Appendix 7

Cultural Heritage Assessment Bogo Quarry via Bookham

(Cultural Heritage Management Australia)

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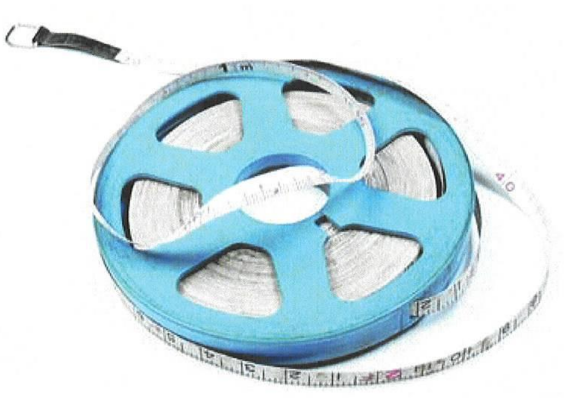

April 2009

Cultural Heritage Assessment Bogo Quarry via Bookham

A Report to R.W. Corkery & Co Pty Limited

By Rob Paton and Jenni Streatfeild
Cultural Heritage Management Australia

CULTURAL HERITAGE MANAGEMENT AUSTRALIA

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Cultural Heritage Assessment
Bogo Quarry via Bookham
A report for R.W.Corkery & Co Pty. Limited

April 2009

EXECUTIVE SUMMARY

Cultural Heritage Management Australia was contracted by R.W. Corkery & Co. Pty. Limited to undertake an Indigenous archaeological investigation of a proposed expansion to the Glenella Quarry Pty Limited's Bogo Hard Rock Quarry near Bookham NSW.

The Bogo quarry is located southeast of the Hume Highway,approximately five kilometres east of Bookham and 28 kilometres west of Yass in southern NSW (Figure 1). The quarry, referred to as the Study Area, covers 39 hectares, including the proposed westerly extension to the existing quarry.

The proposed expansion to the quarry involves:

- increasing the annual production level of hard rock products. This will involve a westerly expansion of the present quarry footprint across the steeply sloping hill as shown on Figure 2;

- the placement and operation of a mobile asphalt plant and a mobile concrete batching plant to be used on a campaign basis at Bogo Quarry. These plants are to be contained on the existing footprint of the quarry and will not involve the disturbance of any unquarried lands.

During the course of the field survey on Thursday 30th April 2009 a total of two new sites and the known site 51-1-0042 were identified.

Based on the above findings and in accordance with the legal requirements of the NSW DECC, a series of specific management recommendations have been established for the sites identified within the Study Area. The recommendations are aimed at minimising the impact of proposed developments on any potential cultural resources present within the surveyed area.

Heritage management options and recommendations provided in this report are made on the following bases:

- consultation with representatives of the Indigenous groups;
- the legal and procedural requirements of NSW DECC;
- the results of the investigation as documented in this report; and
- background research into the extant archaeological and historic record for the Study Area and its surrounding regions.

The recommendations are:

1) Site 51-1-0042 should be protected from any impact of the quarrying processes. This should be achieved through erection of a fence, with a 75 metre buffer zone between the fence and the quarry.

2) Representatives from the Buru Ngunawal Aboriginal Corporation and the Onerwal Local Aboriginal Land Council (one from each) should be present during construction of the fence to ensure the correct placement the fence.

3) Copies of the archaeological report should be supplied to:
   - NSW DECC;
   - Buru Ngunawal Aboriginal Corporation
   - The Onerwal Local Aboriginal Land Council
   - R.W. Corkery & Co Pty. Limited
   - Yass Valley Shire Council.

4) Although Sites Bogo 2009-1 and Bogo 2009-2 will not be directly affected by the development, the proponent should note their locations, avoid these areas, and remain cognisant of the legal obligations pertaining to these sites.

5) If any further Aboriginal objects are uncovered at any time during the course of the proposed development, work at the area should cease and proponent must contact the NSW DECC for advice. It is an offence under the Acts to disturb or destroy Aboriginal relics without permission. The proponent should also make all its staff and contractors aware of their responsibilities in this regard under the NSW NPWS Act 1974.

TABLE OF CONTENTS

TABLE OF FIGURES

1.0 PROJECT OVERVIEW

Cultural Heritage Management Australia was contracted by R.W. Corkery & Co. Pty. Limited to undertake an Indigenous archaeological investigation of a proposed expansion to the Glenella Quarry Pty Limited's Bogo Hard Rock Quarry near Bookham NSW.

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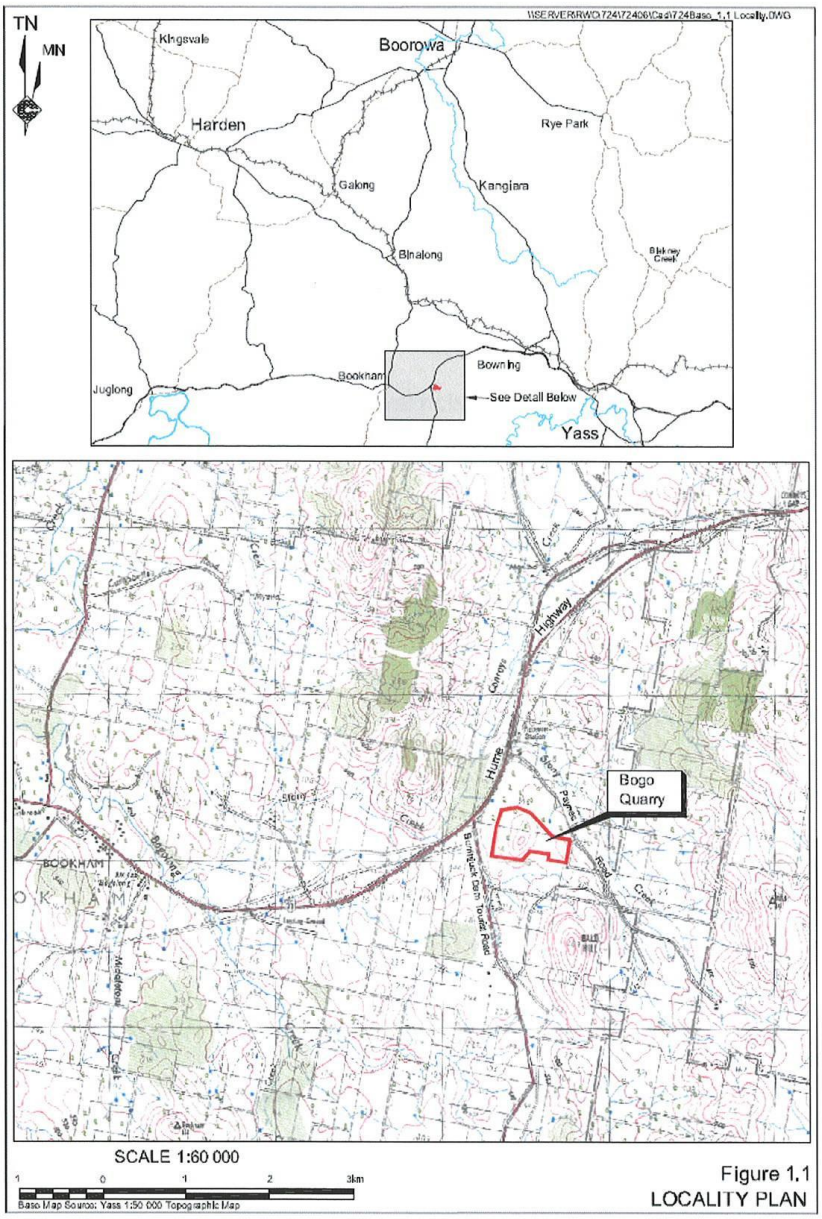

Figure 1: Location of Bogo Quarry.

Figure 2: Proposed Expansion Plan for Bogo Quarry.

1.1 Aims of the Survey

The principal aims of this assessment are as follows.

- To identify any Indigenous cultural heritage sites or areas which may have been previously recorded in the Study Area.
- Review the available archaeological information for the Study Area.
- Carry out a field survey assessment of the proposed development.
- Record and plot the location of any identified Indigenous cultural heritage sites within the Study Area.
- Identify areas of potential archaeological sensitivity within the Study Area.
- Assess the significance of all Indigenous cultural heritage sites or objects identified within the Study Area.
- Develop a set of management procedures for all heritage sites and areas of potential archaeological sensitivity identified within the Study Area.

The field survey was carried out on Thursday 30th April, 2009 by archaeologists, Rose O'Sullivan and Jenni Streatfeild from CHMA along with representatives Tyrone Bell from the Buru Ngunawal Aboriginal Corporation and Wendy Monaghan from the Yass (Onerwal) Local Aboriginal Land Council.

1.2 Methodology

In order to fulfil the outlined project aims, a three stage methodological approach has been adopted for this study.

Stage 1 (The Background Research)
Stage 1 entailed the background component of the project, wherein the following tasks were undertaken:

- The Yass Onerwal Local Aboriginal Land Council and the Buru Ngunawal Aboriginal Corporation were contacted and invited to participate in the survey.

- A review was made of the NSW DECC AHIMS register to determine if any previously identified Indigenous and non-Indigenous sites were located within, or in close proximity to the Study Area (Bookham : Eastings 650000-660000; Northings 6151400-6141400). Nineteen Aboriginal objects and Aboriginal places were listed in the AHIMS register search.

- The following background information was collated:
  - 1:50 000 maps of the Study Area: Yass 8628-S;
  - Ethnohistoric and Anthropological literature for the region;
  - Archaeological reports for the Study Area and surrounding region;

- References to the land use history of the Study Area.

Stage 2 (Field Work)

Stage 2 of the project entailed the implementation of a field survey program to locate and record cultural heritage sites and areas of potential archaeological sensitivity within the Study Area. The fieldwork component of the cultural heritage assessment for the project was completed on Thursday 30th April 2009. The survey team included Archaeologists, Rose O'Sullivan and Jenni Streatfeild , Mr Tyrone Bell (Buru Ngunawal Aboriginal Corporation), and Ms Wendy Monaghan (Yass Onerwal Local Aboriginal Land Council).

Based on a review of available ethnographic, archaeological and environmental literature for the Study Area and surrounding region, environmental setting of the Study Area and the experience of the archaeologist, the probability of encountering items of significance on different areas of the Study Area was predicted. Section 6.0 presents this predictive model.

For this investigation when a site was located the following variables were recorded:

- *Site type*: Single artefact or artefact scatter
- *Grid reference: using WGS84*
- *Environmental setting*
- *Site contents*
- *Site size*
- *Photographs of the site and artefacts.*

Stage 3 (Analysis)

Stage 3 of the project involved the analysis of the data obtained from the field survey. In the analysis specific attention was paid to:

- the predictive model of site patterning in terms of the survey results;
- the relationship between survey findings and environmental factors; and
- an assessment of the results, which takes into account variability in such factors as surface visibility, survey intensity and surveying approaches.

2.0 INDIGENOUS CONSULTATION

Bowdler (1983:26) recognises two kinds of sites that are significant to Aboriginal people. The first relates to pre-contact times, the second to the period since colonisation. Some of these sites may be recognisable due to landscape modification or material remains whereas others may consist of a noticeable but natural physical feature. Bowdler (1983:30) stresses that:

> '..identification of sacred sites and sites of significance to Aboriginal people is of necessity a matter for Aboriginal people. No-one else can decide either the fact of significance or the degree of that significance to an Aboriginal community, except members of that community.'

It is for this reason that members of the Aboriginal community are consulted during heritage studies such as this.

Local Aboriginal Land Councils and Native Title Claimants are normally consulted and actively involved in the Cultural Heritage Assessment process, and wider consultation occurs as part of any Section 87 or Section 90 process, as per DECC Interim Guidelines.

The Yass Local Aboriginal Land Council and the Buru Ngunawal Aboriginal Corporation were contacted by phone and invited to participate in the survey. Ms Wendy Monaghan from the Yass Local Aboriginal Land and Mr Tyrone Bell from the Buru Ngunawal Aboriginal Corporation attended the survey on 30th September 2009. Both participants will receive a copy of the draft report for comment. Any comments from these groups will be incorporated into the final report.

2.1 Legislative Requirements

New South Wales State Legislation
The protection of Indigenous cultural heritage in New South Wales is principally governed by the *National Parks and Wildlife Act 1974 (NSW)* ("the NSW Act"). Artefacts do not require registration or listing to be protected under the NSW Act (Boer, 1995: 18).

When seeking approval for development from the Department of Infrastructure, Planning and Natural Resources (NSW) (DIPNR), certain conditions will usually be imposed - one of which is that an assessment be made of any potential impact on sites or places of indigenous cultural heritage.

For the purposes of dealing with indigenous land issues, NSW has been 'divided' into areas each of which are under the control of Local Aboriginal

Land Councils ("LALCS"). The Department of Environment and Conservation (DECC) requires that 'sufficient consultation' be undertaken with each LALC in which the development is to take place. In addition, DECC requires that Traditional Owners of land who have lodged a Native Title claim must also be included in the consultation process.

Failure to achieve sufficient consultation with LALCs and Native Title claimants will result in rejection by the DIPNR of the overall development application.

Section 86 of the NSW Act requires that any disturbance of the land (to collect indigenous artefactual material) or collection of that material can only be undertaken under a permit issued by the NSW DECC. The permit will be issued subject to any terms and conditions that the Director General of DECC thinks fit (s.88). Again these terms and conditions will include sufficient consultation with LALCs and Native Title claimants. Failure to do so will result in a rejection of the permit application and the inability to undertake any collection of artefactual material (outside of the developmental area) or sub-surface testing.

Penalties payable under the NSW Act (s.90) for damage/destruction etc of indigenous cultural heritage (relics or areas) are:

- $5,500.00 for individuals + restitution costs and/or 6 months' gaol; and
- $22,000.00 for Corporations + restitution costs

Litigious remedies are also available. Any person (whether they have a 'legal interest' in the area or not) can bring proceedings against a person damaging or destroying indigenous cultural heritage in the Land and Environment Court (NSW) to prevent or remedy that damage or destruction (s.176). In addition to individual penalties of up to $11,000, an order can also be made that compensation is to be paid for the damage or destruction of the relic or area.

If the Director-General of DECC believes that an action will or could have a significant effect on the 'environment of native plants' (which is also an indigenous issue) he can issue a Stop Work Order for 40 days, without any prior notice needed to be given (ss.91AA-EE). That Order can be extended for as many 40 day periods as the Director-General sees fit. If the action that has been stopped is not able to be modified sufficiently to protect the environment in question, the Director--General must recommend an Interim Protection Order be made (s.91EE) that will last for up to 2 years (s.91D). The Director-General can also direct that an Interim Protection Order be put in place if, in his opinion, an area of cultural significance is at risk of damage (s.91A).

Each person has a duty to report the discovery of a relic to DECC within a reasonable period of time unless they have reason to believe that DECC is already aware of its existence (s.91).

Commonwealth of Australia

As well as Territory Legislation there are also several pieces of Federal Legislation that provide protection for, or are relevant to, Indigenous cultural heritage. These pieces of Legislation include:

- Native Title Act 1993
- Aboriginal and Torres Strait Islander Heritage Protection Act 1984
- Environment Protection and Biodiversity Conservation Act (EPBC) 1999

Native Title Act 1993
This Act provides national recognition that Indigenous people had a system of law and land ownership prior to the arrival of Europeans. This Act has ramifications for land tenure and consultation under other Acts.

Aboriginal and Torres Strait Islander Heritage Protection Act 1987
The Act was passed to provide protection for Aboriginal heritage in circumstances where it could be demonstrated that such protection was not available at a State or Territory level. In certain instances the Act overrides relevant State and Territory provisions.

The major stated purpose of the Act is to preserve and protect areas and objects of significance to Aborigines and Islanders, from injury and desecration. The Act enables immediate and direct action for protection of threatened areas and objects by a declaration from the Commonwealth minister or authorised officers. The Act must be invoked by, or on behalf of, an Aboriginal or Torres Strait Islander or organisation.

Environment Protection and Biodiversity Conservation Act (Epbc) 1999
The Environment Protection and Biodiversity Conservation Act 1999 (Comm.) has recently been amended, through the Environment and Heritage Legislation Amendment Act (No1) 2003 to provide protection for cultural heritage sites, in addition to the existing aim of protecting environmental areas and sites of national significance.

The 2003 amendments to the *Environment Protection and Biodiversity Conservation Act 1999* have resulted in the inclusion of indigenous and non-Indigenous heritage sites and areas. These heritage items are defined as:

> *'indigenous heritage value of a place means a heritage value of the place that is of significance to indigenous persons in accordance with their practices, observances, customs, traditions, beliefs or history;*

Items identified under this legislation are given the same penalty as actions taken against environmentally sensitive sites. Specific to cultural heritage sites are §324A-324ZB.

In addition to the above amendments to the *Environment Protection and Biodiversity Conservation Act 1999* to include provisions for the protection and conservation of heritage, the Environment and Heritage Legislation Amendment Act (No1) 2003 (Comm.) also enables the identification and subsequent listing of items for the Commonwealth and National Heritage Lists. The Act establishes the National Heritage List that enables listing of sites nationally and internationally that are significant and governed by Australia.

The *Australian Heritage Council Act 2003* defines the heritage advisory boards and relevant lists, with the Act's Consequential and Transitional Provisions repealing the Australian Heritage Commission Act 1975. The Australian Heritage Council Act, like the Australian Heritage Commission Act, does not provide legislative protection regarding the conservation of heritage items in Australia, but has compiled a list of items recognised as possessing heritage significance to the Australian community. The *Register of the National Estate*, managed by the Australian Heritage Council, applies no legal constraints on heritage items included on this list.

3.0 ENVIRONMENTAL SETTING

Numerous investigations within Eastern Australia have revealed that the nature and distribution of archaeological sites across the landscape are strongly influenced by environmental factors. The bedrock geology of a region, it's landforms, soils, vegetation, and climate, all combine to influence the distribution and availability of resources considered to be of importance to prehistoric Aboriginal groups (these being, plant and animal foods, water, raw materials for tool making, ochre and suitable campsites). Such factors will also affect the ease with which people could travel across the landscape. It stands to reason then, that in order to properly understand, or indeed predict patterns of Aboriginal activity within a region; one must first be familiar with the environmental setting of the study region.

3.1 Topography

The Study Area covers the very steep slopes and top of a hill that is the proposed extension to the quarry. The steep sections of this hill have, and continue to be, extensively quarried. All soils and rock to several metres have been removed from the quarried portions of the hill and there is no likelihood of there being archaeological finds in the quarried area. The Study Area also encompasses the lower moderate slopes of the hill. These lower slopes contain two small dendritic creeklines which drain the upper parts of the hill.

Figure 3: View of landscape

3.2 Geology

The Study Area is formed on the Mountain Creek Volcanics of the early Devonian, with natural bedrock exposures in the quarry site particularly on the mid to upper slopes (Resource Planning 1989). This part of the Study Area has no or very shallow soils, meaning it is unlikely that sub-surface sites will be found. The mid to lower slopes have shallow soils overlying bedrock.

3.3 Climate

Burrinjuck Dam is the closest weather observation point to the Bogo Quarry. The average rainfall here is 917.9 mm per year, with the lowest rainfall average of 44 mm in the month of March and the highest in August of 97 mm. Average mean temperatures in the region range from 9.1ºC to 20.6ºC (Bureau of Meteorology 2009 –accessed 14 April 2009).

3.4 Flora

Vegetation at the Study Area consists principally of native and introduced grasses. The area has been heavily grazed. Although the area has been extensively cleared of its tree cover, a few older isolated eucalypts are left standing.

3.5 Prior Land Disturbance

In terms of archaeology, perhaps the most significant feature of the landscape is its heavily disturbed character. The quarry has been operating since 1981 and extensive areas of soil and bedrock have been removed. The surrounding area has been substantially affected by agricultural and grazing practices. Trees have been mostly cleared and the paddocks have been and are regularly grazed by sheep. Several ephemeral gullies present within the Study Area have been altered due to the construction of dams.

4.0 ETHNOHISTORIC ACCOUNTS OF THE REGION

Ethnohistory entails the use of historical literature as a source for constructing ethnographic analogies and models in the study of the prehistory and contact history of indigenous peoples (McBryde 1979). Although ethnohistoric accounts have been recognised as a valuable source for providing insights into the lifeways of prehistoric people, their application can be problematical. These problems relate primarily to the nature of the sources, their accuracy and validity.

The major water sources such as the Lachlan River and to a lesser degree the Boorowa River valley appeared to be the focus of occupation by the local Wiradjuri groups. Early records from around 1810-30 seem to support the view that these river systems were rich foci for occupation. Typically, as with such landscapes in Australia, these were also the prime focus for European occupation when they entered an area. A similar story can be told for most of the large river systems: the thin, rich but fragile ecosystem was able to support a large and healthy Aboriginal population. Unfortunately such eco-tones tend to be marginal, only a few hundred metres away from the river corridors, thus making them less than ideal when two cultures clash. Certainly, the clash of cultures occurred abruptly and with some violence in this region.

The evidence for occupation away from the major rivers is sparse and tends to come mostly from wide ranging archaeological surveys (Pearson 1981) and models of environmental determinism (Kelton 2000: 11). The supposed pattern based on these sources is occupation of the rivers and major waterways during the hotter drier months and a fanning out of people when rains filled smaller creeks and soaks. There is nothing to suggest this model has any major flaws, other than it requires more research to test its viability.

According to the sources (White 1986), the people living in the Study Area came from two language or 'tribal' groups of people, the Wiradjuri and the Onerwal (with various spelling and pronunciations). White's analysis has shown tribal delineations between these groups to be more flexible than is

implied by a strict 'boundary', and that this Study Area was inhabited by both language groups (White 1986).

The two language groups interacted socially and ceremonially as well as commercially (White and Cane 1986); the nature of this interaction was reciprocal exchange between the two groups. Marriage partners, material resources, hunting rights, rights to water sources, and kin for initiation ceremonies and 'pay back' killings all formed part of this exchange system. Therefore contact between the Onerwal and Wiradjuri would have been frequent and considerable (White and Cane 1986).

This period of occupation by Aboriginal people has left a legacy of archaeological sites in the region including open campsites, grinding grooves, art sites, 'bora' rings, burial grounds, scarred trees, and ceremonial grounds.

With the arrival of European people into the region came dramatic disruption to the social and political structure of the Wiradjuri and the Onerwal. Eventually, the Aboriginal people were moved by the government from their traditional lands elsewhere. This culminated in the 1880's with the formation of the Aborigines Protection Board (Read 1988). With the development of government strategies for "management of the Aboriginal problem" came the development of managed mission stations and unmanaged stations or reserves, as well as a string of unmanaged Aboriginal fringe camps which arose near European towns and settlements. The nearest reserves to the Study Area were at Flakeney Creek (also known as Blakney Creek) to the south-east of Boorowa ,at *Edgerton* east of Yass and at Hollywood Mission in Yass town (Kelton 2000: 12; Kabaila 1998:30).

5.0 ARCHAEOLOGICAL BACKGROUND

In NSW the earliest dated evidence of occupation is from the Willandra Lakes. This region of south west NSW has been shown to have been occupied since at least 30 000 years ago (Mulvaney and Kamminga 1999:117). Sites in south eastern Australia have revealed scientifically dated occupation from 20 000 years ago.

Flood's excavation of the Birrigai rock shelter, situated in the northern fringes of the Southern Highlands, provided the first substantive evidence for Pleistocene occupation of the region, and remains the oldest known site. Three relatively distinct phases of occupation of the shelter were noted:

Occupation commences at around 21000 BP with a low intensity of occupation continuing through to 3000 BP. At around 3000 BP occupation intensity increases dramatically, and continues to increase through till approximately 100 BP.

In southern Australia at the end of the Last Glacial Maximum the climate was generally cold and dry. Average daily temperatures inland are estimated to have been 6-10 C. The vegetation became characterised by grass and shrub lands (Mulvaney and Kamminga 1999:115-116). Based on the evidence for occupation of south eastern Australia it is possible to conclude that the Yass region was being occupied and exploited from at least the end of the Pleistocene period.

The AHIMS register search for the locality Bookham: Eastings 650000-660000; Northings 6151400-6141400 shows a total of 19 Aboriginal objects and Aboriginal places in the 100 square kilometre area. These sites on the register are comprised of two isolated finds with the remainder being open sites. Only one of these sites, an open camp site (Site ID 51-1-0042) Bogo Quarry 1, recorded by Saunders is located in the Study Area. This site is located outside of the proposed expansion area of the quarry (see Figure 2).

The identified Site 51-1-004 (Bogo Quarry 1) is an open artefact scatter located on basal slopes approximately 400-500 metres south west from Stony Creek. Artefacts were scattered over an area of 130 x 50m and a total of forty artefacts were recorded. Raw materials include silcrete, chert, volcanics and quartz, comprised of flakes, flaked pieces and blades (Navin Officer 1995).

A number of archaeological surveys have been carried out in the wider region surrounding this Study Area, and these can provide useful information regarding site patterning in the landscape. By and large these have been small-scale linear surveys less than 200 metre wide (Barber 1999; Bonhomme 1986, 1987; Dallas 1985; Hughes and Koettig 1983; Kelton 1997, 2000; Koettig 1986; Koettig and Silcox 1983; Kuskie 1992; Mills 1995; Nicholson 1990; Packard and Hughes 1983; Paton 1993; Silcox and Koettig 1985; Witter 1980, 1981, 1983). Two large scale regional studies have been done by Pearson (1981) and Witter (1992) for the general region.

Even though the range of environmental zones sampled by the majority of these surveys has been necessarily limited, the results when assessed at a general level show a distinct patterning in site location, with most sites being recorded on creek banks or high ground adjacent to permanent or semi-permanent water sources.

In Koettig's (1983) survey of the Goulburn area 50% of the sites occurred on slopes; in the Cullerin Range all of the sites were situated on ridges adjacent to wetlands (Dallas 1985; Koettig and Silcox 1985; Koettig 1986; Mills 1995); between Bowning and Yass (Barber 1999; Kelton 2000; Koettig 1986; Paton 1993) the sites were located on spurs and ridges as were 78% of sites along the Yass By-Pass routes (Koettig and Silcox 1983; Silcox and Koettig 1985). Bonhomme's (1987) survey around Young recorded 98% of sites on slopes adjacent to permanent or semi-permanent water. Similarly the Murrumburrah-Yass and Dalton surveys recorded most sites along water courses.

The majority of these sites have been open campsites, surface scatters of artefacts with little or no sub-surface material and stratigraphy. The largest

sites with stratigraphy have been found associated with sandy deposits along larger water courses for example along the Goulburn River (Koettig 1983) and Lachlan River (Hughes and Koettig 1983).

Other sites recorded on the NPWS Site Register for this wide area include scarred and carved trees, bora rings and ceremonial grounds, stone arrangements, water holes, wells and burials.

However, by far the most frequently occurring site type is the open scatter. Most of these are small sites containing less than 50 artefacts (often less than 10), with medium sized sites of up to 300 artefacts occurring intermittently. Very occasionally large sites with several hundred artefacts occur. The artefacts at these sites are usually manufactured from quartz, silcrete and fine-grained siliceous and volcanic rock. Sites in the Dalton, Yass, Bowning and Goulburn studies reported quartz as the predominant raw material. Silcretes and fine-grained siliceous material were reported at Yass and Cullerin Range, and fine-grained volcanics at Yass and Young.

The artefact types located during these surveys included flakes, flaked pieces, amorphous flakes (all sites), backed blades and hammer-stones (Yass), an axe (Yass), a ground piece of quartzite (Yass). Several sites had bipolar artefacts. Bipolar technology is thought to have been employed more extensively in the past 1500 years, and the presence of these 'types' may be useful for dating sites.

6.0 ARCHAEOLOGICAL SENSITIVITY / PREDICTIVE MODELLING

The ethno-historic records and the archaeological studies for the region provide a fairly clear indication that sites are predominantly located on certain landscapes: typically the most common site type (artefact scatters) are found near creeks, on locally raised, flat terrain. The three areas of medium archaeological sensitivity are located near the ephemeral creek which passes through the Study Area (see Figure 4).

Isolated artefacts may also be found across the landscape, but particularly on the slightly raised ground.

Deeper, stratified sites are unlikely to be present as the soils in the area are skeletal and in fact bedrock can be seen in many areas. For this reason, burials are also unlikely to be present, though it is difficult to accurately predict the location of such sites.

6.1 Predictions for Site Type and Location at Bogo

Based on the above analysis, the archaeological sensitivity of the Study Area has been mapped on Figure 4. In summary the landscape has been divided into three zones as follows:

Unit 1: Sensitivity High – This unit includes the lower slopes of the Study Area through which an ephemeral watercourse passes. The previously recorded site Bogo 1 (Site 51-1-0042) lies within this unit. The elevated area extends to Stony Creek.

Unit 2: Sensitivity Medium – This unit includes two areas. These areas are located close to an ephemeral creek that runs through the Study Area. Both of these areas are slightly elevated. Archaeological material is likely to be found close to the water course on elevated flat terrain. Such sites are likely to be surface scatters of artefacts, the most typical type for the region.

Unit 3: Sensitivity Low – This unit includes the very steep waterless hillsides and hilltop. Sites are not usually found on such steep slopes away from water. This unit may contain occasional isolated finds and very small artefact scatters in localised areas. It is unlikely that any large sites will be present or that any sub-surface deposits will be encountered in the thin soils. Scarred trees may be present where larger isolated original trees have not been removed.

Unit 4: Sensitivity Nil - This unit includes the quarry pit. All surface sediments from this area has been removed. It is extremely unlikely that any archaeological materials will found in such a locality.

Figure 4 Sensitivity map for Bogo Quarry

7.0 CONDITIONS OF VISIBILITY AND COVERAGE

Clearly conditions of ground surface visibility will affect how many sites are found. Visibility may also skew the results of a survey. If, for example, conditions of ground surface visibility vary dramatically between environmental zones, then this in turn will be reflected in the numbers of sites reported for each zone. Zones with the best visibility may be reported as having the most sites (because they are visible on the ground), while another zone with less visibility, but perhaps more sites, will be reported as having very little occupation. It is important therefore to consider the nature of ground surface visibility as part of any archaeological investigation.

The main constraint encountered during the course of this survey was ground surface visibility. Although, the landscape has been subjected to tree clearance, current grass growth patterns limit today's surface visibility in much of the Study Area. Surface visibility at the time of the survey ranged from 5 to 10 percent coverage across most of the Study Area. The exception was at the known site DECC 51-1-0042 that was almost totally clear of vegetation.

Coverage analysis describes the actual ground that was visible and traversed during a survey. This is an important variable to consider when assessing survey results and planning effective and responsible site management.

Coverage analysis for the present study has been calculated using Witter's (1982) model. Witter and Hughes (1983) constructed a model based on the concept of actual area surveyed for any study, given that conditions of ground surface visibility and sedimentation etc. will vary from area to area. For the present study the calculation divides the Study Area into two units, based on differences in visibility between the two areas. The bulk of the Study Area falls into Area 1, which had visibility of 5-10 percent. Area 2 is DECC Site 51-1-0042 which had ground surface visibility of over 90 percent.

It is important to note, however, that although variables such as (v) visibility are treated as a single number, this number actually represents a range (see details of the formula below).

Area 1 – is 600 metres long by 560 metres and was surveyed by 4 people. The total distance walked by the four was 3900 metres. Assuming each individual closely inspected a transect that was five metres wide the total square metres surveyed would then be 195 000 (ie 3900m x 5m = 195 000m^2 which is D1).

Witter has calculated actual areas surveyed (D2) using the following formula: (D1) x (s) x (v) x (b) = (D2) where:

***D1* = area in metres square surveyed.** In Area 1 this equals 195 000 m^2

***s* = index of sedimentation**
0.1 = aggrading surface
0.5 = stable or uncertain
1.0 = degrading surface *(applies)*
***v* = index of visibility**
0.1 = negligible visibility
0.2 = 10% visibility *(applies)*
0.5 = 20% visibility
1.0 = 30% and greater visibility
***b* = background effects (i.e. the presence of natural quartz)**
0.1 = massive amounts of natural quartz
0.5 = small amounts of natural quartz
0.9 = minimal amount of natural quartz *(applies)*
1.0 = no natural quartz

D2 = distance in square metres of effective coverage.
195000(D1) × 1.0 (s) × 0.2 (v) × 0.9 (b) = 351 000 square metres (D2)

Area 1 measures approximately 600m × 560m = 336 000 square metres. Therefore, the above calculations indicate effective survey coverage to be approximately 58 % (195000/336000 × 100 = 58).

Area 2- DECC site 51-1-0042
Area 2 is the known site which was clear of grass and vegetation. It covers approximately 25 x 30m a total of 750 square metres. Three transects were conducted and each individual closely inspected a 1 metre transect. The actual area surveyed of Area 2 is calculated as follows:

(D1) x (s) x (v) x (b) = (D2) where:

***D1* = area in metres square surveyed**. The Study Area is 30m long and was surveyed by 3 individuals closely inspecting a 1 metre transect. Therefore the area surveyed (D1) can be calculated as 30 × 3 × 1 = 90 square metres.

***s* = index of sedimentation**
0.1 = aggrading surface
0.5 = stable or uncertain
1.0 = degrading surface *(applies)*
***v* = index of visibility**
0.1 = negligible visibility
0.2 = 10% visibility
0.5 = 20% visibility
1.0 = 30% and greater visibility *(applies)*
***b* = background effects (i.e. the presence of natural quartz)**
0.1 = massive amounts of natural quartz
0.5 = small amounts of natural quartz
0.9 = minimal amount of natural quartz *(applies)*
1.0 = no natural quartz
***D2* = distance in square metres of effective coverage.**

90 (D1) × 1.0 (s) × 1.0 (v) × 0.9 (b) = 81square metres (D2)

The total of Area 2 measures approximately 25m × 30m = 750 square metres. Therefore, the above calculations indicate effective survey coverage to be approximately 8.5 % (90/750 × 100).

The effective survey coverage for Area 2- the known DECC site 51-1-0042 – is 12 %

Figure 5: Example of Conditions of Ground Surface Visibility in Area 1

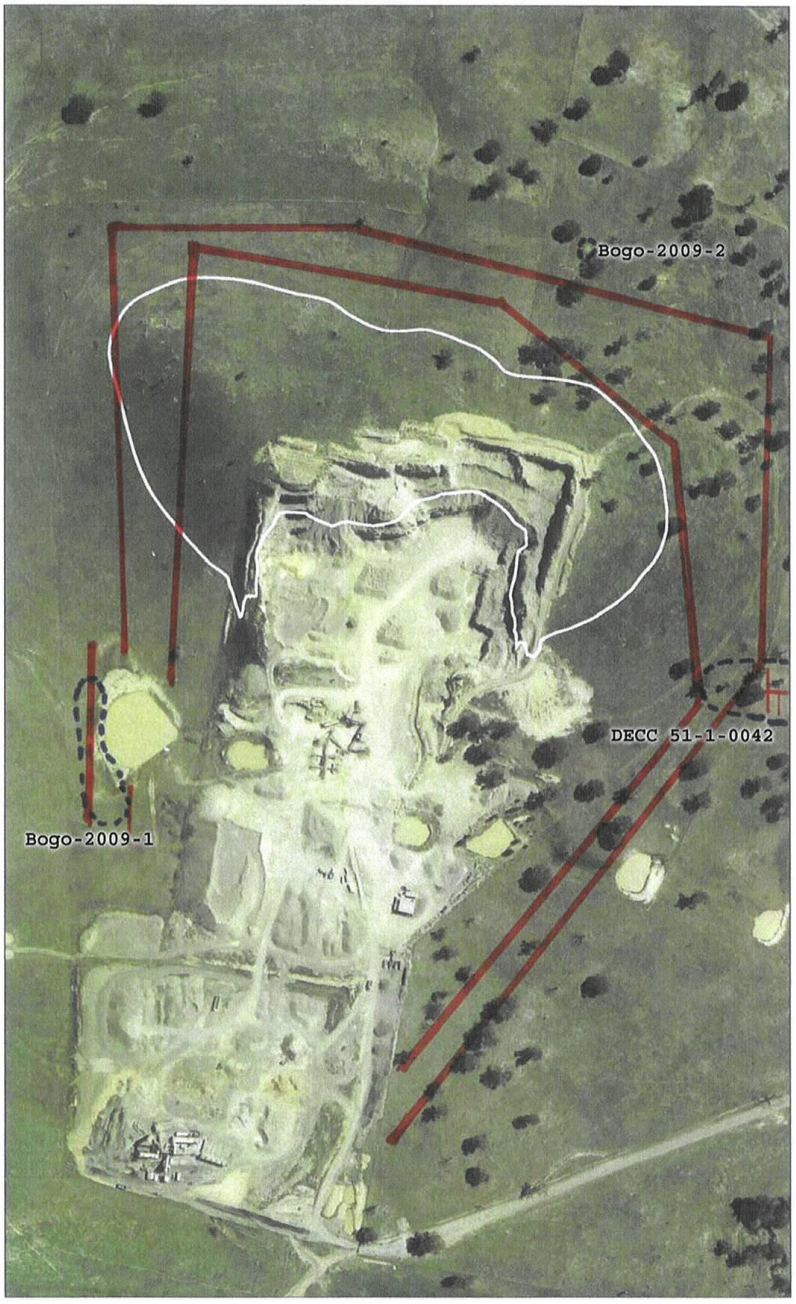

Figure 6 Location of three sites and transects at the Bogo Quarry

8.0 RESULTS AND DISCUSSION

A total of three sites were identified during this survey. The sites are as follows:

Site Name: Bogo 2009 -1.

Grid Reference: 55H E655315 N6146263
Site Type: artefact scatter
Environmental Setting: the site is located on the area adjacent to the dam on the southern side of the existing quarry in the medium sensitivity landscape area.
Visibility: 5-10%
Site Contents: This site comprises seven artefacts

Find	Grid Ref	Type	Material
Bg 1	655348 6146272	Flake L 38x25x R 25x24	silcrete
Bg 2	655355 6146266	Flake	silcrete
Bg 3	655350 6146260	Core 80x45	Silcrete
Bg 4	655315 6146263	Flake piece 25x34	Silcrete
Bg 5	655293 6146256	Flake 50x55	Silcrete
Bg 6	655280 6146257	Flake piece 38x24	silcrete
Bg 7	655273 6146267	Flake 45x32	Silcrete light grey

Site Condition: The site is located on the bank and adjacent to an existing dam. The area is mostly stable and the area is not impacted by the proposed extension to the quarry.

Significance Assessment: there is a potential for subsurface material however the area is highly disturbed by the construction of the dam and is not being impacted by the quarry extension.

Management Recommendation: It is understood that there are no immediate plans for development, construction or disturbance in this area or the immediate vicinity as part of the proposed extension to the quarry. Therefore, it is recommended that no action be taken at present. The developer should, however, be aware of the presence of the site, and their legal obligations, and avoid the area.

Cultural Heritage Assessment ***April 2009***
Bogo Quarry via Bookham
A report for R.W.Corkery & Co Pty. Limited

Figure 7 Bogo-2009-1 , Wendy Monaghan pictured.

Site Name: Bogo 2009-2.

Grid Reference: E654918 N6146639

Site Type: Artefact Scatter

Visibility: 5-10%

Site Contents: two artefacts

Find	Grid Reference	Artefact Type	Raw Material
Bg 8	654918 6146639	2 flake pieces 30x20 45 x40	Hornfels

Site Condition: this site is located on the western side of the existing quarry and falls outside the proposed extension to the quarry.

Significance Assessment: these two artefacts were identified in a small area of higher visibility (20-30%) on a steep slope with shallow soils. It is unlikely there are sub surface artefacts.

Management Recommendations: Given that the site lies outside the impact zone of the proposed extension to the quarry, no action is recommended. Nevertheless, the developer should be aware of the location of the site, avoid the area, and be cognisant of their legal obligations.

Cultural Heritage Assessment ***April 2009***
Bogo Quarry via Bookham
A report for R.W.Corkery & Co Pty. Limited

Site Name: DECC Site 51-1-0042

Grid Reference: E655228 N6146803

Site Type: Artefact Scatter

Visibility: ranging from 20% for finds bg9-bg12 to 90% in DECC 51-1-0042

Site Content: more than 60 artefacts- a sample of the artefacts are given below

Find	Grid Reference	Artefact Type	Raw Material
Bg 9	655299 6146936	Flake piece 20 x 22	Hornfels
Bg 10	655341 6146871	Flake piece 33 x 25	Silcrete
Bg 11	655393 6146839	Flake poss retouch 22 x 21	Silcrete
Bg 12	655360 6146843	Flake 44 x 33	Silcrete grey
Bogo 1 HD 1	Within the known site Bogo 1 sample	flaked piece	Silcrete
Bogo 1 HD 2	Within the known site Bogo 1 sample	Flake	Quartz
Bogo 1 HD 3	Within the known site Bogo 1 sample	Fake	White silcrete

Site Condition: the site is located approximately 400-500 metres south west of Stony Creek and 150-200 metres west of the ephemeral creek and dam. The area is currently clear of vegetation and exposed. It is possible that the site extends into the vegetated area which runs along a rise towards Stony Creek. The site lies outside the proposed quarry extension activities.

Significance Assessment: the site is assessed as a medium sized artefact scatter of moderate regional significance due to its size and density of artefacts. As noted in Section 6.0 artefact scatters are the most common site type in the region.

Management Recommendations:
1. Site 51-1-0042 should be protected from any impact of the quarrying processes. This should be achieved through erection of a fence, with a 75 metre buffer zone between the fence and the quarry.

2. Representatives from the nominated Indigenous groups (one from each) should be present during construction of the fence to ensure the correct placement and monitoring of earthworks for fence construction.

Figure 8 DECC site 51-1-0042 looking north.

8.1 Results compared to the Predictive Model and Sensitivity

As predicted in the model for the Study Area, the steeper slopes were likely to contain isolated finds or small artefact scatters. Bogo 2009-2 (a small artefact scatter) was identified within the low sensitivity area Unit 3 -Low.

The Unit 2 areas of medium density yielded a larger artefact scatter Bogo 2009 -1 near the creek line which is consistent with the model of slightly elevated areas near water being utilised.

The high sensitivity area Unit 1 contained the known site DECC 51-1-0042 plus a possible extension of this site on the rise running towards Stony Creek. This area is an elevated rise running to a creek.

Unit 4 the area that has been extensively quarries was not surveyed due to the operation of heavy machinery and the removal of the topsoil.

These results agree with the predictive model as discussed in Section 6.

9.0 SIGNIFICANCE ASSESSMENT

The following provides an outline of the processes used to assess the significance of any cultural heritage sites that were identified during the course of the assessment.

Assessment Guidelines
There are several different ways of defining types of significance, and many practitioners have developed their own system of significance assessment. However, as Sullivan and Pearson (1995) point out, there seems to be a general advantage in using a set of criteria which is already widely accepted. In Australia cultural significance is usually assessed against the Burra Charter guidelines and the Australian Heritage Commission guidelines (ICOMOS 1988, 1999, Lennon and Mathews 1996).

The Burra Charter
Under the guidelines of the Burra Charter 'cultural significance' refers to the 'aesthetic, historic, scientific, social or spiritual value for past, present or future generations' of a 'place' (ICOMOS 1999:2). The guidelines to the Burra Charter comment:

> *"Although there are a variety of adjectives used in definitions of cultural significance in Australia, the adjectives 'aesthetic', 'historic', 'scientific' and 'social'... can encompass all other values".*

The following provides the descriptions given for each of these terms.

Aesthetic Value
Aesthetic value includes aspects of sensory perception for which criteria can and should be stated. Such criteria may include consideration of the form, scale, colour, texture and materials of the fabric; the smells and sounds associated with the place and its use (Marquis-Kyle & Walker 1992).

Historic Value
A place may have historic value because it has influenced, or has been influenced by, an historic figure, event, phase or activity. It may also have historic value as the site of an important event. For any given place the significance will be greater where evidence of the association or event survives in situ, or where the settings are substantially intact, than where it has been changed or evidence does not survive. However, some events or associations may be so important that the place retains significance regardless of subsequent treatment (Marquis-Kyle & Walker 1992).

Scientific Value
The scientific or research value of a place will depend upon the importance of the data involved or its rarity, quality or representativeness and on the degree to which the place may contribute further substantial information.

A site or a resource is said to be scientifically significant when its further study may be expected to help current research questions. That is, scientific significance is defined as research potential (Marquis-Kyle & Walker 1992).

Social Value
Social values embraces the qualities for which a place has become a focus of spiritual, political, national or other cultural sentiment to a majority or minority group (Marquis-Kyle & Walker 1992).

Significance Criteria Relevant To Indigenous Sites
Indigenous heritage sites and places may have educational, tourism and other values to groups in society. However, their two principal values are likely to be in terms of their cultural / social significance to Aboriginal people and their scientific / archaeological significance. These are the two criteria that are commonly used in establishing the significance of Aboriginal sites. The following provides an explanation of these criteria.

Aboriginal Cultural / Social Significance
This relates to the value placed upon a site or suite of sites by the local or regional Aboriginal community. The identification and assessment of those sites that are significant to Aboriginal people is a matter for Aboriginal people. This assessment can only be made by the appropriate Aboriginal representatives of the relevant communities.

Scientific (Archaeological) Significance
Archaeological significance values (or scientific values) generally are assessed on the potential of a site or place to generate knowledge through archaeological research or knowledge. Bowdler (1984) states that the scientific significance should be assessed according to timely and specific research questions (research potential) and site representativeness.

Research potential entails the potential of a site or suite of sites for scientific research and excavation. This is measured in terms of a site's ability to provide information on aspects of Aboriginal culture. In this respect, the contents of a site and their state of preservation are important considerations.

Representativeness takes account of how common a site type is (Bowdler 1984). That is, it allows sites to be evaluated with reference to the known archaeological record within the given region. The primary goal of cultural resource management is to afford the greatest protection to a representative sample of sites throughout a region. The corollary of a representative site is the notion of a rare or unique site. These sites may help to understand the patterning of more common sites in the surrounding area, and are therefore often considered of archaeological significance. The concept of a rarity cannot be easily separated from that of representativeness. If a site is determined to be rare, then it will by definition be included as part of the representative sample of that site type.

The concepts of both research potential and representativeness are ever changing variables. As research interests shift and archaeological methods

and techniques change, then the criteria for assessing site significance are also re-evaluated. As a consequence, the sample of site types which are used to assess site significance must be large enough to account for the change in these variables.

9.1 Significance rating for the sites identified during this study.

In line with the above guidelines the sites identified at Bogo quarry have been assessed as low to moderate. Two of the artefact scatters (Bogo-2009-1 and Bogo-2009-2) are located in shallow soils with low potential for sub surface deposits and there are no immediate plans for development or activity on the sites. The known site and its potential extension along the rise while being a medium sized scatter is one of the most common site types in the area and therefore is rated medium significance. This site is also outside of the proposed extension and works to the quarry.

Overall the sites identified represent a tangible link to the continued use and occupation of the area by the Aboriginal people and as such often have a high cultural significance to contemporary Traditional Owners.

10.0 RECOMMENDATIONS

Based on the above findings and in accordance with the legal requirements of the NSW DECC, a series of specific management recommendations have been established for the sites identified within the Study Area. The recommendations are aimed at minimising the impact of proposed developments on any potential cultural resources present within the surveyed area.

Heritage management options and recommendations provided in this report are made on the following bases:

- Consultation with representatives of the Indigenous groups;
- The legal and procedural requirements of NSW DECC;
- The results of the investigation as documented in this report; and
- Background research into the extant archaeological and historic record for the Study Area and its surrounding regions.

The recommendations are:

1) Site 51-1-0042 should be protected from any impact of the quarrying processes. This should be achieved through erection of a fence, with a 75 metre buffer zone between the fence and the quarry.

2) Representatives from the Buru Ngunawal Aboriginal Corporation and the Onerwal Local Aboriginal Land Council (one from each) should be present during construction of the fence to ensure the correct placement the fence.

3) Copies of the archaeological report should be supplied to:
   - NSW DECC;
   - Buru Ngunawal Aboriginal Corporation
   - The Onerwal Local Aboriginal Land Council
   - R.W. Corkery & Co Pty. Limited
   - Yass Valley Shire Council.

4) Although Sites Bogo 2009-1 and Bogo 2009-2 will not be directly affected by the development, the proponent should note their locations, avoid these areas, and remain cognisant of the legal obligations pertaining to these sites.

5) If any further Aboriginal objects are uncovered at any time during the course of the proposed development, work at the area should cease and proponent must contact the NSW DECC for advice. It is an offence under the Acts to disturb or destroy Aboriginal relics without permission. The proponent should also make all its staff and contractors aware of their responsibilities in this regard under the NSW NPWS Act 1974.

11.0 REFERENCES CITED

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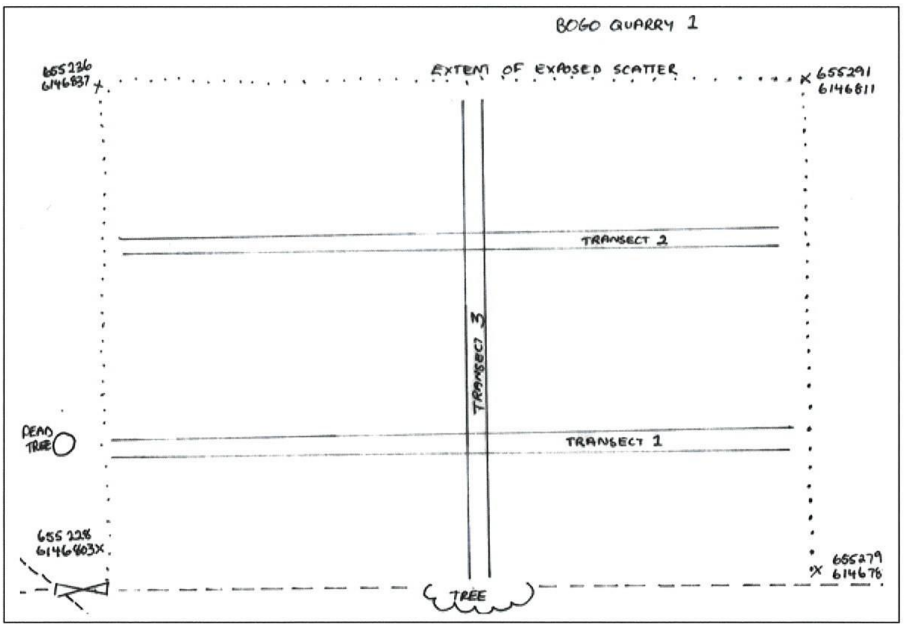
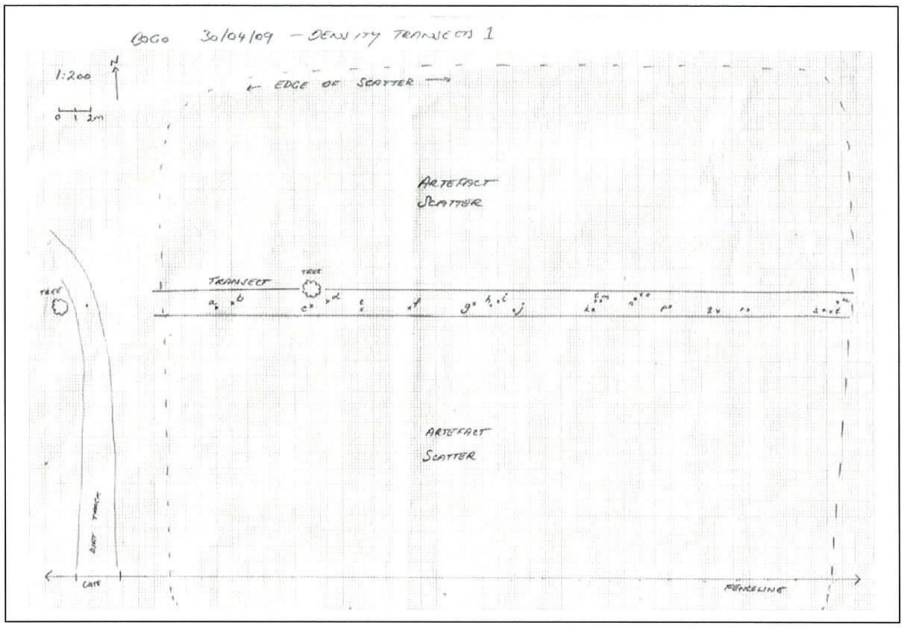
12.0 APPENDIX 1

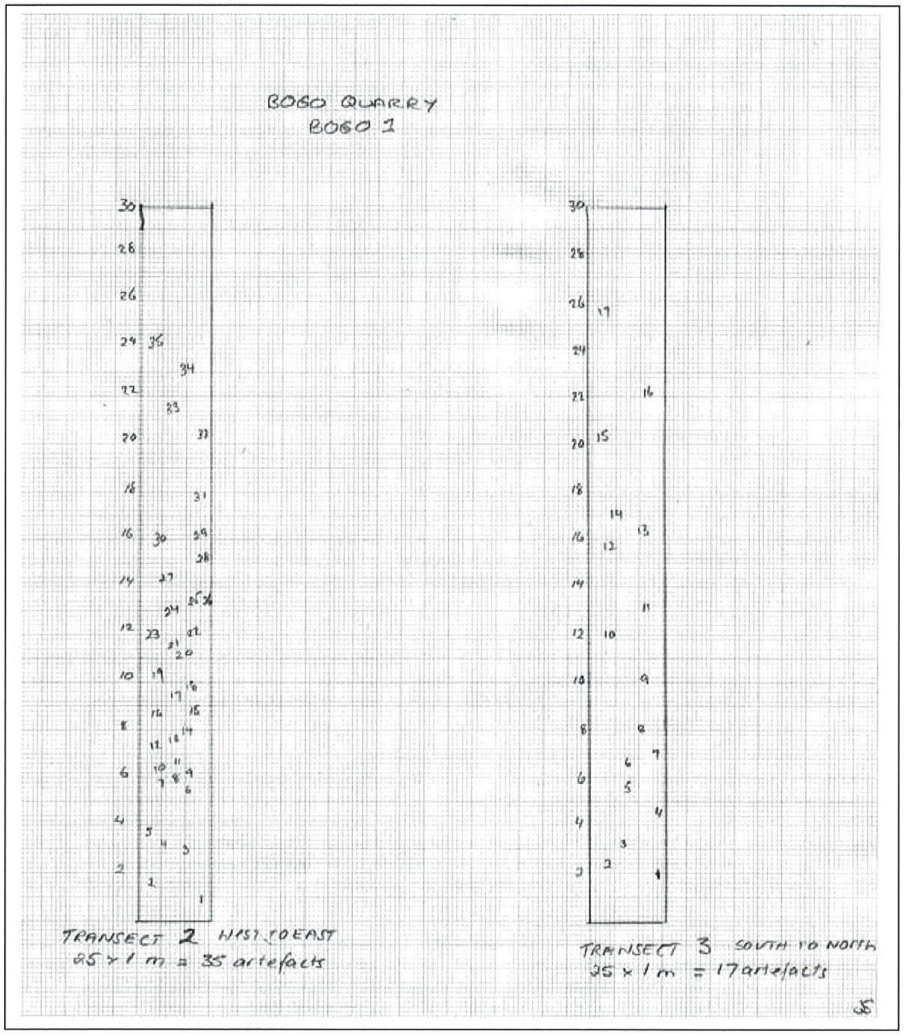
1.1 Details of transects during survey shown in red.



1.2 Location of transects across 51-1-0042.

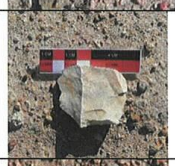


1.3 Transect 3 across Bogo 1 known site.(Rose O'Sullivan)



1.4 Density survey transects Bogo 1.

13.0 APPENDIX 2

Find	Grid Ref	Type	Material	Photo
Bg 1	655348 6146272	Flake L 38x25x R 25x24	silcrete	
Bg 2	655355 6146266	Flake	silcrete	None available
Bg 3	655350 6146260	Core 80x45	Silcrete	
Bg 4	655315 6146263	Flake piece 25x34	Silcrete	
Bg 5	655293 6146256	Flake 50x55	Silcrete	
Bg 6	655280 6146257	Flake piece 38x24	silcrete	
Bg 7	655273 6146267	Flake	Silcrete light grey	
Bg 8	654918 6146639	2 flake pieces L 30x20 R 45 x40	Hornfels	
Bg 9	655299 6146936	Flake piece 20 x 22	Hornfels?	
Bg 10	655341 6146871	Flake piece 33 x 25	Silcrete	None available

Bg 11	655393 6146839	Flake poss retouch 22 x 21	Silcrete	
Bg 12	655360 6146843	Flake 44 x 33	Silcrete grey	
Bogo 1 HD 1	Within the known site Bogo 1 sample	flaked piece	Silcrete	
Bogo 1 HD 2	Within the known site Bogo 1 sample	Flake	Quartz	
Bogo 1 HD 3	Within the known site Bogo 1 sample	Fake	White silcrete	

14.0 APPENDIX 3

BURU NGUNAWAL ABORIGINAL CORPORATION

ABN : 24 059 704 833

31 July 2009

CHMA Pty Ltd
PO Box 9463
DEAKIN ACT 2600

Attention: Ms Jenni Streatfield

RESPONSE - BOGO QUARRY REPORT

This organisation participated in the Aboriginal cultural heritage survey assessment at the Bogo Quarry via Bookham, NSW for evidence of occupation by the local Ngunawal people. As you may appreciate any planned work to be undertaken in the area that lies within our boundaries will impact on our cultural heritage. We therefore acknowledge and appreciate that the proper protocol of advising and consulting with us as the Traditional Carers has occurred.

On the 30th of April 2009 the field survey work was carried out cooperatively by our representative and Ms Jenni Streatfield archaeologist from CHMA Pty Ltd.

During the field work artefacts/sites were uncovered and recorded. We have read the Draft report containing recommendations as listed below which are based on the findings:

"10.0 RECOMMENDATIONS

1. *Site 51-1-0042 should be protected from any impact of the quarrying processes. This should be achieved through erection of a fence, with a 75 metre buffer zone between the fence and the quarry.*
2. *Representatives from the Buru Ngunawal Aboriginal Corporation and the Onerwal Local Aboriginal Land Council (one from each) should be present during construction of the fence to ensure the correct placement the fence.*
3. *Copies of the archaeological report should be supplied to:*
   - *NSW DECC;*
   - *Buru Ngunawal Aboriginal Corporation*
   - *The Onerwal Local Aboriginal Land Council • R.W. Corkery & Co Pty. Limited*
   - *Yass Valley Shire Council.*
4. *Although Sites Bogo 2009-1 and Bogo 2009-2 will not be directly affected by the development, the proponent should note their locations, avoid these areas, and remain cognisant of the legal obligations pertaining to these sites.*
5. *If any further Aboriginal objects are uncovered at any time during the course of the proposed development, work at the area should cease and proponent must contact the NSW DECC for advice. It is an offence under the Acts to disturb or destroy Aboriginal relics without permission. The proponent should also make all its staff and contractors aware of their responsibilities in this regard under the NSW NPWS Act 1974."*

We therefore support the recommendations as proposed by CHMA Pty Ltd.

We would also wish to indicate that the country that this area is situated on is known as Ngunawal and that Onerwal is a European interpretation of the Ngunawal tribal group. There are also some misconceptions about tribal groupings due to incorrect advice provided by Aboriginal people that are not from this country who are of Yuin or Wiradjuri descent.

We wish to reinforce the recommendations in relation to points 1 and 4 to ensure that no damage "by accident" will occur. The simple measure of erecting visible fencing around these areas and informing construction workers of no go zones are imperative. We fully appreciate any actions that

will be forthcoming to implement arrangements as part of the process to protect our cultural heritage for posterity.

Accordingly we wish to state that we consider all Aboriginal sites to be of significance to us as the Traditional Carers for this area. We also consider all sites to be of value to us socially, culturally and spiritually due to the occupation and use of these areas by our ancestors.

I would propose that if there are to be any changes made to the recommendations that may impact on the site that we be contacted immediately.

If you have any queries in relation to this matter please contact me.

Yours faithfully

Wally Bell
Chair

BURU NGUNAWAL ABORIGINAL CORPORATION
ABN : 24 059 704 833

15 September 2015

Robert W. Corkery
Principal/Managing Director
PO Box 239
BROOKLYN NSW 2083

724_Application for ongoing Bogo Quarry Operations

Sorry for the delay in providing a response to your email of 20 August 2015, but prior commitments and health problems prevailed.

Buru Ngunawal Aboriginal Corporation (BNAC) wish to state that we stand by the agreements as stated in our previous correspondence of 31 July 2009 in relation to this project.

Just to reiterate the context of that correspondence the need to reinforce the recommendations in relation to points 1 and 4 to ensure that no damage "by accident" will occur. The simple measure of erecting visible fencing around these areas and informing construction workers of no go zones are imperative. We fully appreciate any actions that will be forthcoming to implement arrangements as part of the process to protect our cultural heritage for posterity.

Accordingly we wish to state that we consider all Aboriginal sites to be of significance to us as the Traditional Carers for this area. We also consider all sites to be of value to us socially, culturally and spiritually due to the occupation and use of these areas by our ancestors.

I would propose that if there are to be any changes made to the recommendations that may impact on the site that we be contacted immediately.

If you have any queries in relation to this matter please contact me.

Yours sincerely

Wally Bell

Onerwal Local Aboriginal Land Council
ABN: 98 164 512 188
95 Meehan St, Yass NSW 2582
PO Box 644, Yass NSW 2582
PH / Fax: 02 6226 5349

28 September 2015

Attention: Brendan Pitt
RW Corkery and Co Pty Limited
PO Box 239
Brooklyn NSW 2083

Ref: 724_Application for Ongoing Operations of Bogo Quarry

Dear Brendan

After reviewing the Bogo Quarry Cultural Heritage Assessment dated April 2009. Onerwal LALC is of the view that it is supportive of the ongoing operations and of Bogo Quarry providing all of the Recommendations 1-5 in the Cultural Heritage Assessment are adhered too.

Should you have any further questions or need any additional information please do not hesitate to contact me on 02 6226 5349.

Regards

Bradley Bell
Chief Executive Officer