance work.

Bigundi Biame Gunnedarr Traditional People (**Appendix vi**) have recommended:

- applications for a Consent to Destroy for 'salvage purposes' be lodged with DEC for sites 'NASO 1' and 'NISO 1';
- the salvaged artefacts should be relocated to the Cumbo Gunerah Keeping Place;
- all sites should be registered on the Aboriginal Heritage Information Management System (DEC);
- monitors should be on site for all turf stripping in the Project Site and along the proposed transport route; and
- Bigundi Biame be notified of any future changes to the proposed transport route.

9.2 RESEARCH POTENTIAL

Of the eight sites recorded during the investigations, the four within the proposed transport route corridor were the only sites assessed to have research potential.

The purpose of the investigation was to identify sites, and to record their type, location, and dimensions for the purpose of forming a basis on which to recommend appropriate mitigation strategies to either avoid the sites altogether or to minimise the impact to them from mining and/or associated activities. It was not to undertake detailed research and analysis of site contents. As a consequence, it was sufficient to identify that sites existed and describe their

character as a site type. To fulfil that function, it was only necessary to determine whether a site was a discrete concentration or a dispersed scatter of artefactual material, and whether the site was of low, moderate or high density. At such a low resolution of analysis, only the large (greater than 15mm) artefacts were observed and noted.

There were at least sixty artefacts in the four sites, and probably many more of smaller and less obvious dimensions. The lag conglomerates were the source of the material, but the particular material from which the artefacts had been manufactured was interesting in that it had been selected for its quality and character as being the preferred material for knapping. Not one of the artefacts observed was of poor quality material, and they each appeared to have been manufactured from selected material rather than from opportunistically collected material. Materials such as chalcedony, malachite, and porcellanite are neither abundant nor easily identifiable amongst an array of water-worn conglomerate pebbles, but each are highly silicified and ideal for knapping into diagnostically different tool types. As a consequence, it is probable that close analysis would identify the particular knapping techniques used, and lead to a greater understanding of how the artefacts were made and for what purpose.

Each of the four locations were in cleared and exposed locations, however, there did not appear to be a great deal of disturbance to sub-surface soils and it is probable that broad-scale excavation would uncover many more artefacts.

However, it should be stressed that the proposed transport route has been realigned to avoid the sites by a wide margin and so there is no impending threat to the sites – and that they will remain in situ awaiting future research opportunities.

The other four sites within the Project Site were assessed to be of no potential research value.

10.0 RECOMMENDATIONS

Both the Red Chief LALC and Bigundi Biame Gunnedarr Traditional People are in agreement and have recommended:

- the following sites should remain in situ, and be re-evaluated if they are likely to be affected by any future mine activities: 'NASO 2', 'GGOS 1', 'GGOS 2', 'GGOS 3', 'GGOS 4', and 'NST 1';
- applications for a Consent to Destroy for 'salvage purposes' be lodged with DEC for sites 'NASO 1' and 'NISO 1';
- the salvaged artefacts from 'NASO 1' and 'NISO 1' should be relocated to the Cumbo Gunerah Keeping Place;
- all sites should be registered on the Aboriginal Heritage Information Management System (DEC);
- monitors should be on site for all turf stripping in the Project Area and along the proposed transport route; and
- monitors should be on site for any ground (surface) disturbance work.

ASR has considered the recommendations and agrees with them. In addition ASR recommends that the scarred tree, 'NST 1', should be enclosed within a 20 m radius buffer zone marked by white posts set vertically at five metre intervals around the tree, and that the location and description 'Culturally Sensitive Area - Aboriginal Scarred Tree' should be marked on all master plans and maps of the East Boggabri Coal Mine.

In addition, the Proponents is advised of the following provisions: 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 Bigundi Biame Gunnedarr Traditional People, and Cultural Heritage Officers of the DEC, 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.

11.0 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

ANTHROPOMORPH: A figure of human form (Walsh 1988).

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 sharpen its edge.
- v) Proximal: The end of a flake closest to the striking platform.
- vi) Distal: The end of a flake furthest from the striking platform.
- vii) Margin: The edge of an artefact.
- viii) 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.

PANARAMITEE: The name given to a style, tradition or method of applying motifs to a rock surface first identified by Robert Edwards in the 1960s. The motifs, which comprise mainly of circles and animal tracks, but which include human footprints, plan aspects of animals, and linear designs, were pecked into the rock surface using indirect percussion – ie. using a pecking-tool and a hammerstone.

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 woollies and are greyish and white, they are popularly known as gray billy (slang for billy goat) (Fairbridge, 1968).

SITE : A discrete area or concentration of artefactual material, place of past Aboriginal activity, or place of significance to Aboriginal people.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

LANDFORM ELEMENTS :

Crest : Landform element standing above all points in the adjacent terrain.

Flat : Neither a crest or a depression <3% slope.

Upper slope : Adjacent to and below a crest or flat but not a depression.

Midslope : Not adjacent to a crest, a flat or a depression.

Lower slope : Adjacent to and above a flat or a depression but not a crest.

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

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

METASEDIMENTARY: Partially-metamorphosed sedimentary rock (Milford 1999).

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

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

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

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

SCARP/CLIFF : A steep slope terminating a plateau or any level upland surface.

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

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

SOIL PROFILE :

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

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

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

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

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

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

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

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

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

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

SURFACE CONDITION :

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

Hardsetting : Soil is compact and hard.

Loose : Soil that is not cohesive.

Friable : Easily crumbled or cultivated.

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

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

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

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

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

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

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

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

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APPENDICES

- Appendix i** **Correspondence from Red Chief LALC dated 21st February 2003**
- Appendix ii** **Details of AHIMS Search**
- Appendix iii** **Site Types**
- Appendix iv** **Schedule of sites and suggested strategies**
- Appendix v** **Correspondence from Red Chief LALC dated 22nd February 2005**
- Appendix vi** **Correspondence from Bigundi Biame Gunnedarr Traditional People Dated 22nd February 2005**

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Appendix i

Correspondence from Red Chief LALC dated 21st February 2003

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Monday, 24 February 2003 4:00 PM

02 6742 5290

p.03



RED CHIEF
LOCAL ABORIGINAL
LAND COUNCIL

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Phone: 02 6742 3602
Fax: 02 6742 3815
Email: redchief@mcsonline.com

Mr John Appleton
Archaeological Survey & Reports Pty LTD
10 Roslyn Avenue
ARMIDALE NSW
2350

WHITEHAVEN COAL MINE
"EAST BOGGABRI PROPOSAL"

Red Chief Local Aboriginal Land Council summary of results and recommendations of a survey carried out on 17-18 February 2003. The survey was of four possible access routes (A,B,X,Y) on behalf of Whitehaven Coal Mine Pty Ltd.

ATTENDANCE: Peter Beale- Resource Officer
Les Fields- Aboriginal Sites Officer
John Appleton- Archaeologist

SURVEY RESULTS: There were six sites and one possible site located during the survey. The sites consisted of four scarred trees identified as NST 1, NST 2, NST 3, NST 4, one Artefact Scatter identified as NAS 1 and one isolated Artefact (Axe) identified as NISO 1.

The possible site is a piece of unidentified bone, identified as bone on the map. The bone was found imbedded in the bank of a creek.

For site locations refer to attached map.

The scarred tree identified as NST 1 is located along the southern boundary of the survey area.

The scarred trees identified as NST 2, NST 3 and NST 4 are located along route Y in the north/ west corner of the survey area.

Monday, 24 February 2003 4:00 PM

02 6742 5290

p.04

The Artefact scatter identified as NAS 1 is located along and to the side of route A and has the potential to be larger than recorded (sub-surface material).

The isolated Artefact (Axe) identified as NISO 1 is located along and to the side of route A.

The bone fragment identified as Bone is located along route Y.

No other archaeological sites were recorded. In some areas there was very good archaeological visibility whilst in other areas the visibility was very poor due to other surface material present.

Generally however the survey team considers it very likely for other archaeological material to be present.

RECOMMENDATIONS:

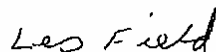
1. It's recommended by the Red Chief LALC that route Y is relocated or not used due to archaeological sites being present.
2. Site NST 1 remain on site and be re-evaluated if need.
3. Sites NAS 1 and NISO 1 to have a consent to destroy "for salvage purposes" filed with NPWS and the Artefacts be relocated to the Cumbo Gunerah keeping place / Gallery at the Red Chief LALC Chandos ST Gunnedah.
4. NPWS to be notified over the bone fragment for identification purposes.
5. The Red Chief LALC suggest that Whitehaven use access route B.
6. The Red Chief LALC recommended that Whitehaven have monitors on site when doing ground disturbance work.
7. The Red Chief LALC also recommends that all sites be recorded on the Aboriginal Sites Register.

If you should require any further information, please do not hesitate to contact the Red Chief LALC.



Peter Beale
Resource Officer

Date: 21.10.2003



Les Field
Aboriginal Sites Officer

Date: 21.10.2003

Appendix ii

Details of AHIMS Search

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Department of
Environment and Conservation (NSW)

Your reference : Boggabri Area
Our reference : AHIMS #11604

Archaeological Surveys and Reports
16 Curtis Street
Armidale NSW 2350

Thursday, 9 December 2004
Attention: John Appleton

Dear Sir or Madam:

**Re: AHIMS Search for the following area at Manilla
Zone 56 Eastings: 222000-233000 Northings: 6602000-6612000**

I am writing in response to your recent inquiry in respect to Aboriginal objects and Aboriginal places registered with the NSW National Parks and Wildlife Service (NPWS) at the above location.

A search of the NPWS Aboriginal Heritage Information Management System (AHIMS) has shown that 3 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 NPWS;
- 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 NPWS 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 NPWS Director-General. An Aboriginal object is considered to be known if:

- It is registered on AHIMS;
- It is known to the Aboriginal community; or
- It is located during an investigation of the area conducted for a development application.

If you considering undertaking a development activity in the area subject to the AHIMS search, NPWS 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



Kellyanne Sheargold
Aboriginal Information Officer
Information Systems & Programs Section
Cultural Heritage Division
Department of Environment and Conservation
Level 6, 43 Bridge Street
P.O. Box 1967
Hurstville NSW 2220
Phone: (02) 9585 6470
Fax: (02) 9585 6094



Department of
**Environment
& Conservation**

List of Sites (List - Short)

Boggabri Area

Grid Reference Type = AGD (Australian Geodetic Datum) Zone = 56 Easting From = 227000 Easting to = 233000 Northing From = 6602000 Northing to = 6612000 Requestor = Archaeological Surveys and Reports (1714) Service ID = 11604 Feature Search Type = AHIMS Features

Site ID	Site Name	Datum	Zone	Easting	Northing	Site Features	Site Types	Recording	Reports
20-4-0017	Nanero Creek;	AGD	56	225600	6608000	AFT,	Open Camp Site		
Status Valid									
Primary Contact									
20-4-0080	BBS: Red Chief LALC; Leard SF - Soombri CK	AGD	56	231841	6610044	AFT,		Gaynor, P. J. (04-MAR-02)	
Status Valid									
Primary Contact Red Chief LALC - BBS Survey Team									
20-4-0090	BBS: Red Chief LALC; Leard SF 5	AGD	56	227346	6610886	AFT,		Gaynor, P. J. (04-MAR-02)	99031,
Status Valid									
Primary Contact Red Chief LALC - BBS Survey Team									

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Appendix iii

Site Types

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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.

Appendix iv

Schedule of Sites and Suggested Strategies

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**Archaeological
Surveys
&
Reports
Pty Ltd**

John Appleton
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Tel. 02 6772 6512 Fax. 02 6772 4567 Mob: 0428 651 789
Email japples@northnet.com.au

ABN 67 075 625 722

The Chairperson
Red Chief Local Aboriginal Land Council
PO Box 745
Gunnedah 2380

18th February 2005

Re: East Boggabri

Yesterday I receive the following Email from Whitehaven Coal.

"With reference to the Aboriginal sites, GGOS 2 should be avoided by keeping the road on the original alignment and corridor of 30 m from the western fence line, the site is approximately 60 m from the fence. GGOS 1 and GGOS 3 will not be affected. GGOS 1 should be avoided if we move slightly west towards the fence, everything else seems to be OK".

With regard to the sites in the 'northern paddock', the company has redesigned the Project Area to exclude the sites recorded by Giles Hamm, so that the only sites in the Project Area and Haul Road corridor now are,

- The scatter of two artifacts (NASO 1), and the isolated artifact (NISO 1), in the northern paddock – both of which will require Consent to Destroy.
- The scarred tree (NST 1) in the Project Area, which will not be impacted upon.
- The scatter of two artifacts (NASO 2 in "Thuin" yards) which will not be impacted upon
- The scatter at GGOS 1 which will not be impacted upon
- The scatter at GGOS 2 which will be avoided
- The scatter at GGOS 3 which will not be impacted upon
- The scatter at GGOS 4, which will not be impacted upon.

All of the sites will be registered on the Aboriginal Sites Register.

I have enclosed maps to show the redesigned Project Area, and the location of the various sites.

Would you please now provide me with a letter detailing your recommendations, and if you agree with the proposed management strategies, state that you agree to Consent to Destroy for NASO 1 and NISO 1, and to monitoring all turf stripping in the Project Area, and along the haul road.

Please ring me if you have any questions.

Yours faithfully

A copy of this letter has also been sent to Wayne Griffiths.

Archaeological

**Surveys
&
Reports
Pty Ltd**

John Appleton
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Email japples@northnet.com.au

ABN 67 075 625 722

Wayne Griffiths
Bigundi Biame Gunnedarr
16 South Street
Gunnedah 2380

18th February 2005

Re: East Boggabri

Yesterday I receive the following Email from Whitehaven Coal.

"With reference to the Aboriginal sites, GGOS 2 should be avoided by keeping the road on the original alignment and corridor of 30 m from the western fence line, the site is approximately 60 m from the fence. GGOS 1 and GGOS 3 will not be affected. GGOS 1 should be avoided if we move slightly west towards the fence, everything else seems to be OK".

With regard to the sites in the 'northern paddock', the company has redesigned the Project Area to exclude the sites recorded by Giles Hamm, so that the only sites in the Project Area and Haul Road corridor now are,

- The scatter of two artifacts (NASO 1), and the isolated artifact (NISO 1), in the northern paddock – both of which will require Consent to Destroy.
- The scarred tree (NST 1) in the Project Area, which will not be impacted upon.
- The scatter of two artifacts (NASO 2 in "Thuin" yards) which will not be impacted upon
- The scatter at GGOS 1 which will not be impacted upon
- The scatter at GGOS 2 which will be avoided
- The scatter at GGOS 3 which will not be impacted upon
- The scatter at GGOS 4, which will not be impacted upon.

All of the sites will be registered on the Aboriginal Sites Register.

I have enclosed maps to show the redesigned Project Area, and the location of the various sites.

Would you please now provide me with a letter detailing your recommendations, and if you agree with the proposed management strategies, state that you agree to Consent to Destroy for NASO 1 and NISO 1, and to monitoring all turf stripping in the Project Area, and along the haul road.

Please ring me if you have any questions.

Yours faithfully

A copy of this letter has also been sent to Red Chief LALC.

Summary of the proposed management strategies for all sites identified in investigations for Whitehaven Coal Mining at East Boggabri

NASO 1

Open scatter of two artefacts in the proposed mine site
Will require Consent to Destroy

NISO 1

Isolated artefact in the proposed mine site
Will require Consent to Destroy

NST 1

Scarred tree in the Survey Area, but will not be impacted upon
No action necessary

GGOS 1

Open scatter near haul road
Will be avoided by the road. No action necessary

GGOS 2

Open scatter near haul road
Will be avoided by the road. No action necessary

GGOS 3

Open scatter near haul road
Will be avoided by the road. No action necessary

GGOS 4

Open scatter near haul road
Will be avoided by the road. No action necessary

Impact mitigation

Turf stripping in the footprint impact zone in the Project Site to be monitored.
Turf stripping along the haul road to be monitored

3rd Feb 2005

Archaeological investigations: East Boggabri (2-2-2005)

Haul road

Four sites were recorded as follows:

GGOS 1

Open scatter

AMG 0228499 6605091 ±5 m

15-20 artefacts in an area approximately 60 m north to south, by 45 m west to east.

GPS reading taken at north center of area

Large erosion feature with minor lag conglomerates

Artefacts of chalcedony, volcanics, mudstone, porcellanite and chert

Management: Route to be re-aligned closer to western fence line to avoid GPS reference by 35 m. ie. 0228464

GGOS 2

Open scatter

AMG 0228345 6604288 ±5 m

20-25 artefacts in an area approximately 70 m north to south, by 45 m west to east

GPS reading taken on western edge of scatter

Large erosion feature with moderate density lag conglomerates

Artefacts of chalcedony, volcanics, mudstone, quartzite, malachite, porcellanite and chert

Management: see next

GGOS 3

Open scatter

AMG 0228292 6604248 ±5 m

8-10 artefacts in an area approximately 15 m diameter

GPS reading taken on eastern edge of scatter

Large erosion feature on loamy soil

Artefacts of chalcedony, malachite and mudstone

Management: Route to pass between GGOS 1 and GGOS 3, ie. between 0228345 6604288, and 0228292 6604248. The alternative is to go to the east of GGOS 2 along say 0228400 but then you would have to take out a large tree.

GGOS 4

Open scatter

AMG 0228335 6604163 ±5 m

5 artefacts in an erosion feature 9 m west to east, 3 m north to south

GPS taken in center of scatter

Erosion feature around a depression (defunct dam or rabbit warren?)

Artefacts of chalcedony

Management: If the route is realigned to pass between GGOS 2 and GGOS 3 it may bring it onto GGOS 4, so the realignment needs to avoid all three sites.

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Appendix v

Correspondence from Red Chief LALC dated 22nd February 2005

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RED CHIEF
LOCAL ABORIGINAL
LAND COUNCIL

PO BOX 745
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Email: redchief@mcsonline.co:

Mr John Appleton
Archaeological Survey & Reports PTY LTD
16 Curtis Street
ARMIDALE, NSW
2350

WHITEHAVEN COAL MINE
"EAST BOGGABRI PROPOSAL"

Red Chief Local Aboriginal Land Council summary of results and recommendations of two (2) archaeological surveys carried out on the 18th January, 2005 and the 3rd February, 2005. The surveys were of the "Project Area" carried out on the 18th January, 2005 and the "Haulage Road Corridor" carried out on the 3rd February, 2005 on behalf of Whitehaven Coal Mine PTY LTD.

Also contained in this report are the recommendations for two (2) sites, NASO1 and NISO1 (Recommendation 8).

ATTENDANCE: Peter Beale- Resource Officer, Red Chief LALC
Wayne Griffiths- Bigundi Biame Gunnedarr Traditional People
John Appleton- Archaeologist

SURVEY RESULTS: There were five (5) new sites located and recorded during the two (2) surveys. The sites consisted of five (5) artefact scatters identified as NASO2 "scatter of two artefacts" GGOS 1, GGOS 2, GGOS 3 and GGOS 4.

For site locations refer to attached map.

Sites NASO 2 "Thuin Yards", GGOS 1, GGOS 2, GGOS 3 and GGOS 4 are located along the Haulage Road corridor.

No other archaeological sites were recorded during these surveys. In some areas there was very good archaeological visibility whilst in other areas visibility was very poor due to other ground material present.

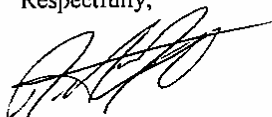
Generally however the survey team considers it very likely for other archaeological material to be present.

RECOMMENDATIONS:

1. It's recommended by the Red Chief LALC that site NASO 2, remain on site and be re-valuated if needed;
2. It's recommended by the Red Chief LALC that site GGOS 1, remain on site and be re-valuated if needed;
3. It's recommended by the Red Chief LALC that site GGOS 2, remain on site and be re-valuated if needed;
4. It's recommended by the Red Chief LALC that site GGOS 3, remain on site and be re-valuated if needed;
5. It's recommended by the Red Chief LALC that site GGOS 4, remain on site and be re-valuated if needed;
6. The Red Chief LALC recommends that Whitehaven Coal Mine to have monitors on site for all turf stripping in the Project Area and along the Haul Road;
7. The Red Chief LALC recommends that Whitehaven Coal Mine to have monitors on site for any ground disturbance work;
8. In regards to sites NAS 1 and NISO 1, a consent to destroy "for salvage purposes" be filed with NPWS and the said artefacts be relocated to the Cumbo Gunerah Keeping place/ Gallery at the Red Chief LALC, 26 Chandos St, Gunnedah, as per the recommendation 3, in the report dated 21st February, 2003.
9. The Red Chief LALC also recommends that all sites be recorded on the NPWS Aboriginal Sites Register.

If you should require any further information regarding this letter, please do not hesitate to contact the Red Chief LALC.

Respectfully,



Peter Beale
Resource Officer

Tuesday, 22 February 2005

Appendix vi

Correspondence from Bigundi Biame Gunnedarr Traditional People dated 22nd February 2005

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WHITEHAVEN COAL **MINE**



“EAST BOGGABRI **PROPOSAL”**

BIGUNDI BIAME GUNNEDARR TRADITIONAL PEOPLE
16 SOUTH STREET
GUNNEDAH
NSW, 2380

PHONE: 02 6742 0311
FAX: 02 6742 0311

TABLE OF CONTENTS

WHITEHAVEN COALMINE “EAST BOGGABRI PROPOSAL”

1. REPORT OF SURVEY & RECOMMENDATIONS
2. OUTLINE LINE PROPOSED MINE AREA
3. PROPOSED HAULAGE ROUTE
4. IDEMITSU COAL LEASE & SITE DISTRIBUTION
5. PHOTOGRAPHS SCARRED TREES
6. PHOTO BONE FRAGMENT
7. MAP OF ARCHAEOLOGICAL SITES
8. DETAILS OF SCARRED TREES & BONE FRAGMENT
9. PREVIOUS REPORT RED CHIEF LOCAL ABORIGINAL LAND COUNCIL



BIGUNDI BIAME GUNNEDARR TRADITIONAL PEOPLE

(IN THE MIST OF GOD)

16 SOUTH STREET
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PHONE: 02 6742 0311
FAX: 02 6742 0311

Mr John Appleton
Archaeological Surveys and Reports PTY LTD
16 Curtis Street
ARMIDALE, NSW 2350

WHITEHAVEN COAL MINE
"EAST BOGGABRI PROPOSAL"

Dear John

Thank you, for your report received on the 21st February, 2005. I have provided results and recommendations in relations to our surveys carried out on the 18th January and the 2nd February 2005.

It was pleasing to see that Whitehaven Coal have redesigned the Project Area to exclude the sites recorded by Giles Hamm.

ATTENDANCE: Wayne Griffiths, Bigundi Biame Gunnedarr Traditional People
Peter Beale, Red Chief Local Aboriginal Land Council, Gunnedah
John Appleton, Archaeologist

SURVEY RESULTS and SUMMARY of the Proposed Management Strategies as per attached appendix as supplied by Mr John Appleton.

RECOMMENDATIONS:

1. The scatter of two Artefacts NASO 1 and the isolated Artefact NISO 1 in Northern Paddock, we agree to have a Consent to Destroy "for salvage Purposes" be filed with NPWS and have the sites recorded on the Aboriginal sites Register. The Artefacts are to be relocated to the Red Chief Local Aboriginal Land Council in Gunnedah.
2. Bigundi Biame Gunnedarr Traditional People also recommend that all sites identified and recorded are to be placed on the Aboriginal Sites Register.

3. Bigundi Biame to be notified if any changes occur in regards to the proposed Haulage route.
4. Bigundi Biame GTP, agrees with the proposed management strategies as outlined in your report.
5. Bigundi Biame GTP, recommends that Whitehaven have sites officers, from Bigundi Biame monitor all turf stripping in the project area and along the haulage corridor road.

If you should require any further information regarding this report, please contact me on the above contact details.

Respectfully,



Wayne Griffiths
Bigundi Biame

Tuesday, 22 February 2005