Godden Mackay Logan
Heritage Consultants

Oakdale Concept Plan

Aboriginal Heritage Assessment and Impact Statement

Report prepared for Goodman International Limited

June 2007

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Report Register

The following report register documents the development and issue of the report entitled Oakdale Concept Plan—Aboriginal Heritage Assessment and Impact Statement, undertaken by Godden Mackay Logan Pty Ltd in accordance with its quality management system. Godden Mackay Logan operates under a quality management system which has been certified as complying with the Australian/New Zealand Standard for quality management systems AS/NZS ISO 9001:2000.

Job No.	Issue No.	Notes/Description	Issue Date
07-0058	1	Draft Report	8 June 2007
07-0058	2	Final Report	21 June 2007
07-0058	3	Final Report (incorporating name changes); Minor modifications 14/12/07.	21 June 2007

Contents Page

1.0 Introduction

1.1 Background

Godden Mackay Logan (GML) has been engaged by Goodman International Limited to prepare an Aboriginal Heritage Assessment for certain land in the 'Western Sydney Employment Hub', and to prepare an Aboriginal Heritage Impact Statement with respect to a 'Concept Plan' for that land (the 'Oakdale Concept Plan'). This report has been prepared to inform the preparation of the Oakdale Concept Plan by identifying potential Aboriginal archaeological and cultural heritage issues arising as a result of the proposed development. The Concept Plan is being prepared and will be assessed under the provisions of Part 3A of the *Environmental Planning and Assessment Act 1979* (the EPA Act). The proposed future development of the study area constitutes a 'major project' under *State Environmental Planning Policy 2005*, and the Minister for Planning is the relevant approval authority.

The location of the study area is illustrated in Figures 1.1 and 1.2. It comprises an approximately 421 ha area of land at Eastern Creek known, proposed for future industrial purposes (warehousing and distribution).

The specific parcels of land to which the Oakdale Concept Plan applies consist of Lots 1 and 2 in DP 120673, Lots 82 and 87 in DP 752041, and Lot 1 in DP 843901 (the existing Austral Bricks Quarry site). The study area also includes an approximately 5km section of the 'Western Sydney Employment Hub Road Network' as illustrated in Figure 1.5, along with contributions to the regional rainwater harvesting infrastructure as indicated in Figure 1.6. The majority of the proposed road network occurs within the Concept Plan area, although a small section of Old Wallgrove Road (within the existing road corridor) lies outside of the Oakdale study area. The additions to the regional rainwater infrastructure are proposed to be located within the existing Warragamba-Prospect Water Supply Pipeline corridor and would be located adjacent to the existing pipeline service road. The proposed addition to the road network and the line of the rain harvesting infrastructure were inspected in the field by surface survey as part of the preparation of the report.

The location and layout of the land that have been subject to detailed Aboriginal archaeological site survey and assessment are illustrated in Figures 1.3 and 1.4. The Austral Bricks Quarry site was not physically inspected in the preparation of this report but it has been evaluated at a 'desk top' level as part of the current assessment.

The Oakdale lands form a part of the 'Western Sydney Employment Hub' which is an identified key centre of employment growth in western Sydney over the next 25 years. At present, the parcels of land that comprise the study area (excluding the Austral Quarry site) consist of a series of largely cleared pastoral properties (see Figures 1.3 and 1.4) that are proposed to be developed for industrial/retail purposes, including the creation of warehouses and distribution facilities. Austral Bricks proposes to continue to utilise the existing quarry/brickworks site (Lot 1 in DP 843901) for quarrying purposes and this will therefore involve the significant disturbance to the vast majority of the lot. As such, detailed environmental and heritage assessment of the lot has not occurred to date; however, the land will require further assessment following rehabilitation of the quarry and cessation of the brick works prior to subsequent development of the site.

1.2 Statutory Context and Controls

1.2.1 Statutory Protection for Aboriginal Cultural Heritage

Two principal pieces of legislation provide automatic statutory protection for Aboriginal heritage and the requirements for its management in New South Wales: the *National Parks and Wildlife Act 1974* (the NPW Act) and the EPA Act. Part 3A of the EPA Act provides the Minister for Planning with considerable flexibility in the application of these legislative provisions. However, they continue to provide a strong guide in the identification and assessment of Aboriginal cultural heritage, and the consultation requirements flowing from them are commonly applied. Therefore, the implications of these statutory controls are outlined below.

The National Parks and Wildlife Service (NPWS) is the principal government agency with responsibility for the management of Aboriginal cultural heritage values. It now comprises an administration branch of the Department of Environment and Climate Change (DECC).

1.2.2 National Parks and Wildlife Act (1974)

The NPW Act provides statutory protection for all Aboriginal 'sites' or 'objects' (consisting of any material evidence of the indigenous occupation of NSW) under Section 90 of the Act, and for 'Aboriginal Places' (areas of cultural significance to the Aboriginal community) under Section 84. Aboriginal sites and objects are afforded automatic statutory protection in NSW whereby it is an offence (without the Minister's consent) to:

> *damage, deface or destroy Aboriginal sites without the prior consent of the Director-General of the National Parks and Wildlife Service (now the DECC).*

The NPW Act defines an Aboriginal 'object' (or site) as:

> *any deposit, object or material evidence (not being a handicraft for sale) relating to indigenous and non-European habitation of the area that comprises New South Wales, being habitation before or concurrent with the occupation of that area by persons of non-Aboriginal European extraction, and includes Aboriginal remains.*

The protection provided to Aboriginal sites/objects applies irrespective of the level of their significance or issues of land tenure. However, areas are only gazetted as Aboriginal Places if the Minister is satisfied that sufficient evidence exists to demonstrate that the location was and/or is of special significance to Aboriginal culture.

Under Section 86 of the NPW Act, it is an offence to disturb or excavate land for the purpose of discovering an Aboriginal object/site, or disturb or move an Aboriginal object on any land, without first obtaining consent (through a Preliminary Research Permit, Excavation Permit, Collection Permit or Rock Art Recording Permit etc) under Section 87 of the NPW Act from the Director-General of the DECC. Under Section 91 of the NPW Act, it is also a requirement to notify the Director-General of the DECC of the location of any Aboriginal object/site within a 'reasonable time-frame'. Identified Aboriginal items and sites are registered with the DECC on its Aboriginal Heritage Information Management System (AHIMS) Register.

As the administrator of the NPW Act, the DECC has issued guidelines outlining the preferred structure for archaeological investigations and reporting.[1] More recently, it has also released interim guidelines for Section 87 and Section 90 Permit Applicants under the NPW Act.[2]

These interim guidelines stipulate a process for seeking the involvement and response of the Aboriginal community to proposed impacts that may occur to registered (known) Aboriginal sites/objects.

Archaeological practitioners and the Aboriginal community are currently awaiting finalised guidelines to further direct this process. These guidelines presently apply to projects where cultural heritage significance assessments have commenced after 1 January 2005. Guidelines for the preparation of Aboriginal Heritage Impact Assessments have also been prepared by the NPWS. Again, these are only in draft form.[3]

1.2.3 Environmental Planning and Assessment Act (1979)

In contrast with the NPW Act, the *Environmental Planning and Assessment Act 1979* (the EPA Act) is designed more specifically to cater for heritage issues within the context of new development projects and is closely linked with the process of preparing environmental impact studies. This Act has three main parts of direct relevance to Aboriginal cultural heritage. Namely, Part 3, which governs the preparation of planning instruments; Part 4, which relates to the development assessment process for local government (consent) authorities; and Part 5, which relates to activity approvals by governing (determining) authorities. In the present case, Part 3A of the EPA Act applies (see Section 1.2.4). However, the Minister may be guided by the principles of Parts 3 and 4 of the EPA Act in applying Part 3A.

Part 3 deals primarily with development planning in which sites and places sacred or significant to Aboriginal communities are to be assessed and are to be taken into consideration in initial studies (as discussed below). Department of Planning has produced guidelines on the preparation of planning instruments such as State Environmental Planning Policies (including SEPPs, REPs and LEPs) that explicitly list Aboriginal sites and places of significance as values which should be assessed as part of initial planning studies.

Part 4 deals with decisions to be made within the context of development applications. The DECC is an approving body under Part V of the EPA Act and will require formal consideration of a variety of cultural and community factors. These may variously include potential impact to significant anthropological, archaeological, cultural and historical values, and these will typically be addressed through a Review of Environmental Factors (REF).

1.2.4 Implications for the Current Study—Part 3A EPA Act

In development circumstances where Part 3A of the EPA Act does not apply, damage, destruction or removal of any Aboriginal 'places' or 'objects' is only permitted where a Permit or Consent has been issued by the Director-General of the DECC according to Sections 87 and 90 of the NPW Act.

In these development circumstances, NPWS Permits and Consents are only granted where sufficient information is supplied in written form to the Director-General of the DECC from Aboriginal stakeholders, archaeologists and development proponents that demonstrate accuracy and transparency in the site assessment process and the good faith intended by each of these parties in applying for consent to either move, disturb and/or destroy statutorily protected objects.

Where development proposals are classified as Major Projects under State Environmental Planning Policy (Major Projects) 2005 according to Part 3A of the Act, the Minister for Planning is the approval authority. In these circumstances (in accordance with the requirements of section 75H of the Act), the Minister will require a number of key issues to be assessed to ensure an acceptable level of environmental performance are achieved.

These key issues would include an initial evaluation of the potential impacts of the proposal upon the Aboriginal cultural heritage values of the place and ways to manage or mitigate those impacts as more detailed design works proceed.

Best practice advocates that development impacts to documented and/or potential sites of Aboriginal cultural heritage sensitivity be avoided where practicable and/or mitigated at the minimum, and that all decisions made for either course of action is to be made as a result of direct guidance provided by Aboriginal stakeholders.

1.3 Report Scope and Objectives

The objectives of this study have been as follows:

1.3.1 Aboriginal Consultation

- To initiate consultation for the project with the Deerubbin Local Aboriginal Land Council (DLALC), the Darug Tribal Aboriginal Corporation (DTAC), the Darug Custodian Aboriginal Corporation (DCAC), and Darug Aboriginal Cultural Heritage Assessments (DACHA).
- To invite the aforementioned Aboriginal organisations to undertake an inspection of the Oakdale study area.
- To invite any Aboriginal cultural or historical knowledge about the study area from the aforementioned Aboriginal organisations for consideration as part of the Oakdale Concept Plan submission.
- To incorporate into the assessment process of the study area the views, possible concerns and recommendations provided by the aforementioned Aboriginal community stakeholder groups to inform the Oakdale Concept Plan.

1.3.2 Background Research

- To undertake background research into the location and nature of any previously recorded Aboriginal archaeological sites that may be present either within the boundaries of the Oakdale study area and/or in areas immediately adjacent.
- From a review of the known Aboriginal archaeology of the local region, to prepare a predictive model describing the potential archaeological sensitivity of the subject land and to predict the potential for unrecorded sites to occur within the boundaries of the study area.

1.3.3 Site Inspection and Assessment

- To undertake an archaeological and cultural heritage survey of the study area in partnership with representatives of the aforementioned Aboriginal organisations.
- To identify and record any Aboriginal archaeological sites or areas of Aboriginal cultural heritage sensitivity that may be present within the subject land and to assess their significance.
- To provide an assessment of the potential for undetected archaeological evidence to occur within the Oakdale study area.

1.3.4 Analysis, Evaluation and Report

- To prepare a report detailing the outcomes of the consultation undertaken with the aforementioned Aboriginal organisations for the project, the results of the field survey, and an Aboriginal Archaeological and Cultural Heritage Survey and Assessment of the study area that meets the requirements of the *NSW NPWS Aboriginal Cultural Heritage Standards and Guidelines Kit* (September 1997).

- To formulate a set of management options and recommendations to inform the Oakdale Concept Plan that provide an appropriate framework for the ongoing protection of any documented Aboriginal sites/areas of sensitivity that may be located in particular, and to guide the future management of the potential archaeological resource/areas of sensitivity that may be identified in general on the subject land relative to the proposed future uses of the place.

1.4 Aboriginal Community Consultation

The subject land falls within the administrative boundaries of the Deerubbin Local Aboriginal Land Council (DLALC), that has a statutory responsibility 'to promote the protection of Aboriginal culture and the heritage of Aboriginal persons'[4] within its boundaries. In addition, a number of organisations and individuals also claim traditional and historical links within the greater western Sydney area of which the Oakdale study area forms a part.

Aboriginal community consultation for the project was initiated by GML in March 2007. This involved contacting the Deerubbin Local Aboriginal Land Council (DLALC), the Darug Tribal Aboriginal Corporation (DTAC), the Darug Custodian Aboriginal Corporation (DCAC), and Darug Aboriginal Cultural Heritage Assessments (DACHA) and forwarding background information about the project to each of these organisations. The DECC, the NSW Native Title Services and the Registrar of Aboriginal Owners were also contacted at this time.

An advertisement was placed in The Australian on 9 April 2007. A copy of the text is provided in Appendix B.

A project familiarisation meeting was held on site on 30 March 2007. This was attended by representatives of the DTAC, the DCAC and the DACHA. The DLALC were however unable to attend at this time.

An inspection of the Oakdale lands was completed by Dominic Steele and Paul Irish for GML in partnership with the DTAC, the DCAC and the DACHA on 17 April 2007. A subsequent inspection of the study area was completed with the DLALC on 28 May 2007.

A draft copy of this report was forwarded to the above Aboriginal community groups for review and comment on 21 June 2007, with an invitation to each to provide Cultural Heritage Statements for submission with the report. Copies of those Cultural Heritage Statements shall be forwarded to accompany the approval application immediately upon receipt.

1.5 Report Outline

This report is divided into the following sections:

- An introduction to the project (Section 1.0).

- A description of the environmental setting of the study area that includes a review of its geology, topography, hydrology, vegetation and soils. This section also provides a brief summary of the land use history of the study area (Section 2.0).
- A summary of the local Aboriginal archaeological context relevant to the project, and a prediction of the types of archaeological evidence that may be present within the study area (Section 3.0).
- The methods employed to survey and record the study area, and the results of the site inspection (Section 4.0).
- The results and conclusions that have been developed for the project and an evaluation of the Aboriginal archaeological significance and sensitivity of the documented and potential archaeological resource on the site relative to the future uses proposed for the study area (Section 5.0).
- The provision of management recommendations on the nature and scope of further Aboriginal cultural heritage and archaeological requirements that may be required prior to and/or during the commencement of future development works on the site (Section 6.0).
- References cited in this report (Section 7.0).
- Aboriginal community correspondence (Appendix A).

1.6 Authorship and Acknowledgements

This report has been prepared by Dominic Steele and Paul Irish, Consultants, for Godden Mackay Logan, with the assistance of Dr Andrew Sneddon, Senior Consultant, Godden Mackay Logan. The report has been reviewed by David Logan, Director, of Godden Mackay Logan.

Godden Mackay Logan would like to acknowledge the assistance provided by the following individuals and organisations in the course of preparing this report:

Mr Phil Jones	Goodman International Limited
Mr Steve Randall	Deerubbin Local Aboriginal Land Council
Mrs Leanne Watson	Darug Custodian Aboriginal Corporation
Mrs Celestine Everingham	Darug Aboriginal Cultural Heritage Assessments
Mr Gordon Morton	Darug Aboriginal Cultural Heritage Assessments
Mr Des Dyer	Darug Tribal Aboriginal Corporation
Mr Gordon Workman	Darug Tribal Aboriginal Corporation

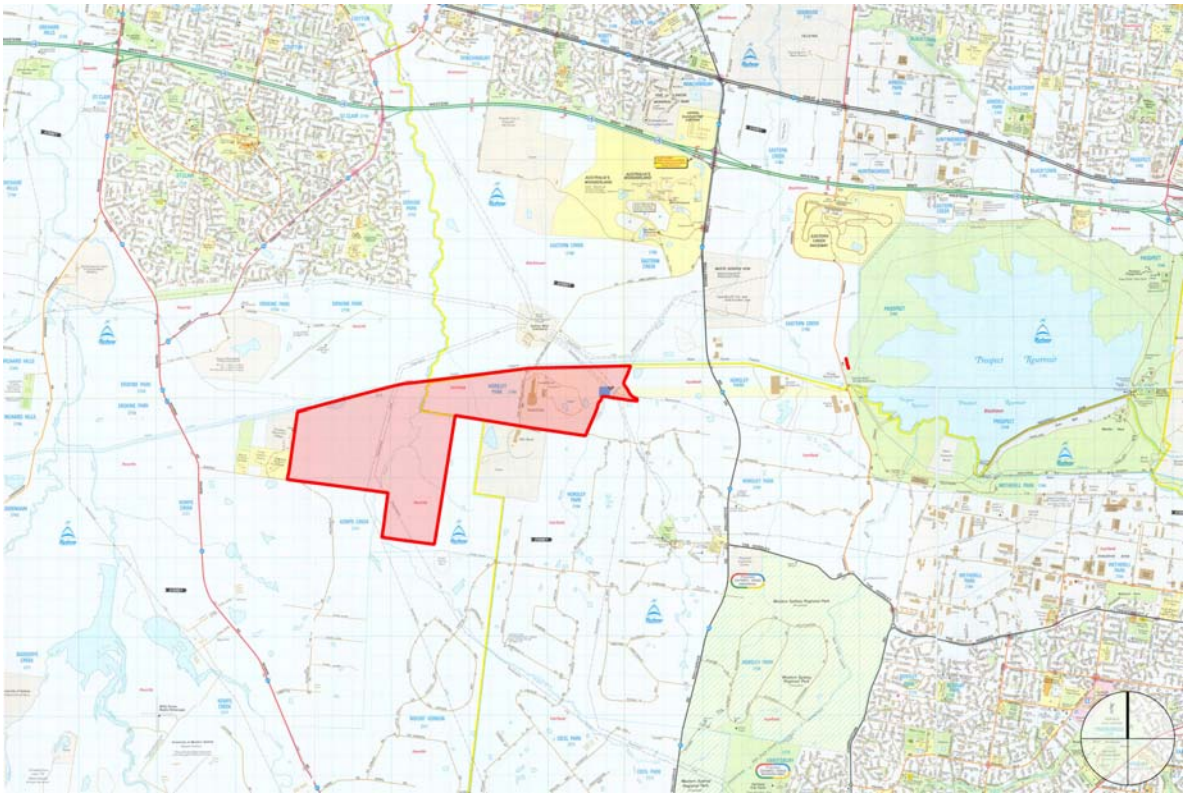


Figure 1.1 Location map.

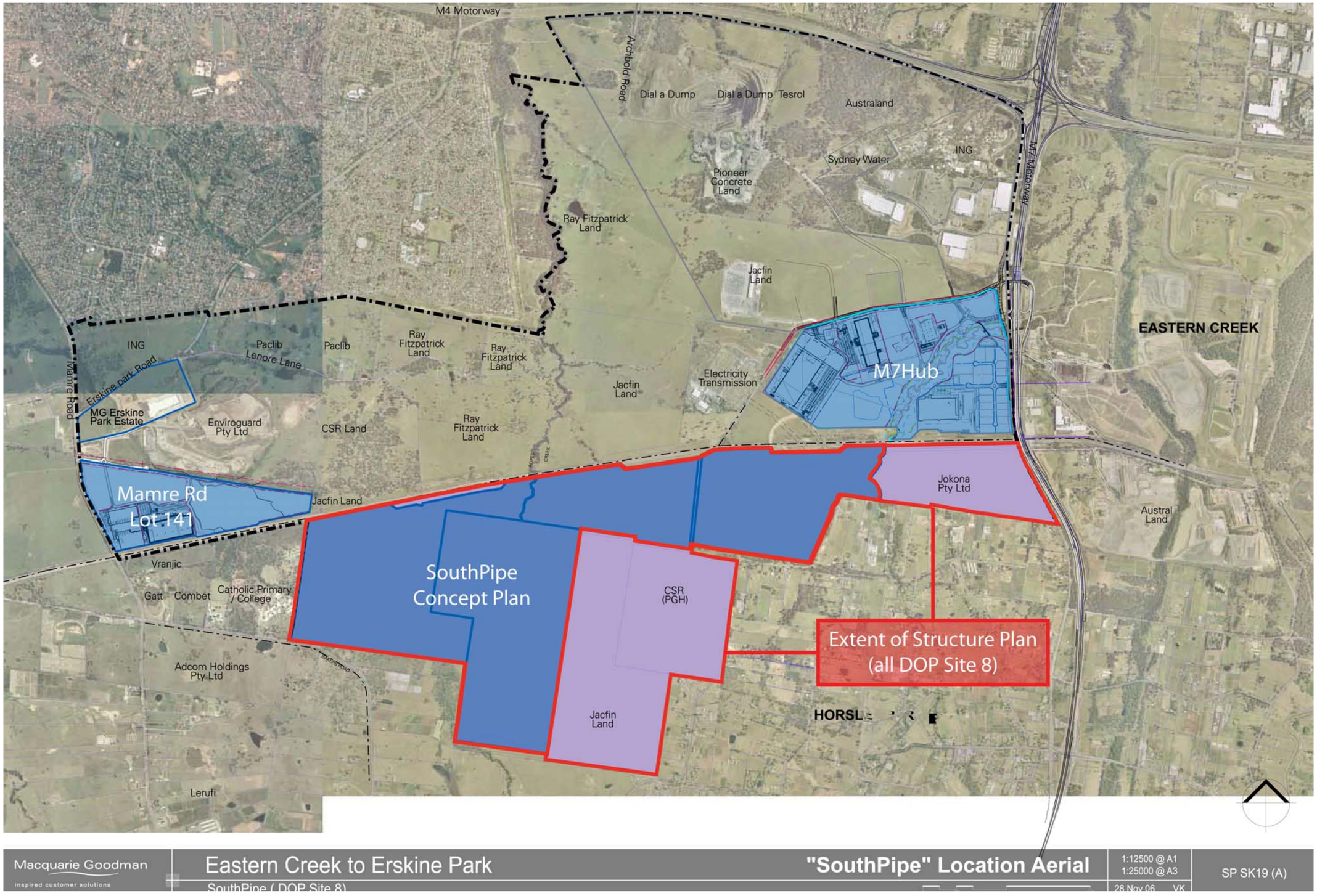


Figure 1.2 Oakdale Concept and Structure Plan.

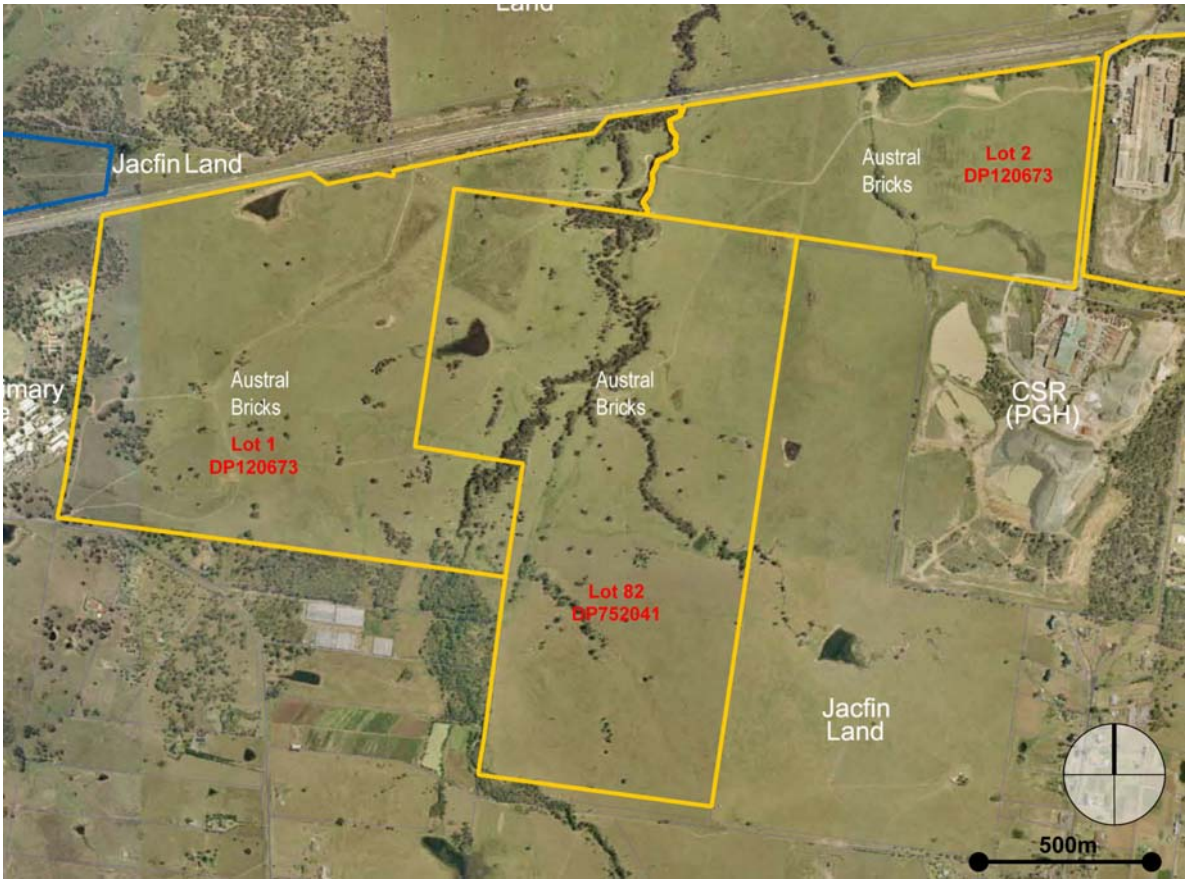


Figure 1.3 Oakdale concept plan lands inspected during this study.

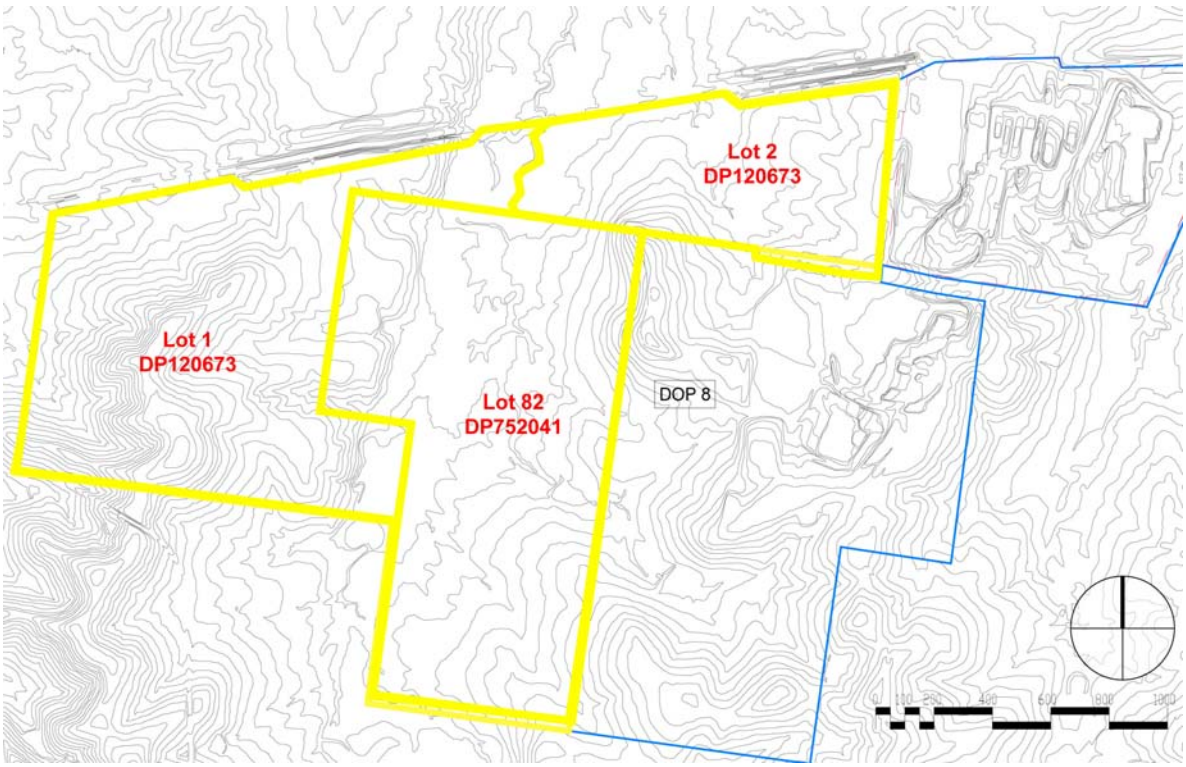
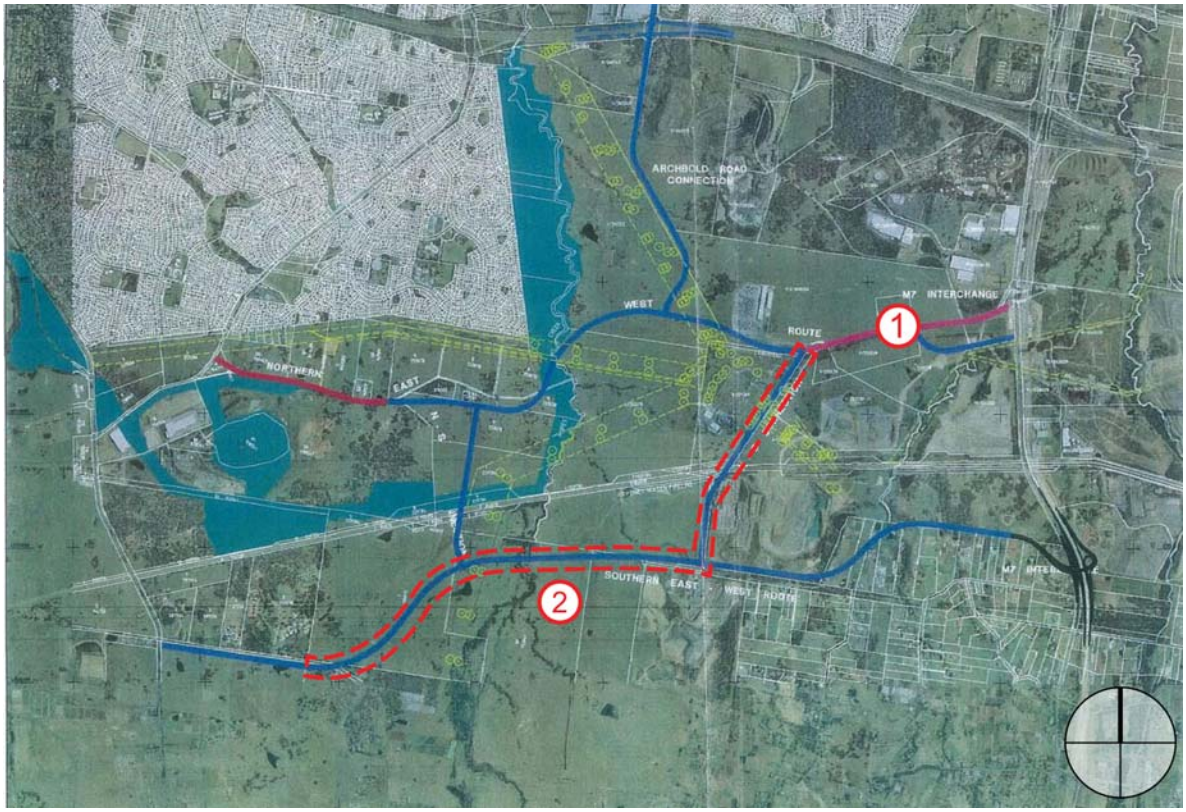


Figure 1.4 Oakdale contour plan.



① Old Wallgrove Road upgrade under M7 Hub consents
② Proposed Link Road segment part of Oakdale application

Figure 1.5 Oakdale Link Road segments. (Source: RTA)

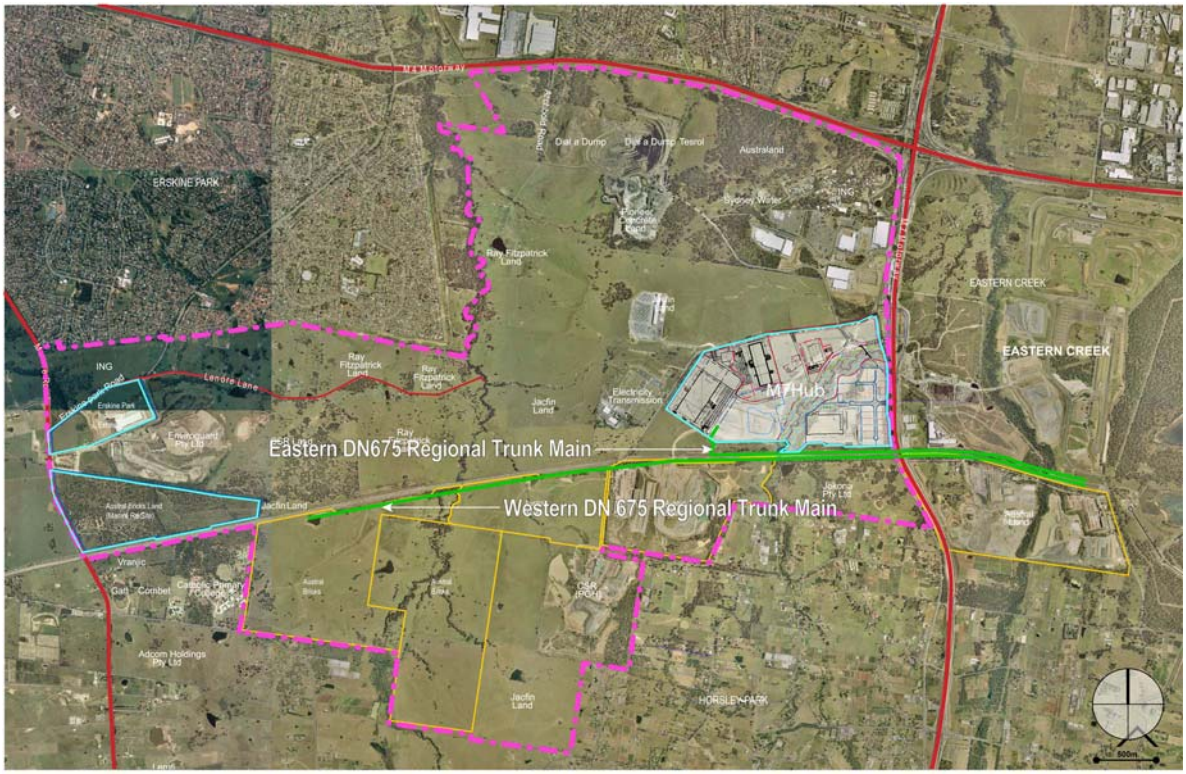


Figure 1.6 Rainwater Harvesting concept plan.

1.7 Endnotes

[1] NSW National Park and Wildlife Service 1997a to c. 'Standards Manual for Archaeological Practice in Aboriginal Heritage Management' in the Aboriginal Cultural Heritage Standards and Guidelines Kit (Draft).
[2] NSW National Park and Wildlife Service 2004. 'Interim Community Consultation Requirements for Applicants'. National Parks and Wildlife Act 1974: Part 6 Approvals. December 2004.
[3] NSW National Park and Wildlife Service (nd). Guidelines for Aboriginal Heritage Impact Assessment (Draft).
[4] Aboriginal Land Rights Act 1983, s52(1)(m).

2.0 Environmental and Historical Context

2.1 How the Environment Affects Archaeological Patterning

Ongoing archaeological research in the greater western Sydney region demonstrates that the original (pre-European contact) environment strongly influenced not only the availability of resources to Aboriginal people in the past, but also largely determines in the present context what types of archaeological evidence is likely to be located when a given parcel of land is inspected to assess potential Aboriginal archaeological and cultural heritage sensitivity.

The distribution and availability of resources such as drinking water, plant and animal foods, raw materials of stone, wood and vegetable fibre used for tool production and maintenance are all influenced by the nature of soils, the composition of vegetation cover and climactic characteristics of a given region. The location of different site-types (such as open campsites, shell midden deposits, scarred trees, axe grinding grooves and rock engravings etc) that may occur in the landscape are therefore influenced by factors such as these, along with a range of other associated features which are specific to different land-systems and bedrock geologies.

Furthermore, the nature and extent to which a given landscape has been subject to impacts as a result of post-Contact land-use practices will also define what types of Aboriginal archaeological evidence is likely to survive.

Documenting the environmental context of a study region is therefore an integral procedure necessary for understanding potential past Aboriginal land-use practices and/or predicting archaeological site distribution patterns.

The information outlined below is considered to be relevant to the assessment of archaeological potential, site visibility, and likely levels of disturbance within the context of the current study.

2.2 Changes in the Environment over Time

Aboriginal people have occupied the greater Sydney region for over 20,000 years. When people first arrived, the landscape and vegetation, the climate, and types of animals encountered was markedly different from today. Archaeological research further indicates that each of these aspects of the pre Contact environment changed dynamically over time up to the present.

Initially, sea levels fell by up to 100m (because of the volume of ice that was locked up in the world's ice-caps) and as a result the coastline retreated to such an extent that by around 18,000 years ago the Sydney foreshore was located between 10km and 20km further to the east than its present position. The climate at this time would have been dry, windy and cold with hard winter frosts and snow prevailing. Sydney Harbour had also drained away as a result of the fall in sea levels and consisted of a rocky inland valley through which a small stream flowed.

Other changes were also occurring at this time with wet sclerophyll forests at times giving way to more open environments, whilst a range of large marsupials ('mega-fauna') that occupied the early Aboriginal landscape started to become extinct.[1]

Sea levels rose as the ice caps progressively melted over the period between approximately 18,000 years ago and 6,000 before present. Excluding minor fluctuations, the Sydney coastline gradually stabilised in its present location at that time.

As a consequence of these environmental changes, most of the evidence for where and how Aboriginal people lived in the Sydney region between the time of their first arrival and approximately 6,000 years ago is now therefore buried deep beneath the ocean.

2.3 Site Geology, Topography, Hydrology, Vegetation and Soils

The lands to which the Oakdale Concept Plan applies are situated between two principal watercourse catchments in western Sydney that consist of South Creek and Eastern Creek. Located immediately to the south of the Warragamba-Prospect Water Supply Pipelines and bisected from north to south by the meandering alignment of a series of channels of Ropes Creek, the general location of the study area is illustrated in Figures 1.1 and 1.2.

The Bringelly Shale formation of the Liverpool sub-group of the Wianamatta Group is the major geological formation underlying the lands in this portion of the Cumberland Plain and comprises predominantly of Tertiary age deposits of quartz, shale, laminate, claystone and fine grained sandstone. The topography of the broader landscape of which the subject lands form a part consist of moderately to low gradient rolling landforms in broad valley slopes, low and broad ridge and spurline crests, and mostly ephemeral drainage lines.[2]

Soils derived from Wianamatta shale weather to relatively heavy clay and loamy duplex deposits. The flood plain of Ropes Creek extends up to 400m from the creek bed and includes a number of flood channels and locally elevated landforms which are likely to represent terrace remnants, or low bedrock topographies that may include Quaternary age alluvial deposits.

The topography of Lot 2 (accessed via Old Wallgrove Road) is dominated by an elevated spur/ridge to the south of the allotment, while the remainder of this parcel of land generally slopes down towards the north and northwest, with the western half draining into the main channels of Ropes Creek contained in Lots 82 and 87 and the remainder draining into a minor tributary channel that bisects the centre of Lot 2 as illustrated in Figure 1.3. Elevations in this parcel of land vary from approximately 80m AHD on the southern boundary and 76m AHD midway along the eastern boundary, down to 56m AHD midway along the northern boundary where it crosses the base of the minor tributary creek, and 52m AHD at the base of Ropes Creek in the northwestern corner of the allotment.[3]

The topography of Lots 82 and 87 (that is bisected by the bifurcated branches of Ropes Creek) is generally lower than Lot 2 as illustrated in Figures 1.3 and 1.4. Gradients become again more elevated in Lot 1 as the land rises to the north-south tending ridgeline that occupies the western half of this allotment.

Prior to initial Post-Contact clearance activities (timber felling) and ensuing pastoral use of the land (improvements of the land for stock grazing purposes), the original vegetation of most of this portion of the Cumberland Plain consisted of open eucalypt woodland in which trees were widely spaced and the ground cover was dominated by grassed under-storeys.[4]

Most of the original vegetation across the study area has now been cleared and the Oakdale site is now dominated by introduced pasture grasses with scattered mature eucalypts, exotic trees, shrubs and weeds. Ribbon strips of isolated eucalypts intermingled with pockets of River oaks, along with patchy occurrences of re-growth and shrubs and bushes occur along the margins of the principal channels of Ropes Creek contained in Lots 82 and 87 and the minor drainage tributary contained in Lot 1 as illustrated in Figure 1.3.

2.4 Historical Land Use and Current Site Condition

The combined Oakdale lands illustrated in Figures 1.2 and 1.3 have not formed part of an undisturbed 'bush-land' setting for a considerable period of time. The respective properties have been modified as a result of the accumulated impacts associated with the following types of land use practices:

- early timber felling, de-stumping, and extensive vegetation clearance for pasture improvement purposes;
- ongoing agricultural activities including animal grazing, water storage dam constructions, the creation of contour banks, and repetitive ploughing over time;
- modifications to the original nature and alignment of Ropes Creek and its associated tributaries in Lots 2 and 82 in particular that have affected water-flow patterns;
- the construction of transmission lines and the creation of various vehicle access tracks and easements across Lots 1, 2, 82 and 87;
- minor quarrying, contouring and surface alterations to the spur/ridge line to the upper slopes located in Lot 2;
- works associated with the creation of the Warragamba-Prospect Water Supply Pipeline corridor situated to the north of the subject lands; and
- quarrying and brick making activities that have been continuous in Lot 1 DP 843901 since 1973.

2.5 Endnotes

1 See discussion by Wright, R.V.S. in P. Stanbury (ed). '10,000 Years of Sydney Life'. A Guide to Archaeological Discovery'. University of Sydney. 1980:40-47.

2 Bannerman, S.M. & P.A. Hazelton. 'Soil Landscapes of the Penrith 1:100,000 Sheet'. Soil Conservation of NSW. Sydney.

3 John Appleton Archaeological Surveys & Reports Pty Ltd. The Archaeological Investigation of Lot 2, DP 120673, the site of a proposed new clay and shale extraction area. Old Wallgrove Road, Horsley Park, west of Sydney, NSW. Report to the Austral Brick Company Pty Ltd. 2002:9.

4 See for example Benson, D. & J. Howell. 'Taken for Granted: the bushland of Sydney and its suburbs'. Kangaroo Press Pty Ltd. NSW. 1990.

3.0 Archaeological Overview

3.1 Regional Aboriginal Archaeological Context

3.1.1 Aboriginal Site Types, Frequency and Survival

Over 4,000 Aboriginal archaeological sites have been located, recorded and registered with the DECC in the greater Sydney region to date. Despite extensive impacts that have accompanied some 220 years of occupation and land development, Aboriginal archaeological sites have been located in all types of landforms extending from ridge-top to valley floor. Documented site types include shell middens and archaeological deposits in rock shelters and in open contexts, dry pigment, painted and engraved art in shelters, engraved images and axe grinding grooves on rock platforms, scarred and carved trees, stone arrangements, waterholes, burials, mythological sites, post-Contact historical campsites.

Aboriginal archaeological and cultural heritage research completed to date indicates the distribution (and survival) of Aboriginal cultural evidence in the Sydney region is strongly related to bedrock geology and local topographic features including elevation and the presence of water resources. The most common site types that occur along the coastal strip in the Sydney landscape are shell middens and are most often found to consist of low density scatters of shell (occasionally with some depth and hence antiquity) and may also be associated with other cultural remains such as stone tools, fish and animal bones, cooking hearths, and human burials.

In sandstone landscapes, middens are often found within rock overhangs and are frequently sited adjacent to watercourses situated close to sources of food (such as shells, fish, and available terrestrial animals etc). Other sites that are prevalent in sandstone country include axe-grinding grooves, painted rock art in shelters, and rock engravings on smooth and flat sandstone platforms.

On the Cumberland Plain, open camp sites are most prevalent. These sites generally consist of concentrations of artefacts of flaked stone and occasional ground stone items. The size, distribution, density, and complexity of these sites vary as discussed below. A number of scarred trees have also been recorded in the local landscapes that have survived extensive land clearance periods over time.[1]

3.1.2 Evidence for Aboriginal Occupation of the Greater Sydney Region

The greater Sydney region has been inhabited by Aboriginal people for at least 20,000 years with dated rock shelter sites occurring in the Blue Mountains and its foothills[2] and two dates ranging from between 10,500 to 12,000 years before present have been reported for an open camp site at Regentville.[3] In addition, a shelter on Darling Mills Creek at West Pennant Hills has also provided a date of a little over 10,000 years for first occupation, whilst two open campsites at Doonside[4] and Rouse Hill[5] respectively have revealed dates ranging from between 4600 and approximately 6000 years ago.

The earliest sites on the coast are located at Burrill Lake that is dated to 20,000 years ago[6] and at Bass Point that is dated to 17,000 years ago[7]. Both of these sites would have been occupied at a time when the sea level was much lower and the present coastline would have been an inland environment drained by streams. There are no other coastal Pleistocene sites known at present. However, two sites dated to around 7000–8000 years before present comprise a sheltered midden at Curracurrang and an open campsite (containing a hearth) at the Prince of Wales Hospital in Randwick.[8]

The majority of Aboriginal archaeological sites recorded in the region are dated to within the last 2500 to 3000 years. It is likely that the early occupation of the Sydney region was not intensive nor included

large groups of people and that around 5000 years ago (when the sea levels stabilised at the present levels) more intensive use of the landscape by Aboriginal people began. Many open sites are likely to have been first occupied in the last 1500 years before Contact.

These arguments are based upon changes in stone tool assemblages and observable changes in the use of certain types of stone used in Aboriginal tool manufacture. Over the 20,000 years of occupation of the region, and in particular the last 5000 to 8000 years, changes in the excavated stone tool assemblages have been observed. Various temporal markers have been established by archaeologists in an attempt to distinguish the more significant changes in tool types and tool kit composition over time.[9]

The most widely used terminology for the archaeological phases within what is currently known as the Eastern Regional Sequence are the Capertian, and the Early, Middle and Late Bondaian. This sequence is still being refined and continues to be clarified by ongoing archaeological work. The sequence is generally accepted and is regularly applied throughout the eastern seaboard of Australia.

The Capertian phase is essentially composed of large, heavy stone artefacts. Tool types include uniface pebble tools, core tools, denticulate stone saws, scrapers, hammerstones, some bipolar cores and flakes, and burins. The change from the Capertian to the Bondaian appears to have taken place some time after 5000 years BP, and is defined by a noticeable shift in stone tool size, raw material use and in the range of raw materials utilised for tool production.

The three phases which are recognised as belonging to the Bondaian sequence are largely based on the timing of the introduction, and subsequent decline, of backed stone implements, as well as the increased use of bi-polar flaking techniques. Other technological innovations, which are evident during the Bondaian, included the introduction of ground edge implements (c4000 years BP), and the widespread use of shell fish hooks during the last 1000 years. The three Bondaian phases are summarised below.

Table 3.1 Changes in the Archaeological Record over the Last 5,000 Years.

Early Bondaian	
Date	5000 – 2800 years BP
Dominant raw materials	Fine grained siliceous cherts and silcretes.
Characteristics	Features of the Capertian appear to have continued in many areas, but backed and edge ground implements were widely introduced and used.

Middle Bondaian	
Date	2800 – 1600 years BP
Dominant raw materials	Fine grained siliceous cherts and silcretes. Increased use of quartz.
Characteristics	Increased of microblades such as bondi points and an increase of bipolar artefacts. Few ground edge implements

Late Bondaian	
Date	Last 1600 years
Dominant raw materials	Include quartz with some uses of other raw materials
Characteristics	Microblades including Bondi points are absent, but *Eloueras* and bipolar pieces are dominant in known assemblages. Edge ground implements are also more common. Bone and shell implements, including fish-hooks, occur at some sites.

3.1.3 Aboriginal Archaeological Research on the Cumberland Plain

Aboriginal archaeological research completed during the last two decades has provided a large body of data about the nature of past Aboriginal use and occupation of the Cumberland Plain. This data is largely archived within the DECC Aboriginal Heritage Information Management System (AHIMS), or Aboriginal Sites Register. Comprehensive investigation of the cultural heritage resource of the region commenced in 1989 with a review of documented recordings of site types and site locations in the Northern Cumberland Plain that was commissioned by the National Parks and Wildlife Service.[10] At the completion of this study there were a little fewer than 400 known sites in the Plain. Over 90% of these were reported to be open campsites, and most were found to be small (comprising <50 artefacts), dispersed and largely disturbed stone scatters (98.9%).

The above study suggested that permanent water might have been a more important variable than the location of stone resources as a site location predictor. This study also suggested that sites would be located on all topographic units, including creek banks and flats, ridge/hill tops and slopes, except for where landforms had been destroyed by European impact and/or as a result of factors of gross taphonomy such as flooding and erosion. Data compiled in this study suggested that the highest site densities occurred around swampy/marshy areas. In addition, at the time of the project, approximately 50% of all sites recorded were located within 50m of a creekline, whilst sites had also been identified on ridges situated over 200m from a water source.

More recent research has contributed new information useful for refining the original models and observations noted above, and as a result our perception of archaeology within the context of the Cumberland Plain has changed accordingly.

For example, a compilation of data in 1997 for the region (as held in the then NSW NPWS Aboriginal Sites Register) identified records for a little fewer than 670 sites.[11] Open campsites were found to be the most prevalent site type (89%), followed by scarred trees (2.1%). A further 3.5% of the site types consisted of isolated finds in combination with various other site types. Shelter sites and axe grinding grooves, generally found around the periphery of the Cumberland Plain at the interface of the shale and sandstone bedrock geologies accounted for a further 3.6% of recorded sites.

The above study also highlighted the problem of archaeological visibility on the Plain and illustrated that existing models based primarily upon surface evidence were inadequate in their ability to describe the characteristics of sites in the region or to predict site location and/or variability. Specifically, the 1997 study concluded that:

- Seventeen of the sixty-one excavated sites on the Cumberland Plain had no artefacts present on the surface prior to excavation. However, most areas with sparse or no surface manifestations were found to contain considerable archaeological deposits.
- The ratio of recorded surface to excavated (sub-surface) artefacts was found to be approximately 1:25 across the Plain.
- None of the excavated sites could be properly characterised on the basis of their surface artefacts alone.
- Open campsites were found to be located in all landscapes on the Cumberland Plain. The predominance of sites recorded along creekbanks was further considered to be likely to be indicative of surface visibility conditions and taphonomic factors, rather than the human distribution of artefacts across the landscape.

A large number of Aboriginal archaeological and cultural heritage site survey and sub-surface investigations have since been completed on the Cumberland Plain over the last decade as development of the land has increased that further contribute to our understanding of past site distribution patterns, and the nature and complexity of the documented and potential archaeological resource of the place. The results of the more pertinent studies relative to the current Oakdale assessment project are reviewed in following sections of this report.

3.2 Local Aboriginal Archaeological Context

Background research into Aboriginal archaeological and cultural heritage investigations previously completed within the study area and its immediate surrounds was undertaken prior to the commencement of the current Aboriginal archaeological survey and assessment program. Information sources accessed included the DECC AHIMS *(*Aboriginal Heritage Information Management System*)* Aboriginal Sites Register, the DECC Catalogue of Archaeological Reports, and other secondary documents.

3.2.1 AHIMS Register Aboriginal Archaeological Site Search

A search of the AHIMS Register for a 10km (east–west) by 5km (north–south) area centered on the allotments detailed in Figure 2.1,[12] returned records for a total of 119 Aboriginal archaeological sites. The majority of these have been located to the north of the Oakdale subject lands, and are reflective of the high intensity of recent Aboriginal archaeological and cultural heritage assessment projects that have been completed in advance of ongoing industrial developments in the SEPP 59 (Wonderland Business Park) and Erskine Park Employment Lands (see for example Figure 3.3).

Recorded site types include open campsites and isolated stone artefact finds (together accounting for approximately 90% of the sites identified within the above AHIMS search parameters), as well as several areas of Potential Archaeological Deposit (some of which appear to be associated with recorded surface archaeological evidence), a small number of scarred trees, and two open campsites that are reported to contain evidence of Post-Contact Aboriginal use (in the form of items of flaked glass).

Five Aboriginal archaeological sites have previously been recorded within the Oakdale subject lands as illustrated in Figure 3.2. All occur in Lot 2 DP120673, reflecting the fact that this is the only allotment that has been the subject of any previous Aboriginal archaeological survey and assessment investigation prior to the current study.

Limited details of these sites/finds are currently available in the DECC AHIMS Register, although each site/find appears to be at the time of their original recording to have consisted of either isolated items of flaked stone and/or low density surface scatters of stone materials[13]. This information is summarised below in Table 3.2.

Table 3.2 Previously Recorded Aboriginal Sites in Lot 2 DP 120673.

AHIMS #	Site Names	Site Type	Description
45-5-2857	HP1	Isolated Find	'Red cherty mudstone (tuff?) flaked piece' recorded in the bank of Ropes Creek 21cm below surface and determined to be associated within an area of PAD all within the Ropes Creek buffer zone (as then proposed).
45-5-2862	HP2	Isolated Find	'Red cherty mudstone (tuff?) flaked piece' exposed on a compacted but seemingly un-eroded vehicle track. Recommended for s.90 collection.
45-5-2859	DTAC1	Artefact/s	Available DECC site card incomplete. Not clear if one or more artefacts were found in the locality. No details of context.

AHIMS #	Site Names	Site Type	Description
45-5-2860	DTAC2	Artefact/s	Available DECC site card incomplete. Not clear if one or more artefacts were found in the locality. No details of context.
45-5-2861	DTAC3	Artefact/s	Available DECC site card incomplete. Not clear if one or more artefacts were found in the locality. No details of context.

It appears that DECC s90 Permits were issued for the possible collection/destruction of the finds at HP2 and DTAC1-3 following the 2002 investigations that would be endorsed by the pertinent Aboriginal community organisations involved in the 2002 study.

However, it is presently unclear whether these permits may have been implemented and/or lapsed given no obvious impacts to the property have occurred in the intervening time from the 2002 investigations up to the present. It would be reasonable to assume that because the then proposed quarry works on the land (Lot 2) did not proceed, the need to collect, relocate, record and document the above items was considered unwarranted by all parties.

Figure 3.1 shows the approximate location of the registered Aboriginal sites known to occur within several hundred metres of the three surveyed allotments that form a part of the current Oakdale project. The nature of these Aboriginal archaeological sites is summarised in Table 3.3 and reviewed below.

It appears that most (if not all) registered Aboriginal archaeological sites in close proximity to the Oakdale subject lands consist of low density surface stone artefact distributions and/or isolated finds. Furthermore, where these previous find locations have been subject to controlled archaeological test excavation, in the most part they have been demonstrated to contain low densities of sub-surface archaeological material.

Table 3.3 Previously Recorded Aboriginal Sites Adjacent to the Surveyed Allotments.

AHIMS #	Name	Site Type	Description
45-5-2992	EPQ1	Open Campsite	Three stone artefacts recorded along a vehicle track with associated PAD. Recommended for s87 test excavation as part of a broad archeological sampling of the local landscape.
45-5-2516	EPQ6	Open Campsite	Three stone artefacts recorded along a vehicle track with associated PAD. Recommended for s87 test excavation as part of a broad archeological sampling of the local landscape.
45-4-0970	EP 1	Open Campsite	Two stone artefacts recorded along a vehicle track with moderate potential for associated PAD. Recommended for s87 test excavation as part of a broad archeological sampling of the local landscape.
45-4-0978	EP 2	Open Campsite	Two stone artefacts recorded along a vehicle track with moderate potential for associated PAD. Recommended for s87 test excavation as part of a broad archeological sampling of the local landscape.
45-4-0971	EP 3	Isolated Find	Single artefact located in an area of surface exposure, with moderate potential for associated PAD. Recommended for s87 test excavation as part of a broad archeological sampling of landscape.
45-4-0972	EP 4	Open Campsite	Three stone artefacts recorded along a cattle track with moderate potential for associated PAD. Recommended for s87 test excavation as part of a broad archeological sampling of landscape.
45-4-0973	EP 5	Isolated Find	Single artefact located on a cattle track, with moderate potential for associated PAD. Recommended for s87 test excavation as part of broad archeological sampling of landscape.

45-4-0977	EP 9	Isolated Find	Single artefact located on eroded creek-bank, with moderate potential for associated PAD. Recommended for s87 test excavation as part of a broad archeological sampling of landscape.
45-5-3058	EV1	Open Campsite	Open campsite with associated PAD. Not to be impacted by the assessed proposal so was not was investigated further.
45-5-3059	EV2	Open Campsite	Open campsite with associated PAD. Not to be impacted by the assessed proposal so was not investigated further.
45-5-3060	EV3	Open Campsite	Open campsite with associated PAD. Test excavated as part of a broad scale archeological testing program and found to contain a low density scatter of Aboriginal artefacts.
45-5-3061	EV4	Open Campsite	Open campsite with associated PAD. Test excavated as part of a broad scale testing program and found to contain a low density scatter of Aboriginal artefacts.
45-5-2057	PGH1	Isolated Find	Piece of debitage of stone recorded in a totally disturbed context. Recommended for s.90 permit.
45-5-2046	PGH2	Isolated Find	Piece of debitage of stone recorded in a totally disturbed context. Recommended for s.90 permit.
45-5-3095	PGH3	Open Campsite	Two artefacts of flaked stone located in a partially disturbed context. Not assessed to be associated with PAD. Recommended for s.90 permit.

3.2.2 Previous Investigations in and Around the Oakdale Site

From the results of the DECC AHIMS search presented above, and from a review of information compiled within the DECC Catalogue of Archaeological Reports assessed as part of this study, it appears that a number of Aboriginal archaeological assessments and archaeological excavations have taken place within the vicinity of the current subject lands over the last two decades as illustrated in Figure 3.2 that can inform this current study. The locations of the most pertinent investigations are numbered in this figure and are summarised in the discussion below.

Survey of Lot 2 in DP 120673 (Within the Subject Lands)

Appleton[14] undertook an archaeological survey of Lot 2 DP120673 for a proposed clay and shale quarry (which has not proceeded) in 2002. The survey resulted in the identification of two isolated stone artefact finds, one of which (HP1 coded as AHIMS #45-5-2857) was located on the eastern bank of Ropes Creek and at the time was assessed as being associated with subsurface archaeological potential (see Figure 3.1 and Figure 3.3).

An additional area stretching to the east was further identified as potentially being of Aboriginal archaeological and cultural heritage sensitivity, as were both banks of the unnamed tributary of Ropes Creek located about 500m to the east of the locality that bisects this specific allotment. The area of PAD associated with HP1 was determined at this time to be contained within a 50m riparian corridor and was not perceived to be impacted upon by the proposal under consideration by Appleton in 2002.

However, Appleton[15] recommended at that time that both areas of potential archaeological/cultural heritage sensitivity be monitored during initial topsoil removal, possibly under a NPW Act Section 87 permit (although this is unclear from the report) and that a Section 90 permit be sought for isolated find HP2 (AHIMS #45-5-2862). As the quarry has not proceeded to date, these recommendations do not appear to have been subsequently enacted. It is noted that an additional three Aboriginal sites were subsequently identified within the property by the Darug Tribal Aboriginal Corporation (as illustrated in Figure 3.1), but scant details of these sites are currently available.

Proposed CSR Quarry

Curran in 1997[16] investigated an allotment immediately south of Lot 2 DP102673 for a quarry and landfill development proposal. The area was already in use as a quarry and the land was therefore assessed to be highly disturbed in most portions. Curran identified two isolated stone artefacts and an 'open campsite' consisting of two artefacts in a disturbed context (and therefore not in their original position and thus possibly not indicative of a site). These were recommended for destruction under an NPW Act Section 90 permit though it is not clear whether this was granted and enacted.

Curran in 1997 investigated an allotment immediately south of Lot 2 DP102673 for a quarry and landfill proposal. The area was already in use as a quarry and the land was therefore disturbed in some portions. Curran subsequently identified two isolated stone artefacts and an 'open campsite' consisting of two artefacts located in a disturbed context (and therefore not in their original position and thus possibly not indicative of a realistic Aboriginal camping site location). These items were recommended for destruction under a Section 90 permit though it is not clear whether this was granted and duly enacted.

Emmaus Village, Kemps Creek

An Aboriginal archaeological assessment was undertaken ahead of a proposed extension of aged care facilities known as Emmaus Village at Kemps Creek immediately to the west of Lot 1 DP 102673 in 2005.[17] The survey was located adjacent to the existing village and included some relatively undisturbed re-growth woodland near a first order tributary of South Creek. The survey resulted in the recording of four open artefact scatters (EV1-4) and a recommendation to undertake a broad scale testing program in the vicinity of sites EV3 and EV4. This testing program involved the bulk mechanical excavation of 18 1m x 1m pits at 50m intervals along four transects.[18] The excavations revealed topsoils of between 50mm to 150mm in depth with a moderate level of historical and natural (bioturbation) disturbance. The testing program retrieved just eleven flaked stone artefacts.

Erskine Park Employment Lands

The area known as the Erskine Park Employment Lands is bounded by the suburb of St Clair to the north, Ropes Creek to the east, the Prospect Water Supply Pipeline to the south, and Mamre Road to the west. This area has been the focus of a number of Aboriginal archaeological survey and cultural heritage assessment projects over the last two decades, which have resulted in the identification of a number of low density surface artefact scatters and isolated finds, and areas that have been recommended to require further subsurface archaeological investigation prior to redevelopment.[19]

Although historically more disturbed than the Oakdale lands, the eastern portion of the Erskine Park Employment Lands in particular is relatively less disturbed and is situated in a similar topographic location to the current study area. Survey of this area[20] resulted in the identification of two isolated stone artefact finds and an open campsite consisting of three artefacts. In addition, areas of surface archaeological potential (in addition to several previously recorded sites) were also reported. Archaeological potential was identified primarily in association with the banks and floodplain of Ropes Creek. The study recommended an archaeological testing program to be undertaken to investigate these areas of potential. These recommended archaeological test investigations have not occurred to date.

It is noteworthy that although open campsites have been recorded in most topographic contexts (such as floodplain, hill-slope, ridge-top landforms) within the Erskine Park Employment Lands, the majority

have been reported to consist of less than 25 artefacts in total with densities of less than one artefact per square metre.

A number of sub-surface investigations of areas across the CSR lands in the central western portion of the Erskine Park Employment Lands immediately north of Lot 1 DP102673 have been undertaken to date. The first of these examined two areas near Lenore Lane along the northern edge of the CSR lands with a total of 21 and 17 mechanically excavated test pits being investigated respectively.[21] These works retrieved less than 50 artefacts in total that were found to have been spread over 20 of the 38 test pits, indicating a very low artefact density attributed to low past Aboriginal intensity use of the local landscape.

Further excavations were undertaken in eleven areas across the CSR lands sampling different topographic contexts and avoiding existing quarried areas in the western portion of the land. Initially 256 mechanically excavated pits were excavated across the eleven sampled areas with a total of less than 300 artefacts being retrieved from about a third of the test pits.[22] Additional testing in Area 11, involving a further 24 test pits, retrieved an additional 172 artefacts.[23] Most pits were found to contain low numbers of artefacts (averaging less than five artefacts per square metre but up to almost thirty in some locations).

In summary, the above archaeological excavations have demonstrated a generally low density distribution of Aboriginal archaeological material across similar topographic contexts that are present within the Oakdale subject lands.

SEPP 59 Lands

The SEPP59 lands are bounded by the Western (M4) Motorway to the north, Wallgrove Road to the east, the Prospect Water Supply Pipeline to the south, and 330kV power-lines east of Ropes Creek to the west. Its designation as employment lands under SEPP 59 led to a progressive Aboriginal archaeological planning study being completed for the area over the period spanning 2002 to 2005.[24] These studies summarised previous investigations[25] which had identified archaeological sites in the area (see Figure 3.2) and involved additional field survey, resulting in the identification of further sites and areas of archaeological potential.

The 2002 to 2005 studies also involved a detailed landscape/landuse and archaeological sensitivity analysis which resulted in the ranking of the SEPP 59 lands into three management zones (1, 2, and 3) of which Zone 1 was regarded as having the highest level of archaeological sensitivity. It was recommended that conservation areas should be selected from Zone 1 lands, which would include samples of all topographic zones except ridge-tops (of which only one exists in the study area). It was further noted that not all conserved areas were known to contain Aboriginal sites.

Four Aboriginal archaeological test excavations have been undertaken within this area in recent years, some of which have been triggered as a result of the conservation and investigation policies instigated by the above-mentioned studies.

DSCA[26] in 2003 excavated an area containing several previously identified low-density surface scatters of artefacts located in the now Wonderland Business Park situated in the central eastern portion of the SEPP 59 lands. These works resulted in the recovery of only five additional sub-surface artefacts over the twenty excavated pits investigated during the project. The areas assessed during the program were found to display high levels of historical disturbance and erosion. Approximately thirty additional surface artefacts were also located during the project but none of these were in situ.

Two areas within the Austral lands in the southeastern corner of the SEPP 59 lands were test excavated in 2004. The Austral Site (AHIMS #45-5-2986) along Reedy Creek in the southeastern corner of the SEPP59 lands was found to contain densities of 17 artefacts per square metre but this was still considered relatively low and the site was not recommended for further investigation or preservation.[27] The second excavations involved the Austral 4 site (AHIMS #45-5-3076) which was found to have very low densities of stone artefacts.[28]

The most recent excavations in this location have involved two adjacent areas of archaeological potential (EC3/1, AHIMS #45-5-3201 and EC3/2, AHIMS #45-5-3202) identified during McDonald's original SEPP 59 studies[29], and also included several previously recorded open campsites and isolated finds located within these lands.[30] The areas investigated were located within lands known as 'Wonderland Surplus' in the northeastern portion of the SEPP 59 development study area. The excavations involved archaeological salvage of a number of targeted sites which included hill-slopes and a low ridge-top landform. Over 1500 artefacts were retrieved during the investigation program from around one hundred 1m x 1m pits, but these finds were found to represent an average density of less than one artefact per square metre in total, although some areas were necessarily found to contain comparatively higher densities of material though still low in absolute terms.

In summary, with the exception of the previously mentioned Austral site (AHIMS #45-5-2986), all surface Aboriginal archaeological sites and excavated sites contained within the SEPP 59 lands have to date been found to comprise artefact densities of less than two artefacts per square metre.

3.3 An Aboriginal Archaeological Land Use Model and Site Prediction

3.3.1 Modelling How People May Have Used the Land in the Past

Predictive models of site location attempt to identify areas of relative archaeological/cultural heritage sensitivity (high, moderate and low etc) as a tool that can be used for the planning and management of Aboriginal sites in future development and/or land modification circumstances.

These models are generally based upon information including the types of land systems/landscape units contained within a study area, the results of previous archaeological surveys, the distribution of recorded sites and known site densities, and an understanding of traditional Aboriginal land use patterns.

3.3.2 Aboriginal Site Prediction in the Local Landscape

McDonald[31] has proposed a predictive model for the location and nature of Aboriginal archaeological sites on the Cumberland Plain that provides a useful context within which to evaluate the documented and potential Aboriginal archaeological resources within the Oakdale subject lands. According to this model, it is predicted that the size (density and complexity) of archaeological sites will vary according to permanence of water, landscape unit, and proximity to stone resources in the following way.

The statements below use a concept of numbered 'stream orders' where the uppermost headwaters of a watercourse has a stream order of '1' (a 'first order stream') and whereby two of these combine to form a stream order of '2' (a 'second order stream'), hence the further downstream one travels, the higher the stream order and the more permanent and larger the watercourse etc:

- In the headwaters of upper tributaries archaeological evidence will be sparse and will comprise little more than background scatters.
- In the middle reaches of minor tributaries archaeological evidence for sparse but focused activity (such as one-off camp locations and single episode knapping floors) will be expected.

- In the lower reaches of tributary creeks archaeological evidence for more frequent occupation will be expected. This will include repeated occupation by small groups, knapping floors (perhaps used and re-used), and evidence of more concentrated activities.
- On major creek-lines (such as along the principal branches of Eastern, Ropes and Reedy Creeks) archaeological evidence for more permanent or repeated occupation will be evident. Sites will be complex and may even be stratified.
- Creek junctions may provide foci for site activity; the size of the confluence (in terms of stream ranking nodes) could be expected to influence the size of the site.
- Ridge-top locations between drainage lines will usually contain limited archaeological evidence although isolated knapping floors or other forms of one-off occupation may be in evidence in such a location.
- Naturally outcropping silcrete (or sources of other raw materials) will have been exploited and evidence for extraction activities (de-cortication, testing and limited knapping) will likely be found in such locations.
- Sites in close proximity to an identified stone source would cover a range of size and cortex characteristics and as one moves away from the resource, the general size of the artefacts in the assemblage should decrease, as should the percentage of cortex.

Data from more recent excavations has allowed McDonald to confirm the relationship between increasing stream order and increasing artefact densities. A summary (though based on very preliminary data) indicates that sites associated with stream orders of 1–3 generally have less than 25 artefacts per square metre when excavated.[32]

3.3.3 Possible Aboriginal Archaeological Evidence Within the Oakdale Lands

The Oakdale lands are characterised by an undulating landscape that occurs around the main channel of Ropes Creek (in its upper reaches), and the catchments of its minor tributaries. The majority of these watercourse tributaries are first order streams which the predictive model outlined above suggest will retain largely background artefact scatters of flaked stone artefacts suggestive of intermittent and/or low intensity use of the place by Aboriginal people in the past.

The previously recorded Aboriginal archaeological sites within the Oakdale subject lands (as illustrated in Figure 3.1), and the surrounding areas (as illustrated in Figures 3.2 and 3.3) appear to consist of individual or small numbers of flaked stone artefacts, some of which have been assessed in the past as being associated with sub-surface archaeological potential deposits.[33]

A relatively high number of surface Aboriginal archaeological surveys and sub-surface archaeological investigations in adjacent areas to the Oakdale lands have been undertaken over the last two decades that have repeatedly demonstrated the low density of archaeological material in similar contexts to the current subject lands and the degree of historical and natural (bioturbation) disturbance.

Based upon information compiled within the DECC Aboriginal Sites Register, and background data for the local archaeological contexts reviewed above, the types of sites which may potentially occur/survive within the boundaries of the Oakdale study area are outlined below:

- Open Camp Sites and Middens—These sites are likely to occur on dry relatively flat landforms along or adjacent to both major and minor watercourses. However, repeatedly or continuously

occupied sites are more likely to be located on elevated ground situated at principal creek confluences.

Open campsites and midden deposits may contain stone artefacts and/or durable food remains such as animal and fish bone or shell. Surface scatters of artefacts may be the result of mobile hunting activities, whilst single or low density occurrences might relate to tool loss, tool maintenance activities or abandonment. These types of sites are often buried in alluvial or colluvial deposits and only become visible when subsurface sediments are exposed by erosion or disturbance.

- Isolated Finds—These are artefacts which occur without any associated evidence for prehistoric activity or occupation. Isolated finds can occur anywhere in the landscape and may represent the random loss or deliberate discard or abandonment of artefacts, or the remains of dispersed artefact scatters. They are generally defined as a single artefact located more than 50m from any other artefact.

- Scarred or Carved Trees—These sites are the result of bark or wood removal to make shields, shelter, canoes containers or carving designs into the exposed wood. Carved trees which often display geometric patterns incised into the wood are believed to be markers of burial grounds or important places. These sites have rarely survived early timber clearance, bush fires and timber cutting. The definite ascription of scarring on a tree to an Aboriginal origin is not always possible. Europeans often removed bark for roofing material and stock watering troughs. Other scars may be the result of surveyor and miner blazes, lightning strikes or cockatoo pecking. Unless the tree is at least 100 years old the scarring is unlikely to have an Aboriginal origin.

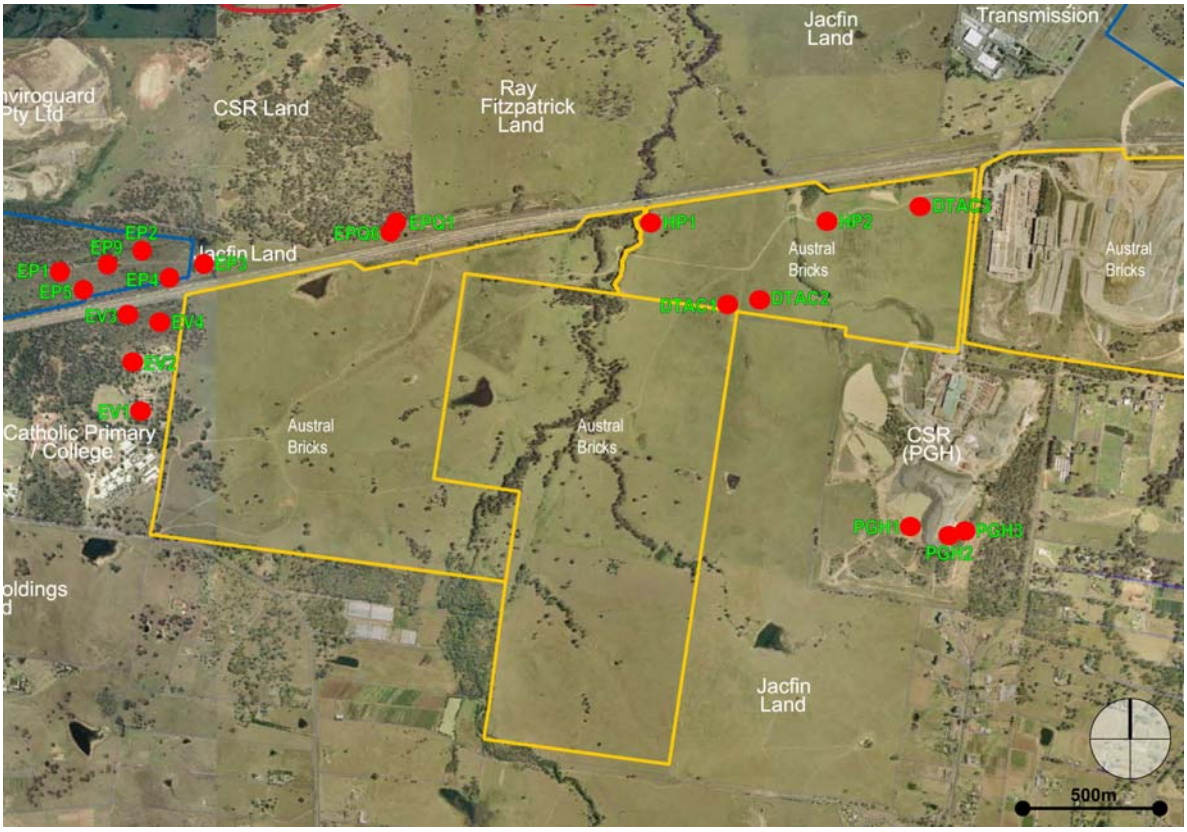


Figure 3.1 Approximate location of previously recorded Aboriginal archaeological sites in and within the vicinity of the surveyed allotments. (Note the size of dots does not indicate the size of each site.)

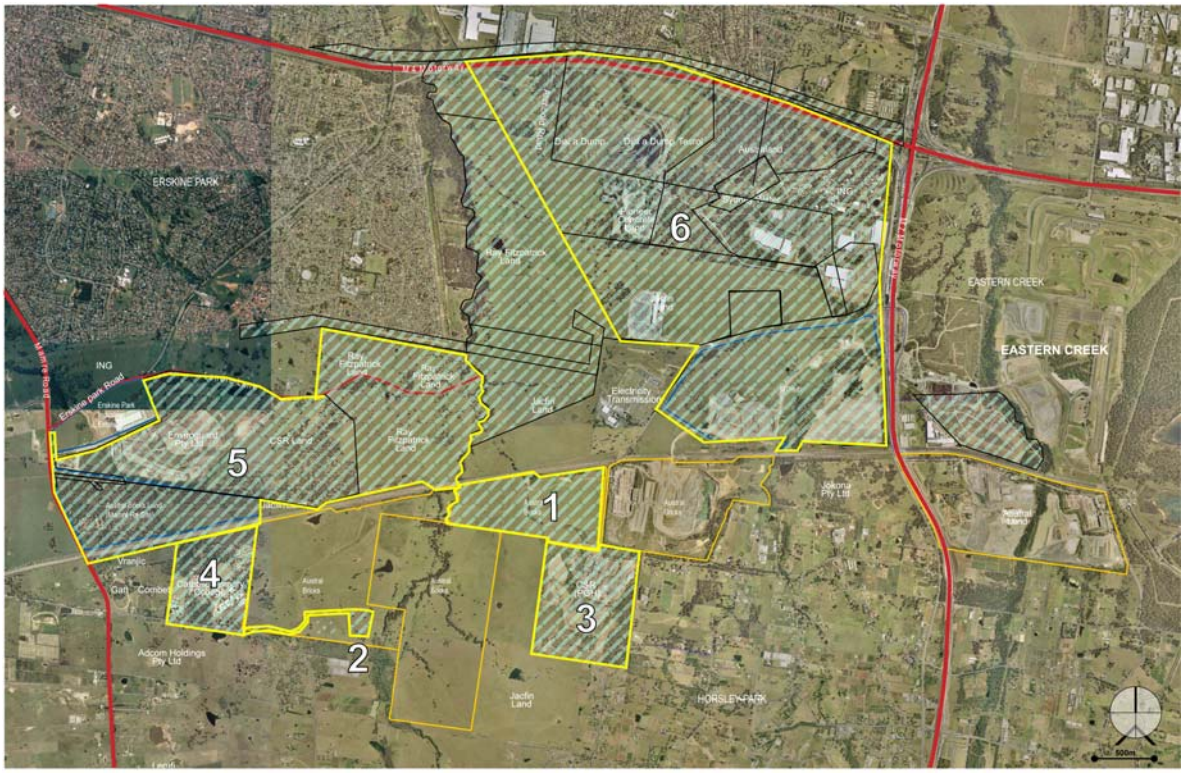


Figure 3.2 Previous archaeological surveys (shaded/black outlines). Numbered studies/areas outlined in yellow are discussed in Section 3.2.2.

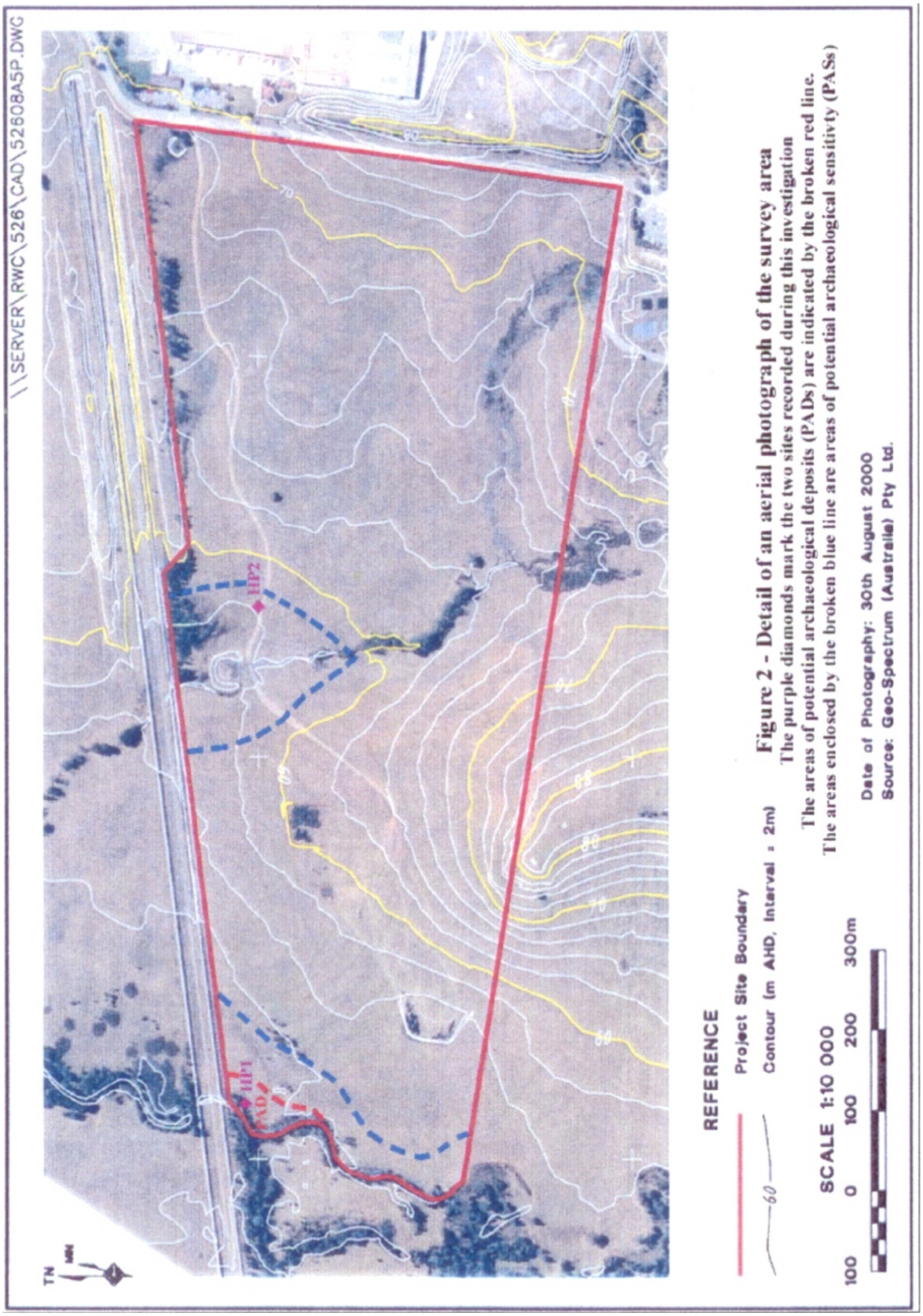


Figure 3.3 Isolated finds and areas of potential archaeological sensitivity identified by Appleton (2002–3).

3.4 Endnotes

[1] See the summary provided by Attenbrow, V. 2002. Sydney's Aboriginal Past. Investigating the archaeological and historical records. UNSW Press.
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[3] McDonald, J. et al. 1996. A Further Investigation of Site RS1 (45-5-892) at Regentville, Mulgoa Creek, Western Sydney. Environmental Services, Pacific Power, Sydney.
[4] Jo McDonald Cultural Heritage Management Pty Ltd. 1999. Test Excavations of PAD5 (RH/SP9) and PAD 31 (RH/CC2) for the Rouse Hill Infrastructure (Stage 2) Project at Rouse Hill and Kellyville, NSW.
[5] McDonald, J. et al. 1994. The Rouse Infrastructure Project (Stage 1) on the Cumberland Plain, Western Sydney. In 'Archaeology of the North'. Proceedings of the 1993 Australian Archaeological Association Conference::259-293.
[6] Lampert, R. 1971. 'Burrill Lake and Currarong'. In Terra Australis (1). Department of Prehistory. Research School for Asia and Pacific Studies, ANU, Canberra.
[7] Bowdler, S. 1970. Bass Point – the excavation of a south-eastern Australian shell midden showing cultural and economic change. B.A. (Hons). University of Sydney.
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[9] See discussion of research undertaken by McCarthy 1948, Megaw 1965, Lampert 1971, and Wright 1987 etc as presented in Attenbrow 2002 as a guide.
[10] Smith, L. 1989. Site Survey and Site Analysis on the northern Cumberland Plain. Report to the NSW NPWS.
[11] Jo McDonald Cultural Heritage Management Pty Ltd. 1997. Interim Heritage Management Report. ADI Site, St Mary's, Volume 1. Report to Lend Lease – ADI Joint Venture.
[12] AMG coordinates in Zone 56: E294000-E304000 and N6252000-6257000.
[13] This table has been compiled on the basis of information provided by Appleton 2002 and more recent research undertaken for the current project.
[14] Appleton. 2002.
[15] ibid. 2002.
[16] Curran, N. 1997. Aboriginal Heritage Assessment. Lot 1 of DP 106143. Horsley Park, NSW. Report to CMPS&F Pty Ltd.
[17] AHMS. 2005a. Emmuas Village, Kemps Creek, NSW. Aboriginal Archaeological Assessment. Report to Catholic Health Care Services Ltd.
[18] AHMS. 2005b. Emmuas Village, Kemps Creek, NSW. Aboriginal Archaeological Test Excavation Report. Report to Catholic Health Care Services Ltd.
[19] See for example McIntyre, S. 1984. An Archaeological Survey of Proposed Quarry Extensions at Erskine Park, NSW. Report for the Readymix Farley Group, NSW; Jo McDonald Cultural Heritage Management Pty Ltd. 1998. Archaeological Survey of CSR Lands, Erskine Park, NSW. Report to GHD on behalf of CSR; Jo McDonald Cultural Heritage Management Pty Ltd. 2000. Archaeological Survey for Aboriginal Sites. Proposed Light Industrial Subdivision, 'Austral Site', Mamre Road, Erskine Park, NSW. Report prepared for Gunninah Environmental Consultants on behalf of Austral Brick Company care of the Hanover Property Group; HLA Envirosciences. 2004. Indigenous Heritage Assessment. Erskine Park. Report to CGP Management Limited; Navin Officer Heritage Consultants Pty Ltd. 2005c. Erskine Park Employment Area. Ropes Creek, Western Sydney. Cultural Heritage Assessment. Report to Mullane Planning Consulting Pty Ltd.
[20] Navin Officer Heritage Consultants Pty Ltd. 2005a. CSR Lands at Erskine Park – Test Areas 1 and 2. Archaeological Sub-surface Testing Program. Report to CGP Management Pty Ltd on behalf of CSR Limited.
[21] ibid.
[22] Navin Officer Heritage Consultants Pty Ltd. 2005b. CSR Lands at Erskine Park. Archaeological Sub-surface Testing Program. Report to CGP Management Pty Ltd on behalf of CSR Limited.
[23] Navin Officer Heritage Consultants Pty Ltd. 2005d. Archaeological Sub-surface Testing Program for a Proposed Access Road, Erskine Park, NSW. Addendum to CSR Lands at Erskine Park. Archaeological Sub-surface Testing Program. Report to CGP Management Pty Ltd on behalf of CSR Limited.
[24] Jo McDonald Cultural Heritage Management Pty Ltd. 2002a. Archaeological Assessment of Aboriginal Sites: Eastern Creek Strategic Landuse Study. SEPP59 Lands in Blacktown Council, NSW. Report to Blacktown City Council; Jo McDonald Cultural Heritage Management Pty Ltd. 2003. Heritage Conservation Strategy for Aboriginal Sites in the SEPP59 Lands Precinct Plan. Eastern Creek, NSW. Report to APP Corporation Pty Ltd; Jo McDonald Cultural Heritage Management Pty Ltd. 2005a. Heritage Conservation Strategy for Aboriginal Sites in the Lands Owned by Valad Funds Management Pty Ltd and Sargents Pty Ltd, in the Eastern Creek Business Park (Stage 3) Precinct Plan, Blacktown, NSW. Report to prepared for Valad Funds Management Pty Ltd and Sargents Pty Ltd.
[25] See for example Haglund 1980, Haglund et al 1983, Dallas 1983, Kohen 1986, Brayshaw & Haglund 1996, Steele & Carney 1999, AMBS 2000 and Jo McDonald Cultural Heritage Management Pty Ltd 2002b as illustrated in Figure 3.2.
[26] Dominic Steele Consulting Archaeology. 2003. Aboriginal Archaeological Test Excavation Report for Land Adjoining Wonderland Theme Park at Wallgrove Road, Eastern Creek, Containing NPWS Sites #45-5-0249, 2822-3, 2827-9 & 2836 & Associated Areas of PAD. Report to Australand.
[27] Jo McDonald Cultural Heritage Management Pty Ltd. 2004a. Archaeological Investigations at the Austral Site (#45-5-2986). 'The Vineyard', Wallgrove Road, Horsley Park. Report to Austral Brick Company Pty Ltd.
[28] Jo McDonald Cultural Heritage Management Pty Ltd. 2005b. Archaeological Sub-surface Investigations at Austral 4 (#45-5-3076). The M7 Hub, Old Wallgrove Road, Horsley Drive. Report to Macquarie Goodman.

[29] Jo McDonald Cultural Heritage Management Pty Ltd. 2002a.
[30] Jo McDonald Cultural Heritage Management Pty Ltd. 2006. Archaeological Sub-surface Investigations at SEPP59 EC3/I (#45-5-3201) and EC/2 (#45-5-3202). Wonderland Surplus, Old Wallgrove Road, Eastern Creek. Report to Macquarie Goodman.
[31] Jo McDonald Cultural Heritage Management Pty Ltd. 1997 and 1999.
[32] See for example Jo McDonald Cultural Heritage Management Pty Ltd. 2004a and 2004b.
[33] See Appleton. 2002.

4.0 Site Inspection and Recording

4.1 Methods

4.1.1 Site Survey and Recording Procedures

The investigations reported here involved a standard archaeological field survey, recording and assessment of the subject lands as outlined in Figure 1.3 and 1.4. Due to the extensive coverage of grass and other vegetation found to occur across much of the surveyed properties, the field inspections focused largely upon exposed ground (existing vehicle tracks etc) and/or other areas that were anticipated to retain potential Aboriginal archaeological and cultural heritage sensitivity. The principal locations across the Oakdale lands inspected on foot during the current study (and recorded and photographed in detail etc) are illustrated in Figure 4.1.

All items of Aboriginal cultural heritage located during the course of the two field surveys completed to date as part of this study (see below) were recorded and plotted using a Garmin Geko 201 handheld GPS set to the AMG coordinate system onto pertinent 1:25,000 topographical maps and superimposed upon available development concept plans. Maps of differing scale were also used to facilitate the location of pertinent field observations. Photographic records (using a Digital Pentax Optio 555 camera), sketch plans, and diary descriptions were also compiled as part of the field records.

Generally, site recording was concerned with topography (whether Aboriginal archaeological sites, features or areas of potential archaeological sensitivity were located on slopes or flats etc), their context, existing vegetation, ground exposures, the nature of ground visibility, and the presence and extent of obvious ground disturbance.

The distinction between site categories (open campsites as opposed to isolated finds etc) was determined according to the following categories:

- Isolated Finds—single artefacts that are located more than 50m apart.
- Sites—open artefact scatters that consist of two or more artefacts situated within 50m of each other.

The following attributes of each stone artefact located during the investigations were recorded:

- Artefact Type—This category records the presence of items such as flakes, flaked pieces and cores etc.
- Raw Material—Raw materials may include silcrete and indurated mudstone etc.
- Dimensions—Maximum length, width and thickness of finds are to be recorded.
- Other—Comments include the presence of cortex and retouch etc.

4.1.2 Assessment of Aboriginal Archaeological Potential

Frequently used criteria inclusive of landform, aspect, topography and subsurface integrity were employed in this study to define areas of Potential Archaeological Deposit (PAD). Within the context of the current project, areas of PAD were considered to be principally associated with open areas which had seemingly undergone minimal surface disturbance and which appeared to have retained original topsoil deposits.

Common attributes of culturally scarred trees[1] have been used to assess whether trees within the study area are likely to have been scarred by Aboriginal people. Any trees with scars identified which may possibly be of Aboriginal cultural origin were to be recorded as such and be the subject of a visual (but non-invasive) estimate of age prior to recording the scars as an Aboriginal site. As tree age is difficult to estimate, and is often the most crucial factor in determining whether scars have a cultural or natural origin, it was considered prudent that a qualified arborist would have the opportunity to examine the tree prior to accessioning the possibly scarred item onto the AHIMS Sites Register.

4.2 Field Survey of the Oakdale Lands

A initial field survey of the Oakdale subject lands was undertaken on Tuesday 17 April 2007 in fine weather by Dominic Steele and Paul Irish for GML in partnership with Mr Des Dyer and Mr Gordon Workman (DTAC representatives), Ms Leanne Watson (DCAC representative), and Mr Gordon Morton (DACHA representative). A subsequent inspection of the study area was undertaken by Dominic Steele, and Mr Steve Randall representing the DLALC on Monday 28 May 2007.

The following summary field observations were made during these inspections. For convenience, these have been broken down according to the three allotments illustrated in Figures 1.3 and 1.4. The precise locations examined in detail as part of the current study are indicated in Figure 4.1.

4.2.1 Lot 1 in DP 120673

A representative view of the cleared and grassed nature of this lot is provided by Figure 4.2. As indicated, much of the area appears to have been repeatedly ploughed in the past. Ground exposures were found to be largely restricted to a series of informal vehicle tracks that run through the centre of this portion of the study area and also within the easement of an electricity transmission line that runs from north to south across the block. A recently ploughed paddock also occurs in the northeast of Lot 1 that is clearly disturbed (containing considerable quantities of concrete rubble) and is fringed by a number of cattle yards/sheds.

The channel and banks of Ropes Creek contained in the northeastern corner of this lot were found to display high levels of erosion and considerable disturbance in places as a result of past excavation and grading works as illustrated in Figure 4.3.

4.2.2 Lot 2 in DP 120673

Representative views of Lot 2 are provided by Figures 4.4 and 4.5. The principal topographic features in this lot comprise an elevated and terraced spur along the southern boundary (with exposed sandstone on the top and sides of this knoll), along with a series of extensive earth mounds situated in the southeast portion of the allotment (within the vicinity of the minor creek channel that bisects this parcel of land) that appear to have been created from the stripping and stockpiling of soil in these areas.

Again, archaeological visibility conditions in Lot 2 were observed to be poor and to be largely restricted to a principal vehicle track extending from Old Wallgrove Road, a small number of excavated dams, and a number of scoured areas bordering the aforementioned minor tributary of Ropes Creek.

As for Lot 1, much of the channel and banks of Ropes Creek contained in the northwestern corner of this allotment were found to display high levels of scouring and disturbance from past excavation works (associated with the creation of informal causeways etc), and damming.

4.2.3 Lots 82 and 87 in DP 752041

Representative views of the nature of soil exposures observed in Lots 82 and 87 are provided by Figures 4.6 and 4.7. Minor erosion scours and sections provided by excavated dams revealed relatively shallow soil profiles within the order of 200mm to 300mm in depth.

The channel and banks of the meandering alignments of Ropes Creek that run through the centre of this lot were observed to be heavily denuded and fringed by a mixture of sapling re-growth vegetation and introduced weed species. Areas situated at the junction of the eastern and western branches of the watercourse located in the centre of Lot 2 were also found to display significant levels of disturbance in the form of past excavations/grading works and de-stumping activities. The remainder of the allotment was found to comprise cleared pasture land that is currently used for stock grazing.

4.2.4 Old Wallgrove Road and Warragamba–Prospect Water Supply Pipeline Corridor

The length of Old Wallgrove Road surveyed for this report had been significantly disturbed for some three metres on either side, in the construction of the road. Similarly, the water supply corridor displayed evidence of past disturbance.

4.3 Results of the Site Inspection

4.3.1 Survey Outcomes

The current Aboriginal archaeological and cultural heritage survey and assessment study of the Oakdale lands as illustrated in Figure 1.3 and Figure 1.4 has resulted in the identification of a number of open campsites and isolated items of flaked stone. The locations of these finds are indicated in Figure 4.8 and are summarised in Table 4.1.

The majority of the above finds have been located upon the surface of a series of existing vehicle tracks and/or in excavated/scoured locations situated along the northern margins of the study area within close proximity to the principal alignments of Ropes Creek and its associated tributaries.

The recorded Aboriginal flaked stone items comprise predominantly unremarkable pieces of flaked stone silcrete, chert and quartz materials that occur in the main in largely disturbed contexts.

Many of the currently recorded finds (particularly IF3, IF4, OC3 and OC4 etc) are closely located, and may therefore form a part of previously documented archaeological evidence on the land such as that recorded by Appleton in 2002 (such as HPI) as reviewed in Section 3.0.

At this time, the finds recorded during the current study have been documented as separate sites/isolated finds as illustrated in Figure 4.8. These various records will be duly correlated following further consultation with relevant Aboriginal community groups. This outcome will provide the basis for a submission to the DECC for these new records for accession onto the DECC AHIMS Sites Register.

With respect to the Old Wallgrove Road section of the Oakdale Concept Plan, no clear or obvious Aboriginal cultural heritage constraints were identified along this existing road corridor. As a result of past road construction works, it appears likely that any Aboriginal archaeological evidence that may survive in this locality that remain undetected at this time will comprise isolated finds, and/or low-density distributions items of flaked stone artefacts that will be recorded in highly modified contexts that retain minimal archaeological integrity. This area is therefore assessed to have minimal Aboriginal archaeological and cultural heritage sensitivity.

Similarly, with respect to the proposed rain water harvesting infrastructure along the route of the existing Warragamba–Prospect Water Supply Pipeline, an inspection of the route was completed in partnership with the DTAC, DTAC and the DCAC on 30 March 2007 as part of the current study to inform the project. No clear or obvious Aboriginal cultural heritage constraints were identified along this existing pipeline and access corridor. It is likely that any Aboriginal archaeological evidence that may survive in this locality will comprise isolated finds, and/or low-density distributions of flaked stone artefacts that may be recorded in highly modified contexts that retain minimal archaeological integrity due to the past creation of the pipeline easement (now significantly disturbed) and its ongoing use. It would appear that that this section of the study area has limited Aboriginal archaeological sensitivity as a result of intensive past uses of the place.

4.3.2 Conclusions

It is possible that the failure to detect any further evidence for past Aboriginal visitation and/or use of the Oakdale lands (as summarised and illustrated in Table 4.1) may be the result of the extremely poor archaeological visibility across the majority of the study area. Ground visibility (exposure) is minimal across most of Lots 1, 2, 82 and 87 due to the presence of a uniform cover of low pasture grass, mixed introduced plantings and weeds, and sapling re-growth along the margins of Ropes Creek.

As a consequence of these factors, it is estimated that the current study has achieved effective survey coverage within the order of 1% or less.

However, the study area nevertheless comprises a parcel of land that is largely low-lying and the site prediction model previously presented in Section 3.0 indicates that it is unlikely to have been subject to intensive Aboriginal visitation in the past that would have resulted in the creation of substantial archaeological deposits as discussed below. The land also displays considerable levels of disturbance as a result of the accumulated impacts associated with past vegetation clearance, ongoing land improvements and maintenance, along with creek modification works which have seemingly served to disturb the sub-surface soil profiles across the site.

The following observations in this regard are provided:

- The Oakdale subject lands currently have extremely low levels of archaeological visibility (ground exposure).
- The areas of ground exposure inspected during the current study have, however, revealed the presence of a number of concentrations of Aboriginal flaked stone artefacts.
- Each of these find locations, however, have been found in all cases to occur in very low numbers as detailed in Table 4.1.
- All of the Aboriginal archaeological find locations illustrated in Figures 4.8 and Table 4.1 occur in relatively disturbed contexts.
- Background Aboriginal archaeological research and modelling discussed above suggests that the local landscape would have been used by Aboriginal people over time, but is unlikely to have been used intensively to a level that would have created significant archaeological deposits given that people would have been more likely to have moved to and from more favourable campsite locations situated to the west and east of the site (between South and Eastern Creeks etc).

- Stratified (in situ) evidence for this Aboriginal occupation of the place is unlikely to be present on the subject land, and any as yet undocumented archaeological evidence is likely to consist of background scatters of flaked stone material with some focal areas that may survive along the fringes (riparian corridors) of Ropes Creek.
- It is further considered likely that at best, any evidence for Aboriginal cultural heritage that may be present within the subject lands that remain undetected at this point in time will comprise isolated finds and/or low density distributions of items that will have provenance to disturbed recovery contexts.
- This conclusion is based upon the fact that few prominent 'high areas' of ground occur on the subject lands (that remain undisturbed), and that the majority of the study area is drained by scoured first order (probably intermittently flowing) streams associated with Ropes Creek that are unlikely to have represented favourable campsite locations in the past.

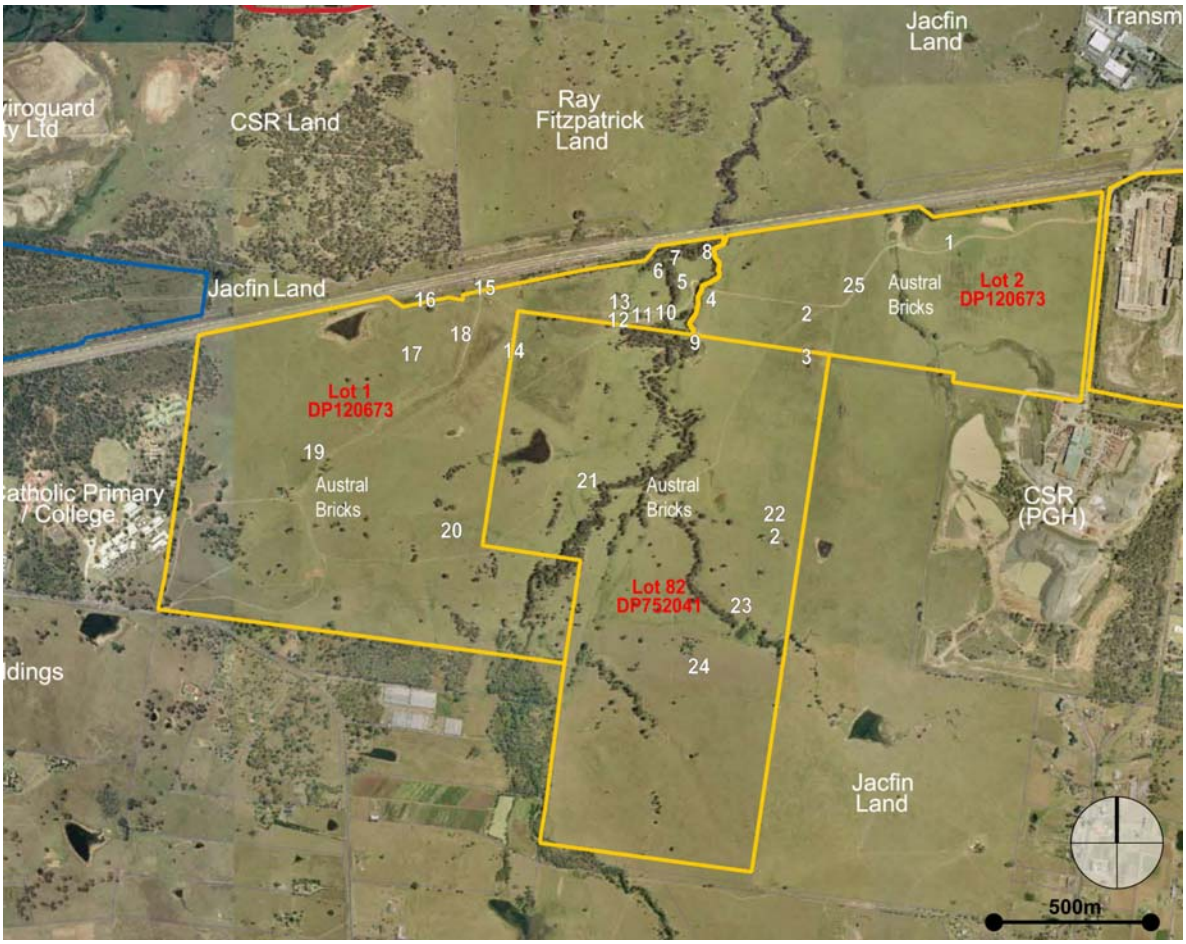


Figure 4.1 Areas of the study area subject to detailed inspection and photographic recording.

Figure 4.2 View southeast over power lines in Lot 1.

Figure 4.3 Exposed subsoil and rubble in Lot 1.

Figure 4.4 View from terraced hill to mounded area in the southeast of Lot 2.

Figure 4.5 Terraced hill in Lot 2 looking from the eastern branch of Ropes Creek.

Figure 4.6 Ground exposure along the upper reaches of Ropes Creek in Lot 82.

Figure 4.7 Dam on upper reaches of Ropes Creek in Lot 82.

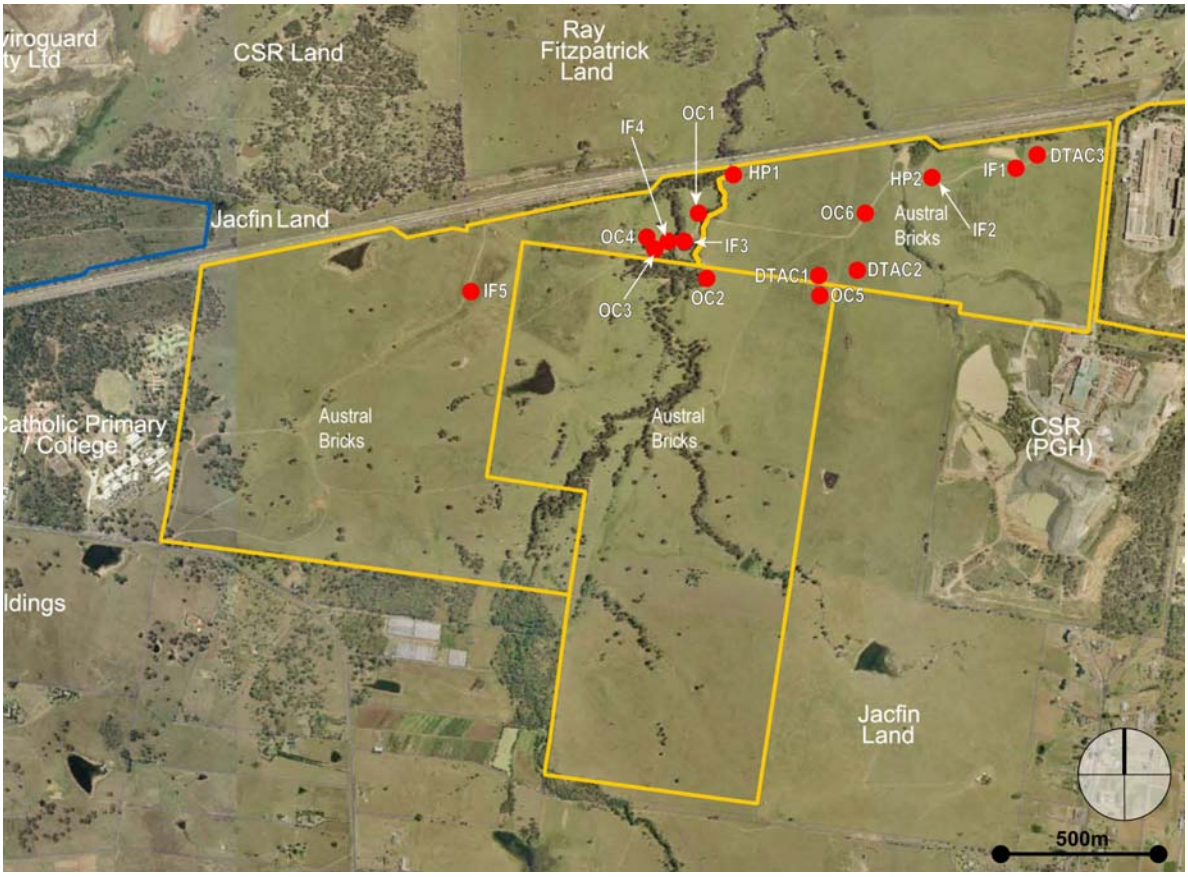
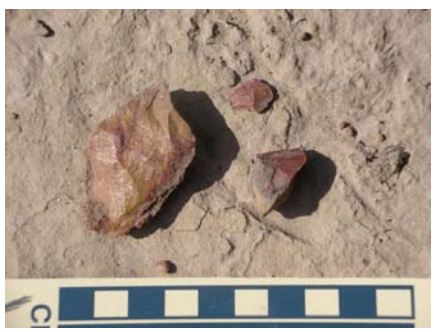


Figure 4.8 Aboriginal archaeological sites identified during the current study.

Table 4.1 A summary of the recorded Aboriginal sites on the Oakdale lands.

Site Name	Site Type	Description	
IF1	Isolated Find	Grey/cream chert flaked piece 25mm x 10mm x 18mm on vehicular track near dam.	
IF2	Isolated Find	Red silcrete flaked piece 15mm x 15mm x 4mm.	
OC1	Open Campsite	Three silcrete artefacts embedded in buff silty topsoil in area trodden by cattle.	

Site Name	Site Type	Description	
OC2	Open Campsite	Six silcrete artefacts in a cutting. Three pieces of debitage (<10mm) and three blocky silcrete flaked pieces (20-30mm length).	
			
IF3	Isolated Find	Red silcrete flaked pieces (<10mm).	
IF4	Isolated Find	Red silcrete flake fragment in area of disturbance/bricks on unsealed vehicle track.	
OC3	Open Campsite	Two red silcrete and two yellow chert cortical flakes.	
OC4	Open Campsite	Two red silcrete and one yellow silcrete flaked pieces.	

Site Name	Site Type	Description
IF5	Isolated Find/Open Campsite?	Red silcrete flaked piece (40mm length) in ploughed paddock with another artefact about 20m away on the track to the west.
		 
OC5	Open Campsite	Two artefacts in totally disturbed context on top and side of steep knoll. May be remnants of sites DTAC1 and DTAC2 previously recorded nearby. One silcrete focal platform broken flake (proximal end) 25l x 20w x 4t and one angular blocky silcrete flaked piece (30-40mm length).
		
OC6	Open Campsite	At least five silcrete and two quartz artefacts spread along a 20m section of track. Unworked silcrete piece on same tack ca 20m to southwest.
		 

4.4 Endnotes

[1] See for example Irish, P 2004. 'When is a Scar a Scar? Evaluating Scarred and Marked Trees at Sydney Olympic Park'. *Australian Archaeology* 59, p59-61; A Long 2005. *Aboriginal Scarred Trees in NSW. A Field Manual*, Sydney, Department of Environment and Conservation.

5.0 Summary and Conclusions

5.1 The Documented and Potential Aboriginal Archaeological Resource—Conclusions

The Oakdale lands inspected and assessed during the current study (as illustrated in Figures 1.1 and 1.2) are generally low-lying in nature and contain a series of largely scoured and meandering first order channels and minor tributary branches of Ropes Creek. The subject lands also display high levels of disturbance that have resulted from the accumulated impacts of past land-uses activities inclusive of timber felling, vegetation clearance, ploughing, creek line modifications, and other pastoral works such as the creation of dams, contoured earth banks, and stock grazing.

Those parts of Old Wallgrove Road and the rain harvesting infrastructure corridor that would be affected by the proposed works have been significantly disturbed in the construction of the existing infrastructure and therefore have been assessed as having very low sensitivity for Aboriginal archaeological and cultural heritage values.

A review of previous Aboriginal archaeological and cultural heritage studies completed on a part of the subject site in 2002 (Lot 2 in DP 120673), and in combination with an evaluation of past investigations undertaken in immediately surrounding areas in recent years (as detailed in Section 3.0), would suggest that the Oakdale study area is unlikely to have been subject to intensive Aboriginal visitation and use in the past that would have resulted in the creation of *substantial* archaeological deposits.

This conclusion is based upon the background Aboriginal archaeological research and modeling presented in Section 3.0 that indicates that while the local Ropes Creek landscape would have been repeatedly visited by Aboriginal people over time, it is unlikely to have been used intensively given people are more likely to have sought more favourable camping and resource gathering locations along the more principal watercourses situated to the west and east of the site such as along South and Eastern Creeks.

The current study identified a series of low density distributions of largely unremarkable flaked stone artefacts and/or isolated finds that were each located in relatively disturbed contexts around the margins of Ropes Creek to the north of the Oakdale lands as illustrated in Figure 4.8.

The failure to locate any further evidence for past Aboriginal visitation/use in the remainder of the Oakdale lands may be the result of the extremely poor nature of archaeological visibility that is currently evident across the majority of the site.

However, with the above considerations in mind, it is considered likely that at most, any evidence for Aboriginal cultural heritage that may be present within the majority of the subject lands that remains undetected at this time will most likely comprise isolated finds and/or low-density (background) distributions of stone materials that will have provenance to largely disturbed recovery contexts. The potential for more concentrated archaeological deposits to occur/survive along the fringes (riparian corridors) of Ropes Creek that retain greater integrity cannot however be discounted at present.

In any event, it is proposed that the study area be developed for industrial purposes (warehousing and distribution), and the type of ground disturbance usually associated with that kind of development would have a high potential to disturb or destroy any archaeological evidence of Aboriginal cultural heritage.

An Aboriginal archaeological sensitivity plan has been developed for the Oakdale study area as illustrated (shaded red) in Figure 6.1. The areas of sensitivity encompass the principal channels and minor drainage lines of Ropes Creek that traverse the subject land. The majority of the documented Aboriginal archaeological surface finds have been recorded to date in these localities. The following factors suggest these areas possess the most likely Aboriginal archaeological and cultural heritage sensitivity:

- A background review of Aboriginal archaeological research previously undertaken within and immediately adjacent to the subject land as presented in Section 3.0 of this report.
- The results of the current site inspections as presented in Section 4.0 of this report.
- The outcomes of the program of Aboriginal community consultation and conclusions that has been completed to date for the project as summarized in Sections 5.0 and 6.0.

The above avenues of research indicate:

- The majority of previous Aboriginal archaeological studies undertaken in the local landscape indicate that most evidence of past Aboriginal visitation and use will be present/survive along the margins of watercourses that retain the greatest integrity.
- The balance of the study area consists of sloping to undulating pastoral land that has been heavily cleared and would appear to retain minimal Aboriginal archaeological and cultural heritage potential etc.
- The only elevated landform in the study area is present at the southern end of Lot 82 that is heavily quarried and retains minimal Aboriginal archaeological and cultural heritage potential.

As previously noted, copies of this report have been forwarded to the relevant Aboriginal community representatives for their input with respect to the above conclusions.

5.2 Identifying Heritage Values

5.2.1 Assessing Cultural Heritage Values Generally

There exist a number of ways in which current assessments of cultural heritage value attempt to identify whether a place/item(s) may have documented/potential heritage significance, to establish what those heritage values may be, and why the place/item(s) may be considered important/valuable to the contemporary community.

In general terms, heritage values are often embodied in the location of the site/item(s), the possible configuration/content/fabric of the place and/or elements it may contain (including its setting and relationship to other known heritage items), the historical and archaeological records that may be associated with the place/item(s), and the response that the place/item(s) may evoke in the local/broader community.

Identifying Aboriginal cultural heritage values or heritage significance of a place/item(s) relies on (in the main) an understanding of documentary evidence, the context and historic uses that may apply to a particular place or item, the way in which the place/item(s) demonstrates and embodies its function (if it can be determined through archaeological/historical analysis), and its possible associations to the contemporary community.

The Burra Charter: The Australia ICOMOS Charter for Places of Cultural Significance 1999 and its Guidelines for *Assessment of Cultural Significance* recommend that cultural significance be assessed according to criteria such as aesthetic, historic, scientific and social significance (see below).

5.2.2 Aboriginal Cultural Heritage Values

Aboriginal cultural heritage conservation and management aims to sustain the relationship between Indigenous people and their heritage places. Assessments of Indigenous heritage values should take into consideration the principles outlined in *Ask First—A Guide to Respecting Indigenous Heritage Places and Values*, in which consultation is an essential key in the process of identifying heritage values. The *Ask First* guide states:

> *In recognising the rights and interests of Indigenous peoples in their heritage, all parties concerned with identifying, conserving and managing this heritage should acknowledge, accept and act on the principles that Indigenous people:*
>
> - *are the primary source of information on the value of their heritage and how this is best conserved;*
> - *must have an active role in any Indigenous heritage planning process;*
> - *must have input into primary decision-making in relation to Indigenous heritage so they can continue to fulfil their obligations towards this heritage; and*
> - *must control intellectual property and other information relating specifically to the heritage, as this may be an integral aspect of its heritage values.*
>
> *In identifying and managing this heritage:*
>
> - *uncertainty about Indigenous heritage values at a place should not be used to justify activities that might damage or desecrate this heritage;*
> - *all parties having relevant interests should be consulted on indigenous heritage matters; and*
> - *the process and outcomes of Indigenous heritage planning must abide by customary law, relevant Commonwealth and State/Territory laws, relevant International treaties and covenants and any other legally binding agreements.*

Adhering to potential cultural restrictions on information about an Indigenous heritage place is also essential to maintaining its heritage value.[1]

Aboriginal community consultation acknowledges the rights of Aboriginal people to be directly involved and participate in matters that directly affect their heritage which is consistent with the policies detailed in the *NSW Government's Aboriginal Affairs Plan* (2003–2012). The government plan promotes the ongoing and increased participation of Aboriginal community stakeholders in projects that may potentially affect Aboriginal cultural heritage values.

5.2.3 How we Assess Indigenous Heritage Values

As part of the Aboriginal cultural heritage management process (that is ongoing in its development), Aboriginal archaeological sites/places are commonly assessed in terms of three broad significance criteria that generally mirror the five key types of cultural heritage values identified in *The Burra Charter: The Australia ICOMOS Charter for the Places of Cultural Significance 1999* that forms the basic framework for assessing significance by heritage authorities in NSW.

These three principal values consist of cultural (Aboriginal), public (educational/social) and scientific (archaeological) significance.

These criteria embody the recognition that Aboriginal sites are valuable in a number of ways, and are all interrelated. Namely, that they are important to:

- the Aboriginal community (as representing tangible links to their past);
- the general public (for both their educational and broader heritage value); and
- the scientific community (for their potential research value that may ultimately lead to both the clarification and augmentation of the criteria above).

A series of guidelines prepared by the NSW National Parks and Wildlife Service provide the basis and background for the discussion to follow concerning the process of evaluating the concept of significance for the Oakdale lands.[2]

Cultural Significance

This area of assessment concerns the relationship and importance of sites/items to the Aboriginal community. Aspects of cultural significance include both people's traditional and contemporary links with a given site or landscape, as well as an overall concern by Aboriginal people for sites/items and their continued protection.

Unmodified natural features in the landscape can signify sacred sites/places of significance. As such they are archaeologically invisible and can only be identified with the aid of Aboriginal interpretation. If such sites are still remembered by local Aboriginal communities, they hold particular cultural significance to Aboriginal people. Furthermore, sites of significance are not restricted to the period prior to contact with Europeans. Often events related to the Contact-period, and at times to the period since European settlement, may be so important to the local Aboriginal communities that they become significant. If these events relate to a specific place in the landscape, then that place (ie the site) may become sacred or highly significant to the local Aboriginal communities.

Consultation undertaken with the local Aboriginal community to date for the current study suggests the Oakdale lands originally formed a part of a far larger cultural landscape that would have been important to the traditional Aboriginal owners for possibly thousands of years prior to the arrival of Europeans, and that the landscape of the region continues to be highly valued by the Aboriginal community today.

As reviewed in Section 4.0, the Aboriginal cultural heritage sites that are documented to occur within the study area consist primarily of isolated finds of flaked stone and/or seemingly low-density distributions of items that have largely been identified to occur in relatively disturbed surface contexts.

Nevertheless, these archaeological remains represent tangible evidence for past Aboriginal visitation and use of the local landscape of which the current Oakdale lands form a part. The potential for as yet further undetected Aboriginal archaeological evidence to be present/survive within the boundaries of the site is also considered to be high at this time given the poor archaeological visibility conditions that currently exist across the majority of the three allotments surveyed during the current study.

It is therefore suggested that this aspect of cultural heritage significance for the Oakdale lands could be duly clarified in more detail through future Aboriginal community consultation at such time when potential land use options for the study area are confirmed.

Public Significance

This category of the assessment process concerns using a site or a site's potential to educate people about the past. It also relates to the heritage value of particular sites as being representative examples of past lifestyles, why they are important, and why they should be preserved.

Education of the wider community is one of the principal concerns of cultural resource management. Education serving to reduce ignorance and raise community awareness (ultimately reducing intended and/or unwitting site destruction) will in many respects be a useful ally in complementing preservation and conservation management procedures.

Ongoing consultation with the Aboriginal community will help to determine the level of the site's educative significance, particularly when the documented and potential archaeological resource becomes better understood relative to future plans that may be considered for the place.

The project nevertheless offers at this time an opportunity for the Aboriginal community in partnership with the development proponents to highlight how Aboriginal heritage issues can successfully be addressed within future land use contexts at an early stage of the planning process, and dependent upon the results of further Aboriginal investigations and assessment, to educate the general public about the possible importance this part of the Cumberland Plain played prior to Contact in the social, economic and ritual lives of the original Aboriginal owners.

Scientific Significance

Scientific significance attempts to place a given site or group of sites into a broader regional framework, and also strives to present an assessment of research potential according to the rationale that the preservation of a representative sample of 'the past' is a principal objective of cultural resource management.

Establishing whether a site (or group of sites) can contribute to current research clearly involves the definition of 'research potential'. Current significance assessment orthodoxy employs criteria inclusive of condition/integrity, structure, contents, and representativeness (the latter context being partly based upon whether the site type is common or a rarity) as a means of evaluation.

Each of the Aboriginal cultural heritage sites located and recorded during the current study consist of low density distributions of largely unremarkable flaked stone artefacts and/or isolated finds. Each has also been located in relatively disturbed contexts as a result of ongoing land use practices including timber felling, vegetation clearance, ploughing and other pastoral activities.

The documented archaeological patterning on the Oakdale site would appear to be broadly reflective of the general nature, distribution and context of the type of Aboriginal archaeological evidence that has previously been reported to occur in similar topographic contexts in the local landscape as discussed in Sections 3.0 and 4.0. The potential for substantial and intact archaeological remains to survive in most portions of the study area would likewise appear to be limited, perhaps excluding those sections of Ropes Creek in Lots 82 and 87 that display lesser levels of disturbance.

As a result, it would appear that the *recorded* Aboriginal archaeological sites on the Oakdale lands (as illustrated in Figure 4.8) at least have a limited potential to answer significant (scientific) research questions that will contribute substantively to our understanding of traditional Aboriginal land use practices in this local landscape that have not been previously addressed by previous studies.

5.3 Preliminary Significance Assessment

On the basis of the information presented within this report, the Oakdale site is assessed to be a place of potentially moderate to high cultural and educative significance, and moderate to low archaeological (scientific) research potential. The study area may contain Aboriginal archaeological deposits and features which can contribute information to our understanding of past Aboriginal use of this part of the Cumberland Plain that is unlikely to be available from other documentary sources.

5.4 Endnotes

1 Australian Heritage Commission 2002, Ask First: A guide to respecting Indigenous heritage places and values, Australian Heritage Commission, Canberra, p 6.

2 NSW National Parks & Wildlife Service 1997. 'Standards Manual for Archaeological Practice in Aboriginal Heritage Management' in the Aboriginal Cultural Heritage Standards and Guidelines Kit (Draft). Sydney, NSW NPWS; National Parks & Wildlife Act (1974): Part 6 Approvals. Interim Community Consultation Requirements for Applicants 2004; Draft Guidelines for Aboriginal Heritage Impact Assessments (nd). Prepared by the NSW National Parks and Wildlife Service.

6.0 Management Recommendations

6.1 Basis for Recommendations

The following recommendations are based upon:

- the statutory framework of the *National Parks and Wildlife Act 1974*, that provides protections to Aboriginal 'sites', 'objects' and 'places', where it is an offence to damage, deface or destroy Aboriginal sites etc without the prior consent of the Director-General of the National Parks and Wildlife Service (now part of the DECC). The application of the NPW Act must be read against the provisions of Part 3A of the *Environmental Planning and Assessment Act 1979*; and
- the results of the archaeological and cultural heritage investigations of the Oakdale lands which are documented in this report, undertaken in company with the *Deerubbin Local Aboriginal Land Council* (DLALC), the *Darug Tribal Aboriginal Corporation* (DTAC), the *Darug Custodian Aboriginal Corporation* (DCAC), and the *Darug Aboriginal Cultural Heritage Assessments* (DACHA).

The views expressed by the above community representatives have been sought and will be forwarded immediately upon receipt.

6.2 Recommendations

The industrial development proposed by the Concept Plan has a high potential to disturb or destroy any archaeological evidence of Aboriginal cultural heritage in the study area. These potential adverse impacts should be managed by observing the following recommendations:

- The liaison established between the Development Proponents and the *Deerubbin Local Aboriginal Land Council* (DLALC), the *Darug Tribal Aboriginal Corporation* (DTAC), the *Darug Custodian Aboriginal Corporation* (DCAC), and the *Darug Aboriginal Cultural Heritage Assessments* (DACHA) for the Oakdale project, should be maintained in order to ensure that all relevant Aboriginal cultural heritage requirements are identified.
- As part of the refinement of the final design options for the study area, the DLALC, the DTAC, the DCAC, and the DACHA should be afforded an opportunity to provide input.
- In any development, the riparian zones fringing the banks of the principal channels and banks of Ropes Creek should be retained with an at least 40m buffer zone to ensure the documented and potential archaeological resource in these portions of Lot 1, 2, 82 and 87 are conserved.
- Future development within the subject lands should be designed and located to best avoid impacting upon the documented archaeological finds identified in Figure 4.8, where practicable.
- Where future development within the study area would disturb or destroy the identified sites illustrated in Figure 4.8, those sites must be appropriately documented following established archaeological practice, prior to commencement of the works. This would include the participation of Aboriginal community representatives, applying the principles in *Ask First—A Guide to Respecting Indigenous Heritage Places and Values*.

- Prior to, or concurrent with, the commencement of any development in the areas shaded in red in Figure 6.1, intensive surface survey and (where survey indicates it would be appropriate) test excavation should be undertaken following established archaeological practice. This would include the participation of Aboriginal community representatives, applying the principles in *Ask First—A Guide to Respecting Indigenous Heritage Places and Values*. At the conclusion of the investigations, a report presenting the acquired data should be provided to the Department of Environment and Climate Change (DECC).

- In all other parts of the study area, works involving ground disturbance can commence without further investigation. However, prior to the commencement of the proposed works, all contractors and relevant personnel involved should be made aware of the existence of identified Aboriginal archaeological sites in the study area, and of the possibility that more as yet undiscovered Aboriginal cultural heritage may exist there, through an induction process.

- Should Aboriginal objects/places be found during any ground disturbance, works in the vicinity must cease immediately and the services of a qualified archaeologist should be obtained to appropriately investigate the objects/places. Should the exposed objects/places prove to be of the same type as those already identified in the study area (illustrated in Figure 4.8) they can be removed after being appropriately documented following established archaeological practice, and in consultation with Aboriginal community representatives, applying the principles in *Ask First—A Guide to Respecting Indigenous Heritage Places and Values*.

- At the conclusion of any archaeological investigations, a report presenting the acquired data should be provided to the Department of Environment and Climate Change (DECC).

- One copy of this draft report should be forwarded to the DLALC, the DCAC, the DTAC and the DACHA.

- One copy of this draft report should be forwarded to the Manager:

  Planning and Aboriginal Heritage Section—Metropolitan Region
  Central Aboriginal Heritage Unit
  Department of Environment and Climate Change
  Level 7, 79 George Street
  Parramatta, NSW, 2150

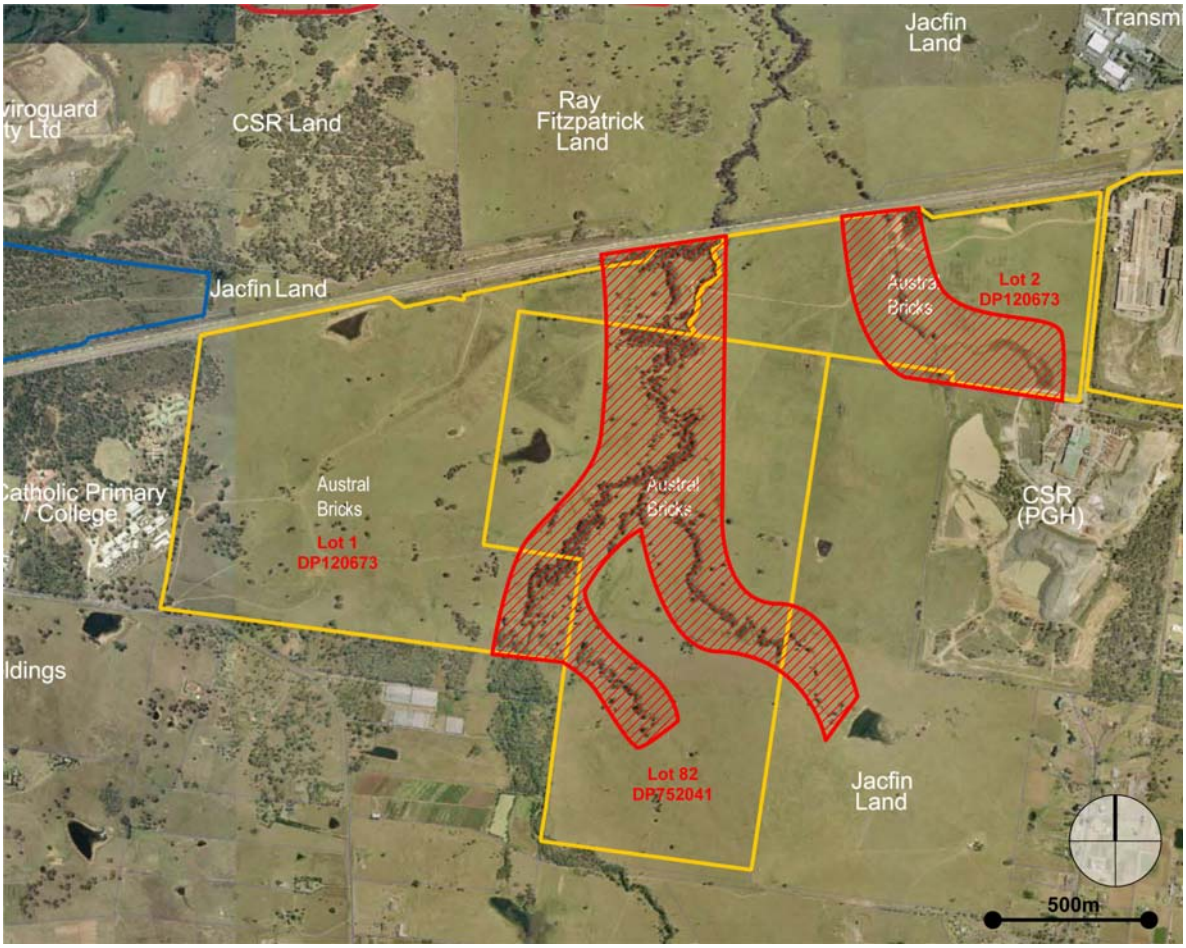


Figure 6.1 Parts of the study area (shaded red) where development must be preceded by intensive surface survey and/or test excavation.

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8.0 Appendices

Appendix A

Copies of correspondence forwarded to Aboriginal community groups (22 March 2007)

Appendix B

Text of the advertisement placed in *The Australian* on 9 April 2007

Appendix A

Copies of correspondance forwarded to Aboriginal community groups (22 March 2007)

Appendix B

Text of the advertisement placed in *The Australian* on 9 April 2007