

Archaeological investigation of the
Turner Road and Oran Park Precincts
within the South West Growth Centre,
Camden, NSW.

January 2007



Report to APP on behalf of
the Growth Centres Commission and Camden City Council

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1. INTRODUCTION AND BACKGROUND

This report was commissioned by APP on behalf of the Growth Centres Commission (GCC) and Camden Council. It documents the Stage 1 assessment of the Oran Park and Turner Road Precincts. This report summarises the existing information, identifies knowledge gaps and details further work to be undertaken in both Precincts.

1.1 Background

The Western Sydney Growth Centres project is seen to present an opportunity to provide housing for Sydney's growing population within an environmentally sustainable framework. The South West Growth Centre comprises a total area of c.17,000 ha and includes land between Camden in the south and Kemps Creek in the north. There are eighteen designated precincts within the South West Growth Centre.

The Oran Park and Turner Road Precincts are two of the first release precincts for the South West Growth Centre. The Oran Park Precinct (c. 1,120 ha) will be developed for a range of land uses. This includes residential (with approximately 8,500 dwellings proposed), and employment land, a town centre and open space. It is currently proposed that the Turner Road Precinct (which is c.540 ha) will be developed for residential purposes (with approximately 4,000 dwellings) and 80 ha of employment land.

All work undertaken for this study is being done in accordance with the Protocols and Precinct Assessment Method developed by the GCC and DEC (Appendix 1). This Stage 1 report documents the first step of the defined Protocols and Methodology involves the gathering and analysis of existing information.

1.2 Summary of findings and recommendations

Preliminary mapping of previous land use impacts indicates that there has been a significant amount of prior disturbance across the majority of the Oran Park and Turner Road Precincts. Land identified as having primarily agricultural land use has been identified as having the highest potential for containing intact archaeological sites. The land with the highest archaeological sensitivity has been mapped.

Ground truthing of these results will be undertaken with relevant stakeholders over 11 days of fieldwork. All of the groups who registered interest in being involved in the consultation for the Oran Park and Turner Road Precinct Assessments have been invited to contribute to the preparation of this document and will be sent a copy for review.

It is recommended that:

1. The Oran Park and Turner Road Precincts should be surveyed on foot in order to identify the presence of surface archaeological sites and to ground-truth the results of sensitivity mapping undertaken in Step 1;
2. The fieldwork should focus on areas identified as having particular potential for retaining intact archaeological sites across the study area such as:
 - ☉ Land identified as having a primarily agricultural land use and areas of good – high potential archaeological deposit identified through sensitivity mapping;
 - ☉ Original water holes at the junction of higher order streams;
 - ☉ Fluvial erosional bench above third and fourth order channels.
3. The TLALC and the other interested Aboriginal groups continue to be involved in all stages of the assessment process in accordance with the GCC guidelines;

1.3 Report authorship

This report was written by Amy Stevens, with contributions from Dr. Peter Mitchell (Groundtruth Consulting) and management input from Jo McDonald. Dr. Peter Mitchell (Groundtruth Consulting) undertook the land use interpretation, completed the assessment on the geomorphology and soils (Appendix 2) and contributed to the analysis of potential archaeological sensitivity.

2. ABORIGINAL CONSULTATION

The Oran Park and Turner Road Precincts fall within the boundaries of the Tharawal Local Aboriginal Land Council. Cubbitch Barta Native Title Claimants Aboriginal Corporation, Darug Tribal Aboriginal Corporation, Darug Custodial Aboriginal

Corporation and Darug Aboriginal Cultural Heritage Assessments have also been identified as stakeholders. Relevant documentation is provided in Appendix 3.

Advertising for interested parties has been undertaken in accordance with DEC guidelines. Notices were placed in the Koori News and the Indigenous Times on 23.11.06, as well as in the Wollandilly Advertiser on 28.11.06.

Responses registering interest were received by Mr Pat Lock of Carwoola Council Elders, Mr Nigel Robinson of Gundngarra Local Aboriginal Land Council, Ms Sarah James of the University of Western Sydney and Dr Greg Teal of the University of Western Sydney, all of whom indicated an interest in reviewing reports upon the completion of the site inspection. In accordance with their request, Mr. Nigel Robinson and Ms. Sarah James were also invited to attend the stakeholder meetings. La Perouse Botany Bay Aboriginal Corporation, Wadi Wadi Coomaditchie Aboriginal Corporation and Moran Elders Council have also registered separate expressions of interest in being involved in the project through the Northern Illawarra Aboriginal Corporation (NIAC).

All identified stakeholders were invited to contribute to the background research and prioritisation of further work.

Tharawal Local Aboriginal Land Council is interested in being involved in all aspects of the fieldwork and reporting in order to assist in the appropriate management of the cultural heritage for the study area.

Ms Glenda Chalker (Cubbitch Barta Native Title Claimants) recalls identifying artefacts while surveying the Denbigh curtilage, and that the landowners had collected some of these artefacts and submitted them with the Australian Museum. Ms Chalker indicated that she would like the landowner to accompany the archaeologist during the survey of that area to identify the location from which these artefacts were removed. As a part of the expected outcomes for this project, the Cubitch Barta group is interested in pursuing evidence that the Dharawal people were the original inhabitants of the land covered by the Oran Park and Turner Road Precincts.

A report that was commissioned by Cubbitch Barta in 1999 and written by Dan Tuck was not made available to the consultant due to a conflict of interest between Cubbitch Barta and several of the registered claimants being consulted as a part of this study.

Mr Des Dyer (Darug Tribal Aboriginal Corporation) noted that there has been very little archaeological work undertaken within the study area. Mr. Dyer expressed a strong interest in participating in the survey in order to add to our knowledge of the local archaeology.

Ms Leanne Watson (Darug Custodial Aboriginal Corporation) has registered interest in being involved in all aspects of the project.

Ms Celestine Everingham (Darug Aboriginal Cultural Heritage Assessments) observes that the entire area is close to permanent water and she believes there will be a significant number of sites within the study area.

La Perouse Botany Bay Aboriginal Corporation, Wadi Wadi Coomaditchie Aboriginal Corporation and Moran Elders Council have contributed to the background research through NIAC. Mr. Chris Illert has provided a large amount of information relating to the study area and surrounds on their behalf. Much of the information contained in the *Social and Cultural Associations* section of this report has been as a result of the contributions from these groups.

Survey of the Oran Park and Turner Road Precincts will be undertaken over 11 days once site access has been arranged. All of the identified stakeholders have expressed a strong interest in participating in the survey.

3. THE STUDY AREA

Oran Park Precinct is 1,119 ha of land at the south-western extent of the South West Growth Centre (Figure 1). South Creek runs along one boundary and The Northern Road bisects the Precinct (Figure 2). The two major land holders within this Precinct include the Oran Park Raceway and the Macarthur Anglican School. Denbigh heritage homestead is also located within this Precinct, as well as 10 smaller land holdings.

The Turner Road Precinct is 536 ha of land at the south-eastern extent of the South West Growth Centre (Figure 1). Camden Valley Way provides its north-west boundary, with Badgelly Road running through the middle of the Precinct (Figure 3). There are currently two major land holders within the Turner Road Precinct – the Camden Valley Golf Resort and St Gregory's College, which is located immediately adjacent to this precinct. There are 28 smaller land holdings located within the Precinct.

Figure 1: Plan of the South West Growth Centre, showing Precinct layout.

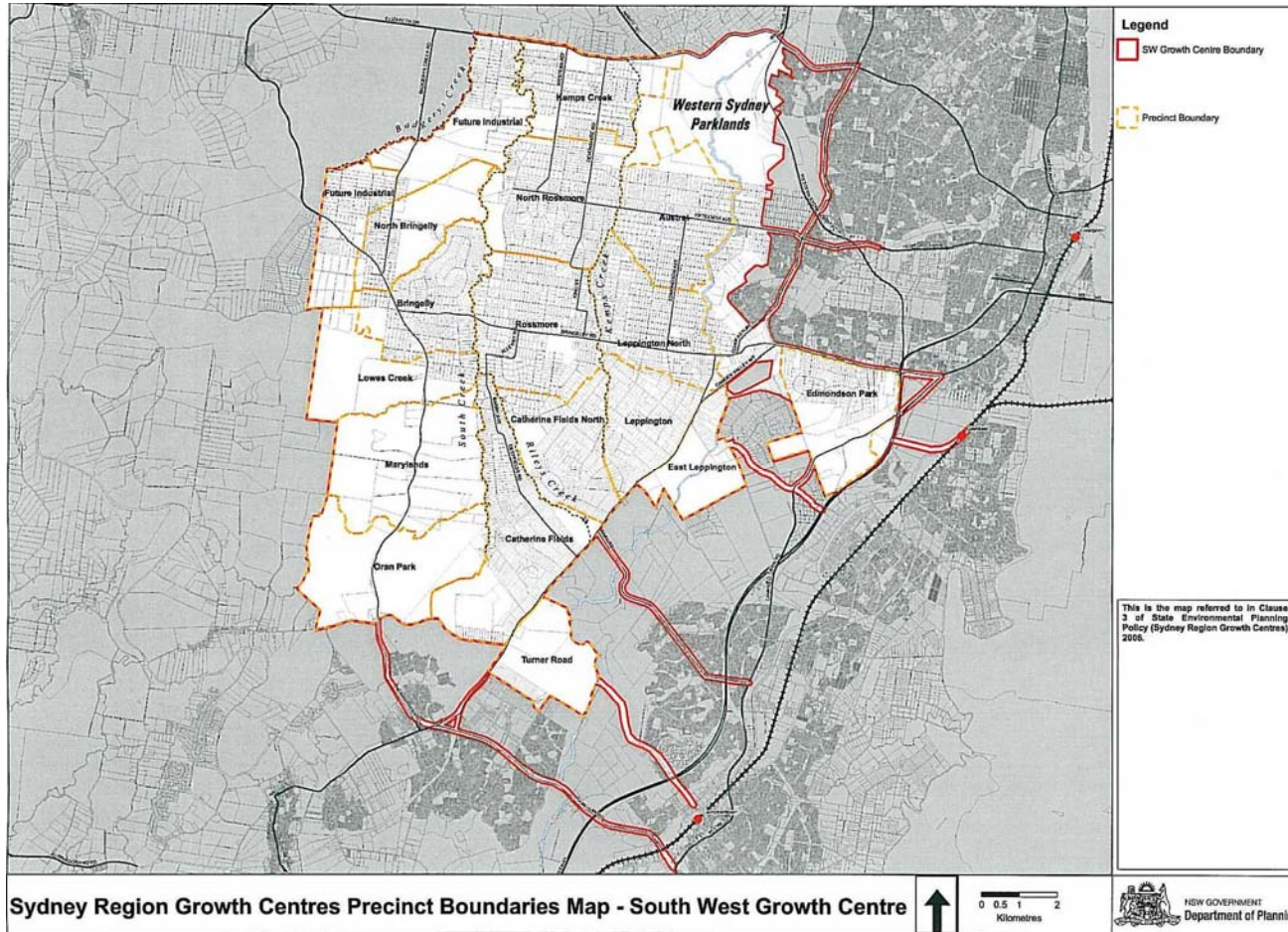


Figure 2: Indicative Layout Plan for the Oran Park Precinct. The grey shading indicates the Denbigh curtilage.

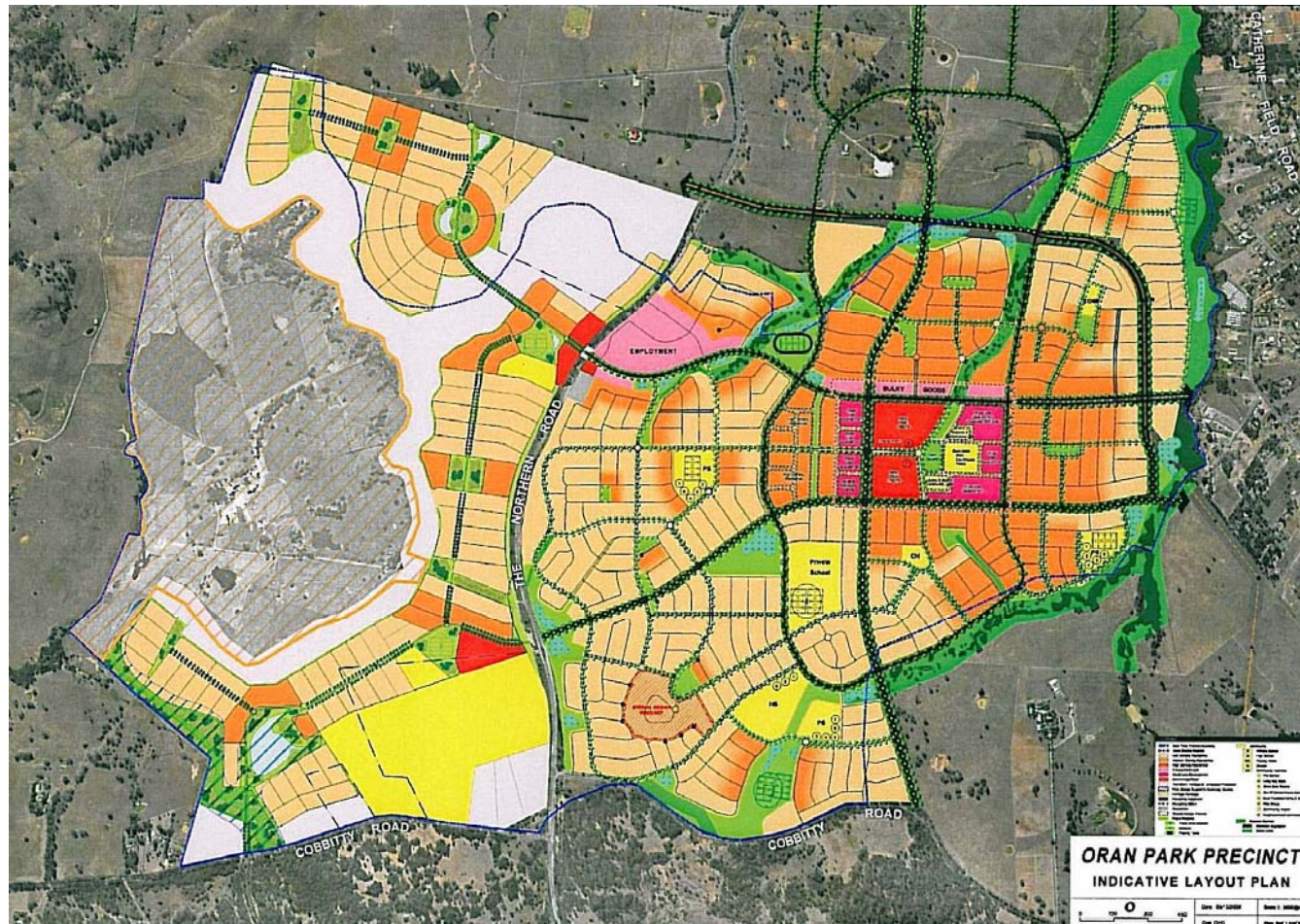
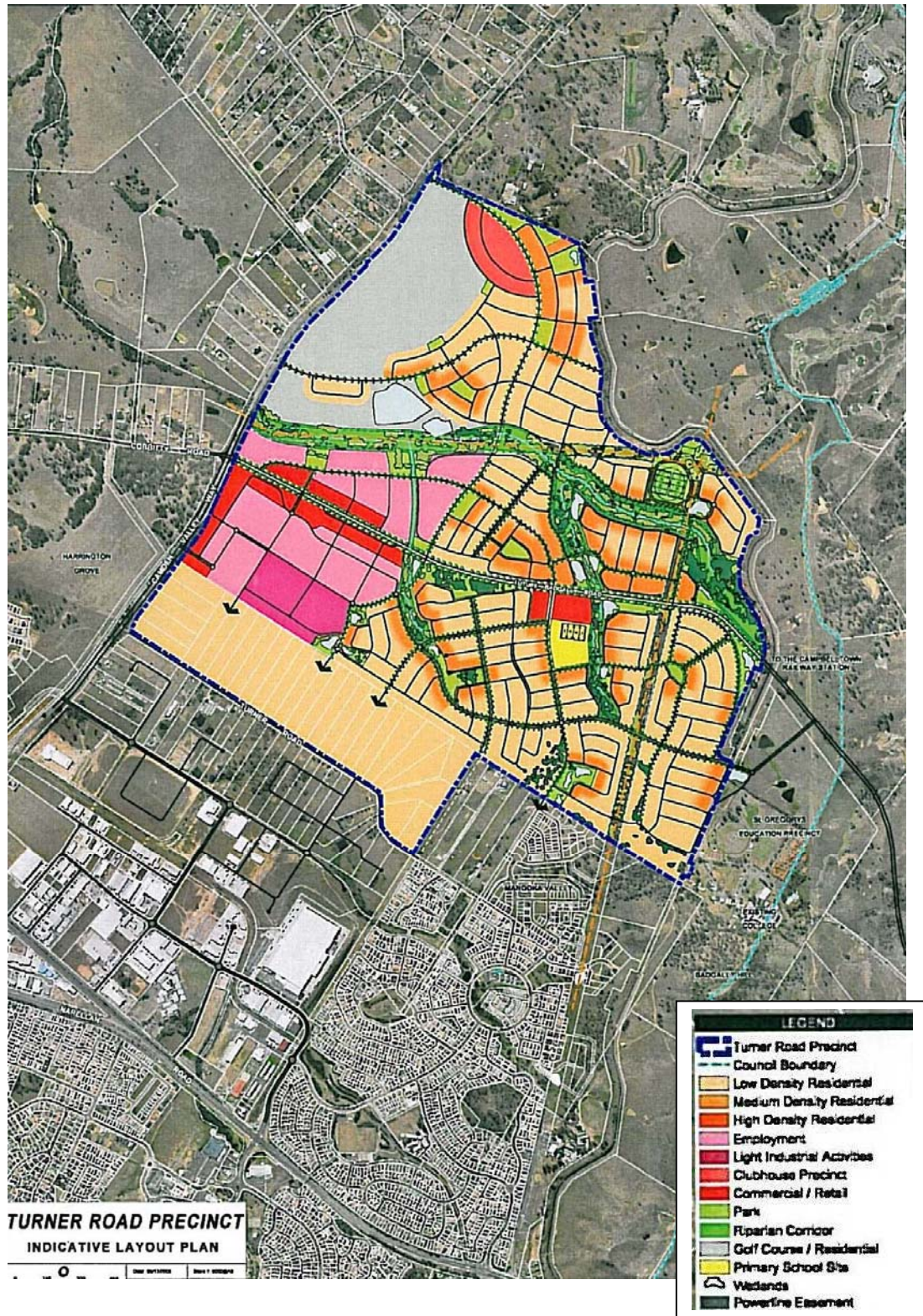


Figure 3: Indicative Layout Plan for the Turner Road Precinct.



3.1 History of European Land Use

The first land grant of 5,000 acres in the Cowpastures area was made in 1805 to John Macarthur. The government initially tried to deter settlement in the area to protect the wild herds of cattle that had escaped from the colony in 1788 and were rediscovered having multiplied greatly in number by 1795 (Ashton and Blackmore 1987). Macarthur's grant was made with the intention of raising and exporting wool from the colony during a period of impending war. Much of the land-use history known for the region comes from records related to the Macarthur property (now Camden Park).

With rising numbers of convicts being transported to the colony in 1815 and some anxiety over the economic viability and self sufficiency of the settlement, the government began making attempts to expand pastoralism. Thousands of acres beyond the Cumberland Plain were granted and sold and the Macarthur family received further grants of 10,298 acres in the Cowpastures in 1822 and 1823, and an additional 10,400 acres in 1825 (Ashton and Blackmore 1987).

In 1815, Harrington Park was granted to William Campbell as compensation for the loss of his ship (Proudfoot 1990). The Oran Park Precinct is within this large early land grant. The Turner Road Precinct was originally part of land grant made to George Molle in 1816 (Proudfoot 1990).

Clearing and burning of the Cowpastures land grants was undertaken immediately and the area was utilised for diverse farming, including grain, meat, fruit and dairy produce. The area was subject to fires and severe drought from the late 1820s, and consistently throughout the nineteenth and twentieth centuries.

By 1841 Camden Village had been established. The village at this stage included only a small number of cottages, with a Post Office, a church and an inn being constructed (Atkinson 1988). During this time, the Macarthur's were also leasing out land within Camden Park, expanding horticultural activities and increasing the production of Camden wine.

The area continued to be used for a diverse range of farming activities, though by the late nineteenth century, dairying had become the most profitable industry for the area. Further clearing, burning and ring-barking was undertaken at this stage to allow for an expansion in grazing and fodder crops. Severe drought in the early twentieth century

provided the impetus for the construction of many more silos and dams throughout the area.

Industrialisation of rural industries took off in the 1950s, and new technology was brought to the area in relation to the dairies, orchards and irrigation systems that included the construction of large new dams. Following the rural recession of 1970-71, the Camden Park Estate was sold to developers and shortly thereafter acquired by the State Government (Atkinson 1988).

3.2 Landscape parameters

The study area is located towards the southern end of the Cumberland Plain. The landscape comprises gently rolling hills and wide valley floors with channel and floodplain merging with a low angle colluvial slope. Both Oran Park and Turner Road Precincts are situated on bedrock of Bringelly Shale.

The Oran Park Precinct ranges in elevation from 162m asl (above sea-level) in the northwest corner to 66m asl in Cobbitty Creek. The total relief of 96m over c.5.5km kilometres is reflected in an average slope of 2-4° with short segments up to 15° on the northern margin.

The Turner Road Precinct ranges in elevation from 143m asl in the southwest corner to 93m asl on South Creek. The total relief of 50m (over c.3km) is reflected in an average slope of 1-3°. More detailed information on the geology, geomorphology and soils of the Oran Park and Turner Road Precincts are provided by Dr. Peter Mitchell (Groundtruth Consulting) in Appendix 2.

Stream Order Analysis

Oran Park and Turner Road Precincts are located in the headwaters of South Creek. Stream order analysis has been used to indicate the potential distribution of Aboriginal sites across the landscape. Dr Peter Mitchell conducted this analysis using the Strahler method using 1:25k topographic maps. Constraints to this approach result from the fact that many of the first order streams are not identified on the 1:25k maps and that the Precincts are not defined by catchment boundaries. These results however, provide a broad interpretative tool which informs the direction of subsequent field investigations.

The Oran Park Precinct lies within the headwaters of left bank tributaries of South Creek and right bank tributaries of Cobbitty Creek. South Creek is variably a third or fourth order creek within the Oran Park Precinct, and provides the highest potential for containing more extensive Aboriginal sites. Only the left bank of South Creek is within the Oran Park Precinct.

Table 1: Strahler statistics for streams in the Oran Park Precinct (see Appendix 2).

Stream Order	1	2	3	4
Number of segments	42	12	4	2
Length (km)	15.9	8.2	4.1	2.9

The Turner Road Precinct lies within the headwaters of the right bank tributaries of South Creek and right bank tributaries of Kenny Creek. According to the stream order analysis (Table 2), a short section of South Creek is the only third order stream within the Precinct and this would have provided the most reliable source of water within the Precinct.

Table 2: Strahler statistics for streams in the Turner Road Precinct (see Appendix 2).

Stream Order	1	2	3
Number of segments	29	7	1
Length (km)	8.6	4.4	1.7

Vegetation

According to a study of remnant bushland on the Cumberland Plain (NPWS 2000), remnant vegetation is shale hill woodland dominated by grey box *Eucalyptus moluccana*, forest red gum *Eucalyptus tereticornis*, with some narrow leaved ironbark *Eucalyptus crebra* on a few of the ridges in the eastern part of the Turner Road Precinct with patches of alluvial woodland, mainly swampy oak *Casuarina glauca* along the streams. In the past, most of the landscape has been extensively cleared but patches of regenerating woodland have become more common in the last two decades. These usually have an understorey of boxthorn *Themeda australis*. The most common weed species is African olive *Olea europaea*.

3.3 Stone Raw Materials

Silcrete was the most common raw material utilised by Aboriginal people for stone artefact production on the Cumberland Plain. Known sources include the St Marys

Formation, Rickabys Creek gravels and terraces along the Nepean-Hawkesbury River, which include Agnes Bank Sand and the Cranebrook Formation. Silcrete generally occurs as pebbles, cobbles and occasionally boulders (some boulders up to 2m long have been recovered from the bed of the Nepean-Hawkesbury River (Attenbrow 2002).

Stone raw materials such as silicified tuff, silicified wood, quartz, quartzite and chert were also utilised for production of stone artefacts on the Cumberland Plain. The Rickabys Creek Gravels contain cobbles of quartzite, silcrete, chert, porphyry and igneous rock. Pebbles of igneous rock, suitable for grinding into hatchet heads, are also known to occur in gravel beds on the Nepean River.

The St Marys Formation has been mapped at the South / Eastern Creek systems downstream of the study area, at Mulgoa Creek c.18 km north of the study area and near the Georges River at Moorebank c.22km northeast of the study area. Pleistocene terraces along the channels of the Nepean River have been mapped from the junction of Nepean and Warragamba River (c.20 km northwest of the study area). Rickabys Creek Gravel is located c.24km north of the study area.

None of the naturally occurring geological materials observed within the study area (Groundtruth Consulting 2006) are rock types suitable for the manufacture of artefacts. Any artefacts identified within the study area would have been imported from more distant resource locations.

3.4 Existing Disturbance

The Oran Park and Turner Road Precincts have been subject to a range of previous land use disturbance impacts which have affected both ground surfaces and sub-soils. Clearing, cultivation, agricultural activities and the construction of tracks, roads and farm dams has occurred across the majority of both precincts. Extensive disturbance to the soil is also evident in relation to earthworks associated with Oran Park Raceway and the margins of The Northern Road and Camden Valley Way in the Oran Park Precinct. Development around the Macarthur Anglican School and the subdivision of small residential blocks along Turner Road has had a similarly extensive impact on the soil within the Turner Road Precinct.

Sheet erosion during the early to mid 20th century has resulted in the effective stripping of hill crests throughout the study area. This has left the clay subsoil exposed in parts of

the study area, though much of the land has recovered. Aboriginal sites are often exposed through sheet erosion, though this process does have the equal effect of compromising the condition of, or completely destroying archaeological sites.

As a method of identifying potentially sensitive archaeological landscapes throughout the study area, basic land use mapping has been undertaken for both the Oran Park and the Turner Road Precincts by Dr. Peter Mitchell (see Appendix 2). While this does not constitute a detailed assessment of the land use history or archaeological sensitivity, it does provide a framework with which to guide subsequent field investigations.

The land use assessment draws on the *Land use and Fragmentation Study* (EDGE Land Planning 2003) and previously accepted approaches to cultural heritage management (e.g. JMcD CHM 1997, 1999, 2005a). Such an assessment is based on an obvious inverse relationship between ground disturbance and the potential survival of buried Aboriginal sites and is used as an indication of the potential survival and relative condition of sites. The EDGE Planning report identifies five primary land uses, four of which are identified within the Oran Park and Turner Road Precincts (Figure 4).

These are:

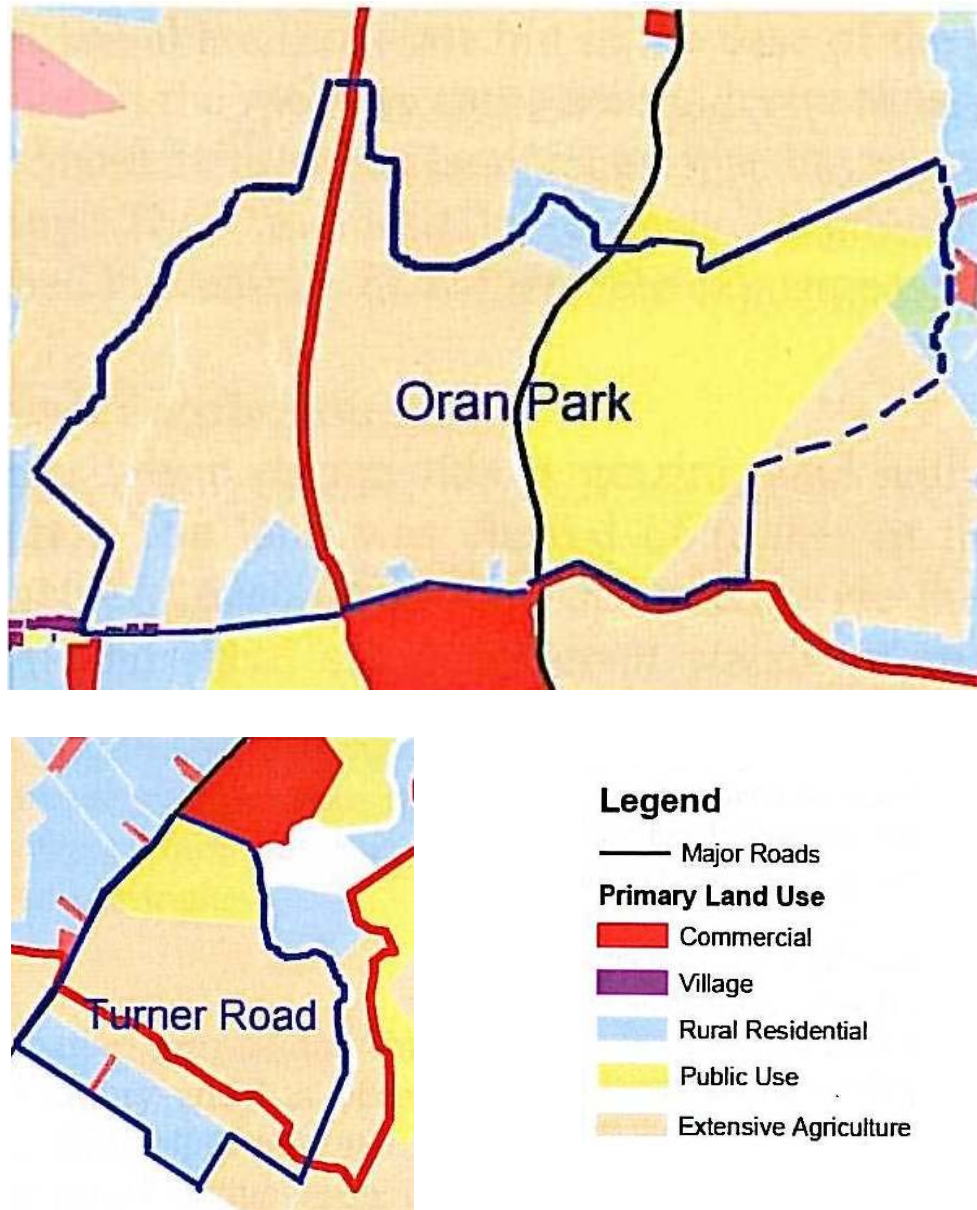
- ☉ Commercial
- ☉ Village
- ☉ Rural Residential
- ☉ Public Use
- ☉ Extensive Agriculture

Land identified as village land use and rural residential land use comprises an extremely small proportion of both study area. Both categories of land use are likely to be characterised by higher ground disturbance due to the construction of buildings and dams, grazing and sheet erosion. The chance of Aboriginal sites surviving intact is considered respectively to be extremely low (village land use) and low (rural residential land use).

Public land use is defined in this study as the Camden Valley Golf Course (Turner Road Precinct) and Oran Park Raceway (Oran Park Precinct). The expected levels of site disturbance vary between these two locations and across the sites themselves.

Overall the chance of Aboriginal sites surviving in these lands is considered to be moderate, although there will be pockets of land with higher or lower potential determined by varying degrees of disturbance across these sites.

Figure 4: Principle land uses identified by EDGE Land Planning (2003) with approximate Precinct Boundaries (blue lines).



Extensive agriculture has been identified as the principle land use across much of the study area. Disturbance in this land is due to clearing, cultivation, grazing and sheet erosion. Areas of extreme ground disturbance are expected within these lands associated with roads, tracks, buildings, pipelines, quarries, sand pits and particularly farm dams.

A summary of these results indicates that land identified as intensive agriculture is the most likely area in which Aboriginal sites will have survived and where sites will likely be in the least disturbed condition, particularly in pockets with lower previous impacts. Public land has variable potential for containing intact deposit, but is considered to be moderate overall. Village and rural residential land has low – very low potential for containing intact deposit.

4. ETHNOGRAPHIC CONTEXT

There is considerable debate over the original language groups occupying the Camden area prior to European contact and the extent and nature of territorial boundaries. This is due in part to the absence of ethnographic and linguistic study at the time of European contact and the scarcity of adequate historical documentation and anthropological interest until well after settlement of the region. Undoubtedly, there was also some confusion due to the inability of many European settlers to distinguish between tribal groups.

The linguistic evidence for the region indicates the presence of discrete language groups at European contact (Capell 1970, Dawes 1790, Mathews 1897, 1901, Mathews and Everitt 1900, Threlkeld in Fraser 1892, Tindale 1974, Troy 1990). This evidence is sketchy, and there are conflicting views on how it can be interpreted (Kohen 1986, 1988; Kohen and Lampert 1988; Ross 1976, 1988). The boundaries between these different language groups, as well as inter-relationships between these create the greatest disagreement in archaeological and current socio-political interpretation.

Linguistic evidence collected at contact was largely in the form of unprovenanced word lists (Collins 1798: Appendix XII, Hunter 1793[1968]:523, Tench 1793[1961]:291-3), with the Dawes (1790) manuscript providing a detailed and comprehensive analysis of the Sydney language.

Mathews' work in the region defined three distinctive languages, the *Darkingung*, *Gandangara* and *Tharawal*. *Darug* was defined as a dialectic variation of *Gandangara* (Mathews and Everitt 1900:265). These four languages provided an incomplete coverage of the region, as they did not include the coastal area north the Hawkesbury (specifically) and possibly also north of Port Jackson (Capell 1970). Mathews placed the *Darkingung* to north of the Hawkesbury River in the drainage basins of the Macdonald and Colo Rivers, Putty Creek and Wollombi Brook (Mathews 1897:1). The *Gandangara* were said to have existed in 'the coastal district ... from the Hawkesbury River to Cape Howe, extending inland to the Blue Mountains, and thence southerly ...' (Mathews and Everitt 1900:262). The *Tharawal* speaking people were spread over the coast from Port Hacking to Jervis Bay, ...extend[ing] inland for a considerable distance (Mathews 1901:127). Mathews recorded *Darug* dialect being spoken at 'Campbelltown, Liverpool, Camden, Penrith, and possibly as far east as Sydney, where it merged with *Thurrawal*' (Mathews and Everitt 1900:265).

A book of memoirs published (1914) by William Russell (Werriberri) identifies the Camden Aborigines as a distinctly separate language group and their tribal area as 'Cubbitch-barta' after its white pipe clay. William Russell recalls that 'Old Bundle' was the chief of the Camden people during the 1830's. Lists put together from the 1828 NSW census and the 1832-43 Return of Aboriginal Natives also identify the Cobbiti Barta as the name of the tribal group associated with Camden, and there are records of Old Bundle living in the area until 1843. Reverend William Ridley compiled word lists in the 19th century including an unnamed language he recorded as being spoken at George's River, Cowpasture and Appin.

Mapping of tribal boundaries by Tindale (1974) indicates that the Camden region was occupied by the *Dharawal* language group, their land extending south of Botany Bay to the Shoalhaven River and inland to Camden. The *Dharug* language group occupied country to the north of Camden and covered the south west part of the country of Cumberland. The *Gundangara* language group occupied country to the south and south-west.

More recent linguistic mapping and research (e.g. Troy 1990) has shown a wide variation on the geographical boundaries of these languages and dialects, although it is likely that there were enough common words between them that the groups could

communicate without too much difficulty. The geographical boundaries of language groups and territories are only indicative. The issue is subject to significant debate and the interpretation based on extremely limited historical documentation. Moreover, such boundaries may not have been originally well-defined or obviously delineated across the landscape.

What is apparent from the ethnohistoric and historic records is that the Camden region may have been on the periphery of the core territories of a number of separate Aboriginal groups. It seems that, at European contact, this area was close to the boundary between the Darug, Dharawal and Gandangara language groups (and see Haglund 1989). The Narellan Valley area may also have been part of a 'travel corridor' linking the northern Cumberland Plain, the Cowpastures/Camden area and the Illawarra region (Haglund 1989).

Early contact between Europeans and the Aboriginal groups of the Cowpastures

The Camden area was first known as the Cowpastures after Governor Phillip's escaped cattle were discovered there in 1795. The six head of cattle escaped and vanished in 1788. A number of reports were made that the cattle were under the care of natives beyond the western settlements, but it was not until 1795 that two emancipated convicts were sent to find the cattle (Liston 1988). With Tharawal guides, the cattle were located in the Cowpastures. Governor Hunter visited the area to confirm the sighting shortly thereafter and found that the herd had increased significantly in number.

Early accounts of the Cowpastures noted an abundance of resources that made Camden and the surrounding areas a good prospect for European settlement and it would certainly have made an attractive area for occupation by Aboriginal groups.

Governor King sent a party led by Ensign Barrallier in 1802, to attempt a crossing of the mountains west of the Cowpastures. The party was accompanied by a number of native guides and came across a group of Aborigines, an encounter retold by King in a letter to Camden in 1805. According to this account, the chief of this particular group was *Goondel* and the surrounding country belonged to him. This is confirmed in Russell's memoirs, which cites *Goondel* as the earliest of the chiefs he remembers (Russell, 1914: 9).

A botanist, George Caley was also one of the first Europeans to venture into the Cowpastures on a series of surveys. At this time he made significant contact with Aboriginal people inhabiting the region. He recounts meeting with two Aboriginal groups whilst on a survey in 1804 (Caley's journal quoted in Design 5 2006). One group was familiar to him from previous visits and greeted him by name. This group was occupied with 'Walbunga' at the time of Caley's visit, hunting, using fire to flush out the kangaroos.

Though there was some confusion in the midst of the fire, Caley noted that there were two distinct groups present – the individuals he recognised from previous visits being the tribe inhabiting the Cowpastures and a visiting group from the mountains. Caley is more specific about the details of the visiting group and notes in particular the presence of a well known 'chief' 'Cannabaygal (also known as *Cannaboygal* or *Cannamikel*). Caley spoke with *Cannabaygal* through an interpreter and observed a distinct authority in his countenance and a profound respect from the local Aboriginal group during their visitors stay (Proudfoot 1990).

Aboriginal / European relations during initial settlement of the Cowpastures

During the initial years of expansion into the Cowpastures, relations between the Europeans and Aboriginal people were generally peaceable. John Warby was stationed in the Cowpastures from c.1802 and conducted extensive exploration of surrounding areas with the assistance of the Tharawal people (Liston 1988:50). Certain individuals are recorded as having frequently acted as guides, translators and mediators for European explorers and settlers in these initial years, particularly *Boodbury* and *Old Bundal*.

More extensive settlement of the Cowpastures continued through the early 19th century, owing largely to a serious drought that began in 1812 and lasted for four years. This put a significant strain on local resources, both for the European settlers and the Aboriginal groups (the local groups and neighbouring groups driven from their own drought stricken lands).

The first recorded instance of open conflict in the Cowpastures occurred in 1814. After the murder of several Aboriginal people and European settlers, a tribe generally agreed to be from beyond Stonequarry Creek (Jervis Bay tribe) killed a number of

stockmen and waged a battle with settlers near Cawdor (Liston 1988). *Boodbury* and other Aboriginal people from the local tribes acted as mediators and translators. Five mountain Aboriginals (*Gandungarra*) were held responsible for the murder of James Daley's children at Bringelly (Atkinson 1988) and a number of the local tribe assisted in tracking the offenders, though they were not found.

During this period of conflict, it is generally agreed that the Camden tribe and the Tharawal were relatively peaceful and that it was the visiting mountain tribes and southern highland tribes who were instigating the violence (Liston 1988).

The hostilities worsened in 1816, when a number of men were killed by visiting Aboriginal groups. Settlers engaged in battle with the Aboriginal men, taking a number of *Tharawal* men (including *Boodbury*) to fight, though the men managed to escape. In retribution, Governor Macquarie sent three detachments of the 43rd regiment to put an end to the conflict. This culminated in the massacre of 14 Aboriginal people hiding at Appin, including *Cannabayagal*, the *Gandungarra* man encountered by Caley in 1804 (Liston 1988: 52).

Continuing Aboriginal occupation in the Cowpastures

After this initial conflict, relations between Aboriginals and European settlers in the Cowpastures were relatively quiet. There are limited records of the Aboriginal groups still inhabiting Camden, though there is evidence of Aboriginal groups being employed to work as guides, farm hands, trackers and policemen and certain individuals are well known from historic documents.

Bundal is known to have accompanied expeditions as guide and interpreter in 1818 for Charles Throsby and was appointed as a constable at Narellan in 1822 (Atkinson 1988). *Bundal* was also employed as a tracker on a number of occasions, helping the police to track down thieves and escaped convicts. In 1851, 'Yellow Johnny', an Aboriginal man who worked on William Macarthur's orchard is known to have tracked down three children lost in the bush near Appin (Atkinson 1988). Another Aboriginal man, Johnny Tindal is recorded as being employed from the 1830s as a rough rider.

There are also records of Aboriginal people being employed as seasonal workers, for which they were paid in provisions. James Hassall, whose family purchased the Denbigh

Property in 1826 recalls up to 200 Aboriginal people working at their estate during burning off periods (Hassall 1977).

A permanent camping place remained on Camden Park until the late 19th century. James Macarthur and his family have recounted stories of Aboriginal corroborees nearby Camden Park in 1839, 1846 and 1850. James Hassall also recalls witnessing a number of corroborees on the Denbigh Property, overlooking Cobbitty Creek (Hassall 1977). It is suggested that a ceremonial ground may have been located to the north of the Denbigh Homestead (Mary Dallas Consulting Archaeologists 2003).

Population numbers are indicative at best and derived from diaries, letters and blanket return lists. Governor Macquarie's journals list nine adults and four or five children in 1810. William Macarthur recorded 18 Aboriginal people living permanently at Camden in 1843 (Atkinson 1988). A list compiled in 1842 records the Aboriginal population as 62, however this is the combined population of the Camden people and the people from Burraborang and Nattai, often described as one tribe due to their close relations. In 1845, the combined population was recorded as 67, including nine part-Aboriginal children. Blanket return lists from 1865 recorded the names of nine Aboriginal people living within Camden.

4.1 Social and Cultural Associations

A number of documents have been compiled in recent years detailing the ancestry of Aboriginal families living in and around the Camden district at the time of European expansion into the region. There has also been an attempt to record some of the traditional stories and significant events associated with the study area, from the early 19th century and in the more recent past.

One such story is an oral account by Jean Stewart of La Perouse, known as 'The story of the littlest Gundungaras and their great walk to La Perouse' (Illert 2005). Jean Stewart relates a story that was told to her by her aunt (Emma Timberley), which is thought to have occurred around 1890. After Jane Timberley (wife of *Gundungarra* man Henry John Simms) died in childbirth in an Aboriginal camp in the Southern Highlands, Emma Timberley (Jane's mother), upon learning that her grandchildren had been abandoned walked from La Perouse to find them. Emma and the three children (and

possibly a fourth Gundungara child) then walked all the way back to La Perouse where she raised the children herself.

Ellen Anderson (1855 – 1931) was an Aboriginal woman born in Unanderra, c.7km south of Wollongong. Through the 1920's, Ellen recounted a number of traditional Aboriginal stories and stories from her own life, which were recorded by C. W. Peck. Amongst other stories recorded by Peck, he recalls a conversation with Ellen upon their meeting where she told him that her father was a king and Ellen herself a princess. According to Peck, Ellen recalled her father 'King Mickey', being crowned by the white people at Wollongong Show. Ellen went on to become one of Peck's main sources for his published Aboriginal stories and legends, many of which relate to the Illawarra and Burratorang Valley regions. An assessment of these stories has been undertaken previously (Illert 2003), but they do indicate a tradition of Aboriginal storytelling that continued long after European contact and the cessation of traditional ways of life.

Another story tells of a fight for leadership after the death of 'King' Mongang in 1845. An interpretation by Illert (unpub *no date*) on behalf of the Moran Elders Council, purports that *Murruin* and *Moyengully* were fighting for leadership of the *Gundungarra* nation. Derived largely from an account by Ben Carlton that was published by William Cuneo in 1893, this account suggests that a battle was waged between the two during an 'ascension' ceremony witnessed by Carlton and his father (c.1845). At this time, *Moyengully* was elected king. Within weeks, having been accused by *Murruin* of the leader's murder, a fight eventuated between the two in revenge for this death. Illert's interpretation asserts that the leadership of the *Gundungarra* nation altered after this fight.

Documentation provided by Cubbitch Barta Native Title Claimants indicates that the Cubbitch Barta people are a clan of the Dharawal language group. These people were known to early colonists as the Cowpastures people. This is supported by William Russell's memoirs and documented by lists put together from the 1828 NSW census and the 1832-43 Return of Aboriginal Natives. Cubbitch Barta records corroborees at the Denham Court property up into the 1850s. These corroborees were documented as including local Aboriginal people as well as other visiting groups.

5. ARCHAEOLOGICAL CONTEXT

5.1 Regional Context

Most of the 4,000-plus archaeological sites recorded on the Cumberland Plain are open artefact scatters. There are few surviving scarred trees due to previous bushfires, land clearing and disturbance, and stone extraction sites occur in areas where there are naturally occurring lithic resources.

Various models have been proposed to explain the distribution and variability of Indigenous heritage sites across the Cumberland Plain. Haglund's (1980) model for sites in the Blacktown area stated that these would most likely occur on or near water sources, often on elevated ground. Based on a larger sample of surface scatter data, Kohen (1986) and Smith (1989) found that the primary determinant for Aboriginal open site location on the Cumberland Plain was proximity to water.

Contrary to earlier models, which tried to explain site location and variation based primarily on surface evidence, the Rouse Hill test excavation programme and further work on the Cumberland Plain has found that:

- ☉ Most areas – even those with sparse or no surface manifestations – contain sub-surface archaeological deposits;
- ☉ Where open sites are found in aggrading and stable landscapes, some are intact and have potential for internal structural integrity. Sites in alluvium possess potential for stratification;
- ☉ While ploughing occurs in many areas of the Cumberland Plain, this only affects deposit up to 30cm deep, and even then ploughed knapping floors have been located which are still relatively intact;
- ☉ Contrary to earlier models for surface open sites, many sites contain extremely high artefact densities, with variability appearing to depend on the range of activity areas and site types present;
- ☉ The complexity of the archaeological record is also far greater than was previously identified on the basis of surface recording and more limited test excavation; and,

- ☉ Gross site patterning is identifiable on the basis of environmental factors: sites on permanent water are more complex than those on ephemeral or temporary water lines.

Distance from stone raw material sources explains some variability in surface assemblages (distance-decay model). Dallas and Witter (1983) originally suggested that sites close to raw material sources e.g. silcrete, would have more cores and knapping debitage and less utilized stone than sites further from the source. Artefacts would tend to be discarded in earlier stages of manufacture and be larger nearer the source. Since this study, new silcrete sources have been identified on the Cumberland Plain, (Corkill 1999, JMcD CHM 1997) and there has been a series of project which have identified that the relationship between sources and the movement of material around the landscape is more complex (JMcD CHM 2005b, 2006). The model has been less successful as more sources useable cobbles have been discovered across the Cumberland Plain.

5.2 Local Context

Previously recorded sites

A search of the AHIMS database (24.11.06) and subsequent research has identified 85 sites previously recorded within an 8 kilometre radius of the study area. These include primarily open camp sites and isolated finds (Table 1), though areas of potential archaeological deposit (PAD), scarred trees and shelters with rock art are also identified within the larger region.

Table 3: Sites within the Camden region (data derived from DEC AHIMS Register information as at 24.11.06 and review of recent reports).

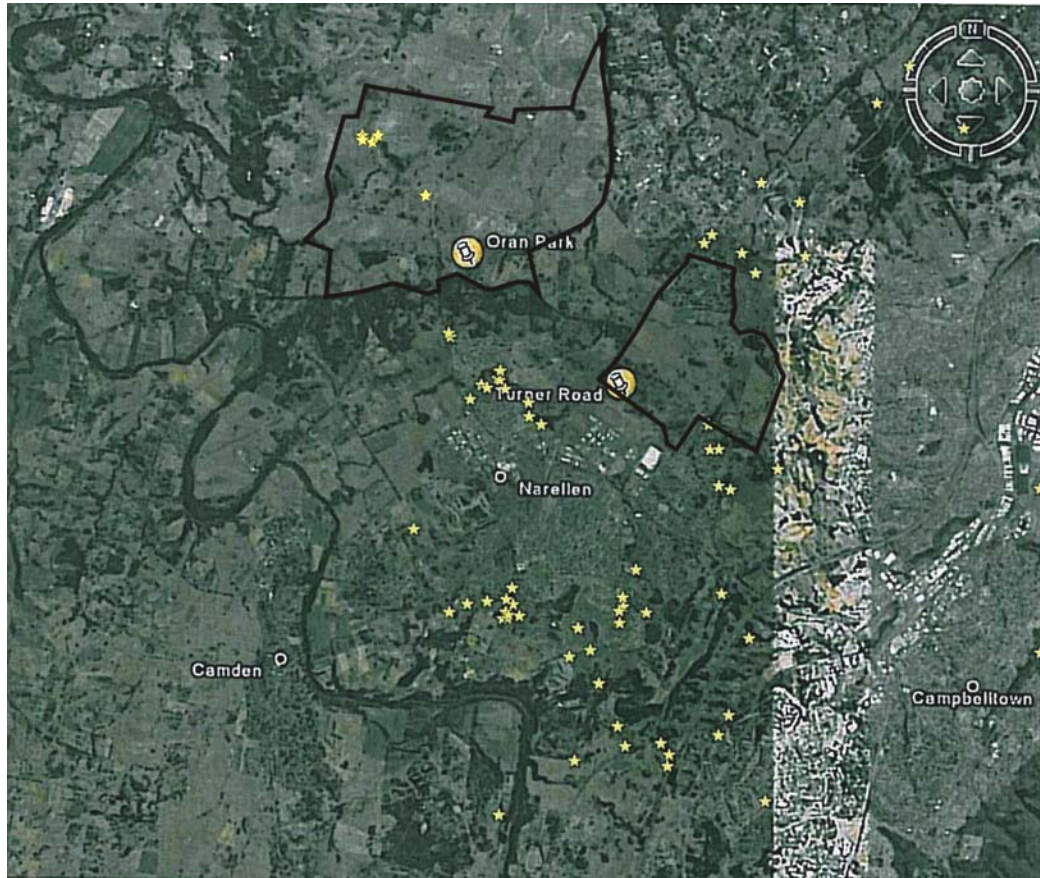
Site type	Number of recordings	%f
Open camp site	41	48.2
Isolated finds	35	41.2
PAD	6	7.0
Scarred Tree	2	2.4
Shelter with art	1	1.2
Total	85	100

Open lithic scatters and isolated finds are the dominant site types, accounting for 89.4% of the total number of recorded sites within the study area. These open surface camp sites comprise of mostly low density artefact scatters.

Carved trees are an extremely rare site type within Australia and are found only within south-eastern Queensland and eastern New South Wales. Of the 97 recorded carved tree sites, the majority occurred on the Western slopes and south as far as Sydney (Attenbrow 2002; Bell 1982). Ten of these sites occur within 100 km of Camden (see Figure 8). Research into the dendroglyphs by Etheridge in the early 20th century suggested that dendroglyphs could be divided into two basic groups – taphoglyphs (indicating an interment) and teleglyphs (indicative of initiation sites). Based on this division, all ten carved trees within the vicinity of Camden are thought to be burial markers. One of these sites, consisting of five carved trees (Figure 9), is recorded as having been located c.10km north-west of the Oran Park Precinct, within the Greendale Estate near Narellan.

One of the recorded scarred trees (where bark is removed for containers, canoes or shields) is located inside the Denbigh curtilage, within the Oran Park Precinct. One dendroglyph site where five carved trees (totemic motifs cut into trees at ceremonial grounds or burials) were recorded and donated to the Australian Museum in the early 20th century (Bell 1982). Though a precise location for these was not recorded, the site appears to have been c.10km northwest of Oran Park. Sites containing scarred or carved trees require trees of at least 150 years in age (or dead mature trees) (allowing for the manufacture of these during the contact-period). Due to the extent and totality of previous land use disturbance throughout the area, these are sites locally and regionally rare.

Figure 5: Previously recorded sites within the region (AHIMS register information and other reports).



Previous surveys within the region

An Aboriginal cultural heritage planning study in the Camden Area c.5km south of the Oran Park Precinct (JMcD CHM 1996), made several predictions regarding the likely locations of Aboriginal archaeological sites, including:

- ⊙ Significant sites were likely to occur on elevated ground associated with Narellan Creek;
- ⊙ The spurs and ridges associated with the steeper Luddenham landscape group will contain archaeological sites, although they will mostly occur as lag deposits due to previous soil erosion; and,

- ☉ The alluvial sands and terraces of the Nepean River floodplain may contain significant sites, including Aboriginal burial sites, dating to between 5,000 and 20,000 years ago.

Reconnaissance of areas assessed as archaeologically sensitive located five low density open artefact scatters (Clutha 1-5), containing between 2 – 9 artefacts. Three of the open artefact scatters were associated with Narellan Creek. Four isolated finds (IF1-4) were also identified.

A survey conducted by Mary Dallas Consulting Archaeologists in 2003 (Mary Dallas Consulting Archaeologists 2003) concentrated on the area surrounding the historic Denbigh homestead. During the course of this survey, recorded Aboriginal sites included an Aboriginal scarred tree, and four isolated artefacts. The scarred tree is described as being of definite Aboriginal origin on a eucalypt to the NW of the homestead complex. The scar was an elongated ellipse measuring 150 x 25cm with c.10cm of regrowth, a scar size indicated that the bark was procured to make a shield.

The four isolated artefacts consist of a broken edge ground hatchet and three fragments of worked glass. The hatchet is made of basalt, with grinding evident of the distal end and possible hafting notches at the proximal end. The glass has been identified as 19th century bottle glass and was considered as evidence that traditional practices continued through the Cowpastures during initial European settlement (see section 4 above) .

A 'canoe tree' (i.e. a tree bearing a scar from the removal of bark to make a canoe) recorded near Camden Park, located c.8km south of the Turner Road Precinct, is an extremely rare Aboriginal archaeological site type for the Cumberland Plain (English 1994b). Two large scars, measuring 3-5m in length and 80cm wide, were recorded on a dead Eucalypt on the bank of the Nepean River. The site card for this scarred tree was unavailable at the time of undertaking this research and the current condition of these sites is unknown.

Menangle Park and its surrounds have been the focus of extensive archaeological work over recent decades. Twenty-two surface open sites have now been recorded within the Menangle Park release area as have a number of PAD area/sensitive landscapes (Barker 1999, Byrne 1994, Corkill and Edgar 1991, Dibden 2002a, 2002b, 2003a, 2003b; HLA 2004, JMcD CHM 1996, 2004; Kohen and Knight 2000; McDonald and

Brayshaw 1983, McDonald 1990). The sand bodies along the Nepean, which seldom containing surface artefacts, have been identified as having the potential of burial sites.

Haglund (1985) investigated an area for the (then) proposed Mt Annan Botanic Garden and Native Arboretum. One open camp site was located consisting of a sparse scatter of artefacts, as well as six isolated finds. There was no evidence of artefact manufacture and the material was interpreted as debris left behind from hunting and gathering trips through the area. It was noted that the locations more favourable for camp sites and thus more likely to contain higher density sites had been significantly disturbed by previous land use.

A survey for the upgrading of West Camden Sewerage Plant (Oakley 1993), undertaken c. 6km south west of Oran Park, did not identify any Aboriginal sites, but assessed the entire study area as archaeologically sensitive.

Surveys related to the Camden Gas Project (Dibden 2003a, 2003b) occurred from c.5km south of the Turner Road Precinct. Twenty sites were located on both sides of the Nepean River in the vicinity of Camden and Menangle Parks. These consisted of 12 open lithic scatters, seven isolated finds and one scarred tree. Four of the open lithic scatters were assessed as having moderate archaeological significance and the remaining sites assessed as having low or undetermined archaeological significance.

The Narellan Creek Valley, located c.2km south of the Oran Park Precinct, was surveyed in the early 1980s (Hanrahan 1981, 1982a, 1982b). Eight sites were located during the course of three surveys. Site 2 was described as a dense, localised scatter of artefacts and was subsequently excavated. The remaining seven sites were described as minor, sparse artefact scatters, though site five was also subsequently excavated.

Figure 6: Dendroglyphs recorded within 100 km of the study area. Black dots indicate carved tree locations, consisting of between one and five carved trees.

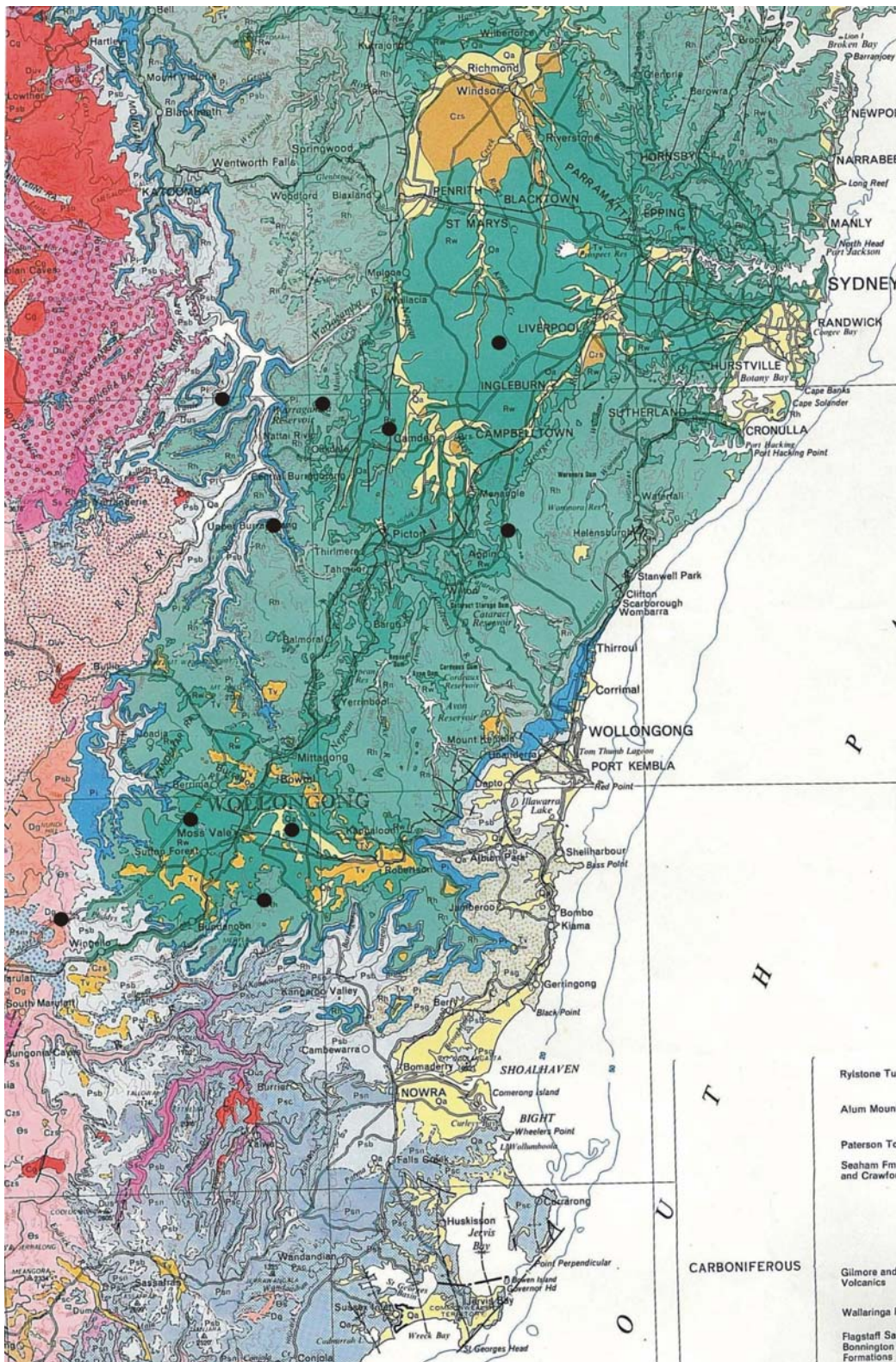


Figure 7: Carved trees originally located at Greendale Estate near Narellan and donated to the Australia Museum by Mr. A Vickery (images taken from Etheridge 1918).

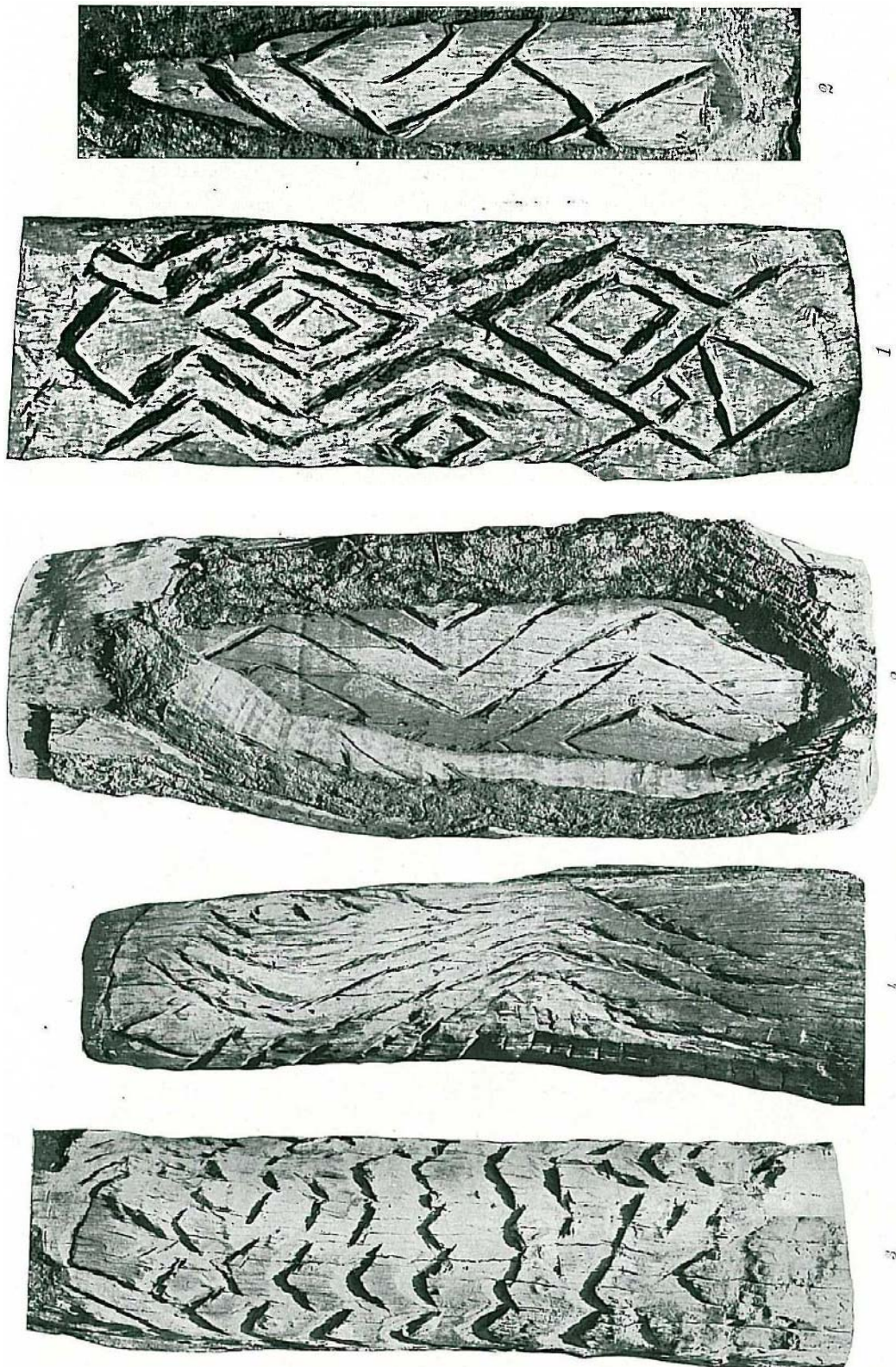
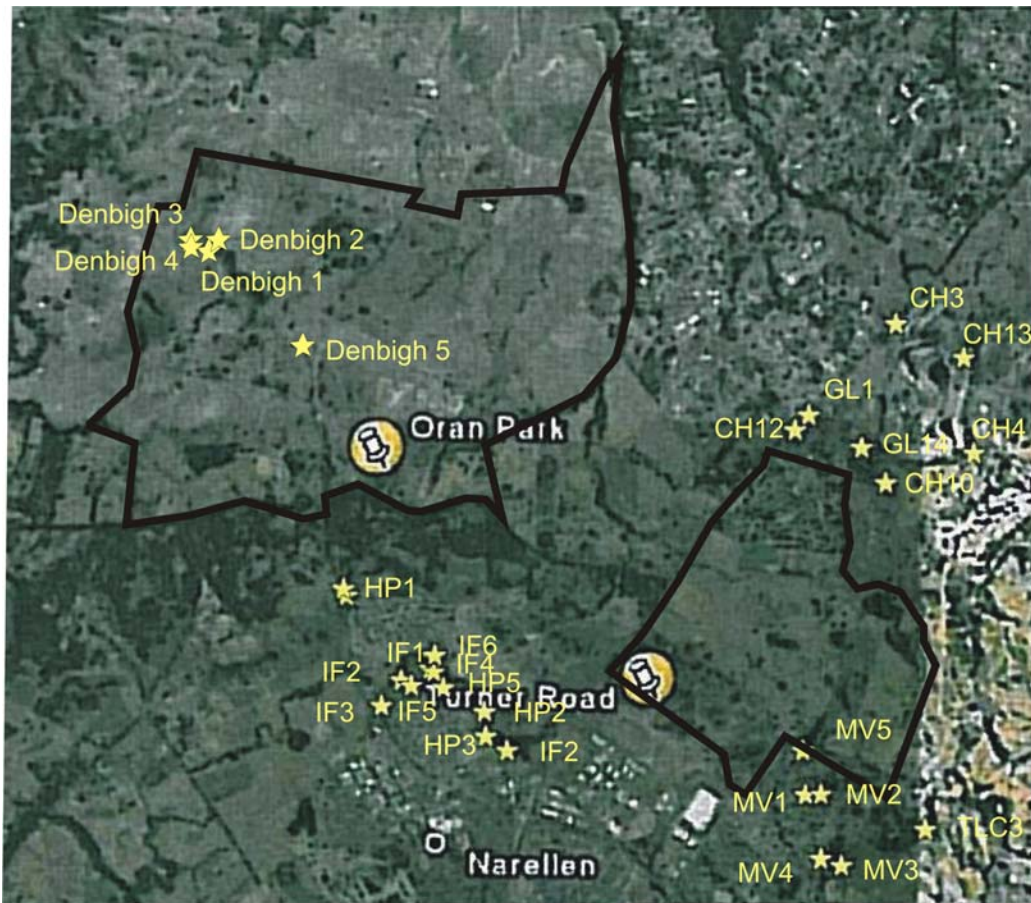


Figure 8: Previously recorded sites within and close to the study area

Manooka Valley is located immediately adjacent to and east of the Turner Road Precinct. Over the course of two surveys (JMcD CHM 2000, 2001), two open camp sites (MV3 and MV5) were located, as were three isolated finds (MV1, MV2 and MV4). These sites were located on hillslopes within a disturbed context, with 1st and 2nd order ephemeral creeks providing the closest water source. This was interpreted as a sparse background scatter of material, conforming to the general prediction for the area that evidence will be sparse in the vicinity of temporary water sources.

There have also been a large number of surveys undertaken within the area that have failed to locate any surface sites or areas of potential archaeological deposit. This may have been for reasons relating to visibility (Kohen & Knight 2000; Lee and Somers 1999; Crew 1989; Corkill 1992; Oakley 1993), erosion (Therin 1998; Dallas 1986), land-use disturbance (Byrne 1987) or environmental reasons (McDonald 1992; Dibden 2000, 2001b, 2002a, 2002b; Corkill 1992). This scarcity of artefactual material across the Camden area may also be the result of differential use of the landscape,

whereby the majority of the landscape was occupied on a rare, seasonal or short-term basis and artefactual material simply did not accumulate in these areas.

Previous sub-surface investigations within the region

Three sub-surface investigations have so far been conducted within the Camden area. Test excavations have been conducted within the Narellan Creek Valley, located c.1km south of the Oran Park Precinct (English 1994a; English and Gay 1994; Haglund 1989; Hanrahan 1981, 1982a, 1982b) and further south within Menangle Park (Corkill and Edgar 1991).

Site HP4 (PAD 1 as identified in English 1994) is located c.1.5km south of the Oran Park Precinct, associated with Narellan Creek and was excavated in 1994 (English and Gay 1994). HP4 was found to contain a high density of lithic material with a total of 98 artefacts retrieved by excavation and three by surface collection. Silcrete was the dominant raw material (81%), followed by indurated mudstone (11%), quartz (5%) and fine grained siliceous material (3%). A variety of tool types were recovered, including backed artefacts, which was taken to indicate that occupation of the site had occurred within the 3-5,000 years before present (English and Gay 1994).

In 1989, Sites N2 and N5 were excavated c.3km south of the Turner Road Precinct within the Narellan Creek Valley, on either side of Narellan Creek (Haglund 1989). Site N2 was located at the junction of Narellan Creek, and a large tributary, c.1.3km south of Camden Road. A total of 259 artefacts were recovered from site N2, including a ground edge hatchet and a hammerstone. Silcrete dominated the assemblage (66%), followed by indurated mudstone (24%) and quartz (10%). A variety of tool types were recovered, including backed artefacts. Site N5 was located c.1km further south, east of a large dam. A total of 41 artefacts were recovered from site N5, a total too small for detailed statistical analysis, though with similar ratios of raw material and tool types to that of N2.

The density and type of material recovered from N2 suggested repeated occupation over a considerable period of time. The presence of a backed artefact assemblage was interpreted as indicating occupation of the site was concentrated within the last three millennia. Site N5 was interpreted as representing short term camps by occasional small groups or individuals. Furthermore, it is suggested that the sites identified by

Hanrahan (1982a) represent a network of occupation, with site N2 representing a focal point, around which was located a spread of less permanent camp sites occupied by smaller groups.

Further south, c.10km south of the Oran Park Precinct and within Menangle Park, Sites Menangle Park 1, Menangle Park 2 and Menangle Park 3 were excavated in 1991 (Corkill and Edgar 1991). Menangle Park 1 was located on a ridge spur c.1km north of the Nepean River. Three artefacts were recovered from a surface collection. Given the disturbed nature of the site, excavation focused on a flat section of the spur c.300m west of MP1. Seven artefacts were recovered from this area. A transect linking this area with MP1 recovered no artefacts and so the area of artefact recovery was designated a separate site (MP3). Menangle Park 2 was located within a shallow valley c.2km north of the Nepean River. A total of 18 artefacts were recovered from MP2 by means of surface collection, ninety-five shovel probes and six 0.25 square meter trenches.

Silcrete was the dominant raw material in all excavated and surface collection assemblages, followed by indurated mudstone and with a small quartzite component. All of the Menangle Park sites were subject to disturbance and were assessed as being in poor condition and with low archaeological potential. The two excavated sites (MP2 and MP3) contained low density assemblages consisting primarily of unmodified silcrete flakes and were considered unsuitable for determining the age or use of these sites.

The previous work undertaken within the study area suggests that large watercourses such as Narellan Creek form foci for occupation. The archaeology of the local area is best described as consisting of a sparse scatter of artefacts across the landscape, with larger concentrations of artefacts (interpreted as larger camp sites) found associated with major watercourses and favourable geological and environmental factors.

5.3 Predictions for sites in the regional context

Based on previous work in the region and using general stream order models (after Schrever 1966 and Strahler 1952, McDonald and Mitchell 1994) it has been predicted that within the two precincts, archaeological features will vary according to gross geomorphological factors and proximity to water.

Stream order identification for each precinct will assist in the prediction of variability in the archaeological record. Predictions for how the archaeological record will be subject to the effect of landscape parameters include:

- ④ Areas of archaeological potential occur wherever there has been limited prior disturbance.
- ④ The nature of sites within these areas of potential is likely to vary: the model used here is aimed at predicting the likely nature of sites across the study area in terms of landscape features.
- ④ The nature (density and complexity) of archaeological evidence will vary according to the permanence of water (i.e. stream order), landscape unit and proximity to lithic resources in the following way:
 - ④ In the headwaters of upper tributaries (first order creeks) archaeological evidence will be sparse and represent little more than a background scatter;
 - ④ In the middle reaches of minor tributaries (second-order creeks) there will be archaeological evidence for sparse but focused activity (e.g. one-off camp locations, single episode knapping events);
 - ④ In the lower reaches of minor tributaries (third order creeks) there will be archaeological evidence for more frequent occupation. This will include repeated occupation by small groups, knapping floors, and evidence for more concentrated activities;
 - ④ On major creek lines (fourth / fifth order creeks) there will be archaeological evidence for more permanent or repeated occupation. Sites will be complex and some may be stratified, depending on sedimentation processes; and
 - ④ Creek junctions (confluences) may provide foci for site activity. The size of the confluence (in terms of stream ranking nodes) could be expected to influence the size and /or complexity of the site.
- ④ Ridge top locations between drainage lines will usually contain limited archaeological evidence, although isolated knapping floors or other forms of one-off occupation may occur in such locations.

- ☉ Where naturally outcropping lithic resources such as silcrete occur, these will have been exploited. Evidence for extraction activities (decortication, testing and limited knapping) would be expected in such locations, as might more general occupation evidence:
- ☉ Sites in close proximity to an identified stone raw material source would cover a range of characteristics relating to artefact size and retention of cortex. As a general rule, the general size of artefacts in an assemblage should decrease, as should the percentage of cortex with distance from source.

Predictions for sites within the Oran Park and Turner Road Precincts

Much of the Oran Park and Turner Road Precincts are located in the headwaters and middle reaches of lower order tributaries. Archaeological evidence is expected to be generally sparse and represent a background scatter of artefacts with occasional foci of small scale activities.

South Creek is variably a third or fourth order stream across the Oran Park study area. It represents the major creekline within this study area and is likely to have provided more permanent water and hence the potential for more permanent occupation. Important Aboriginal sites are likely to be located in association with original waterholes in proximity to this and high order stream junctions.

Any sites that are located within the study area will be subject to the effects of fabric contrast soils – common on the shale plains. Artefacts will have accumulated at a common level at the base of the A-horizon. This will generally have eliminated stratigraphic information and makes relative dating of assemblages difficult.

None of the geological materials observed within the study area (Groundtruth Consulting 2006: Appendix 2) are rock types suitable for the manufacture of artefacts. Any stone artefacts identified within the study area would have been imported from more distant resource locations. The absence of any geological materials within the area that may have been utilised for rock shelters, manufacture of artefacts or the preparation of ground edge tools, means that geology is not likely to be an effective indicator of Aboriginal activity.

The degree of prior disturbance has limited the archaeological potential across the majority of the two study areas. Agricultural land is likely to have the highest potential for retaining intact archaeological sites and this is subject to localised areas of low – very high disturbance throughout. Air photo interpretation has assisted in identifying areas of sensitivity within this Agricultural land, where previous land use impacts would appear to be lower and hence the potential for intact archaeological sites is greater.

5.4 Sensitivity Mapping

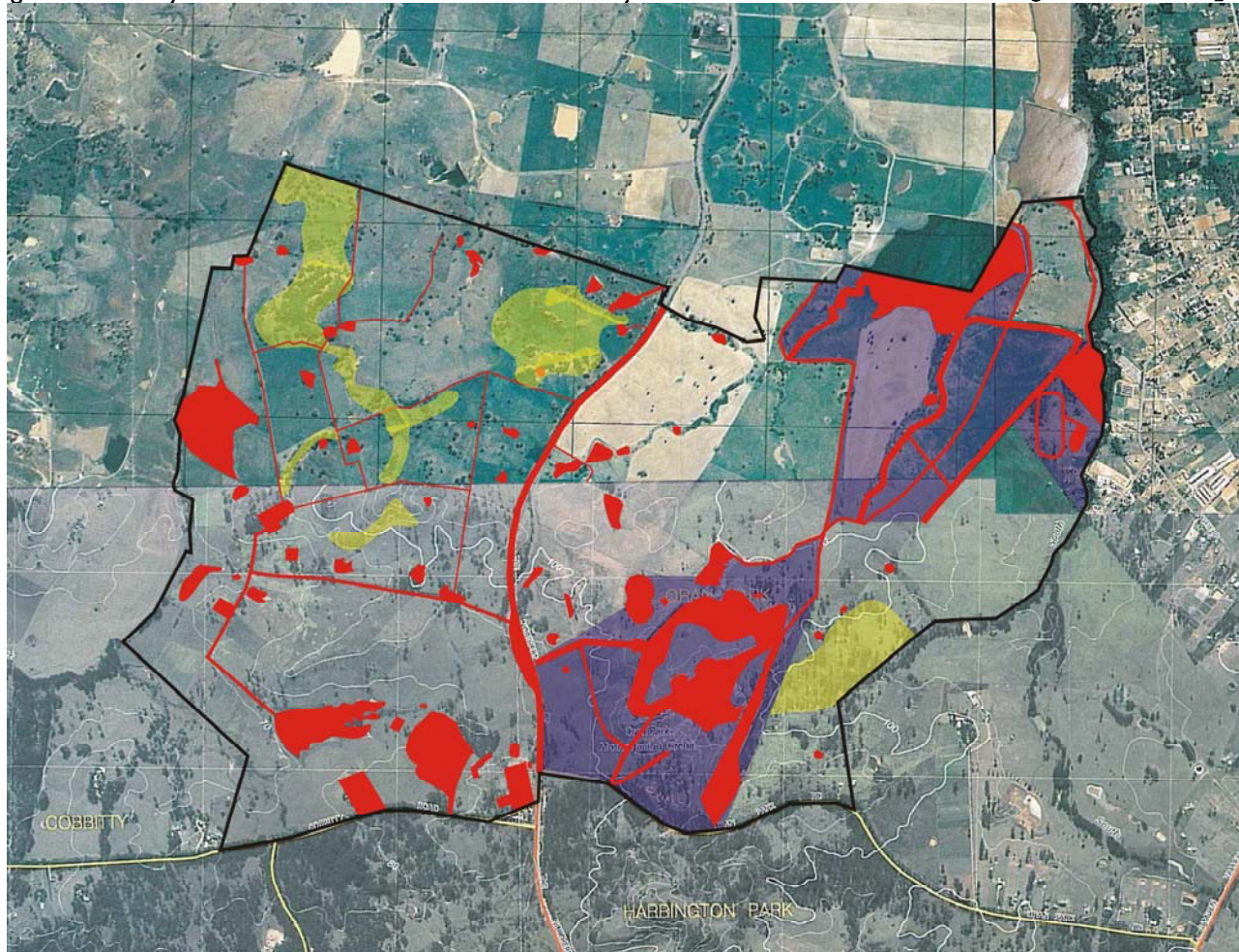
Sensitivity mapping was done based on an interpretation of aerial photos and topographical maps and the land use assessment undertaken by Peter Mitchell. This exercise aims at developing a more detailed assessment of archaeological potential for the two precincts.

The assessment of sensitivity is based on a consideration of land use impacts, practical landscape parameters and high value landscapes (i.e. locally or regionally threatened). Threatened landscapes within this region include first order tributary creeklines, shale ridges and low ridge tops, and shale hillslopes, all of which are present within the study areas.

None of the land within the Oran Park Precinct remains in pristine condition, and the entire precinct has been subject to a range of previous land-use disturbances. Some of the landscapes however, are in significantly better condition than others and zoning has been undertaken accordingly.

- ☉ Zone 1 is land with high potential for containing intact archaeological deposit;
- ☉ Zone 2 is land with good potential for containing intact archaeological deposit;
- ☉ Zone 3 is land with moderate potential for containing intact archaeological deposit; and
- ☉ Zone 4 is land with low potential for containing intact archaeological deposit.

Figure 9: Archaeological sensitivity for the Oran Park Precinct. Zone 1 = yellow. Zone 2 = no colour. Zone 3 = blue. Zone 4 = red.



The sensitivity assessment for the Oran Park Precinct has identified five areas with high potential for containing intact archaeological sites. West of The Northern Road, these focus on the ridge lines surrounding the Denbigh property and the headwaters of first order tributaries where clearing has been at a lesser scale than the majority of the agricultural land. East of The Northern Road, one area of high potential is identified in the headwaters and middle reaches of first and second order creeks that feed into South Creek less than 1km away. Within Oran Park, less than 8% of the land has been identified as having high archaeological sensitivity (Table 4). The majority of the land (59%) is agricultural and has been identified as having good potential for containing intact archaeological deposit.

Table 4: Summary of sensitivity mapping results for the Oran Park Precinct.

Zone	Area (ha)	%
Zone 1	87.77	7.8%
Zone 2	663.3	59.3%
Zone 3	191.54	17.1%
Zone 4	176.39	15.8%
Total	1119	100

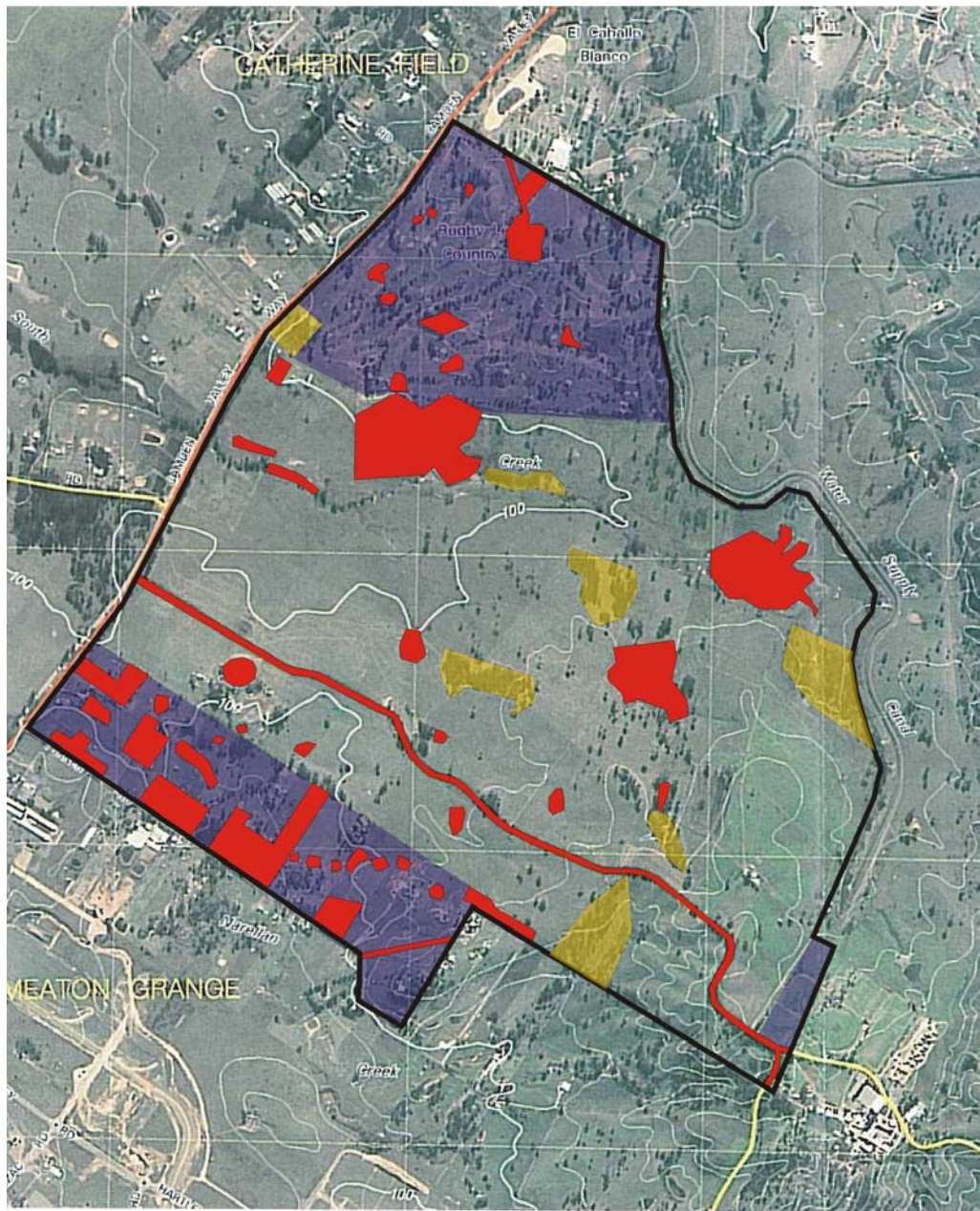
None of the land within the Turner Road Precinct remains in pristine condition, and the entire precinct has been subject to a range of previous land-use disturbances. Some of the landscapes however, are in significantly better condition than others and zoning has been undertaken in the same manner as the Oran Park Precinct.

The sensitivity assessment for the Turner Road Precinct has identified six areas with high potential for containing intact archaeological sites. The southern most potential archaeological deposit (PAD) is within the middle reaches of a minor tributary to Narellan Creek. The remaining areas are all located on gentle to moderate hill slopes and focus on areas where there has been a lesser scale of clearing and cultivation. Within the Turner Road Precinct, less than 5% of the land has been identified as having high archaeological sensitivity (Table 5). The majority of the land (60%) is agricultural and has been identified as having good potential for containing intact archaeological deposit.

Table 5: Summary of sensitivity mapping results for the Turner Road Precinct.

Zone	Area (ha)	%
Zone 1	24	4.5%
Zone 2	325.6	60.7%
Zone 3	127.9	23.9%
Zone 4	58.5	10.9%
Total	536	100

Figure 10: Archaeological sensitivity for the Turner Road Precinct. Zone 1 = yellow. Zone 2 = no colour. Zone 3 = blue. Zone 4 = red.



6. DISCUSSION

Strategic Management Model

In various contexts across the (northern) Cumberland Plain a strategic management approach to Indigenous cultural heritage has been implemented (JMcD CHM 2004; McDonald 1996). This strategy is based both on scientific and cultural (or social) values (JMcD CHM 2002). By identifying the range of representative landscapes with the best conservation potential, and by adding to this identified areas of Aboriginal significance - and targeting these for conservation - a meaningful management outcome should be realised. A similar approach is advocated here to ensure an appropriate management outcome for Indigenous heritage is achieved (JMcD CHM 1997).

The overriding aim of a strategic Indigenous heritage management strategy is the preservation of a representative sample of intact landscapes, to ensure that a range of human responses, as represented by the archaeology, can be protected. Rather than targeting only sites of known extent or known significance (e.g. through sub-surface investigation), zones based on landscape parameters have been defined, and these areas are to be managed on the basis of their conservation potential.

Most of the archaeological sites on the Cumberland Plain are comprised of open stone artefact scatters. Different types of sites provide information on the different ways that the Plain was used by Aboriginal people. It is the variety of site types which have the potential, through their content and arrangement across the landscape, to provide the details which will enhance our general understanding of prehistoric human occupation of this region. It is likely that such a certain variety of sites and types of evidence will be present across the Oran Park and Turner Road Precincts because of the range of environmental landscapes present. We know little detail about this likely range of sites because no previous excavations have been done in these specific landscapes. Because a relatively large proportion of these areas are already disturbed, not all parts of these precincts are likely to contain good contextual information – and indeed the potential for conservation areas is apparently low.

The general principles for a Strategic Management Model (SMM) are as follows:

- ④ The primary selection criteria for the conservation strategy is identified landscapes which have been minimally disturbed by land-use practices over the last 200 years;
- ④ A similarly important criteria for the selection of conservation areas is that these landscapes must provide, and be representative of, the range of landscapes present across the study area;
- ④ An additional criteria is that regionally threatened landscapes, sites of recognised regional significance (i.e. rarity) and areas of significance to the Aboriginal community should be included within the conservation area, as long as these are minimally undisturbed by previous land use disturbance;
- ④ Areas are also been assessed on the basis of a predictive model of Aboriginal site occupation on the Cumberland Plain, since some areas have a greater potential to contain archaeological sites of high significance than others;
- ④ Landscapes which have been comprehensively disturbed by sub-surface soil removal or rearrangement are of limited potential for archaeological sites. These require no further archaeological investigation and pose no constraint for development.

Four management zones are devised for the Oran Park and Turner Road Precincts. Each of these is likely to have a different designated management outcome (Table 4; see Figures 9 and 10).

Table 6: Management zones showing management outcomes

Management Zone	Archaeological sensitivity	Management outcome
Zone 1	High potential for intact archaeological evidence	Conservation zone (CCZ) to be selected from this zone. Remainder to be developable.
Zone 2	Good potential for intact archaeological evidence	Conservation zone (CCZ) may be selected from this zone where landscape units are not present as Zone 1. Remainder to be developable.
Zone 3	Moderate potential for intact archaeological evidence	Developable land. Some landscapes may require further work before clearances given.
Zone 4	Low - no potential for intact archaeological evidence	Developable land with no constraints – no further archaeological work required.

Zone 1 is identified as the potential conservation zone. It is envisaged that land identified as requiring conservation would come from this Zone and that no development take place within it. This land would be managed into the future on the basis of its Aboriginal (and other) heritage values.

In keeping with this approach, no archaeological investigation would take place within the land which is to be conserved. Protocols and strategies would need to be developed for the management of this conservation area. Zone 1 lands which cannot be conserved should be the subject of a salvage (mitigation) exercise (see below).

The land falling outside the defined conservation area would all be deemed developable.

The developable land will also be ranked for its archaeological sensitivity and is likely to contain landscapes that are Zone 2 and 3. The SMM presumes that while containing varying sensitivity zones, that these will be developed; i.e. that the archaeology in these areas would be impacted upon by a range of development proposals.

Further archaeological investigation will be required in high sensitivity areas which fall within the developable lands. Archaeological evidence should be salvaged here from a representative range of landscapes as these occur within the overall study area. This salvage will provide archaeological evidence and context for conservation areas and/or mitigate against the destruction by development of sites that may be encountered.

No further archaeological work will be required in areas of low archaeological sensitivity, where sites are assessed as having minimal or no archaeological potential. There is no constraint to development in these areas, and further archaeological works will not be undertaken in these areas. It should be noted that the Aboriginal community may wish to monitor development which takes place in this zone, particularly along stream lines and waterways.

7. CONCLUSIONS

The completion of this Step 1 (according to the GCC Protocols and Methodology) report for the Oran Park and Turner Road Precinct Assessment has identified a range of issues that need to be considered as further work is undertaken for this assessment.

The Cowpastures area appears to have been close to the boundary between several linguistic groups prior to European settlement. As such it may have been on the periphery of these groups' core territories. The nearby Nepean River would have been rich in resources and would have been an important area to Aboriginal groups, as would the more permanent stretches of South Creek.

Previous archaeological investigations, mostly surface survey, have identified a generally low density of sites scattered across this region, generally characterised by isolated artefacts and low density surface lithic scatters. This is likely to in part reflect a selective and sporadic use of the lower hillslopes more distant from the Nepean River and higher order creeks, the effect of extensive European land use since the late 18th century and the low number of sub-surface investigations that has been carried out in this part of the region.

While the designated precinct boundaries do not reflect biogeographic landscape parameters we can still consider a predictive site distribution model for the precincts in terms of our predictive model.

The proposed survey phase of this investigation will target areas of identified archaeological and cultural sensitivity within the two precincts.

Areas which have been identified as containing good potential for intact archaeological sites (Zone 1) should be considered as having potential to provide a conservation outcome.

Within the Oran Park Precinct, the majority of land identified as having high potential for containing intact archaeological sites is located within the Denbigh curtilage. Given that there is no proposed development within this part of the Precinct, the Denbigh curtilage may provide an ideal opportunity for achieving a meaningful conservation outcome within the Oran Park Precinct.

8. RECOMMENDATIONS

The following recommendations are based on consideration of:

- ⊗ Legal requirements under the terms of the *National Parks and Wildlife Act* (1974) (as amended) which states that it is illegal to damage, deface or destroy an Aboriginal object or Place without first obtaining the written consent of the Director-General, Department of Environment & Conservation, NSW;
- ⊗ The Strategic Management Model to be employed in the management of cultural heritage throughout the Oran Park and Turner Road Precincts;
- ⊗ The four management zones based on archaeological sensitivity identified across the two Precincts;
- ⊗ The results of this Stage 1 background research, and previous surveys and excavations in the vicinity and the identified areas of social and cultural sensitivity;
- ⊗ The interests of the Tharawal Local Aboriginal Land Council, Cubbitch Barta Native Title Claimants Aboriginal Corporation, and other identified stakeholders;
- ⊗ The stage of the planning process and the likely impact of the proposed development.

It is recommended that:

1. The Oran Park and Turner Road Precincts should be surveyed on foot in order to identify the presence of surface archaeological sites and to ground-truth the results of sensitivity mapping undertaken in Step 1;
2. The fieldwork should focus on areas identified as having particular potential for retaining intact archaeological sites across the study area such as:
 - ⊗ Land identified as having a primarily agricultural land use and areas of good – high potential archaeological deposit identified through sensitivity mapping (Zones 1 and 2);
 - ⊗ Original water holes at the junction of higher order streams;

- ☉ Fluvial erosional benches above third and fourth order channels.
3. The TLALC and the other interested Aboriginal groups continue to be involved in all stages of the assessment process in accordance with the GCC guidelines;
 4. One copy (each) of this report should be sent to:

Ms. Leeanne Hestelow,
Cultural and Heritage Representative,
Tharawal Local Aboriginal Land Council
PO Box 20
BUXTON, NSW, 2571.

Ms. Glenda Chalker
Cubbitch Barta Native Title Claimants
Aboriginal Corporation
55 Nightingale Road,
PHEASANTS NEST, NSW, 2574

Mr. Des Dyer,
Darug Tribal Aboriginal Corporation
PO Box 441
BLACKTOWN, NSW, 2148

Ms. Leanne Wright,
Darug Custodian Aboriginal Corporation,
PO Box 81,
WINDSOR, NSW, 2756

Mr. Gordon Morton
Darug Aboriginal Cultural Heritage
Assessments
90 Hermitage Road
KURRAJONG HILLS. NSW, 2758

Moran Elders Council
c/o NIAC
2/3 Birch Crescent
EAST CORRIMAL, NSW, 2518

Wadi Wadi Coomaditchie Aboriginal
Corporation
c/o NIAC
2/3 Birch Crescent
EAST CORRIMAL, NSW, 2518

La Perouse Botany Bay Aboriginal
Corporation
c/o NIAC
2/3 Birch Crescent
EAST CORRIMAL, NSW, 2518

Mr. Nigel Robinson
52 Bombala Crescent
QUAKERS HILL, NSW, 2756

Mr. Pat Lock
Carwoola Elders Council
NARELLAN VALE

6. Three copies of this report should be sent to:

Ms Lou Ewins
Manager Cultural Heritage Unit
Sydney Zone, DEC NSW
PO Box 686
PARRAMATTA, NSW, 2134.

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