Wolgan Valley Aboriginal Heritage Study
Stage II Survey

Clifton Coney Group for Emirates Hotels Australia Pty Ltd.

Final Report

2005014-01

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Executive Summary

UrbisJHD, on behalf of Emirates Hotels Australia Pty Ltd, commissioned Australian Museum Business Services (AMBS) to undertake an Aboriginal heritage assessment of a proposed luxury resort in the Wolgan Valley, NSW. Clifton Coney Group is the project manager.

Emirates Hotels is planning to develop a range of luxury villas and ancillary health spa, conference, restaurant, helipad and other facilities. The project is currently designed to sit lightly within its environment in a manner that is sympathetic to the natural, cultural and scenic values of the Wolgan Valley.

This report is designed to assess the archaeological potential of the property and the potential impact of the development on Aboriginal cultural heritage. This report also details a comprehensive consultation with the Aboriginal community in determining the property's archaeological significance.

Within the findings of this report 12 Aboriginal archaeological sites have been identified. Eleven of these are stone artefact scatters and are located within the property boundary of the subject land. One of these sites contained hundreds of stone artefacts. In addition to the stone artefacts, one rock-art shelter was found just outside of the property boundaries on an access route leading up to the Gloworm Tunnel. A further three areas are identified as exhibiting potential archaeological deposit (PAD). These locations are where archaeological sites are highly likely to occur.

The identified archaeological and landform features within the study area represent a complete archaeological landscape. The potential exists to conserve the archaeology of the subject land en masse, while still allowing the proposed low density and environmentally sensitive development to proceed. Sites of high or moderate scientific and cultural significance should be conserved. Sites of low scientific or cultural significance should not pose a constraint to development. The best possible outcome will be to position the proposed construction works in areas of low archaeological significance. Test excavation of the development precinct will allow for the identification of areas of low archaeological significance. In some instances it may not be possible or practical to conserve some of the significant sites or PADs. In these instances it will be necessary to salvage the Aboriginal objects in order to ensure that a proper record of their contents is obtained, and a sample of their assemblage retained.

Contents

Plates

Figures

Tables

1 Introduction

This report presents an archaeological assessment of the proposed Emirates Luxury Resort in the Wolgan Valley, NSW. The work was commissioned by UrbisJHD on behalf of Emirates Hotels Australia Pty Ltd. Clifton Coney Group is the project manager.

Australian Museum Business Services (AMBS) was contracted to undertake an archaeological assessment of the proposed development site in the Wolgan Valley (Figure 1). Emirates Hotels is planning to develop the land as a low density luxury resort consisting of a range of luxury villas and ancillary health spa, conference, restaurant, helipad and other facilities (Figure 2). The project has been designed to sit lightly within its environment in a manner that is sympathetic to the natural, cultural and scenic values of the Wolgan Valley. This assessment was design to assess the archaeological potential of the property and the potential impact of the development on Aboriginal cultural heritage. The current assessment (stage II) undertaken in December 2005 is a continuation of a preliminary inspection (stage I, appendix A) undertaken during September 2005. The earlier inspection identified substantial archaeological features on the property and recommended further survey and Aboriginal community consultation. These recommendations formed the objectives of current stage II investigations.

The property is located 35 km north of Lithgow and three km south of Newnes. It lies in a valley on the western escarpment of the Blue Mountains plateau. The study area is irregular in shape (Figure 1). It is bounded by rural properties on the northern side of Wolgan Road and by a Reserve which includes Mount Wolgan and Donkey Mountain, to the east by the Wollemi National Park, to the south by rural properties adjacent to the Carne Creek and Reserves, to the west by rural properties adjacent to the Wolgan River and Wolgan Road.

1.1 Summary of Findings

The current field inspection identified 12 new archaeological sites, 11 stone artefact scatters within the study area and one rock-art site (just inside the National Park). Three potential archaeological deposits (PAD) were also identified. PADs are locations were low levels of disturbance and high archaeological significance are found in the same area indicating that sites are highly likely to occur. The currently identified sites and PADs depict only a small segment of a much larger archaeological picture that is the Wolgan Valley. The study area represents a complete archaeological landscape, where discrete sites can be seen to merge forming holistic networks of prehistoric activity. Conservation should be the primary objective of any management strategy and wherever practicable, to retain Aboriginal archaeological objects in situ. With careful use and management it is possible to conserve the archaeology of the subject land en masse, while allowing the proposed development to proceed.

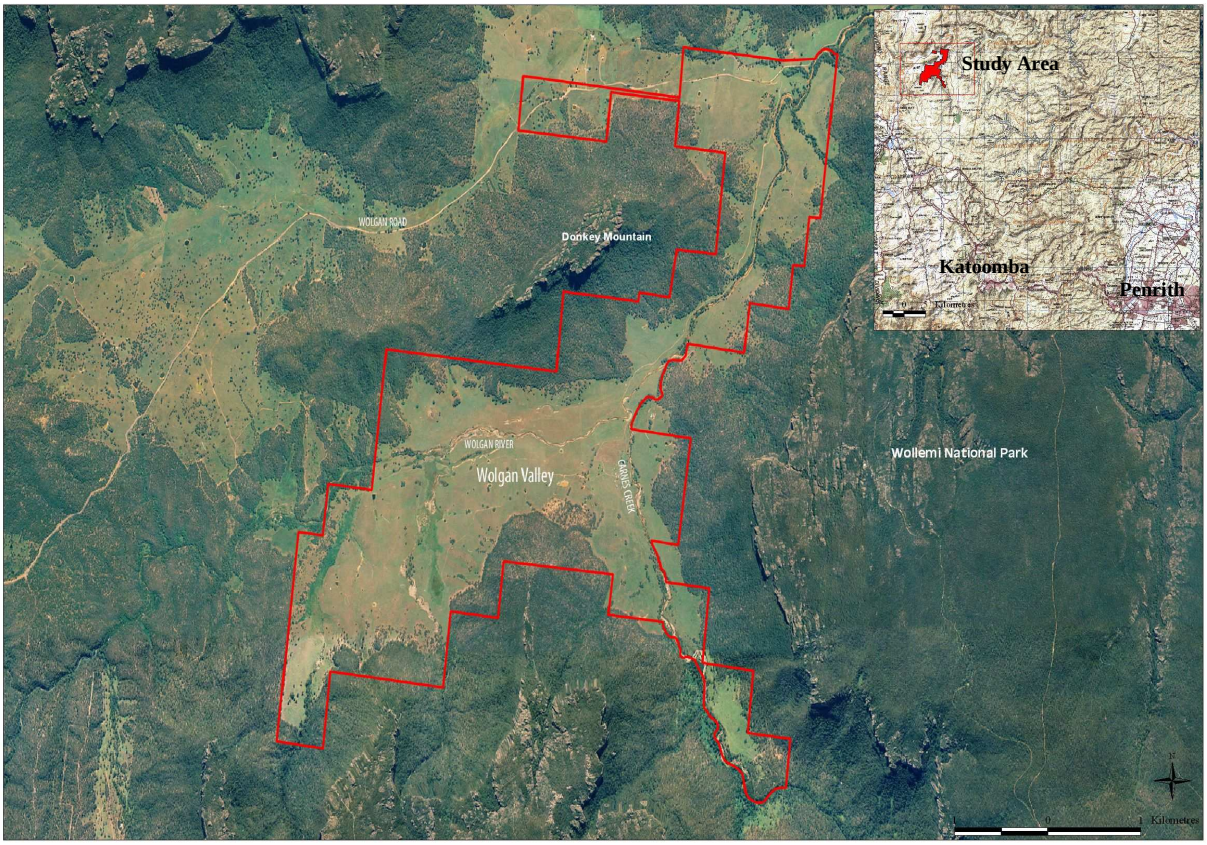

Figure 1: Location of study area.

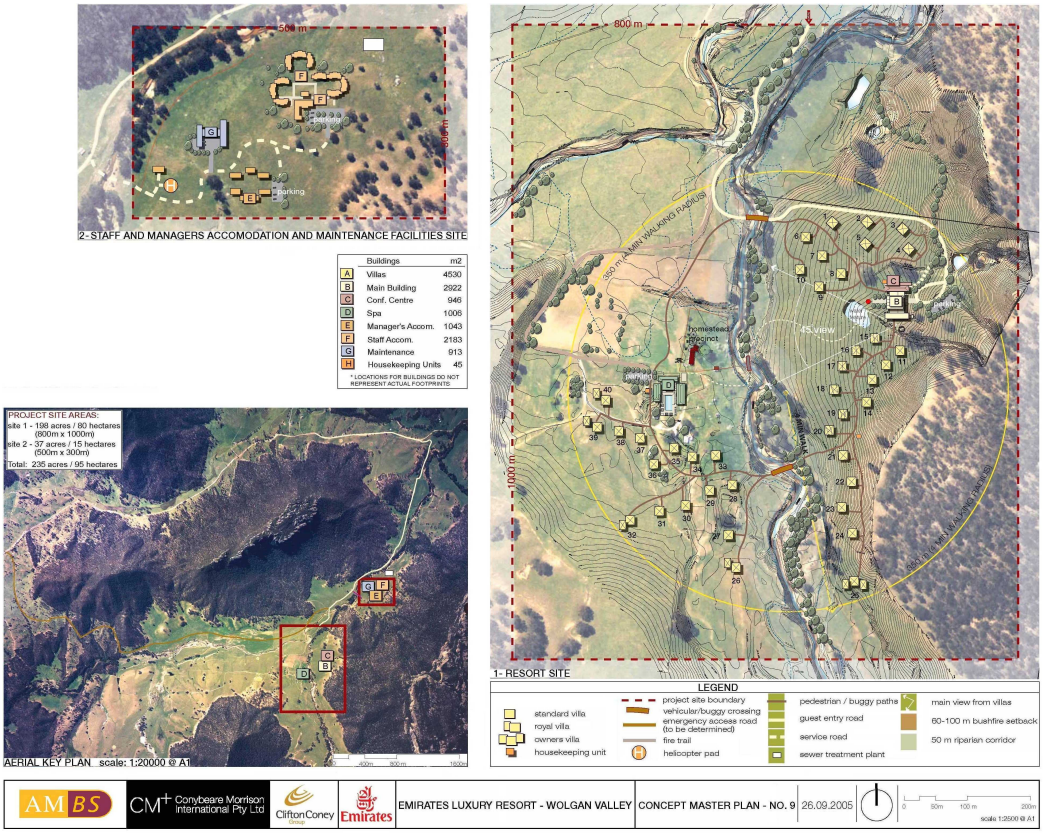

Figure 2: Resort concept materplan showing the proposed development.

1.2 Recommendations Summary

The following recommendations are made:

- Continuation of consultation with the Aboriginal community.
- Reconcile the current building sitting plan with the location of identified Aboriginal objects and PADs, in consultation with the project architect. The aim is to minimise the impact of the building sitting plan on identified or potential Aboriginal objects.
- Test excavation of locations where the current building sitting plan conflicts with identified or potential archaeological deposit, where it is not practical to alter the building sitting plan.
- Conserve sites of high scientific and cultural significance by avoiding the placement of building works over these features and ensuring their ongoing protection.
- Salvage sites where conservation is not possible due to design inflexibility.
- Sites of low scientific or cultural significance should not pose a constraint to development.
- Management of the subject land by implementing short term (excavations and reporting) and long term conservation (education and impact mitigation) management plans for Aboriginal objects.

1.3 Aboriginal Consultation

The study area falls within the boundaries of the Bathurst Local Aboriginal Land Council (BLALC). Warwick Peckham chairman of the BLALC was contacted prior to Stage I investigations, but due to the tight timeframe was unable to participate in stage I surveys (AMBS Wolgan Valley Stage I). BLALC representatives Richard Peters and Chantel Peters were able to participate in stage II surveys.

Several other Aboriginal community groups and individuals have an interest in the area including: Wiradjuri Nation, Greater Lithgow Aboriginal and Torres Strait Islander Corporation, Aboriginal Cultural and Resource Centre. An Aboriginal community consultation meeting was held in Lithgow on 15th November 2005 to discuss the proposed development and the findings of the stage I survey. The minutes from this meeting are found in appendix B. All Aboriginal community representatives were invited to participate in stage II surveys. Sharon Riley, Wiradjuri Nation, participated in one day of the stage II survey. Conservation of the study area's archaeology was discussed during the meeting as the preferred option, but it is understood that some areas will be impacted by the development. Excavation of moderate or high archaeological potential area (i.e. places not likely to be conserved) was also discussed as the likely management strategy.

It is understood by all parties that Aboriginal community consultation is an ongoing process. Further consultation will be required once the resort's design is finalised and specific impacts can be addressed (perhaps in the form of a second Aboriginal community meeting).

Copies of this report have been sent to all Aboriginal groups for comment.

2 Background Information

2.1 Environmental Background

The study area is located in the Wolgan Valley which is situated within the western escarpment of the Blue Mountains. To assess patterns of Aboriginal occupation and site location within the valley, it is necessary to understand the geological and environmental morphology of the greater Blue Mountains region. This greater appreciation of the surrounding area will provide more accurate insights into how topography and resource procurement may have affected Aboriginal occupation patterns, and provide the contextual framework from which a predictive model of Aboriginal site patterning may be constructed. The following sections provide a brief summary of the geomorphology and geology of the Blue Mountains Region. A more detailed geotechnical analysis for the study area is available by Douglas Partners entitled 'Report on Geotechnical Investigation proposed Emirates Luxury Resort Wolgan Road, Wolgan Valley, 2005'.

2.1.1 Geomorphology

The Blue Mountains belong to a sub area of the Sydney Basin known as the Blue Mountains Plateau. The plateau is an undulating heavily dissected plateau with ovoid platform crests, rather than the conical peaks often associated with mountain ranges. The plateau is made of sandstone formations. The geographic limits and structure of the plateau are generally well defined: the northern limit following the Mt Coricudgy Anticline (generally congruent with the Colo River), bordered on the east by the prominent Lapstone Monocline (roughly congruent with the Nepean River), in the south by less well defined warping (generally congruent with the Coxs River), and stops in the west along the Lachlan Fold Belt (Coxs River).

The mountains slope to the east, with elevations sometimes reaching 1300m in the west and finally reaching the edge of the Cumberland plain which averages approximately 20m above sea level. The southern parts of the mountains are 20km wide, widening in the north near the Capertee Valley to 90km.

The three main river systems drain to the east, flowing eventually into the Napean/Hawkesbury Rivers. These systems are the Coxs/Wollondilly system, the Grose River and the Capertee/Wolgan River systems. Apart from geomorphologic features, Blue Mountains' rivers tend not to exhibit much of an ecological impact outside of their immediate vicinity. Basically the rivers are contained within their gorges with most surface water draining quickly into the rivers and continuing out through the major drainage outlets. The overall effect is that water moves quickly out of the region and is generally contained within narrow canals. As a consequence, at any given moment water is found in most valleys. Only limited outsources, mostly consisting of rock pools, are found along the elevated portions of the plateau. Large permanent accumulations of water are within reach of the valley heads while ridgetop water sources are generally seasonal.

The region can be separated geographically into ridgetops, broad valley, headwater valleys, steep gulleys and sheer cliffs. The Blue Mountains' chief topographic

characteristic is its deeply incised gorges, valleys and canyons. Incising becomes steadily deeper from east to west due to differences in the underlying sandstone geology and higher elevations in the west. The farther west one proceeds into the mountains the terrain becomes steadily harsher, more dramatic, and more difficult to traverse. The undercutting of claystone layers (beneath the sandstone layers) in the western mountains creates steeply benched incising, with waterfalls. This undercutting is less prevalent in the headwater valleys where less erosion has taken place. In effect the whole area is heavily dissected and difficult to travel across. As a consequence of the topography, travel in the region is most easily facilitated by following routes along interconnecting ridgetops and moving down into the resource rich valleys via the headwater.

2.1.2 Geology

The surface layers of the Blue Mountains plateau belong to the hard Narrabeen Group lithic sandstones. This consists mainly of Narrabeen Sandstone horizontally layered with Grose Sandstone, dipping below the Hawkesbury Sandstone at the Calecul Range near the Colo River. In the more elevated western regions (like the study area) Hawkesbury Sandstone is only found where erosion has cut back the rock surface. The fine structure of Hawkesbury Sandstone is exploited for grinding and art with exceptional occurrences at great elevation likely to have drawn attention. The Narrabeen and Grose sandstones are generally coarser than the Hawkesbury sandstone and are thus less suitable for art and the formation of habitable rock shelters. Colluvial boulders of Hawkesbury Sandstone are found on the slopes of the study area. Some of these have eroded to form small shelters.

Beneath the surface geology lies the softer Permian coal measures, the erosion of which has led to the deep gorges, cliff lines and bottle neck valleys prevalent in the area. This erosion has also led to a plethora of sandstone rock shelters suitable for past Aboriginal occupation.

A prevalent source of raw material for stone tool manufacture is quartz, which is readily available in the form of pebbles from the Narrabeen group of sandstones. Two dolerite plugs are located within the area at Mt Budgary and Galah Mountain which would also have been suitable for stone tool manufacture. Other sources of raw material within the area include Tertiary basalt at Mt Cameron, chert within the Permian coal seams found in the Wolgan Valley and Devonian Quartzite, located in the western section of the Wolgan Valley.

2.1.3 Vegetation

Flora of the Blue Mountains Plateau can be summarised in terms of vegetation from high (west) to low (east) as: low heath or lightly wooded plateaus, woodland valley slopes, densely wooded incised gullies, heath swamps and tall forests in the wetter valleys and more open heath and tall woods in the dryer valleys. The more open vegetation of the ridgetops as opposed to the denser vegetation of the valleys makes traversing ridgetops easiest for inter-regional travel.

The upper reaches of the Wolgan River and especially Carne Creek are associated with swamplands which may have acted as a resource focal point for Aboriginal people. It is likely that fauna would have been attracted to the swampland and it has

been suggested that the *Gahnia grandis* (sedge grass), found in swampy areas, may have provided a stable food source. Lennon (1983) argues that *Gahnia grandis* could have provided a reliable food source throughout the year and hence capable of supporting permanent occupation of the Newnes plateau. The use of plant foodstuff as a staple has never been documented in the Blue Mountains and it would be useful to test the validity of Lennon's theory.

2.1.4 Existing Improvements

The property has been cleared and development for grazing beginning in the early nineteenth century. The property is surrounded by native vegetation in the adjoining national park and reserves; however only small groupings of trees remain interspersed among the existing pasture. Some minor dirt roads, residential buildings, agricultural structures and numerous fences have been added to the property. Several small-medium size dams are located on the midslopes.

2.2 Prehistoric Background

Archaeological investigation in the Blue Mountains region has been undertaken sporadically since the start of the nineteenth century, with the earliest excavation undertaken in the region by McCarthy in 1934 at Emu Plains shelter. By the end of the century a total of 23 sites (Table 1) had been excavated (three of which were excavated twice), using a range of methodologies and recording strategies. The sites that have been excavated where not discovered by means of systematic surveys, and as such may not be a representative sample of archaeological sites within the region. McIntyre (1990) notes that all these sites are relatively accessible by road, suggesting a bias in site sampling strategy.

The early excavations by McCarthy at Capertee 3 (1964) just north of the current study area have been instrumental in establishing a basic interpretive framework for Australia's prehistory. McCarthy identified a three phase sequence or Eastern Regional Sequence in Australian stone tool technology. These excavations helped to establish a greater antiquity for Aboriginal culture than had previously existed. The Capertee sites remain important today because they showcase a range of technological changes, which are continually being researched and debated (Hiscock and Attenbrow 2005). New archaeological information from the Wolgan Valley would play an important part in increasing our understanding of Australia's cultural heritage as it would be directly comparable with the Capertee information.

The earliest dates for the region were recovered from Kings Table by Stockton and Holland (1979), with dates of 22,240 ± 1000 B.P. and 19,534 ± 300 B.P., however, these early dates have been questioned due to the disturbed nature of the deposit (Johnson 1979, Bowdler 1981). A higher proportion of early dates recovered from the region show a range between 13,000 and 12,000 years B.P. (e.g. Lyre Bird Dell 12,550 ± 145 B.P., Stockton and Holland 1979; Noola 12,550 ± 185 B.P., Birmingham 1966; Walls Cave 12,000 ± 350 B.P., Stockton and Holland 1974).

Table 1: Summary table of excavations in the Blue Mountains.

Site	Date of Excavation	Excavator	Excavated Area	Max Lithics/m³	Altitude
Capertee 1	1958-61	McCarthy	25 m³	?	~320m
Capertee 1	1978	Johnson	?	?	~320m
Capertee 2	1958-61	McCarthy	?	?	~320m
Capertee 3	1958-61	McCarthy	60m³	?	~320m
Capertee 3	1978	Johnson	4m³	4,800	~320m
Capertee 4	1958-61	McCarthy	?	?	~320m
Capertee 5	1958-61	McCarthy	1.75m³	?	400m
Noola	1961	Tindall	6 m³	?	340m
Lapstone Ck.	1936	McCarthy	15 m³	?	70m
Emu Plains	1934	McCarthy	?	?	~70m
Shaws Ck.	1972	Stockton	0.8 m³	22,800	20m
Springwood W	1962-64/70's	Stockton	4 m³	1,300	270m
Springwood E	1962-64	Stockton	?	?	270m
Springwood S	1962-64	Stockton	?	?	270m
Springwood G	1962-64	Stockton	?	?	270m
Springwood C	1962-64	Stockton	?	?	270m
Horseshoe Falls	1970's	Stockton	?	?	600m
Lawson P	1962-64	Stockton	?	?	700m
Lawson Q	1962-64	Stockton	?	?	700m
Lawson D	1962-64	Stockton	?	?	700m
Kings Table	1970's	Stockton	2 m³	7,400	880m
Lyre Bird Dell	1970's	Stockton	?	?	900m
Lyre Bird Dell D	1970's	Stockton	?	?	900m
Walls Cave	1970's	Stockton	1.5 m³		910m
Black Fellows Hands Shelter	1939	McCarthy	2 m³	?	1000m

2.2.1 Surveys

Several small and large scale surveys have been undertaken in the region surrounding the current study area (summarised in Table 2). Brayshaw (1981) surveyed a proposed rail loop at Birds Rock and documented three sites. These sites consisted of two shelters with artefactual deposit and one site consisting only of axe grinding grooves.

Table 2: Summary table of surveys undertaken in the region near the study area.

Archaeologist	Date	Location	Landform	Number of Sites/PADs	Site Types
Brayshaw	1981	Birds Rock	Plateau	3 sites	2 x Shelter (Deposit), Axe grinding grooves
Brayshaw	1983	Northern Hermitage Colliery		5 sites, 25 PADs	
Gorecki	1982/83	Kariwara, Angus Place Extension	Upper Plateau	8 sites, 30 PADs	Shelter (art), open, shelter (deposit)
Gollan	1983	Mt Horne, Newnes	Upper Plateau	~30 sites	Open Sites (isolated finds)
McIntyre	1990	Kariwara		53 sites	Shelters, Scarred Tree, Open site.

Two broad area surveys were conducted by Gorecki in 1982 and 1983 at Kariwara and the Angus Place Extension area. During the survey eight sites and 30 PADs were located. The location of these sites and PADs were in areas previously regarded as being marginal in relation to Aboriginal occupation, and as such constitute an important addition to the understanding of site locations within the landscape, and posed serious questions as to the validity of previous models of occupation (see section 2.2.2). Further work has been undertaken as a result of these findings, in particular by Lennon (1983) with a site catchment analysis on the Wolgan River sites, and by Gollan (1983) concentrating on site locations on the upper plateau to see whether the lack of sites on the plateau areas was a real pattern or an artefact of sampling strategy. Lennon suggests that economic strategies changed to incorporate the procurement/exploitation of complex carbohydrates (in this case *Gahnia grandis*), a view also expressed by Bowdler (1983) in her Australia-wide site location and exploitation model. In this scenario, large sites should be clustered around swamps where *Gahnia grandis* grows. Gollan located approximately 30 open sites, which exhibited mostly small numbers or even single artefacts. Unfortunately the area in which Gollan surveyed was found to be largely disturbed, so the possibility of locating intact large open sites was very low.

McIntyre's survey of the Kariwara Longwall Coal Mine (1990) was located roughly within the same area as Gorecki's 1982/83 surveys at Kariwara and the Angus Place Colliery. (The survey area extends roughly to the southern portions of the current study area.) During the survey 57 sites were recorded, these included mostly shelter sites, which when clustered are referred to as site complexes. Other types of sites found include one scarred tree, one open site and four historical sites. McIntyre (1990: 26) found that there was little evidence to support Gollan's theory of large open sites located on the plateau and adjacent to swamps for exploitation of *Gahnia grandis*. Large sites occur along the western flanks of the plateau where creek gullies enter the Coxs River Valley, smaller sites probably representing sporadic but repeated use may be found at the end of long ridges. Finally, ephemeral sites or 'one-off' sites may be found anywhere below the cliff line where there is relatively easy access down from the plateau (these are also incorporated into the occupation model described below).

2.2.2 Predictive Model

A number of models for Aboriginal occupation in the Blue Mountains have been presented over the past 40 years (McCarthy 1964, Stockton 1970, Stockton & Holland 1974, Johnson 1979, Pearson 1981 and Bowdler 1981). These models, however, were based on an insufficient sample of sites often with insufficient evidence to support hypotheses, and none formulated from detailed surveys (McIntyre 1990). The trends proposed by the models suggest that occupation was mainly restricted to major valley floors and lower slopes, with occupation on the sandstone plateau either unlikely or restricted to short term trips or ceremonial purposes (Stockton 1970). This model was based on the accessibility or inaccessibility of locations, altitude and location of art sites.

McIntyre suggests a tentative pattern of site location after her survey of the Kariwara Longwall Coal Mine (1990: 25-26), where major site complexes would be located either:

(i) at the head of open gullies where there is relatively easy access from ridgetops to the resources provided by major creeks and rivers

(ii) on the plateau at locations which combine vantage points with localised, specialist resources.

A synthesis of site prediction, taking into account previous models of occupation and based largely on McIntyre's prediction on Aboriginal site distribution, is given by Kelleher (2003) and is the most current predictive model for the Blue Mountains Region.

2.2.2.1 Predictive Model of Aboriginal Site Locations in the Blue Mountains

Major site complexes in the Blue Mountains are generally located:

- at the head of gullies and valleys and at junction points of main waterways within the valleys where there is relatively easy access from ridgetops to the resources provided by permanent water sources;
- plateaus where the location offers a good vantage point and specialist resources.

Small sites or site complexes in the Blue Mountains represent:

- repeated transit use for purposes of hunting or travel; found along or near the end of ridgetops;
- single use sites; found along access routes between major site complexes and resources.

Travel within the Blue Mountains Plateau is likely to follow a general three part model:

- water routes are unlikely to be used as access routes due to harsh and difficult terrain (*e.g.*, heavy undercutting and thick vegetation);
- interconnecting ridges are the most probable travel routes, long interconnecting ridges provide the easiest travel routes within the plateau (*e.g.*, Great Western Highway, Bells Line of Road);
- occupation and travel routes outside the Blue Mountains Plateau are likely to be associated with major river valleys (*e.g.*, Coxs River, Nepean River) as these are resource- and access- friendly environments.

In summary, the predictive model suggests the highest probability of encountering archaeological objects will occur in the study area near the junction of the Wolgan River and Carne Creek and near the northern end of the property where Barton Creek joins the Wolgan River. These areas provide good access to reliable resources and are ample enough to allow for a moderate level of sustained occupation. Other areas where access to the ridgetop is relatively easy, such as the talus slopes near the Gloworm Tunnel are likely places for small or transit type sites.

3 Survey Methodology

Field survey of the study area was undertaken over four days commencing on Tuesday 6th December and concluding on Friday 9th December 2005. AMBS archaeologists Matthew Kelleher and Alison Nightingale conducted the survey and were accompanied on the first three days by Richard Peters and Chantel Peters (Bathurst LALC). Sharon Riley (Wiradjuri Nation, National Parks and Wildlife Sites Officer) also visited the site and discussed the proposed development with AMBS archaeologists on Thursday. Additional site information and photographs were taken by AMBS personnel on Friday.

The following fieldwork methods were adopted based on the topography, previous assessments and the likely impacts of the proposed development.

- Defined landscape precincts were used as guides for targeting the likely development impacts (see Figure 3).

- Survey focused on the proposed development precinct, access corridor precinct and managed pasture precinct. Surveys in these areas were a combination of pedestrian and vehicle methods. All ground exposures (e.g. erosion scars) were inspected by pedestrian survey. At least two people carried out each survey. Aerial photographs and digital maps were used for reference. Handheld GPS (AGD 84) were used to register grid references.

- The riparian corridor precinct related to the development precinct (i.e. the lower portion of Carne Creek) was also inspected via pedestrian survey.

- A vehicle survey was undertaken of the nature conservancy precinct and the remainder of the riparian corridor precinct. This survey targeted significant exposures such as tracks which provided good visibility.

- Generally surface visibility across the study area was poor-moderate with a resulting low-medium level of effective coverage (Table 3).

The low level of effective coverage was able to identify 12 previously unrecorded sites and three PADs. The PADs were identified through a combination of landform and predictive modelling combined with onsite analysis of the geomorphology and identified archaeological sites.

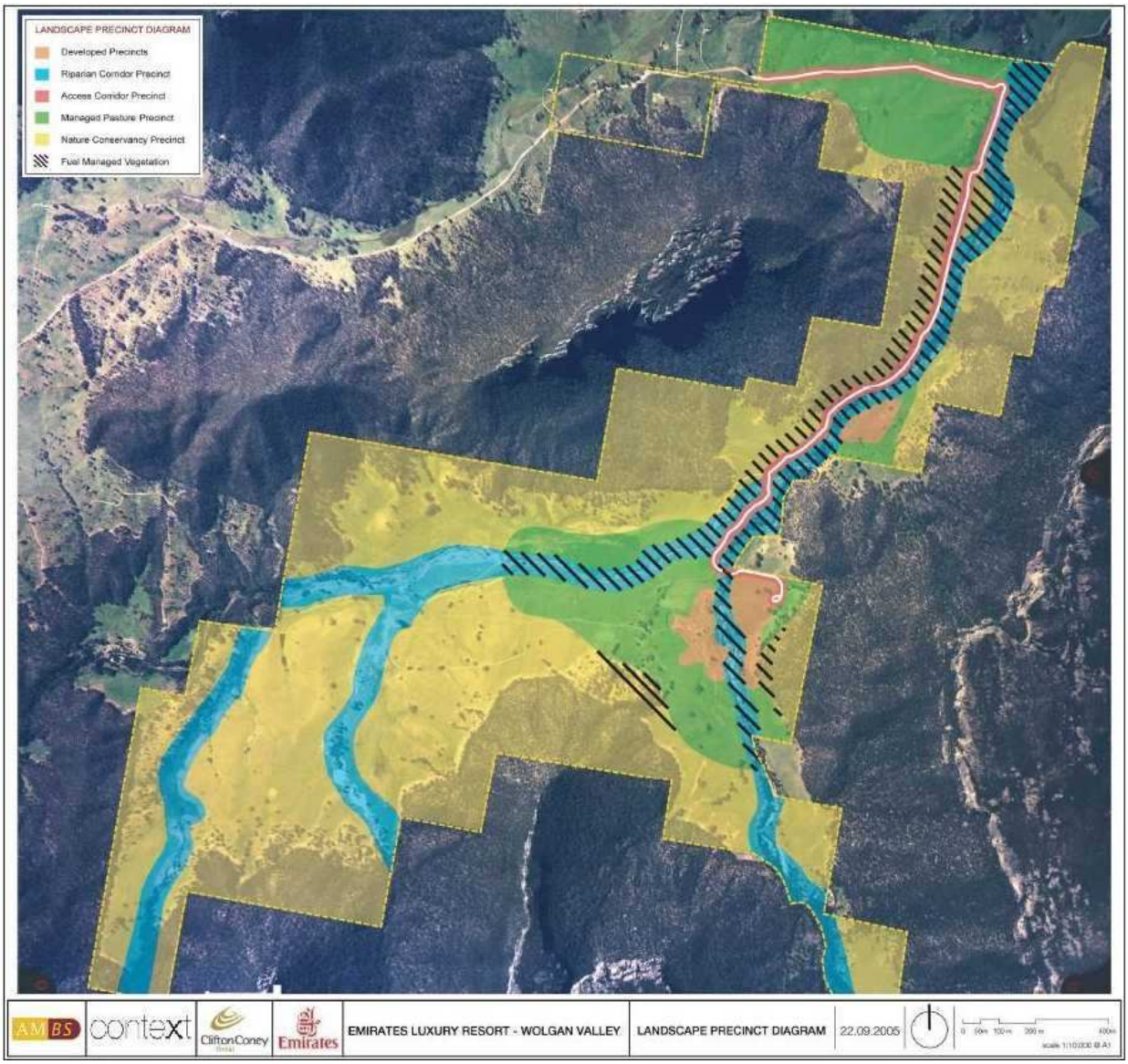

Figure 3: Landscape precincts used during the survey.

3.1 Effective Survey Coverage

Effective survey coverage was low-moderate for the majority of the Wolgan Valley study area. A low grass with the occasional eroded surface covered the majority of the subject land. Dense to very dense scrub and woodland was concentrated on the steep slopes on the ridge sides and sporadically along the riparian corridor. In areas where the surface visibility was low it is unlikely that Aboriginal archaeological sites (if present) will be identifiable. In such cases (where the effective survey coverage was very low) the concept of PAD was used to identify places of archaeological potential (AMBS 2004, 2005). For the purposes of the current assessment, the boundary of the

PADs was defined on the basis of the proposed development and access corridor precincts but extend beyond the defined area.[1]

Table 3: Effective survey coverage calculation table.

Survey Unit (Landform Precinct)	Landform	Land use and disturbance	Exposure	Surface Visibility	Effective Coverage
Development Precinct	Alluvial Fans (along Carne Creek), Colluvial Fans on slopes, Berry Formation shale/sandstone (near Wolgan Road)	Dense vegetation along the creek and thick grasses reduced visibility. Pockets of erosion near drainage channels. High levels of erosion along creek beds. Substantial archaeologically sensitive zones are located along Carne Creek near the homestead and on the eastern bank (alluvial fans).	10%	25%	2.5%
Access Corridor Precinct	Alluvial Fans (along Carne Creek), Colluvial Fans on slopes, Berry Formation shale/sandstone (near Wolgan Road)	Road has cut through alluvial deposit and exposed the subsurface. Increased visibility along the road.	80%	80%	60%
Managed Pasture Precinct	Alluvial Fans (along Carne Creek), Colluvial Fans on slopes, Berry Formation shale/sandstone (near Wolgan Road)	Relatively dense grass coverage over pasture. Erosion associated with cattle tracks, stockyard and dams increase surface visibility	10%	50%	5%
Riparian Corridor Precinct	Alluvial deposits	High levels of disturbance along waterways exposing alluvial deposit. Active erosion of the stream banks common throughout river course. Visibility is generally high but integrity of deposit is low.	10%	75%	2.5%
Nature Conservancy Precinct	Alluvial Fans (along waterways), Colluvial Fans on slopes, Berry Formation shale/sandstone (mid-upper ridge sides and near Wolgan Road)	High levels of disturbance in the eastern portion near Bow Bowing Creek and railway. Dense vegetation along the creek and on most of the sides and top of ridges severely limited visibility. Dense grass also covered most open areas. No significant eroded areas were located in this survey unit. Substantial archaeologically sensitive zones are located along the creek and on the top of the most southern hill.	2%	10%	0.2%

[1] Archaeological material will extend all along the creek flats, alluvial fans and to a lesser degree on the colluvial fan, only the portion directly impacted by the development precinct has been assessed using the PAD concept in the current study. Relocating the proposed development precinct outside of the currently identified PADs will still likely encounter other archaeologically sensitive areas.

Figure 4: Map of study area showing the locations of identified sites and PADs.

4 Survey results

The current survey identified eight new archaeological sites and three PADs. Previous surveys (AMBS 2005) identified four sites. All of the identified sites and PADs for the study area are described below.

4.1 WV AMBS 1

This site is located in the southern arm of the property on the eastern side of Carne Creek approximately 1.8 kilometres south of the development precinct and 200 metres northeast of Carne Creek just above the 580 metre contour line. The site is situated in a large eroded area 30 metres north of a small westward flowing tributary. The site consists of one mudstone core. The site was found late in the day and poor lighting may have hampered the identification of further artefacts.

Plate 1: Banded mudstone core artefact from WV AMBS 1.

Table 4: WV AMBS 1 artefacts.

Material	Total Artefacts	Colour	Quality	Size Range (cm)		Type/s	Co-ordinates	
				Min	Max		Easting	Northing
Mudstone	1	Orange/dark brown bands	good	3.5	4.5	Core (10% cortex, 2 neg. flake scars)	239566	6314374

Plate 2: WV AMBS 1 facing west towards Wolgan Pinnacle. Artefacts are found in the erosion gully.

4.2 WV AMBS 2

This site is located 100 metres north of the development precinct within cleared pasture which is part of the national park. The site is located on a flat elevated terrace just east of a small cluster of trees. The terrace extends some 50-75 metres towards the south. The site is approximately 200 metres east of Carne Creek and on the edge of the 570 metre contour. Artefacts were visible along the heavily eroded northwestern edge of the terrace, near an isolated sandstone boulder. The site consists of six mudstone flakes. Two artefacts were initially identified at this site late in the first day of survey (stage I) and a follow-up inspection the next day in good light yielded four additional artefacts.

Plate 3: Tuff artefacts from WV AMBS 2.

Table 5: WV AMBS 2 artefacts.

Material	Total Artefacts	Colour	Quality	Size Range (cm)		Type/s	Co-ordinates	
				Min	Max		Easting	Northing
Tuff	6	Brown, orang/red, cream	good	1.6	2.5	3 Flakes, 1 Broken Flake, 2 Flake Frags (1distal)	238593	6317089

Plate 4: WV AMBS 2 facing southwest. Artefacts were found eroding out of the edge of the alluvial fan (arrow).

4.3 WV AMBS 3

This site is at the northern tip of a low hill approximately 150 metres west of the Wolgan homestead. The hill is 100 meters southeast of the Wolgan River and 250 metres west of Carne Creek and is adjacent to the main homestead road. The site consists of three artefacts: one large basalt flake, one bipolar crystalline quartz flake and a heavily patinated mudstone flake. The artefacts were found eroding out of a sandy deposit approximately 565 metres in elevation.

Plate 5: Artefacts form WV AMBS 3.

Table 6: WV AMBS 3 artefacts.

Material	Total Artefacts	Colour	Quality	Size Range (cm)		Type/s	Co-ordinates	
				Min	Max		Easting	Northing
Mudstone	1	Yellow/cream mottled	good	1.4	3.0	Flake (R/U)	238081	6316876
Quartz	1	Milky Crystal	good	1	1.8	Flake (Bipolar)	238081	631876
Volcanic	1	Grey	good	5	5.5	Flake (20% Cortex)	238081	631876

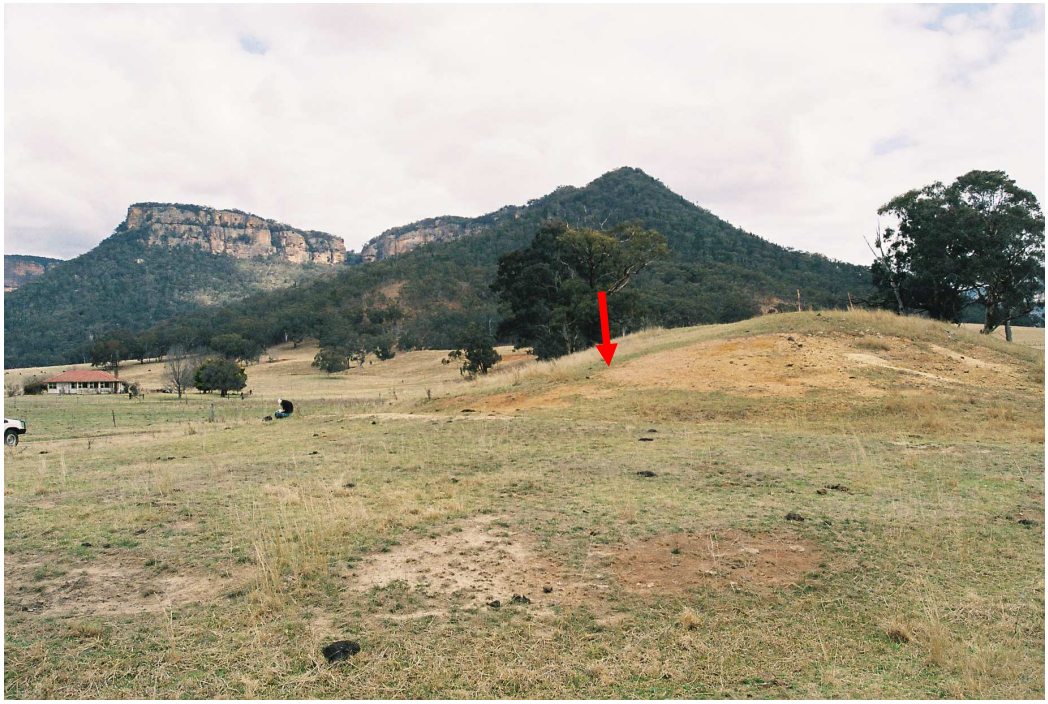

Plate 6: WV AMBS 3 facing south. Artefacts were found eroding out of the edge of the alluvial fan (arrow).

4.4 WV AMBS 4

This site is an artefact scatter located on the same hill as WV-AMBS 03. The site is situated along the southern side of an access road leading to a stockyard on the western side of the hill. The site consists of one mudstone flake and one bipolar quartz core. The artefacts were found eroding out of the side of the hill where it had been cut by the road at an elevation of 570 metres.

Plate 7: Artefacts from WV AMBS 4.

Table 7: WV AMBS 4 artefacts.

Material	Total Artefacts	Colour	Quality	Size Range (cm)		Type/s	Co-ordinates	
				Min	Max		Easting	Northing
Mudstone	1	Cream	good	1	1.5	Flake	237916	6316615
Quartz	1	Milky	low	2	3.0	Flake Frag. (Bipolar)	237916	6316615

Plate 8: WV AMBS 4 facing east (towards the homestead) from the stockyards. Artefacts have eroded out of the alluvium where the track has cut through the surface.

4.5 WV AMBS 5

This site is located on the eastern side of Carne Creek approximately one kilometre south of the homestead (outside of the proposed development precinct). An isolated artefact of silious tuff was located at the base of a slope near a natural drainage channel. Apart from the small exposure caused by the channel the area is covered in a thick grass, which limited surface visibility.

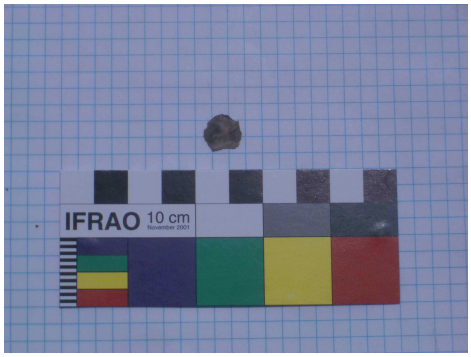

Plate 9: Tuff artefact from WV AMBS 5.

Table 8: WV AMBS 5 artefacts.

Material	Total Artefacts	Colour	Quality	Size Range (cm)		Type/s	Co-ordinates	
				Min	Max		Easting	Northing
S.Tuff	1	Grey	Good		1.5	Flake	238967	6315668

Plate 10: WV AMBS 5 facing west (left picture) towards Carnes Creek (and vehicle) and east (right picture) towards the upper alluvial fan slopes.

4.6 WV AMBS 6

This site is located on the eastern side of Carne Creek approximately two kilometers southeast of the homestead. Three artefacts were found within 15m along an eroded edge of an alluvial fan on the north side of the fan formation. The artefacts consist of chert and tuff flakes and flake fragment. The artefacts displayed some edge damage and the tuff flake exhibited a brown-yellow patina. It is likely that the artefacts are not in situ and have been washed with the alluvium.

Plate 11: Artefacts from WV AMBS 6.

Table 9: WV AMBS 6 artefacts.

Material	Total Artefacts	Colour	Quality	Size Range (cm)		Type/s	Co-ordinates	
				Min	Max		Easting	Northing
Chert	1	Grey/banded	Good	1	1.5	Flake	239180	6314810
Chert	1	Grey	Good	1.5	1.5	Flake Fragment (distal)	239180	6314810
S.Tuff	1	Cream/yellow	Good	1.5	4.3	Flake	239180	6314810

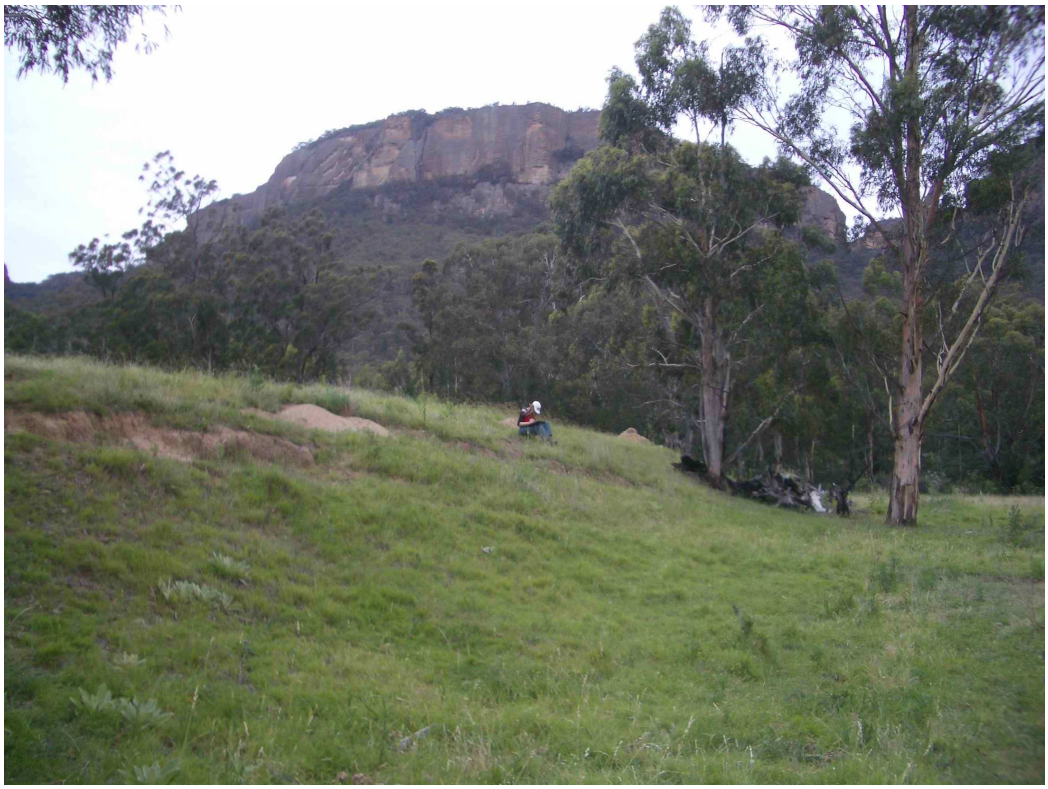

Plate 12: WV AMBS 6 facing west towards Wolgan Pinnacle. Artefacts were found eroding out of the edge of the alluvial deposit.

4.7 WV AMBS 7

This site is located at the entrance gate to the property off of Wolgan Road. This site is the largest open scatter identified consisting of several hundred artefacts. The site extends from the alluvial exposures along the track to the sandstone hill (see PAD 3) southeast of the entrance. Artefacts are found in all exposed areas within 200m east and southwest of the entrance and approximately 50m north and south. The subsurface has been exposed due to a small drainage channel cutting across the road and hill. Substantial clusters of tuff and quartz were identified, as well as small groupings of silcrete, quartzite and chert. The table below is indicative of the raw material range and artefact types dispersed over the extended site.

Table 10: WV AMBS 7 artefacts (indicative).

Material		Total Artefacts	Colour	Quality	Size Range (cm)		Type/s	Co-ordinates	
					Min	Max		Easting	Northing
A	S.Tuff	30	Grey/yellow /cream	good	0.5	3.5	9 Flakes (1R), 1 Broken Flake (R), 1 Core, FFs & FPs	239747	6319779
	Silcrete	1	Yellow	good	1	1.5	Flake	239747	6319779
	Quartzite	1		good	1	1.5	Flake Fragment	239747	6319779
	Chert	1	Orange	good	1	1.5	Flake	239747	6319779
	C. Quartz	5		good	1	1.5	1 Flake, 4 Flake Frags	239747	6319779
	M. Quartz	4		good	1	1.5	1 Flake (R/U)	239747	6319779
B	S.Tuff	15		good	1.5	1.5	4 Flakes	239545	6319769
	Chert	1	Banded	good	1.5	1.5	Flake	239545	6319769
	C. Quartz	5		good	1.5	2	2 Flakes	239545	6319769
	M. Quartz	1		good	1.5	2		239545	6319769
C	S.Tuff	12	Yellow/grey	good	2	2.5	4 Flakes, 1 Core	239538	6319760
	Chert	2	Banded	good	2	2.5	Flakes	239538	6319760
	Quartzite	3		good	3	3	2 Flakes	239538	6319760
D	S.Tuff	13	Cream/grey/ pink/red	good	2	3	6 Flakes, 2 Cores	239538	6319760
	Quartz	3		good	2	3.5	3 Flakes	239535	6319758

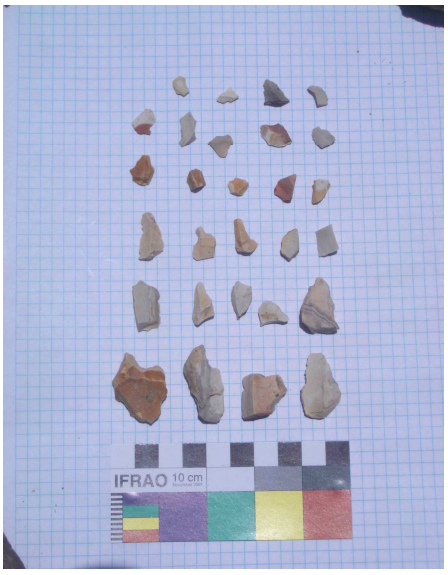

Plate 13: Tuff artefacts from WV AMBS 7.

Plate 14: WV AMBS 7 facing west with view of main entrance to the property and Donkey Mountain in the background on the left.

Plate 15: WV AMBS 7 facing east along main vehicle track with the Wolgan River in the background.

4.8 WV AMBS 8

This site is located on the main vehicle track leading from Wolgan Road into the homestead approximately 800m from the property entrance. Two tuff artefacts were found along the edge of the road after it takes a sharp westerly bend and then heads due south. One of the artefacts was a backed geometric with visible usewear/damage along the edge.

Plate 16: Tuff artefacts from WV AMBS 8.

Table 11: WV AMBS 8 artefacts.

Material	Total Artefacts	Colour	Quality	Size Range (cm)		Type/s	Co-ordinates	
				Min	Max		Easting	Northing
S.Tuff	1	Grey	good	1.5	3.5	Flake	239635	6319254
S.Tuff	1	Grey	good	3	2.3	Geometric BA (R/U)	239635	6319254

Plate 17: WV AMBS 8 facing northeast along the main vehicle track.

4.9 WV AMBS 9

This site is located on an unformed vehicle track approximately 500m west of the homestead, about 250m west of the stockyards. Artefacts were found along the track where it cut through a highpoint exposing the top of an alluvial fan.

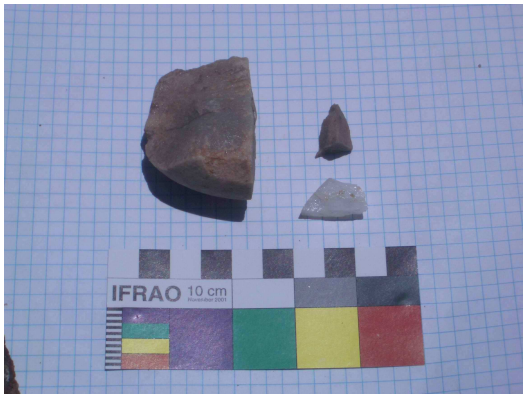

Plate 18: Artefacts from WV AMBS 9.

Table 12: WV AMBS 9 artefacts.

Material	Total Artefacts	Colour	Quality	Size Range (cm)		Type/s	Co-ordinates	
				Min	Max		Easting	Northing
S.Tuff	1	Grey	good	2	5.5	Flake	237656	6316650
S.Tuff	1	Grey	poor	3.5	6.4	Flake (2 conjoined pieces)	237656	6316650
S.Tuff	1	Grey	good	1	2	Broken Flake (blade FL)	237745	6316635
S. Quartz	1		poor	1	2	Flake	237574	6316662

Plate 19: WV AMBS 9 facing east along unformed track.

4.10 WV AMBS 10

This site is located in the south western portion of the property along an unformed vehicle track approximately two kilometres west of the homestead. The site is situated on a relative highpoint east of swampy ground and is wrapped by the slopes of the surrounding ridge. Shallow drainage channels run on other side of the site/highpoint. The site consists of 18 artefacts several of which appear to come from the same tuff core.

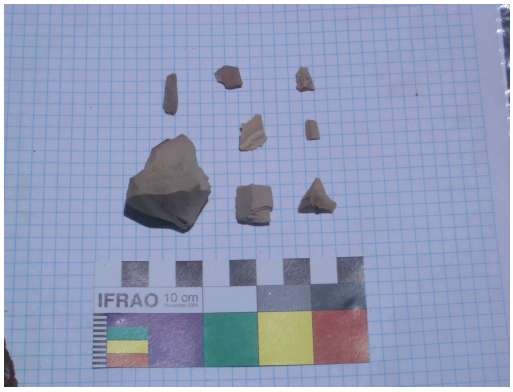

Plate 20: Selection of artefacts from WV AMBS 10.

Table 13: WV AMBS 10 artefacts.

Material	Total Artefacts	Colour	Quality	Size Range (cm)		Type/s	Co-ordinates	
				Min	Max		Easting	Northing
S.Tuff	8	Light grey/cream yellow	good	1	2	1 Core, 1Flake (Bladelette), 2 Flakes, 1 Broken Flake, 1 Flake Frag, 2 Flaked pieces	236621	6315970
Silcrete	1	grey	good	2	2.4	Flaked Piece	236621	6315970
Chert	7	Banded	good	2	2	6 Flakes, 1 Flaked Piece	236621	6315970
Quartz	1	grey	good	2	2	Flake	236621	6315970
Quartzite	1	grey	good	1.5	3	Flaked Piece	236621	6315970

Plate 21: WV AMBS 10 facing southwest along a fenceline leading towards the site. High grass made it impossible to identify artefacts outside of erosion areas.

4.11 WV AMBS 11

This site is located just outside of the property in the Wollemi National Park. The site (240588E 6318735N) is found in the colluvial pass leading up to the Gloworm Tunnel. The site is a small rock shelter found in a medium sized colluvial boulder. One white child size (11cm wide, 12cm long) left hand stencil and some indeterminate red lines are found in the shelter (10m x 2m 3m). No lithics were found in the deposit. Several colluvial boulders line the pass and it is possible that more art may exist in this area.

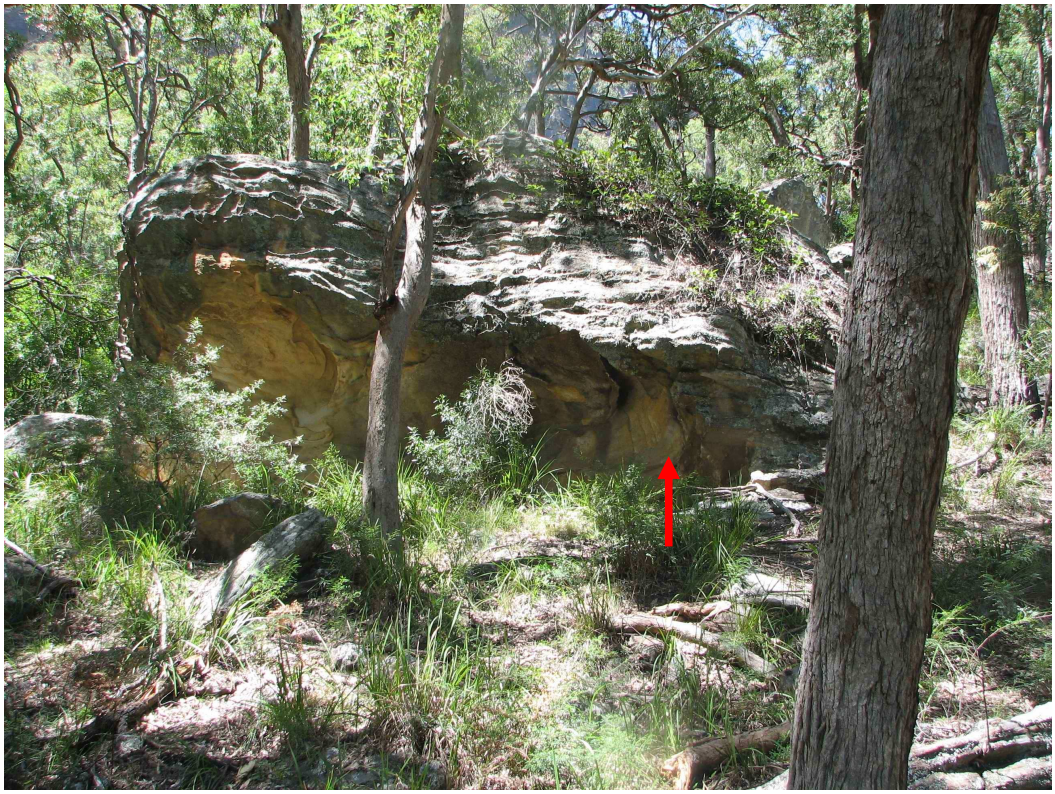

Plate 22: WV AMBS 11 facing east looking at the colluvial boulder / rock shelter. The hand stencil is located in the lower right of the shelter (arrow).

Plate 23: WV AMBS 11 view of the inside of the shelter, location of art is marked by the arrow.

Plate 24: WV AMBS 11 image of the child size hand stencil, faint red lines are evident in the lower left side of the photograph (arrow).

4.12 WV AMBS 12

This site is located within the grounds of the homestead, near the equipment storage sheds. This site is situated within the current development precinct. The site is set on a hardpan sandy alluvial deposit. The surface of the ground has been exposed by a series of vehicle tracks. The site consists of six chert flakes, which were embedded in the hard sandy surface.

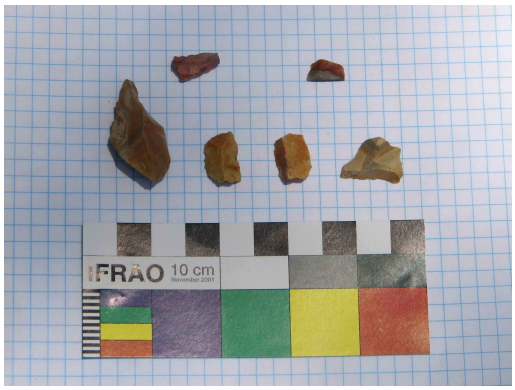

Plate 25: Artefacts from WV AMBS 12.

Table 14: WV AMBS 12 artefacts.

Material	Total Artefacts	Colour	Quality	Size Range (cm)		Type/s	Co-ordinates	
				Min	Max		Easting	Northing
Chert	6	Red, yellow, creamy/banded	good	2	3.5	4 Flakes (1 U), 2 Flaked Pieces	238267	6316633

Plate 26: WV AMBS 12 facing south from the workshed area. Hardpan sandy deposit containing artefacts is visible in the foreground.

4.13 WV AMBS PAD 1

PAD 1 is located on the eastern side of Carne Creek and is defined by the development precinct. Artefacts are found in the alluvial deposits north and south of this PAD. The PAD sits on an alluvial fan deposit which displays good stratigraphic integrity along its edges. This PAD is elevated from the creek flat which suggests that the area is less prone to severe flooding.

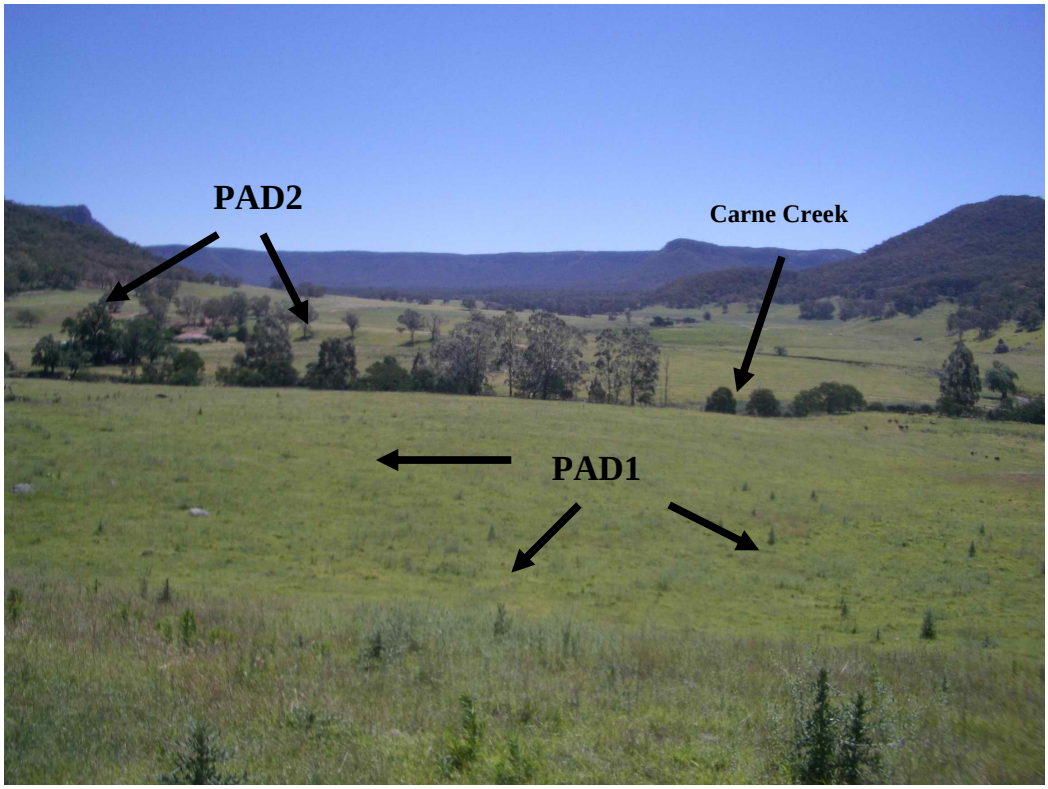

Plate 27: View the edge of the elevated alluvial fan deposit of PAD 1 facing west towards the northern portion of PAD 2 (homestead visible).

4.14 WV AMBS PAD 2

PAD 2 is located on western side of Carne Creek and is the current location of the Wolgan station/homestead. The PAD is defined by the development precinct. The PAD sits on a deposit of alluvium which has been subject to periodic flooding. The impact of this flooding on the potential archaeology is unknown, however sites are found on the margins WV AMBS 3 and on exposures within the grounds of the homestead (WV AMBS 12). Because it is not possible with the current level of investigations to determine the depositional integrity of the PAD it was determined that a cautious approach should be adopted and the entire development precinct be identified as PAD.

4.15 WV AMBS PAD 3

PAD 3 is located at the northern boundary of the study area, west of the main entrance. This PAD is spatially related to WV AMBS 7 and represents a possible extension of the site. The PAD sits on a relatively flat shale/sandstone formation above Wolgan Road. The PAD is located near the junction of Barton Creek, Tunnel Creek and the Wolgan River. Like all PADs in this report, it is defined by the development precinct. Proposed development plans indicate a new road will be cut through this area. The PAD appears to exhibit shallow but good depositional integrity as the surface shows only minor levels of recent disturbance.

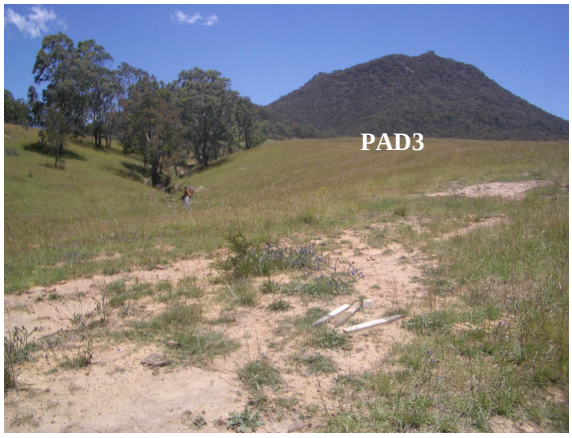

Plate 28: View of PAD 3 facing west-southwest from WV AMBS 7.

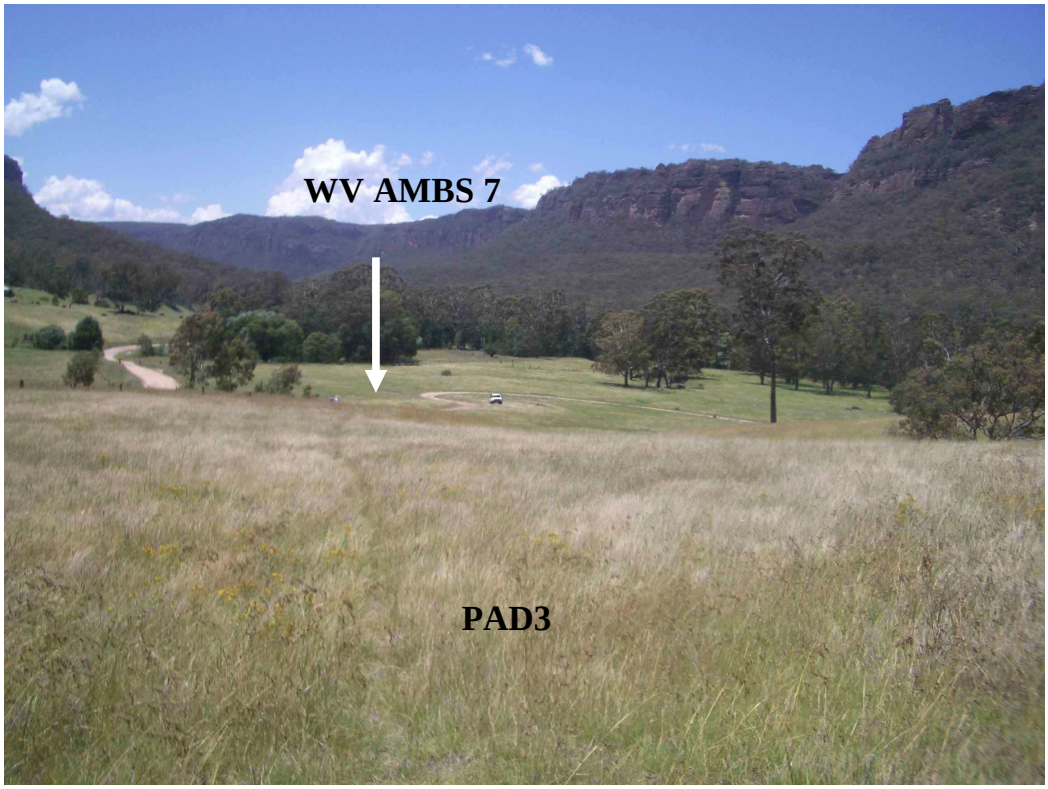

Plate 29: View from the top of PAD 3 facing east towards WV AMBS 7 and the Wolgan River.

5 Significance Assessment

5.1 Assessment Criteria

One of the primary steps in the process of cultural heritage management is the assessment of significance. Not all sites are equally significant and not all are worthy of equal consideration and management (Sullivan and Bowdler 1984, Pearson and Sullivan 1995:7). The determination of significance can be a difficult process as the social and scientific context within which these decisions are made is subject to change (Sullivan and Bowdler 1984). This does not lessen the value of the heritage approach, but enriches both the process and the long-term outcomes for future generations as the nature of what is conserved and why, also changes over time.

Significance assessment can generally be described under three broad headings (Pearson and Sullivan 1995:7):

- value to groups such as Aboriginal communities;
- value to scientists and other information gatherers; and
- value to the general public in the context of regional, state and national heritage.

Professional guidelines to the assessment of significance (NPWS Aboriginal Heritage Guidelines 1997) discuss two types of significance: social significance and archaeological significance.

Social Significance
This area of assessment concerns the value/s of a feature or site to a particular community group, in this case the local Aboriginal community. Aspects of social significance are relevant to sites, objects and landscapes that are important or have become important to the local Aboriginal community. This importance involves both traditional links with specific areas as well as an overall concern by Aboriginal people for sites generally and their continued protection. Aboriginal cultural significance may include social, spiritual, historic and archaeological values.

Scientific Significance
For archaeologists, scientific significance refers to the potential of a site to contribute to current research questions. Alternately, a site may be an *in situ* repository of demonstrably important information, for example rare artefacts of unusually high antiquity.

Scientific significance is assessed using criteria to evaluate the contents of a site, state of preservation, integrity of deposits, representativeness of the site type, rarity/uniqueness and potential to answer research questions on past human behaviour (NPWS 1997). DEC guidelines recommended criteria for assessing archaeological significance include:

- *Archaeological Research Potential* - significance may be based on the potential of a site or landscape to explain past human behaviour and can incorporate the intactness, stratigraphic integrity or state of preservation of a site, the association of the site to other sites in the region, or a datable chronology;

- *Representativeness* - all sites are representative of those in their class (site type/subtype) however; the issue here relates to whether particular sites should be conserved to ensure a representative sample of the archaeological record is retained. Representativeness is based on an understanding of the regional archaeological context in terms of site variability in and around the study area, the resources already conserved and the relationship of sites across the landscape; and

- *Rarity* – which defines how distinctive a site may be, based on an understanding of what is unique in the archaeological record and consideration of key archaeological research questions (i.e. some sites are considered more important due to their ability to provide certain information). It may be assessed at local, regional, state and national levels.

High significance is usually attributed to sites, which are so rare or unique that the loss of the site would affect our ability to understand an aspect of past Aboriginal use/occupation of an area. In some cases a site may be considered highly significant because it is now rare due to destruction of the archaeological record through development. Medium significance is attributed to sites, which provide information on an established research question. Low significance is attributed to sites, which cannot contribute new information about past Aboriginal use/occupation of an area. This may be due to site disturbance or the nature of the site's contents.

5.2 Statement of Significance

The majority of the study area is assessed as exhibiting medium-high archaeological potential and thus medium-high archaeological significance. The study area represents a complete archaeological landscape and is therefore of importance because it has the potential to offer a holistic picture of the prehistoric past. The study area exhibits only minor long term disturbance outside of the creek beds. The effect of periodic flooding in this area (i.e. alluvial flats) on the archaeological record is unknown, although recent investigations have shown that flooding may have less of an impact on depositional integrity of localised deposits then previously assumed (Jo McDonald CHM Pty Ltd 2004).

The identified archaeological PADs exhibit high potential for intact archaeological deposit. The 12 identified sites contain observable archaeological material. All of the PADs and sites are of at least moderate archaeological significance and should be conserved if possible. If it is not possible to conserve the sites or PADs then a salvage excavation should be undertaken in order to record the materials at these places.

The Bathurst LALC have expressed their views on the cultural significance of the study area in their letter (appendix C).

6 Statutory Controls

The current proposal comes under *Environmental Planning and Assessment Act* 1979 (EP&A Act) which requires that consideration be given to environmental impacts as part of the land use planning process. In NSW, environmental impacts include cultural heritage impacts. Part 3 of the Act relates to planning instruments including those at local and regional levels, Part 4 of the Act controls development assessment processes and Part 5 of the Act refers to approvals by determining authorities.

The new Part 3A (2005) of the EP&A Act changes the way development applications for major and infrastructure projects are assessed and approved. The 3A approval will integrate the approvals of eight previous separate acts. It will also provide for concept approvals for major complex projects so that their development can be delivered in a staged manner.

Environmental assessments (including Aboriginal cultural heritage assessments) are required as part of the assessment and approval process for major projects. Proponents are guided in their assessments by guidelines and protocols.

6.1 Aboriginal cultural heritage and consultation

New draft guidelines for Aboriginal Cultural Heritage Impact Assessment and Community Consultation (2005) have been issued by the Department of Environment and Conservation. These guidelines identify the important factors that need to be considered when assessing potential impacts on Aboriginal cultural heritage for development applications assessed under Part 3A of the EP&A Act 1979. At this stage the guidelines are still in draft form with no set methodology, performance criteria and consultant requirements. It is advisable that all assessments should be conducted following the DEC's Aboriginal Cultural Heritage Standards and Guidelines Kit until the establishment of a firm set of Part 3A guidelines.

Throughout the entire process it is important that an appropriate level of consultation be undertaken with the Aboriginal communities regarding the proposed development and management of Aboriginal heritage.

7 Conservation, Management and Recommendations

The study area represents a complete cultural heritage landscape with moderate-high archaeological significance. Archaeological assessments of the subject land have identified 11 discrete Aboriginal sites and three specific areas of defined archaeological potential (PADs). For Aboriginal people the significance of individual features (sites) is derived from their inter-relatedness with the cultural landscape. This means that it is not possible to assess the identified sites in isolation and any assessment must be a holistic approach.

The Wolgan Valley property is scientifically and culturally significant because it is in itself a representative sample of archaeological landforms. Large portions of the property are in effect continuums of archaeological activity, spread both along the valley and up onto the ridgetops. Best practice conservation outcomes should be concerned with preserving the property's archaeology en masse. This is by far the best possible conservation outcome. However, archaeological continuums (cultural landscapes) do not preclude the development of the site. Continuums by their nature display varying degrees of significance. All parts are important, but not all parts are equally important. Unfortunately it is not possible to ascertain the true nature of the study area's archaeology solely from surface survey.

Although the proposed resort and facilities are designed to sit sympathetically within the valley, the proposed works will still impact on the Aboriginal cultural heritage contained in the valley. Points of impact are primarily limited to the development precinct and access corridor. The likelihood of Aboriginal objects in these areas is high where subsurface excavations, roadworks or substantial land sculpting is proposed. Test excavation will be required where sites or PADs have been identified to determine the extent, integrity, spatial distribution and nature of the subsurface archaeology at specific locations. Once the subsurface has been assessed it will be possible to position the development in such a way that it minimises the impact on the archaeology.

7.1 Recommendations

7.1.1 Aboriginal heritage assessment and management plan

The current assessment of Aboriginal heritage identified Aboriginal objects and substantial potential archaeological deposits on the property. These findings combined with the probabilities outlined as part of the predictive model show that the property exhibits a high level of archaeological sensitivity. Given the findings of this assessment a further stage of archaeological assessment (test excavation) is warranted for the detailed design and construction works.

This plan involves the following:

- Continuation of consultation with the Aboriginal community.
- Reconcile the current building sitting plan with the location of identified Aboriginal objects and PADs, in consultation with the project architect. The aim

is to minimise the impact of the building sitting plan on identified or potential Aboriginal objects.

- Test excavation of locations where the current building sitting plan conflicts with identified or potential archaeological deposit, where it is not practical to alter the building sitting plan.
- Once the extent, integrity, spatial distribution and nature of the subsurface archaeology is identified (through test excavation) the following management strategy should be implemented.
    - ***Conserve*** - sites of high scientific and cultural significance should be conserved by avoiding the placement of building works over these features and ensuring their ongoing protection.
    - ***Salvage*** - sites of moderate to good scientific or cultural significance should be conserved where possible. If preservation of sites is not possible due to design inflexibility, the sites should be salvaged to ensure that a proper record is obtained.
    - ***Destroy*** - sites of low scientific or cultural significance should not pose a constraint to development.
- Comprehensive reporting regarding the archaeological work undertaken in accordance with existing guidelines, including interpretation models and conservation and management plans.

Objectives

- Comprehensive consultation with the Aboriginal community in determining the property's archaeological significance.
- Full investigation of the Aboriginal archaeological potential and cultural value of the site.
- Wherever practicable, to retain Aboriginal archaeological objects in situ.
- To ensure that the detailed sitting and design of all proposed buildings and works minimise the disturbance of Aboriginal archaeological objects.
- To ensure that any Aboriginal archaeological objects that are proposed to be disturbed, destroyed or removed are appropriately documented and/or transferred to the custody of their traditional owners.
- To incorporate a plan for the interpretation of Aboriginal values for the site within the proposed resort.
- To generate and implement short term (excavations and reporting) and long term conservation (education and impact mitigation) management plans for Aboriginal objects.

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Appendix A Wolgan Valley Aboriginal Cultural Heritage Stage I Report

AMBS Reference: 2005014

7 September 2005

Ian Cady
UrbisJHD
Level 18
60 Castlereagh Street
Sydney NSW 2000

Dear Ian

Preliminary archaeological assessment Emirates Luxury Resort, Wolgan Valley

This letter outlines a preliminary archaeological assessment of the proposed Emirates Luxury Resort in the Wolgan Valley, NSW. The assessment was undertaken for UrbisJHD on behalf of Emirates Hotels. The preliminary results are not a conclusive archaeological assessment and further archaeological work and consultation with the Aboriginal community will be required. Only 25% of the development precinct was intensively surveyed during the current investigation.

Australian Museum Business Services (AMBS) was contracted to undertake a brief archaeological inspection of the proposed site for the Emirates Luxury Resort. AMBS spent nine hours inspecting the property, primarily concentrating on the proposed development precinct. However, due to the scale of the development, AMBS was able to inspect only 25% of the development precinct and a small portion of the remainder of the property. During this inspection AMBS identified four archaeological sites, all of which are located outside of the currently proposed development precinct. The lack of observed archaeological sites within the development precinct, however, cannot be taken as indicative of an absence of archaeological material. It is likely that archaeological material exists within the development precinct, but was not visible due to the low effective visibility and the limited amount of time spent investigating the property. During the inspection it was noted that artefacts were apparent in virtually all significantly eroded areas, outside of the immediate creek line. No eroded areas of significance were visible within the development precinct. Further archaeological work is recommended. Recommendations include an on site consultation and survey with the Bathurst Local Aboriginal Land Council (BLALC), predictive modelling, an impact assessment and archaeological significance assessment.

Consultation

Warwick Peckham chairman of the BLALC was contacted prior to the survey. Due to the tight timeframe, BLALC was unable to participate in the survey. Warwick has indicated that BLALC would like to participate in all future assessments. A copy of this letter will be forwarded to BLALC.

Significance

The Wolgan Valley is located in proximity to highly archaeologically significant portions of the greater Blue Mountains and Wollemi National Parks. One of the cornerstones of our understanding of past culture in the Sydney Basin comes from a series of excavations undertaken by the Australian Museum in the 1950's and 1960's in the Capertee Valley near Glen Davis, approximately 20 kilometres to the north. These excavations helped to establish a greater antiquity for Aboriginal culture than had previously existed. The Capertee sites remain important today because they showcase a range of technological changes, which are continually being researched and debated. New archaeological information from the Wolgan Valley would play an important part in increasing our understanding of Australia's cultural heritage because it would be directly comparable with the Capertee information. In addition, the rock-art of the Wollemi region has recently become internationally significant with the discovery of the superb art site known as Eagles Reach. This site is one of the best art sites in Australia and is extremely important to rock-art researchers, Aboriginal community and general public. Recent investigations within the Wollemi during the past four years have re-discovered over 200 art and occupation sites, which have vastly increased our understanding of Aboriginal culture in rugged and

remote environments. In this light, several important rock-art sites are also found within 10 kilometres of the Wolgan Valley. Rock shelters in direct proximity to the proposed resort may also contain rock-art, but have as of yet not been investigated. Blackfellows Cave near Wolgan Gap, for example, is covered by handstencils and stencilled boomerangs and axes. Concentrations of rock-art sites are also found in the east near Mount Cameron and Galah Mountain and in the north within the Capertee Valley.

Wolgan Valley Survey

The survey of the Wolgan Valley property for the proposed Emirates Resort was conducted on the 5th and 6th of September. A vehicle survey was conducted of the proposed main road and a combination of vehicle and pedestrian survey was conducted for the remainder of the development precinct as well as targeted portions of the property. The following sites were identified:

Site Name	Easting	Northing
Wolgan Valley-AMBS 01	239566	6314374
Wolgan Valley-AMBS 02	238593	6317089
Wolgan Valley-AMBS 03	238081	6316876
Wolgan Valley-AMBS 04	237916	6316615

Each site was recorded using standard site cards supplied by the Department of Environment and Conservation (DEC). All site cards will be forwarded to the DEC as required by legislation. Copies of the site cards are attached.

Wolgan Valley-AMBS 01

This site is located in the southern arm of the property on the eastern side of Carne Creek approximately 1.8 kilometres south of the development precinct and 200 metres northeast of Carne Creek just above the 580 metre contour line. The site is situated in a large eroded area 30 metres north of a small westward flowing tributary. The site consists of one mudstone core. The site was found late in the day and poor lighting may have hampered the identification of further artefacts.

Wolgan Valley-AMBS 02

This site is located 100 metres north of the development precinct within cleared pasture which is part of the national park. The site is located on a flat elevated terrace just east of a small cluster of trees. The terrace extends some 50-75 metres towards the south. The site is approximately 200 metres east of Carne Creek and on the edge of the 570 metre contour. Artefacts were visible along the heavily eroded northwestern edge of the terrace, near an isolated sandstone boulder. The site consists of six mudstone flakes. Two artefacts were initially identified at this site late in the first day of survey and a follow-up inspection the next day in good light yielded four additional artefacts.

Wolgan Valley-AMBS 03

This site is at the northern tip of a low hill approximately 150 metres west of the Wolgan homestead. The hill is 100 meters southeast of the Wolgan River and 250 metres west of Carne Creek and is adjacent to the main homestead road. The site consists of three artefacts: one large basalt flake, one bipolar crystalline quartz flake and a heavily patinated mudstone flake. The artefacts were found eroding out of a sandy deposit approximately 565 metres in elevation.

Wolgan Valley-AMBS 04

This site is an artefact scatter located on the same hill as WV-AMBS 03. The site is situated along the southern side of an access road leading to a stockyard on the western side of the hill. The site consists of one mudstone flake and one bipolar quartz core. The artefacts were found eroding out of the side of the hill where it had been cut by the road at an elevation of 570 metres.

Interim Results

The results of the preliminary inspection indicate the visible presence of archaeological material on the Wolgan Valley property and within the adjacent national park. An archaeological synopsis of the property is as follows:

> **Artefacts are visibly present in low densities across the property where significant erosion has exposed the subsurface. It is possible that subsurface artefacts will be located across all portions of the property. The density and distribution of artefact on the property will vary depending on geomorphic and cultural factors.**

Previous experience in similar environments within the Sydney Basin suggests that the observed low densities and occurrences of artefacts are not a reliable indicator of actual artefact numbers. Rather, the overall low numbers of artefacts identified during the survey are indicative of the substantial quantity of grass currently covering the property (i.e. limiting the effective surface visibility) and the limited amount of time spent surveying the 2000 hectare site.

An interesting observation is that archaeological material is most visible between the 560-580 metre contours. This is likely related to the tendency for the edges of these contours to erode more readily because of land clearance across the floor of the valley, but it may also indicate a greater degree of fluvial disturbance within the deposit below this elevation level. Further work will be able to explore this observation more closely and examine the possible impact on potential subsurface archaeological deposits.

The survey also identified deep stratified deposit at multiple locations across the property. This deposit is principally a combination of alluviums and ranged from 0.5-2.0 metres in depth. Deep deposits of alluvium have the potential to yield artefacts at substantial depths; such artefacts would not be visible during a surface survey. On average it was noted that the artefacts identified during the present survey appeared to emanate from 5 - 6 cm below the surface.

Summary and Recommendations

The current preliminary archaeological assessment was able to identify the presence of archaeological material on the property. The current assessment however was only able to briefly examine a limited portion of the very large property. A summary of the preliminary results are as follows:

- Archaeological assessment is incomplete and further work is required;
- Artefacts have been found dispersed across the property;
- No consultation with the BLALC has taken place;
- The development precinct, as well as the remainder of the property has not been fully assessed.

The following recommendations are based on the findings of this preliminary study. Recommendations are as follows:

- Consultation and inspection with the Bathurst Local Aboriginal Land Council and other relevant Aboriginal groups is required in order that an Aboriginal heritage assessment of the property be completed;
- In conjunction with Aboriginal community consultation, the proponent should undertake further intensive archaeological survey of the development precinct and targeted survey of the remainder of the property. This step is necessary to establish a more informed understanding of the archaeology of the property and will form the foundation of a predictive model (below);
- Generate a predictive model for the property. This will allow for an informed assessment of the areas of the property which do not currently exhibit archaeological material. For example, a predictive model will be able to ascertain the probability of archaeological material occurring in areas of the development precinct which exhibit a dense coverage of grass (effectively precluding an effective surface survey);
- The outcome of the predictive model will allow management of the identified archaeologically sensitive areas within the final design concept;

- Generate a detailed report outlining the Aboriginal community's views on the potential sociocultural impacts resulting from the development and detailing the potential scientific impacts on the archaeological significance of the property. This report will provide opportunities for conservation and management outcomes across the property.

If you require any additional information, or if I can be of assistance in any way please contact me on (02) 9320 6466 or email matthewk@austmus.gov.au.

Yours sincerely

Dr Matthew Kelleher
Archaeologist / Project Manager

Appendix B Report by Bathurst LALC

BATHURST
LOCAL ABORIGINAL LAND COUNCII

149 Russell Street
Bathurst NSW 2795

PO Box 1500
Bathurst NSW 2795

Phone: 02 6332 6835
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EMIRATES RESORT WOLGAN VALLEY

A survey was conducted for Emirates Hotels (Australia) Pty Ltd over a three-day period from Tuesday 6th December 2005 to Thursday 8th December 2005. This survey is for the commissioning of the six star eco tourism luxury international standard Wolgan Valley Resort and Spa in Wolgan Valley. The survey area is located approximately 40km north east of Lithgow NSW on Wolgan Road at Newnes.

ROAD SURVEY

From the main entrance gate leading into the property a large open scatter of artefacts were located; covering an area approximately 50 metres by 200 metres. If this area is to be impacted for any purpose, test archaeological pits will need to be conducted. If another access route is chosen as entry into the Resort further surveys of this new route will need to be conducted.

MAIN BUILDINGS and ACCOMMODATION AREA

Artefacts were discovered in several locations this area, all sites and artefacts were photographed and their locations recorded. Due to the sensitivity of this survey area sub soil testing will be necessary in particular sections to determine the significance of these sites.

EMPLOYE/ RECREATIONAL BUILDINGS

No evidence of Aboriginal activity, artefacts, shelters or scared trees was recorded or discovered during this section of the survey.

Therefore if Emirates selects this area for further construction the Bathurst Local Aboriginal Land Council has no objections to the installations of buildings within this survey area.

SOUTH WEST AREA SURVEY

Adjacent to the swamp area an open scatter was discovered on the bush track. As this area is intended for recreational use little to no impact should occur. However if work on the road or building is to occur in this area further investigation will be necessary.

Due to recent rains creating tall lush grass, visibility was nonexistent for ninety-eight percent of all surveyed areas.

All open scatter sites and artefacts were photographed and locations recorded, the position for the artefacts and survey areas can be located on the maps provided by Dr Matthew Kelleher, Project Manager/Archaeologist from the Australian Museum.

Emirate Dec 05

BATHURST
LOCAL ABORIGINAL LAND COUNCIL

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Construction (eg. roads, buildings, stables etc) is not to commence until all building areas are finalised and all further survey and archaeological testing excavation are completed.

Once the final selection has been decided upon for all construction areas and all surveys and archaeological test pits have been completed the Bathurst Local Aboriginal Land Council has no objections to the purposed Emirates Resort project commencing.

Present during this survey were:

Joost Heymeijer	Project Manager Emirates Hotels (Australia) Pty Ltd
Dr Matthew Kelleher	Project Manager/Archaeologist Australian Museum
Alison Nightingale	Senior Project Manager/Archaeologist Australian Museum
Sharon Riley	National Parks & Wildlife Services Officer
Richard Peters	Sites Officer Bathurst Local Aboriginal Land Council
Chantel Peters	Sites Officer Bathurst Local Aboriginal Land Council

Richard J. Peters

RICHARD J PETERS
SITES OFFICER
13th DECEMBER 2005

Emirate Dec 05