Appendix C

Cultural heritage assessment

Navin Officer Pty Ltd

Southern Highlands Regional Shooting Complex

Aboriginal Cultural Heritage Assessment

November 2007

Report to GHD

Navin Officer

heritage consultants Pty Ltd

acn: 092 901 605

Number 4
Kingston Warehouse
71 Leichhardt St.
Kingston ACT 2604

ph 02 6282 9415
fx 02 6282 9416

EXECUTIVE SUMMARY

- The Department of Arts, Sport and Recreation propose to develop a regional shooting complex at the site of the existing rifle range at Hilltop in the southern highlands of NSW.

- The development works include an additional rifle range, an additional range for rifle and pistol shooting, a pistol range, a shotgun range, an indoor air range and supporting facilities and infrastructure.

- GHD commissioned a cultural heritage assessment of the augmentation works study area which included a review of relevant heritage literature and databases, Aboriginal consultation and field inspections.

- Background research indicated that no Aboriginal sites had been previously recorded as occurring in the near vicinity of the Hilltop study area.

- One Aboriginal site, a single Aboriginal stone artefact (site Hill 1), was recorded within the area that would be impacted by the proposed development works. The site is assessed as having minimal archaeological significance.

- It is concluded that there are no long–term Aboriginal cultural heritage constraints to the proposed development.

- This report recommends:

    - If possible, impact to the identified Aboriginal site Hill 1 should be avoided.

    - If impact to the Aboriginal site Hill 1 cannot be avoided then the artefact should be collected or relocated away from the area of impact. This recommendation should be included in the Statement of Commitments under a Part 3A approval.

    - No development or other activity can occur in the vicinity of Hill 1 until the appropriate planning permission has been received by the development proponent.

~ o0o ~

TABLE OF CONTENTS

1. INTRODUCTION

The Department of Arts, Sport and Recreation propose to develop a regional shooting complex at the site of the existing rifle range at Hilltop in the southern highlands of NSW. (Figure 1.1). The proposal would involve works to establish a regional recreational shooting complex incorporating the existing Hill Top Rifle Range (which would continue to operate), and include:

- An additional rifle range (500 metres by 100 metres);
- An additional range for rifle and pistol shooting (200 metres by 85 metres);
- A pistol range (50 metres by 140 metres);
- A shotgun range;
- A indoor air range (21 metres by 17 metres by 6.5 metres); and
- Supporting facilities and infrastructure, including:
  - Clubhouse;
  - Toilet facilities;
  - Access roads (designed for two wheel vehicle access) connecting to Wattle Ridge Road and between the clubhouse and ranges;
  - Diesel generator, solar panels, water supply tanks and septic system;
  - Informal (sealed) parking for 180 cars; and
  - Ponds to contain water for water quality control and fire fighting purposes.

This report documents the results of an Aboriginal cultural heritage assessment of the proposed development works. The report forms part of the environmental assessment being prepared as part of the development application process under Part 3A of the *Environmental Planning and Assessment Act 1979*. The report was commissioned by GHD.

1.1 Report Outline

This report:

- Documents consultation with local Aboriginal groups carried out in the course of the investigation;
- Describes the environmental setting of the Hilltop study area;
- Provides a background of local and regional archaeology for the study area;
- Describes the field survey strategy and results;
- Outlines the statutory obligations relevant to cultural heritage in the study area; and
- Provides recommendations based on the results of the investigation and the potential impact of the proposed development on the archaeological resource.

1.2. Aboriginal Participation

The Hilltop study area is located within the boundaries of the Illawarra Local Aboriginal Land Council (ILALC) and the area of custodial interest of the Wodi Wodi Elders Corporation, the Korewal Eloura Jerrungarugh (KEJ) Tribal Elders Aboriginal Corporation and the Gundungurra and Wadi Wadi traditional owner groups represented by the Northern Illawarra Aboriginal Collective (NIAC).

In addition to the above Aboriginal Community groups the study area lies within the registered Native Title Claim of the Gundungurra Tribal Council Aboriginal Corporation. For the cultural heritage

assessment of the study area, each of the above groups was contacted before the field survey and a representative from each group was invited to participate in the fieldwork.

Subsequently, a representative from the the Illawarra Local Aboriginal Land Council, Neville Maher, and two representatives from the Northern Illawarra Aboriginal Collective, Alan Carriage and Paul Cummins, participated in the field survey.

The Wodi Wodi Elders Group, the Korewal Eloura Jerrungarugh Tribal Elders Aboriginal Corporation and the Gundungurra Tribal Council Aboriginal Corporation did not provide a field representative. These groups were informed of the results of the field survey and copies of this report will be forwarded to the groups.

Records of Aboriginal Participation are provided in Appendix 1.

Figure 1.1 Hilltop Regional Shooting Complex study area
(Base map supplied by GHD)

2. STUDY METHODOLOGY

2.1 Literature and Database Review

A range of documentation was used in assessing archaeological knowledge for the Hilltop study area and its surrounds. This background research was used to determine if known Aboriginal sites were located within the area under investigation, to facilitate site prediction on the basis of known regional and local site patterns, and to place the area within an archaeological and heritage management context.

Aboriginal literature sources included the NSW Department of Environment and Conservation (DEC) Aboriginal Heritage Information Management System (AHIMS), associated files and catalogue of archaeological reports.

2.2 Fieldwork

Fieldwork was carried out on 24th August 2006 by a team of five people. All survey was conducted on foot and involved walking both formal and opportunistic traverses within the study area. All areas of significant ground surface visibility were surveyed. An assessment of landscape disturbance and archaeological sensitivity/potential was made for all areas.

2.3 Project Personnel

Background research, field work organisation, survey and report preparation was carried out by Lyn O'Brien. Field assistance was provided by Lindsay Smith.

2.4 Recording Parameters

The archaeological survey aimed at identifying material evidence of Aboriginal occupation as revealed by surface artefacts and areas of archaeological potential unassociated with surface artefacts. Potential recordings fall into three categories: isolated finds, sites and potential archaeological deposits.

2.4.1 Isolated finds

An isolated find is a single stone artefact, not located within a rock shelter, and which occurs without any associated evidence of Aboriginal occupation within a radius of 60 metres. Isolated finds may be indicative of:

- random loss or deliberate discard of a single artefact,
- the remnant of a now dispersed and disturbed artefact scatter,
- an otherwise obscured or sub-surface artefact scatter

Except in the case of the latter, isolated finds are considered to be constituent components of the *background scatter* present within any particular landform.

2.4.2 Background scatter

Background scatter is a term used generally by archaeologists to refer to artefacts which cannot be usefully related to a place or focus of past activity (except for the net accumulation of single artefact losses).

There is however no single concept for background discard or 'scatter', and therefore no agreed definition. The definitions in current use are based on the postulated nature of prehistoric activity, and often they are phrased in general terms and do not include quantitative criteria. Commonly agreed is that background discard occurs in the absence of 'focused' activity involving the production or discard of stone artefacts in a particular location. An example of unfocused activity is occasional isolated

discard of artefacts during travel along a route or pathway. Examples of 'focussed activity' are camping, knapping and heat -treating stone, cooking in a hearth, and processing food with stone tools. In practical terms, over a period of thousands of years an accumulation of 'unfocused' discard may result in an archaeological concentration that may be identified as a 'site'. Definitions of background discard comprising only qualitative criteria do not specify the numbers (numerical flux) or 'density' of artefacts required to discriminate site areas from background discard.

2.4.3 Sites

A site is defined as any material evidence of past Aboriginal activity that remains within a context or place which can be reliably related to that activity.

Frequently encountered site types within southeastern Australia include open artefact scatters, coastal and freshwater middens, rock shelter sites including occupation deposit and/or rock art, grinding groove sites and scarred trees. For the purposes of this section, only the methodologies used in the identification of these site types are outlined.

Most Aboriginal sites are identified by the presence of three main categories of artefacts: stone or shell artefacts situated on or in a sedimentary matrix, marks located on or in rock surfaces, and scars on trees. Artefacts situated within, or on, a sedimentary matrix in an open context are classed as a site when two or more occur no more than 60 metres away from any other constituent artefact. The 60 metre specification relates back to the definition of an isolated find (*Refer above*). In a rockshelter, a site is defined as one or more artefacts occurring within or immediately adjacent to the sheltered space. Unlike a single artefact in an open context, a rock shelter provides a probable occupational focus to the interpretation of a single artefact and can therefore be considered to be indicative of a site. An exception would be a single artefact which may have been deposited in the shelter through natural processes.

Any location containing one or more marks of Aboriginal origin on rock surfaces is classed as a site. Marks typically consist of grinding features such as grinding grooves for hatchet heads, and rock art such as engravings, drawings or paintings. The boundaries of these sites are defined according to the spatial extent of the marks, or the extent of the overhang, depending on which is most applicable to the spatial and temporal integrity of the site.

2.4.4 Potential Archaeological Deposits

A potential archaeological deposit, or PAD, is defined as any location where the potential for subsurface archaeological material is considered to be moderate or high, relative to the surrounding study area landscape. The potential for subsurface material to be present is assessed using criteria developed from the results of previous surveys and excavations relevant to the region. Where necessary, PADs can be given an indicative rating of their ‘archaeological potential’ based on a combined assessment of their potential to contain artefacts, and the potential archaeological value of the deposit.. Locations with low potential for artefacts fall below the threshold of classification. In such cases the potential incidence of artefactual material is considered to be the same as, or close to that for background scatter. Where there is moderate potential for artefacts, the predicted archaeological potential parallels the potential significance of the deposit. For deposits with high potential for artefacts, the assessed archaeological potential is weighted positively.

The boundaries of PADs are generally defined by the extent of particular micro-landforms known to have high correlations with archaeological material. A PAD may or may not be associated with surface artefacts. In the absence of artefacts, a location with potential will be recorded as a PAD. Where one or more surface artefacts occur on a sedimentary deposit, a PAD may also be identified where there is insufficient evidence to assess the nature and content of the underlying deposit. This situation is due mostly to poor ground surface visibility.

3. ENVIRONMENTAL CONTEXT

The study area is located near the village of Hilltop in the southern highlands of New South Wales approximately eleven kilometres northwest of Mittagong. Mittagong is situated at the southern end of the Sydney Basin between the upper reaches of the Nepean River and other rivers such as the Wollondilly, Nattai, Bargo and Wingecarribee. These rivers flow into the Nepean River further to the north. Topographically and geologically the area is transitional between the Cumberland Plain of the Sydney Basin, and the southern uplands.

3.1 Geology and Topography

The underlying geology of the study area comprises the Hawkesbury Sandstone of the Mittagong Formation (Herbert and Helby 1980: 256). The Hilltop study area lies within an outcrop of the Narrabean group comprises sandstone, claystone and siltstone. The Hawkesbury sandstone overlies a Triassic shale unit, the Wianamatta Group (Figure **3.1**).

The study area is characterised by relatively flat topography, being situated on a spurline that trends to the north from the Wattle Ridge Range. This spurline occupies a position between two tributaries of the Rocky Waterholes Creek. All watercourses are upper tributaries of the Nattai River. Within an Aboriginal landuse context, the water availability present at the study area would be considered to have been reliable and within half a kilometre of access at all times to either the western or eastern tributary.

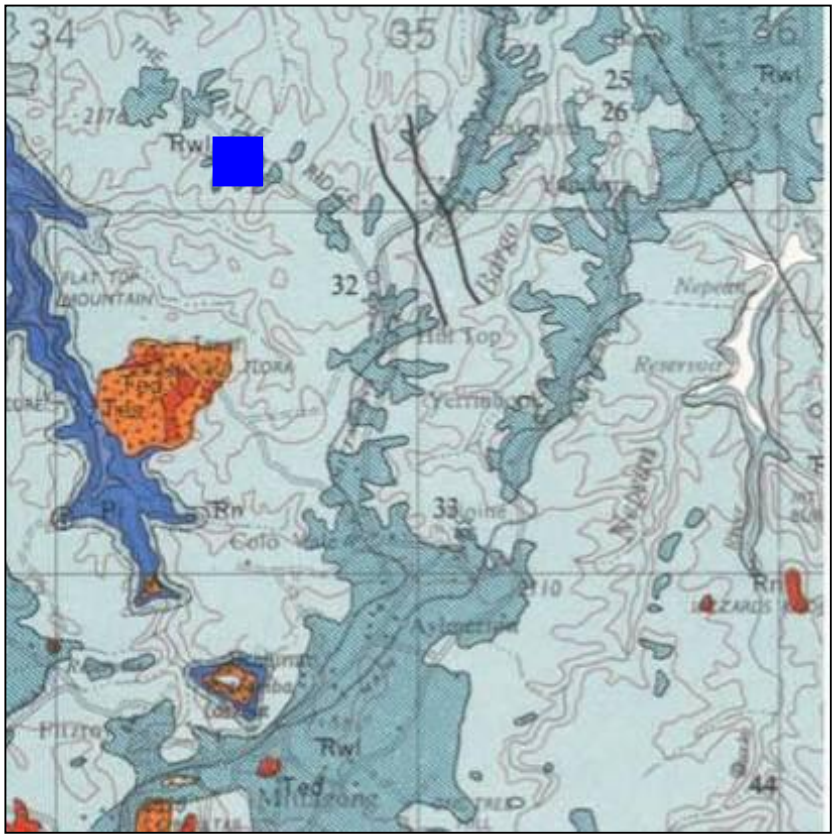

Figure 3.1. Geology map of the study area (marked in blue)
(extract from Wollongong SI 56-9 1:250 000 Geology map 1966 (Geological Survey of NSW))

The three main groups of soils that occur within the study area are:

- sandstone tableland soils;
- valley soils (sandstone derived); and
- soils associated with nutrients rich shales and igneous rocks (NPWS 2001).

Land surfaces in the study area do not appear to have been significantly transformed. These soil landscape types are unstable when disturbed. They are highly susceptible to mass movement, such as slides and rock falls, as well as wind and water erosion (Hazelton and Tille 1990). A major cause of erosion in an area of this type is fire. After a fire in which the crowns are consumed, the loose sandy soils remain bare for a long period. If rain then shortly follows a fire, there is a resulting increase in surface run-off, causing increased erosion, and a reduction in plant propagation and animal habitats.

3.2. Vegetation

The Royal Botanic Gardens carried out a series of surveys on all the Nattai reserves (Benson 1992; Benson and Howell 1994; Fisher *et al* 1995; and Keith and Benson 1988) including the study area. These surveys resulted in a classification of Sydney Sandstone Gully Forest for the vegetation within the study area (NPWS 2002). A comprehensive survey and classification of the Bargo State Conservation Area was undertaken by the NSW DEC which resulted in a classification of Sandstone Shrub Woodland for the study area (DEC 2004).

3.3 Previous land use and disturbance

Land surfaces in the study area do not appear to have been significantly transformed. The Cumbertine Parish Map of 1898 (Figure 3.2) shows blocks 121 and 124 having been previously granted to John Randall, brother of James Randall of Wattle Ridge. It is highly probable that land was cleared for agriculture and stock run on the property.

The study area was previously included in the Bargo State Conservation Area created in 1991. A large and intense fire ravaged the area in 2002 (DEC 2004), the results are still visible today with blackened tree trunks and a more open canopy than would normally be expected.

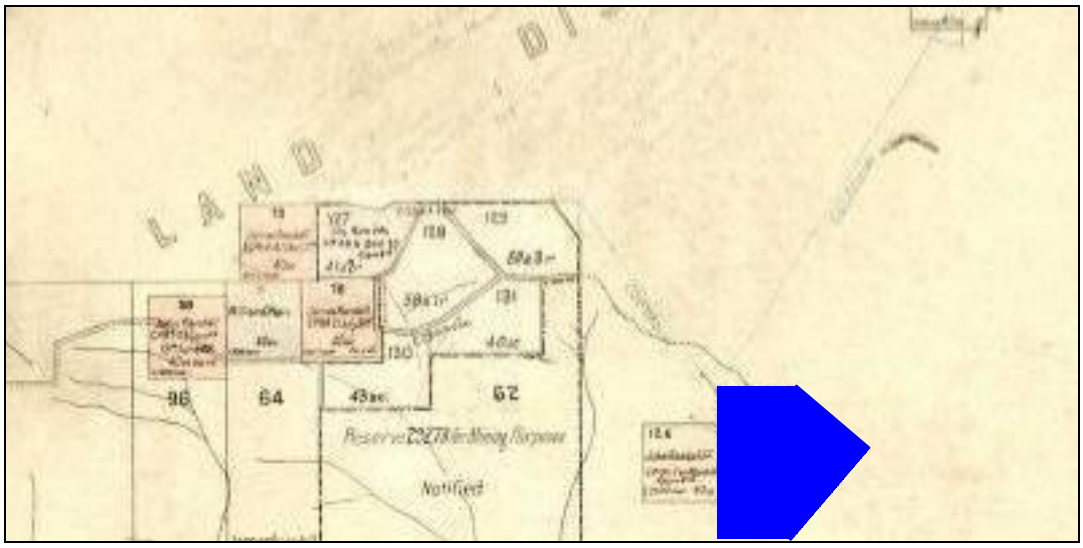

Figure 3.2 Extract from Parish of Cumbertine map, dated 1898 showing the location of the study area (solid blue line) (NSW Land and Property Information Map)

4. ARCHAEOLOGICAL CONTEXT

4.1 Ethnohistory

The exact pre-contact and contact boundaries of Aboriginal territories which existed prior to 1788 in the Sydney region are impossible to reconstruct because of the lack of reliable data available from that period of time. However, the study area is located within proximity to what is understood to be a north-south trending boundary with Gandangarra people occupying the country to the west and Wodi Wodi people living in the land to the east (Tindale 1974).

Wodi Wodi spoke Dharawal (Eades 1976). Based on the surviving data, Eades concluded that the use of Dharawal extended from the Shoalhaven District, northward across the Illawarra to Port Hacking (Eades 1976). Though possibly a separate dialect, the remaining linguistic data suggests that the term Wodiwodi is more probably a name for an Illawarra district tribal group within the Dharrawal speakers.

The tribal area of the Gandangarra is understood to have extended from Lithgow eastwards to Camden and from there, south to Goulburn (Tindale 1974). Linguistically Gandangarra was very similar to Ngunnawal, the language of their southern neighbour (Eades 1976).

It is believed that the Bunan ceremony of initiation was common to both groups (Matthews 1896). Certainly large-scale gatherings were a common feature of social activity in the southeast (McBryde 1984). Given ritual, social and familial aspects of Aboriginal life, people moved through different countries in which they had varying degrees of identity and connectedness; the archaeological ramifications of so-called tribal groupings is little understood. Rich commented in (1988a) that even if the boundaries of these tribal groupings are correctly described we do not know how far back in time they existed, or whether they are visible archaeologically.

4.2 Regional Overview

Based on dated material from sites located within the wider region, Aboriginal occupation of the southern highlands began in the Pleistocene. Aborigines have lived in the region for at least 20,000 years (Stockton and Holland 1974). Late Pleistocene occupation sites have been identified around the fringes of the Sydney Basin at Shaws Creek in the Blue Mountain foothills (Kohen 1984), at Mangrove Creek, Loggers Shelter (Attenbrow 1981), Burrill Lake (Lampert 1971), Bass Point (Bowdler 1979) and Bulee Brook 2 (Boot 1994). These sites were all located in inland contexts and occupied during the Pleistocene indicating that the coastal hinterland was occupied during this time. Boot (1996) in reference to the NSW south coast, has argued that the character of this early inland occupation was based on long-term residence rather than “fleeting forays” from the coast.

However, the majority of both open and rock shelter sites in the Southern Highlands date to within the last 3,000 years. A similar trend in occupation age occurs in dated deposits in NSW coastal sites. This has led many researchers to propose that population and occupation intensity increased from this period (Attenbrow 1987; Hughes and Lampert 1982; Kohen 1986; Koettig 1985; McDonald 1994). The increase in occupation intensity post-dates the time when sea levels stabilised after the last ice age around 5,000 years ago.

Rich (1991) has argued that sites in the Berrima and Mittagong area that have been examined archaeologically probably date within the last 3,000 years.

4.3 Hilltop/Mittagong Region

The study area is located approximately 5.5 km northwest of the small village of Hilltop which is approximately 11 km north of Mittagong. Few archaeological studies have been carried out in the vicinity of the study area and a site search of the DEC database only recorded two sites within four kilometres of the Hilltop study area. These two sites were recorded on a property near Wattle Ridge and consist of axe grinding grooves and a hatchet head which was located during ploughing.

There have been a limited number of archaeological studies that have been carried out in the Mittagong area. Those that occurred to the north of Mittagong closest to the study area are summarised below.

The nearest archaeological investigation to the Hilltop study area was conducted by Rich at Mount Flora situated approx five kilometres south of the study area. Rich (1988b & 1988c) recorded 21 sites and potential archaeological deposits at the Mount Flora area. Two of these sites were subsequently excavated (1991, 1993), one of which revealed long and repeated occupation from 7,500 years ago through to the historic period. Chert and quartz were the dominant raw materials at these two sites, unlike the pattern discerned by Koettig and Silcox (as described below). Rich (1988c) explained this pattern in terms of complex cultural rules governing the distribution of raw materials rather than a purely functional explanation based on proximity to raw material sources.

In a synthesis of research for the Mittagong area Rich (1993: 6) calculated an average site density of four sites/km^2 for the greater region. Sites types include open artefact scatters, grinding grooves, shelters with art, shelters with deposit, scarred trees and a burial. While this study is now somewhat dated, the statistics are still of relevance given the relative paucity of recent studies and site recordings in the area.

Koettig (1981) recorded a wide range of sites (24 in total) including scarred trees, open camp sites, art sites and shelters with deposit during her survey for the Hume Highway Mittagong by-pass. This was a linear transect which extended over 30 km from Alpine to Hoddles Crossing; this study area is situated to the south-west of the current study area by approximately 13 km. Three open sites near Berrima and two near Mittagong were subsequently excavated (Koettig1985). At the Berrima sites the archaeological deposit was ca. 25 cm deep. The most common raw materials recovered were silcrete and quartz, however, relative frequencies varied between sites. This dominance of silcrete and quartz appears to be related to the local availability of the raw materials. All three sites revealed low-density artefact distribution, often over large areas; however, each site was comparatively different. HCA11 contained a sparse distribution of artefacts distributed over an area which measured one kilometre in length adjacent to a creek. HCA13 was dominated by quartz artefacts manufactured by bipolar knapping methods. HCA14 contained three very dense concentrations that were distributed at apparently regular intervals across the site. Each concentration was associated with relatively large numbers of backed blades and they were interpreted as knapping floors. A hearth from this site was dated to 1780±60 BP and is stratigraphically associated with the knapping floors.

Similarly, artefacts were located to a depth of 25 cm in HCA22 at Sheepwash Creek, near Mittagong. This site was later excavated by Silcox in 1988. The dominant raw materials recovered were silcrete and quartz. At HCA22, artefact density was calculated to be 27 artefacts/m^2, however, spatial variation in density was apparent (Silcox 1988). Excavations were undertaken at HCA23 in an adjacent location. Artefact density was extremely low at this location.

A stretch of the Wingecarribee River between Berrima and the Wingecarribee Swamp was surveyed by Rich (1988c). Open artefact scatters, isolated finds, PADs and scarred trees were recorded. Low-density artefact scatters were located predominantly within 50 m of water. Based on the results of this study, Rich (1988c) argued that site distribution in the cold upland areas may have been governed by cultural preferences. She concluded that most sites will be located along minor water courses on elevated dry flat areas and more selectively along rivers where the valley is wide, or where resource areas such as swamps occur. Isolated finds, however, will be found at a wider variety of locations.

McDonald (1990) recorded an isolated find during a linear survey for a proposed 33kV transmission line. The site has not been entered on the DEC Aboriginal site database.

Barton and Dallas (1997) and Navin Officer Heritage Consultants (2000a – 2000d) did not locate any sites during surveys conducted in relation to the proposed Mittagong Sewerage Scheme. Visibility variables were low in the Navin Officer surveys. However, generally transects were located at some distance from water and accordingly, these areas were assessed to be of low archaeological potential.

Dibden (2000) conducted a survey of ca. 5.5 ha adjacent to the upper reaches of Nattai Creek at which time an artefact scatter was located with artefacts distributed on either side of an ephemeral creek channel. Subsequent subsurface test pitting revealed that the site had been extensively disturbed by previous European industrial activity. The site was determined to be a sparse scatter of low-density lithic material comprising primarily silcrete, chert and quartz and covering an area of ca. 1.8 ha. The assemblage contained debitage resulting from stone artefact manufacture; no actual 'tool' types were recovered. A micro-blade core recovered indicated that micro-blade technology was employed on the site (Dibden 2001).

4.4 The Study Area

A search of the NSW Department of Environment and Conservation (DEC) Aboriginal Site Register indicates that no Aboriginal sites have been recorded as occurring within the Hilltop study area.

4.5 Predictive Archaeological Statement

Archaeological research throughout the Southern Highlands has established a set of generalised criteria for predicting the location of Aboriginal sites within the landforms represented in this upland environment (Barton and Dallas 1997; McDonald 1990; Rich 1988a; Navin Officer 2002).

The type of sites known to occur in the region and the potential for their presence within the study area are listed as follows:

- **open scatters of stone artefacts** are most likely to occur on level, well-drained ground adjacent to sources of freshwater (creeks or swamps), particularly minor water courses. These sites are often buried in alluvial or colluvial deposits and only become visible when subsurface deposits are exposed by erosion or other types of ground disturbance. Within the study area stone artefacts will be distributed as a virtual continuum across the landscape, but with significant variations in density in relation to different environmental factors.

- **isolated finds** occur as single artefacts. Whether or not the isolated position of the artefact is a true reflection of artefact density or as a result of low visibility variables, it is considered to be the constituent component of the background scatter present within its particular landform unit.

- **burial sites** are generally found in landforms characterised by a relatively deep soil profile of soft sediments such as aeolian sand and alluvium. Usually burials are only identified when eroding out of sand dunes or creek banks, or when disturbed by development. The probability of detecting burials during surface field surveys is extremely low.

- **potential archaeological deposit (PAD)** Most open artefact scatters in the Tablelands are associated with only shallow deposit, although some stratified sites are known (Koettig 1985). It is predicted that PADs are likely to be present on elevated, flat or low-gradient landform elements associated with drainage lines and the crest of spurlines, close to water. Considering the topography of the study area it is unlikely that PADs will occur.

- **scarred trees** may occur in areas of remnant vegetation which contain trees of sufficient age. Carved trees associated with burial grounds and other ceremonial places have been recorded in the wider region.

  The likelihood of trees bearing cultural scarring remaining extant and *in situ* is low given events such as the recent bushfires. Generally scarred trees will only survive if they have escaped logging and bushfire damage. These site types are unlikely to have survived in the Hilltop study area.

5. RESULTS

5.1 Aboriginal Sites

A search of the AHIMS database (NSW DEC) resulted in no Aboriginal sites having been previously identified in the study area.

One Aboriginal site, an isolated Aboriginal stone artefact was identified in the course of the Hilltop field survey. Details of this site are listed below.

No areas of archaeological sensitivity or potential were identified in the Hilltop study area.

Aboriginal Isolated Find Hill 1

AGD 265320.6200371

Isolated find Hill 1 consisted of a single grey tuff flake measuring 40 x 25 x 4 mm. This flake consists of a single platform initiation with a bending termination showing seven negative scars. Edge damage is clearly visible on the dorsal portion of the left lateral margin. The location of Hill 1 is shown on Figure 5.1. The artefact and its location are shown in Figures 5.2 and 5.3.

Hill 1 was located in a regenerating cleared area adjacent to a vehicle track running southeast from Wattle Ridge Road to a constructed dam. The artefact was situated within a roughly circular area of exposure measuring approximately 10 m diameter.

Visibility in the area was high at approximately 80%. A thorough search of the surrounding area and adjacent track was undertaken by the survey group but no further artefacts were located. The potential for further artefacts to occur, or for Hill 1 to be associated with subsurface archaeological deposit, is considered to be low.

Figure 5.1 Site map showing location of Aboriginal Site Hill1 (marked in red)
(Base Map supplied by GHD)

Figure 5.2 Artefact Hill1

Figure 5.3 Location of Hill1 (marked by folder) looking south to access road at rear of photo.

5.2 Survey Coverage and Visibility Variables

The effectiveness of archaeological field survey is to a large degree related to the obtrusiveness of the sites being looked for and the incidence and quality of ground surface visibility. Visibility variables were estimated for all areas of comprehensive survey within the study area. These estimates provide a measure with which to gauge the effectiveness of the survey and level of sampling conducted. They can also be used to gauge the number and type of sites that may not have been detected by the survey.

Ground surface visibility is a measure of the bare ground visible to the archaeologist during the survey. There are two main variables used to assess ground surface visibility, the frequency of exposure encountered by the surveyor and the quality of visibility within those exposures. The predominant factors affecting the quality of ground surface visibility within an exposure are the extent of vegetation and ground litter, the depth and origin of exposure, the extent of recent sedimentary deposition, and the level of visual interference from surface gravels. Two variables of ground surface visibility were estimated during the survey:

- a percentage estimate of the total area of ground inspected which contained useable exposures of bare ground

- a percentage estimate of the average levels of ground surface visibility within those exposures. This is a net estimate and accounts for all impacting visual and physical variables including the archaeological potential of the sediment or rock exposed.

The obtrusiveness of different site types is also an important factor in assessing the impact of visibility levels. Sites based on rock exposures, such as rock shelters, open engravings and grinding grooves are more likely to be encountered than sites with no surface relief located on, or within, sedimentary matrices. Rock platform sites are still subject to visibility constraints in the form of obscuring ground litter, flood debris and sedimentation, however, rock shelters are less likely to go uninspected. The inspection rate of rock shelters is likely to be 100% in a comprehensive survey, however the extent of leaf litter and recent sediment on a rock shelter floor may be an important factor in a recorder's ability to detect either a site, or simply a potential archaeological deposit.

In another example, artefacts made from locally occurring rock such as quartz may be more difficult to detect under usual field survey conditions than rock types that are foreign to the area. The impact of natural gravels on artefact detection was taken into account in the visibility variables estimates outlined above.

The natural incidence of sandstone platforms suitable for grinding grooves or engraving, together with the incidence of old growth trees, are important considerations in identifying both survey effectiveness and site location patterns outside of environmentally determined factors.

Table 5.1 summarises estimates for the degree to which separate landforms within the study area were examined and also indicates the exposure incidence and average ground visibility present in

each case. A total of 30% of the ground area in the study area was inspected during the survey, with 40% providing useable archaeological exposures.

Taking into account survey coverage, archaeologically useable exposures, and visibility variables, the effective survey coverage (ESC) was 8.4% of the total survey area. The ESC attempts to provide an estimate of the proportion of the total study area that provided a net 100% level of ground surface visibility to archaeological surveyors.

The ESC calculation is defined and required by the DEC and stated to be of use in assessing and cross comparing the adequacy of archaeological surface surveys. The actual utility of the ESC calculation however is challenged by many archaeologists. The limitations of the ESC calculation are emphasised by differences in the subjective assessment of exposure and visibility levels, variations in how survey units are defined and measured, and differences in how and which variables are estimated and combined. In reality, ESC results tend only to be meaningful when compared across surveys conducted by the same surveyors and ESC measurers.

Table 5.1: Survey Coverage Data

Survey division	Survey unit	Landform	Survey mode	Main exposure types	Estimated Survey Unit area (ha)	Proportion of unit surveyed %	Area of unit surveyed (ha)	Exposure incidence %	Average exposure visibility %	Net effective exposure (ha)	Effective survey coverage of survey unit %	Aboriginal Archaeological recordings
A	1	Spurline	foot	vehicle tracks, ant nests, fallen trees, erosion scours	32	30	9.6	40	70	2.6880	8.4	
Total					*32*		*9.6*			*2.6880*	*8.4*	

6. SIGNIFICANCE ASSESSMENT

6.1 Aboriginal Heritage

6.1.1 Assessment Criteria

The Burra Charter of Australia defines cultural significance as 'aesthetic, historic, scientific or social value for past, present and future generations' (Aust. ICOMOS 1987). The assessment of the cultural significance of a place is based on this definition but often varies in the precise criteria used according to the analytical discipline and the nature of the site, object or place.

In general, Aboriginal archaeological sites are assessed using five potential categories of significance:

- significance to contemporary Aboriginal people,
- scientific or archaeological significance,
- aesthetic value,
- representativeness, and
- value as an educational and/or recreational resource.

Many sites will be significant according to several categories and the exact criteria used will vary according to the nature and purpose of the evaluation. Cultural significance is a relative value based on variable references within social and scientific practice. The cultural significance of a place is therefore not a fixed assessment and may vary with changes in knowledge and social perceptions.

Aboriginal significance can be defined as the cultural values of a place held by and manifest within the local and wider contemporary Aboriginal community. Places of significance may be landscape features as well as archaeologically definable traces of past human activity. The significance of a place can be the result of several factors including: continuity of tradition, occupation or action; historical association; custodianship or concern for the protection and maintenance of places; and the value of sites as tangible and meaningful links with the lifestyle and values of community ancestors. Aboriginal cultural significance may or may not parallel the archaeological significance of a site.

Scientific significance can be defined as the present and future research potential of the artefactual material occurring within a place or site. This is also known as archaeological significance.

There are two major criteria used in assessing scientific significance:

1. The potential of a place to provide information which is of value in scientific analysis and the resolution of potential research questions. Sites may fall into this category because they: contain undisturbed artefactual material, occur within a context which enables the testing of certain propositions, are very old or contain significant time depth, contain large artefactual assemblages or material diversity, have unusual characteristics, are of good preservation, or are a constituent of a larger significant structure such as a site complex.

2. The representativeness of a place. Representativeness is a measure of the degree to which a place is characteristic of other places of its type, content, context or location. Under this criteria a place may be significant because it is very rare or because it provides a characteristic example or reference.

The value of an Aboriginal place as an educational resource is dependent on: the potential for interpretation to a general visitor audience, compatible Aboriginal values, a resistant site fabric, and feasible site access and management resources.

The principal aim of cultural resource management is the conservation of a representative sample of site types and variation from differing social and environmental contexts. Sites with inherently unique

features, or which are poorly represented elsewhere in similar environment types, are considered to have relatively high cultural significance.

The cultural significance of a place can be usefully classified according to a comparative scale which combines a relative value with a geographic context. In this way a site can be of low, moderate or high significance within a local, regional or national context. This system provides a means of comparison, between and across places. However it does not necessarily imply that a place with a limited sphere of significance is of lesser value than one of greater reference.

The following assessments are made with full reference to the scientific, aesthetic, representative and educational criteria outlined above. Reference to Aboriginal cultural values has also been made where these values have been communicated to the consultants. It should be noted that Aboriginal cultural significance can only be determined by the Aboriginal community, and that confirmation of this significance component is dependent on written submissions by the appropriate representative organisations.

6.1.2 The Study Area

Isolated find Hill 1 is a common artefact type and a common raw material, located in a disturbed context. It is not likely to be associated with archaeological deposit or large numbers of artefacts. The artefact is consequently not considered significant based on any of the criteria defined above.

7. STATUTORY OBLIGATIONS[1]

7.1 The National Parks and Wildlife Act 1974

The following summary is based on:

- The provisions of the current National Parks and Wildlife Act 1974 (NP&W Act) as amended. It should be noted that amendments to this Act were passed by both houses of the NSW State Government in 2001 (no.130, assented 19/12/2001). Some of these amendments are yet to be proclaimed.

- Department of Environment and Conservation policy as presented in the 1997 Standards and Guidelines Kit for Aboriginal Cultural Heritage provided by the (then) NSW NPWS, and as communicated orally to the consultants on a periodic basis. The 1997 Standards and Guidelines Kit is currently under review and subject to change in the near future.

The guideline documents presented in the 1997 Standards and Guidelines Kit were stated to be working drafts and subject to an 18 months performance review. The Standards Manual was defined not to be a draft and subject to periodic supplements.

With the exception of projects subject to the provisions of Part 3A of the Environmental Planning and Assessment Act 1979 (EP&A Act), the National Parks and Wildlife Act 1974 (as amended) provides the primary basis for the legal protection and management of Aboriginal sites within NSW. The implementation of the Aboriginal heritage provisions of the Act is the responsibility of the Department of Environment and Conservation (DEC).

The rationale behind the Act is the prevention of unnecessary or unwarranted destruction of relics, and the active protection and conservation of relics that are of high cultural significance.

With the exception of some artefacts in collections, or those specifically made for sale, the Act generally defines all Aboriginal artefacts to be 'Aboriginal objects' and to be the property of the Crown. An Aboriginal object has a broad definition and is inclusive of most archaeological evidence The Act then provides various controls for the protection, management and disturbance of Aboriginal objects.

An Aboriginal object is defined as:

> 'any deposit, object or material evidence (not being a handicraft made for sale) relating to the Aboriginal habitation of the area that comprises New South Wales, being habitation before or concurrent with (or both) the occupation of that area by persons of non-Aboriginal extraction, and includes Aboriginal remains.' [Section 5(1)].

In practice, archaeologists use a methodology that groups 'Aboriginal objects' into various site classifications according to the nature, occurrence and exposure of archaeological material evidence. The archaeological definition of a site may vary according to survey objectives, however a site is not recognised or defined as a legal entity in the Act. It should be noted that even single and isolated artefacts are protected as Aboriginal objects under the Act.

The investigation, use or destruction of Aboriginal objects is managed through a system of Permits and Consents under the provisions of Sections 87 and 90 of the Act. Section 87 relates to actions which do not involve direct damage to Aboriginal objects, and Section 90 relates to damage or defacement of Aboriginal objects.

---

[1] The following information is provided as a guide only and is accurate to the best knowledge of Navin Officer Heritage Consultants. Readers are advised that this information is subject to confirmation from qualified legal opinion.

Under Section 87 of the Act, it is an offence to do any of the following without a Permit from the Director-General of the Department of Environment and Conservation: disturb or excavate any land for the purpose of discovering an Aboriginal object; disturbing or moving an Aboriginal object; take possession of or removing an Aboriginal object from certain lands; and erecting a building or structure to store Aboriginal objects on certain land (Section 86). The maximum penalty is $11,000 for individuals and $22,000 for corporations.

Under section 90 of the Act, a person who, without first obtaining the consent of the Director-General knowingly destroys, defaces or damages, or knowingly causes or permits the destruction or defacement of or damage to, an Aboriginal object or Aboriginal Place is guilty of an offence against the Act.

Where salvage actions (such as collection or re-positioning) are proposed in conjunction with an application to destroy Aboriginal objects, then an application for a section 87 permit must accompany the section 90 application. This is because a consent issued solely under section 90 of the Act is not considered to permit actions other than those which destroy, deface or damage Aboriginal objects.

In January of 2005, the DEC introduced Interim guidelines for Aboriginal Community Consultation with regard to the preparation of applications for a consent or permit under Part 6 (section 87 and 90) of the NP&W Act. The DEC anticipate that the guidelines will be replaced with a more detailed policy at some future date following consultation with the Aboriginal community and other stakeholders. The Interim guidelines include a required process of notification of intended applications in the local media, an invitation for stakeholder groups to register interest, and various time periods providing an opportunity for registered stakeholders to comment and review proposed methodologies and assessments. A transition phase has been specified for the application of the Interim guidelines. Any project where a Planning Focus Meeting was held before the 1st of January 2005, or where the proponent can demonstrate that cultural heritage assessment work commenced prior to this date, may continue to prepare Part 6 applications according to the former processes. Alternatively a proponent may choose to comply with the new guidelines.

It should be noted that section 75U of the EP&A Act 1979 (as amended) establishes an exception to the application of sections 87 and 90 of the NP&W Act. It states that a Permit under section 87 or a Consent under section 90 of the NP&W Act 1974 is not required for an approved project subject to the provisions of Part 3A of the EP&A Act.

Section 175B of the NP&W Act outlines circumstances where corporation directors may be taken to have contravened these provisions, based on the acts or omissions of that Corporation.

The processing and assessment of Permit and Consent applications is dependent upon adequate archaeological review and assessment, together with an appropriate level of Aboriginal community liaison and involvement (refer Standards for Archaeological Practice in Aboriginal Heritage Management in 1997 NPWS Standards and Guidelines Kit).

The Minister may declare any place which, in his or her opinion, is or was of special Aboriginal significance with respect to Aboriginal culture, to be an Aboriginal place (Section 84). The Director-General has responsibility for the preservation and protection of the Aboriginal place (Section 85). An area declared to be an Aboriginal place may remain in private ownership, or be acquired by the Crown by agreement or by a compulsory process (Section 145).

The Director General may make an interim protection order and order that an action cease where that action is, or is likely to, significantly affect an Aboriginal object or Aboriginal place. Such an order is current for 40 days (Section 91AA, Schedule 3[10]). Such an order does not apply to certain actions, such as where they are in accordance with development consents or emergency procedures.

7.1.1 General Management Constraints and Requirements

Except where a project is subject to the provisions of Part 3A of the EP&A Act, the NP&W Act, together with the policies of the Department of Environment and Conservation provide the following constraints and requirements on land owners and managers:

- It is an offence to knowingly disturb an Aboriginal object (or site) without an appropriate permit or consent (Sections 87 and 90);

- Prior to instigating any action which may conceivably disturb an Aboriginal object (this generally means land surface disturbance or felling of mature trees), archaeological survey and assessment is required (refer Standards for Archaeological Practice in Aboriginal Heritage Management in 1997 NPWS Standards and Guidelines Kit).

- When the archaeological resource of an area is known or can be reliably predicted, appropriate landuse practices should be adopted which will minimise the necessity for the destruction of sites/Aboriginal objects, and prevent destruction to sites/Aboriginal objects which warrant conservation (refer Standards for Archaeological Practice in Aboriginal Heritage Management in 1997 NPWS Standards and Guidelines Kit).

- Documented and appropriate consultation with relevant Aboriginal Community representatives is required by the Department of Environment and Conservation as part of the prerequisite information necessary for endorsement of consultant recommendations or the provision of Consents and Permits by the DEC (refer Standards for Archaeological Practice in Aboriginal Heritage Management in 1997 NPWS Standards and Guidelines Kit).

7.1.2 Statutory Constraints Arising from Artefacts which Constitute Background Scatter

Background scatter is a term used generally by archaeologists to refer to artefacts that cannot be usefully related to a place or focus of past activity. There is no single concept for background 'scatter' or discard, and therefore no agreed definition. The recognition of background material within a particular study area is dependent on an appreciation of local contextual and taphonomic factors. Artefacts within a 'background' scatter can be found in most landscape types and may vary considerably in density.

Standard archaeological methodologies cannot effectively predict the location of individual artefacts within background scatters. Surface survey may detect background material either as individual artefacts ('isolated finds'), or even as small, low-density 'sites'. Subsurface testing may sample, and through analysis, characterise background material. However, beyond the scope of archaeological sampling, the potential to encounter background artefacts within the context of development related ground disturbance will always remain.

Most previous cultural resource management archaeological methodologies have acknowledged that there is little scientific justification for the conduct of archaeological salvage or ground disturbance monitoring to effect the recovery of background artefacts. The intrinsic scientific value of any recovered artefacts does not, in general, outweigh the expense of conducting the monitoring. However, low density distributions of artefacts are a current subject of interest by some heritage practitioners and DEC policy regarding this issue may change in the future. The monitoring of construction related ground works by Aboriginal groups is now increasingly practiced. The recovery of background scatter artefacts is often a probable outcome of such monitoring exercises.

Given the nature of statutory and DEC policy requirements in NSW, the detection of background artefacts during monitoring can be problematic. Except where a project is subject to the provisions of Part 3A of the EP&A Act, or where an Aboriginal object is covered by a current Consent or Permit (or Heritage Impact Permit (HIP)), from DEC, all further impact to an Aboriginal object detected during development works, and to the ground in its immediate vicinity, must cease until an appropriate Permit or Consent is gained. It may take up to eight weeks for this to occur. In the past, however, DEC has not as a general rule granted Consents to cover artefacts within background scatters which remain undescribed and undetected. This is because DEC sought to provide Consents where the significance and location of the Aboriginal objects to be impacted could be reliably defined. By their very nature, this may not be possible for artefacts that constitute a background scatter.

The present application of policy by the DEC does not provide for a consistent or proactive means of dealing with the statutory constraints posed by the detection of background scatter artefacts during development works. In those cases where the provisions of Part 3A of the EP&A Act do not apply, an option is the provision by the DEC of a section 87 Permit or section 90 Consent which includes all

Aboriginal objects situated within the defined development site rather than specific sites or finds within it. This approach has been adopted by some DEC branch jurisdictions where an assessment has been provided which suitably investigates the known and predicted incidence of Aboriginal objects potentially subject to disturbance. Other DEC jurisdictions do not accept this approach and only provide Permits and Consents for known and defined Aboriginal object occurrences.

It should therefore be noted, that in the event that an Aboriginal artefact ('Aboriginal object') is detected during ground disturbance within a development study area, and that area or Aboriginal object is not covered by a Permit or Consent to Destroy (or Heritage Impact Permit), there may be considerable delays to development works while an application for a Consent to Destroy is processed.

7.2 The National Parks and Wildlife Amendment Bill 2001

Although this Act was passed by both houses of the NSW parliament in 2001, a number of its provisions with regard to Aboriginal cultural heritage have yet to be gazetted and are not yet law. These include the following provisions:

- The requirement for a section 90 'Consent to Destroy' from the Director General will be replaced by a 'heritage impact permit' (Schedule 3[1], 3[3-8]).

- The offence under section 90 of the Principal Act of 'knowingly' destroying, defacing or damaging Aboriginal objects and Aboriginal Places without Consent will be changed so that the element of knowledge will be removed (Schedule 3 [2]). The amended section 90, subsection 1 will read:

  'A person must not destroy, deface, damage or desecrate, or cause or permit the destruction, defacement, damage or desecration of, an Aboriginal object or Aboriginal place.'

- Section 90 subsection 1 will not apply when an Aboriginal object or Aboriginal place is dealt with in accordance with a heritage impact permit issued by the Director-General (Schedule 3[3], Section 90(1B) in amended Act).

- It will be a defence to a prosecution for an offence against subsection 1 if the defendant shows that:

  (a) 'he or she took reasonable precautions and exercised due diligence to determine whether the action constituting the alleged offence would, or would be likely to, impact on the Aboriginal object of Aboriginal place concerned, and

  (b) the person reasonably believed that the action would not destroy, deface, damage or desecrate the Aboriginal object or Aboriginal place.' (Schedule 3[3], Section 90(1C) in amended Act)

- A court will be able to direct a person to mitigate damage to or restore an Aboriginal object or an Aboriginal place in appropriate circumstances when finding the person guilty of an offence referred to in section 90 of the Principal Act (Schedule 3[9]).

- Schedule 4[8] of the Bill provides for the Director-General to withhold in the public interest specified documents in the possession of the DEC which relate to the location of Aboriginal objects, or the cultural values of an Aboriginal place or Aboriginal object.

7.3 Environmental Planning & Assessment Act (1979)

The Environmental Planning & Assessment Act 1979 (EP&A Act) and its regulations, schedules and associated guidelines require that environmental impacts are considered in land use planning and decision making. Environmental impacts include cultural heritage assessment. The Act was reformed by the passage of the Environmental Planning and Assessment Amendment (Infrastructure and other Planning Reform) Act in June 2005.

There are four main areas of protection under the Act:

- Planning instruments allow particular uses for land and specify constraints. Part 3 governs the preparation of planning instruments. Both Aboriginal and Historic (Non-Indigenous) cultural heritage values should be assessed when determining land use.

- A separate streamlined and integrated development assessment and approvals regime for major infrastructure and other projects of significance to the State is defined by Part 3A.

- Section 90 lists impacts which must be considered before development approval is granted. Part 4 relates to the development assessment process for local government authorities. Impact to both Aboriginal and Historic (Non-Indigenous) cultural heritage values are included.

- State Government agencies which act as the determining authority on the environmental impacts of proposed activities must consider a variety of community and cultural factors in their decisions, including Aboriginal and Historic (Non-Indigenous) cultural heritage values. Part 5 relates to activities which do not require consent but still require an environmental evaluation, such as proposals by government authorities.

Under the *Environmental Planning & Assessment Act (1979*) the Minister for Planning may make various planning instruments such as regional environmental plans (section 51) and local environment plans (section 70). The Minister may direct a public authority such as a Local Council, to exercise certain actions within a specified time, including the preparation of draft Local Environmental Plans and appropriate provisions to achieve the principles and aims of the Act (section 117).

These planning instruments may identify places and features of cultural heritage significance and define various statutory requirements regarding the potential development, modification and conservation of these items. In general, places of identified significance, or places requiring further assessment, are listed in various heritage schedules that may form part of a Local Environmental Plan (LEP) or a Regional Environmental Plan (REP). Listed heritage items are then protected from certain defined activities, normally including demolition, renovation, excavation, subdivision, and other forms or damage, unless consent has been gained from an identified consent authority. The consent authority under a LEP is normally the local Shire or City Council.

In addition to the development of these environmental planning instruments, the Director of the Department of Planning (DoP) or a local Council may prepare a Development Control Plan (DCP), where it is considered that more detailed provisions or guidelines are required over any part of land covered by an REP, LEP or their Drafts (sections 51A and 72).

Recent amendments to the Act require a single LEP to be prepared according to a standard template, for each local government area within the next five years

In determining a development application (DA), a consent authority, such as a local Council, must take into consideration any of the following which are relevant to the subject application (section 79C(1) Potential Matters for Consideration):

- the provisions of any environmental planning instrument, or draft environmental planning instrument (which has been placed on public exhibition); any development control plan; and the regulations;
- the likely impacts of that development on the natural and built environments, and the social and economic impacts on the locality;
- the suitability of the site for the development;
- any submissions made in accordance with the Act or the regulations; and
- the public interest.

Best Practice Guidelines have been issued by DoP on the use of section 79C(1) and include an assessment of how the proposed development will affect the heritage significance of the property, or

adjacent properties, in terms of the historic, scientific, cultural, spiritual and archaeological of Aboriginal, non-Aboriginal and natural heritage.

If a development consent is required from council under the provisions of a LEP and a permit or license is also required from a State Government Agency an integrated development must be submitted to the consent authority. A development is an 'integrated development' if it requires an approval under section 90 of the *NSW National Parks & Wildlife Act, 1974* or if the Director General of DEC is of the opinion that consultation with an Aboriginal group or organisation should be consulted prior to a determination being made. Any development approval issued for an integrated development of this kind must be consistent with the general terms of approval or requirements provided by the relevant State Government Agency.

The *Environmental Planning & Assessment Act, 1979*, as amended, provides for the listing of heritage items and conservation areas and for the protection of these items or areas through environmental planning instruments (like LEPs and REPs) at the local government and State planning levels. These statutory planning instruments usually contain provisions for the conservation of these items and areas as well as an assessment process to reduce the impacts of new development on the heritage significance of a place, building or conservation area.

Part 3A of the Act is a recent amendment and establishes a separate streamlined and integrated development assessment and approvals regime for major State government infrastructure projects, development that was previously classified as State Significant development, and other projects, plans or programs declared by the Minister for Planning.

Part 3A removes the stop-the-clock provisions and the need for single-issue approvals under eight other Acts, including the National Parks and Wildlife Act 1974 and the Heritage Act 1977. Environmental planning instruments such as the heritage provisions within LEP and REPs, (other than State environmental planning policies) do not apply to projects approved under Part 3A.

Where warranted the Minister may declare any project subject to Part 3A to be a critical infrastructure project. These projects only require a concept approval in contrast to other Part 3A projects which require project approval. In most circumstances, a concept approval will be obtained to establish the environmental performance requirements and consultation requirements for the implementation of the subsequent stages of the project.

Under the provisions of Part 3A, proponents of major and infrastructure projects must make a project application seeking approval of the Minister. The application is to include a preliminary assessment of the project. Application may be for concept plan approval or full approval. Following input from relevant agencies and council(s), DoP will issue the proponent with requirements for the preparation of an Environmental Assessment and a Statement of Commitments. The Statement of Commitments will include how the project will be managed in an environmentally sustainable manner, and consultation requirements.

Following submission of an Environmental Assessment and draft Statement of Commitments to DoP, these documents are variously evaluated, reviewed, circulated and exhibited. The proponent may modify the proposal to minimise impacts in response to submissions received during this process. The proponent then provides a Statement of Commitments and, following any project changes, a Preferred Project Report. An assessment report is then drafted by the Director-General and following consultation with relevant agencies, a final report with recommendations for approval conditions or application refusal is submitted to the Minister. The Minister may refuse the project, or approve it with any conditions considered appropriate.

8. MANAGEMENT CONSIDERATIONS AND RECOMMENDATIONS

One Aboriginal Object (Hill 1), as defined under the NPW Act, has been identified in the Hilltop Shooting Complex study area. As this project is proceeding under Part 3A of the *Environmental Planning and Assessments ACT* 1979 there will be no requirement to obtain Section 87/90 permits from the NSW DEC in regards to this Aboriginal object.

Taking account of the low archaeological significance of Hill 1, an appropriate mitigation strategy for this artefact would be collection or relocation away from impact areas. This recommendation should be included in the Statement of Commitments for the project.

In the event that the project is not approved under part 3A then the approvals process under the NSW DEC will apply to Hill 1. In this case application should be made to the Director General of the DEC to obtain a Section 90 'Consent to Destroy' permit for the Aboriginal object prior to any proposed development activities that impact on the artefact.

The proponent has applied for the Hilltop development area to be excised from the Native Title provisions by the passing of the *National Parks and Wildlife (Adjustment of Areas) Act* 2006. While this extinguishes any rights of native claimants over the area under the NSW native title regime, consultation with the native title claimant body has been conducted as a courtesy to the local Aboriginal community. Aboriginal groups consulted in relation to the Hilltop project have requested that consultation continue as the development proceeds.

It is concluded that there are no long–term Aboriginal cultural heritage constraints to the proposed Hilltop development.

As a result of the Aboriginal cultural heritage assessment undertaken within the proposed Hilltop development area it is recommended that:

1. If possible, impact to the identified Aboriginal site Hill 1 should be avoided.

2. If impact to the Aboriginal site Hill 1 cannot be avoided then the artefact should be collected or relocated away from the area of impact. This recommendation should be included in the Statement of Commitments under a Part 3A approval.

3. No development or other activity can occur in the vicinity of Hill 1 until the appropriate planning permission has been received by the development proponent.

4. Three copies of this report should be forwarded to the DEC for review and comment.

Department of Environment and Conservation
PO BOX 1967
Hurstville NSW 2220

5. A copy of this report be forwarded to the following participating Aboriginal organisations

The Secretary
Northern Illawarra Aboriginal Collective
2/3 Birch Cres
East Corrimal NSW 2518

Ms Kelly Longbottom
Illawarra Local Aboriginal Land Council
37/39 Princes Hwy
Dapto NSW 2530

9. REFERENCES

Attenbrow, V. 1981 Mangrove Creek Dam - Salvage Excavation Project. A report prepared for the National Parks and Wildlife Service of NSW on behalf of the Department of Public Works'.

Attenbrow, V. 1987 The Upper Mangrove Creek Catchment: A Study of Quantitative Changes in the Archaeological Record. Unpublished PhD Thesis. University of Sydney.

Australia ICOMOS 1987 *The Australia Icomos Charter for the Conservation of Places of Cultural Significance (The Burra Charter), Guidelines to the Burra Charter: Cultural Significance and Conservation Policy.* Pamphlet, Australia Icomos (Inc).

Barton, H. and M. Dallas 1997 Archaeological Survey for the Proposed Mittagong Regional Sewerage Scheme Wingecarribee LGA. Report prepared for Rust PPK Pty Ltd.

Benson, D. H. 1992. Natural Vegetation of the Penrith Area. *Cunninghamia* 2(4).

Benson, D. H. and J. Howell 1994 The Natural Vegetation of Sydney 1:100,000 map sheet. *Cunninghamia* 3(4) pp. 677-729.

Boot, P. 1994 Recent research into the Prehistory of the Hinterland of the South Coast of New South Wales. In Sullivan, M., Brockwell, S. and Webb, A. (eds) *Archaeology in the North: Proceedings of the 1993 Australian Archaeological Association Conference*. NARU: Darwin.

Bowdler, S. 1979. Bass Point: The Excavation of a South-East Australian Shell Midden Showing Cultural and Economic Change. Unpublished BA (Hons) Thesis, University of Sydney: Sydney.

DEC. 2004 The Native Vegetation of the Nattai and Bargo Reserves. Unpublished Report to Department of Environment and Conservation, Hurstville.

Dibden, J. 2000 Proposed Subdivision of Lot 1. DP 539841, Colo Street, Mittagong, NSW. Aboriginal Archaeological Assessment. Report to Brian Wallis Real Estate, Mittagong.

Dibden, J. 2001 Proposed Subdivision of Lot 1. DP 539841, Colo Street, Mittagong, NSW. Aboriginal Archaeological Assessment – Results of subsurface excavation programme. Report to Brian Wallis Real Estate, Mittagong.

Eades, D. 1976 *The Dharawal and Dhurga Languages of the New South Wales South Coast.* AIAS Canberra.

Fisher, M., K. Ryan and R. Lembit 1995 The Natural Vegetation of the Burragorang 1:100 000 map sheet *Cunninghamia* 4(2) pp. 143.216.

Hazellton, P. A. and P. J. Tille 1990 *Soil Landscapes of the Wollongong-Port Hacking 1:100 000 Sheet*. Soil Conservation Service of NSW, Sydney.

Herbert, C. and R. Helby 1980 *A Guide to the Sydney Basin*. Geological Survey of NSW. Bulletin 26. Department of Mineral Resources.

Hughes, P. and R. Lampert 1982 Prehistoric Population Change in Southern Coastal New South Wales. In S. Bowdler (ed) *Coastal Archaeology in Eastern Australia. Proceedings of the 1980 Valla Conference on Australian Prehistory*. pp 16-28. Canberra: Department of Prehistory, Research School of Pacific Studies, The Australian National University.

Keith, D. A. and D. H. Benson 1988 The Natural Vegetation of the Katoomba 1:100 000 map sheet *Cunninghamia* 2(1) pp. 107-145.

Koettig, M. 1981 Hoddles Crossing to Alpine – Archaeological Survey of the Proposed F5 Extension. Report to the Department of Main Roads.

Koettig, M. 1985 Archaeological Investigations of Sites HCA 11, HCA 13 and HCA 14, near Berrima, Southern Tablelands, NSW: Investigation of sites along State Highway No 2 – Hume Section. Report to Department of Main Roads, NSW.

Kohen, J. 1984 Preliminary Report on an Aboriginal Site Complex at Second Ponds Creek, Quakers Hill. Report to National Parks and Wildlife Service.

Kohen, J. 1986 Prehistoric Settlement in the Western Cumberland Plain: Resources, Environment and Technology. Unpublished PhD Thesis. Macquarie University.

Lampert, R. 1971 Burrill Lake and Currarong: Coastal Sites in Southern New South Wales. *Terra Australia 1* Department of Prehistory, ANU: Canberra.

Mathews, R. H. 1896 The Bunan Ceremony of New South Wales. *The American Anthropologist* 9(10):327-344

McBryde, I. 1984 Exchange in South Eastern Australia: An Ethnohistorical Perspective. *Aboriginal History.* Vol. 8, No. 2, pp. 132-153.

McDonald, J. 1990 Archaeological Survey of Proposed 33kv Transmission Line, Bowral – Mittagong. Report prepared for Illawarra Electricity.

McDonald, J. 1994 Dreamtime Superhighway: An Analysis of Sydney Basin Rock Art and Prehistoric Information Exchange. Unpublished PhD thesis, Department of Prehistory and Anthropology, Australian National University, Canberra.

Navin Officer Heritage Consultants 2000a Proposed Mittagong Villages Reticulation Scheme – Willow Vale (including Balaclava and Braemar). Report to Connell Wagner.

Navin Officer Heritage Consultants 2000b Proposed Mittagong Villages Reticulation Scheme – Aylmerton. Report to Connell Wagner.

Navin Officer Heritage Consultants 2000c Proposed Mittagong Villages Reticulation Scheme – Colo Vale. Report to Connell Wagner.

Navin Officer Heritage Consultants 2000d Proposed Mittagong Villages Reticulation Scheme – Hilltop. Report to Connell Wagner.

Navin Officer Heritage Consultants 2002 Proposed Renwick Sustainable Village Mittagong, NSW. Archaeological Assessment. Report to GHD.

NPWS 2001 Nattai Reserves Plan of Management. Report to National Parks and Wildlife Service, NSW.

NPWS 2002 Bargo State Conservation Area Draft Fire Management Strategy. Report to National Parkes and Wildlife Service, NSW.

Rich, B. 1988a Proposed Quarry at Mount Flora, Southern Tablelands: Archaeological Survey for Aboriginal Sites. Report for Mitchell McCotter & Associates Pty Ltd.

Rich, B. 1988b Proposed Quarry at Mount Flora, Southern Tablelands: Bargo River and Additional areas – Archaeological Survey for Aboriginal Sites. Report prepared for Mitchell McCotter & Associates Pty Ltd.

Rich, B. 1988c Wingecarribee River Proposed Management Project: Archaeological Survey for Aboriginal Sites. Report prepared for the Water Board.

Rich, B. 1991 Proposed Quarry at Mount Flora, near Mittagong: Report on Aboriginal Sites. Report to Mitchell McCotter & Associates Pty Ltd.

Rich, B. 1993 Archaeological Investigation of Sites RC-PAD and MF2 at Mount Flora, near Mittagong, NSW. Report to R. W. Corkery & Co., Orange, NSW.

Ridley, W. 1875 *Kamilaroi and Other Australian Languages*. New South Wales Government Printer, Sydney.

Silcox, R. 1988 Archaeological Investigations of HCA 22 and HCA 23, near Mittagong, NSW. Report to Department of Main Roads, NSW.

Stockton E.D. and W. Holland 1974 Cultural Sites and their Environment in the Blue Mountains; in *Archaeology and Physical Anthropology in Oceania* 9(1):36-65.

Tindale, N. B. 1974 *Aboriginal Tribes of Australia*. Australian National University Press. Canberra.

~ o0o ~

APPENDIX 1

RECORDS OF ABORIGINAL PARTICIPATION

Record of Aboriginal Representative Participation*

Name(s) of Aboriginal Representative: Neville Maher

Name of Aboriginal Organisation: Illawarra Local Aboriginal Land Council

Archaeologist(s): name & address: Lyn O'Brien
Navin Officer Heritage Consultants Pty Ltd
4/71 Leichhardt Street, Kingston, ACT 2604

Project Name: Hilltop Regional Shooting Complex

Client: name & address: *(please send your invoice to this address)*: GHD
10 Bond Street Sydney NSW 2000
Contact: Alex Horton

Type of participation:

- ☐ Guided inspection of study area and sites
- ☐ Accompanied/participated in archaeological survey/salvage
- ☐ Separate inspection or survey
- ☐ Accompanied/participated in excavation program

Period of participation:

Date(s)	Start	Finish
24/8/06	0830	1500.

Comments:
Consultation should continue.

Signed *(archaeologist)*: Lyn O'Brien

Signed *(Aboriginal representative(s))*: N Maher

* *Please note this form is not an invoice. For payment, please send an invoice from your organisation to the client name and address provided above.*

Record of Aboriginal Representative Participation*

Name(s) of Aboriginal Representative: Allan Carriage

Name of Aboriginal Organisation: Northern Illawarra Aboriginal Collective

Archaeologist(s): name & address: Lyn O'Brien
Navin Officer Heritage Consultants Pty Ltd
4/71 Leichhardt Street, Kingston, ACT 2604

Project Name: Hilltop Regional Shooting Complex

Client: name & address: GHD
(please send your invoice to this address) *10 Bond Street Sydney NSW 2000*
Contact: Alex Horton

Type of participation:

- ☐ Guided inspection of study area and sites
- ☐ Accompanied/participated in archaeological survey/salvage
- ☐ Separate inspection or survey
- ☐ Accompanied/participated in excavation program

Period of participation:

Date(s)	Start	Finish
24/8/06	0830	1500

Comments: Ongoing consultation should continue.

Signed *(archaeologist)*: L O'Brien

Signed *(Aboriginal representative(s))*: Allan R Carriage

* *Please note this form is not an invoice. For payment, please send an invoice from your organisation to the client name and address provided above.*

Record of Aboriginal Representative Participation*

Name(s) of Aboriginal Representative: Paul Cummins .....

Name of Aboriginal Organisation: Northern Illawarra Aboriginal Collective .....

.....

Archaeologist(s): name & address Lyn O'Brien .....
Navin Officer Heritage Consultants Pty Ltd
4/71 Leichhardt Street, Kingston, ACT 2604

Project Name: Hilltop Regional Shooting Complex

Client: name & address: GHD .....
(please send your *10 Bond Street Sydney NSW 2000* .....
invoice *to this address*)
Contact: Alex Horton .....

Type of participation:
- ☐ Guided inspection of study area and sites
- ☐ Accompanied/participated in archaeological survey/salvage
- ☐ Separate inspection or survey
- ☐ Accompanied/participated in excavation program

Period of participation:

Date(s)	Start	Finish
24/8/06		
	0830	1500.

Comments: Consultation should continue.
.....
.....
.....
.....

Signed *(archaeologist)*: L O'Brien

Signed *(Aboriginal representative(s))*: P Cummins

* *Please note this form is not an invoice. For payment, please send an invoice from your organisation to the client name and address provided above.*