Godden Mackay Logan
Heritage Consultants

Ropes Creek—Lot 5 DP 262213

Heritage Assessment Report

Revised Report prepared for Jacfin Pty Ltd
April 2011

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Report Register

The following report register documents the development and issue of the report entitled Ropes Creek, Lot 5 DP 262213—Heritage Assessment Report, 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 9001:2008.

Job No.	Issue No.	Notes/Description	Issue Date
10-0256	1	Draft Report	9 August 2010
	2	Revised Draft Report for Client Review	16 August 2010
10-0434	3	Revised Draft Report for Aboriginal Stakeholder Review	29 October 2010
	4	Revised Draft Report following comments from client and DECCW	20 January 2011
	5	Revised Report following Department of Planning Review	14 April 2011
	6	Revised Report following Client Review	18 April 2011

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1.0 Introduction

1.1 Preamble

Godden Mackay Logan Pty Ltd (GML) has been engaged by Jacfin Pty Ltd to prepare an Indigenous and non-Indigenous Heritage Assessment for a site at Ropes Creek (Lot 5 DP 262213). This report has been prepared to:

- identify known and potential Aboriginal and historical archaeological heritage within the site; and
- provide advice regarding the management of the known and potential archaeological resource.

This assessment will:

- form part of the Stage One Project Application for the site; and
- form part of the Concept Plan Application for the site.

1.2 Site Location

The Ropes Creek site, hereafter referred to as the subject land or study area, is located within the Blacktown Local Government Area (LGA) and within Precinct 6 of the Western Sydney Employment Area (WSEA) c40km west of Sydney (Figures 1.1 & 1.2). The study area is defined by Ropes Creek to the west, which is also the LGA boundary between Blacktown and Penrith. The southern boundary is the Sydney Catchment Authority (SCA) water supply pipeline and also the LGA boundary between Blacktown and Fairfield. To the east the site adjoins a Transgrid Substation and to the north is land owned by the Department of Planning. The site is legally known as Lot 5 in Deposited Plan 262213 and is 105 ha in area.

1.3 Scope

The report has been prepared in accordance with the 'Aboriginal Cultural Heritage Standards & Guidelines Kit' to satisfy the Department of Environment, Climate Change and Water (DECCW), in response to the requirements of the *National Parks and Wildlife Act 1974* (NSW) and with DECCW Guidelines under Part 3A of the Environmental Planning and Assessment Act 1979 relating to Aboriginal Cultural Heritage Impact Assessment and Community Consultation. The report has been prepared in accordance with the NSW Heritage Manual's 'Archaeological Assessment' in reference to historic heritage. The scope of the work for this project included the following tasks:

- a review of previous historical and Aboriginal research within the vicinity of the study area;
- a search of the Aboriginal Heritage Information Management System (AHIMS) for known Aboriginal objects and/or sites within the vicinity of the study area;
- a search of heritage registers (including the State Heritage Register and State Heritage Inventory) to identify known non-Indigenous heritage sites;
- historical research for the study area, including analysis of historical plans and maps to determine the locations of any former existing structures and buildings;

- consultation with Aboriginal parties who registered an interest in the project through the consultation process;
- development of a predictive model for the study area based on the background research;
- inspection of the proposed development area to identify visible archaeological objects/relics and/or heritage items, sites and places and assessment of their potential to contain subsurface cultural material;
- assessment of the archaeological significance of those relics/objects;
- assessment of the impacts of the proposed Stage One Project Application;
- the providing of recommendations to guide future planning for the site; and
- preparation of a report that complies with NSW Heritage Council, DECCW and Part 3A guidelines.

1.4 Limitations

This report has been prepared to inform the Stage One Application and the Concept Plan for the site and to form the basis of a Heritage Impact Assessment. It contains sufficient detail to inform recommendations for the future management of the potential archaeological resource.

The conclusions of this report are based on a surface survey of the site. No excavation was undertaken. Although maximum site coverage was attempted, thick grass cover limited the ground surface visibility over most of the subject land. One hundred per cent coverage of the site was not possible.

1.5 Authorship and Acknowledgements

This report has been prepared by Lyndon Patterson, Consultant and Archaeologist and Seána Trehy, Consultant and Archaeologist. Lyndon Patterson undertook the site survey and consultation with Aboriginal stakeholders with the assistance of Seána Trehy and Tim Owen, Senior Consultant. Michelle Richmond, Senior Consultant and Historian, prepared the historic background. The report has been reviewed by Reece McDougal, Special Advisor, of Godden Mackay Logan.

GML would like to acknowledge the assistance of Jennie Buchanan of JBA Planning and Jackie Waterhouse of Jacfin.

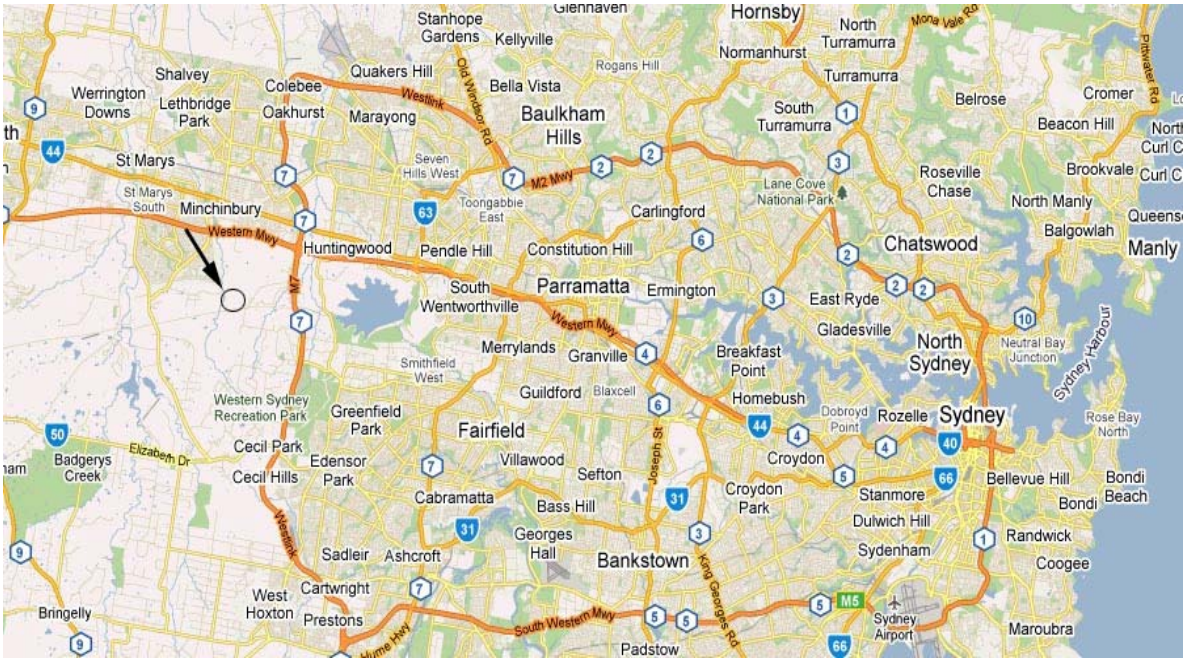


Figure 1.1 Map showing the general location of the study area within the Sydney Metropolitan area. (Source: Google Map)

Figure 1.2 Aerial photograph of the subject site, which is outlined in red. (Source: Google Map)

2.0 Statutory Context

2.1 Environmental Planning and Assessment Act 1979

The *Environmental Planning and Assessment Act 1979* (EP&A Act) provides a statutory framework for the determination of development proposals. It distinguishes between:

- Part 3A development—A single assessment and approval system for major development and infrastructure projects in which the provisions of certain legislation do not apply; and
- Part 4 development—Development that must comply with all relevant statutory planning instruments and legislation, including the *Heritage Act 1977* (NSW) (the Heritage Act) and the *National Parks and Wildlife Act 1974* (NSW) (NPW Act).

The proposed redevelopment of the study area is a 'Major Project' under Part 3A of the EP&A Act. Under Part 3A, certain provisions of the Heritage Act and the NPW Act do not apply.

Insofar as the potential archaeological resource is concerned, a determination by the Minister that a development is a Part 3A matter usually means:

- an excavation permit issued pursuant to Section 139 of the Heritage Act is not required for non-Aboriginal archaeology; and
- a permit under Section 87 or consent under Section 90 of the NPW Act is not required for potential Aboriginal archaeology.

However, the Minister will still require that appropriate measures be taken for the management of the potential archaeological resource by other means consistent with practices and standards adopted in meeting the requirements of the Heritage Act 1977 and National Parks and Wildlife Act 1974.

This report has been prepared as part of the environmental assessment (EA) for the proposal to accompany an application to the Department of Planning for approval under Part 3A of EP&A Act. The Director General's Requirements (DGRs) for the Ropes Creek Project issued on 13 August 2010 included provisions for heritage including Aboriginal and non-Aboriginal heritage. This Heritage Assessment Report responds to the DGRs in Section 4, 5, 6 & 7 of this report and has undertaken this assessment in a manner consistent with the DECCW Guidelines and Standards for Aboriginal Heritage and the NSW Heritage Manual and Burra Charter for non-Aboriginal heritage.

2.1.1 Consideration of Part 3A Guidelines

This Heritage Assessment has been undertaken in accordance with DECCW Guidelines under Part 3A of the Environmental Planning and Assessment Act 1979 relating to Aboriginal Cultural Heritage Impact Assessment and Community Consultation. It follows the listed steps in undertaking the assessment, consulting with the Aboriginal community, determining the impact of the proposal on the Aboriginal heritage and recommends mitigation measures and strategies to manage Aboriginal heritage values.

The preliminary assessment and desk top review was undertaken using a "multi-value" approach to identify whether there are Aboriginal cultural heritage values associated with the subject site. This included the consideration of landscape and historical context (Section 3.0 of this report), review of

the Aboriginal Heritage Information Management System for registered sites in the local area (Section 4.3.1), archaeological models for the Cumberland Plain (4.3.2) and any previous archaeological investigations (4.3.3). Other data sources such as the state Heritage Register, relevant Environmental Planning Instruments, the Commonwealth and National Heritage list and the Register of the National Estate were also searched in relation to the study area. Special consideration was given to any site types likely to be in the study area (Section 4.4). This revealed the subject land contained 6 previously identified sites and a number of landform units of interest.

The Assessment documents the consultation process and information received from the Aboriginal community that will be included in the final assessment report. Such an approach is consistent with the Part 3A Guidelines and aims to establishing social and cultural values includes the spiritual, traditional, historical or contemporary associations and attachments for any place or area in the subject property.

Initial consultation including field survey has been conducted with the Deerubbin Local Aboriginal Land Council. In addition, following advertisement a register of Aboriginal stakeholders who have an interest in the project has been prepared and consistent with DECCW Guidelines. Copies of this Assessment have been forwarded to each of the six registered organisations for review and comment and an invitation to include their cultural statement for inclusion in the report.

The field survey located four new artefact scatter sites located predominantly near watercourses which will form part of the proposed Conservation Zone. Standard archaeological field survey techniques were employed during the site survey.

Consistent with the Guidelines potential impacts from the proposed development were identified and measures were recommended to mitigate such impacts and management strategies that should be adopted to manage Aboriginal heritage in subject property. Such measures and strategies will be consistent with consultation outcomes from the Aboriginal community.

2.2 The Heritage Act 1977

The Heritage Act is a statutory instrument designed to conserve New South Wales' environmental heritage.

Archaeological features and deposits are afforded automatic statutory protection by the 'relics provisions' of the Heritage Act. Section 139[1] states that:

> *A person must not disturb or excavate any land knowing or having reasonable cause to suspect that the disturbance or excavation will or is likely to result in a relic being discovered, exposed, moved, damaged or destroyed unless the disturbance or excavation is carried out in accordance with an excavation permit.*

A 'relic' is defined to mean any deposit, object or material evidence that:

> *(a) relates to the settlement of the area that comprises New South Wales, not being Aboriginal settlement, and*
>
> *(b) is of State or local heritage significance*

In other words, where archaeological relics, or the potential for archaeological relics, are identified at a site, an application for an excavation permit is ordinarily required. No structures or other features within the subject land are listed on the State Heritage Register.

2.3 National Parks and Wildlife Act 1974

Aboriginal cultural heritage in NSW is principally protected and managed under the NPW Act. Under this Act, the Director General of the Department of the Environment, Climate Change and Water (DECCW) is responsible for the care and protection of all Aboriginal objects (sites, relics and cultural material) and places in NSW. The Act is administered by DECCW, which has responsibilities—including approvals and enforcement functions—under the legislation.

Section 5 of the Act defines an 'Aboriginal object' as:

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

Under Section 84, the Act defines an 'Aboriginal place' as:

> *any place specified or described in the order, being a place that, in the opinion of the Minister, is or was of special significance with respect to Aboriginal culture.*

Aboriginal cultural heritage can include human remains and burial sites, scarred trees, artefact scatters, shell middens, rock art, engravings, ceremonial or dreaming sites and natural features that are particularly significant to Aboriginal people. It can also include places with important Aboriginal associations since European settlement.

Under Sections 86 and 87 of the Act, it is an offence to collect, disturb or excavate any land, or cause any land to be disturbed or excavated, for the purpose of discovering an Aboriginal object without a Section 87 permit authorised by the Director General of DECCW (sometimes referred to as a 'research permit').

Similarly, under Section 90 of the Act, it is an offence to destroy, deface, damage or desecrate, or cause or permit the destruction, defacement, damage or desecration of an Aboriginal object or place without first obtaining consent from the Director General (sometimes called a 'consent to destroy'). Under Section 90, consent can only be granted by applying for a Heritage Impact Permit, which must be approved by the Director General.

Section 91 requires anyone who discovers an Aboriginal object to notify the discovery to the Director General of DECCW.

Identified objects and sites are registered on the Aboriginal Heritage Information Management System (AHIMS), which is managed and maintained by DECCW. The AHIMS is a database for all Aboriginal objects, Aboriginal places and other Aboriginal heritage values in NSW that have been reported to DECCW. An Aboriginal object is considered to be 'known' if it is registered on AHIMS, is known to the Aboriginal community, or is identified during an investigation of the area conducted for a development application. Aboriginal objects and places are afforded automatic statutory protection in NSW under the Act. This protection applies irrespective of the level of their significance or issues of land tenure. Sites of traditional significance that do not necessarily contain material remains may be gazetted as Aboriginal places and thereby be protected under the NPW Act. However, areas are only gazetted if the Minister is satisfied that sufficient evidence exists to demonstrate that the location was and/or is of special significance to Aboriginal culture.

The need for approval (either under Section 87 or Section 90) is determined by the nature of the proposed works and thus any potential impact on Aboriginal objects or places. In considering

whether to issue a Section 90 permit, DECCW will consider the significance of the object or place that would be subject to the proposed impact, as well as the effect of the impact and mitigation that is proposed. Alternatives to the proposed impact would also be considered, as would the conservation outcomes that would be achieved if consent for impact was granted. Integral to consideration of any permit application is the outcome of Aboriginal community consultation with regards to the proposed impact.

In order to inform this decision, DECCW often requires further investigation of a site through a Section 87 research permit or as a salvage condition of a Section 90 Aboriginal Heritage Impact Permit. In either scenario, Aboriginal community consultation conducted in accordance with the DECCW *Aboriginal cultural heritage consultation requirements for proponents 2010* is required.

A search of the AHIMS reveals there are six previously recorded sites in the study area. Within a 4km2 search area around the study area, 46 Aboriginal objects have been recorded. These sites are detailed in Section 4.3 of the report.

2.4 Blacktown Local Environmental Plan 1988

No part of the subject land has been identified as a heritage item in Schedule 2 of the LEP and the subject land is not located within a conservation area. There is one heritage item identified in Schedule 2 (Part 1) in the vicinity of the subject land. This item is identified in Section 5.2 of this report.

The mapping associated with the Blacktown LEP 1988 does indicate an archaeologically significant area along the creek line of Ropes Creek and two known archaeological sites, all located within the study area.

Clause 16A: Development in the Vicinity of Heritage Items

Clause 16A requires the preparation of a Heritage Impact Statement as part of DA documentation, to inform the consent authority of any adverse impacts (of proposed development) on a heritage item in the vicinity of a proposed development. This includes impacts on the setting and heritage significance of the heritage item, or any direct physical impacts.

For potential archaeological sites, Council cannot issue consent for excavation or filling of land until any requirements for an Excavation Permit pursuant to the provisions of the Heritage Act have been satisfied.

2.5 Commonwealth Heritage List, National Heritage List and the Register of the National Estate

The *Environment Protection and Biodiversity Conservation Act 1999* (Cwlth) creates/governs the following heritage lists:

- the National Heritage List—places of outstanding heritage value to the nation;
- the Commonwealth Heritage List—places that embody identified Commonwealth Heritage values; and
- the Register of the National Estate—a list of heritage places that is presently being phased out, but is still a relevant consideration for the Minister for the Environment, Heritage, Water and the Arts.

The site is not listed on these registers.

2.6 State Environmental Planning Policy (Western Sydney Employment Area) 2009

The majority of the Ropes Creek site is zoned INI – General Industrial pursuant to the State Environmental Planning Policy (Western Sydney Employment Area) 2009 with E2 Conservation Zones located along Ropes Creek, and in corridors across the subject land in the northern and south western areas of the subject land.

3.0 Landscape and Historical Context

3.1 Environment

3.1.1 Geology

The dominant geology of the property and the wider Cumberland Plain is the Triassic Period (251–200 million years ago) Wianamatta Group, which is divided into three formations: Ashfield Shale, Minchinbury Sandstone and Bringelly Shale. The Ashfield Shale consists of black and grey siltstone and laminite. This is overlain by Minchinbury Sandstone which consists of fine to medium-grained quartz lithic sandstone. This is overlain by Bringelly Shale, which consists of claystone and siltstone, carbonaceous claystone, laminite and fine- to medium-grained lithic sandstone.[1]

3.1.2 Hydrology

The study area is located within the Hawkesbury-Nepean catchment. The property contains a number of small unnamed natural drainage lines which all flow from east to west towards Ropes Creek, which lies approximately 600m to the west of the study area. In the southeast of the area, three small natural drainage lines join before the dam in the centre of the property to form a small second order stream which flows west into Ropes Creek, which is a third order stream at this location. Ropes Creek flows in a north-westerly direction, joining South Creek near Ropes Crossing, which in turn flows into the Hawkesbury River.

There are two farm dams on the site that have been created through in the European period of the site for stock water.

Studies have shown that the Aboriginal people favoured locations close to permanent sources of water for their campsites. As such, large and complex artefact scatters or camp sites on the Cumberland Plain are located along prominent waterways or at the confluence of creeks. This form of predictive modelling based on hydrology is further discussed in Section 4.3.2.

3.1.3 Soils

The soil type in the study area is known as the Blacktown Soil Unit which covers large parts of the Cumberland Plain. This soil unit contains shallow to moderately deep mottled soils

The topography of this soil unit is described as gently undulating rises on Wianamatta Shale with local relief ranging 10-30m, with gentle slopes of less than 5%, but occasionally up to 10%. Wide rounded ridges and crests dominate the landscape measuring 200-600 metres wide.[2] Shale generally does not appear on the surface, but does however occur in areas of disturbance. The soils can be divided into friable brownish black loam to clay loam forming the topsoil (A horizon), hardsetting brown clay loam to silty clay loam forming the A_2 horizon, strongly pedal, mottled brown light clay forming the B horizon and light-grey plastic mottled clay forming the C horizon.[3] Areas of alluvium may occur on the floodplain adjacent to Ropes Creek.

3.1.4 Climate

The climate of Ropes Creek is temperate with cool winters and warm to hot summers. January is the warmest month at nearby Horsley Park, with the average daily temperatures ranging from a minimum of 17.6°C to a maximum of 29.8°C. July is the coolest month, with average daily temperatures ranging from overnight minimum of 5.8°C to a high of 17.1°C; and frosts are common

in winter. The average annual rainfall for the area is 747mm and totals are highest in the summer months and lowest in the winter months.[4] The Cumberland Plain is located in the rain shadow of the higher coastal plateau of the Blue Mountains that captures rain from the prevailing winds from the southeast.[5] As such, the rainfall in the western Cumberland Plain is considerably lower than that of the adjacent Blue Mountains and coastal Sydney. The climate of the last 1,000 years is noted to have been similar to that of today[6], so the Ropes Creek area would have been suitable for occupation by Aboriginal people in the past.

3.1.5 Flora and Fauna

Before European settlement, the Cumberland Plain was covered with open forest and was home to diverse flora and fauna which would have been an essential resource to the local Aboriginal inhabitants. Through European land clearance and farming practices—which commenced in the area in the early nineteenth century and were followed by the development of housing, roads and services—much of the area has been cleared of its original forest cover.

The riparian corridor of Ropes Creek is marked by Swamp She-Oak (*Casuarina glauca*) trees along its length and other smaller floral species including Acacia species. The balance of the subject land has largely been cleared of native vegetation and is now pasture. The wider area today, outside of the subject land, is characterised by cleared dry sclerophyll forest with the dominant species being spotted gum (*Eucalyptus maculata*) and grey box (*E. moluccana*). Understorey shrubby species include hickory (*Acacia implexa*) and blackthorn (*Bursaria spinosa*), while grasses include kangaroo grass (*Themeda australis*) and speargrass (*Aristida vegans*).[7] A range of faunal species exist throughout the Cumberland Plain including eastern grey kangaroo (*Macropus giganteus*) and a range of wallaby, wombat and possum species. Swan and duck species frequent the wetlands and creeks in the surrounding area. The plants and animals in the area would have provided Aboriginal people with a varied diet in the past.

3.2 Ethnohistory and Aboriginal Social Structure

3.2.1 Contact History and Population Size

Looking at the ethnographic record, when the first Europeans came in contact with the local Aboriginal inhabitants in the late eighteenth and early nineteenth centuries they described the area as being part of the Darug (or 'Dharug', 'Dhar'-rook' or various other spellings—see Attenbrow 2002 table 3.3[8]) language group.[9] Twentieth-century ethnologist Norman Tindale's map of Aboriginal tribes of Australia[10] shows the area of the Cumberland Plain to be occupied by the 'Daruk'; similarly Horton's map of Aboriginal Australia[11] shows the same area as 'Dharug'. At the beginning of the twentieth century, anthropologist and linguist RH Matthews documented the location of this language group:

> *The Dhar'-rook dialect, very closely representing the Gundungurra, was spoken at Campbelltown, Liverpool, Camden, Penrith, and possibly as far east as Sydney, where it merged into Thurrawal.*[12]

Language groups were broken into a number of small groups called 'bands' (or extended family groups). Scholars[13] identified 13 inland Darug clans, the closest to the Ropes Creek area being the Cannemegal clain located at Prospect, Mulgoa clan located at Penrith and the Gomerigal-tongara, possibly being located along South Creek. 'Mulgoa' is believed to be the Darug name for the Mulgoa area and means 'black swan'.[14]

Determining the population of Aboriginal people at the time of European contact is notoriously difficult. Firstly, Aboriginal people were largely mobile and avoided contact with Europeans. Further, many Aboriginal people perished from European diseases—such as smallpox—some time after contact or through clashes with the new settlers, so the population statistics gathered in the early years are not accurate or reliable. Population estimates for the greater Sydney region, including the lower Blue Mountains, generally range from 4,000 to 8,000 at the time of European contact.[15] Specifically within the western Cumberland Plain, Kohen[16] estimated the population to be between 500 and 1,000 people at the time of contact, with a minimum population density of 0.5 people/km^2.

The Aboriginal population of the Sydney region declined significantly following the arrival of Europeans, as they brought with them diseases to which the Indigenous inhabitants had little or no resistance. The smallpox epidemic of 1789 was particularly deadly and spread throughout the Aboriginal population. The Governor of New South Wales, Arthur Phillip, was reported to note dead Aboriginal elderly people and children around Sydney Harbour in 1789.[17] Smallpox had quickly spread west to the Cumberland Plain by the time of Governor Phillip's expedition to the Hawkesbury–Nepean River in April 1791. The smallpox epidemic is thought to have caused the death of well over half of the Aboriginal population of the Sydney region within one year.[18] Butlin argued that prior to the 1780s Aboriginal people in southeastern Australia had not been exposed to smallpox and estimated that 80 percent of them died.[19] The widespread death from smallpox would have had an enormous impact on the social life of Aboriginal people in the Sydney region at the time, including mourning the family members who perished, the loss of elders' knowledge, the survivors fleeing inland to escape the disease and the depopulation of some areas.

Despite these early problems of the impacts of European diseases and depopulation, Aboriginal people continued to live in the region into the twentieth century and today are represented by many local organisations.

3.2.2 Material Culture and Diet

The material culture of Aboriginal people in the Cumberland Plain at the time of European settlement was diverse and utilised the local materials at hand, including plants, animals and stone. The use of plant materials was widespread, with many items being made from bark and wood including shelter, canoes, weapons, tools and items of personal adornment. Canoes were noted on the Hawkesbury–Nepean River and ranged in length from 2.4m to 6m.[20]

Spears were made of wood, with stone, bone, wood or shell barbs attached using resin. Wood was also used for axe handles, bowls and women's digging sticks, used to obtain yams and other tubers.[21] Boomerangs and clubs were made from hardwoods and were used in hunting. 'Boomerang' is believed to be a Darug word.[22] Besides plant materials being used to create useful items, Sydney's vegetation communities include over 200 species that have edible parts, including seeds, fruits, tubers, leaves, flowers and nectar.[23] Some plant products also had medicinal or ceremonial use.

Land mammals on the Cumberland Plain were hunted and eaten, including kangaroos, wallabies, possums, gliders, fruit bats and kangaroo-rats. Birds were also hunted and eggs were collected for eating. Freshwater food resources available in the Hawkesbury–Nepean catchment included eel, fish, crayfish, yabbies, shellfish, platypus and water rat. Reptiles including snakes, lizards and tortoises were caught and eaten.[24]

Stone was the basis for many of the tools and was used for axe heads and barbs on the ends of wooden spears. From the ethnographic record, the son of settler William Cox, writing in 1875, described seeing ground-edge stone axes 'in the hands of the greater number of the natives of the tribes which once inhabited the Valley of Mulgoa near Penrith'.[25]

As can be seen from the ethnographic record, the natural environment of the Cumberland Plain provided Aboriginal people with a wide variety of plants, animals and stone that were used for food, medicine and artefact manufacture.

3.3 European Development and Use

The study site on 250 acres lies within an original grant of 1100 acres granted to John Thomas Campbell by Governor Macquarie in 1819.

The site has four main phases of European development.

3.3.1 Phase 1: Mount Philo 1819–1832

The first phase of the site's history was from 1819 until 1832 when it was part of the Mount Philo estate of John Campbell and his family. Campbell arrived in Sydney with Governor Macquarie in 1810, having been appointed as his Secretary, a position he held until 1819 when he was appointed Provost-Marshal by Macquarie. Campbell was a large landholder by this time, with 1500 acres having already been granted to him at Bringelly in 1811, and was known to be an efficient farmer and breeder of cattle and horses.

Campbell named his property Mount Philo, a barely disguised reference to a libel case involving himself and the Reverend Samuel Marsden, in which Campbell had written a letter attacking Marsden to the Sydney Gazette, of which he (Campbell) was the official censor, signing it as Philo Free. Marsden successfully sued Campbell for libel.[26]

As an early colonial grant and farm estate, the property was used for cattle and horse breeding while native timber was cleared to provide grazing land and to feed the construction industry of nineteenth-century Sydney. The large size of the estate (1100 acres) meant that much of it, including the study area bounding Ropes Creek, was largely (if not entirely) undeveloped during the Campbell occupation.

Campbell died in 1830 and his estates were inherited by his brother, the Reverend Charles Campbell. In 1832 Charles Campbell sold the Mount Philo estate to Charles Roberts, a local landowner and horse breeder. Roberts was already in possession of the adjacent Lucan Park estate, and in 1834 purchased Wallgrove which faced on to Eastern Creek. Roberts bred race horses on his estates, as well as horses for coaches and farm work.[27]

As well as breeding horses, Roberts was a keen gambler on horse racing, and through the 1840s and 1850s began using various parts of his estate as collateral for his loans. In 1851, Charles Roberts and his wife Margaret borrowed money with ten percent interest, placing their entire Lucan Park estate, including Mount Philo, up as security. The money was borrowed from trustees for the underage Samuel Ashmore, son of Sydney merchant Richard Pritchard. By 1856, Roberts, who had borrowed more money on the estate, was sufficiently behind on his repayments for the trustees to take possession of his estate. Roberts owed £1375.19.7. In the same year, the trustees Andrew Lenchan and George Paterson sold on the Mount Philo Estate, together with 200 acres from the

adjoining Erskine Park Estate, to brothers Thomas, David and Patrick Lindesay Crawford Shepherd for £2700.[28]

3.3.2 Phase 2: Chatsworth 1856–1909

The second phase of the study area's development lies between 1856 and 1909 when the area was owned by the Shepherd Brothers who used the property to supply their inner city nursery, Darling Nursery at Darlington (see Figure 3.3). The Shepherds renamed the Mount Philo property 'Chatsworth' and built a house of the same name (see Figure 3.2). This house does not lie within the present subject area.

The Shepherd brothers' nursery was one of the earliest (if not the earliest) commercial nurseries in Australia. They were instrumental in the development of landscape gardening and horticulture, and promoted a wide range of exotic plants for use in Australian colonial gardens. Olives were a variety of plant particularly promoted by the Shepherds and grown at the Chatsworth Nursery. By the 1870s the Chatsworth nursery was well stocked with large numbers of fruit trees including plantations of apple trees, pear trees, quinces, peaches, apricots, medlars and mulberries, which were shipped throughout New South Wales, Queensland, New Zealand, Melbourne and Western Australia. The estate also produced various kinds of beans intended for supplying the seed trade, while a variety of maize was planted for the purpose of proving them, and also for making the place self supporting for stock.

By the 1880s, the remaining brothers, David and Patrick, were in dispute over the operation of the family business and each began trading as separate businesses, using the Chatsworth nursery for their commercial stock. Patrick became proprietor of PLC Shepherd and Son, Seed Merchants. However, by the end of the nineteenth century, the nursery was in decline and with the onset of the 1890s economic depression in New South Wales, the Shepherd brothers decided to sell the business, which was now largely suppling packeted seeds, to Yates Ltd. Shepherd's Seed Merchants continued to trade under the name, albeit as a subsidiary of Yates, until the late 1940s.[29]

3.3.3 Phase 3: Thomas Barker 1909–1950s

The third phase of the study area includes the period from 1909 to the 1950s when the study area was used as part of a farm run by Thomas Baker and family.

In 1909, David Shepherd, who had lived at Chatsworth with his wife Jane and seven children, decided to sell his stake of 801 acres to Thomas Baker, a farmer from Wentworthville, for £4500. This included the homestead and outbuildings, though these buildings do not lie with the present study area. [30]

Thomas Baker had been involved in the timber industry while at Wentworthville, a business that he continued when he moved to Chatsworth. Despite nearly 100 years of European occupation on the estate by the time of Baker's arrival, there were still large enough stands of timber to allow for timber getting. Baker's timber resource was transported to local mills in Rooty Hill, likely to the mill owned by Baker himself.[31]

As the timber was cleared, and on those parts of the property where it had already occurred, the property was stocked with sheep and cattle. The Baker family were known for their cattle and sheep stocks, with Thomas Baker a familiar figure at Flemington and district cattle saleyards. It is likely that many of the farm buildings, such as the sheds, the small shearing shed, barns and

haysheds, were built during the early years of the Baker residency. None of these buildings, however, appear to have been located on the 250 acres relating to this study.

3.3.4 Phase 4: Fitzpatrick Family 1950s–Present

The Baker family continued to live at Chatsworth until Thomas's death in 1934 selling the estate to Burfield Pty Ltd in 1955 for £33,000. They in turn sold the property to Ray Fitzpatrick Pty Ltd and Ray Fitzpatrick Quarries. The land at this time was described as Lot 45 in DP 588400 and contained 801 acres and 24 perches (see Figure 3.4).[32]

The study area of 250 acres (104 hectares) is contained in the western portion of Lot 45. An aerial photo of the site from 1947 shows no structures on the subject land except two dams (see Figure 3.6).

In the early 1960s Transgrid, then part of the State Electricity Commission, constructed the Sydney West substation on land adjoining the subject site to the east and began to construct electricity towers on the subject land. An aerial photograph from 1970 shows the location of the electricity substation, electricity towers and new towers under construction (see Figure 3.7).

The property was re-subdivided in 1982 as Lots 2 to 5 in DP 262213. Lot 5, which relates to this study contains 250 acres and was purchased by Jacfin Pty Limited in 1983, a company owned by members of the Fitzpatrick family (see Figure 3.5). Jacfin remain the current owners. The land has continued to be used for grazing cattle to this present day.

3.3.5 Land Titles Search

Land Titles Information: **Ropes Creek**

1819 Crown Grant dated 17th August
To John Thomas Campbell of 1100 acres part of Portion 45 parish of Melville

1909 Conveyance dated 6th December Bk 895 No. 803
David Shepherd to Thomas Baker

1934 Probate of the will of Thomas Baker dated 14th April

1939 Conveyance dated 1st December Bk 1861 No. 83
William Thomas Collett Baker and others to MWS&D Board

1946 Conveyance dated 29th August Bk 1995 No. 998
To William Thomas Collett Baker

1955 Conveyance dated 3rd May Bk 2333 No. 276
To Burfield Pty Limited

1959 To Ray Fitzpatrick Pty Limited
Leased to Ray Fitzpatrick Quarroes Pty Limited Bk 2603 No. 79

1976 Primary Application No. 52819 dated 21st December
Ray Fitzpatrick Pty Limited of land described as Lot 45 in DP 588400

1978 Certificate of Title Volume 13548 Folio 70 dated 9th February
Ray Fitzpatrick Pty Limited being Lot 45 in DP 588400 at Ropes Creek, Municipality of Blacktown, Parish of Melville

1982 Re-subdivided as Lots 2 to 5 in DP 262213
(To CT Volume 14726 Folios 222 to 225)

1982 Certificate of Title Volume 14726 Folio 225 dated 23rd April
Ray Fitzpatrick Pty Limited as to land in CT 13548-70 and Jacfin Pty Limited as to land in CT 11063-178 being Lot 5 in DP 262213 at Ropes Creek being part of Portion 45 granted to John Thomas Campbell in 1819 and part of Portion 80 granted by Crown Grant Volume 6887 Folio 107

1983 Transfer No. T805286 dated 2nd November
To Jacfin Pty Limited

Current Title Lot 5 in DP 262213

Current Owner Jacfin Pty Limited

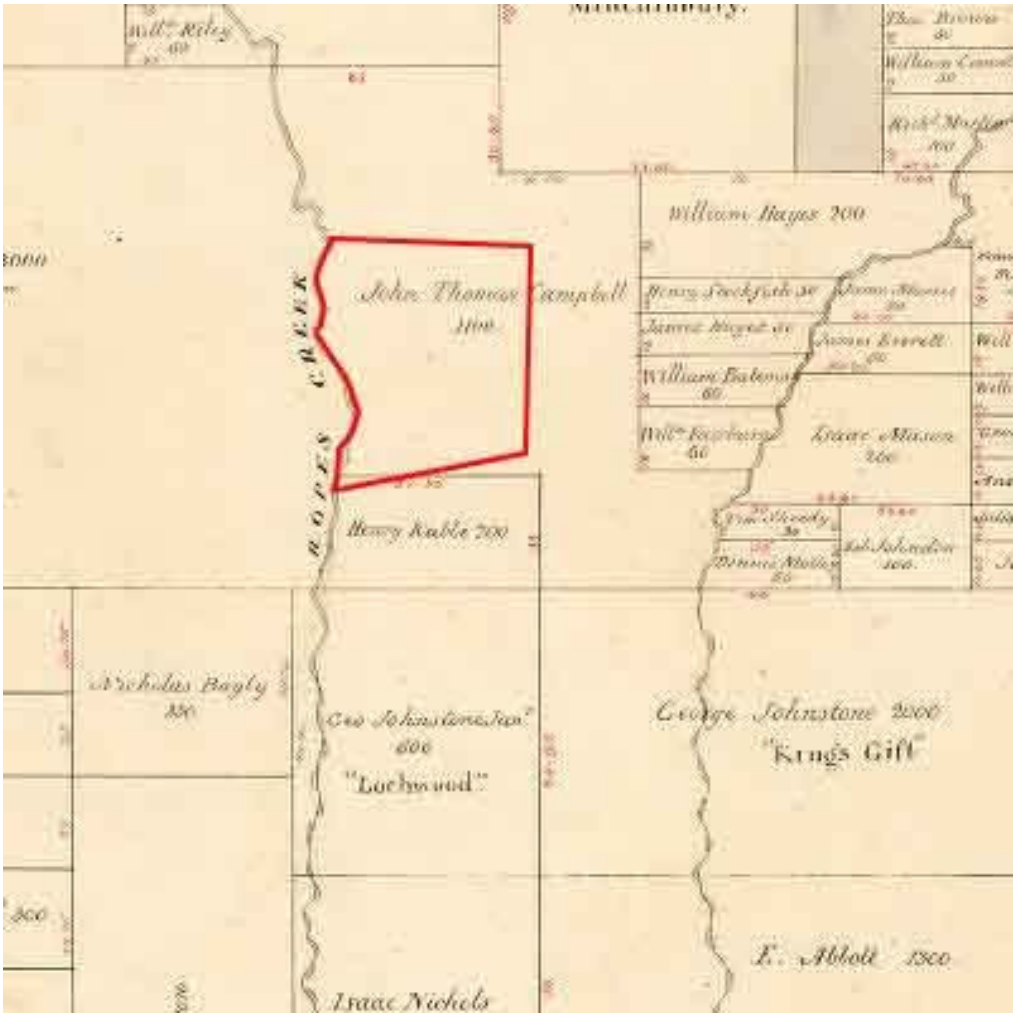


Figure 3.1 Parish Map No. 14067101 showing approximate location of subject site within John Campbell's original grant of 1100 acres. (Source: Department of Lands)

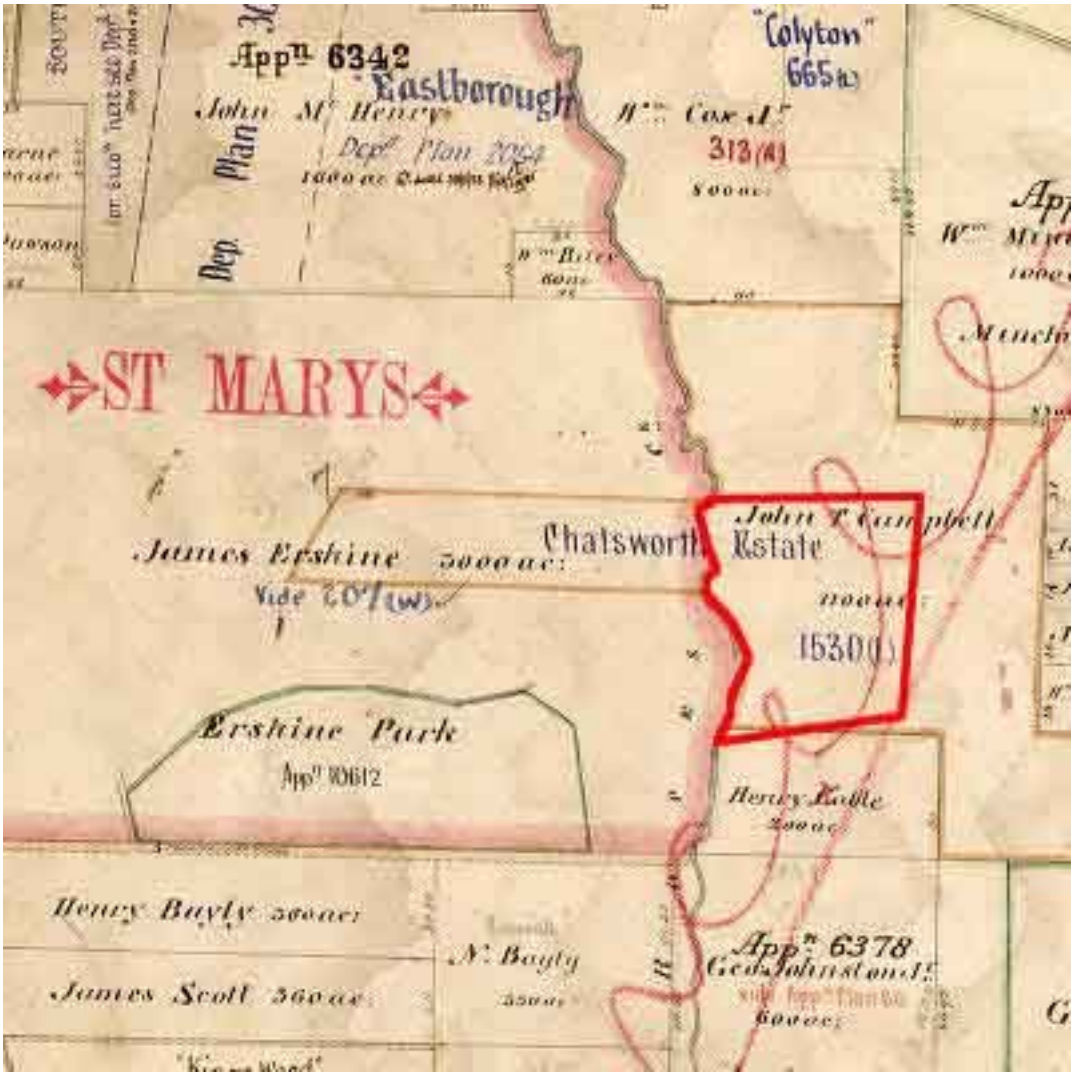
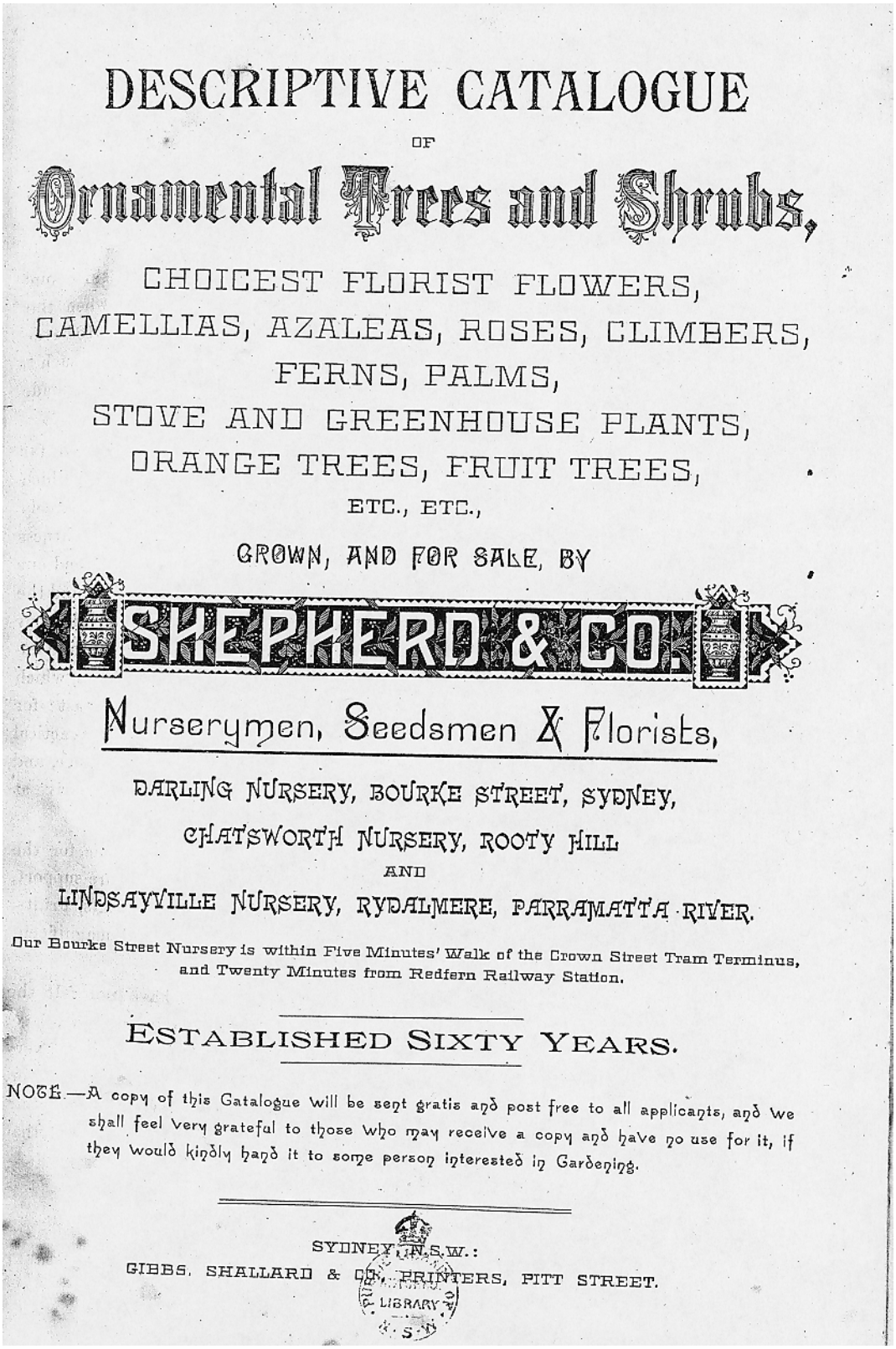


Figure 3.2 Parish Map No. 14066901 showing John Campbell's original grant now included in the Chatswood Estate. Subject site outlined in red. (Source: Department of Lands)



DESCRIPTIVE CATALOGUE

OF

Ornamental Trees and Shrubs,

CHOICEST FLORIST FLOWERS,
CAMELLIAS, AZALEAS, ROSES, CLIMBERS,
FERNS, PALMS,
STOVE AND GREENHOUSE PLANTS,
ORANGE TREES, FRUIT TREES,
ETC., ETC.,

GROWN, AND FOR SALE, BY

SHEPHERD & CO.

Nurserymen, Seedsmen & Florists,

DARLING NURSERY, BOURKE STREET, SYDNEY,
CHATSWORTH NURSERY, ROOTY HILL
AND
LINDSAYVILLE NURSERY, RYDALMERE, PARRAMATTA RIVER.

Our Bourke Street Nursery is within Five Minutes' Walk of the Crown Street Tram Terminus, and Twenty Minutes from Redfern Railway Station.

ESTABLISHED SIXTY YEARS.

NOTE.—A copy of this Catalogue will be sent gratis and post free to all applicants, and we shall feel very grateful to those who may receive a copy and have no use for it, if they would kindly hand it to some person interested in Gardening.

SYDNEY, N.S.W.:
GIBBS, SHALLARD & CO., PRINTERS, PITT STREET.

LIBRARY

Figure 3.3 1885 Descriptive Catalogue for Shepherd and Co. Nursery. Notice that the address included Chatsworth Nursery, Rooty Hill, which by this period was the main supply for Shepherd's product. (Source: Mitchell Library 635.9/S)

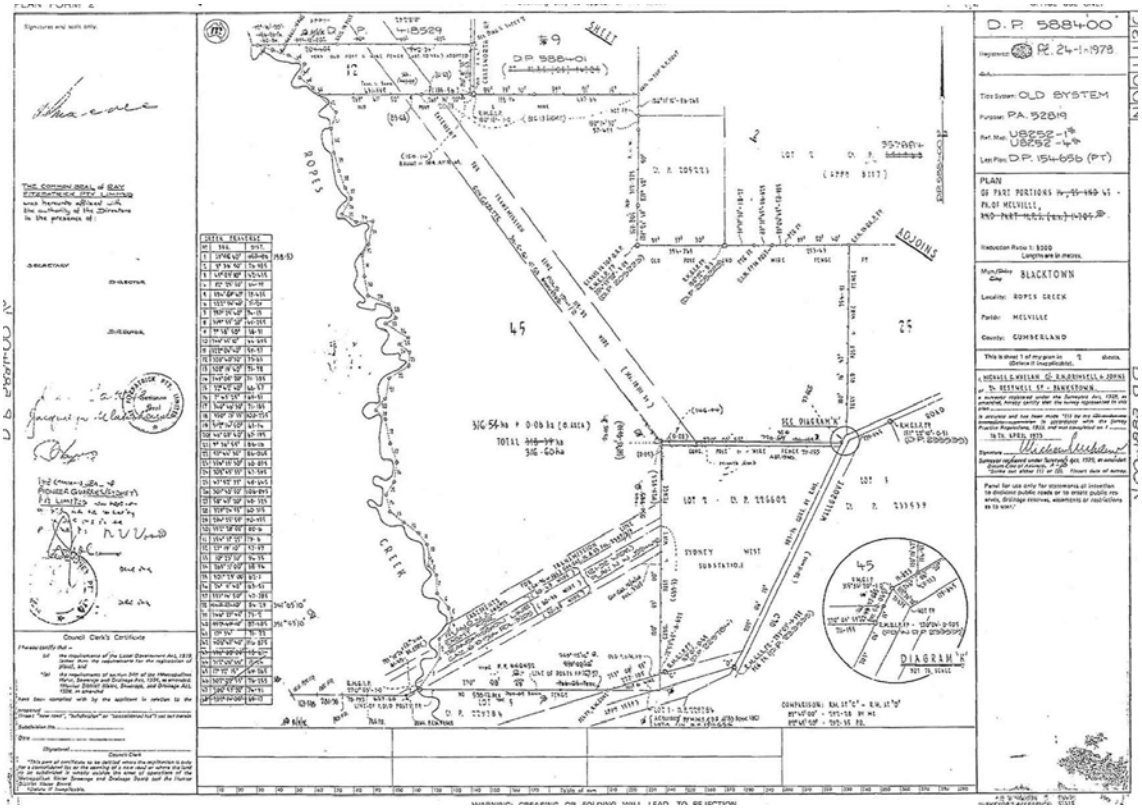


Figure 3.4 DP 588400 dated 1978. The subject site was included in Lot 45 at this time. (Source: Department of Lands)

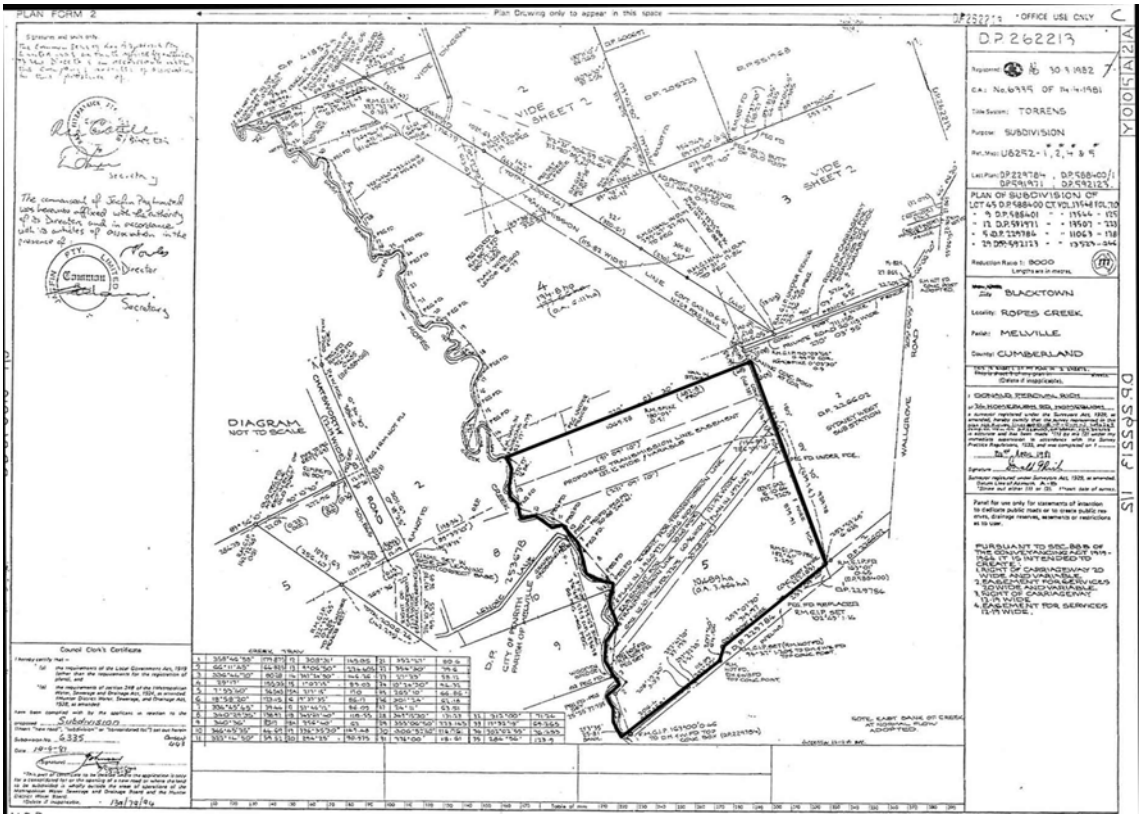


Figure 3.5 DP 262213 dated 1982 showing the subject site, Lot 5, outlined in black. (Source: Department of Lands)

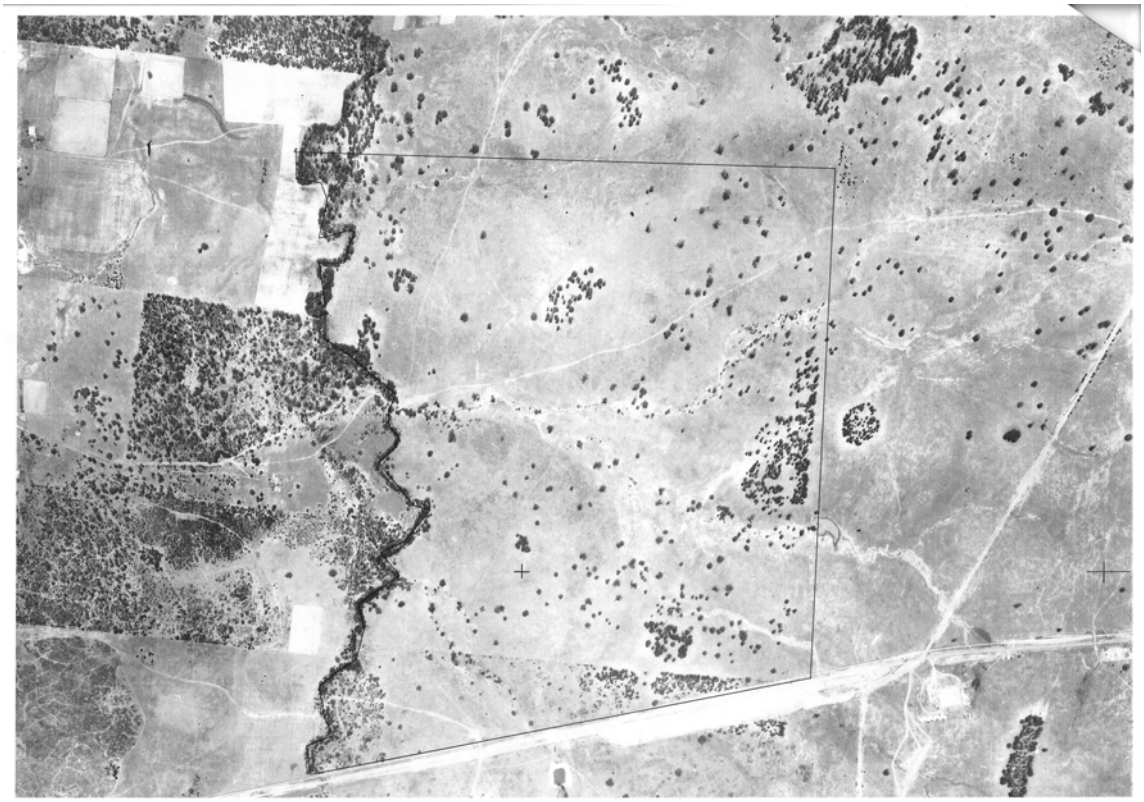


Figure 3.6 1947 aerial photograph showing the subject site outlined. (Source: Department of Lands)

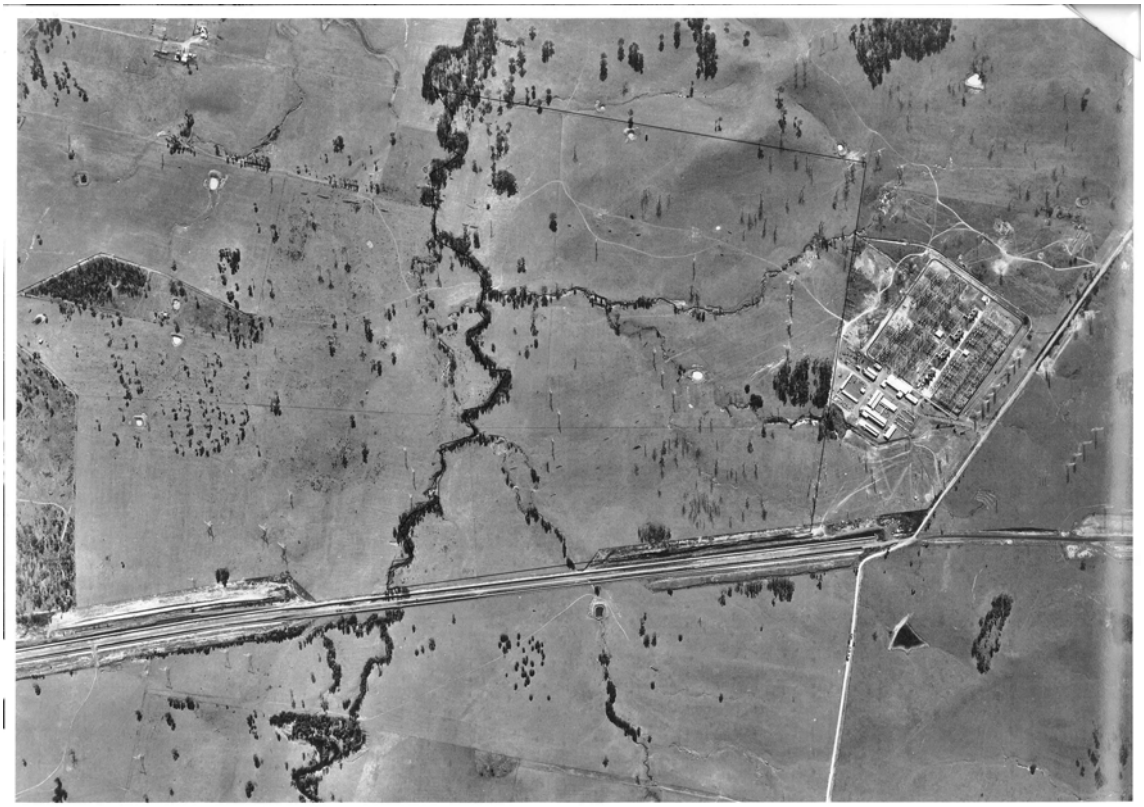


Figure 3.7 1970 aerial photograph showing the subject site outlined. Note the Sydney West Power Station adjoining the subject site and the electricity towers in the site. Additional dams have been constructed. (Source: Department of Lands)

3.4 Endnotes

1 Bannerman, SM and Hazelton, PA 1990, *Soil landscapes of the Penrith 1: 100 000 Sheet*. Soil Conservation Service of NSW, Sydney pp 2–3.
2 Hazelton, P A, Bannerman, S M and Tillie P J, 1989, *Penrith Soil Landscape Series Sheet 9030*. Soil Conservation Service of NSW, Sydney, map.
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4 Weatherzone Website: <http://www.weatherzone.com.au/climate/station.jsp?lt=site&lc=67119> Accessed on 02/08/10.
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6 Attenbrow, V 2002, *Sydney's Aboriginal Past – Investigating the Archaeological and Historical Records*, the Australian Museum Trust, Sydney, p 39.
7 ibid pp 64.
8 Attenbrow, op cit, p 32.
9 Kohen, JL and R Lampert 1987, 'Hunters and Fishers in the Sydney region', in DJ Mulvaney and JP White: *Australians to 1788*, Sydney, Fairfax, Syme & Weldon, p 351.
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11 Horton, DR 1996, *Aboriginal Australia*, AIATSIS, Canberra, map.
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23 Attenbrow, op cit, p 76.
24 ibid pp 69–71.
25 Kohen, J 1982, op cit, p 5.
26 *Australian Dictionary of Biography* Volume 1, Campbell, John Thomas.
27 Nicolaidis, G 2000, *Eastern Creek and Land Settlers*, Blacktown City Council, p 27.
28 Old Systems Title Book 57 No. 753, Department of Lands.
29 Nicolaidis,op.cit. p27.
30 Conveyance David Shepherd to Thomas Baker No. 803, Book 895, 6 December 1909.
31 Nicolaidis, op cit, p 49.
32 Primary Application No. 52819, Department of Lands.

4.0 Indigenous Heritage Assessment

4.1 Preamble

This Indigenous Heritage Assessment is based on consideration of information from the following sources:

- Consultation with Aboriginal parties who registered an interest in the project through the consultation process.
- A desktop review of known Aboriginal archaeological sites registered on the Aboriginal Heritage Information Management System (AHIMS) database and a review of past Indigenous heritage projects undertaken in the general area.
- Predictive modelling of Indigenous archaeological sites based on a review of the environmental and historical background and past land uses on the subject land.
- The preparation of a field survey methodology.
- A field survey of the subject land with the Indigenous stakeholders to identify archaeological sites, areas of potential archaeological sites, landforms and past land disturbances.

4.2 Indigenous Consultation

4.2.1 Background

Input from Aboriginal stakeholders is an integral part of assessing the significance and cultural heritage values of Aboriginal objects and places. Aboriginal community involvement is a requirement under Part 6 of the NPW Act, which requires an application for a permit or consent.

In Part 3A matters, the Minister also generally requires this (or a similar) level of Aboriginal community consultation. DECCW has prepared the draft '*Guidelines for Aboriginal Cultural Heritage Impact Assessment and Community Consultation*' July 2005 which reference the '*Interim Community Consultation Requirements for Applicants*', December 2004. This report has been prepared in accordance with these guidelines.

In non-Part 3A matters, DECCW's consultation guidelines outline the requirements (including prescribed timeframes) for engaging with the Aboriginal community as part of the preparation of an application for consent or a permit under Part 6 of the NPW Act (ie Section 87 or Section 90 permit applications).

4.2.2 The Consultation Process

The subject land falls within the administrative boundaries of the DLALC under the *Aboriginal Land Rights Act 1983* (NSW). This organisation has a statutory responsibility 'to promote the protection of Aboriginal culture and the heritage of Aboriginal persons'[1] within its boundaries. DLALC was contacted and invited to take part in the field survey. Steven Randall represented DLALC during the field survey on 21 and 29 July 2010.

In addition, a number of organisations and individuals also claim traditional and historical links within the greater-western Sydney area of which the Ropes Creek area forms a part. GML has

commenced wider consultation in line with the *Interim Community Consultation Requirements for Applicants* (2004).

This involved placing an advertisement on 28 July 2010 in the *Koori Mail,* inviting stakeholders to register their interest by 11 August 2010 (Appendix A) and sending letters of invitation out to the following bodies:

- Department of Environment, Climate Change and Water (Metro Office);
- DLALC;
- Registrar of Aboriginal Owners;
- National Native Title Tribunal;
- NSW Native Title Services;
- Penrith City Council; and
- Hawkesbury-Nepean Catchment Management Authority.

As at 16 August 2010, the following Aboriginal organisations or individuals have registered their interest in the project:

- DLALC;
- Darug Aboriginal Cultural Heritage Assessments (DACHA);
- Darug Aboriginal Landcare Incorporated (DALI);
- Darug Custodian Aboriginal Corporation (DCAC);
- Darug Land Observations (DLO); and
- Yarrawalk;

Copies of their response letters are in Appendix B. These organisations were invited to a site visit and to prepare a cultural statement or comment on the property. DACHA, DALI, DCAC, DLO and Yarrawalk attended the site visit on 21 December 2010. Verbal comments from some of these organisations were received during the site visit and written responses are included in Appendix C.

A consultation log has been kept for this project and forms Appendix D. In addition, Darug Tribal Aboriginal Corporation (DTAC) who have an active role in cultural heritage in the Western Sydney region were sent a letter (dated 17 August 2010) inviting their organisation to register an interest in the project. DTAC did not respond to this invitation.

4.2.3 Department of Planning Review

The Department of Planning (DoP) reviewed this report in early 2011. The DoP required that the project be readvertised in a local newspaper, as the DoP deemed the Koori Mail was not a local newspaper. As such, the project was readvertised in a local newspaper – St Mary's Star on 22 March 2011 with a closing date to respond to the advertisement of 5 April 2011. The advertisement is presented in Appendix A. No additional stakeholders responded to the advertisement placed in the St Mary's Star.

4.3 Desktop Review

4.3.1 AHIMS Sites

A search of AHIMS reveals there are six previously recorded sites on the subject land. The location of these sites is shown in Figure 4.1 and the details presented in Table 4.1 below.

Table 4.1 AHIMS-registered sites within the subject land.

Site ID	Site Name	Location on Subject Land / AMG Coordinates	Site Features	Reporting Details
45-5-0561	Blacktown Southwest 9 Colyton	Next to Ropes Creek, under transmission lines in west of property 297580E; 6256310N	Artefact scatter containing 2 chert flakes	Kohen, 1986 An Archaeological Survey of Aboriginal Sites Within the City of Blacktown
45-5-0562	Blacktown Southwest 10 Colyton	300 metres east of Ropes Creek, north-west corner of property 297867E; 6256329N	Artefact scatter containing 7 stone artefacts (chert, silcrete and quartz flakes)	Kohen, 1986, An Archaeological Survey of Aboriginal Sites Within the City of Blacktown
45-5-3062	EP PAD 1	Where unnamed creek meets Ropes Creek, west of subject land; 297553E; 6256165N	Potential Archaeological Deposit (PAD) only, no artefacts presently known	Navin Officer Heritage Consultants Pty Ltd, 2003, 132kV Transmission line from Transgrid Station to Erskine Park
45-5-3159	RCIF 2	North-west corner 297776E; 6256537N	Isolated artefact containing one orange mudstone flake	Environmental Resource Management (ERM) Australia, 2005, report not specified on site card
45-5-3163	RCAS 5	North-west corner 297990E; 6256594N	Artefact scatter containing three red silcrete flakes	Environmental Resource Management (ERM) Australia 2005, report not specified on site card
45-5-3843	RCIF 1	North-east corner 298621E; 6256456N	Artefact scatter (number of artefacts not known as site card is not available from AHIMS)	Officer, Permit 3262, site card not available from AHIMS, listing and coordinates only

In addition, two previously recorded sites are located approximately 100m to the north of the northwest corner of the current property, in the adjacent paddock. When mapped, these sites are shown inside the current property; however, the site cards show these sites are located just to the north of the current property. Both sites are artefact scatters comprising a small number of stone artefacts each, recorded by Kohen in 1986:

- 45-5-0560 (Blacktown Southwest 8) 297630E, 6256600N; and
- 45-5-0563 (Blacktown Southwest 11) 297900E, 6256600N.

Within a 4km x 4km search area surrounding the subject land, 46 Aboriginal sites have been recorded and in a 10km x 10km search area approximately 300 Aboriginal sites have been recorded. These sites within a 4km x 4km search area are summarised in Table 4.2 below.

Table 4.2 AHIMS-registered sites within a 4km x 4km search area surrounding the subject land.

Site Type	Site Features	Frequency
Artefact scatter/open campsite	Artefacts	44
Potential archaeological deposit (PAD)	Unknown without further investigation	1
Artefact scatter and PAD	Artefacts	1
TOTAL		**46**

As illustrated in Table 4.2, almost all sites in the local area are artefact scatters or contain lithic material, representing 96% of all sites. In addition, there is one Potential Artefact Deposit (or PAD) and one combined artefact scatter and PAD. Artefact scatters represent the majority of sites previously recorded on the Cumberland Plain. Of note, there are no scarred trees, stone exploitation sites, freshwater midden sites or human burials previously recorded in the immediate vicinity. Many of the local sites have been recorded along waterways in the area, particularly Ropes Creek. This fits in well with where camp sites or larger artefact scatters are more likely to be located, with proximity to permanent water sources or rises close to creek lines. Many of the sites have been recorded as a response to the development of the surrounding area for residential, industrial and road building projects.

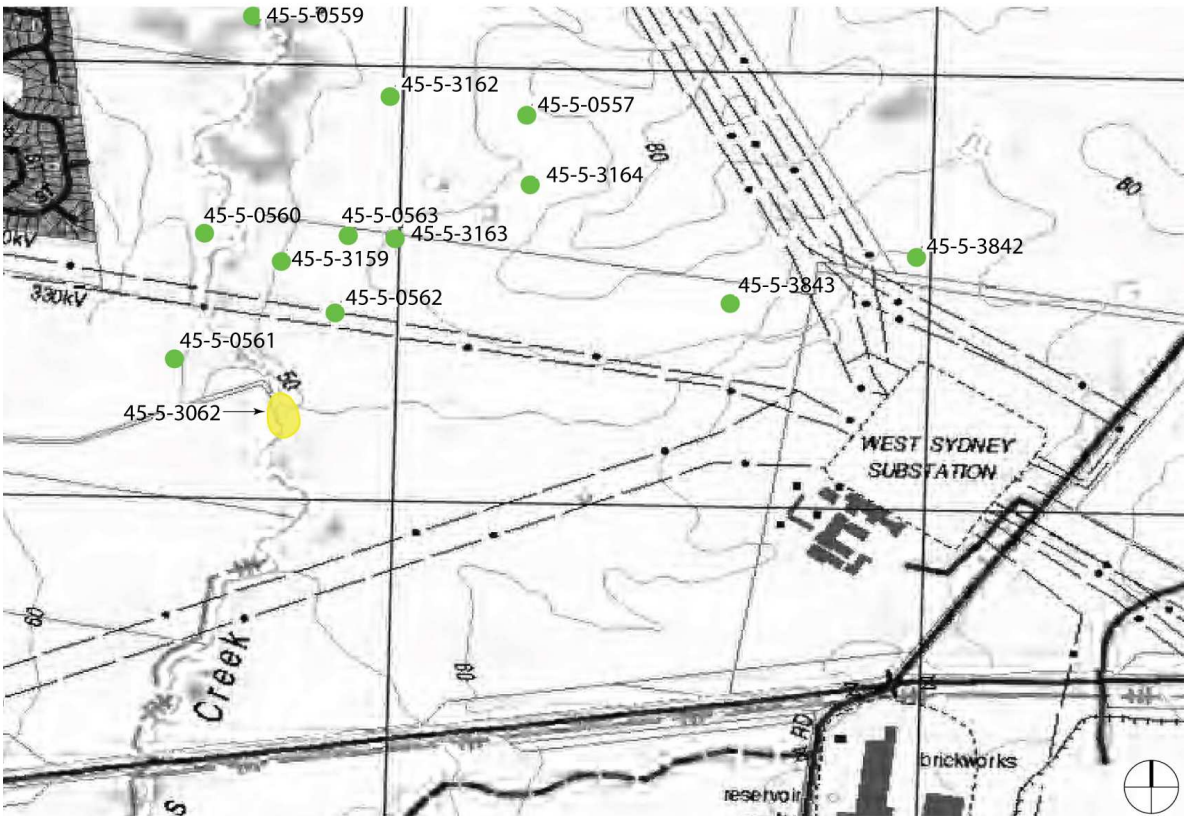

Figure 4.1 Location of previously recorded sites as mapped from AHIMS search result. Note that sites 45-5-0560 and 45-5-0563 are actually located just outside the current study area to the north, as they were recorded in the pre-GPS era when coordinates were approximate. (Source: Topoview Raster 2006 with AHIMS data added 2010)

4.3.2 Archaeological Models for the Cumberland Plain

Previous archaeological research on the Cumberland Plain has taken two forms: academic-driven research begun in the 1960s and consultant reports which have responded to the urban development of western Sydney, following the gazettal of the NPW Act in 1974.

Aboriginal occupation of the Cumberland Plain and Nepean River Valley extended into the Pleistocene, 10,000 years before present (BP). Currently the oldest accepted date in this region is from the Shaws Creek rockshelter, located on the Nepean River at Cranebrook, dating to 14,700 years BP.[2] Pleistocene dates were also recorded for the lower occupation levels at Regentville near Penrith, dating to 12,100 years BP.[3]

Archaeological models for the Cumberland Plain were developed during the 1980s and 1990s. One of the earliest was developed by Kohen who argued that Aboriginal occupation of the Cumberland Plain first occurred during the mid to late Holocene (c4,500 BP). Before this, it was said that occupation was confined to the coastal areas and the Nepean River Valley. Kohen argued the changes at this time related to increased population and the addition of small tool technologies.[4]

Following on from this, Smith developed a theory for the southern Cumberland Plain, based on her work with the National Parks and Wildlife Service (NPWS) Planning Study for the Cumberland Plain. She concluded that by the time of her study (1989), less than 0.5% of the Cumberland Plain had been the subject of archaeological surveys and that only 17 sites had been excavated. Smith found that sites were more likely to be found along permanent creeks and swamp margins on the Cumberland Plain.[5]

Jo McDonald developed a theory through her work on the Cumberland Plain in the 1990s. She found that by 1997, 666 sites had been registered with DEC (the predecessor to DECCW) on the Cumberland Plain and that the vast majority (89%) of sites were open artefact scatters/open camp sites. A further 3.5% of sites were isolated artefacts, with scarred trees representing 2.1% of sites on the Cumberland Plain. Following on from salvage excavations undertaken by McDonald at Rouse Hill in the 1990s, she noted that many areas contained subsurface stone artefacts, even when there was no lithic material present on the surface. She found a variety of site types including intact knapping floors; backed-blade manufacturing sites with two early Bondaian dates between 3,000 and 5,000 years BP; heat treatment sites; specialised tool types; and general camp sites.[6]

In further developing her predictive model for the Cumberland Plain, McDonald noted that stream order was an important feature in determining the locations, sizes and complexity of archaeological sites on the Cumberland Plain. She noted:

> *In the headwaters of the upper tributaries (first order creeks) archaeological evidence will be sparse and represent little more than a background scatter. In the middle reaches of the minor tributaries (second order creeks) archaeological evidence will be sparse but indicated focussed activity (e.g. single camp locations). In the lower reaches of tributaries creeks (third order creeks) will be archaeological evidence for more frequent occupation. 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 and rivers (fourth order) archaeological evidence will indicate more permanent or repeated occupation. Sites will be complex, with a range of lithic activities represented, and may even be stratified. Creek junctions may provide a focus 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 the 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.*[7]

4.3.3 Previous Archaeological Investigations

This section provides a summary of previous archaeological investigations in the Ropes Creek area as a response to local residential and industrial development.

132kV Transmission line from Transgrid Station to Erskine Park

Navin Officer Heritage Consultants Pty Ltd undertook a cultural heritage assessment in 2003 of a strip of land. At the time, Integral Energy were proposing to construct a 132kV transmission line from the Sydney West Substation (immediately to the east of the study area) for approximately 3.5km (west) to Erskine Park. This proposed transmission line extended across the current study area. Two Aboriginal sites (EP1 and EP2) and an area of archaeological potential (EP PAD1) were recorded in the course of the field survey of the easement. The sites are open scatters of stone artefacts and are located in valley floor contexts associated with the margins of ephemeral drainage lines. The sites were assessed as being of low archaeological significance within a local context. EP PAD1 is located on both sides of Ropes Creek, near the junction of the creek with an unnamed natural drainage line that flows into Ropes Creek from the east. A single European feature, (EPH1) the remains of an old bridge crossing on an unnamed tributary of Ropes Creek, was noted during the field survey. Site EPH1 does not reach the threshold where it would be considered significant under any heritage assessment criteria.[8]

SEPP 59 Lands

The SEPP 59 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. Part of this area is located within the Ropes Creek site. 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.[9] These studies summarised previous investigations[10] 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 ridgetops (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[11] in 2003 excavated an area containing several previously identified low-density surface scatters of artefacts located in the now Wonderland Business Park, 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 south-eastern corner of the SEPP 59 lands were test excavated in 2004. The Austral Site (AHIMS #45-5-2986) along Reedy Creek in the south-eastern 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.[12] The second excavations involved the Austral 4 site (AHIMS #45-5-3076) which was found to have very low densities of stone artefacts.[13]

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[14], and also included several previously recorded open campsites and isolated finds located within these lands.[15] The areas investigated were located within lands known as 'Wonderland Surplus' in the north-eastern 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 100 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. No sites were found on the Ropes Creek site.

Horsley Park

Jo McDonald Cultural Heritage Management Pty Ltd undertook an archaeological survey of a site in Horsley Park in 2008. This site is located c350m to the south of the study area. Five small stone artefacts were found on a dam wall within the site. However, due to extensive grass cover and very limited exposure of soils on different land forms the report suggested it is highly likely the study area contains stone artefacts which were not found during the survey. A zoning map of the study area was prepared and general management outcomes were suggested in relation to these zones. Archaeological excavation was recommended in four areas within one of the zones. It was further recommended that this work proceed under an approved Aboriginal Heritage Management Plan (AHMP).[16]

Eastern Creek Sewer Carrier Route Realignment

Australian Museum Business Services undertook an Aboriginal Heritage Assessment of the route of a proposed sewer carrier associated with the servicing of the SEPP 59 lands in 2005. The proposed route is situated c1.5km to the east of the study area. Four archaeological sites (artefact scatters) and one potential archaeological deposit (PAD) were identified. Of all of the sites the PAD is located the closest to the study area. It is situated along the banks of Reedy Creek approximately 150m south of Old Wallgrove Road and 50m west of Wallgrove Road. The recommendations relating to the PAD, in consultation with Aboriginal community representatives, suggested that the implementation of a research project would act as the best mitigation measure against the potential loss of archaeological information contained within the PAD. It was further recommended that the developer try to minimise the impact to the PAD.[17]

Old Wallgrove Road and Ropes Creek

In 2002, John Appleton undertook an Aboriginal archaeological survey of a large parcel of land for a proposed shale and clay extraction area between Old Wallgrove Road and Ropes Creek, directly to the south of the subject land. The survey located two isolated artefacts and one PAD. The study stated that permits would be required to disturb the isolated artefacts if they were to be impacted, and if the PAD were to be impacted by the proposed development an excavation permit would be needed.[18]

Proposed CSR Quarry

Curran in 1997[19] investigated an allotment 500m to the south of the study area 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.

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, approximately 1.5km to the west-southwest of the study area in 2005.[20] 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.[21] 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 11 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 and is situated immediately to the west of the study area. 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 recommended to require further subsurface archaeological investigation prior to redevelopment.[22]

Although historically more disturbed than the study area, 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[23] 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, hillslope, ridgetop 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 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.[24] 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 11 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 11 sampled areas with a total of less than 300 artefacts being retrieved from about a third of the test pits.[25] Additional testing in Area 11, involving a further 24 test pits, retrieved an additional 172 artefacts.[26] Most pits were found to contain low numbers of artefacts (averaging less than five artefacts per square metre but up to almost 30 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 subject lands.

Luddenham and Mamre Roads 1988

In 1988, Dallas undertook an Aboriginal archaeological investigation of a parcel of land between Luddenham and Mamre Roads, c3km to the east of the study area. The study recorded 12 open camp sites: five of these were located along Cosgrove Creek, three on flood-prone flats between South and Cosgrove creeks and the remaining four sites close to the confluence of Badgerys and South creeks. Dallas noted the presence of raw nodules of silcrete along Cosgrove Creek, indicating a local source of this raw material. The study recommended that if the proposed development was to impact any of the registered sites, management of these sites would be required.[27]

Luddenham and Mamre Roads 2001

In 2001, Dominic Steele prepared an archaeological research design for the excavation of three registered open camp sites between Luddenham and Mamre Roads, c 3km east of the subject land.[28] The proposed excavation and analysis of the findings aimed to answer questions such as:

- Where were people living in the past?
- Along what creeks did they have their camping spots?
- How long ago were people living there?
- What types of raw materials were they using?
- What sorts of artefacts were they producing?

The excavation was subsequently undertaken and yielded silcrete flakes, flaked pieces and very few formal tools, which was said to represent casual discard of stone artefacts by Aboriginal people.

The study found that there were no significant undisturbed archaeological remains on the property and Steele applied for a Section 90 Consent to Destroy to DEC (now DECCW), which was approved. Steele found the primary focus of Aboriginal occupation of the area was at the confluence of South, Kemps and Badgerys creeks and the slopes that rose up from these creeks. In this location there was said to be evidence of stone-tool manufacturing (including heat treatment) and silcrete stone exploitation sites. Steele then produced a management plan for the property, which included provisions for conservation zones.[29]

Riverstone, Schofields and Quakers Hill

In 1982, Mary Dallas undertook an Aboriginal archaeological assessment of a large area of land proposed for development covering parts of Riverstone, Schofields and Quakers Hill to the north-northwest of the current subject land. The study recorded seven artefact scatters/camp sites and four isolated artefacts, most of which were found to be damaged or disturbed. Silcrete dominated the assemblages of the sites, while smaller percentages of chert, quartz, chalcedony and silicified wood were also present. The study recommended that the two extensive open sites be preserved, while the remainder of the sites were too heavily disturbed. It was subsequently recommended that the client apply for a permit to disturb these sites.[30]

St Marys

In 2008, Jo McDonald Cultural Heritage Management Pty Ltd prepared an archaeological assessment of the former Australian Defence Industries (ADI) site at St Marys, approximately 8km north-west of this report's subject land. The area of the property is 1,545ha and the study found there were 39 surface archaeological sites within the boundaries. Previous excavations within the property have yielded over 7,000 stone artefacts and more than 131ha of the property have been designated PADs.[31] The study recommended that salvage excavations be undertaken on the property. The excavations were subsequently undertaken by Jo McDonald Cultural Heritage Management Pty Ltd in mid 2009; results are pending.

Ropes Creek

In 2010, Biosis Research undertook an Aboriginal archaeological excavation on NPW sites 45-5-3843 and 45-5-3062 (located on the current subject land) and NPW site 45-5-3842 (located on a neighbouring property) as part of the Erskine Park road works. The excavation report is not currently available for public viewing from DECCW, as such the results of the excavation are not known at the time of preparation of this report.

4.4 Site Types Considered in the Study Area

A wide range of site types can be encountered during archaeological investigations in New South Wales, and these reflect the range of activities carried out by Aboriginal people in the past. The AHIMS sets out 20 site types which are defined by the cultural activities associated with the use of a place. These site types reflect the diverse range of evidence that may be encountered relating to past Aboriginal activity. It is important to note that one site may comprise a number of different site types or attributes, indicating the diverse range of cultural activities that can be undertaken in one place.

All site types listed on the AHIMS database were considered prior to commencing the field survey in order to determine the site types most likely to be encountered on the subject land. This was informed by the AHIMS search results (which indicate the types of sites and distribution patterns

that typically occur within the immediate vicinity of the subject land) as well as a desktop assessment of the landforms and environment within the subject land. The archaeological models for the Cumberland Plain (described in Section 4.3.2) indicate that the most common site types in the area are open camp sites and isolated artefacts. This is also confirmed by the results of the AHIMS search. Other site types which may be encountered in the area include scarred trees and stone exploitation sites. These potential site types are discussed below. Given the known geology and pastoral landscape, other site types including grinding grooves, freshwater midden sites, art sites and human burials would be unlikely on the subject land.

4.4.1 Open Camp Sites, Artefact Scatters and Isolated Artefacts

Stone artefacts occur across much of the New South Wales landscape in varying densities and are typically classified as artefact scatters, open camp sites or isolated occurrences of individual artefacts. These sites provide a record of past Aboriginal occupation and activity across the landscape. Artefact scatters comprise visible concentrations of artefacts (although these sites often have a significant subsurface element) and typically reflect areas of concentrated Aboriginal activity and occupation in the past, either as campsites or more transient places of activity. Artefact scatters or open camp sites are typically defined as the presence of two or more artefacts within 50m of each other. These contrast with isolated artefacts, which occur in much lower densities and are generally considered a 'background scatter' across the landscape in many areas of New South Wales, and may represent casual discard of lithic material. Thus, an artefact scatter or open camp site can be defined as a concentration of artefacts that occur in a greater density than the surrounding low-density 'background scatter'.

Throughout the twentieth century, scholars have argued about stone tool technologies varying over time in New South Wales. After subsequent radiocarbon dating of deposits taken from the excavation of two rockshelters in eastern New South Wales: at Lapstone Creek at the base of the Blue Mountains (1936)[32]; and at Capertee Valley, north of Lithgow (1964)[33], Fredrick McCarthy coined the theory of the 'Eastern Regional Sequence'. He identified the 'Carpertian', 'Bondaian' and 'Eloueran' as three phases within the series which collectively span the last 15,000 years. In the earliest phase, Capertian, tools were characterised by uniface pebble implements, cores, dentated saws and large heavy flakes. The Bondaian phase saw the arrival of the microliths and was typified by the small Bondi points (named after Bondi Beach, one of the places where they were first identified), burins and scrapers. The Eloueran phase was named after the Elouera, a triangular sectioned stone-backed blade, somewhat larger than the Bondi point. This last phase also contained ground-edge axes.[34]

Later, scholars such as Stockton and Holland (1974) modified McCarthy's sequence, proposing four phases. After the Capertian, they identified the 'Early Bondaian' and 'Middle Bondaian' phases where the classic backed blades the Bondi point, geometric microlith and the Elouera became common from the late Holocene (5,000 years BP) onwards. Stockton and Holland's[35] 'Late Bondaian' phase corresponded to McCarthy's Eloueran phase which has been revised through carbon dating to the last 1,600 years. During this period, Bondi points and geometric microliths became far less common in the coast areas of Sydney, but remained common on the Cumberland Plain, where they survived until at least 500 years BP. Stockton and Holland's terms are widely used in the Sydney region today.[36]

4.4.2 Stone Exploitation Sites

Stone exploitation sites, also known as 'quarries', are places where stone was either collected from the surface or struck off from bedrock for the purpose of fashioning stone tools. Stone exploitation sites are found over many parts of New South Wales and stone was often traded large distances from the source of the raw material, at times hundreds of kilometers. Stone exploitation sites are characterised by the presence of large amounts of flaked artefacts and debris close to a stone source or negative flake scars on bedrock or both. Stone reduction sites are those where the raw material is broken down into usable flakes, blades or cores for the production of tools. Stone reduction sites may occur at the stone exploitation site or some distance from it. On the Cumberland Plain there are a number of silcrete stone exploitation sites located in the St Marys area and along some of the north–south flowing creeks.

4.4.3 Carved and Scarred Trees

Aboriginal people carved trees by removing a section of the bark and then carving into the exposed wood. These carvings were done to mark burials and ceremonial sites and, as such, are still significant to Aboriginal people. Scarred trees differ in that they were created when a section of a tree's bark and wood was removed to make a range of useful objects including canoes, shields, containers (such as coolamons) and other weapons and items.[37] The term 'possum tree' refers to trees that have had small notches or toeholds cut into them for the purpose of possum hunting or collecting honey. In New South Wales, these types of evidence tend to only occur on trees over a certain age, related to the gradual cessation of traditional Aboriginal land use practices with the arrival of European ways of life. Trees of this age are also becoming rarer as they decay, fall over or are burnt.[38] A number of scarred trees have previously been recorded on the Cumberland Plain.

4.4.4 Potential Archaeological Deposits

Potential Archaeological Deposits or PADs are sites where archaeological deposits such as buried artefact scatters or shell midden accumulations are likely to occur based on sensitive landforms and locations in the landscape. This site type can also be registered with DECCW.

4.5 Predictive Modelling for the Subject Land

4.5.1 Potential Impact of Former Land Uses

Land uses can have a substantial impact on any Aboriginal archaeological resource that may have once been present. The history of the property shows that it was used for cattle grazing and agricultural activities during the nineteenth and twentieth centuries.

A 1947 aerial photograph (Figure 3.6) shows the property largely devoid of trees by this time; presumably the trees were cleared much earlier than this so the property could be used for grazing and other agricultural pursuits. Two dams were also created by this time, by creating a dam wall along the natural draining line for stock water.

In the early 1960s Transgrid, then part of the State Electricity Commission, constructed the Sydney West substation on land adjoining the subject site to the east and began to construct electricity towers on the subject land. An aerial photograph from 1970 shows the location of the electricity substation, electricity towers and new towers under construction (See Figure 3.7)

The removal of the native tree and shrub vegetation, creation of dams, ploughing and grazing, the construction of the nearby substation and electricity towers on the subject land itself are all

evidence of earth disturbance and potential erosion. The construction of the substation would have affected the hydrology of the natural drainage line in the southeastern area of the subject land.

4.5.2 Aboriginal Archaeological Potential on the Subject Land

The subject land is well watered, bound to the west by Ropes Creek which is a prominent waterway on the Cumberland Plain. Three natural drainage lines flow from east to west across the subject land joining Ropes Creek. Ropes Creek has a considerable catchment and is likely in the past that this was an area of permanent water supply and as such would have been suitable for campsites for Aboriginal people while hunting and gathering food. Much of the land is low lying, particular on the west side of the subject land, and would have been subject to periodic flooding during times of excessive rainfall. There are three notable rises, the large ridgeline along the northern boundary fence is by far the most prominent, while there are also smaller rises on the east side next to the substation, and in the centre of the property, to the south of the east-west running natural drainage lines.

Given the potential impact of past land uses on the subject land, pre-European Aboriginal archaeological resources are likely to have been disturbed to varying degrees in some isolated parts of the site. The area of the two dams, the stockyards in the north-east corner of the site and the powerlines are all obvious areas of disturbance. The small bridges crossing the creeklines, vehicle tracks and fencelines are other examples of earth disturbance. If the subject land has been subject to ploughing in the past, this would have disturbed some potential artefact scatters; however, studies have shown that stratified archaeological deposits often survive below the plough zone in areas of agriculture.

4.6 Field Survey Methodology and Recording Procedures

Standard archaeological field survey techniques were employed during the site survey. Due to the dense grass cover over the fields, a decision was made to undertake a pedestrian survey, as opposed to the team walking transects separated by set distances. The field team began with attempting to relocate the previously recorded sites. The team then focussed their attention on the Ropes Creek corridor, the natural drainage line corridors, hillslopes and hilltops where artefacts would be more likely to occur, and areas of exposures, such as dam banks, vehicle and animal tracks where artefacts and sites would be more visible.

All items of Aboriginal cultural heritage located during the course of the field survey were recorded and plotted using a Garmin handheld GPS set to the GDA co-ordinate system. Photographic records (using a Digital Canon Powershot A550 camera), GML site recording forms, sketch plans, and diary descriptions were also compiled as part of the field records.

The site recording detailed the sizes, types and boundaries of archaeological sites, topography (whether Aboriginal archaeological sites, features or areas of potential archaeological sensitivity were located on slopes or flats, etc), their contexts, existing vegetation, ground exposures, ground-surface visibility (GSV) and the presence and extent of obvious ground disturbance. The distinction between site categories (open camp sites or artefact scatters as opposed to isolated finds, etc) was made 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.

Individual artefacts were flagged and their locations were recorded using a GPS to determine if they were parts of larger sites or isolated artefacts.

The following attributes of each stone artefact were recorded:

- Raw material—Raw materials may include silcrete, tuff, basalt, chert, quartz, quartzite and indurated mudstone, etc.
- Artefact type—This category records the presence of items such as flakes, flaked pieces, blades, cores and hammerstones, etc.
- Tool type—This category records specialised tool types such as scraper, Bondi point, Elouera, geometric microliths, ground edge axe. Non-tools such as un-retouched waste flakes were identified in the catalogue as N/A.
- Dimensions—The maximum lengths, widths and thicknesses of artefacts were recorded.
- Landform unit—The landform where the artefact was located, such as plain, creek bank, swamp, upper slope, middle slope, lower slope, etc.
- Other—Comments include additional information such as the colour of the raw material and the presence of cortex and retouch.

Common attributes of culturally scarred trees[39] have been used to assess whether trees within the subject land are likely to have been scarred by Aboriginal people. Any trees with scars identified as being of possible 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 is considered prudent that a qualified arborist should have the opportunity to examine any possibly culturally modified/scarred trees prior to registering the item on the AHIMS register.

4.7 Field Survey Results

4.7.1 Confirmation of the Existence of Previously Recorded Aboriginal Objects and Places

The first task of the field survey was to confirm the existence of (relocate) the five previously recorded Aboriginal sites (all artefact scatters) and one PAD to determine their current extent, condition and integrity.

Table 4.3 illustrates the current status of the previously recorded sites on the subject land.

Table 4.3 Status of previously recorded sites on subject land during the site survey

Site ID	Site Name	Relocated	Current Condition / Integrity
45-5-0561	Blacktown Southwest 9 Colyton	No	Condition unknown due to dense vegetation and low visibility along Ropes Creek. Site card describes site as disturbed.
45-5-0562	Blacktown Southwest 10 Colyton	Yes	Two red chert flakes located on dirt track. The site has low integrity; artefacts are on surface and not in situ. Site card describes site as grossly disturbed.
45-5-3062	EP PAD 1	Area of PAD visually inspected	PAD covers confluence of east–west running creekline in the centre of subject land and Ropes Creek. Biosis Research undertook test excavation of this PAD in 2010. The excavation report is not currently available for viewing from DECCW.
45-5-3159	RCIF 2	No	Unknown current condition. Could not relocate this isolated artefact. This was in an area of earth disturbance by a mechanical excavator. In the surrounding area, visibility was nil due to long pasture grass. Site card describes site as partially disturbed.
45-5-3163	RCAS 5	No	Unknown current condition. Could not relocate, area of nil visibility due to long pasture grass. Site card describes site as very disturbed due to dam construction and animal hooves.
45-5-3843	RCIF 1	Yes	Six artefacts comprising four silcrete flakes, two quartz flakes and one mudstone flake were located. The site integrity is low due to ploughing in this area and trees have been mulched up at this spot. Ground surface visibility in this area is approximately 30%.

4.7.2 Survey Units

Following the relocation of the previous sites, the balance of the property was surveyed according to survey units. For the purposes of ease of undertaking the survey, the subject land was divided into five principal areas. Survey Unit One contained the Ropes Creek corridor. Survey Unit Two contained the other natural drainage lines on the property. Survey Unit Three contained the ridgeline in the north of the subject land, bound to the south by the unnamed natural drainage line running through the centre of the property. Survey Unit Four contained the ridgeline in the east adjacent to the West Sydney Substation. Survey Unit Five contained the land in the south of the subject land away from the drainage lines.

A description of the landforms, findings and photographs of each of the survey units is shown in Table 4.4 below.

Table 4.4 Descriptions of Survey Units used within the Horsley Park field investigation.

Survey Unit	Description and Landforms	Photograph
1	Survey Unit One comprised Ropes Creek and its floodplain. Ropes Creek was flowing with water at the time of the survey and is marked by Swamp She-Oak (*Casuarina glauca*) trees along its length (Figure 4.2). Ground surface visibility in this area was very low due to the tree and grass cover. The creekline is fenced off. This unit contains two previously recorded sites: -45-5-0561 (artefact scatter) which could not be relocated due to dense vegetation; and -45-5-3062 (PAD) at the confluence of the smaller unnamed creek flowing through the centre of the property and Ropes Creek. No new sites were located in this unit during the current survey. The creekline, floodplain and surrounding lower slopes have high potential for intact archaeological deposits to exist.	 **Figure 4.2** Ropes Creek. (Source: GML 2010)

Survey Unit	Description and Landforms	Photograph
2	Survey Unit Two comprised the other natural drainage lines on the property including two first order streams and two second order streams that flow from east to west where they meet Ropes Creek. The largest natural drainage line flowing through the centre of property was heavily eroded for much of its length, although less eroded at the confluence of Ropes Creek (Figure 4.3). Ground surface visibility was high along the central natural drainage line due to erosion and generally low along the other natural drainage line due to existing vegetation (Figure 4.4). This unit contains one previously recorded site: -45-5-3062 (PAD) at the confluence of the smaller natural drainage line flowing through the centre of the property and Ropes Creek. In addition, 18 stone artefacts comprising four new artefact sites were located along the east west drainage line that runs through the centre of the property. These have been registered with DECCW under the site numbers (and names) 45-5-3936 (Ropes Creek AS 4), 45-5-5-3637 (Ropes Creek AS 3), 45-5-3938 (Ropes Creek AS 2) and 45-5-3939 (Ropes Creek AS 1). Raw materials of these new sites comprised silcrete, chert, mudstone and basalt artefacts. These sites are located on the eroded banks along the length of the largest natural drainage line flowing through the centre of property A fifth new artefact scatter site (Ropes Creek AS 5) was located on the site visit on 21 December 2010 in a clearing immediately to the east of the second order natural drainage line in the southwest corner of the property. This site is being registered with DECCW with the NPW site number to be confirmed once received from DECCW. The natural drainage lines, floodplain and surrounding lower slopes have moderate to high potential for intact archaeological deposits to exist.	 **Figure 4.3** Field team walking along the eroded banks of unnamed natural drainage line that flows through the centre of the property from east to west. (Source: GML 2010)  **Figure 4.4** Second order natural drainage line in Survey Unit 2. (Source: GML 2010)

Survey Unit	Description and Landforms	Photograph
3	Survey Unit Three contained the prominent ridgeline in the north of the subject land (Figure 4.5), bound to the south by the natural drainage line running through the centre of the property. Ground surface visibility in this area was low due to the dense pasture grass cover. This unit contains four previously recorded sites: -45-5-0562 (artefact scatter) which was relocated; -45-5-3159 (isolated artefact) which could not be relocated due to dense vegetation; -45-5-3163 (artefact scatter) which could not be relocated due to dense vegetation; and -45-5-3843 (artefact scatter) which was relocated. Due to low ground surface visibility and proximity to permanent water (Ropes Creek) this unit has moderate potential for further archaeological material to exist, possibly in subsurface deposits.	 **Figure 4.5** Ridgeline in Survey Unit 3. (Source: GML 2010)
4	Survey Unit Four contained the ridgeline in the east adjacent to the West Sydney Substation. This area had areas of disturbed earth being close to the substation and also from the powerlines (Figure 4.6). Ground surface visibility in this area was low due to pasture grasses. No sites were located in this survey unit. Give the past disturbances in this unit; it has low to moderate potential for further archaeological material to exist, possibly in subsurface deposits.	 **Figure 4.6** Stock dam in front of ridgeline in Survey Unit 4. The West Sydney Substation is in the background. (Source: GML 2010)
5	Survey Unit Five contained the land in the south of the subject land away from the natural drainage lines. This land is generally low lying and prone to flooding including during the site of the site visit (Figure 4.7). Ground surface visibility in this area was low due to pasture grasses. No sites were located in this survey unit. Due to the poor ground surface visibility and proximity to permanent water, this unit has moderate potential for further archaeological material to exist, possibly in subsurface deposits.	 **Figure 4.7** Low lying land in the south of the subject land with the Sydney Water Supply Pipeline visible in the background. (Source: GML 2010)

4.7.3 Newly Identified Aboriginal Objects and Places

In addition to the five previously reported artefact scatter sites and one PAD, 18 stone artefacts were located on the site visits in July 2010, all along the eroded banks of the central natural drainage line which runs east to west. These 18 artefacts comprise four new artefact scatter sites. No carved or scarred trees were found on the property. The artefact scatter sites have been registered with AHIMS under the names Ropes Creek AS 1, Ropes Creek AS 2, Ropes Creek AS 3, Ropes Creek AS 4.

A fifth new artefact scatter site (Ropes Creek AS 5) was located on the site visit on 21 December 2010 in a clearing immediately to the east of the second order natural drainage line in the southwest corner of the property. This site is being registered with DECCW with the NPW site number to be confirmed once received from DECCW.

In addition, a possible grinding groove was located on a sandstone outcrop in the northwest of the subject land. Prior to construction, this area should be investigated further by removing grass covering the sandstone outcrop to determine if this is a grinding groove.

Details of the sites including photographs of selected artefacts are presented in Table 4.5 below. The site cards are presented in Appendix D. The location of the newly recorded sites are shown in Figure 4.14.

Table 4.5 Newly recorded artefact scatter Sites from the current investigation.

Site ID	Site Name	Location and Contents	Photograph
45-5-3939	Ropes Creek AS 1	298768E; 6256397N; located on the east to west drainage line in the north east corner of the site in an eroded nature. Site Dimensions are 1m x 1m. Comprises one silcrete flaked piece.	No photograph.
45-5-3938	Ropes Creek AS 2	298533E; 6256290N; located on east to west drainage line near the centre east of the property. Artefacts are located along the creek bank. Site dimensions are 200m x 30m. Site comprises six artefacts including five silcrete flakes and one chert flaked piece.	 **Figure 4.8** Silcrete flake from site 45-5-3938. (Source: GML 2010)

Site ID	Site Name	Location and Contents	Photograph
45-5-3937	Ropes Creek AS 3	298214E; 6256217N; located on the east to west drainage line near the centre of property. Artefacts are located along the creek bank. Site dimensions are 270m x 30m. Site comprises ten artefacts including seven silcrete flakes, one silcrete core, one silcrete blade and one basalt chopper.	 **Figure 4.9** Silcrete core from site 45-5-3937. (Source: GML 2010)  **Figure 4.10** Basalt chopper from 45-5-3937. (Source: GML 2010)
45-5-3936	Ropes Creek AS 4	298002E; 6256241N; located on the east to west drainage line in the central west part of the property. Artefacts are located along the creek bank. Site dimensions are 30m x 5m. Site comprises two silcrete flakes.	 **Figure 4.11** Silcrete flake from site 45-5-3936. (Source: GML 2010)
TBC by DECCW	Ropes Creek AS 5	297951E; 6255727N; located in a clearing immediately to the east of the second order natural drainage line in the southwest corner of the property. Site dimensions are 20mx 10m. The site comprised three artefacts including a red silcrete core with two negative flake scars and two silcrete flakes. This site is being registered with DECCW with the NPW site number to be confirmed once received from DECCW.	 **Figure 4.12** Silcrete flake from site Ropes Creek AS 5 (NPW site number to be confirmed). (Source: GML 2010)

Site ID	Site Name	Location and Contents	Photograph
N/A	N/A	Possible grinding groove site located on a partially visible sandstone outcrop next to a small soak. Three parallel grooves were observed on one surface. Another surface has modern grooves / graffiti writing on it. This outcrop should be investigated further to determine the origin, nature and extent of the markings prior to construction in this area. If it is found to be Aboriginal in origin, it should be registered with DECCW.	 **Figure 4.13** Possible grinding grooves on sandstone outcrop. (Source: GML 2010)

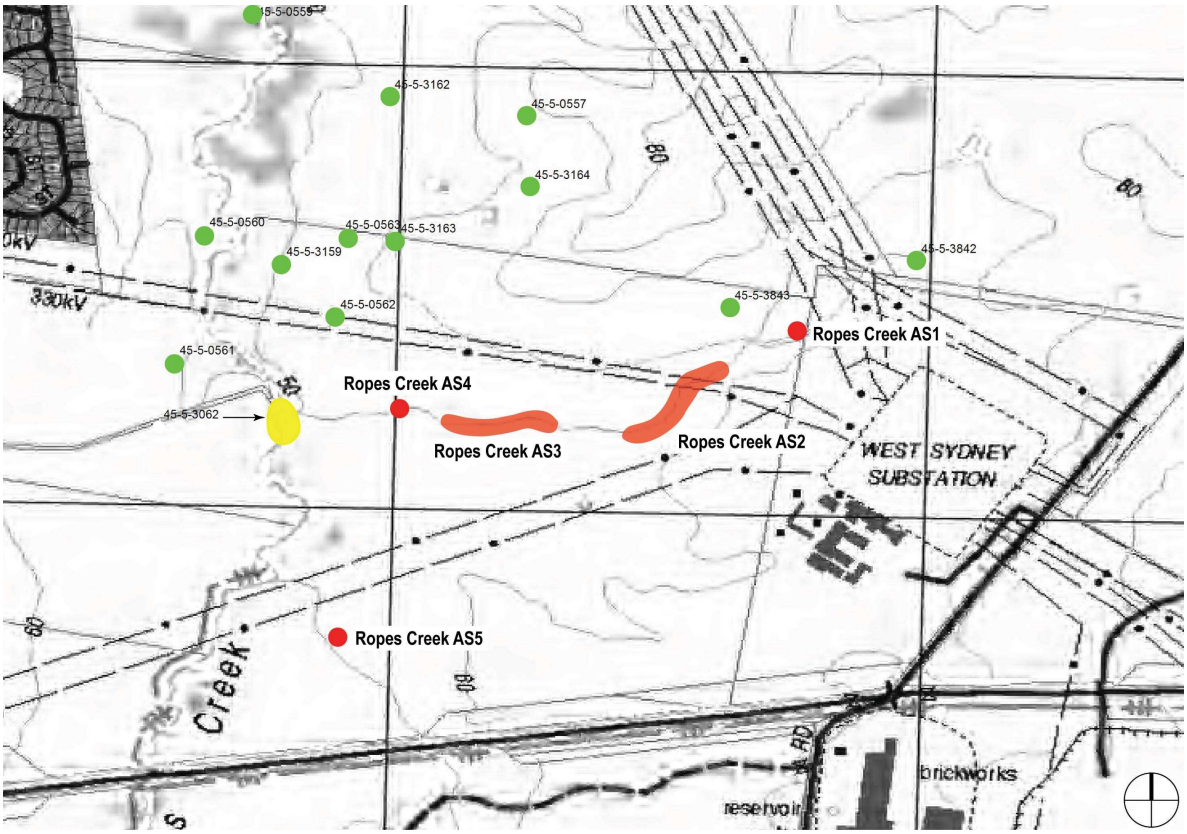

Figure 4.14 Location of previously recorded sites and newly recorded sites on the subject land. (Source: Topoview Raster 2006 with AHIMS data added 2010)

4.7.4 Effective Survey Coverage

Effective survey coverage is an estimate of the ground surface that was visually examined during a field survey of a property. Effective survey coverage is measured by multiplying the percentage Ground Surface Visibility (GSV) by the size of the survey unit. The effective survey coverage would be low on a heavily vegetated site such as in a forest or grassed field and high on land such as freshly ploughed fields or in an area where the ground was exposed. Effective survey coverage for the subject land was overall very low, with the average being 6.5% over the entire property. A summary of the effective survey coverage for each survey unit is presented in Table 4.6 below.

Table 4.6 Effective survey coverage for the subject land.

Survey Unit	Average GSV % for the Unit	Estimated Size of Survey Unit (in Hectares)	Effective Survey Coverage (in Hectares)
1	2	10	0.2
2	30	10	3.0
3	5	34	1.7
4	5	20	1.0
5	3	30	0.9

Average effective survey coverage over all survey units is 6.5%.

4.8 Significance Assessment—Indigenous Heritage

4.8.1 The Purpose and Criteria of Significance Assessment

An assessment of significance provides important information on which DECCW can base its decisions regarding the management and protection of Aboriginal heritage sites in New South Wales. The significance of Aboriginal cultural heritage is generally assessed under four criteria commonly applied in Aboriginal cultural heritage management. These criteria are based primarily on the standards outlined in the ICOMOS Burra Charter, which is generally considered to set best-practice standards for the management and conservation of places of cultural significance within Australia and also in accordance with the National Parks and Wildlife Service 'Aboriginal Cultural Heritage Standards and Guidelines Kit'.[40]

Cultural significance, as defined under the Burra Charter, relates to the aesthetic, historic, scientific and social significance of a site or place, and thus emphasises not only the scientific but also the social values of a site or place. This emphasis is similarly embodied in the principles of DECCW, which place emphasis on consultation with Aboriginal stakeholders when assessing the cultural significance of Aboriginal objects and/or places. When assessing an Aboriginal Heritage Impact Permit (AHIP) application, DECCW will consider:

- *cultural and scientific significance of the Aboriginal object(s) and/or place(s);*
- *potential or likely impacts of the proposal on the Aboriginal objects(s) and/or place(s);*
- *adequacy of any proposed measures to avoid or reduce impacts; and*
- *the results of consultation with Aboriginal people.* [41]

Based on this approach, significance is assessed under four criteria:

- **Cultural value:** The cultural significance of a place relates to its value and importance to Aboriginal people, and thus significance under this criterion can only be assessed in consultation with Aboriginal stakeholders.
- **Scientific/archaeological/research value:** This criterion is used by archaeologists to determine the research potential of a particular site. The focus is on the site's ability to illustrate past human behaviour. The research potential of a site includes information about its

integrity, such as its stratigraphic integrity and evidence of past disturbances. A site may have increased value when taken as part of a group of sites, as together they can illustrate past human behaviours that they could not do as individual sites. The research potential of sites may be increased if they are able to provide a timeframe for past human behaviours, given the right stratigraphy and preservation and utilising scientific dating methods. Within this criterion are the subsets of Representativeness and Rarity.

  - ***Representativeness:*** This value represents the ability of a site to demonstrate a specific site type or deposit. The importance of this has been realised in Australia with the conservation of representative site types being a priority for government departments. Representativeness can be considered for sites within the state of New South Wales or within a specific region such as the Cumberland Plain. Site distribution across the landscape can also be considered.

  - ***Rarity:*** This value implies an understanding of the types of archaeological sites that are already known within the state or a particular region. If there are numerous other examples of a particular site in a region then a site may be considered common. In contrast, if there are few or no other examples of a particular site within a region, the site would be rare.

- **Aesthetic value:** This criterion relates to the visual beauty of the place. As such, different people may have vastly different aesthetic views on heritage sites. The Aboriginal Cultural Heritage Standards and Guidelines Kit recommends that archaeologists do not make an aesthetic significance judgement of Aboriginal sites or places because of the subjective nature of this type of assessment. A person with specialist skills in art history may be able to undertake this assessment.[42]

- **Educational value:** This criterion relates to the ability of the site to educate the general public about the Aboriginal past of the area. Educating the public on the Aboriginal past may be achieved through site tours, interpretive displays, public parks, lectures or through books, articles and other publications.

4.8.2 Cultural Significance

This area of assessment concerns the relationship and importance of sites/items to the Aboriginal community. Aspects of cultural significance include 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 may be important to the local Aboriginal community. 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 community.

This assessment details the six previously recorded sites (four artefact scatters, one isolated artefact and one PAD) and the five newly recorded artefact scatters as part of the current assessment.

Comments from Registered Aboriginal Stakeholders

Copies of this report have been sent to the Aboriginal stakeholders that register their interest in this project for comment. DACHA, DALI and DCAC have provided written responses following the site visit and issuing of the draft report. The written responses are presented in Appendix C and summarised below.

DACHA stated in their letter (dated 24 January 2011) that artefacts were located during the site visit from material manufactured from elsewhere and they further investigation should be undertaken on the property including the removal of overburden from the sandstone surface. DACHA would like to be involved in all fieldwork and consultation.

DALI's response (dated 22 December 2010) following the site visit (see Appendix C). The key points raised in the letter were for DALI to be informed of how the conservation zone will be protected due to most of the artefacts being located within it; to further explore the potential grinding groove; that visibility was low during the site visit due to long grass and that DALI would like to be consulted and take part of any removal of Aboriginal heritage or artefacts.

DCAC's stated in their letter (dated 24 January 2011) that Ropes Creek is a significant waterway to the Darug and the area of the creek is a continuos site. DCAC would like to the sandstone outcropping to be investigated further to see if there are grinding grooves. DCAC recommend conservation of land along the waterway and portion of the remainder as well as signage, interpretive walkways and Darug art where possible. DCAC state all artefacts are significant to them and they would like to be consulted on all sites and interpretation.

During the site visit the registered Aboriginal stakeholders were asked their views on the cultural significance of the property and landscape. In addition to the above written comments, the following verbal comments were received on site.

Des Dyer (from DALI) said he would like the sites to be kept within the conservation zone and he would like to see the creek left open and not blocked or dammed up (Des Dyer pers. com).

Gordon Morton (from DACHA) said he would like the possible grinding groove be investigated further to determine the nature and origin of the marks (Gordon Morton pers. com). There was general consensus amongst the stakeholders during the site visit on 21 December 2010 that this could be achieved by removing the grass and exposing the sandstone surface.

4.8.3 Preliminary Scientific/Archaeological/Research Significance

The artefact scatters previously identified on the subject land are described on the site cards as containing few artefacts and are of generally low integrity due to previous disturbance and erosion. The scientific significance of the PAD is currently unknown without further investigation. The four newly recorded artefact scatter sites (Ropes Creek AS 1-4) located as part of the current assessment were found eroding out of the natural drainage line bank and are generally considered to have low integrity and low research potential. These artefacts may, however, represent larger deposits of buried archaeological material; however this cannot be ascertained without further investigation.

4.8.4 Aesthetic Significance

The Aboriginal Cultural Heritage Standards and Guidelines Kit recommends that archaeologists do not make an aesthetic significance judgement of Aboriginal sites or places because of the

subjective nature of this type of assessment.[43] As such, no assessment was made of the sites under this criterion.

4.8.5 Education Value

The educational value of the sites is considered low, as they are not considered to hold much value for educational or interpretative purposes.

4.8.6 Summary of Preliminary Significance

The preliminary significance assessment of the site is summarised in Table 4.7 below. Note that this does not include the aesthetic significance as discussed in Section 4.8.4.

Table 4.7 Summary of the preliminary significance assessment of the previously recorded and newly recorded sites at Ropes Creek.

Site Number / Site Name	Cultural significance	Scientific/ archaeological/ research potential	Representativeness	Rarity	Educational value
45-5-0561 Blacktown Southwest 9 Colyton	No specific comment relating to this site.	Low	Similar to other sites	Common	Low
45-5-0562 Blacktown Southwest 10 Colyton	No specific comment relating to this site.	Low	Similar to other sites	Common	Low
45-5-3062 EP PAD 1	No specific comment relating to this site.	Unknown	Cannot be determined without further investigation.	Cannot be determined without further investigation.	Cannot be determined without further investigation.
45-5-3159 RCIF 2	No specific comment relating to this site.	Low	Similar to other sites	Common	Low
45-5-3163 RCAS 5	No specific comment relating to this site.	Low	Similar to other sites	Common	Low
45-5-3843 RCIF 1	No specific comment relating to this site.	Low	Similar to other sites	Common	Low
45-5-3936 Ropes Creek Artefact Scatter 4	No specific comment relating to this site.	Low	Similar to other sites	Common	Low
45-5-3937 Ropes Creek Artefact Scatter 3	No specific comment relating to this site.	Low	Similar to other sites	Common	Low

Site Number / Site Name	Cultural significance	Scientific/ archaeological/ research potential	Representativeness	Rarity	Educational value
45-5-3938 Ropes Creek Artefact Scatter 2	No specific comment relating to this site.	Low	Similar to other sites	Common	Low
45-5-3939 Ropes Creek Artefact Scatter 1	No specific comment relating to this site.	Low	Similar to other sites	Common	Low
NPW # TBC Ropes Creek Artefact Scatter 5	The sandstone outcrop should be investigated for potential grinding grooves.	Cannot be determined without further investigation.	Cannot be determined without further investigation.	Cannot be determined without further investigation.	Cannot be determined without further investigation.

4.9 Discussion of Aboriginal Archaeology on the Subject Land

In summary, the subject land contains six previously identified sites comprising four artefact scatters, one isolated artefact and one PAD. All of these are located in the northern half of the subject land. Of the sites containing artefacts, only two were relocated during the current survey, the others could not be relocated due to poor ground surface visibility from thick pasture grasses.

The current assessment located a further four artefact scatters along the drainage line that flows east to west through the centre of the subject land and one artefact scatter beside the drainage line in the southwest corner of the property. The existence of the previous sites and artefact scatters located during the current investigation reveals the subject land is sensitive for Aboriginal archaeological material and more artefacts may exist on the surface or in subsurface deposits.

Due to fields being covered in pasture grasses, the effective survey coverage was very low over the subject land, averaging just 6.5%. This meant that most of the property could not be adequately inspected for Aboriginal artefacts, which may exist on the surface but covered in grasses.

The areas that have moderate or high archaeological potential are as described below and should be subject to further investigation in the form of test excavation should earthworks occur in these areas:

- The Ropes Creek floodplain and adjacent lower slopes (Survey Unit One) have high potential for artefact deposits to exist, possibly in subsurface deposits, due to proximity of permanent water and the large number of sites previously recorded along Ropes Creek.
- The drainage lines, floodplain and adjacent lower slopes (Survey Unit Two) have moderate to high potential for artefact deposits to exist, possibly in subsurface deposits.

- The ridgeline in the north of the subject land (Survey Unit Three) due to low ground surface visibility during the site survey and proximity to permanent water (Ropes Creek) has moderate potential for further archaeological material to exist, possibly in subsurface deposits.
- The land in the southern part of the subject land away from the natural drainage lines (Survey Unit Five), due to the poor ground surface visibility during the site survey and proximity to permanent water, has moderate potential for further archaeological material to exist, possibly in subsurface deposits.
- The area of the sandstone platform in the northwest of the subject land has potential for grinding grooves and grinding surfaces.

The following areas have low potential for intact archaeological material and further archaeological work is not required:

- The rise in the east of the subject land, adjacent to the Western Sydney Substation (Survey Unit Four) and given the past disturbances in this unit, has low potential for intact archaeological material to exist.
- The drainage lines in the south-east of the subject land (Survey Unit Two) have been disturbed from the construction of a dam bank, ploughing and the construction of the Western Sydney Substation. These areas have low potential for intact artefact deposits to exist.

Areas of disturbance including the dam banks, the cattle yards in the northeast corner, land at the base of electricity towers and areas adjacent to the Western Sydney Substation are unlikely to contain intact archaeological deposits. Artefacts, if they exist in these locations are likely to comprise isolated artefacts or material not in situ. The landforms identified and areas of disturbance are shown in Figure 4.15 below.

Figure 4.15 Location of landforms found within the subject land. (Source: JBA with GML additions 2010)

4.10 Endnotes

1 *Aboriginal Land Rights Act 1983* (NSW), s52(1)(m).

2 Nanson, GC, Young, RW and Stockton, ED 1987, 'Chronology and palaeoenvironment of the Cranebrook Terrace (near Sydney) containing artefacts more than 40 000 years old', in *Archaeology in Oceania* 22(2), Sydney, p 76.

3 McDonald, J, Mitchell, P and Rich, E 1996, A Further Investigation of Site RS1 (45-5-892) at Regentville, Mulgoa Creek, Western Sydney, unpublished report, Sydney, p 33.

4 Foley, J 1986, An Archaeological Survey of 'Windbourne' at Mulgoa, unpublished report, Sydney.

5 Smith, L 1989, Interim Report: Site Survey and Site Analysis on the Cumberland Plain, report prepared for NSW National Parks and Wildlife Service, Sydney, p 2.

6 McDonald, Mitchell and Rich, 1996, op cit, p 115.

7 McDonald, J 2000, Archaeological Survey for Aboriginal Sites: Proposed Light Industrial Subdivision 'Austral Site' – Mamre Road, Eskine Park, NSW, unpublished report, Sydney, p 19.

8 Navin Office Heritage Consultants Pty Ltd 2003, Proposed 132kV Transmission line Erskine Park, NSW, Cultural Heritage Assessment, report for Integral Energy.

9 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.

10 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.

11 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.

12 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.

13 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.

14 Jo McDonald Cultural Heritage Management Pty Ltd. 2002a.

15 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.

16 Jo McDonald Cultural Heritage Management Pty Ltd 2008, Archaeological survey for Aboriginal sites: Horsley Park FP 392643A, NSW, Report prepared for the Worley Parsons Group On behalf of Jacfin Pty Ltd.

17 AMBS Consulting 2005, Aboriginal Heritage Assessment, Eastern Creek Sewer Carrier Route Realignment for Hyder Consulting Pty Ltd.

18 Appleton, J 2002, The Archaeological Investigation of Lot 2 DP 120673, the site of the proposed new clay and shale extraction area, Old Walgrove Road, Horsley Park, West of Sydney, NSW, unpublished report, Sydney, pp 24, 29.

19 Curran, N. 1997. Aboriginal Heritage Assessment. Lot 1 of DP 106143. Horsley Park, NSW. Report to CMPS&F Pty Ltd.

20 AHMS. 2005a. Emmuas Village, Kemps Creek, NSW. Aboriginal Archaeological Assessment. Report to Catholic Health Care Services Ltd.

21 AHMS. 2005b. Emmuas Village, Kemps Creek, NSW. Aboriginal Archaeological Test Excavation Report. Report to Catholic Health Care Services Ltd.

22 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.

[23] 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.

[24] ibid.

[25] 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.

[26] 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.

[27] Dallas, M 1988, Preliminary Archaeological Study: Luddenham Equestrian Centre, Luddenham Road, Erskine Park NSW, pp 1–26.

[28] Steele, D 2001, Archaeological Research Design for Three Sites within land between Luddenham & Mamre Roads Luddenham, NSW, unpublished report, Sydney, p 41.

[29] Steele, D 2004, Aboriginal Heritage Conservation Action Plan, Application for a Section 90 Heritage Impact Permit (Consent with Salvage & Collection), Twin Creeks Estate, Luddenham Road, Luddenham, NSW, unpublished report, Sydney, p 7.

[30] Dallas, M 1981, An Archaeological Survey at Riverstone, Schofields and Quakers Hill NSW, unpublished report, Sydney, pp 8–19.

[31] Jo McDonald Cultural Heritage Management Pty Ltd, 2008, Archaeological Assessment of Indigenous Heritage Values in the Western Precinct of the St Marys Sites, Site Marys, unpublished report, Sydney, pp i–43.

[32] McCarthy, F 1948, The Lapstone Creek Excavation: Two Culture Periods Revealed in Eastern NSW, Records of the Australian Museum 22, Sydney, pp 1–34.

[33] McCarthy, F 1964, The Archaeology of the Capertee Valley, New South Wales, records of the Australian Museum 26, Sydney, pp 197–246.

[34] McCarthy, F 1976, Australian Aboriginal Stone Implements, The Australian Museum Trust, Sydney, pp 96–97.

[35] Stockton, ED and Holland, WH 1974, 'Cultural Sites and their Environment in the Blue Mountains', in *Archaeology and Physical Anthropology in Oceania* 9(1), Sydney, pp 36–65.

[36] Attenbrow, op cit, pp 153–159.

[37] DECCW, online aboriginal site information: <http://www.environment.nsw.gov.au/nswcultureheritage/OtherSites.htm> Accessed 16 October 2008.

[38] ibid.

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

[40] NSW National Parks and Wildlife Service 1997, Aboriginal Cultural Heritage Standards and Guidelines Kit, Working Draft, Aboriginal Heritage Division, NSW National Parks and Wildlife Service, p 21.

[41] Department of Environment, Climate Change and Water NSW, 2010, 'Aboriginal cultural heritage consultation requirements for proponents 2010', Sydney, p 2.

[42] NSW National Parks and Wildlife Service 1997, op cit, p 29.

[43] NSW National Parks and Wildlife Service 1997, op cit, p 29.

5.0 Non-Indigenous Heritage Assessment

5.1 Introduction

This section discusses potential non-Indigenous heritage issues at the site, including built heritage, the site's historical archaeological potential and a significance assessment. This non-Indigenous heritage assessment is based on consideration of background historical information about the site, a review of heritage listings for the site and the surrounding area, and a site inspection conducted on 29 July 2010.

5.2 Desktop Review

5.2.1 Search of Heritage Registers

Heritage items within the subject land

The following heritage registers were searched to identify any previously recorded heritage items within the subject land or in the vicinity of the subject land:

- State Heritage Inventory (Heritage Branch, Department of Planning);
- State Heritage Register (Heritage Branch, Department of Planning);
- Blacktown Local Environmental Plan 1988;
- the National Heritage List (Department of Environment, Water, Heritage and the Arts);
- the Commonwealth Heritage List (Department of Environment, Water, Heritage and the Arts); and
- the Register of the National Estate(Department of Environment, Water, Heritage and the Arts).

These searches revealed that the subject land is not located in a Conservation Area and there are no heritage items within it.

Heritage Items in the vicinity of the subject land

The following heritage item is included in Schedule 2—Heritage Items of BLEP 1988 and is located in the vicinity of the subject site:

- House, Southridge, Eastern Creek, Old Wallgrove Road (No. 21).

Figure 5.1 shows the approximate location of this item.

5.2.2 Review of Documentary Evidence

The documentary evidence does not indicate any specific development or activities within the study area that would give rise to substantial archaeological evidence. Development across the site appears to have been limited to timber felling and general farming and possible land management practices such as crop raising, stock grazing, and possible associated features such as fencelines, sheds, dams, tracks, and rubbish dumps. While evidence of these may survive across the landscape (eg post-holes, shed footings, former track surfaces, rubbish dumps, and archaeological evidence), such remains would probably be fragmentary and it would be difficult to predict the

location and extent of this evidence. There is, therefore, low potential for historical archaeological resources to exist within the subject site.

5.3 Built and Landscape Elements

There are no standing structures on the site and no landscape features were identified that would be considered to have heritage significance. The remains of an old bridge crossing on an unnamed tributary of Ropes Creek was noted during the field survey. This feature does not reach the threshold where it would be considered significant under any heritage assessment criteria.

5.4 Potential Archaeological Resource

5.4.1 Potential Remains—General Observations

The limited occupation and development of the subject land throughout its non-Indigenous history is unlikely to have resulted in any substantial archaeological evidence that could be clearly associated with specific activities or phases of the site's history. Any such evidence would be likely to be limited to the following:

- postholes—associated with former fencelines or timber structures such as sheds or stables;
- former tracks/roads/paths—evidence associated with former thoroughfares or hardstand areas, including packed earth or cobbled/paved surfaces;
- artefact scatters—associated with incidental use of the site during various phases of its history (land clearing, stock management, temporary camp sites, rubbish dumps);
- pits—associated with rubbish dumping or carcass disposal; and
- dams or irrigation/drainage channels—associated with land and stock management throughout various phases of the site's history.

Given the limited amount of documentary evidence about how the site was used throughout its history, the location and extent of any such evidence would be difficult to predict. Owing to the generic nature of this evidence (that is, it relates to general agricultural activities and would probably be difficult to associate with specific phases or individuals in the site's history), it would have limited research potential as it would be unlikely to contribute substantial information about the site's history or development.

5.4.2 Site Inspection

Given that the documentary evidence compiled as part of this study does not provide any reference to particular historical development at the site, or features or activities that would give rise to specific archaeological evidence, the site inspection comprised a general observation of the site to take note of any features or other visible evidence indicating areas of archaeological potential, as well as any evidence of disturbance across the site that would affect the survival of any archaeological remains.

There was no noticeable disturbance to topsoil other than probable locations of cattle feeders. There was evidence of modern ploughing; however, no historical archaeological remains were observed during the site inspection.

5.4.3 Summary of Non-Indigenous Archaeological Potential

The subject land has been used primarily for stock grazing throughout its non-Indigenous history, and possibly as part of the Chatsworth nursery supplying stock to an inner city nursery. There has been little recorded development or occupation since the area was first granted in 1819 to John Campbell. The subject land has little potential to contain archaeological remains associated with the site's history and development other than generic or incidental evidence associated with its agricultural use.

On the basis of the findings of this study, the subject land is considered to have little or no historical archaeological potential and little or no research potential.

5.5 Significance Assessment—Non-Indigenous Heritage

5.5.1 Principles

The concept of 'cultural significance' or 'heritage value' embraces the value of a place or item that cannot be expressed solely in financial terms. Assessment of cultural significance endeavours to establish why a place or item is considered important and is valued by the community. Cultural significance is embodied in the fabric of the place (including its setting and relationship to other items), the records associated with the place, and the response that the place evokes in the community.

The assessment of cultural significance with respect to archaeological sites is more difficult, in that the nature and extent of the features is sometimes unknown, and it becomes necessary for value judgements to be formulated on the basis of expected or potential attributes. The element of judgement can be greatly aided by historical or other research, as has been carried out in this and earlier studies.

Archaeological deposits and features provide important evidence of the history and settlement of New South Wales. Archaeological sites may include stratified deposits of material culture which can be analysed to yield information about the history of the colony and state, which is unavailable from documentary sources alone. Archaeological investigations can reveal much about technologies, economic and social conditions, taste and style. The features and artefacts extracted and recorded can provide primary evidence about the way of life of previous generations through examination of structural features, artefacts and deposits. Archaeological sites that contain these elements therefore have a high scientific value. This value can be further enhanced where there is a substantial body of supporting documentary evidence that enables further inference to be drawn from the archaeological records. It is through this potential for revealing information that the heritage significance of archaeological sites occurs.

5.5.2 Basis of Assessment

Bickford and Sullivan Questions

The NSW Heritage Criteria are not specifically tailored to address the significance of archaeological sites, and historical archaeological sites in particular. This is a matter that has been considered in an influential paper by Bickford and Sullivan, published in 1984.[1] Bickford and Sullivan draw attention to the dilemma faced by archaeologists and developers in connection with sites that are to be destroyed as a result of development, and discuss effective means of assessing those sites' heritage values, applying the following three questions:

- Can the site contribute knowledge that no other resource can?
- Can the site contribute knowledge that no other site can?
- Is this knowledge relevant to general questions about human history or other substantive questions relating to Australian history, or does it contribute to other major research questions?

Heritage Branch Guidelines for Assessing Significance related to Archaeological Sites and Relics

Use of the Bickford and Sullivan questions will provide basic but essential information. However, particular questions framed around the current NSW Heritage Criteria build upon that essential information to allow consideration of how an individual archaeological site or relic may be assessed in its own right. Part of the significance assessment of the subject sites archaeological resource is carried out by applying a range of criteria expressed in the publication 'Assessing Significance for Historical Archaeological Sites and Relics' prepared by the Heritage Branch, Department of Planning (NSW) in December 2009.[2] This guideline has adopted criteria for assessing significance related to non-Indigenous archaeological sites and relics. Significance assessments address the following criteria:

- Archaeological Research Potential (current NSW Heritage criterion E)
- Association with individuals, events or groups of historical importance (NSW Heritage Criteria A, B, & D)
- Aesthetic or technical significance (NSW Heritage Criterion C)
- Ability to demonstrate the past through archaeological remains (NSW Heritage Criteria A, C, F & G)

5.5.3 Significance Assessment—Bickford and Sullivan Questions & Heritage Branch Guidelines

Given the absence of any structures or features of potential heritage significance at the site, as well as the limited potential for the site to contain historical archaeological evidence that could contribute substantial information about the site's history, a detailed assessment of the significance of the site's non-Indigenous cultural heritage resource—against Bickford and Sullivan's questions and the Heritage Branch guidelines for assessing significance related to archaeological sites and relics—has not been prepared. The site's heritage significance has been summarised below.

5.5.4 Summary Statement of Significance

European settlement of the region began c1819, with a number of large land grants at this time, including the subject land. The subject land appears to have been primarily used for stock grazing (horses and cattle) throughout the nineteenth and twentieth centuries. During the mid-nineteenth century to the early twentieth century the site was possibly in use as part of a large nursery and was being used for timber getting in the mid-twentieth century. There has been little recorded development or occupation throughout this time.

The site does not contain any identified heritage items, or other standing structures or features that would be considered to have any heritage significance.

The subject land has little potential to contain archaeological remains associated with the site's history and development other than generic or incidental evidence associated with its agricultural and possible nursery use. The subject land is considered to have little or no historical archaeological potential and little or no research potential. Any historical archaeological evidence that does survive at the site would be considered to be of Local significance.

Figure 5.1 Location of heritage item (red dot) in vicinity of the study area (outlined in red). The red dot indicates the location of a house listed on Schedule 2 of the BLEP 1988. (Source: Google Map with additions by GML 2010).

5.6 Endnotes

1 Bickford, A and Sullivan S 1984, 'Assessing the Research Significance of Historic Sites', in Sullivan, S and S Bowdler (eds) *Site Surveys and Significance Assessment in Australian Archaeology* (Proceedings of the 1981 Springwood Conference on Australian Prehistory), Department of Prehistory, Research School of Pacific Studies, The Australian National University, Canberra, pp 19–26.

2 Heritage Branch, Department of Planning 2009, *Assessing Significance for Historical Archaeological Sites and 'Relics'*, Heritage Council of NSW.

6.0 Impact Assessment of Stage One Project Application and Concept Plan

6.1 Ropes Creek Employment Precinct

The Lot 5 DP 262213, Ropes Creek Employment Precinct—Stage One Project Application and Concept Plan contain the following features:

- Assessment of the impact on the Concept Plan;
- Stage 1 Project Application building sites;
- Indicative Building Footprints;
- Regional Road One;
- Temporary Access Road;
- Local Road One;
- Local Road Two;
- Local Road Three;
- Indicative Internal Access Road;
- Permanent Access Road to be provided when Link Road is operational;
- Potential Service Centre Location;
- Existing Pylons with 15m setback zones; and
- E2 Environmental Conservation Zone along Ropes Creek, across the site in the northern and south-western areas.

The Stage One Project Application and Concept Plan preliminary layout is shown in Figure 6.1.

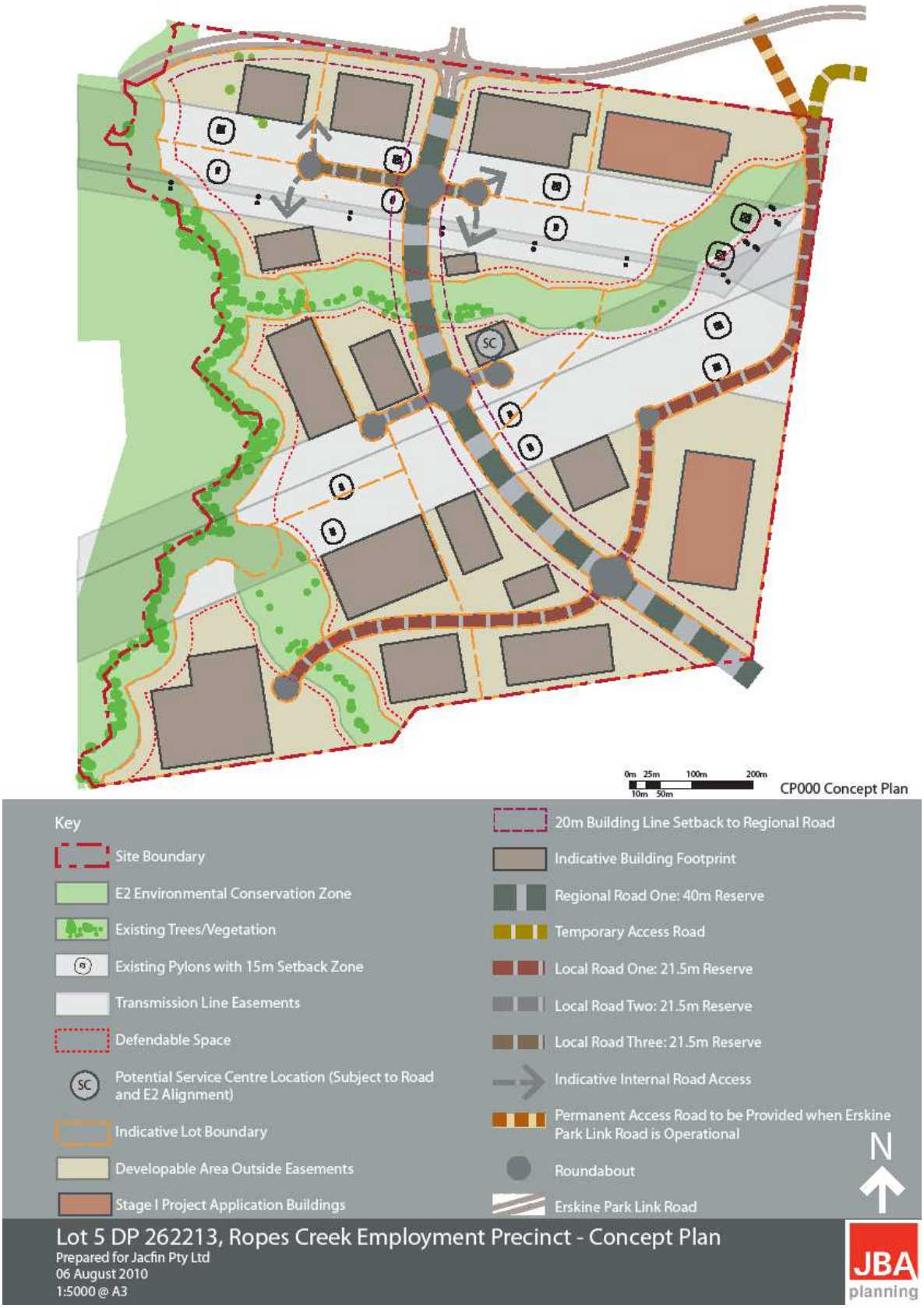

Figure 6.1 Lot 5 DP 262213, Ropes Creek Employment Precinct Park Concept Plan. (Source: JBA, 6 August 2010)

6.2 Impacts on Indigenous Heritage from the Concept Plan and Stage One Project Application Buildings

6.2.1 Concept Plan

Aboriginal heritage over the balance of the Concept Plan area not included in the Stage One Project Application, including the other recorded sites (45-6-0561, 45-5-0562, 45-5-3062, 45-5-3159, 45-5-3163) and the newly recorded sites (45-5-3936, 45-5-3937, 45-5-3938, 45-5-3939, Ropes Creek AS 5 – NPW # to be confirmed) and areas of archaeological potential can be managed by:

- the preparation of an Aboriginal Heritage Management Plan (AHMP) for the precinct, including both development land and E2 zones prior to the commencement of future development on the subject land beyond the Stage 1 application area. The AHMP will include a proposal for test excavation in areas identified as having moderate to high potential for archaeological deposits at locations that will be disturbed by proposed earth works of the development as well as the area of sandstone outcropping in the northwest corner of the property. The AHMP would need to be reviewed by registered Aboriginal stakeholders in accordance with Part 3A development conditions; or

- the undertaking and submission of Aboriginal Heritage Impact Assessments with each future project application.

6.2.2 Stage One Project Application

The Stage One Project Application Building in the north-east corner of the site (Warehouse Building 2) is on the location of the previously recorded site 45-5-3843 (RCIF 1). The existence of this site was confirmed during the current assessment and was found to be disturbed through ploughing and the mulching of vegetation at this location. Given this site has low integrity and low scientific value; it is recommended that the client notify Department of Planning and DECCW to disturb/destroy this site through the Part 3A process.

To mitigate this impact, the artefacts on the surface should be collected prior to earthworks in this area. Agreement should be reached with the local Aboriginal community to find a suitable safe location to deposit any collected artefacts, such as relocation within a conservation zone, deposited with the Australian Museum or with a local Aboriginal community for safe keeping.

The Stage 1 Project Application Building in the south-east corner of the site (Warehouse Building 1) is at the location of an area identified as low potential for intact artefact deposits to exist. No artefacts were located on the surface at this location. No further archaeological work is recommended in this specific location.

6.3 Impacts on Non-Indigenous Heritage

This assessment did not identify any significant non-Indigenous heritage on the subject land.

In the unlikely event that unexpected archaeological evidence relating to non-Indigenous occupation of the site not identified by this assessment were to be discovered during site works, NSW Department of Planning should be notified.

7.0 Conclusions and Recommendations

7.1 Indigenous Heritage

7.1.1 Conclusions

- A search of the AHIMS register revealed six previously recorded sites for the subject land comprising four artefact scatters, one isolated artefact and one Potential Archaeological Deposit (PAD). In the surrounding search area of 4km x 4km, 46 sites have been previously recorded. Two of these sites were relocated during the current assessment; the other sites could not be relocated due to the dense grassy vegetation.
- Aboriginal community consultation for this project was initiated by GML in July 2010. Six organisations registered their interest in this project.
- The site visits in July 2010 located four previously unrecorded artefact scatters (Ropes Creek AS 1 - 4) along the drainage line which begins in the north-east corner of the site and flows west to meet Ropes Creek.
- The site visit on 21 December 2010 located a further, one previously unrecorded artefact scatter (Ropes Creek AS 5) along the drainage line in the southwest corner of the property. One possible grinding groove was located in the northwest corner of the subject land.
- The survey found most of the land was covered in pasture grasses which made ground surface visibility and effective survey coverage extremely low. Due to the pasture grasses, there was little opportunity to locate artefacts on the surface.
- Based on the review of previously recorded sites in the area, landform analysis and results of the survey, Ropes Creek floodplain and adjacent lower slopes were considered to have high potential for archaeological deposits to exist, possibly in subsurface deposits.
- The drainage lines, floodplain and adjacent lower slopes have moderate to high potential for artefact deposits to exist, possibly in subsurface deposits.
- The ridgeline in the north of the subject land, due to low ground surface visibility during the site survey and proximity to permanent water (Ropes Creek) has moderate potential for further archaeological material to exist, possibly in subsurface deposits.
- The land in the southern part of the subject land away from the natural drainage lines, due to the poor ground surface visibility during the site survey and proximity to permanent water, has moderate potential for further archaeological material to exist, possibly in subsurface deposits.
- The drainage lines in the south-east of the subject land have been disturbed from the construction of a dam bank, ploughing and the construction of the Western Sydney Substation. These areas have low potential for artefact deposits to exist.
- The rise in the east of the subject land, adjacent to the Western Sydney Substation and given the past disturbances in this unit, has low potential for further archaeological material to exist.

- The Ropes Creek Employment Precinct Stage One Project Application Building in the north-east corner of the subject land will impact on a previously recorded artefact scatter (45-5-3843).
- The Ropes Creek Employment Precinct Stage One Project Application Building in the south-east corner of the subject land will impact an area identified as having low archaeological potential, thus no further archaeological work is recommended at this location.

7.1.2 Recommendations

Based on the findings of this investigation and the requirements of the *National Parks and Wildlife Act 1974* and Part 3A of the *Environmental Planning and Assessment Act 1979,* the following management recommendations are made for the subject land:

1. Stage One Application Building in North-East Corner of Subject Land

The Stage One Project Application Warehouse Building 2 is on the location of the previously recorded site 45-5-3843 (RCIF 1). The existence of this site was confirmed during the current assessment and was found to be disturbed through ploughing and the mulching of vegetation at this location. Given this site has low integrity and low scientific value, it is recommended that the client notify Department of Planning and DECCW to disturb/destroy this site through the Part 3A process.

To mitigate this impact, the artefacts on the surface should be collected prior to earthworks in this area. A care agreement should be reached with the local Aboriginal community to find a suitable safe location to deposit any collected artefacts, such as relocation within a conservation zone, deposited with the Australian Museum or with a local Aboriginal community for safe keeping.

2. Stage One Application Building in South-East Corner of Subject Land

The Stage 1 Project Application Building in the south-east corner of the site (Warehouse Building 1) is at the location of an area identified as low potential for intact artefact deposits to exist. No artefacts were located on the surface at this location. No further archaeological work is recommended at this specific location.

3. Test Excavation Program

To mitigate the impact from the proposed development, archaeological investigation in the form of a test excavation program should be undertaken at the locations identified as having moderate or high archaeological potential to determine the presence and extent of buried archaeological material. The area of the sandstone outcropping in the northwest of the subject land should also be investigated at this time to determine the origin, nature and extent of the markings prior to construction in this area. If the markings are found to be Aboriginal in origin, the site should be registered with DECCW and conservation should be considered. An Archaeological Research Design (ARD) should be developed prior to the test excavation and presented to the registered Aboriginal stakeholders for review and comment. It is recommended that the test excavation methodology should follow the DECCW 'Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales'. Should highly significant archaeological deposits or material be discovered during the test excavation program, a program of salvage excavation *or in situ* conservation of material may be appropriate. If Aboriginal objects are located during the test excavation program, the finds should be reported to DECCW under Section 91 of the *National Parks and Wildlife Act* 1974.

4. Aboriginal Heritage Management

Concurrently to the test excavation program, Aboriginal heritage over the balance of the Concept Plan area, including the other recorded sites (45-6-0561, 45-5-0562, 45-5-3062, 45-5-3159, 45-5-3163, 45-5-3936, 45-5-3937, 45-5-3938, 45-5-3939 and Ropes Creek AS 5 [NPW Site # TBC]) and areas of archaeological potential can be managed by:

- the preparation of an Aboriginal Heritage Management Plan (AHMP) for the precinct, including both development land and E2 zones prior to the commencement of future development on the subject land beyond the Stage 1 application area. The AHMP would need to be reviewed by registered Aboriginal stakeholders in accordance with Part 3A development conditions; or
- the undertaking and submission of Aboriginal Heritage Impact Assessments with each future project application.

5. Unexpected Discovery of Further Aboriginal Objects

Should Aboriginal objects be identified during any stage of development of the subject land, works must stop and a suitably qualified archaeologist should be called in to document and assess the finds. The finds should be reported to DECCW and advice sought on the management of the object(s).

6. Unlikely Discovery of Human Remains

In the unlikely event that human remains are discovered during any development works on the property, the findings should immediately be reported to the New South Wales Coroner's Office and/or the New South Wales Police. If the remains are suspected to be Aboriginal, DECCW should also be contacted and a specialist should be consulted to determine the nature of the remains.

7. Reports

Copies of this report have been forwarded to the Aboriginal stakeholders who have registered an interest in this project for comment. Cultural assessments and comments received from these organisations have been included in this report in Appendix C.

One paper copy and one electronic (PDF) copy of the final report should be forwarded to:

The Registrar
Aboriginal Heritage Information Management System
NSW Department of Environment, Climate Change and Water
PO Box 1967
HURSTVILLE NSW 2770

7.2 Non-Indigenous Heritage

7.2.1 Conclusions

- The subject land has been used primarily for stock grazing and also as part of a possible nursery and for timber getting throughout its European history, with little recorded development or occupation throughout this time.

- There are no structures or other features within the subject land that would be considered to have heritage significance.
- The subject land has little potential to contain historical archaeological remains associated with the site's history and development other than generic or incidental evidence associated with its agricultural use, nursery use or timber getting use.
- On the basis of the findings of this study, the subject land is considered to have little or no historical archaeological potential, with little or no research potential. Any historical archaeological evidence that does survive at the site would be considered to be of Local significance.

7.2.2 Recommendations

- As no heritage items have been identified within the subject land there would be no requirements for any further approval from the Heritage Branch, Department of Planning, on non-Indigenous (historical) archaeological grounds to develop this site.
- In the unlikely event that unexpected archaeological evidence relating to non-Indigenous occupation of the site not identified by this assessment was to be discovered during site works, NSW Department of Planning should be notified.