Aboriginal & Historical Archaeological Assessment

Bringelly Road Business Hub

Bringelly and Stuart Roads, Bringelly, New South Wales

Report to

Western Sydney Parklands Trust

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30 November 2014

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Document Control

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Glossary and Abbreviations

Aboriginal Archaeological & Cultural Heritage Assessment (AACHA)	A document to assess archaeological and cultural values of an area.
Aboriginal Cultural Heritage Consultation Requirements for Proponents 2010	Guidelines developed by OEH to guide formal Aboriginal community consultation undertaken as part of an Aboriginal Cultural Heritage Assessment (ACHA).
Aboriginal Heritage Impact Permit (AHIP)	Statutory instrument that the Director General of the Office of Environment and Heritage (OEH) issues under Section 90 of the National Parks and Wildlife Act 1974 to allow the investigation (when not in accordance with certain guidelines), impact and/or destruction of Aboriginal objects.
Aboriginal object	A statutory term defined under the NPW Act 1974 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'.
AHIMS Aboriginal Heritage Information Management System (AHIMS)	The Office of Environment & Heritage (OEH) maintains the Aboriginal Heritage Information Management System (AHIMS) which includes information about Aboriginal objects/sites and Places.
Alluvial	Pertaining to sediment deposited from transport by channelled stream flow or overbank flow.
Artefact	Any product made by human hands or caused to be made through human actions.
Archaeological Potential	The likelihood of undetected surface and/or subsurface archaeological materials existing at a location.
B.P.	Before Present. The 'Present' is defined as 1950.
Burra Charter	The Burra Charter provides guidance for conservation and management of places of cultural significance and sets a standard of practice for the management of places of cultural significance. The most recent version of the Burra Charter was adopted by Australia ICOMOS in 1999.
Due Diligence Code of Practice for the Protection of Aboriginal Objects in NSW	Guidelines developed by OEH, outlining the first stage of a two stage process in determining whether Aboriginal objects and/or areas of archaeological interest are present within a subject area. The findings of a due diligence assessment may lead to the development of an AACHA.
Effective (survey) Coverage	A quantifiable estimate of the area in which archaeological materials are 'detectable' (exposed ground surface area).
Environmental Assessment (EA)	Document summarising the assessment of environmental impacts of a development which supports an application for approval under Part 3A of the Environmental Planning and Assessment Act 1979.
Environmental Planning and	Statutory instrument that provides planning controls and requirements for

Assessment Act 1979	environmental assessment in the development approval process. The Act is administered by the DPI.
Guide to Investigating, Assessing and Reporting on Aboriginal Cultural Heritage	Guidelines developed by OEH to inform the structure and content of an Aboriginal Cultural Heritage Assessment (ACHA).
In Situ	In situ refers to the (natural or) original position an artefact (or archaeological) deposit was originally formed or deposited.
Isolated Find	An isolated find is usually considered a single artefact or stone tool, but can relate to any product of prehistoric Aboriginal societies. The term "object" is used in the ACHA, to reflect the definitions of Aboriginal stone tools or other products in the National Parks and Wildlife Act 1974.
Lower Slope	Slope element not adjacent below a crest or flat but adjacent above a flat or depression (Speight 2009: 21).
Mid Slope	Slope element not adjacent below a crest or flat and not adjacent above a flat or depression (Speight 2009: 21).
National Parks & Wildlife Act 1974	Primary piece of legislation for the protection of Aboriginal cultural heritage in NSW. Part 6 of this Act outlines the protection afforded to and offences relating to disturbance of Aboriginal objects.
Office of Environment and Heritage (OEH)	The OEH is responsible for managing the Aboriginal Heritage (and other) provisions of the National Parks and Wildlife Act 1974.
Pleistocene	The geological period equivalent to the last ice age and preceding the Holocene from c. 2 million years to 10,000 years B.P. The Late Pleistocene generally refers to the period of time from 40,000 – 10,000 years ago.
Potential Archaeological Deposit (PAD)	Areas assessed as having the potential to contain Aboriginal objects. PADs are commonly identified on the basis of landform types, surface expressions of Aboriginal objects, surrounding archaeological material, disturbance, and a range of other factors. While not defined in the National Parks and Wildlife Act 1974, PADs are generally considered to retain Aboriginal objects and are therefore protected and managed in accordance with that Act.
Proponent	A corporate entity, Government agency or an individual in the private sector which proposes to undertake a development project.
RAP	Registered Aboriginal Party.
Taphonomy	The study of the processes that have acted on an archaeological site to make it as it appears today.
Upper Slope	Slope element adjacent below a crest or flat nut not adjacent above a flat or depression (Speight 2009: 21).
Visibility	The degree to which the surface of the ground can be observed and may be influenced by natural processes such as wind erosion or the character of the native vegetation, and by land use practices.

Executive Summary

The *Western Sydney Parklands Trust* (Trust) proposes to develop a new business park on an approximately 20 hectare parcel of semi-rural farm land at Bringelly to be known as the *Bringelly Road Business Hub* (BRBH). The proposal is a State Significant Development being assessed under *the Environmental Planning and Assessment Regulation 2000.*

This *Aboriginal and Historical Archaeological Assessment* has been prepared for the Trust to address the key Aboriginal and historic archaeological and cultural heritage issues that form a part of *NSW Department of Planning & Infrastructure's Director-General's Requirements* that have been issued for the project. This report also identifies potential heritage constraints of all periods and types that may exist on the site and makes recommendations for how the proposed BRBH development can be appropriately managed to avoid or to mitigate at a minimum future heritage impacts to acceptable levels. The proposed BRBH site redevelopment is likely to either destroy or significantly disturb any potential archaeological resources on the land.

No historical archaeological sites or items occur on the BRBH land that are listed on any State or local heritage register or schedule, and historical research also suggests that no (recorded) significant activity or event occurred on the land that is particularly remarkable in the local landscape that will have created an archaeological record, and the place retains at best low archaeological potential. This evaluation is also based on the observation the land has been considerably impacted upon by ongoing agricultural use and is unlikely to yield a significant sample of archaeological material of sufficient integrity that can provide us with substantial new information that may not be able to be sourced from other documentary-based avenues of research.

It is therefore assessed that the BRBH proposal is unlikely to have an adverse impact upon the European archaeological heritage values of the place and that no historical archaeological constraints to the redevelopment of the land have been identified by this report to restrict the BRBH proposal proceeding as planned.

Aboriginal community consultation for the BRBH project has been undertaken in accordance with DECCW's (OEH) *Aboriginal Cultural Heritage Consultation Requirements for Proponents 2010.* Current archaeological visibility conditions across the BRBH site are extremely limited because of the nature of the extensive grass cover across the site where few ground exposures are evident, and these conditions have precluded the completion of an effective surface survey and assessment of the land with the project Registered Aboriginal Parties (RAP's). This largely explains why no Aboriginal archaeological sites or objects have been located on the site to date. However, the BRBH land has been identified through consultation with the RAP's to have value to the local Aboriginal community, and the BRBH landscape archaeological assessment that is reported here illustrates while the

predominant landform units on the site are slopes of some form, the topography of the property also includes a number of areas of flat to gently sloping ground or what could be termed as 'site favourable' locations that may have attracted camping and/or been suitable for repeated or extensive use by Aboriginal people in the past. The nature, frequency and duration of the potential Aboriginal landuse of the study area is however presently unknown, and it is likewise unclear whether past Aboriginal visitation and use of the site has been of sufficient repetition and type to create archaeological deposits that have survived accumulated historical agricultural impacts including timber felling and stump removal, market garden planting and ploughing, and dam excavation and drainage works.

Test excavation of selected landforms within the study area would be required to establish whether Aboriginal archaeology occurs on the BRBH land and to assess its potential archaeological (scientific) and cultural heritage significance because no surface indicators are available at present to refine the desktop archaeological assessment presented here. The aim of the recommended test excavations would be to collect through sub-surface testing sufficient information about the nature and extent of Aboriginal objects and deposits on the land from an appropriate landscape and landform sample, to establish the nature, distribution and significance of any Aboriginal archaeological objects or features present, and to determine whether the results of testing are similar to the results that have been reported elsewhere from previous archaeological excavations in the local landscape. The results of testing would be used to help decide future management options and harm mitigation measures for the BRBH site.

In this regard it is recommended that:

- A copy of this report should be forwarded to the *NSW Office of Environment and Heritage* (OEH) in support of an application for an *Aboriginal Heritage Impact Permit* (AHIP) under Section 90 of the *National Parks and Wildlife Act 1974* to manage the potential BRBH Aboriginal archaeological resource(s). The AHIP should be supported by a Research Design and Excavation Methodology using the current document as a baseline and following Aboriginal consultation that would be undertaken in accordance with the Office of Environment and Heritage (OEH) consultation guidelines.

Report Contents

Supporting Documentation

Appendix 1: Public Notice

Appendix 2: Stakeholder Notification Correspondence

Appendix 3: AHIMS Site Searches

Appendix 4: Aboriginal Community Correspondence and Consultation Schedule

Appendix 5: Land Ownership Details

Appendix 6: Geotechnical Bore Hole Data

Appendix 7: OEH Due Diligence Flow Chart

1.0 Introduction

1.1 Background

The *Western Sydney Parklands Trust* (Trust) proposes to develop a new business park to be known as the *Bringelly Road Business Hub* (BRBH) on an approximately 20 hectare parcel of semi-rural land on the corner of Stuart and Bringelly Roads at Bringelly, New South Wales (**Figures 1.1** and **1.2**). The project is being undertaken according to the Trust's functions under the *Western Sydney Parklands Act 2006* and the *Western Sydney Parklands Plan of Management 2020,* and is being assessed as a State Significant Development under *the Environmental Planning and Assessment Regulation 2000.*

This *Aboriginal and Historical Archaeological Assessment* has been prepared for the Trust to address the key Aboriginal and historic archaeological and cultural heritage issues that form a part of *NSW Department of Planning & Infrastructure's Director-General's Requirements* (DGR's) that have been issued for the project (dated 14 April 2014). In doing so, this assessment also identifies potential archaeological heritage constraints of all periods and types that may exist for the proposal and provides recommendations for how the future redevelopment of the land can be appropriately managed to avoid and/or mitigate any future heritage impacts to acceptable levels.

1.2 The BRBH Development Proposal

The proposed BRBH site comprises a number of adjoining land parcels on the northern side of Bringelly Road and their existing layout and condition are illustrated in **Figure 1.3**. Proposed future lot layout plans are provided by **Figures 1.4** and **1.5**, and future uses for the land will include:

- Lot subdivision and provision of site infrastructure (estate roads and stormwater).
- The development of lots for predominately retail warehousing facilities with service centres with the potential for some light industrial uses.
- The demolition of existing site structures, which include a number of private residences and their ancillary buildings, fencing, farm dams, and associated structures and services.
- Bulk and detailed earthworks across the site to create level building pads for the future development.

1.3 The Project DGRs for Heritage

The DGR's key heritage requirements that are addressed in this report are as follows:

19. Heritage

Provide a Statement of Significance including field surveys and an assessment of the impact on the heritage significance of any items and/or conservation areas should be undertaken in accordance with the guidelines in the NSW Heritage Manual by a qualified practitioner/consultant with historic sites experience.

Note: Provisions of the Division 9 of the NSW Heritage Act 1977 may require an excavation permit for excavation of archaeological relics.

Address Aboriginal heritage in accordance with the Draft Guidelines for Aboriginal Cultural heritage Impact Assessment and Community Consultation (2005) and Aboriginal Cultural heritage Requirements for Proponents (DECCW 2010). Impacts to Aboriginal cultural heritage must be avoided or adequately mitigated (in consultation with Aboriginal stakeholders).

20. Archaeological Impacts

If relevant, an archaeological study is to be carried out on the site to identify any European and/or Aboriginal archaeological impacts associated with the proposal. Address recommendations in any archaeological zoning plan or management plan held by Liverpool Council.

1.4 Statutory Heritage Context and Controls

1.4.1 Commonwealth Legislation

Environment Protection and Biodiversity Act (1999)

The *Commonwealth Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) took effect in 2000. Under Part 9 of the Act, any action that is likely to have a significant impact on a matter of National Environmental Significance (known as a controlled action under the Act) may only progress with approval of the Commonwealth Minister of the *Department of Environment, Water, Heritage and the Arts*. An action is defined under the Act as a project, development, undertaking, activity (or series of activities), or alteration. An action will also require approval if:

- It is undertaken on Commonwealth land and will have or is likely to have a significant impact.
- It is undertaken outside Commonwealth land and will have or is likely to have a significant impact on the environment on Commonwealth land.
- It is undertaken by the Commonwealth and will have or is likely to have a significant impact.

The Act defines 'environment' as both natural and cultural environments, and includes the consideration of Aboriginal and historic cultural heritage sites and items. Under the Act, protected heritage items are listed on the National Heritage List or the Commonwealth Heritage List which have replaced the Register of the National Estate (RNE). While the RNE has been suspended and is no longer a statutory instrument, Section 391A of the Act requires the Minister to consider RNE listing if a referral is made. This requirement expires in 2012, by which time all RNE listings are to be transferred to a relevant heritage register. Items on the RNE can have a variety of statuses, including Registered (if it is inscribed on the Register) and Indicative (if it is on the database, but no formal nomination has been received or an assessment has not been completed).

The heritage registers mandated by the EPBC Act have been consulted for the current project and this search indicates that there are no Aboriginal or European heritage sites or items identified within the study area.

The Native Title Act 1993

The *Native Title Act 1993* establishes the principles and mechanisms for the preservation of Native Title for Aboriginal people. Native title claimants can negotiate about some proposed developments over land and waters (known as 'Future Acts'), if they have the right to negotiate. Claimants gain the right to negotiate if their native title claimant application satisfies the registration test conditions.

A search of the National Native Title Register, the Register of Native Title Claims, and the Register of Indigenous Land Use Agreements for the project indicates there are no lands determined to have native title, no registered native title claims, or indigenous land use agreements that apply to the subject site or its immediate vicinity.

1.4.2 State Legislation and Heritage Controls

Statutory Protection for Aboriginal Cultural Heritage in NSW

Two principal pieces of legislation provide statutory protection for Aboriginal heritage and the requirements for its management in New South Wales. Both pieces of legislation have been amended in recent years. This legislation comprises:

- The *National Parks and Wildlife Act 1974* (as amended); and
- The *Environmental Planning and Assessment Act 1979* (as amended).

National Parks and Wildlife Act (1974)

The *Office of Environment and Heritage* (OEH) is the principal government agency with responsibility for the protection and management of Aboriginal archaeological sites and Aboriginal cultural heritage values. It comprises an administrative branch of the *NSW Department of Planning and Infrastructure*. The *Environment Protection Authority* (EPA) became a separate statutory authority in 2012 and is responsible for environmental regulation and associated activities throughout NSW. The OEH and EPA areas of statutory responsibility sometimes overlap with the management of some Aboriginal archaeological heritage site and Places.

The NPW Act was amended through the *National Parks and Wildlife Amendment Act 2010*. The majority of the Aboriginal heritage management objectives and protection provisions of the NPW Act remain largely the same as they were originally established in 1974. However, a number of the amendments and administration functions of the NPW Act that have implications for the current project are summarised below:

- The Director-General (DG) of the OEH is responsible for the protection and conservation of Aboriginal objects and declared Aboriginal places in NSW.
- Part 6 of the NPW Act provides specific protection for Aboriginal objects and declared Aboriginal places by establishing offences of harm.

- Harm is defined under the Act to mean destroying, defacing, damaging or moving an Aboriginal object from the land.
- Under Section 86 of the Act, it is an offence to knowingly, or cause or permit harm to an Aboriginal object (or Aboriginal place) without prior written consent from the DG.[1]
- There are a number of defences and exemptions to the offence of harm under the NPW Act. One of these is that harm is carried out under the terms and conditions of an approved Aboriginal Heritage Impact Permit (AHIP).
- Section 87 of the NPW Act also provides for defences to harm done to an Aboriginal object if *due diligence* has determined that no Aboriginal object would be harmed, compliance with *regulations* or an approved *code of practice* was followed, and if it is shown as a *low impact act* and/or an (unintended) omission
- The NPW Act establishes the DG of the OEH as the decision-maker for AHIP applications.
- The OEH requires effective consultation with Aboriginal people as a fundamental component of the AHIP assessment process.
- AHIPs are issued under Section 90 of the NPW Act.
- Section 5 of the NPW Act defines an Aboriginal object as: '*any deposit, object or material evidence (not being a handicraft for sale) relating to Indigenous and non-European habitation of the area that comprises New South Wales, being habitation before or concurrent with (or both) the occupation of that area by persons of non-Aboriginal extraction, and includes Aboriginal remains*'.
- A declared Aboriginal Place is a statutory concept, meaning that it is any place (land, landscape element, or building etc) that is declared to be an Aboriginal place (under Section 84 of the Act) by the Minister administering the NPW Act because the Minister is of the opinion that the place is or was of special significance with respect to Aboriginal culture.
- A declared Aboriginal Place may or may not contain Aboriginal objects.
- The protection provided to Aboriginal objects and places applies irrespective of the level of their significance or issues of land tenure.
- Section 89A of the NPW Act requires that the DG be notified of the location of any newly identified Aboriginal site or object which is then registered with the OEH *Aboriginal Heritage Information Management Service* (AHIMS) database.

Where development proposals are classified as SSD's according to EP&A Act, the Minister for Planning is the approval authority. In these circumstances, the Minister will require an acceptable level of heritage due diligence and performance to be achieved that will include both the recognition and application of the principal Aboriginal heritage management objectives and protection provisions of the NPW Act as they are outlined above.

[1] Part 6 of the NPW Act also details and explains the DG's right to issue stop-work orders, interim protection orders, and remediation directions in certain circumstances.

NSW Heritage Act (1977)

The *NSW Heritage Act 1977* (as amended) is the principal legislation that provides statutory protection for non-Indigenous (European) heritage and the requirements for its management in NSW. The administration of the Act is overseen by the *NSW Heritage Branch* and is guided by the *NSW Heritage Council* in their regulatory role as part of the *NSW Department of Planning and Infrastructure*.

The primary purpose of the Act is to protect, conserve and manage the environmental heritage of the State. Environmental heritage is broadly defined under Section 4 of the Act as:

'those places, buildings, works, relics, moveable objects, and precincts, of State or Local heritage significance'.

Amendments to the Act made in 2009 have changed the definition of an archaeological 'relic' whereby a relic is now referred as an archaeological deposit, artefact, object or material evidence that:

a) Relates to the settlement of the area that comprises NSW, not being Aboriginal settlement;
b) Is of State or Local heritage significance.

The new definition is no longer based primarily on age. Previously, a 'relic' was described as comprising any item older than 50 years of age.

This significance based approach to identifying 'relics' is consistent with the way other heritage items such as buildings, works, precincts and landscapes are identified and managed in NSW.

While a number of the archaeological provisions of the Act have been streamlined, the Act nevertheless retains the core principals and objectives that require anyone proposing to disturb land to obtain a permit from the *Heritage Council of NSW* (under Section 140 or Section 60 of the Act) if it is known or suspected that 'relics' of significance may be disturbed, moved, or destroyed by future land alterations and/or use.

Section 139 of the Act stipulates that:

a) '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.

b) A person must not disturb or excavate any land on which the person has discovered or exposed a relic except in accordance with an excavation permit'.

If the site is the subject of an order under Section 130 of the Act, an Interim Heritage Order, or is listed on the SHR, approval for an excavation permit is required under Section 60 of the Act.

If the site is not the subject of an order under the Act and is not listed on the SHR, an excavation permit may be required, in accordance with Section 140 of the Act, subject to what significance the site/place has been assessed to possess. Excavation permit exceptions under Section 139(4) of the Act include:

- An archaeological assessment (zoning plan or management plan etc) has been prepared which indicates that any relics in the land are unlikely to have State or Local heritage significance (1A).
- The excavation or disturbance of land will have a minor impact on archaeological relics (1B).
- The proposed excavation demonstrates that evidence relating to the history or nature of the site, such as its level of disturbance, indicates that the site has little or no archaeological research potential (1C).

Section 146 of the Act requires that the accidental discovery of relics should be reported to the '*Heritage Council of NSW (in any circumstances, and whether or not the person has been issued with an excavation permit),* and *within a reasonable time'.*

1.5 Heritage Assessment and Reporting Methodology

1.5.1 Introduction

This report has been prepared in accordance with the following heritage recording, assessment and reporting guidelines and standards:

- Australia ICOMOS. 2002 (Revised). The Burra Charter. The Australia ICOMOS Charter for Places of Cultural Significance. Australia ICOMOS Inc.[2]
- NSW Department of Environment, Climate Change & Water. (DECCW) 2010a (September). Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales. DECCW. Sydney.
- NSW Department of Environment, Climate Change & Water. (DECCW) 2010b (September). Due Diligence Code of Practice for the Protection of Aboriginal Objects in New South Wales. DECCW. Sydney.[3]
- NSW Department of Environment, Climate Change & Water. (DECCW) 2010c (April). Aboriginal Cultural Heritage Consultation Requirements for Proponents. Part 6 National Parks and Wildlife Act 1974. DECCW. Sydney.
- NSW Heritage Office. 1996. NSW Heritage Manual. NSW Heritage Office and the Department of Urban Affairs and Planning. Sydney (revised 2002).
- NSW Heritage Office. 2001. Assessing Heritage Significance. A NSW Heritage Manual Update. NSW Heritage Office. Sydney.
- NSW Heritage Office. 2005. Historical Archaeology Code of Practice. NSW Department of Planning. Sydney.
- NSW Heritage Council.2008a. Levels of Heritage Significance. Assessing Heritage Significance Supplement. NSW Heritage Council. Sydney.
- NSW Heritage Council. 2008b. Levels of Heritage Significance. Assessing Heritage Significance Supplement. NSW Heritage Council. Sydney.

[2] The Burra Charter establishes nationally accepted principles for the conservation of places of cultural significance.
[3] A flow chart explaining how to follow the OEH due diligence process is appended to this report (**Appendix 1**). The principles and objectives of this best-practice assessment and action approach underpin the Aboriginal heritage component of this report.

- NSW Heritage Office. 2009a. Levels of Heritage Significance. NSW Heritage Office, NSW Department of Planning. Sydney.
- NSW Heritage Branch. 2009b. Assessing Significance for Historical Archaeological Sites and 'Relics'. NSW Heritage Branch, NSW Department of Planning. Sydney.
- NSW Heritage Branch. 2009. Guidelines for the Preparation of Archaeological Management Plans. NSW Heritage Branch, NSW Department of Planning. Sydney.

1.5.2 Aboriginal Community Consultation

The following Aboriginal community consultation has been completed for the project (in summary):

- The initiation and maintenance of consultation with local Aboriginal communities and individuals with regards to the BRBH proposal.
- The incorporation of the views and management recommendations provided by these community stakeholders to inform this study.

1.5.3 Background Research & Evaluation

The following Aboriginal and European heritage registers, lists, and schedules have been reviewed for the project.

- NSW Office of Environment & Heritage (OEH) Aboriginal Heritage Information Management System (AHIMS) Sites Register.
- NSW Heritage Council – State Heritage Register (SHR) & State Heritage Inventory (SHI).
- National Heritage List (NHL).
- National Trust of Australia (NT).
- Liverpool Local Environmental Plan 2008 (LEP).
- NSW Roads & Maritime Services Heritage & Conservation Register.
- Sydney Water Heritage & Conservation Register.

1.5.4 Literature Review

A document review has synthesised information available for the land and addresses knowledge gaps where they exist according to the following:

- Background research into the location and nature of any previously recorded Aboriginal archaeological sites, objects, and/or areas of potential Aboriginal cultural heritage sensitivity known to be present either within the boundaries of the study area or in immediately adjacent areas.
- On the basis of the above heritage review, to provide a predictive model that outlines the potential Aboriginal archaeological sensitivity of the subject land and an evaluation of the possibility for Aboriginal archaeological sites, objects and/or areas of likely sensitivity to occur within the study area.

- A review of relevant reports that describe and explain the location and nature of any previously recorded European archaeological sites or items recorded (or suspected) to be present within the boundaries of the study area.

1.5.5 Public Notification & Registration of Expressions of Interest

Aboriginal community consultation for the project has been undertaken in accordance with the procedures set out in *Aboriginal Cultural Heritage Consultation Requirements for Proponents 2010* (DECCW 2010a). The guidelines require the following tasks to be undertaken:

1. Pre-notification – identification of the Aboriginal parties.

2. Notification – contacting identified Aboriginal parties to seek their interest in the project.

3. Presentation of Project – advising the registered Aboriginal parties (RAP) of the project, which may involve meetings and/or site visits.

4. Methodology – providing the RAPs with the proposed field methodology and seeking any information from them on cultural matters in the study area.

5. Impacts and Mitigation Options – discussion of potential impacts to heritage and appropriate mitigation options prior to developing the report.

6. Report review – review of the final report.

In order to identify, notify, and register Aboriginal people who may hold cultural knowledge relevant to determining the cultural significance of Aboriginal objects and/or places that may be affected by the proposal a Public Notice for the project that was placed in the local print media (on the 21st May of 2014 in the Liverpool City Champion) as appended (**Appendix 1**).

Following the notice, the organisations and individuals below were notified of the project directly in writing following a list of Aboriginal community stakeholder's for the project that was provided by the OEH (10 May 2014).

- Tharawal Local Aboriginal Land Council (TLALC).
- Cubbitch Barta Native Title Claimants Aboriginal Corporation (CBNTAC).
- Rebecca Chalker.
- Darug Custodian Aboriginal Corporation (DCAC).
- Darug Tribal Aboriginal Corporation (DTAC).
- Darug Aboriginal Cultural Heritage Assessments (DACHA).
- Darug Aboriginal Land Care Incorporated (DALCI).
- Gunjeewong Cultural Heritage Aboriginal Corporation.
- Peter Falk Consultancy.

- Darug Land Observations (DLO).
- Des Dyer.
- Phil Khan.
- Warragil Cultural Services.
- Wurrumay Consultancy.
- Tocomwall.
- Bidjawong Aboriginal Corporation.
- D'harawal Men's Aboriginal Corporation.

The following government agencies were also notified of the proposal at this time:

- NSW Heritage Branch.
- Camden Council.
- NTSCorp Limited.
- National Native Title Tribunal.
- Registrar of the Aboriginal Land Rights Act 1983.
- NSW Heritage Branch.

The following Registered Aboriginal Parties (RAP's) were identified for the project through the Public Notice and Direct Notification process:

- Tharawal Local Aboriginal Land Council (TLALC).
- Gandangara Local Aboriginal Land Council (GLALC).[4]
- Cubbitch Barta *Native Title Claimants Aboriginal Corporation* (CBNTAC).
- Darug Custodian Aboriginal Corporation (DCAC).
- Darug Aboriginal Cultural Heritage Assessments (DACHA).
- Darug Land Observations (DLO).
- Des Dyer.
- Phil Khan.
- Tocomwall.

A draft copy of a preliminary 'desk top' based landscape archaeological assessment was provided to each of the project RAP's in early July 2014. A series of on-site meetings were subsequently held with each of the groups during late August and September 2014 (see **Appendix 4**) after which the first draft of this document was refined following consultation with the community. A final draft of this report was forwarded to the project RAP's for review and comment on 12 September 2014. The comments and advice that has been provided by the project RAP's has been incorporated into this final report.

[4] Deerubbin Local Aboriginal Land Council has provided in agreement with the GLALC the project heritage advice on behalf of Gandangara.

A schedule of the Aboriginal community consultation undertaken during the preparation of this assessment is appended (**Appendix 4**) along with copies of the community responses and other stakeholder correspondence received for the project.

1.5.6 Site Inspection & Recording

This report provides the following:

- The rationale and methods used to inspect and record the property.
- A summary of the observations recorded during the site inspections, and an evaluation of the results of the fieldwork completed in consultation with the project RAP's.

1.5.7 Analysis, Evaluation and Report

This report presents the following:

- An Aboriginal and historical archaeological assessment of the place that includes the outcomes of consultation undertaken with the local Aboriginal community, an evaluation of the results of the site inspections and on-site meetings, and a discussion of the Aboriginal and historical archaeological and heritage management conclusions that have been developed for the BRBH project.
- Aboriginal and European heritage management options and recommendations that establish a baseline framework for the protection of any documented and/or potential Aboriginal and European archaeological sites, objects/'relics', or areas of potential archaeological or cultural heritage sensitivity identified relative to the proposed BRBH development.

1.6 Report Outline

This report presents the following:

- An introduction to the BRBH project (**Section 1.0**).
- A review of the environmental context of the site including its geology, topography, hydrology, vegetation and soils (**Section 2.0**).
- A background Aboriginal archaeological heritage context for the project (**Section 3.0**).
- A discussion of the known European history of the study area and its archaeological implications (**Section 4.0**).
- The methods employed to record the site and an evaluation of the recently completed site inspections with the project RAP's (**Section 5.0**).
- A preliminary archaeological assessment of the significance of any identified and potential Aboriginal and European archaeological and cultural heritage sites or objects located on the proposed BRBH site; and an outline of the statutory heritage frameworks that are applicable to establish how these heritage resources should be managed relative to the BRBH proposal (**Section 6.0**).

- Heritage management recommendations (**Section 7.0**).
- References cited in this report (**Section 8.0**).
- Supporting documentation (**Appendices**).

1.7 Authorship & Acknowledgements

This report has been written by Dominic Steele of *Dominic Steele Consulting* Archaeology (DSCA). The background historical review presented in **Section 4.0** has been prepared by Mr Nick Jackson (DSCA Associate).

DSCA would like to acknowledge the advice and assistance provided by the project RAP's along with the following people during the course of preparing this report:

Mr Tim Colless	Western Sydney Parklands Trust
Nick Jackson	DSCA Associate
David Burke	DSCA Associate

Figure 1.1: Location of the proposed BRBH site (Google 2014)

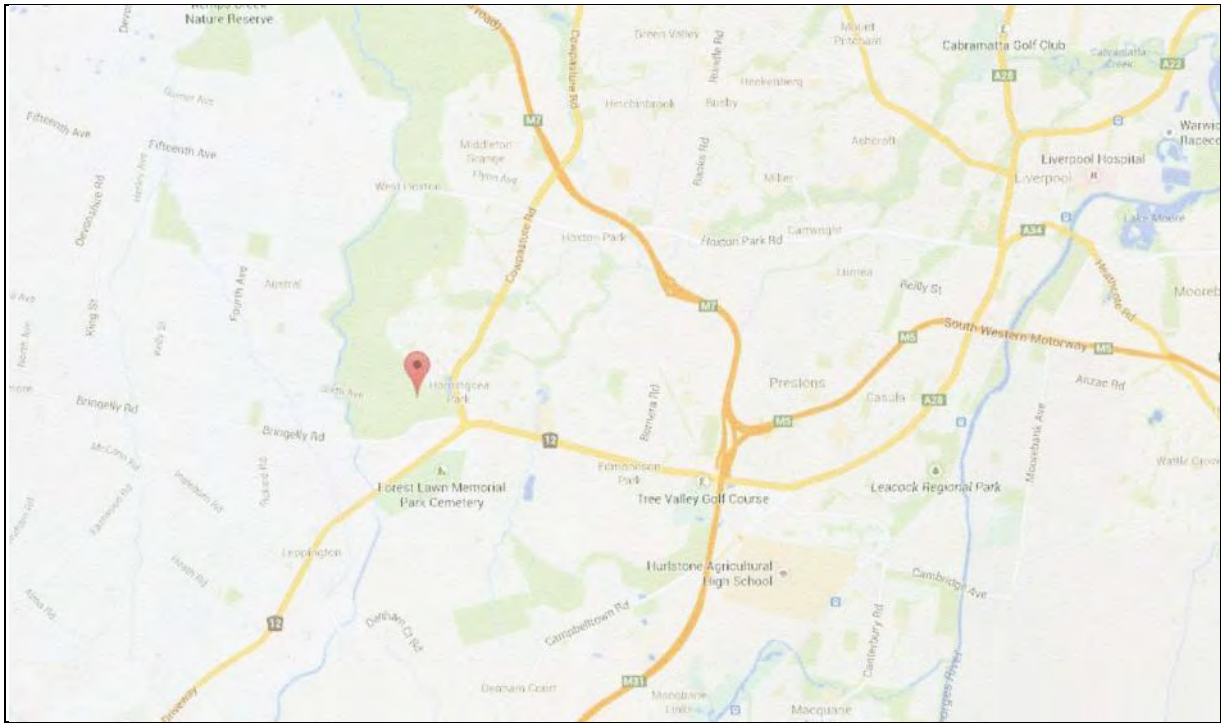


Figure 1.2: Survey plan and geotech borehole location (Source: Coffey 2014)

Figure 1.3: Existing condition of the land (Google 2014)

Figure 1.4: Site plan (Source: WSP Trust 2014)

2.0 Environmental Setting

2.1 Introduction

The following discussion is based on a number of premises:

- The pre-Contact environment influenced the availability of resources to Aboriginal people in the past, and has a bearing on the types of archaeological evidence that is likely to be located (and/or will survive) in contemporary land planning circumstances.
- The distribution and availability of resources (fresh drinking water, plant and animal foods, stone materials for artefact manufacture etc) were influenced by soils, vegetation cover, landform, aspect and other climactic characteristics including temperature and rainfall.
- The nature and extent to which land has been impacted by historic post-Contact land use will define what types of Aboriginal archaeological evidence is likely to survive.
- The same type of general principles as these also apply to understanding how and why Europeans first settled and used the landscape, and what traces of this historic use may survive in the archaeological record.

This environmental review underpins the Aboriginal archaeological site prediction discussions for the BRBH site that are presented in following sections of this report. Factors also considered here in order to assess the Aboriginal and European archaeological potential of the study area include archaeological site visibility (which is effectively zero due to the overgrown nature of the grass currently present across the site) and likely levels of site disturbance as a result of historic land uses including market gardening.

2.2 The Site and its Landscape Characteristics

The study area measures approximately 700m long and is 300m to 350m wide and is situated within the Cumberland Lowlands (Hazelton and Tille 1990:2) that is a mature and largely undulating landscape of low rounded hills or ridges with relatively shallow but often 'v' shaped creek valleys with little aspect differentiation. These are underlain by Wianamatta shales and soft sandstones. Surface hydrology includes dendritic drainage systems ('tree-like') that have resulted from uniform surface control of the development of stream channels. These are the most common form of drainage system in the region where there are many contributing streams ('twigs on a tree' etc) which are then joined together into tributaries of the main river (the branches and the trunk of the tree, respectively). However, in saying this, we know historically little about the location of former natural springs or perennial soaks in this country that is likely to have sustained during the first half of the nineteenth century considerable numbers of cattle (and sheep) during prolonged drought periods when creeks and drainage lines in the local landscape were dry.

The topography of the site reflects a small west facing spur that originates from a larger and more elevated ridge line to the east. The land has a predominantly westerly aspect with slopes that grade down from west to

east across the site with a change in elevation of approximately 30m, and slopes of up to approximately 10°. The landscape is dissected by one and possibly two east-west orientated minor tributaries of Cabramatta Creek that drain the higher ground situated towards Cowpasture Road to the east and north. The site generally slopes down towards the west and towards the SCA Canal which is an open concrete lined culvert constructed in the late 1880's and confines South Creek. This is a SCA heritage asset (Upper Canal - Water Supply) which is listed on the State Heritage Register.

Underlying geology is Triassic Wianamatta Group Shales that includes shale, sandstone, carbonaceous claystone, laminate and coal (Stroud et al. 1985). Reference to the Penrith 1:100,000 Series Geological Sheet indicates the site is underlain by Ashfield Shale bedrock. However, previous work by Coffey near the eastern corner of the site indicates the underlying Minchinbury Sandstone may also be present. Residual clay soils are expected to overlie this unit as a result of natural weathering. Residual soil derived from Ashfield Shale is typically of high plasticity, moderately to highly reactive and around 2m to 3m deep over the shale bedrock (Coffey Geotechnics June 2014:4).

Quaternary Alluvium also occurs along Bonds Creek at Leppington to the east (Jones and Clark 1991-Penrith 1:100K Geological Series Sheet 9030) and along South/Wianamatta Creek in the west (Stroud et.al. 1985-Wollongong to Port Hacking 1:100K Geological Sheet). Soils may straddle the Penrith and Wollongong-Port Hacking 1:100K map sheets (Bannerman and Hazelton 1990, and Hazelton and Tille 1990) and is likely to be underlain by profiles of the Blacktown Soil Landscape. There is a small area of Luddenham Soil Landscape around Bringelly Road to the east.

Archaeological implications of the Blacktown soils indicate good conditions for artefact survivability but limited stratigraphic potential where artefacts will exist where soil conditions are stable, but the active (aggraded/deflated) nature of the soils means most artefacts will collect above the B horizon. (Kelleher Nightingale Consultancy Pty Ltd 2011:8). The Luddenham Soil Landscape, contained in the east of the study area, comprises an A1 horizon of friable dark brown loam to silty clay, an A2 horizon of clay loam to fine sandy clay loam and a B horizon of reddish brown to bright yellowish brown silty clay to heavy clay with shale rock fragments common throughout. The preservation of artefacts in this soil landscape includes bioturbated artefacts in active topsoils, but with the potential for primary context sites in areas displaying episodic deposition of sediments and reworked soils (and low levels of disturbance).

Prior to European settlement, two main vegetation communities would have dominated the Wianamatta Shale's and podzolic soils of the broader study region comprising possibly varieties of Grey Box-Ironbark Woodland as described by Bannerman & Hazelton (1990) and Benson (1981). These are believed to have comprised the following on the basis of remnant vegetation stands that survive in places today:

2.3 Landuse History in Summary

The area has been affected by a long history of agriculture and grazing. The Bringelly area was settled after Governor Macquarie's visit to the area in 1810 with land grants marked out in Bringelly from 1811 and given out to people such as Robert Lowe in 1812. Bringelly developed as a predominantly pastoral and agricultural district with a number of large historic pastoral estates bordering Camden Valley Way (formerly known as Old Cowpasture Road including 'Raby' 'Gledswood' and 'Molles Main' which have been used for stock grazing since the early nineteenth century. By 1826 a road network was established in the district, including Bringelly Road, The Northern Road between Camden and Richmond and Old Cowpasture Road. The section of Bringelly Road that is to be affected by the proposal is not a heritage listed item. From 1891 grants in the area were subdivided to form the settlement of Bringelly (Ibid:9).

Land use in the study area is still predominantly rural and includes market gardens and small farm allotments. A closer historical evaluation of the study area is presented in **Section 3.0**.

2.4 Geotechnical Data

A geotechnical assessment of the site (Coffey Geotechnics Pty Ltd) has revealed a broad subsurface soil profile (see **Appendix 6**) following the drilling of six boreholes (BH1 to BH6) and eight test pits (TP1-8) to depths varying from 1.6m to 4.6m below existing ground surface. The subsurface conditions encountered at the site were relatively consistent, and typically comprised approximately 0.15m to 0.20m (but up to 40cm in TP4) of topsoil overlying approximately 0.5m to 4m of residual clay of high plasticity and stiff to hard strength which is underlain by extremely weathered, very low strength shale. Fill was only encountered in TP1. The residual silty clay layers were thickest towards the north-west corner of the site.

No anomalies or disconformities are apparent in the subsurface profiles to suggest the presence of buried soils or paleosols. Namely, buried soils with archaeological potential where a former land surface(s) upon which Aboriginal people in the past may have camped have been covered by younger sediments (soil development) and which are derived from former climates or topographic and drainage conditions.

Aboriginal objects (artefacts) located within the topsoil profiles would in general have been subject to erosion and bioturbation, as well as extensive reworking from repeated market gardening. Some mixing with lower clays through processes like shrink-swell (and bioturbation) and ploughing is likely.

2.5 Aerial Photography

The site appears to have comprised tenanted farm land from at least the mid 1920s (and probably for much longer) before the land was subdivided to form allotments of around five acres. The 1930 aerial photograph (see **Figure 4.9**) shows the property largely cleared of trees and as open paddocks with isolated stands of shade trees, and a number of these was under cultivation at this time. The land in 1947 had far more substantial areas under cultivation, but the elongated cluster of trees in the western third of the site appears much the

same. However, the northern half of this timber stand has since been largely cleared (post 1947), and the southern half includes elements of very immature regrowth. This and the current configuration of the trees indicates some of the trees present in 1947 have been cut down in this locality since that time for the creation of larger areas for cultivation. Overlapping agricultural fields/market garden allotments are evident over most of the property and extend up to the edges of the timber stand in 1947, and the main dams on the property also date from this time or earlier.

2.6 Resources Available to Aboriginal People in the Past

2.6.1 Tools and Equipment

The early European diarists recorded a wide variety of tools and weapons used by Aboriginal people in obtaining food and raw materials, for carrying items, and for making and maintaining equipment. These included fishing and hunting spears tipped with bone, stone and shell barbs, shell and bone fish hooks and vegetable and animal sinew 'string' fishing lines (on the coast at least), timber/bark shields, clubs, canoes and digging sticks, baskets and net bags and a variety of flaked and ground stone artefacts inclusive of axe/hatchet heads, points, blades, scrapers, awls and pounders. Animal skins, bones and sinews are also recorded to have been used for a variety of purposes including cloaks, carrying bags and decorative items.

As discussed in the following section of this report, a wide variety of stone raw materials (frequently imported from outside sources) were either ground to produce adze, axe and chisel blades or were flaked using often complex reduction strategies to produce a variety of cutting and scraping implements along with points suitable for use as spear barbs (see below). Many observations also report that coastal people used shell rather than stone as cutting implements, for the production of fish hooks by grinding *Turbo* shell with sandstone files and for hafted barbed points (Bradley 1969:92, Collins 1975:320).

Aboriginal people (in Port Jackson in particular) were frequently reported fishing in the harbour from canoes made from bark (often sourced from She Oak, Bangalay, and Stringybark etc), and their fishing lines and spears were often found left on the shores. Canoe bark was removed with stone axes, and later in the post-Contact period, with metal axes. Generally, it appears canoes were from between 2.5m and 6m long, and propelled with wooden paddles. Small fires were often observed to have been kept alight on clay beds in the centre of the canoes to provide light and warmth and to cook food. These serviceable but perhaps flimsy craft were occasionally observed to have been kept operational through patching using resin from the Grass Tree and lined with Cabbage Tree Palm leaves. These types of observations, although less frequent inland, are still likely to have encapsulated how in general terms people made and used canoes for transport and communication at Contact along the larger river and creek corridors of the Cumberland Plain.

Other early references comment on the use of tree-bark and the form of Aboriginal shelters. These are described to have ranged from pieces of bark laid together in the form of a low oven, open at one end and of a length sufficient to cover the full length of an adult to pieces of bark cut from a single tree and bent in the

middle and placed on the ground on its two ends '*exactly resembling two cards, set up to form an acute angle*' (Tench 1979:154).

Some huts are recorded to have been large enough to accommodate six to eight people, and to have been occasionally grouped together in large numbers (Barrington 1810:20). Some early observers also comment on the presence of '*villages*' situated on the coast between Botany Bay and Pittwater where upwards of 300 people were reported (see Tench 1979).

Although historical records emphasise the importance of the waters and water edge (both on the coast and along rivers) for camping and subsistence, there are some indications of the importance of camping in a 'set back' area (ERM 2004:122). Attenbrow (2002a:47) cites an observation from W.R. Govett written after a trip to the Berowra-Cowan area sometime between 1829 and 1834 suggesting that the valley bottoms were a strategic nexus between the marine and estuarine resources of the water, and the terrestrial plant and animal resources of the 'bush':

> *'The bottom of the ravines, especially where the creeks widen and open to the river, were much frequented by the coastal natives; for the wooded sides of the ridges in this neighbourhood, abound with various animals, and the waters below afford a plentiful supply of oysters and other shells'.*

2.6.2 Use of Stone by Aboriginal People

As noted above, early colonial observations of Aboriginal life in the Sydney region suggest that coastal groups used stone implements less often than hinterland and inland groups (such as in the Cumberland Plain) and that materials of bone and shell was used in its place for the manufacture of such items as spear barbs, adzes and scrapers (see for example Collins 1975:488, Hunter 1968:519).

This picture presents something of a paradox. While little is recorded in the early records of the use of stone by Aboriginal people (at least along the coastal strip and immediate hinterland), stone tool artefacts represent the most common type of archaeological evidence excavated from sub-surface sites (excluding sheltered habitation areas such as beneath rock overhangs etc) and observed on surface archaeological sites. This is largely the product of differential survival where less durable remains of animal bone, shell and vegetable materials representing food debris and items used for the manufacture and maintenance of equipment have not survived the processes of weathering and decay over time.

2.6.3 Use of Plants

A variety of edible or otherwise useful plants are likely to have been present within the immediate vicinity of the study area in the past. These may have included the flowers, nectar, fruits and leaf-bases of many plants and shrubs (including varieties of *Melaleuca, Banksia, Grevillia* and *Hakea)* that are edible when collected at certain times of the year and/or when they are suitably processed.

Fibres for string bags and fishing lines procured from the inner bark of various shrubs and trees including Kurrajong (*Brachychiton populenus*) and Grass Tree (*Xanthorrhoea Sp.*) are also likely to have been exploited by Aboriginal people. The latter species is known to have been used for gum extraction and adhesive, and the fabrication of spear shafts from the dried stem. *Melaleuca* (tea tree) bark is recorded to have been used to make containers, used as a 'blanket' in which a newborn baby was wrapped and as a torch (Collins 1975:369).

Tench also noted that when fish were not readily available:

> *'their principle support is derived from small animals which they kill and some roots which they dig out of the earth'.*

The 'roots' described by Tench are generally believed to be yams which formed a significant component of the Aboriginal vegetable diet. Hunter (1968:150) recorded following a visit to the Hawkesbury by boat in 1789 that:

> *'they appear to live chiefly on the roots which they dig up from the ground; for these low banks appear to have been ploughed up, as if a herd of swine had been living on them. We put ashore, and examined the plants which had been dug and found a wild yam in considerable quantities, but in general very small, not larger than a walnut; they appear to be greatest plenty on the banks of the river'.*

Yams are the bulbs of a variety of creepers and vines. Some can be eaten directly after being dug up, while others are poisonous and require 'detoxifying' (leaching through water etc) prior to use. The use of yams by Aboriginal people appears to have related to seasonality with few of the species growing all the year round (Attenbrow 2002:78).

2.6.4 Hunting and Trapping Land Animals

There are few detailed accounts of the nature of Aboriginal exploitation of the larger terrestrial animals which are like to have been present in the local landscape around Contact. However, it is reasonable to assume that kangaroos and wallabies, along with a range of smaller mammals (such as possums, potoroos, bandicoots, flying foxes etc) and reptiles (snakes and lizards) would have been exploited by Aboriginal groups where and when these food resources were available.

A number of early diarists make mention of Aboriginal people catching and eating other types of foods shortly after settlement (Hunter 1968:60-61, Tench 1979:51). Bradley (1969:133-134) recorded in Port Jackson in October 1788:

> *'For a considerable time after our arrival it was suspected they the food of the natives was entirely Fish, but the winter convinced us, that if they had not had some other resource great numbers of them must perish, as it they are very hard put to it when the Fish is scarce:.....There is no doubt they lay wait for the Kanguroo & Birds, many of the trees are notch'd that has not had a Canoe taken from them from which I suppose they get into these Trees to seek or wait for anything that may come their way'.*

Most accounts of hunting derive from Sydney's west and highlight communal techniques and the use of fire as provided by Francis Barrallier (surveyor and explorer) below (AHMS Pty Ltd 2007:23):

> *'they form a circle which contains an area of 1 or two miles, according to the number of natives assembled. They usually stand about 30 paces apart, armed with spears and tomahawks. When the circle is formed, each one of them holding a handful of lighted bark, they at a set signal set fire to the grass and brush in front of them. In proportion as the fire progresses they advance forward with their spear in readiness, narrowing the circle and making as much noise as possible, with deafening shouts, until, through the fire closing in more and more, they are so close as to touch one another. The kangaroos try to escape in various directions, and the native frightening them with their shouts throw spears at the one passing nearest them. By this means not one can escape'.*

There are some suggestions in the historical records (Hunter 1968:469 for example) that these types of hunting activities were seasonally influenced to an extent, where in winter and early spring, particularly during dry weather, that (seemingly the men in particular) the grass was burnt to catch such land animals, while women continued to fish (Attenbrow 2011:471).

2.6.5 The Use of Birds

The extent to which Aboriginal people used birds as a food resource is not fully understood, particularly in areas outside of the immediate coastal strip. The only types of birds reported as eaten were crows, hawks, and parrots (Collins 1975:455). It is probable however, that both migratory and resident birds would have been sought along the adjacent creek-lines, ponds and 'swamps' that may have occurred within proximity to the study area before the drainage systems were changed through farming activity.

3.0 Aboriginal Archaeological Heritage Context

3.1 Aboriginal Archaeology in the Cumberland Plain

One of the first attempts to explain past Aboriginal use and occupation of the Cumberland Plain as a whole was developed by Kohen (1986) who proposed a general model of archaeological site occurrence, chronology and function for the region. At the time, few Aboriginal heritage sites had been excavated and fewer still dated, and mindful of this limitation the chronological component of this model suggested that the Aboriginal occupation of the Cumberland Plain primarily occurred during the mid to late Holocene (approximately 5,000 BP) and was related to an increase in Aboriginal population in the area and the introduction of a new stone tool technology (the 'small tool tradition') as discussed shortly. Prior to the mid Holocene, Kohen argues that Aboriginal occupation of the area was concentrated on and around the Nepean River and the coast. A subsequent predictive site location model developed by Smith (1989) for the southern Cumberland Plain refined Kohen's earlier work and suggested Aboriginal archaeological sites would be most commonly found along permanent creeks and around swamp margins, and that creek flats and banks were considered to be focal topographical features for site location (Smith 1989:2).

A number of summaries of (ongoing) site heritage planning survey and test/salvage excavation that has since the late 1980s progressively refined our understanding of past Aboriginal land use practices in the Cumberland Plain are provided by JMCHM Pty Ltd (1999b), McDonald (2007), and White & McDonald (2010). The studies variously report on the importance of stream order provenance, landforms, distance from water, site aspect, geology, past vegetation landscapes, and how these interrelated factors are likely to have affected Aboriginal site complexity and composition revealed through recent Aboriginal archaeological excavations. The majority of these Aboriginal archaeological excavations have been undertaken in landscape contexts associated with Eastern and Caddies Creeks within the Rouse Hill Development Area (RHDA) which is albeit some distance and possibly different from the South Creek country that is discussed in this report.

White & McDonald (2010:32-34) provide the following information that assists in orientating subsequent sections of this report.

> *'Stream Order: Water supply is often thought to be a significant factor influencing peoples' land-use strategies. Large and/or permanent water supplies may have supported large numbers of people and/or long periods of occupation while small and/or ephemeral water supplies may have been able to support only small numbers of people and/or transient occupation.*
>
> *The stream order method identifies the smallest tributary stream as 1st order, two 1st order streams to join to form a 2nd order streams, two 2nd order stream, two 2nd order streams join to form a 3rd order stream, two 3rd order streams join to form a 4th order stream and so on.*
>
> [Aboriginal] *artefact distributions varies significantly with stream order.*

Landform: 'Creek Flats' are flood plains with flat to gently inclined surfaces, adjacent to streams. 'Terraces' are former flood plains but no longer [are] *frequently flooded and occur at higher elevations than flats. 'Ridges' occur at the top of slopes, forming watersheds. 'Hillslopes' are roughly subdivided into lower, middle and upper to describe their relative position in valleys. Lower slopes comprise the lower third of slopes above valley floors, mid-slopes comprise the middle third of valley slopes between valley floors and ridge tops, and upper slopes comprise the upper third of slopes below ridge tops.*

Artefact distribution varies significantly with landform.

Distance From Water: Proximity to water was previously thought to be a primary determinant of site location on the Cumberland Plain. Distance from water is considered here in relation to stream order [as described below].

Previous studies on the Cumberland Plain indicated that 'sites' would be clustered within 50m of water.

Aspect: The orientation of open land surfaces may have influenced people's choices of artefact discard locations: north-facing slopes tend to be drier and provide shelter from colder southeast or southwest winds. Slopes facing northeast receive morning sun in winter and are sheltered from hot afternoon sun in summer.

Geology: Geology defines landforms and drainage, influences habitat formation and provides different resources such as sandstone suitable for grinding, and diversity of plant resources. Within the RHDA, the Wianamatta group of shales forms an undulating topography, and overlies Hawkesbury sandstone which is exposed on some lower slopes and along larger streams as platforms, low ledges, boulders and (rarely) rockshelters.

Distance to Silcrete Sources: Silcrete is the predominant artefact lithology in the RHDA, with silicified tuff predominant in only a few stratigraphically deeper [excavated] *assemblages which are technologically similar to late Pleistocene or early Holocene assemblages from Parramatta. Numerous studies have shown the effects of increasing distance from stone sources on attributes of lithic assemblages, as people used various strategies to conserve available lithic supplies when distant from quarries – 'distance-decay theory'. One conservation strategy could have been to discard fewer artefacts, therefore resulting in lower artefact densities with increasing distance from known lithic sources'.*

Extrapolating this framework to the archaeological evidence it has been suggested that people in the Sydney region first occupied places close to the main rivers such as the Nepean (at archaeological sites such as Shaws Creek, Springwood Creek, Jamison's Creek etc) and Hawkesbury (Windsor and Pitt Town) and around Penrith (Regentville). Too few early sites have been identified to date to shed much new light on how and when Aboriginal people first occupied the region, although 30,000 to 40,000 years BP dates will not be unexpected in the future.

Over time the territory of occupation of these first people expanded and these mobile groups who carried silicified tuff from the Hawkesbury-Nepean River gravels and used the resource sparingly to produce relatively large cores and flake tools. When sea levels rose around 6,000 years BP, coastal groups that previously

occupied the now drowned coastal strip most likely moved inland and the population possibly steadily increased to a point when around 4,000 years BP when many new sites were occupied. It is argued that this evidence suggests that for the first time people took up permanent and semi-permanent occupation in different areas of the region. Some groups probably lived full time on the Cumberland Plain, while others occupied the surrounding sandstone country (see Kelleher Nightingale Consulting Pty Ltd April 2008).

There also appears to have been an increase in rock shelter occupation at this time, along with major changes in stone tool technology, most notable of which is the use of locally available stone. The raw material that was most commonly used in the local landscape was silcrete and was used for a wide range of tasks. The majority of artefacts at most sites are often small (<5cm) and its probable people prepared stone at or close to stone source and transported selected materials back to residential camp sites.

During the last 1,000 years the use of ground stone appears to have increased although these artefacts are infrequently found in surface or excavated archaeological assemblages (fragmentary evidence often occurs at most sites). An increase in bipolar flaking at this time probably indicates further intensive use of local resources, but backed artefact manufacture declines. This may be due to the fact that there was less need for these tools as result of either changing social networks or less priority being given to their bulky production.

In 1788, Sydney Aboriginal groups were living in defined territories and interaction between groups is evident in art sites, with changing frequencies of different raw materials also indicating more restricted social movement, and contact via exchange networks.

Only a small number of archaeological sites recorded across the Cumberland Plain have been directly dated and most that have been demonstrated to show a mid Holocene age of occupation from between approximately 8,000 years BP to 2,000 years BP (see (McDonald and Rich 1993; McDonald 1986; Smith 1986; Kohen 1986). As noted above, older sites have been reported in the Blue Mountains and its foothills. Site RH/CC2 close to Cattai Creek has provided evidence of an extensive stratified site that has been interpreted as pre-dating the Bondaian phase (see below) and possibly dating to older than 9,000 years BP. The stone artefact assemblage from this early phase from this site is described to be analogous to excavated assemblages elsewhere from the Sydney region, which at some sites is dated to between 10 000 and 20 000 years BP (JMCHM 2002a).

A prehistoric Aboriginal landuse model that has been developed to explain the phases of Aboriginal occupation of the Sydney region (JMCHM 2002a:475) which is based on the 'Eastern (Archaeological) Regional Sequence' originally developed by Hiscock (1994) is summarised below.

Pre-Bondaian (before 9000 BP)

Preference for the use of silicified tuff for stone toll artefact manufacture, unless the investigated site is too great a distance from known sources and is often augmented with quartz and unheated silcrete materials.

Cores and tools vary in size (some are quite large), but there are no backed artefacts, elouera, or ground stone implements. Unifacial flaking is a predominant technique for stone tool production during this period.

Early Bondaian (9000 to 4000 BP)

The archaeology suggests a preference for the use of silicified tuff to decline during this period where a greater use is made of local stone materials. Backed artefacts appear sporadically and bipolar flaking widely in use but rarely at individual sites.

Middle Bondaian (4,000 to 1,000 BP)

The use of different raw material types varied between sites and within sites over time. This is the main phase of backed artefact production and the introduction of asymmetric alternating flaking. Substantially smaller cores and tools are prevalent. Ground stone artefacts appear, though infrequently and present at fewer than half the dated sites. Elouera are present but rare.

Late Bondaian (1,000 BP to contact)

The use of different raw material types continued to vary. Backed artefacts decline, becoming rare or absent from most sites. Bipolar flaking techniques are evident at most sites. Ground stone at most dated sites in low frequencies. Elouera continued to be present but are rare.

3.2 Local Archaeological Context

3.2.1 Literature Review

A number of archaeological excavations and surface surveys have been undertaken in the local landscape. Key studies are summarised below:

Bringelly Road Upgrade Preliminary Aboriginal Heritage Assessment (Austral 2010)

The RTA has commenced planning for the upgrade of Bringelly Road between Camden Valley Way at Leppington and The Northern Road at Bringelly (approximately 10km in length) that will affect the site. The upgrade to the southern site boundary where the proposal will widen Bringelly Road from a two lane road to a four lane divided road between Camden Valley Way in the east and The Northern Road in the west. The upgraded Bringelly Road will form one of the arterial road transport corridors for the South West Growth Centre.

The preliminary archaeological assessment of the Bringelly Road upgrade corridor identified 42 Aboriginal archaeological sites and one associated area of potential archaeological deposit (PAD with artefacts). The survey comprised a pedestrian inspection either side of Bringelly Road for the entire length of the road upgrade corridor (approximately 10km) and ranged in width from 20m to 100m from the existing road corridor. All of the recorded sites were stone artefact locations and largely comprised single or low density finds in disturbed

contexts with limited archaeological research value. A total of 138 artefacts were identified; predominantly of silcrete (49%), mudstone (20%) and chert (13%) with smaller percentages of quartz, quartzite and tuff. Most finds were flakes or flake fragments.

Bringelly Road Upgrade (Kelleher Nightingale Consultancy Pty Ltd 2011)

The archaeological heritage assessment survey of the Bringelly Road upgrade corridor following the 2010 study relocated most of the previous find locations Thirty nine of the sites identified along the Bringelly Road corridor were assessed as low or low-moderate archaeological significance.

This assessment was based on their site contents (isolated occurrences or low number of artefacts) in disturbed contexts with poor condition and site integrity (e.g. soil intactness, extent of previous land use disturbance), resulting in low archaeological potential. None of the low significant sites are reported to pose a constraint to development (although each will require an AHIP prior to impact). Five sites were assessed as being of moderate archaeological significance. These sites were generally the remnant portions of larger and more disturbed areas. The remnant portions of these areas were considered to have moderate potential for subsurface material.

South West Rail Link Preliminary Aboriginal Heritage Assessment (Heritage Concepts, 2006)

Heritage Concepts (2006) conducted a preliminary archaeological investigation of the South West Rail Link (SWRL) corridor, which ran to the south of Bringelly Road. There were seven sites identified during the preliminary investigation, comprising two open artefact scatters, four isolated artefacts and a possible scarred tree.

East Leppington (Heritage Concepts Pty Ltd. Ltd 2008)

This was a large-scale assessment at East Leppington that recorded fifty isolated artefacts, six open campsites, four scarred trees, and five areas of PAD. The findings of the assessment generally conformed with existing predictive modelling on the Cumberland Plain, with open campsites and isolated artefact occurrences increasing in frequency with proximity to water (Heritage Concepts 2008:75).

South West Rail Link Aboriginal Heritage Assessment (AMBS 2010)

AMBS (2010) conducted an Aboriginal heritage assessment of the SWRL following from Heritage Concepts (2006) preliminary assessment. The SWRL corridor passes the eastern end of the BRBH study area. The study identified four sites, all artefact scatters (low numbers of artefacts) or isolated finds. One possible scarred tree, a Grey Box eucalypt, was located on flat ground approximately 500m from a creek line. AMBS (2010:61) was subsequently determined the scarred tree to not be an Aboriginal site.

Archaeological Excavations

A number of archaeological excavations have been completed in the local landscape. JMCHM (2007a) undertook a preliminary investigation of the Turner Road and Oran Park Precinct within the South West Growth Centre that involved preliminary mapping of land use impacts and primarily concluded land with long agricultural historic land use was likely to retain the highest potential for containing intact archaeological sites. Recommendations included pedestrian survey and Aboriginal community consultation in order to confirm site location hypothesis in areas of good to high potential for archaeological deposit to occur such as water holes at the junction of higher order streams and fluvial erosional benches above third and fourth order streams.

The (Stage 2) reports (JMCHM 2007b & c) followed the preliminary mapping of the Precincts (JMCHM 2007a) and involved field survey with Aboriginal community groups that identified a total of 44 sites and four areas of PAD. Sites consisted of principally open stone artefact scatters, a number of isolated finds, and several scarred trees. Artefact material was of silcrete, tuff, quartz, quartzite and petrified wood with some flaked glass items also reported. The majority of the sites were located along tributaries and some ridge tops. It was noted that there was limited potential for understanding occupation patterns or site use based on the surface evidence alone (JMCHM 2007c:71) but the investigations revealed a revealed a number of trends including:

- A focus on occupation at the junction of first and second order tributaries as well as along higher order creeks.
- The occurrence of low density artefact sites located some distance from water that represents a background scatter of artefactual material.
- Ridge tops, hill crests and low order creeks flats were the focus of some occupation activities within the Oran Park Precinct.

AECOM ENSR 2008: Stage 1 archaeological excavation in the Oran Park and Turner Road precincts in this project included four test trenches excavated to the surface of the clay B-horizon located just outside the boundaries of four conservation areas. A total of 744 stone artefacts were recovered, including knapping floor concentrations at two sites. Silcrete from sources located 20-40 km to the north in the central Cumberland Plain was the dominant artefactual material. Possibly 'exotic' grey and white silcrete artefacts were found at all four sites. The excavations also found consistent density of artefacts throughout the trenches with no clear decline in frequency as one moved away from the nearby creeks.

ENSR AECOM 2009: Stage 2 of the overall assessment of Aboriginal heritage values for the two precincts included test excavation and salvage where a total of 340 test pits were excavated over various landforms resulting in 4,780 artefacts being recovered. Aboriginal flaked glass artefacts were found, but most of the evidence pointed towards pre-Contact sites with low intensity Aboriginal activity. Most artefacts were found within 300m from major creeks and 120m from minor watercourses. Artefact manufacturing areas were evident in stone artefact concentrations on areas (including elevations) with good outlook over creeks and valleys, and inter-regional cultural connections were demonstrated by the presence of small quantities of

silcrete most likely source about 100 km to the south. A few scarred trees are also reported including one identified in the Gledswood/Lakeside subdivision lands to the north of the study area (AMBS 2006).

3.2.2 AHIMS Site Search Results & Archaeological; Site Prediction

A search of the AHIMS Sites Register indicates that no Aboriginal archaeological sites or objects have previously been identified to occur within the proposed BRBH site (see **Appendix 3**).

3.2.3 Archaeological Sites, Activity Zones and Indicators

The land within the proposed BRBH study area is largely undulating and sloping landscape with little aspect differentiation. The topography includes a relatively small and low west trending facing spur branching from a larger and more elevated ridge line to the east and is dissected by one and possibly two minor tributaries of Cabramatta Creek. The site generally slopes down towards the west and towards South Creek.

A number of models, developed primarily from the more gentle undulating shale topography on the Northern Cumberland Plain and the influence of the main creeks in this landscape setting, attempt to link Aboriginal site distribution to a variety of environmental factors, with proximity to water, stream order, landform and geology (including proximity to known stone sources) representing key determinants.

The terrain of the study area comprises a mid slope landform that overlooks South Creek. The site includes views with predominantly westerly aspects, with slopes in the order of ~5%.

Aboriginal archaeological site locations and potential complexity in this landscape setting may also reflect patterns of past movement of people noting that sites located away from main ridgelines and creek systems may generally be predicted to be situated on (undisturbed) flat sections of ridges that provided access to other creek and hinterland resource zones. In this context (where travel and movement won't necessarily leave an archaeological signature even if the travel corridor was repeatedly used over time) it is assumed here that stone artefacts would be an indicator of a range of past Aboriginal landuse and occupation activities where:

- 'Isolated finds' may be found as isolated occurrences in seemingly all landscape contexts.
- Concentrations marking the locality as 'activity areas'.
- Predicted but undetected subsurface 'Potential Archaeological Deposit' (PAD).

Occasionally, additional archaeological evidence such as hearths may also be found in association with stone artefacts, although this is uncommon as such there relatively few directly dated excavated sites in the local landscape around Bringelly. Most sites across the Cumberland Plain have been located within 200 metres or less of the nearest known drinking water source, although different types of watercourses will have attracted different types of Aboriginal visitation and use in the past. As a rule, fewer ridgeline sites are reported.

A number of views are reported in the archaeological literature for characterising places where sufficient Aboriginal archaeological evidence is present to be called a 'site'. For example, by using Binford's (1980:9-10)

definitions that would apply to prehistoric Aboriginal hunter-gatherer landuse whereby a 'residential (home) base' would be the focus of subsistence activities and a place where most resources gathered by foraging parties would be processed and/or and tools and equipment manufactured and/or repaired. 'Home bases' would imply frequent visitation and possibly prolonged use at times, while Binford uses the term 'indicators' to describe places where more limited activities may have been carried out over shorter time periods such as 'dinnertime camps' described by Meehan (1982) that can be used to convey circumstances where small (family sized) groups stop for a time during foraging and carry out a range of 'domestic' or other utilitarian tasks that may create an archaeological signature.

Baker (1998) has suggested an 'activity zone model' to explain varying frequencies and densities of stone artefacts recorded nearby to a freshwater creek in the western Cumberland Plain using the following broad categories and contents:

- 'Complex zone' within a few hundred metre of the creek would comprise repeated and overlapping stone working ('knapping') events creating high densities of stone debris that may end up stratified in the archaeological record.
- 'Dispersed zone' with discrete artefact concentrations typically further away from watercourses representing occasional use separate from more important campsite and/or resource use areas.
- 'Sparse zone' with consistently low density artefact distributions ranging from single isolated finds to frequencies that would be considered to be part of 'background' artefact scatter that could be inferred to exist across most landscapes and landform units.

The potential subsurface archaeological signatures (stone tool frequency and density patterns etc) that could be expected to have been created by mobile landuse in this Aboriginal cultural heritage landscape setting is summarised below:

Table 3.1: Aboriginal Landuse and Potential Archaeological Expectations

Landuse/Occupation Pattern	*Activity Location*	*Proximity to Water*	*Proximity to Food*	*Archaeological Expectations*
Transitory travel & day to day movement through the country	All landscape zones ridgelines and elevated spur/crests may have been favoured for travel/communication along with creek corridors, with gentle slopes and valley flats probably also being preferable (attractive) landforms	Not important	Not important	Isolated items and assemblages of low density & diversity with evidence of tool maintenance & repair. Evidence for stone knapping may also occur anywhere in the landscape
As one off events	All landscape zones	Not Important	Nearby reliable	Assemblages of low

that may also occur during hunting and foraging without 'camping'.			and/or seasonal sources	density & diversity and evidence of tool maintenance. Stone knapping would be expected with possibly a high(er) frequency of used tools
Camping by small groups	Frequently associated with permanent & also temporary fresh water (seasonal 'chains of ponds' etc)	Nearby	Nearby reliable and/or seasonal sources	Assemblages of low to moderate density & diversity with evidence of stone tool maintenance & repair and hearths
Nuclear/extended family base camps	Level or gently sloping/ undulating ground	Nearby and/or at source	Nearby reliable source	Assemblages of high density & diversity with features such as heat treatment pits, and grindstones
Community base camps	Level or undulating ground	Nearby and/or at source	Nearby reliable source	Assemblages of high density & diversity. Heat treatment pits may occur with other finds (eg. grindstones & ochre). These sites may be large in size (<100sqm) marked with multiple 'Isolated' campsites being overprinted in space and time

In some respects, the distribution of recorded Aboriginal archaeological heritage sites across the landscape surrounding the study area may also reflect more accurately the pattern of development, the non-systematic nature of site discovery and recording during project environmental assessments, and factors of site visibility (exposure), rather than providing a true picture of (surviving) Aboriginal site distribution. However, a number of evidentiary-based considerations are apparent that can also be broadly relied upon and applied to support the Aboriginal archaeological site prediction model that is presented below. These include:

- Stream order modelling can be used to anticipate the potential for Aboriginal campsite locations in the local landscape based primarily on the order of water permanence. Namely, it can be utilised to

forecast the likely location, nature and complexity of sites including the possible range of activities that may have been carried out at a particular site in the past, as well as the possible frequency and/or duration of site occupation. In terms of the most common (and durable) type of evidence found comprising Aboriginal heritage site in the region – stone artefacts - it is likely that overall artefact occurrences in the vicinity of a high order ranking stream will reflect a greater range of activities (e.g. tool manufacture and maintenance, use, food processing and quarrying) than those located on lower order streams. Temporary or casual occupations of a site, reflected by isolated knapping floor or low frequency tool discard, are more likely to occur on smaller, less permanent water courses.

- Historic landuse activities will have an impact on the surface and subsurface archaeological potential of a study area. In general, lower levels of disturbance will often be expected to correlate with higher potential for archaeological survival, dependent on the nature, location and context of the landform under consideration. Categories of ground disturbance types are varied, but can include (hand and mechanical) vegetation clearance, stock grazing, cultivation (ploughing and drainage provision), and construction (commercial/residential, road and infrastructure works).
- Different types of landuse activities, and different levels of associated environmental effects (such as sheet/gully erosion, fluvial disturbance etc), will have different levels of archaeological impacts that will affect the integrity of both documented and potential archaeological resources. For example, tree removal/de-stumping) may result in local displacement of buried artefacts, while mechanical agricultural activities (deep-tilling etc) may extend below 'plough zones' that are sometimes referred to as occurring between 100mm to 300mm below ground surfaces. Larger-scale removal or displacement of topsoil via excavation for commercial/residential development may entirely destroy archaeological sites, although remnant (dispersed) materials may survive, but in uncertain archaeological contexts.

3.4 An Aboriginal Archaeological Site Prediction

3.4.1 Rationale

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

These models are generally based upon information including the types of landscape units contained within a study area, the results of previous Aboriginal archaeological and cultural heritage investigations undertaken in the surrounding landscape, the distribution of previously recorded sites along with their known nature, integrity, and potential composition, and upon an understanding of traditional Aboriginal land-use patterns (where possible) as guided by contemporary Aboriginal communities.

3.4.2 BRBH Aboriginal Archaeological Site Prediction

The following Aboriginal archaeological and cultural heritage predictive statement for the proposed BRBH site was prepared prior to the commencement of the current site inspection, assessment and Aboriginal community consultation program.

Based upon information sourced from the OEH AHIMS Sites Register, and the background data for local Aboriginal archaeological contexts reviewed above, the types of sites/evidence that were expected to potentially occur/survive within the study area (as detailed and illustrated in **Section 5.0** of this report) were outlined.

- *Open Camp Sites*: These types of Aboriginal cultural heritage sites are likely to occur on dry and relatively flat landforms along or adjacent to both major and minor watercourses in the local landscape. However, repeatedly or continuously occupied sites are more likely to be located on elevated ground situated at principal creek confluences in the locality.

  Surface scatters of flaked stone artefacts (or potentially durable food remains such as animal and fish bone or shell) may be the result of mobile hunting activities, while single or/and low density occurrences of such finds might relate to tool loss, tool maintenance activities or abandonment. These types of sites are often buried in alluvial or colluvial deposits and only useably become visible when subsurface sediments are exposed by erosion or disturbance allowing their identification and subsequent reporting.

  As described and evaluated in following sections of this report, surface sites can also be indicators of associated subsurface archaeological deposits which may remain intact dependant on the degree of land disturbance which has occurred in the past.

- *Isolated Artefacts*: These items generally occur without any associated evidence for past Aboriginal prehistoric activity or extended occupation. Isolated finds can occur anywhere in the local landscape and may represent the random loss, deliberate discard or abandonment of artefacts, or the remains of dispersed artefact scatters as people moved through favourable resource catchment zones over time. Ridgelines for example would have 'attracted' casual but repeated use by people and artefact discard in some form over time, but most of the main ridges in this local landscape are now major arterial routes and archaeological potential will be confined to in most places side spurs and slopes.

  Single artefacts are commonly found across the landscape as individual pieces which have no associated archaeological context. Isolated finds may be the result of either opportunistic resource use/discard or represent the 'background scatter' of Aboriginal archaeological material that can be seen across much of the Cumberland Plain.

Manuports are referred to as items consisting of raw materials of stone that do not naturally occur within the soil profiles of a given region. Transported onto a site by Aboriginal people from sources elsewhere, these items will have subsequently been discarded before use as flaked or ground stone tools.

It was anticipated at the initiation of the project that there was some chance that isolated artefacts (and/or low distribution of finds) may occur on the site, although it was recognised these items are in most cases extremely difficult to detect where ground visibility conditions are limited. The archaeological visibility considerations recorded during the recent site inspections are described in the following sections.

- *Background Archaeological Scatters:* A number of definitions exist in the archaeological literature for which this term may apply. This refers to be low density presence of Aboriginal archaeological material across most landforms on the Cumberland Plain. Often isolated finds or artefacts out of context, Aboriginal archaeological material is present across much of the region as a result of the time depth in which Aboriginal people have been present and utilising resources on the Cumberland Plain (c.20,000 years). This time depth when related to variables such as: changes in past Aboriginal populations; landuse regimes, artefact reduction methods and the longevity of Aboriginal stone artefacts in the archaeological record and combined with natural erosion processes have served to create what archaeologists call a 'background scatter' of archaeological material in which whole and *in situ* Aboriginal archaeological sites are identified and studied.
- *Potential Archaeological Deposit (PAD):* A number of definitions also exist in the archaeological literature for which this term may apply. This issue, relative to the current BRBH proposal, is discussed in context within following sections of this report.

  Essentially, this term generally refers to an area of subsurface archaeological sensitivity that has not undergone any significant levels of disturbance in historical times, whereby archaeological excavation of a PAD is considered likely to yield intact subsurface Aboriginal artefacts and/or artefact-bearing deposits. The identification of areas of PAD is generally based on landscape and environmental factors such as topography, hydrology and proximity to local resources. PADs can either be identified in association with identifiable surface artefacts or on the basis of landscape and environmental factors alone.

- *Scarred Trees*: These sites are the result of bark or wood removal to make shields, shelter, canoes containers or carving designs into the exposed wood. These sites have rarely survived early timber clearance, bush fires and timber cutting. The definite ascription of scarring on a tree to an Aboriginal origin is not always possible. Europeans often removed bark for roofing material and stock watering troughs. Other scars may be the result of surveyor and property owner blazes, lightning strikes or

cockatoo pecking. Unless the tree is at least 150 years old or more) the scarring is unlikely to have an Aboriginal origin. Aerial photographs indicate the trees on the property are either recent or historic regrowth dating at the oldest to the early twentieth century.

4.0 European Heritage Context

4.1 Drummond's lands of 400 and 210 Acres

British expansion into the country south-west of Liverpool began in the 1810s under the administration of Governor Macquarie and was continued by his successors into the 1830s. The land grants were made to free settlers and former military men with the wherewithal and capital to establish stock runs. The grants were therefore large in area and consequently the country was sparsely settled. The soils are generally poor, but the creek systems of South Creek and Cabramatta Creek sustained farming over generations.

The study area is located within a crown grant of 410 acres given to John Drummond in 1816. Prior to the grant part of the land had been promised to another and was also reported in 1821 that part of the land had been within a government stock yard.[5] At the time, the grant was bounded on the north by the Cowpasture Road. This road had begun around 1800 as track leading from Prospect to the area of Camden where, in 1795, a herd of strayed cattle had been discovered. The road was surveyed by James Meehan in 1805 and is the earliest road in the Liverpool district.[6] The original route of the road was depicted in Burr and Ballisat's plan of the colony published in 1814.

Drummond's grant was dissected by the road to Bringelly which formed sometime over 1816/1817. The road provided access to the district between South Creek and Nepean River, and is the earliest road west from Liverpool. At the intersection of these two roads is Carnes Hill, a local landmark. The hill is named after Thomas Carne, a free settler, who owned Bellevue, a grant of 700 acres some distance to the west on Bringelly Road.[7] While Drummond's grant benefited from a chain of ponds draining to Cabramatta Creek and had frontage to important transport routes, it did not have frontage to a major watercourse. This changed in December 1820 when Drummond enlarged the land holding by purchasing Robert Bostock's grant of 200 acres sited along the eastern boundary of Drummond's grant, which had frontage to Cabramatta Creek.[8] Thereafter and until subdivision in the 1880s the land holding originally owned by Drummond was described as being the 410 and 200 acreages.[9]

[5] Advertisement, Sydney Gazette, 27/10/1821, p.3
[6] Liston,C, Pictorial History: Liverpool and District, Kingsclear Books, 2009, p.5 (LIston 2009)
[7] Liston 2010, p.52
[8] Recited in Primary Application 14611
[9] Various Old System land deeds recited elsewhere in this report

Figure 4.1: Detail from J Burr and G Ballisat's Plan of the Allotments of Ground Granted from the Crown in New South Wales, published in London in 1814. The circled area depicts the later Drummond grant of 1816, which by c.1814 had been promised in two parts. By this date, only Cowpasture Road had been formed

Source: Dixson Library (Cb81/1) reproduced in Jack (2010) Macquarie's Town

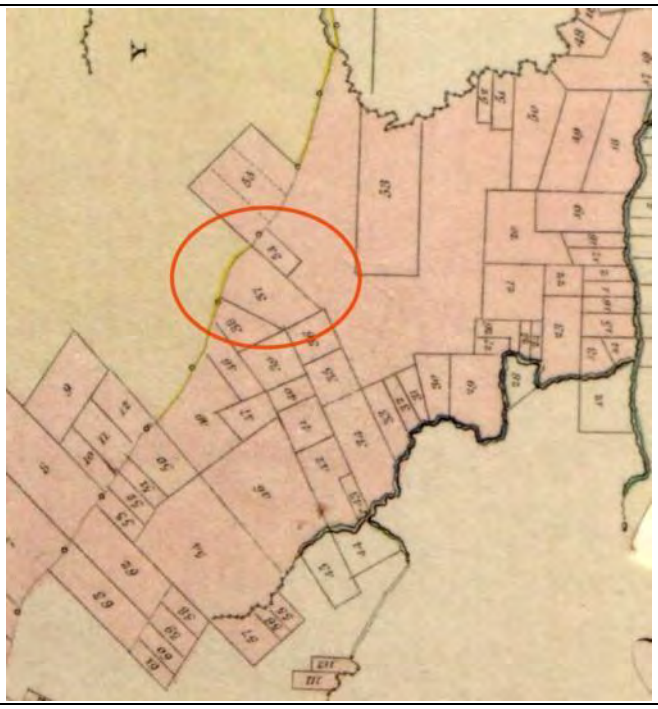


Figure 4.2: Detail from GC Stewart's 'Map of the County of Cumberland', dated 1822. The circled area depicts Drummond's grant of 1816. By this date Bringelly Road had been formed

Source: State Records NSW (Map 1692) reproduced in I Jack (2010)

Figure 4.3: Detail from an undated (c.1830s) map of the parish of Minto depicting the southern two thirds of Drummond's 410 acres (shaded blue); the northern third above Bringelly Road is within the parish of Cabramatta. The map also shows Robert Bostock's grant of 200 acres (shaded green) that Drummond purchased in 1820. Bostock's grant had frontage to Cabramatta Creek

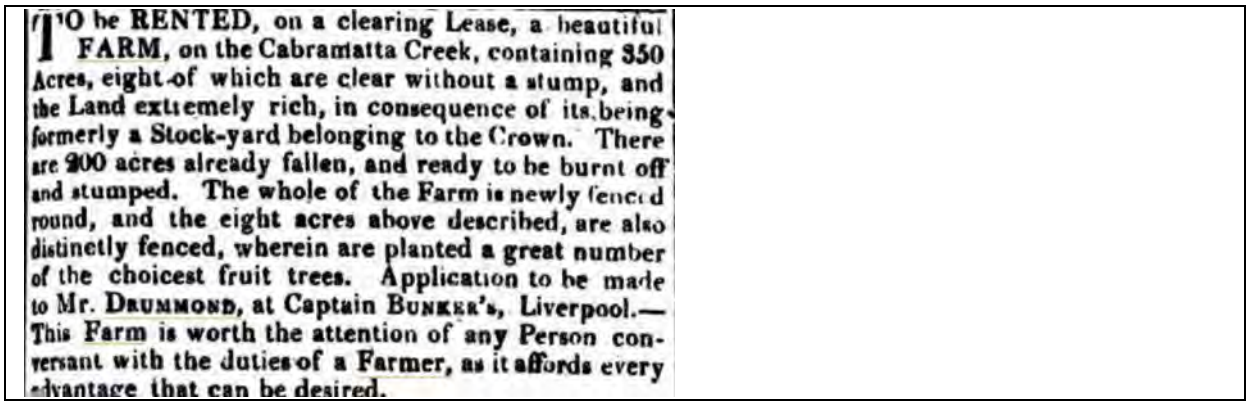
Source: Land and Property Information

Figure 4.4: Detail from an aerial photograph dated 1947 depicting the area (in part) of the grants when the land remained in agricultural use. The blue line demarcates the grant of 400 acres and the green to 210 acres. The area shaded red depicts (very approximately) the study area

Source: Land and Property Information

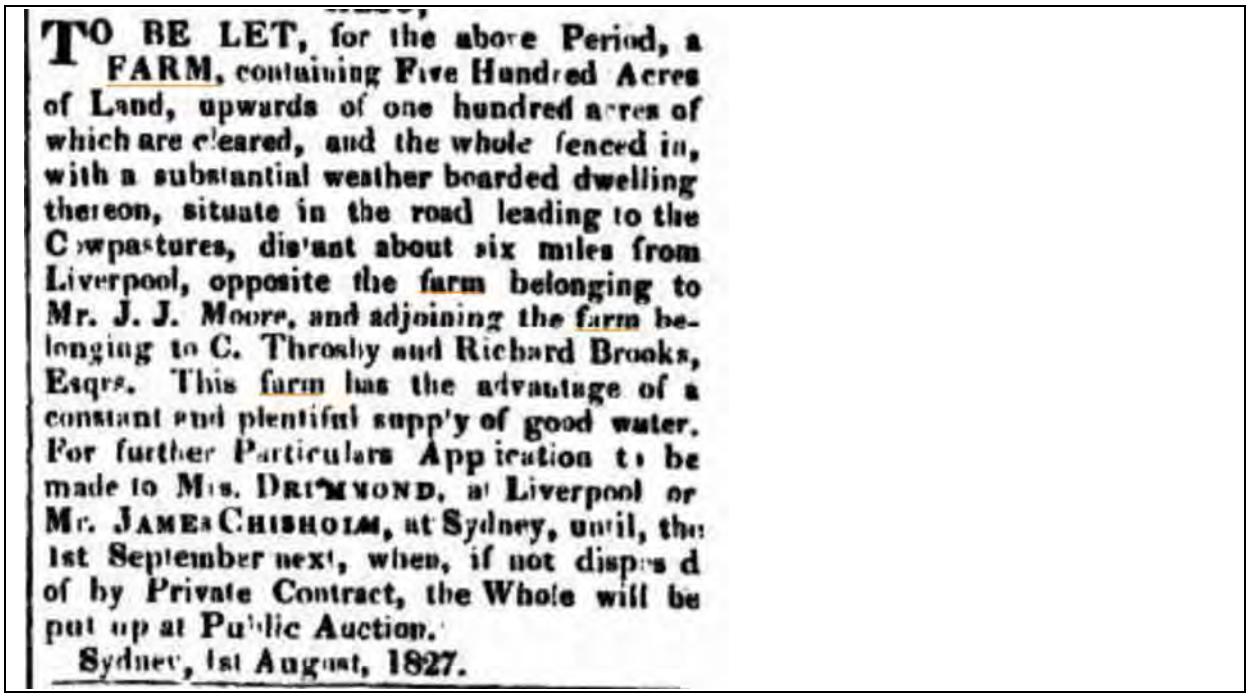
John Drummond had arrived in the colony in 1788 aboard the convict supply vessel Sirius commanded by Captain John Hunter (later governor) and held the senior rank of quarter master. Between 1796 and 1813 he was on Norfolk Island where he held the position of beach master and pilot responsible for landing of stores. While at Norfolk Island he entered into a relationship with Ann Read, a convict. The couple married in May 1813 on their return to Sydney and when he took up farming with financial assistance from a government pension in recognition of his services. At first, Drummond purchased 100 acres of Chipp's Farm on the outskirts of the township of Liverpool in July 1813 and that was the couple's place of residence until their death in the late 1820s; John in July 1827 and Ann in August 1828.[10]

While Drummond resided at Liverpool, his land at present day Leppington was being developed evidently over the late 1810s and early 1820s and leased. A number of newspaper notices of this era refer to a farm owned by Drummond which probably referred to the Leppington land although the details were not consistent entirely. In 1821 John Drummond advertised the farm as being for lease and it was partly cleared, and in 1827 his widow advertised the farm as being for lease and by then possessed a weatherboard dwelling (Sydney Gazette, 6 August 1827, p.3):



TO be RENTED, on a clearing Lease, a beautiful FARM, on the Cabramatta Creek, containing 350 Acres, eight of which are clear without a stump, and the Land extremely rich, in consequence of its being formerly a Stock-yard belonging to the Crown. There are 200 acres already fallen, and ready to be burnt off and stumped. The whole of the Farm is newly fenced round, and the eight acres above described, are also distinctly fenced, wherein are planted a great number of the choicest fruit trees. Application to be made to Mr. DRUMMOND, at Captain BUNKER's, Liverpool.—This Farm is worth the attention of any Person conversant with the duties of a Farmer, as it affords every advantage that can be desired.

[10] Liston,C, Pictorial History: Liverpool and District, Kingsclear Books, 2009, p. 10



TO BE LET, for the above Period, a FARM, containing Five Hundred Acres of Land, upwards of one hundred acres of which are cleared, and the whole fenced in, with a substantial weather boarded dwelling thereon, situate in the road leading to the Cowpastures, distant about six miles from Liverpool, opposite the farm belonging to Mr. J. J. Moore, and adjoining the farm belonging to C. Throsby and Richard Brooks, Esqrs. This farm has the advantage of a constant and plentiful supply of good water. For further Particulars Application to be made to Mrs. DRUMMOND, at Liverpool or Mr. JAMES CHISHOLM, at Sydney, until the 1st September next, when, if not disposed of by Private Contract, the Whole will be put up at Public Auction.

Sydney, 1st August, 1827.

Following the death of Mrs Drummond, the two grants at present day Leppington and the house in Liverpool, Drummond Cottage, were bequeathed to Joseph Thompson. Thompson (1784-1839) was a merchant captain, master of the whaler Active that was based in Sydney in the period 1820-1822,[11] and later master of the whaler Woodlark. Thompson together with James Chisholm was executors of Ann Drummond's estate.[12] On Thompson's death, at Liverpool, in 1839,[13] the properties passed to his second born daughter Ann Jane, who later took the name Ann Jane Drummond Thompson.[14] In 1841 Miss Thompson married Joshua Cooper in Liverpool.[15] Cooper (1820-1853) was the eldest son of the Rev Joseph Cooper. In the 1840s he held the station Culford on the Kings Plains in the New England district and later was at Jerry's Plains in the Hunter Valley.

Joshua Cooper died in September 1853[16] but in June of 1852 he and his wife sold the land at Leppington to Timothy Beard for 725 pounds. The conveyance was for 550 acres, but the land description was for the grants of 410 acres and 200 acres.[17]

The period of ownership by the Drummonds and Thompsons lasted 36 years. The documentary evidence for site use is limited and comprises the late 1820s advertisements reproduced above and the early map of the parish. The advertisements indicate a 'substantial' weatherboard cottage stood somewhere within the 610 acres. The locations of dwellings in the colonial period were, as common sense dictates, on the highest point

[11] Howard, M, Masters of the Sydney Whaling Fleet, 1805-1896, Descent, June 2014, p.92
[12] Advertisement, Sydney Monitor, 13/10/1828
[13] Died, Sydney Gazette, 3/10/1839, p.3
[14] Recited in Old System Conveyance Book 23 No. 816
[15] Married, Sydney Herald, 13/8/1841, p.3
[16] Deaths, Sydney Morning Herald, 24/9/1853, p.3
[17] Old System Conveyance Book 23 No. 816

within the available area. The notation on the parish map was unusual and further research into contemporary road surveys would be required to further elucidate its meaning. It is likely the property in this period was cleared to some extent, and divided into paddocks and leased for pasturing cattle or horses.

Figure 4.5: Detail from the undated (c.1830s) map of the parish showing a building or compound within Drummond's 410 acres. This built feature was located within the study area (approximately Lot 11 or 12 in Deposited Plan 29104)

Source: Land and Property Information

Timothy Beard was the son of the publican and horse dealer Timothy Beard (1780-1848). Beard senior had purchased land located on the south side of Bringelly Road[18] and to the east of Drummond's grant in the late 1820s. Beard opened the Bay Horse Inn, described in 1827 as being 'at the bottom of Carn's Hill',[19] and in other accounts on Cowpasture Road, although the use of Cowpasture and Bringelly to describe the road near Carnes Hill was interchangeable in this period evidently.[20] The location of the inn was said in 1954 by the local historical society as being on the south side of Bringelly Road 'below the summit of Carne's Hill',[21] which was within Drummond's 400 acres but not within the study area. It is possible the property of the inn was leased from the Drummond/Thompson family over the 1820s-1840s.

In 1858 Beard leased the property to John Green with a rental of 35 pounds per annum. The deed referred to the farm as 'Drummondsville' on Cowpasture Road.[22]

A government development in this era and of this area was the building of a toll house or bar in the early 1850s at the junction of Cowpasture and Bringelly roads. A survey of 1865 plotted this toll bar west of present day Stuart Road and not within the study area.

[18] See sketch map in Old System Conveyance Book 734 No. 513
[19] Supreme Criminal Court, Sydney Gazette, 4/7/1827, p.3
[20] See sketch map in Old System Conveyance Book 734 No. 513
[21] 'Members of Historical Society Visit Bringelly', Camden News, 17/6/1954, p.4
[22] Old System Conveyance Book 62 No. 524

In the early 1860s the property changed ownership frequently. Although owned by George Minchin, Beard retained an fiduciary interest in the property until 1865 when it was sold to brothers Patrick Cahalan and Edward Cahalan for 750 pounds.[23] Brothers Patrick and Edward Cahalan owned the property between 1865 and 1878. The Cahalans raised families here and farmed the land.[24] The property the Cahalans purchased was described in the sale as: Source: Sydney Morning Herald, 7/10/1865, p.11).

CABRAMATTA.

VALUABLE FARM AND HOMESTEAD,

Near the junction of the Bringelly and Cowpasture Roads, at Kearne's Hill, opposite the public-house formerly occupied by Mr. Beard, about five miles from the Liverpool Railway Station.

This Property comprises 510 ACRES, all of which is fenced and subdivided into paddocks. The land is good, portions consisting of rich whinstone rises, and a large area is cleared and ready for cultivation. About 400 Acres, with Cottage, &c., is let for £35 per annum, the residue, with superior Weatherboard Residence, Garden, small Orchard, &c., is occupied by Mr. Minchin, the proprietor.

Particular attention is directed to this conveniently situated superior Farm, which will be positively sold, and an inspection prior to the sale is invited.

RICHARDSON and WRENCH have received instructions to sell by public auction, at the Rooms, Pitt-street, on MONDAY, 9th October, at 11 o'clock,

The above favourably situated country estate, full particulars of which may be obtained on application at the Rooms.

Plans on view.
Terms at sale.

The sale notice indicated there were two cottages on the property; a 'superior weatherboard residence' occupied by Minchin that probably was the same building as described in the lease notice published in 1828; this cottage would seem to have been located within the area of Bostock's grant of 200 acres and therefore outside the study area. The other cottage was within Drummond's 400 acres and leased by Green.

A survey of part of the farm was undertaken in 1865 by the government to form present day Stuart Road as a re-alignment of Cowpasture Road.[25] The survey and subsequent dedication would seem to have legitimized a section of Cowpasture Road that had long been used given the notation on the survey plan that the original alignment was 'impracticable'. The survey did not depict any building within the study area, although a corn field was plotted (within present day Lot 14 in Deposited Plan 29104).

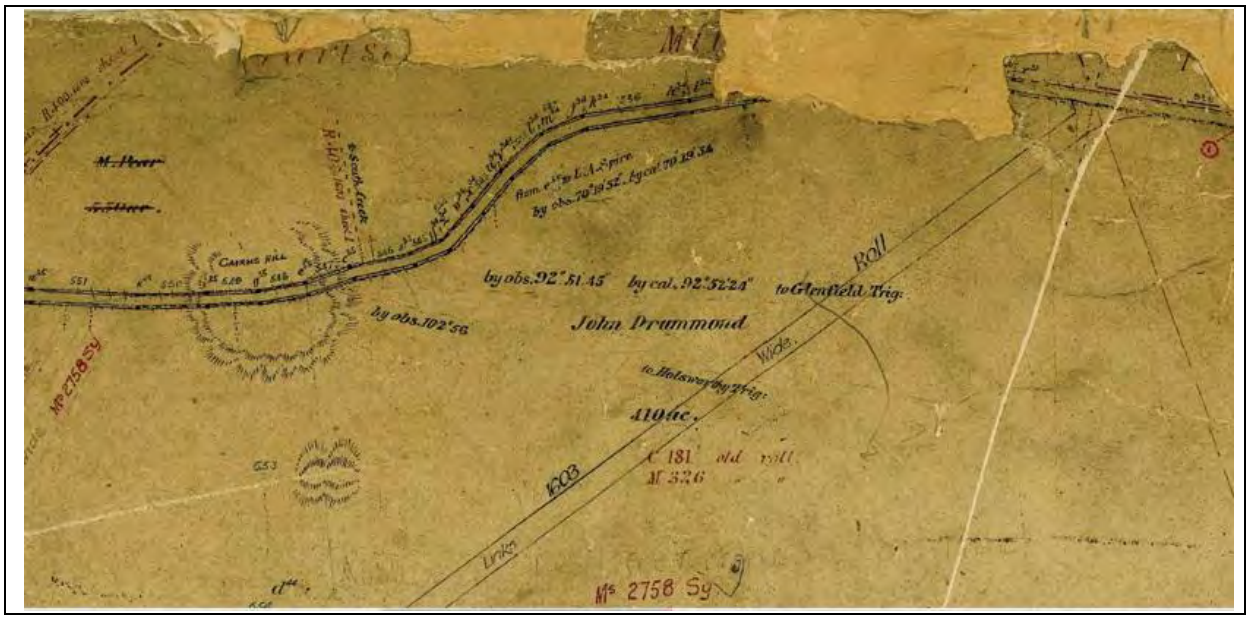
[23] Old System Conveyance Book 80 N0. 158; Book 95 No. 823; Book 96 No. 148
[24] 'Death of Mrs Cahalan', Cumberland Argus, 18/12/1915
[25] Land and Property Information Crown Plan 409.1603

Figure 4.6: Detail from the 'Plan of road from Smithfield to the main southern road at Carnes Hill' (May 1865)

Source: Land and Property Information (Crown Plan 409.1603)

Figure 4.7: Detail from 'Plan shewing the re-definition of the Great Southern Road', August 1885

Source: Land and Property Information (CP 3289.1603)



4.2 Subdivision and Formation of Land Holdings of 81 Acres

In 1878 the Cahalan brothers sold the land holding of the grants of 400 and 210 acres to John Moore for 1,487 pounds.[26] Moore at the time was residing at Glenmore near Penrith. A survey of part of the farm was undertaken in 1885 by the government to confirm the alignment of Bringelly Road.[27] While prepared for road alignment purposes, the survey did not depict any building within the study area. No further details known.

Moore commenced the subdivision of the land holding of the grants of 400 and 210 acres in 1880s and the farm holding of around 81 acres was purchased by James Oprey and his wife Frances Elizabeth. Little is known of Oprey, but wife Frances was born in the district in 1849 to Mary and Joseph Rolfe.[28] The Rolfes were relatives of the aforementioned Beards. Frances married James Oprey in 1868 and on coming of age in 1871 acquired part of Timothy Beard senior's land holding on the south side of Bringelly Road, of around 81 acres.[29]

The Opreys ran a dairy farm, but it is not known if it was on or in part on the study area given the other farm on Bringelly Road. The 1890s was a decade of extreme drought and it affected the livelihood of the Ospreys. Both farms were mortgaged to Neal Collins in 1893.[30] The farm had 25 head of dairy cattle and all died in December 1894 owing to the want of water. Mr Oprey died in October 1895 and for a time the dairy farm was continued by his widow and son, also named James (1885-1932). In 1896 their creditors filed for bankruptcy[31] and the farm was retained by their mortgagee Neal Collins. Collins (1866-1922), was a solicitor and prominent layman in the Roman Catholic Church,[32] who loaned money on a commercial basis. There was no family connection.

As noted, James Oprey died in 1895 and Mrs Oprey subsequently remarried in 1903 to Patrick Job Bird (1875-1950). By the time of her death in 1908 she was living in Pyrmont, although her youngest children, Frances and Hughie, had remained in the Liverpool district.[33] Presumably, from the mid 1890s the farm was tenanted.

A map dated 1906 recorded the owner of the farm as 'E Collins' (sic), and a building on the east side of the farm. This building was not shown in an aerial photograph dated 1930.

[26] Old System Conveyance Book 188 No. 229
[27] Land and Property Information Crown Plan 3289.1603
[28] Index to New South Wales Births, Deaths and Marriages
[29] 'Rolfe v Opery', Sydney Morning Herald, 14/6/1893, p.4; Old System Mortgage Book 734 No. 513
[30] Old System Mortgage Book 525 No. 487 and Book 734 NoO. 513
[31] 'Law Report', Sydney Morning Herald, 12/11/1896, p.3
[32] 'Death of a Prominent Sydney Catholic', Freeman's Journal, 10/8/1922, p.26
[33] Funerals, Sydney Morning Herald, 8/9/1908, p.12

Figure 4.8: Survey of the farm of 81 acres undertaken in 1894 for land conveyancing purposes only.

Source: Land and Property Information

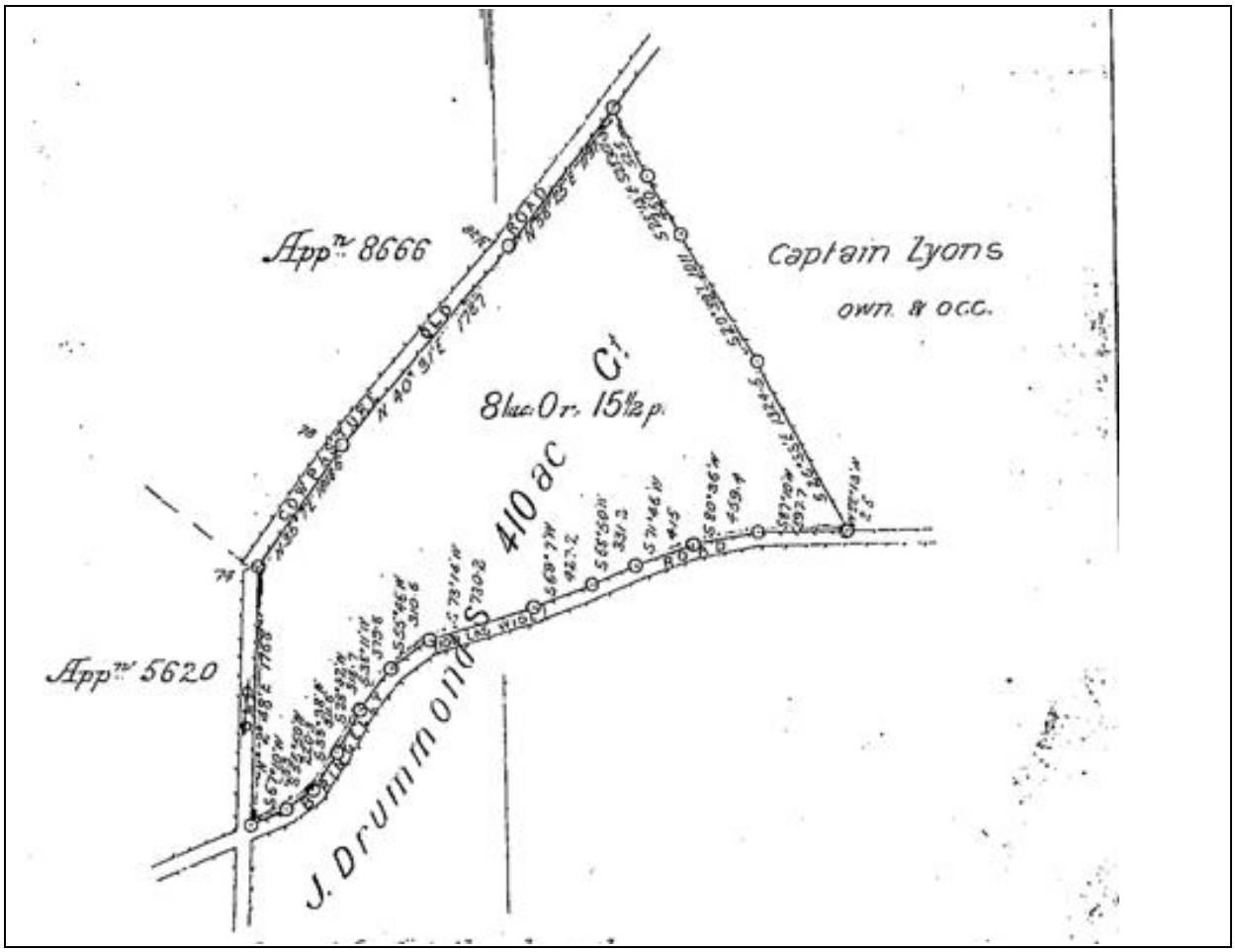
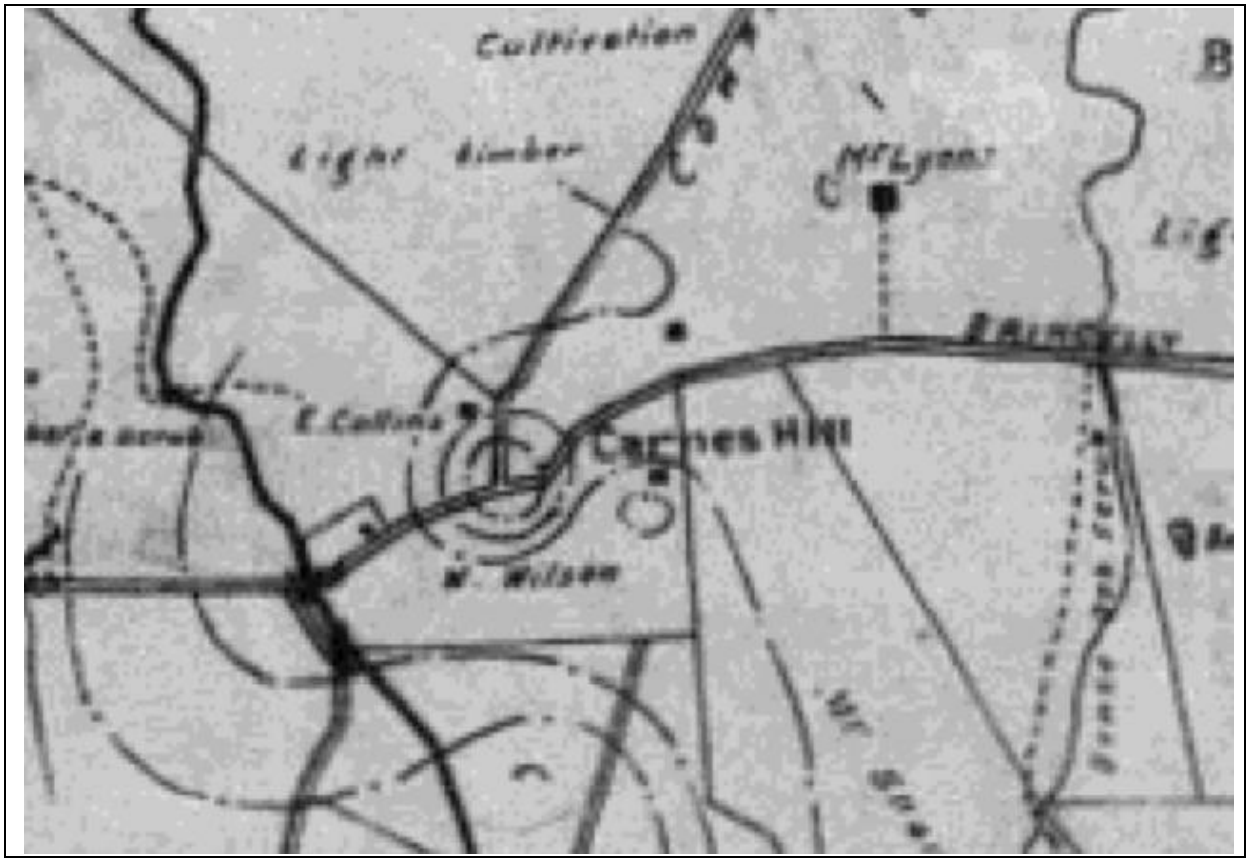


Figure 4.9: Detail from a reconnaissance map of the district of Liverpool prepared in 1906 by John Byrne. The subject area at the time was shown as being in the ownership of E Collins. Note the building above the Carnes Hill notation

Source: State Library of New South Wales (Z M3 811.134/1906/1)



Collins sold the farm to John Robert English in 1921.[34] English and his wife Beatrice were described as being dairy farmers resident at Hoxton Park, a locality strictly being to the north of the area under review, in various land deeds and street directories. John died in 1926 at Camden and was buried in Cobbitty.[35] His widow retained the property until 1942 when it was sold to Mrs Eliza May Bernier.[36]

From the mid 1920s the farm was tenanted. In 1958 Bernier subdivided the farm to form allotments of around five acres. For the period from 1930 aerial photographs are available to document the developed nature of the farm. The 1930 aerial photograph recorded the property as cleared of tree cover and substantially open paddocks with sporadic stands of shade trees. A complex of buildings was located on the rising ground at the south-west corner and with the chain of ponds to its north-east. The buildings could have been a dwelling and out houses or feed stores associated with the dairy operation. There was a drive off Cowpasture Road, and

[34] Torrens Title Dealing A747475
[35] Death, Camden News, 5/ 8/1926, p4
[36] Torrens Title Dealing D166587

there were a number of small paddocks under cultivation adjacent the building complex and also on Bringelly Road. The 1930 photograph probably recorded the early twentieth century characteristics of the farm.

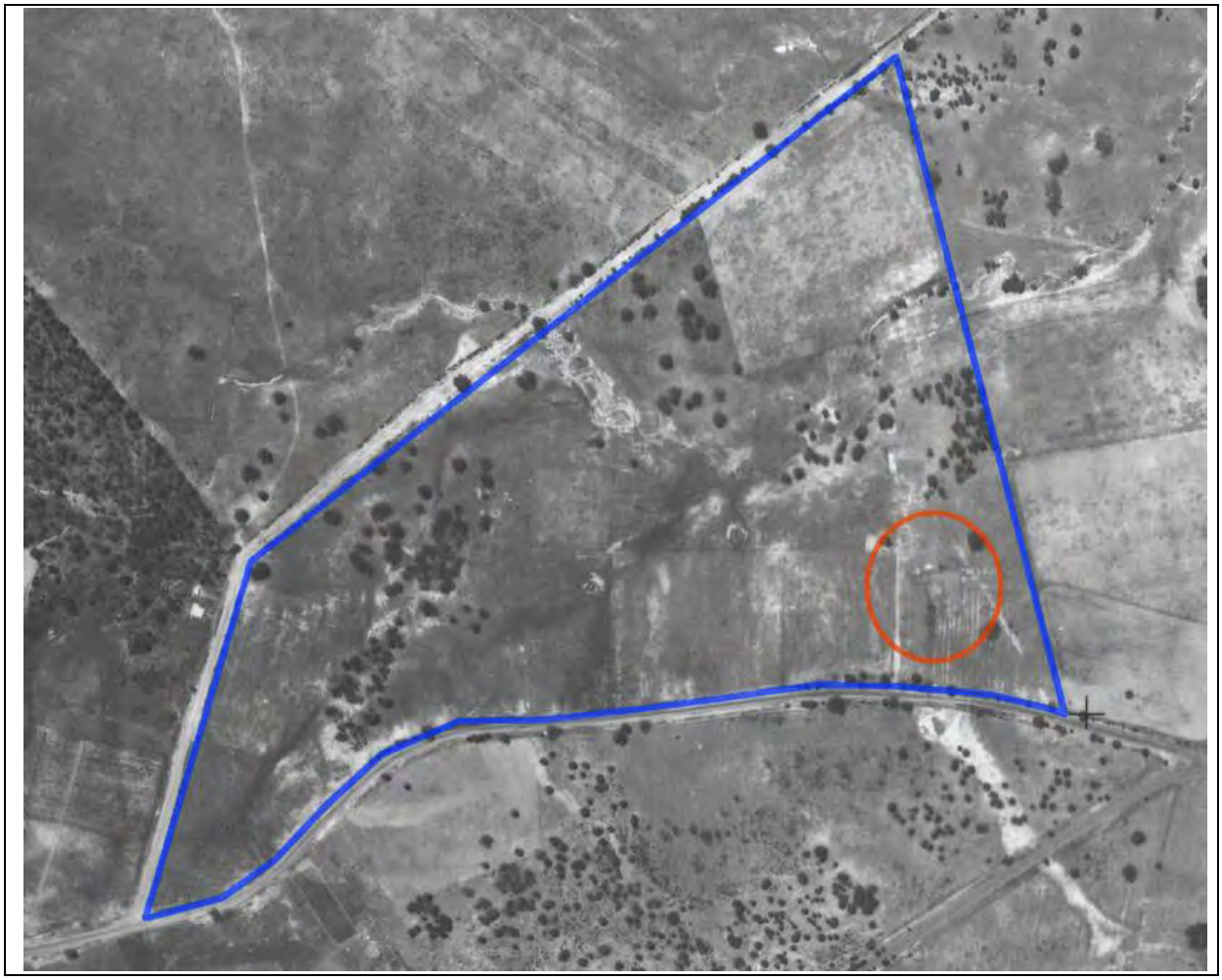
By the 1947 photograph the buildings and drive depicted in 1930 had been removed and a new house erected further east and fronting Bringelly Road. The land at that time was being more intensely used with substantial areas under cultivation. Presumably this residence, which is not within the study area (Lot 9 in Deposited Plan 29104), was erected in the 1930s. This image also shows two creeks running across the study area.

Figure 4.10: Detail from an aerial photograph dated 1930 depicting the area of the farm of 81 acres. The circled area shows a complex of buildings. This area is within the study area (Lots 2 and 3 in Deposited Plan 29104)

Source: Land and Property Information

Figure 4.11: Detail from a 1947 aerial photograph depicting the area of the farm of 81 acres (boundary in blue). The circled area has been interpreted as the place of residence on the farm at that time and from the 1930s. This residence is not within the study area (Lot 9 in DP 29104)

Source: Land and Property Information



4.3: Subdivision in 1958 and Formation of the Existing Allotments

Mrs Bernier, the owner since 1942, arranged for the subdivision and sale of the farm in 1958. The subdivision created 14 allotments; most around five acres. The study area comprises Lots 1-3 and 10-14 of this subdivision (being DP 29104). At the time of the land release, the only farm dwelling standing was within Lot 9 (not part of the study area), which would seem to have been erected in the 1930s according to the aerial photographs discussed above.

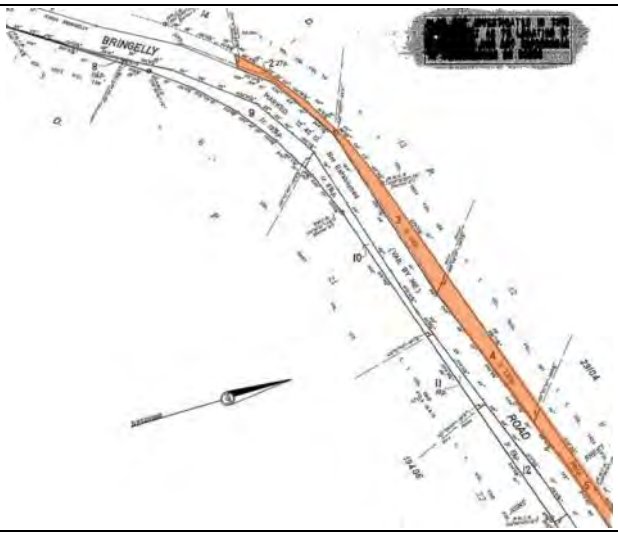
The timing of the subdivision followed closely the adoption of the County of Cumberland Planning Scheme in 1951. The cornerstone of this Scheme was a 'green belt' around the existing metropolitan area, and was designed to restrict urban sprawl. Liverpool was within the green belt and this was thought to potentially constrain development, but the study area was just beyond and within the rural zone. Whether this had an impact on the land value of the new allotments is not known.

The new allotments were generally five acres in extent and therefore not ideal for the needs of the market gardeners who purchased the land. Consequently in some instances two allotments were purchased to form a farm of ten acres. Many of the purchasers were migrants from the countries of the Mediterranean region as follows:

- Lot 1 - Rene Raymond Cailly
- Lots 2 & 13 - Morris Novakovich
- Lots 3 & 11 - Lazar Radusavlevic
- Lot 10 - Antonis Pierubon (from 1960)
- Lot 12 - Nikola Milenov
- Lot 14 - Salvatore Rizzo (from 1961)

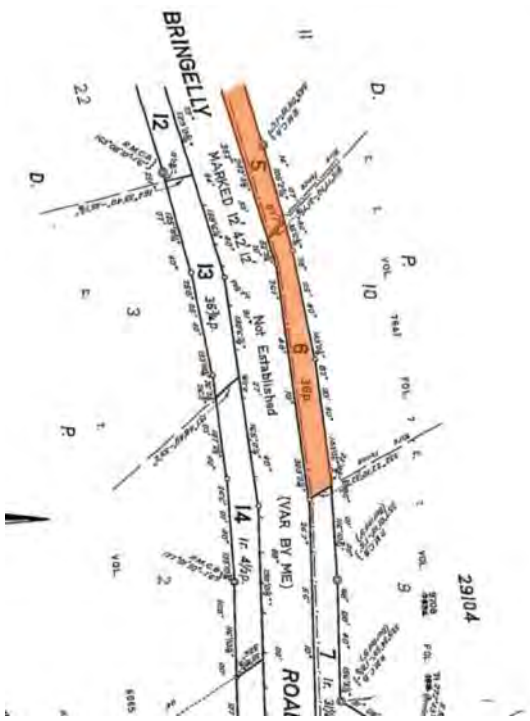
New dwellings were erected on Lot 10, Lot 11 and Lot 13 from around 1960 fronting Bringelly Road. These allotments came into government ownership from 1976. The built character of the area has changed rapidly in the last few decades as part of government responses to Sydney's rising population with former farmland being redeveloped for housing and commercial uses. Today, the original route of Cowpasture Road is now named Stuart Road and its intersection with Bringelly Road has been removed. Bringelly Road was widened sometime after 1967 which have removed the nineteenth century road frontage to the farm land discussed above.

Figure 4.12: Changes to Bringelly Road in the 1960s



Source: Land and Property Information (DP225208)

Figure 12. Detail from a re-alignment plan of Bringelly Road, dated 1967



5.0 Archaeological Landscape Evaluation

5.1 Landform & Slope Analysis

A preliminary archaeological landscape evaluation of the study area was undertaken by DSCA prior to the completion of a series of on-site meetings that were held with the project RAP's in late September and early August 2014. This included both a perimeter ('road verge') walk to assess the major land form units contained within the property, and this was followed by a number of targeted walkovers of specific areas in the west and central portions of the site along the Stuart and Bringelly Road frontages to gauge the nature of archaeological visibility conditions across the site.

The latter 'spot checks' showed that the site was entirely covered with tall and dense grass and that this was inter-mixed in places with dense stands of lantana and black berry, with virtually no natural ground exposures being evident. The preliminary inspections also confirmed that the site is characterised by sloping topography orientated around low-order drainage lines falling towards South Creek to the west. In this respect, the BRBH site has a change in land elevation of approximately 30m from east to west over a distance of c.300m and has undulating with slope forms up to approximately 10° in gradient which are associated with two minor tributaries (now dammed) of Cabramatta Creek.

This preliminary landscape evaluation established that the poor archaeological visibility conditions currently evident across the property would preclude an effective surface survey and assessment of the site. This conclusion was confirmed during on-site discussions with the project RAP's. While it was observed that the predominant landform units on the site were slopes of some form, the topography of the property was also observed to include a number of areas of flat to gently sloping ground or what could be termed as 'site favourable' locations that may have attracted camping and/or been suitable for repeated or extensive use by Aboriginal people in the past.

Within this context, it was broadly postulated (by DSCA) that the land contained within the study area may have been used by people in a 'transitory' way as they travelled across the country between different resources zones within the wider local landscape including the more elevated country in the upper catchment of Cabramatta Creek to the north and east of the site, and the riparian corridor and flood plain resources of South Creek to the west. The most elevated portions of the site (such as in the south western corner of the site at the corner of Stuart and Bringelly Road) command panoramic 'sight lines' that will have been important for travel and communication purposes, and people may have used through the land by following the drainage lines and low ridge corridors that are included within the study area.

From a landscape archaeological perspective, some of the slope gradients present across the study area would have been suitable (theoretically) for either casual or prolonged Aboriginal use. In this respect, only a few areas have entirely flat topography, but likewise, only a small proportion of the site (predominantly in the

western third of the site) consists of higher gradients which would have been seemingly too steep for use by people other than for travel. The general types of archaeological evidence that may be expected to potentially occur within this form of undulating and sloping topographic context is suggested below.

Table 5.1: Slope and Gradient Categories & Archaeological Expectations

Category	Slope	Archaeological Expectation
Level ground	>2%	Suitable for one-off and/or repeated camping of a both nature and duration over time sufficient to have created archaeological deposit
Level ground-gentle slope	2-4%	
Gentle slope	5-9%	
Moderate slope	10-19%	Suitable for casual short-term visitation and use. However, potential archaeological deposit may have been altered by 'soil creep' or largely created within taphonomic landscape 'artefact traps' including toe slope hollows that will have collected materials as a result of sheet and gully erosion and run off
Steep to very steep	<20%	Likely to be too steep for use other than through travel with loss or discard of finds often relocated and exposed by colluvial erosion processes

5.1.2 Landforms with Potential Archaeological Sensitivity

A number of areas on the site that are of some size (over approximately 20m by 20m or more) are relatively flat to gently sloping, are some of these are also elevated above drainage and in landscape positions that may have been attractive to people in the past to 'camp' and/or carry out particular tasks and these are coded A to G in **Figure 5.5**. Area A and Areas C to G variously comprise low flattened spurs and/or their side slopes with low gradients that directly overlook or lead down to drainage that is likely to have represented an ephemeral but perennial source of water. Area B denotes. The largest area of flat land on the site occurs in the vicinity of Area E, while the steepest land is located towards the Stuart and Bringelly Roads intersection. Area B denotes the current main timber stand on the property that has been in the same approximate location since c.1947. It has been historically defined by market gardening that has extended up to the edges of the timber, and the locality retains a greater probability to possess relatively intact soil profiles when compared with the majority of the remainder of the property that has been used extensively for agricultural purposes for possibly a century or more which will have reworked the relatively shallow topsoils in the locality. The nearest borehole data (see **Figure 1.2** and **Appendix 6**) on 'dry land' (BH 5) and away from the dam (BH6) revealed a subsurface profile of approximately 20cm of silty clay but plastic brown loam topsoil (A1/A2 units) over a deeper B-horizon profile of red brown silty clay with a trace of fine gravel.

5.1.3 Landuse History & Potential Archaeological Impacts

The site has been used continuously used since 1947 for market gardening and other agricultural purposes such as stock grazing prior to this time. The former activities have created the most visually obvious changes to the land in the form of contiguous patterns of overlapping rectangular shaped allotment or fields that have been ploughed or planted leaving parallel furrow lines. The agricultural dams on the land date to this period or earlier (and appear to have been possibly enlarged over time), and the overlapping cultivated plots extend up to the edges of the ground overlying the drainage lines that are likely to have been too step to use (too wet) by people in the past, and also extend to the edges of the remnant timber stand in Area B. While the specific location and relative maturity of the individual trees currently on the site suggests the trees have been at least partly cleared and regrown since 1947, the locality may retain subsurface soil profiles with some integrity. The settlement period landuse history suggests the land has long history of agriculture and grazing, and is likely used for stock grazing since the early nineteenth century and possibly largely cleared by mid century or before.

It is expected that while most of the flatter land and gentle side slopes illustrated in **Figure 5.5** may theoretically lend themselves for casual or repeated Aboriginal visitation and use, the surviving archaeological record of this past Aboriginal landuse (if formerly present) will have been significantly reworked by continuous ploughing and the stratigraphic integrity of the potential archaeological deposits within which the Aboriginal objects or features may be identified will be limited.

While these impacts are unlikely to have entirely destroyed the potential archaeological evidence, the potential Aboriginal objects themselves may also have been dispersed/displaced vertically and horizontally continuously over time by a combination of colluvial processes of soil erosion and dispersal by water action. Sloping landforms and 'light' (newly ploughed) soils are more sensitive to erosion, and the volume or rate of flow of surface runoff water either in defined drainage gullies or overland where topographic differentiation may be limited (larger or rapid flows induce more erosion etc), will have affected archaeological survival from taphonomic influences such as 'sheet' and 'gully' wash. In this respect, sheet erosion is intended to refer to the probable removal of layers or 'sheets' of topsoil from sloping land and erosion is usually heaviest during the early part of irrigation (especially when ploughing/hoeing/irrigating on slopes) because dry surface soil is often loosened by cultivation and easily removed by flowing water. After this, moist soil 'settles down' and erosion is reduced. Gully erosion can be defined as the removal of soil by a concentrated water flow, large enough to form channels or gullies, and this is likely to have occurred at times in the prehistoric and historic past.

5.2 Aboriginal Cultural Values

Three separate on-site meetings were held with the project RAP's where the BRBH proposal was explained and the preliminary desk top archaeological assessment of the land that is presented here was discussed. It was clearly identified to DSCA that the study area has cultural heritage value to the local Aboriginal community, and some of the general Aboriginal cultural heritage values that were expressed by stakeholders include:

- The Aboriginal history of the place (including Robert Lock and his Darug wife Maria who settled on Rev Cartwrights farm on Cabramatta Creek etc) and its possible proximity to Aboriginal pathways and trade/communication routes linking the Cumberland Plain and people and country to the south, along with a possible historic period meeting place as told by oral tradition.
- Scarred trees (mindful that they are uncommon). Two scarred trees are recorded to be located along Cabramatta Creek, one upstream of Hoxton Park Road and the other just downstream of Camden Valley Way.
- Artefact sites, landscape features such as hills, creek banks and waterholes, potential cultural-ecological evidence that may survive in association with any archaeology on the site, and a general concern for burials, as their locations are not always known and they can be found almost anywhere.

Additional comments and advice provided by some of the project RAP's (see **Appendix 4**) that are summarised are further discussed in following sections of this report:

Darug Custodian Aboriginal Corporation (27 September 2014)

'We have received and reviewed the– Aboriginal cultural heritage draft assessment for Bringelly Road Business Hub The Assessment and findings are very inclusive and informative the complex of sites in this area has been recorded and documented to a high standard. Surrounding this area are many highly significant sites that are all a connected complex of sites. Although there is visible finding of artefacts here due to grass cover, this area is still important for the information that we can collect here to assess the bigger picture and add information to our overall studies of how Darug people moved, lived and survived in this landscape.

We would like to add that our sites are a complex and not all separate sites and recommend that the connections are interpreted throughout the project. Information gathered during these projects is of high significance, once our sites are gone there is no other evidence of the sites or connections. This area has shown in recent excavations and surveys that this is a Darug landscape and there are still numerous parts of our histories to be recorded.

We support the findings and recommendations in this report'.

Darug Landcare/Des Dyer (17 September 2014)

'The Darug Aboriginal Landcare/Uncle Des Dyer have no objections to the proposed area of development.

We agree with the all your recommendation and methodology, in your report for the test excavation, that will be carried out.

We would like to see a plan of management be put in place to rebury artefacts some were close by once the development in completed.

All land holds specific social, spiritual and cultural values to our organisation'.

Deerubbin Local Aboriginal Land Council – on behalf of the GLALC (16 September 2014).

'Because of the grass cover across the landscape and ground surface visibility being poor, no Aboriginal cultural materials (in the form of stone artefacts, for example) were found.

Deerubbin Local Aboriginal Land Council therefore recommend further investigations be undertaken with a program of test excavation'.

Tocomwall (1 September 2014).

[Danny Franks] '*observed some notable areas that would have been excellent areas for indigenous habitation. The study area holds a natural reservoir and also geological features such as small hills that would have made for great vantage points and campsites. The spring would have attracted wildlife and made good hunting and fishing. These attributes and the proximity to other sites as mentioned in the field create a unique and interesting study area both scientifically and culturally'.*

Phil Khan (5 September 2014).

'The large 20 ha block of land between Sturt and Cowpastures Rd looks to be of great cultural interest. With its hilly land forme with its small creeks and possibly wetlands that may have been created by natural springs back in the old days when the old Aboriginal tribes wonder this land freely hunting wild game to survive the way they have for thousands of years.

It would have been areas like this that they may have had as special places for men's and women's areas were there was water all the time, not water flowing but under the ground and they would of dug it out and used it then closed if after wounds. The area that looks to be a small wetland would have had all kinds of wild game around it, turtles, snakes, snakes, ducks, yaby's, kangaroos, yams and other bush foods. The areas that may have cultural material could be the flat areas along creek lines and on top of the larger hills were the old men would sat catching the breeze in the summer time and maybe flaking a stone to make a tool with a small fire to keep the fly's of him.

I feel we need to have further archaeological excavations in the areas that I have talked about on the flat lands in between the small waterways and the hills, and on the larger hills themselves'.

Cubbitch Barta (16 September 2014).

'During the site inspection, it became obvious that there was no visibility over the whole of the proposed area of the land for this development. According to the report there has been some disturbance of the land, due to past land use, but I do not believe that this will have impacted any potential for the land to still hold cultural objects sub surface.

There may not be any sites recorded in this particular property but there are several within the immediate vicinity, one of which avoided by the South West Rail Corridor , but not totally avoided by Sydney Water who are proposing

to place a sewer line near the site. A 10 metre wide corridor will partially impact the site [the site is marked on a map attached to the Cubbitch Barta correspondence].

There are several locations on the property that are suitable for camping, and they will require further investigation before any proposed works on the site.

.....The report mentions the property being sold to John Robert English. John English is probably a relative, a Dharawal descendent. I have not done any further research to substantiate this, but my great grandmother married a James English in the year 1889. The family was quite large and it is possible that he is a descendent, especially with ties still in Camden'.

Darug Aboriginal Cultural Heritage Assessments (19 November 2014)

'DACHA have reviewed your report on the proposed Business Hub and we support your conclusions and recommendations and summary, and look forward to working with you on this project'

5.3 Due Diligence Considerations

The *Office of Environment and Heritage* (OEH) *Due Diligence Code of Practice for the Protection of Aboriginal Objects in New South Wales* (DECCW September 2010) is a step by step formulae that requires '*taking reasonable and practical measures to determine whether your actions will harm an Aboriginal object and, if so, what measures can be taken to avoid that harm'* (DECCW 2010:4). The Code and its methods are designed to give a baseline level of information outlining opportunities and constraints related to Aboriginal heritage and the steps in the due diligence processes are in summary:

- Step 1 Determining if the activity will disturb the ground surface or any culturally modified trees.
- Step 2a Database search: Aboriginal heritage information management system (AHIMS) and known information sources.
- Step 2b Landscape assessment.
- Step 3 Impact avoidance assessment.
- Step 4 Desktop assessment and visual inspection.

The Code specifies if the initial assessment process identifies Aboriginal sites or objects will or is likely to be harmed by the proposed activity then further investigation and impact assessment is required (**Appendix 7**).

Step 1. Will the activity disturb the ground surface?

Almost the entire site is likely to be disturbed during future construction works. Some areas are however are to be retained as open space.

Step 2a. Search the AHIMS database and use any other sources of information of which you are already aware

No Aboriginal archaeological sites or objects occur on and/or immediately nearby to the BRBH site. The nearest known heritage sites that are listed on AHIMS comprise isolated finds or low density scatters of flaked stone items, and most have been reported in disturbed contexts. Larger and more complex Aboriginal archaeological sites have however been reported in locations elsewhere in the local landscape.

Step 2b. Activities in areas where landscape features indicate the presence of Aboriginal objects

The landscape features contained within the study area that indicate (or increase the likelihood for) the presence of Aboriginal objects include minor drainage lines of Cabramatta Creek that cross the study area, and a number of low spurs containing areas of flat to gently sloping topography which could be termed as 'site favourable' locations that may have attracted repeated use by Aboriginal people in the past.

Step 3. Can you avoid harm to the object or disturbance of the landscape feature?

No identified Aboriginal objects will be impacted by the proposal, but the future land redevelopment has the potential to impact on landforms with some potential to contain Aboriginal objects.

Step 4: Desktop assessment and visual inspection

The adjoining semi-rural properties comprising the BRBH study area are largely unremarkable (or broadly typical of the area) on archaeological grounds in terms of the landforms they contain when compared with the surrounding landscape, and would also appear to possess limited potential to retain *intact* subsurface archaeological profiles as a result of past market gardening and agricultural land improvements including excavations for water retention and drainage. The top soil profiles across the site range from approximately 15cm to 25cm in depth, and these overlie considerably older clay subsoil profiles that are expected to be archaeological sterile. It is expected that any potential archaeological deposits in the upper soil profiles at least will have been extensively and repeatedly reworked by historic market gardening activity (for possibly a century or more), and the Aboriginal objects contained within these potential archaeological profiles will have limited stratigraphic integrity.

Step 5. Further investigations and impact assessment

The DECCW Code of Practice (2010:24) states that:

> *'Archaeological test excavation will be necessary when (regardless of whether or not there are objects present on the ground surface) it can be demonstrated through Requirements 1, 2, 3, 4, and 5 that sub-surface Aboriginal objects with potential conservation value have a high probability of being present in an area, and the area cannot be substantially avoided by the proposed activity.*
>
> *The test excavations permitted by this Code are limited in their scope as described below. The first priority in test excavations, and recording Aboriginal objects during test excavations, must always be to avoid or minimise, as far*

practicable, the risk of harm to the objects under investigation. This means due care must be taken when excavating and collecting objects, and that unnecessary excavations do not comply with this Code.

Purpose: To collect information about the nature and extent of sub-surface Aboriginal objects, based on a sample derived from sub-surface investigations. Test excavations contribute to the understanding of site characteristics and local and regional prehistory and they can be used to inform conservation goals and harm mitigation measures for the proposed activity'.

Test excavation of selected landforms within the study area would appear to be required to establish whether Aboriginal archaeology occurs on the land and to assess its potential archaeological (scientific) and cultural heritage significance because no surface indicators to refine the desktop assessment presented in this report are available due the poor archaeological visibility conditions that are currently prevalent on the property.

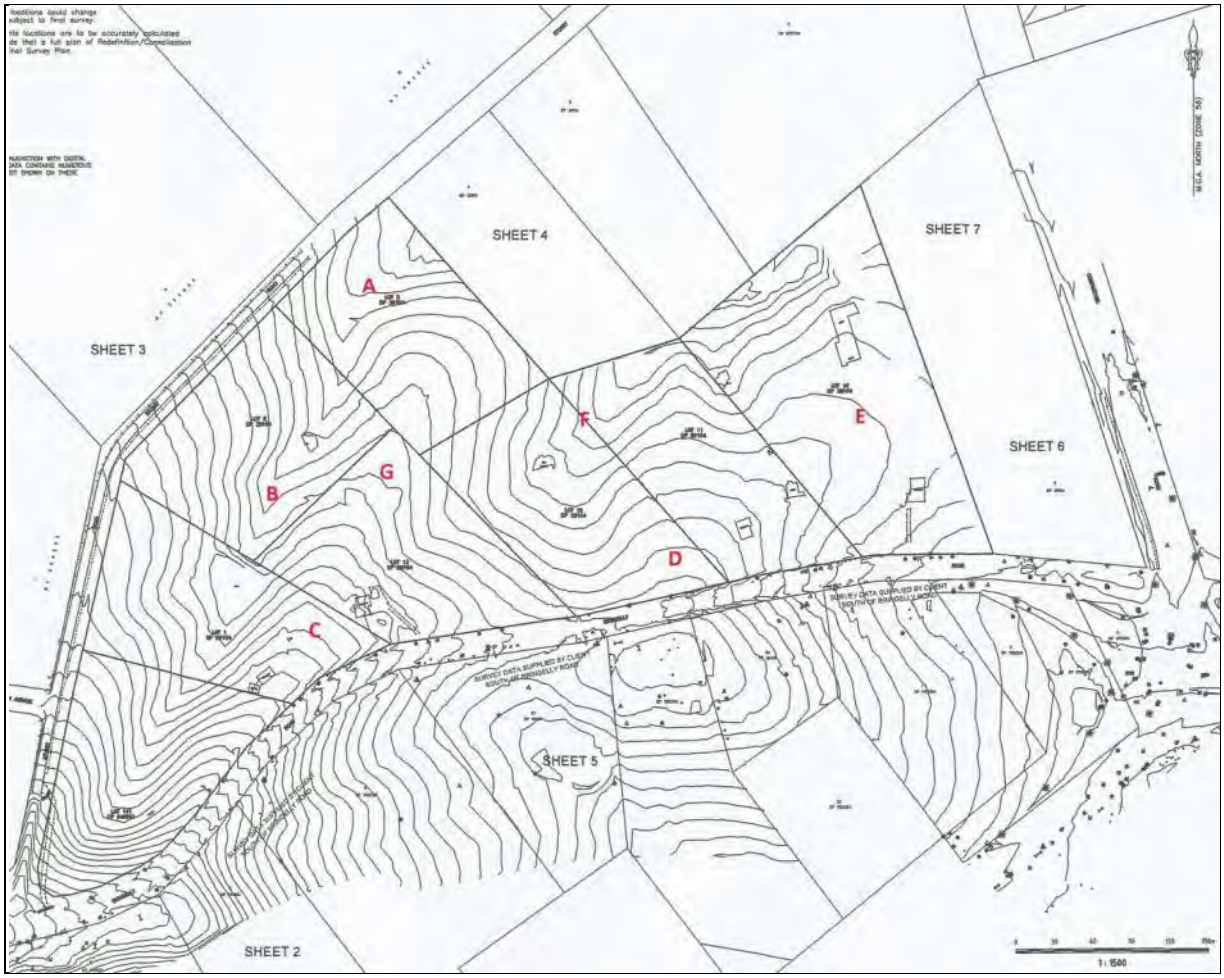
Figure 5.1: A view over the north-western third of the site looking from the elevated land at the western end of Stuart Road. The undulating nature of the terrain is likely to have been created in part by the meandering nature of a farmer watercourse(s) that drained this sloping land and can be seen as the slightly darker coloured green swathe leading down slope from centre right of this image to the dam in the middle background of this picture. Much of this land has been market gardened for a considerable period of time and is at close inspection discernibly furrowed from past ploughing and provision of drainage channels

Figure 5.2: This image presents a similar view to the previous but looking further south and east towards Bringelly Road. The existing properties (dwellings, outbuildings and yards etc) on that street frontage have been constructed on large prepared building/landscaping envelopes on top of the low spur that can be seen in the background of this photograph. The former drainage line is dammed here and the surviving timber stand nearby has been historically 'thinned' or largely cleared in part at least one since 1947

Figure 5.3: This image shows the nature of the prevalent grass cover across the property. The remnant tree stand in the background is relatively immature, but has been historically retained as a general timber stand that has been in the same approximate location since c.1930 where market gardening has extended right up to the edges of the outermost trees

Figure 5.4: Drainage line and gentle slopes in the central part of the property adjoining Bedwell Park. The general topography of the land illustrated is typical of much of the terrain in the eastern half of the study area

Figure 5.5: Possible locations which possess flat to gently sloping ground above drainage on suitable landforms for past Aboriginal visitation and use



6.0 Summary and Conclusions

6.1 Aboriginal Archaeological Heritage Impact Statement

6.1.1 Issues for Consideration

- No *previously* documented Aboriginal archaeological sites or objects are known to occur within the boundaries of the proposed BRBH study area. The nearest known sites registered with the OEH AHIMS are located to the south and west of the study area within the rail corridor and also along Bringelly Road to the west.
- Excluding a small number of largely immature scattered trees, no original timber survives on the property that may have formerly displayed evidence for Aboriginal cultural modification (bark removal) for the creation of containers, canoes or other equipment useful for day to day activities. The majority of property was entirely cleared by at least 1930, and timber felling and pasture improvement activities are likely to have commenced in some form from perhaps 100 years prior to that (from the 1830s) when the larger Crown land grant of which the BRBH site forms a part began to be occupied on a more systematic basis than appears to have characterised the more permissive or 'absentee' occupancy of the local landscape that occurred prior to this time.
- The subject site has been disturbed over time as a result of the accumulated impacts associated with past timber felling and vegetation clearance, and ongoing use for a variety of agricultural purposes including crop growing, intensive market gardening, probable stock grazing, and other property improvements including building and farm dam construction.
- Minor tributaries of Cabramatta Creek runs through the site. The original channel(s), banks, and flats of the watercourses have however been heavily modified over time as a result of vegetation stripping, market gardening (planting and ploughing), dam constructions changing water-flows, and excavations for the creation of irrigation and drainage channels and other water control measures.
- No sources of stone raw materials commonly used by Aboriginal people in the past for artefact manufacture are known to occur on the property itself, or in locations nearby. The principal (documented) sources for silcrete for example occur considerable distances further to the north and west of the study area.
- At this point in time, it does not appear that the land would have originally contained significant (and valuable) raw materials resources that were highly sought after by people in the past (and not available elsewhere) for subsistence and tool and equipment manufacture and maintenance purposes that would have marked the site out specifically. It is proposed

that it is more likely that the site may have been visited periodically by people over time as they moved to and from more attractive landscape contexts and resource zones in the local landscape such as the catchments (containing higher stream order tributaries) to the west (such as South Creek) and the north and east (such as Cabramatta Creek). Some of the flatter and elevated (dry) topography associated with the drainage on the property may however have been used for short-term but possibly repeated use by people over time that may have created archaeological signatures that survive in the subsurface profiles at the site.

6.1.2 Assessing Aboriginal Heritage Significance

Significance assessments aim to explain why particular sites or places may be important to the community and allow for appropriate management strategies to be developed within proposed changes in landuse circumstances that may potentially affect the assessed significance values of a site or a place.

Cultural significance is defined in the *Australian ICOMOS Charter for the Conservation of Places of Cultural Significance* (the *Burra Charter*) as '*aesthetic, historic, scientific or social value for past, present or future generations*' (Article 1.1). This aspect of significance may be derived from the fabric of a place, association with a place, or the research potential of a place. While these definitions are more commonly used with reference to buildings or items, they can also in a number of respects also apply to archaeological features and deposits.

This preliminary assessment of Aboriginal cultural heritage significance of the potential Aboriginal archaeological resources that may be contained within the BRBH site incorporates a consideration of the Aboriginal cultural values as they were explained during the consultation process with the project RAP's, follows current OEH guidelines (NPWS 1997:5-11), and also uses additional criteria that are derived from the Burra Charter (see below). An important position that needs to be made clear as part of the assessment process is that not all sites are equally significant and not all heritage sites at a general level will warrant equal consideration and management. The significance of heritage sites also changes over time, often as more research is undertaken in archaeological and environmental circumstances, and as community values change and develop over time.

This does not lessen the value of the heritage assessment approach, but is an integral part of the process of determining what is conserved for future generations and why. OEH guidelines for the assessment of significance of Aboriginal sites, objects and places identify two types of significance criteria; *cultural significance* and *archaeological significance.*

Cultural significance concerns the values of a site or feature to a particular community group which in this case is the local Aboriginal community. Aboriginal Archaeological heritage sites, objects, and some landscapes are all often important for different reasons, or have become important to Aboriginal people over time. This importance involves both people's traditional and historical links to 'country' in general, and their possible

attachments to specific areas in particular, as well as an overall concern of many Aboriginal people for the continued protection of the land and its cultural heritage sites.

The Aboriginal social, historical and archaeological values that the project RAP's attach to the BRBH site have been identified (see **Appendix 4**) and are further evaluated below.

Scientific significance in archaeological contexts is usually assessed using criteria that aim to evaluate a given site's contents, state of preservation (integrity), representativeness or rarity, and research potential. A preliminary evaluation of the significance of the potential Aboriginal archaeological resources at the BRBH site according to the criteria below is provided using the following as a guide:

- *Archaeological research potential* incorporates values of intactness (whether it has stratigraphic integrity or is disturbed), the association of the site to other sites in the local or regional (or State) context, and sometimes also how the site may fit into a datable chronology if one exists, when considering how the site may contribute to our further understanding of past Aboriginal life. This area of assessment is consistent with *Criterion e* of the *Heritage Branch* guidelines that are used to assess the potential historical archaeological resources of the BRBH site (see below).
- *Representativeness* is a term to convey the idea that most Aboriginal archaeological sites are representative of a particular 'type' or sub-type/class which for example would apply to a rock shelter with art as distinct from an open campsite with stone artefacts. A key issue is whether particular sites should be conserved to ensure a representative sample of the archaeological record is retained for future generations. This general area of assessment is consistent with *Criterion a* of the *Heritage Branch* guidelines (see below).
- *Rarity* can apply to a unique or uncommon archaeological site itself or elements of its component parts (archaeological rare finds or contexts), and can be assessed at a local, regional, State and national level. This area of assessment is consistent with *Criterion a* of the *Heritage Branch* guidelines (see below).

6.1.3 Assessment against standard Criteria

NSW Heritage Branch *Assessing Heritage Significance* establishes seven evaluation criteria that reflect significance categories and representativeness by which a place can be evaluated. The following responses to each below have been guided by the Aboriginal archaeological and cultural heritage findings and conclusions that are documented in this report.

Criterion (a) – an item is important in the course, or pattern, of NSW's cultural or natural history (or the cultural or natural history of the local area).

It is expected that the potential BRBH Aboriginal archaeological resources will comprise largely of stone artefacts (with possible features such as hearths, 'ovens) that will be of a general character and composition

representative of similar sites recorded in the local landscape. In this respect, it is unlikely that the BRBH site itself will have potential archaeology of State significance but may have local research value and is considered to have Aboriginal heritage values by the project RAP's.

Criterion (b) – an item has strong or special association with the life or works of a person, or group of persons, of importance in NSW's cultural or natural history (or the cultural or natural history of the local area).

The potential BRBH Aboriginal archaeological resources will comprise tangible elements (stone artefacts) that have survived of additional items and materials that Darug/Tharawal/Gandangara people lost or threw away at different times in the past as they undertook daily tasks. The physical remains will thereby be representative of this past life and retain considerable cultural significance to the local Aboriginal community representatives consulted with during the preparation of this report. The identities however of the Aboriginal people who may have visited and used the place in the past to create the potential archaeology are unknown, but it is likely that their individual role in NSW's cultural-evolution was minor.

Criterion (c) – an item is important in demonstrating aesthetic characteristics and/or a high degree of creative or technical achievement in NSW (or the local area).

It is unlikely that the potential BRBH Aboriginal archaeological resources fulfil this criterion.

Criterion (d) – an item has strong or special association with a particular community or cultural group in NSW (or the local area) for social, cultural or spiritual reasons.

At this time, the BRBH land has been identified to have value to the local Aboriginal community for a number of cultural heritage reasons (see **Appendix 4**).

Criterion (e) – an item has potential to yield information that will contribute to an understanding of NSW's cultural or natural history (or the cultural or natural history of the local area).

The BRBH potential archaeological resource is assessed to have moderate research potential.

Criterion (f) – an item possesses uncommon, rare or endangered aspects of NSW's cultural or natural history (or the cultural or natural history of the local area).

It is unlikely that BRBH potential archaeological resource will be uncommon or rare.

Criterion (g) – an item is important in demonstrating the principal characteristics of a class of NSW's cultural or natural places; or cultural or natural environments.

It is expected that the BRBH potential archaeological resource is likely to be broadly representative of similar sites in the region.

6.1.4 Evaluation

The BRBH potential Aboriginal archaeological resource may contribute new information useful to increasing our understanding of past Aboriginal use and occupation of the local landscape. The site is however an area where *potential* archaeological survival will have been impacted by a long landuse history of clearing, farming, building, and land improvement including dam excavation and drainage provision, and the *potential* for *in situ* archaeological features or deposits would appear to be limited due to the extensive levels of disturbances that are presently evident across virtually all areas of the property. The potential significance of this site would be Local or moderate in scientific criteria, but cannot be adequately established on the basis of the surface observations alone.

6.2 European Archaeological Heritage Impact Statement

6.2.1 Assessing the European Archaeological Heritage Significance of the Site

In general terms, the process of linking this assessment process with a site's historical context is outlined in the NSW Heritage Branch guidelines - *Assessing Heritage Significance* - and is supported by the *NSW Heritage Manual* as previously detailed in this report. The guidelines establish seven evaluation criteria (see above) that reflect significance categories and representativeness by which a place can be evaluated in the context of State or Local historical themes. Different components of a site or a place may make a different relative contribution to its overall heritage value. Loss of integrity or poor condition for example may diminish a site or an item's significance. Relative grades that can be used to determine the heritage significance of items (both built and archaeological) also include:

Exceptional: Rare or outstanding item of Local or State significance. High degree of intactness. Item can be interpreted relatively easily. Fulfils criteria for Local or State listing

High: High degree of original fabric. Demonstrates a key element of the item's significance. Alterations do not detract from significance. Fulfils criteria for Local or State listing.

Moderate: Altered or modified elements. Elements with little heritage value but which contribute to the overall significance of the item. Fulfils criteria for Local or State listing.

Little: Alterations detract from significance. Difficult to interpret. Does not fulfil criteria for Local or State listing.

Intrusive: Damaging to the item's heritage significance. Does not fulfil criteria for Local or State listing.

Detailed local historical records exist for the use and occupation of the study area which suggests that the land does not appear to differ in any significant way with how other contemporary farm holdings that continue to operate for small-scale market gardening in the local district have been used and developed over the latter half of the twentieth century.

6.2.2 The Potential Historical Archaeological Resource(s)

The known landuse history and landscape context of the site suggests that any potential archaeological remains associated with pre c.1930 use and occupation of the land is likely to be, if present, of low significance according to the heritage assessment criteria noted above. Namely, for the following types of reasons:

- The property is an area where *potential* archaeological survival will have been considerably impacted upon by a long landuse history of clearing, farming, building, and land improvement including dam excavation and drainage provision.
- The *potential* for *in situ* archaeological features or deposits, in the form of building footings and occupation materials associated with any pre 1930s buildings would appear to be limited due to the extensive levels of disturbances that are presently evident across virtually all areas of the property.
- The removal, at least down to ground levels that existed at the time, of any demolition materials of any former (pre-1930s) structures would have most likely needed to be cleared to allow the continued operation of the farms on each of the allotments within the study area.

To evaluate what archaeological research potential and educative opportunities the *potential* archaeological remains on the site may have for providing insights into the lifestyles of 'early' farmers in the area, it is necessary to consider what archaeological features and deposits may survive on the property, what their integrity is likely to be, and what these archaeological resources may be able to tell us about the occupation and use of the land that we cannot find out and/or reasonably infer from the available documentary records.

Archaeological potential is defined by the NSW Heritage Office *Archaeological Assessment Guidelines* (1996:14) '*as the degree of physical evidence present on an archaeological site*'. The broad definition makes it difficult initially to define sites that have no archaeological remains readily apparent in so far as under the provisions of the *NSW Heritage Act 1977* all relics are protected irrespective of their significance, although they are at the same time managed in practice under the Act according to their archaeological significance.

A reasonable and pragmatic approach to the assessment of archaeological potential is to determine the ability of a site, element or feature to significantly increase our knowledge about a historical site, person or community. Archaeological significance has traditionally been assessed in terms of Assessment Criterion (e) – that is, '*the potential to yield information*'. The *Guidelines* (1996:26) comment that:

> *'the key test that must be applied in understanding the scientific research values of a known or potential archaeological site is the question of whether further studies of the physical evidence may reasonably be expected to help answer research questions'.*

In this context, it is considered that:

- Deep-cut archaeological features are the most likely types of physical remains that will have survived outside of areas excavated for dam constructions, and below zones that are likely to have been deep-ripped for the creation of market garden cultivation plots and drainage infrastructure.
- Brick (or possibly stone) base-course footings of structures may survive in footing trenches at some depth below ground. Traces of smaller outbuildings made of timber and/or with piers and possibly cement slab floor are less likely to survive repeated ground disturbances from farming (such as ploughing, drainage line excavations etc).
- The lower sections of wells or cess pits (privies) may survive below ground. Earthen-sided wells/water storage tanks may be difficult to detect in the archaeological record, unless they have been backfilled with rubbish prior to their falling into disuse. These types of materials when identified in the ground (particularly in disturbed contexts) can sometimes indicate the presence of such features in the vicinity
- Ground surfaces contemporary with the period(s) of occupation of former farms, and evidence of the use of that land in the form of defined cultivated plots and fence lines etc, will have been largely obscured by significant 'activity overprint' associated with continued farm use from the 1930s to the present. The distinctive agricultural furrows evident across much of the site today are the product of over 80 years of continued farming activity on the land.
- It is unlikely that 'domestic' occupation deposits will survive with any archaeological integrity. Household items lost or discarded within internal building spaces (sub-floor) are unlikely to have survived intact demolition later construction and farming activities. Refuse discarded in scatters across yard areas or buried within rubbish pits are also likely to have been dispersed during later landuse phases.

Balanced against these considerations, it may be concluded that '*further studies of the physical evidence* [that] *may reasonably be expected to help answer research questions*' is likely to result in only a relatively few 'knowledge gaps' being addressed that cannot be explored by further historical research into the history of the site that is beyond the scope of the current archaeological heritage assessment reported here.

6.2.3 Evaluation

It is reasonable to conclude on the basis of the landuse history previously outlined for the site, and the results of the recent site inspections recorded for the property, that the place retains at best low historical archaeological potential. This evaluation is based on the fact that the land has been considerably impacted upon by ongoing agricultural use and is unlikely to yield a significant sample of archaeological material of sufficient integrity that can provide us with substantial new information that may not be able to be sourced from other documentary-based avenues of research.

It is therefore assessed that the BRBH proposal is unlikely to have an adverse impact upon the European archaeological heritage values of the place and that no significant archaeological constraints are apparent that would restrict the BRBH proposal proceeding.

7.0 Heritage Impact Assessment & Management Recommendations

7.1 Potential Archaeological Impact

The proposed redevelopment of the BRBH site will remove all potential Aboriginal archaeological features and deposits contained within the property.

7.2 Archaeological Heritage Management Recommendations

The following recommendations are based on the requirements of the *National Parks and Wildlife Act 1974*, the results of the due diligence archaeological assessment documented n this report, and the advice provided through consultation with the local Aboriginal community.

I A copy of this report should be forwarded to the *NSW Office of Environment and Heritage* in support of an application for an *Aboriginal Heritage Impact Permit* (AHIP) under Section 90 of the *National Parks and Wildlife Act 1974* to test excavate and manage the potential BRBH Aboriginal archaeological resource(s). The AHIP application should be supported by an Archaeological Research Design and Excavation Methodology using the current document as a baseline to establish an appropriate site sampling strategy to guide the recommended test excavation program.

II If human skeletal material is discovered on the site at any future stage, work should cease and the Proponent should contact the Police and Coroner's Office. If the remains are of an Aboriginal person, the OEH is to be contacted for advice regarding management of the discovery.

III One copy of this report should be forwarded to:

Ms Miranda Firman
Manager Planning & Heritage Section
Metropolitan Branch
NSW Office of Environment and Heritage
PO Box 668
PARRAMATTA, NSW, 2124

IV One copy of this report should be forwarded to:

Ms Katrina Stankowski
NSW Heritage Branch
Office of Environment and Heritage
Department of Premier and Cabinet
Locked Bag 5020
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Public Notices

Bringelly Road Business Hub, Bringelly, NSW
Public Notice and Registration of Interest
NSW National Parks & Wildlife Act 1974
Environmental Planning & Assessment Act 1979
The Western Sydney Parklands Trust propose to develop an approximately 20 ha parcel of land at Bringelly and Cowasture Road, Bringelly, NSW. The proposal is being assessed as a State Significant Development under the Environmental Planning and Assessment Regulation 2000.
In accordance with the NSW Office of Environment and Heritage's Aboriginal Cultural Heritage Consultation Requirements for Proponents 2010, Part 6 National Parks and Wildlife Act 1974, individuals or groups are invited to register their interest in writing to participate in the Aboriginal cultural heritage assessment and consultation process for the proposal.
Contact details are as follows:
Mr Tim Colless
Project Manager
Western Sydney Parklands Trust
Level 7, 10 Valentine Avenue
PARRAMATTA, NSW, 2150
The registration period closes on: 5 June 2014
The consultation period closes on: 30 June 2014

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REWARD - LOST DOG
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Liverpool City Champion, Wednesday, May 21, 2014 -37

Appendix 2

Stakeholder Notification Correspondence

NSW GOVERNMENT | Office of Environment & Heritage

Our reference: EF14/2019

Mr Dominic Steele
Dominic Steele Consulting Archaeology
21 Macgregor Street
CROYDON NSW 2132

Dear Mr Steele,

Thank you for your letter dated 14/5/2014 to the Office of Environment and Heritage (OEH) regarding obtaining a list of the Aboriginal stakeholders that may have an interest in the proposed Bringelly Road Business Hub, Bringelly (Camden LGA).

Please find attached the list of Aboriginal stakeholders known to OEH that may have an interest in the project.

As the Department of Planning and Environment is the approval authority for this project, the consultation process should be in accordance with the relevant guidelines as stipulated by the Department of Planning and Environment.

If you wish to discuss any of the above matter further please contact Miranda Firman, Aboriginal Heritage Planning Officer, on (02) 9995 5477.

Yours sincerely

S. Harrison 16/05/14

Susan Harrison
Senior Team Leader Planning
Greater Sydney Region
Regional Operations

PO Box 644 Parramatta NSW 2124
Level 6, 10 Valentine Avenue Parramatta NSW 2150
Tel: (02) 9995 5477
ABN 30 841 387 271
www.environment.nsw.gov.au

Aboriginal Stakeholders that may have an interest: Camden/Campbelltown/Wollondilly LGA's

Tharawal Local Aboriginal Land Council	Ivan Simon	(02) 46810059	PO Box 20 Buxton NSW 2571
Darug Custodial Aboriginal Corporation	Leanne Watson	02 4577 5181 / 0415 770 163	PO Box 81, Windsor NSW 2756
Darug Tribal Aboriginal Corporation	Sandra Lee	02 9622 4081	PO Box 441, Blacktown NSW 2148
Darug Aboriginal Cultural Heritage Assessments	Gordon Morton	02 4567 7421 or 0422 865 831	90 Hermitage Rd, Kurrajong Hills NSW 2758
Darug Land Observations	Gordon Workman	0415 663 763/ fax 02 9831 8868	PO Box 571, Plumpton, NSW 2761
Des Dyer		0408 360 814	18a Perigee Close, Doonside 2767
Cubbitch Barta	Glenda Chalker	0427 218 425	55 Nightingale Rd, Pheasants Nest NSW 2574
Rebecca Chalker		Not provided	99 Menangle street, Picton 2571
Gunjeewong Cultural Heritage Aboriginal Corporation *	Cherie Carroll Turrise	(02) 6355 5673	1 Bellvue Place, Portland NSW 2847 *Cherie is Ngunnawal Elder however lived in the Western Sydney area during her childhood. She recognises she is not from the area but has associations.
Peter Falk Consultancy	Peter Falk	0401 938 060	PO Box 1018 Mittagong NSW 2575
Warragil Cultural Services	Aaron Slater	0481 280 067	22 Tiffany Close, Rooty Hill NSW
Wurrumay Consultancy	Kerrie Slater	0423 935 556	89 Pyramid street, Emu Plains NSW
Phil Kahn		0434 545 982	78 Forbes Street, Emu Plains, NSW 2750
Tocomwall	Scott Franks	0404 171 544	PO Box 76, Caringbah NSW 1495
Bidjawong Aboriginal Corporation	James Carroll	0433 224 324	PO Box 124, Round Corner, NSW 2158
D'harawal Mens Aboriginal Corporation	Elwyn Brown	0401920982	187 Riverside Drive, Airds NSW 2560

OFFICE OF THE REGISTRAR
ABORIGINAL LAND RIGHTS ACT 1983 (NSW)

11-13 Mansfield Street
Glebe NSW 2037
PO Box 112, Glebe NSW 2037
P. 02 9562 6327 F. 02 9562 6350

Mr Tim Colless
Project Manager
Western Sydney Parklands Trust
Level 4, 10 Valentine Avenue
PARRAMATTA NSW 2150

RECEIVED
22 JUL 2014 220714
NSW GOVERNMENT
WESTERN SYDNEY PARKLANDS TRUST

Dear Mr Colless

Re: Request - Search for Registered Aboriginal Owners

I refer to your letter dated 14 July 2014 regarding Aboriginal Cultural Heritage Assessment within Bringelly in NSW.

I have searched the Register of Aboriginal Owners and the project area described *does not appear* to have Registered Aboriginal Owners pursuant to Division 3 of the *Aboriginal Land Rights Act* 1983 (NSW).

I suggest that you contact the Tharawal Local Aboriginal Land Council. They will be able to assist you in identifying other Aboriginal stakeholders for this project.

Yours sincerely

Tabatha Dantoine
Administration Officer
Office of the Registrar, *Aboriginal Land Rights Act* (1983)
18 July 2014

ntscorp

18 July 2014 ref: OE&H: 18-7-14/1

Dominic Steele Consulting Archaeology
21 Macgregor Street
Croydon NSW 2132

Dear Sir/ Madam

Aboriginal & Historical Archaeological Heritage Assessment, Bringelly Road Business Hub, Bringelly NSW

I refer to your letter on the 14 July 2014 concerning the above.

I advise that NTSCORP's privacy guidelines restrict us from providing proponents with contact details of traditional owners. However, we will forward your correspondence to any individuals, groups and organisations, whom NTSCORP is aware assert traditional interests within, or hold cultural knowledge about the relevant area.

Please be aware that NTSCORP cannot make a guarantee or undertaking that the recipients of our correspondence represent the entirety of traditional owners for the relevant area.

To assist proponents in following the Aboriginal Cultural Heritage Consultation Requirements, recipients of our correspondence will be invited to register their interest in the project ASAP.

Yours faithfully

George Tonna
Land & Notifications Officer
Strategic Development Team

Level 1, 44-70 Rosehill St Redfern NSW 2016 Australia
t: + 61 2 9310 3188
PO Box 2105 Strawberry Hills NSW 2012 Australia
f: + 61 2 9310 4177
abn: 71 098 971 209
w: www.ntscorp.com.au

Appendix 3

OEH AHIMS Site Searches

NSW GOVERNMENT Office of Environment & Heritage

AHIMS Web Services (AWS)
Search Result

Your Ref Number : Bringelly

Client Service ID : 132228

Dominic Steele Archaeological Consulting

Date: 21 April 2014

64 Newington Road
Marrickville New South Wales 2204

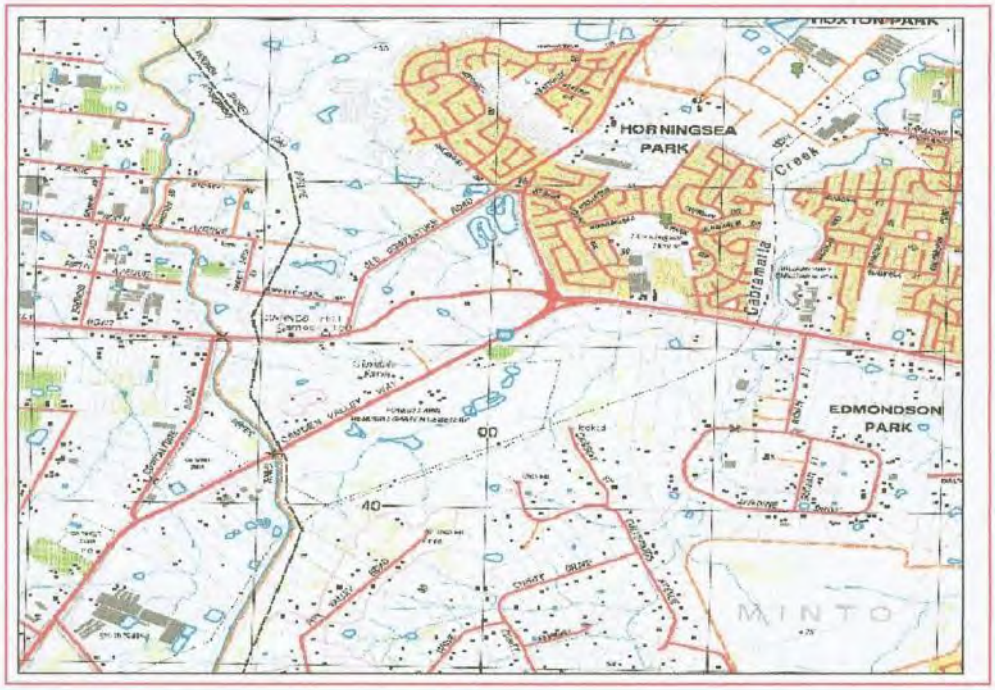
Attention: Dominic Steele

Email: dsca@bigpond.net.au

Dear Sir or Madam:

AHIMS Web Service search for the following area at Datum :GDA, Zone : 56, Eastings : 298000 - 302000, Northings : 6240000 - 6242000 with a Buffer of 50 meters, Additional Info : EIS, conducted by Dominic Steele on 21 April 2014.

The context area of your search is shown in the map below. Please note that the map does not accurately display the exact boundaries of the search as defined in the paragraph above. The map is to be used for general reference purposes only.



A search of the Office of the Environment and Heritage AHIMS Web Services (Aboriginal Heritage Information Management System) has shown that:

25	Aboriginal sites are recorded in or near the above location.
0	Aboriginal places have been declared in or near the above location. *

Office of Environment & Heritage

NSW

AHIMS Web Services (AWS)

Extensive search - Site list report

Your Ref Number : Bringelly

Client Service ID : 132228

SiteID	SiteName	Datum	Zone	Easting	Northing	Context	Site Status	SiteFeatures	SiteTypes	Reports
45-5-2878	Horningsea Park PAD 1	AGD	56	300507	6241504	Open site	Valid	Potential Archaeological Deposit (PAD) : -		102442
	Contact	Recorders	Ms.Vanessa Hardy					Permits	1746	
45-5-3373	LLB1 Edmonson Park	AGD	56	300788	6240591	Open site	Valid	Artefact : -		102442
	Contact	Recorders	Navin Officer Heritage Consultants Pty Ltd					Permits	2764	
45-5-3304	EPCS 7	AGD	56	300765	6239877	Open site	Valid	Artefact : -, Potential Archaeological Deposit (PAD) : -		102442
	Contact	Recorders	Australian Museum Consulting (AM Consulting)					Permits	2706	
45-5-3305	EPCS 8	AGD	56	300961	6239813	Open site	Valid	Artefact : -, Potential Archaeological Deposit (PAD) : -		102442
	Contact	Recorders	Australian Museum Consulting (AM Consulting)					Permits	2706	
45-5-3300	LIF-1	AGD	56	298817	6240125	Open site	Valid	Artefact : -		102442
	Contact T Russell	Recorders	Navin Officer Heritage Consultants Pty Ltd					Permits		
45-5-3307	Horningsea Park Arhcaeological Deposit 1 (HSP AP1)	AGD	56	301142	6241249	Open site	Valid	Potential Archaeological Deposit (PAD) : -		102442
	Contact T Russell	Recorders	Austral Archaeology Pty Ltd,Ms.Gretta Logue					Permits		
45-5-3943	LP-2	GDA	56	299202	6240304	Open site	Valid	Artefact : 5		102442
	Contact	Recorders	Matthew Kelleher,Mr.Mark Rawson,Kelleher Nightingale Consulting Pty Ltd					Permits		
45-5-3944	LP-1	GDA	56	298851	6240110	Open site	Valid	Artefact : 1		102442
	Contact	Recorders	Mr.Mark Rawson,Kelleher Nightingale Consulting Pty Ltd					Permits	3517	
45-5-3946	LP-3	GDA	56	299439	6240616	Open site	Valid	Artefact : 1		102442
	Contact	Recorders	Mr.Mark Rawson,Kelleher Nightingale Consulting Pty Ltd					Permits	3517	
45-5-3906	SWRL SITE 12	GDA	56	299228	6240872	Open site	Valid	Artefact : 1		102442
	Contact	Recorders	Mrs.Jenna Weston					Permits		
45-5-3910	EPCS 6	AGD	56	300860	6240248	Open site	Valid	Artefact : 1		102442
	Contact	Recorders	Australian Museum Consulting (AM Consulting)					Permits		
45-5-3903	SWRL SITE 10	GDA	56	300380	6240664	Open site	Valid	Artefact : 1		102442
	Contact	Recorders	Mrs.Jenna Weston					Permits		
45-5-3905	SWRL SITE 11	GDA	56	300276	6240709	Open site	Valid	Artefact : 1		102442
	Contact	Recorders	Mrs.Jenna Weston					Permits		
45-5-3874	BRP-S-19	GDA	56	298829	6240826	Open site	Valid	Artefact : 1		102442
	Contact	Recorders	Mr.Leigh Bate					Permits		

Report generated by AHIMS Web Service on 21/04/2014 for Dominic Steele for the following area at Datum :GDA, Zone : 56, Eastings : 298000 - 302000, Northings : 6240000 - 6242000 with a Buffer of 50 meters. Additional Info : EIS. Number of Aboriginal sites and Aboriginal objects found is 25

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Page 1 of

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Office of Environment & Heritage

AHIMS Web Services (AWS)

Extensive search - Site list report

Your Ref Number : Bringelly

Client Service ID : 132228

SiteID	SiteName	Datum	Zone	Easting	Northing	Context	Site Status	SiteFeatures	SiteTypes	Reports
45-5-2559	TLC1	AGD	56	298849	6240532	Open site	Valid	Artefact : 2	Isolated Find,Scarred Tree	98739,102442
	Contact	Recorders	Annie Nicholson					Permits		
45-6-2427	IF1;AGL Gas;	AGD	56	299200	6239780	Open site	Valid	Artefact : -	Isolated Find	98739,102442
	Contact	Recorders	Anthony English					Permits	743	
45-5-0777	CC-3 (Cabramatta Creek) Site de-registered	AGD	56	301140	6241100	Open site	Not a Site	Modified Tree (Carved or Scarred) : -	Scarred Tree	1727,98369,98370,98371,98443,98739,102442
	Contact	Recorders	Alice Gorman,Laura-Jane Smith					Permits		
45-5-3533	SWRL Site 8	GDA	56	300714	6240540	Open site	Destroyed	Artefact : 18		102442
	Contact	Recorders	C Samson,Australian Museum Consulting (AM Consulting),Proust and Gardner Con					Permits	3460	
45-5-3534	SWRL Site 6	GDA	56	300601	6240699	Open site	Valid	Stone Arrangement : 13		102442
	Contact	Recorders	Australian Museum Consulting (AM Consulting)					Permits	3571	
45-5-3536	SWRL Site 4	GDA	56	298965	6240982	Open site	Valid	Stone Arrangement : 1		102442
	Contact	Recorders	Australian Museum Consulting (AM Consulting)					Permits		
45-5-3537	SWRL Site 3	GDA	56	300303	6241016	Open site	Valid	Stone Arrangement : 8		102442
	Contact	Recorders	Australian Museum Consulting (AM Consulting)					Permits		
45-5-4257	SWRL 19	GDA	56	300832	6240004	Open site	Valid	Artefact : -		
	Contact	Recorders	Australian Museum Consulting (AM Consulting)					Permits		
45-5-3246	EPCS 5	AGD	56	300893	6240589	Open site	Partially Destroyed	Artefact : -		102442
	Contact	Recorders	C Samson,Australian Museum Consulting (AM Consulting),Proust and Gardner Con					Permits	2553,2764,3460,3571	
45-5-3295	PP-8	GDA	56	298711	6242029	Open site	Valid	Artefact : -		
	Contact	Recorders	Mr.Mark Rawson					Permits		
45-5-3285	HSP PAD1	AGD	56	301142	6241249	Open site	Valid	Potential Archaeological Deposit (PAD) : -		102442
	Contact	Recorders	Austral Archaeology Pty Ltd					Permits	2599,2745,2771	

Report generated by AHIMS Web Service on 21/04/2014 for Dominic Steele for the following area at Datum :GDA, Zone : 56, Eastings : 298000 - 302000, Northings : 6240000 - 6242000 with a Buffer of 50 meters. Additional Info : EIS. Number of Aboriginal sites and Aboriginal objects found is 25

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Office of Environment & Heritage

NSW GOVERNMENT

AHIMS Web Services (AWS)

Search Result

Your Ref Number : Bringelly III

Client Service ID : 146245

Dominic Steele Archaeological Consulting

Date: 29 August 2014

64 Newington Road
Marrickville New South Wales 2204
Attention: Dominic Steele

Email: dsca@bigpond.net.au

Dear Sir or Madam:

AHIMS Web Service search for the following area at Datum :GDA, Zone : 56, Eastings : 299250 - 300250, Northings : 6241000 - 6241750 with a Buffer of 50 meters, conducted by Dominic Steele on 29 August 2014.

The context area of your search is shown in the map below. Please note that the map does not accurately display the exact boundaries of the search as defined in the paragraph above. The map is to be used for general reference purposes only.

A search of the Office of the Environment and Heritage AHIMS Web Services (Aboriginal Heritage Information Management System) has shown that:

0	Aboriginal sites are recorded in or near the above location.
0	Aboriginal places have been declared in or near the above location. *

Appendix 4

Project Aboriginal Community Consultation Schedule

BRBH Aboriginal Community Consultation Schedule

Date	Organisation	Action	RAP EOI, Date and Notes
21 May 2014	DSCA	**Public Notice**	None
9-14 July	DSCA	**Direct Stakeholder Notification & Draft Assessment Distribution** Tharawal Local Aboriginal Land Council Cubbitch Barta Rebecca Chalker. Darug Custodian Aboriginal Corp Darug Tribal Aboriginal Corporation Darug Aboriginal Cult Her Assessments Gunjeewong Aboriginal Corporation Peter Falk Consultancy Darug Land Observations Des Dyer Phil Khan Warragil Cultural Services Wurrumay Consultancy Tocomwall Bidjawong Aboriginal Corporation D'harawal Men's Aboriginal Corp NSW OEH NSW Heritage Branch Liverpool Council NTSCorp Limited Registrar ALR Act 1983	 TLALC: 18 August 2014 CBNTAC: 11 August No response DCAC (Phone): 17 August No response DACHA: 6 August Gunjewong: 17 July Peter Falk: 21 July DLO (email): 17 August Des Dyer (Phone):30 July Phil Khan: 7 August No response No response Tocomwall: 17 July No response No response 10 May No response 18 July 22 July
Late July and early August	DSCA & Project RAP's	**Field Inspections & Draft Report** Field inspections, on-site meetings, and response received from project RAP's on Draft Archaeological Assessment report. The following groups attended one of four separate on-site meetings: Tharawal Local Aboriginal Land Council Deerubbin Local Aboriginal Land Council Cubbitch Barta Darug Custodian Aboriginal Corp Darug Aboriginal Cult Her Assessments Darug Land Observations Des Dyer Phil Khan Tocomwall	 Deerubbin Local Aboriginal Land Council (DLALC) inspected the site acting on behalf of Gandangara LALC. Phil Khan: 5 September Tocomwall: 1 September

			No additional (written) responses were received on the first draft
12 September	DSCA	**Final Draft Report Distribution** Final Draft Archaeological Assessment distribution to project RAP's for review and comment	DCAC: 27 September Des Dyer: 25 September DLALC: 16 September TLALC: 1 October Cubbitch Barta: 3 October DACHA: 19 November 2014 (received 28 November) No additional responses or additions to previous statements provided by the project RAP's were received on the final draft
30 November	DSCA	**Final Report**	

Tocomwall Pty Ltd
PO Box 76 Caringbah NSW 1495
Tel: 02 9542 7714 Fax: 02 9524 4146
Email: info@tocomwall.com.au www.tocomwall.com.au
ABN: 13 137 694 618

17 July 2014

Tim Colless
Western Sydney Parklands Trust
Level 47, 10 Valentine Avenue
Parramatta NSW 2150
Via email: Tim.colless@wspt.nsw.gov.au

Dear Tim,

RE: Aboriginal Cultural Heritage Assessment at Bringelly Road Business Hub, Bringelly
Registration of Interest

Tocomwall is seeking *primary involvement* in all consultation meetings and fieldwork for the above mentioned project.

Tocomwall represents traditional owners from this area and retains local and oral history on behalf of its membership. We do not accept or support any person or organisation that comments regarding the said area unless confirmed in writing by myself. We have no objection to our information being provided to the Office of Environment and Heritage and the Local Aboriginal Land Council.

Tocomwall is able to assist with input that can be incorporated into a written assessment of cultural values of the area. We are also able to provide fit staff to assist with work that may involve physical labour. We can provide copies of relevant certificates of currency for business insurances on request.

Please also be advised that this Aboriginal organisation does not do volunteer work or attend unpaid meetings.

All correspondence should be emailed to scott@tocomwall.com.au and sarah@tocomwall.com.au or to the above postal address.

Kindly contact our office if you require any further information.

Yours faithfully

Danny Franks
Senior Field Manager

Integrating Landscape Science & Aboriginal Cultural Knowledge for our Sustainable Future

17/7/2014

Dear Tim Colless Project Manager I would like to Register my corporation Gunjeewong Cultural Herity Aboriginal Corporation for archaelogical Heritage Asses of Bringelly RD My Family Lived Cowpasture RD for 4yrs so we know the area. I am a 6 Generation Aboriginal elder I Believe it is so important we find and keep all artefacts Left By our ancestors for future generations I have spoken to AHMS Archeologists and we are currently trying to get funding for museum for local artefacts of our descendants Aboriginal.

Yours Sincerely

Director

Gunjeewong Cultural Aboriginal Corporation (stamp)

Mobile 0421 [illegible]

Email Julieschroder5@live.com.au

From: Peter Falk [kanga26@live.com.au]
Sent: Monday, 21 July 2014 4:30 PM
To: dsca@bigpond.net.au
Subject: Western Parklands Trust-Bringelly

Hi Dominic,
Further to your letter of 14 July, do you have any drawings or maps of the subject property, so that I can get a better handle on the location of this project.
If so could you please send via email to me
Thanks
Peter

Peter Falk Consultancy
0401938060

Dominic Steele

From: Peter Falk [kanga26@live.com.au]
Sent: Wednesday, 27 August 2014 5:44 PM
To: Dominic Steele
Subject: RE: Western Parklands Trust-Bringelly

Dom,
I did register but OK I will look at report and comment if required yes call me and we will chat
Regards
Peter

Peter Falk Consultancy
0401938060

From: dsca@bigpond.net.au
To: kanga26@live.com.au
CC: Tim.Colless@wspt.nsw.gov.au
Subject: RE: Western Parklands Trust-Bringelly
Date: Wed, 27 Aug 2014 17:24:49 +1000

Hi Peter,

Did you send an EOI to the WSPT after you got the site plans? As far as I am aware, the deadline for formally identifying project RAP's has passed, so I have cc'd the Project Manager in on this given it's a bit late in the day to call etc. The grass across the entire site is between knee and waist height, and the ark visibility is zero or thereabouts. My archaeological conclusions will have to be desk top based in some respects, so I am drafting up this now and the pictures tell the tale. Tharawal, Cubbitch Barta and a few other RAP's will be providing their respective Aboriginal cultural heritage statements that will be incorporated into the final (draft) archaeological and cultural heritage assessment for the project. I will send you a copy if you like when its ready to go?

I will give you a call in the morning and say howdy. I've seen your name on a few OEH lists, but I don't think we have met, so it will be good to introduce myself. We can chat then. Cheers.

Dom.

Dominic Steele Consulting Archaeology
21 Macgregor Street, Croydon, NSW 2132
(02) 9715 1169 or 0411 88 4232

From: Peter Falk [mailto:kanga26@live.com.au]
Sent: Wednesday, 27 August 2014 10:59 AM
To: Dominic Steele
Subject: RE: Western Parklands Trust-Bringelly

Dom,
When is the survey coming up on this project??
Please advise ASAP

1

Darug Aboriginal Cultural Heritage Assessments

ABN 51734106483

Gordon Morton

Mob: 0422 865 831
Fax: 45 677 421

Celestine Everingham
90 Hermitage Rd., Kurrajong Hills, 2758
Ph/Fax: 45677 421
Mob: 0432 528 896

RECEIVED
06 AUG 2014 060814
NSW GOVERNMENT
WESTERN SYDNEY PARKLANDS TRUST

3. 8. 14

Attention
Tim Gilles
Project Manager

re : Bringelly Road Business Hub, Bringelly, NSW
Darug Aboriginal Cultural Heritage
Assessment.

DHC HA wishes to register their interest in the assessment and consultation process for the proposal. We look forward to working with you on this project.

Yours Sincerely,
C. Everingham

Cultural Heritage – Building respect for the past and Conservation for the future

KAMILAROI-YANKUNTJATJARA WORKING GROUP

- Lawn Mowing
- Gutter Cleaning
- Yard Clean-up
- Rubbish Removal
- Fencing

Phil Khan PH: 0434 545 982
philipkhan.acn@live.com.au 78 Forbes St Emu Plains 2750

Pollowan Phillip Khan
78 Forbes Street
Emu Plains NSW 2750
22,07, 2014
mobile: 0434545982

RECEIVED
07 AUG 2014 070814
NSW GOVERNMENT
WESTERN SYDNEY PARKLANDS TRUST

Mr Tim Colless
Project Manager
Western Sydney Parklands Trust
Level 47, 10 Valentine Avenue
PARRAMATTA, NSW, 2150

Dear Mr Tim Colless

I Have received a letter informing me that Dominic Steele Consulting Archaeology has been engaged to undertake archaeological work at Bringelly and Cowpasture Roads NSW, and that you are inviting Aboriginal organisations to register, if they wish to be involved in the community consultation process.

As Senior Aboriginal person who has for the past forty of so years (40) actively participated in the Protection Aboriginal Cultural Heritage throughout the Sydney Basin , and particularly throughout Western Sydney, I, on behalf of the Kamiloroi- Yankuntjatjara Working Group, wish to provide to you my organisations' registration of interest.

Information in my registration of Interest:

1. I am a Senior Aboriginal and Principal of the Kamilaroi -Yankuntjatjara Working Group, and all Aboriginal entity (ABN33979702507).

2. I prefer communicating by, Mail, Telephone, and; and I am, the Principal, person to contact, and;
   My contact details are:
   Phillip Khan
   78 Forbes Street, Emu Plains NSW 2750
   Mobile 043 4545 982

3. I wish to be involved and participate in all levels of consultation/project involvement. I wish to attend all meetings, and, participate in available field work; and would receive a copy of the report.

4. I attach to this letter a copy of Kamiloroi- Yankuntjatjara Working Group's; GIO Public Liability Insurance; GIO Workers Compensation Certificate.

Should you wish me to provide further information, please do not hesitate to contact me on 0434545982.

Yours Sincerely,

Pollowan Phillip Khan

Aboriginal Corporation
55 Nightingale Road,
PHEASANTS NEST. N.S.W. 2574.
7TH August, 2014.

Mr. Tim Colless,
Project Manager
Western Sydney Parklands Trust,
Level 47, 10 Valentine Avenue,
PARRAMATTA. N.S.W. 2150.

Dear Tim,

Re; Bringelly road
Business Hub

I would like to take this opportunity of expressing an interest on behalf of the Cubbitch Barta Native Title Claimants Aboriginal Corporation on the above proposed project.

Yours faithfully,

G. Chalker

Glenda Chalker
Hon. Chairperson
Phone/Fax 0246841129 0427218425
kgchalker@bigpond.com

RECEIVED
14 AUG 2014 110814
NSW GOVERNMENT
WESTERN SYDNEY PARKLANDS TRUST

KAMILAROI-YANKUNTJATJARA WORKING GROUP

- Lawn Mowing
- Gutter Cleaning
- Yard Clean-up
- Rubbish Removal
- Fencing

Phil Khan PH: 0434 545 982
philipkhan.acn@live.com.au 78 Forbes St Emu Plains 2750

Philip Khan

Kamilaroi Yankuntjatjara Working Group

78 Forbes street Emu Plains

NSW 2750 0434545982

To Dominc Steele

This large 20 ha block of land in-between Sturt and Cowpasture Rd looks to be of great cultural interest, With its hilly land forme with its small creeks and possibly wet lands that may have been created by natural springs back in the old days wen the old Aboriginal tribes wonder this land freely hunting wild game to survive the way they have for thousands of years.

It would have been areas like this that they may have had as special places for men or woman's areas were there was water all the time, not water flowing but under the ground and they would of dug it out and used it then closed it after wounds. The area that looks to be a small wetland would have had all kinds of wild game around it, turtles, snakes, ducks, yabby's, kangaroos, yams and other bush foods. The area's that may have cultural material could be the flat areas along the creek lines and on the top of the larger hills were the old men would sat catching the breeze in the summer time and maybe flaking a stone to make a tool with a small fire to keep the fly's of him .

I feel we need to have further archaeological excavations in the areas that I have talked about on the flat lands in-between the small waterways and the hills, and on the larger hills them selves.

Regards Philip Khan

THARAWAL LOCAL ABORIGINAL LAND COUNCIL

220 West Parade, Couridjah NSW 2571
PO Box 168, Picton NSW 2571
Phone: 02 4681 0059 Fax: 02 4681 0866

Monday 18th August 2014

Dominic Steele
Dominic Steele Consulting Archaeology
21 Macgregor Street,
Croydon NSW 2132
P: 9715 1169 M: 0411 884 232

Re: Bringelly Proposal Registration of Interest,

Dear Dominic,

I am writing to you to please register interest in the Bringelly Proposal on behalf of Tharawal Local Aboriginal Land Council as we are an interested party and this is within the Tharawal Local Aboriginal Land Council Boundaries.

Regards,

Abbi Whillock
Tharawal Local Aboriginal Land Council
Aboriginal Cultural & Heritage Officer
P: (02) 4681 0059 F: (02) 4681 0866 M: 0448 002 042
E: heritage@tharawal.com.au
220 West Parade, Couridjah NSW 2571

Tocomwall Pty Ltd
PO Box 76 Caringbah NSW 1495
Tel: 02 9542 7714 Fax: 02 9524 4146
Email: info@tocomwall.com.au www.tocomwall.com.au
ABN: 13 137 694 618

01 Sep 2014

Dominic Steel
Dominic Steel Consulting
21 Macgregor Street
Croydon NSW 2132
Via email: dsca@bigpond.net

Dear Dominic,

RE: Aboriginal Cultural Heritage Assessment at Bringelly Rd.

Following on from the assessment that took place for the western parklands trust, I observed some notable areas that would have been excellent areas for indigenous habitation. The study area holds a natural reservoir and also some geological features such as small hills that would of made for great vantage points and campsites. The spring would of attracted wildlife and made for good hunting and fishing. These attributes and the proximity to other sites as mentioned in the field create a unique and interesting study area both scientifically and culturally. I would like to obtain a previous geo-tech report and any other ecological information that has been obtained in prior works if that's at all possible

.

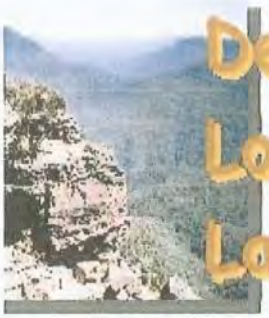
All correspondence should be emailed to danny@tocomwall.com.au and sarah@tocomwall.com.au or to the above postal address.

Kindly contact our office if you require any further information.

Yours faithfully

Danny Franks
Aboriginal Heritage

Integrating Landscape Science & Aboriginal Cultural Knowledge for our Sustainable Future



Deerubbin Local Aboriginal Land Council

Level 1, Suite3
291-295 High Street
PENRITH NSW 2750
PO Box 40
PENRITH BC
NSW 2751 AUSTRALIA

ABN: 41 303 129 586
T: (02) 4724 5600
F: (02) 4722 9713
E: reception@deerubbin.org.au
W: http://www.deerubbin.org.au

Western Sydney Parkland Trust

Our Ref: 2494

C/- Dominic Steele Consulting Archaeology

21 Macgregor Street

CROYDON NSW 2132

16 September 2014

PROTECTION OF ABORIGINAL CULTURAL HERITAGE

Proposed Development

Land Bounded by Cowpasture, Bringelly & Stuart Roads,

West Hoxton Park

Attention: Dominic Steele

A representative of Deerubbin Local Aboriginal Land Council inspected the proposed development site at the abovementioned location on Tuesday, 9 September 2014. An Aboriginal cultural heritage assessment was undertaken to evaluate the likely impact the proposed development has on the cultural heritage of the land.

Because of grass cover across the landscape and ground surface visibility being poor, no Aboriginal cultural materials (in the form of stone artefacts, for example) were found.

Deerubbin Local Aboriginal Land Council therefore, recommend further investigations be undertaken with a program of test excavations.

Yours Faithfully,

S Randall

Steven Randall

(Senior Aboriginal Cultural Heritage Officer)

c.c. Miranda Firman – Office of Environment & Heritage

Darug Aboriginal LandCare

(Uncle Des Dyer)

18a Perigee Close
Doonside 2767NSW
ABN 71 301 006 047

Dominic Steele
Archaeologist
21 Macgregor Street
Croydon 2132
NSW

Re: Daily Rate

Dear Dominic,

The Darug Aboriginal Landcare / Uncle Des Dyer. Our Daily rate is $105.00

The area is an important part of our culture and valued by the community as most of the people that lived there were Darug.

Thank you

Kind regards
Des Dyer
Email desmond4552@hotmail.com
Mobile 0408360814

Darug Aboriginal Landcare

Uncle Des Dyer

18 a Perigee Close
Doonside
NSW 2767
ABN 71 301 006 047

Dominic Steele
Archaeologist
21 Macgregor Street
Croydon 2132
NSW

Re: Bringelly Road:

Dear Ben,

The Darug Aboriginal Landcare/ Uncle Des Dyer have no objections to the proposed area of development.

We agree with the all your **recommendation and methodology**, in your report for the test excavation, that will be carried out.

We would like to see a plan of management be put in place to rebury artefacts some were close by once the development in completed.

. All land holds specific social, spiritual and cultural values to our organisation.
We would like to thank you and look forward to working with you again

Respectfully yours,
Des Dyer
Site Officer
Darug Aboriginal Land Care
Fax (02) 88 14 95 47
Mobile 0408 360 814

DARUG CUSTODIAN
ABORIGINAL
CORPORATION

PO BOX 81 WINDSOR 2756
PHONE: 0245775181 FAX: 0245775098
MOBILE: 0415770163 Leanne Watson
0414962766 Justine Coplin
EMAIL: mulgokiwi@bigpond.com / justinecoplin@optusnet.com.au

Attention: Dominic Steele Consulting Archaeology

Subject: Aboriginal cultural heritage draft Assessment Bringelly Road Business Hub

Dear Dom

We have received and reviewed the– Aboriginal cultural heritage draft assessment for Bringelly Road Business Hub The Assessment and findings are very inclusive and informative the complex of sites in this area has been recorded and documented to a high standard. Surrounding this area are many highly significant sites that are all a connected complex of sites. Although there is visible finding of artefacts here due to grass cover, this area is still important for the information that we can collect here to assess the bigger picture and add information to our overall studies of how Darug people moved, lived and survived in this landscape.

We would like to add that our sites are a complex and not all separate sites and recommend that the connections are interpreted throughout the project. Information gathered during these projects is of high significance, once our sites are gone there is no other evidence of the sites or connections. This area has shown in recent excavations and surveys that this is a Darug landscape and there are still numerous parts of our histories to be recorded.

We support the findings and recommendations in this report.

Please contact us with all further enquiries on the above contacts.

Regards

Justine Coplin

Cubbitch Barta Native Title Claimants
Aboriginal Corporation
55 Nightingale Road,
PHEASANTS NEST. N.S.W. 2574.
3rd October, 2014.

Dominic Steele
21 Macquarie Street,
CROYDON. N.S.W. 2132.

Dear Dom,

RE; BRINGELLY ROAD
BUSINESS HUB

Thank you for the opportunity to participate in the site survey and to comment on the DRAFT Aboriginal Heritage Assessment.

During the site inspection, it became obvious that there was no visibility over the whole of the proposed area of land for this development. According to the report there has been some disturbance of the land, due to past land use, but I do not believe that this will have impacted any potential for the land to still hold cultural objects sub surface.

There may not be any sites recorded on this particular property but there are several within the immediate vicinity, one of which avoided by the South West Rail Corridor, but not totally avoided by Sydney Water who are proposing to place a sewer line near the site. A 10 metre wide corridor will partially impact the site. I have marked the location on your map on Page 71.

There are several locations on the property that are suitable for camping, and they will require further investigation before any proposed works are to proceed.

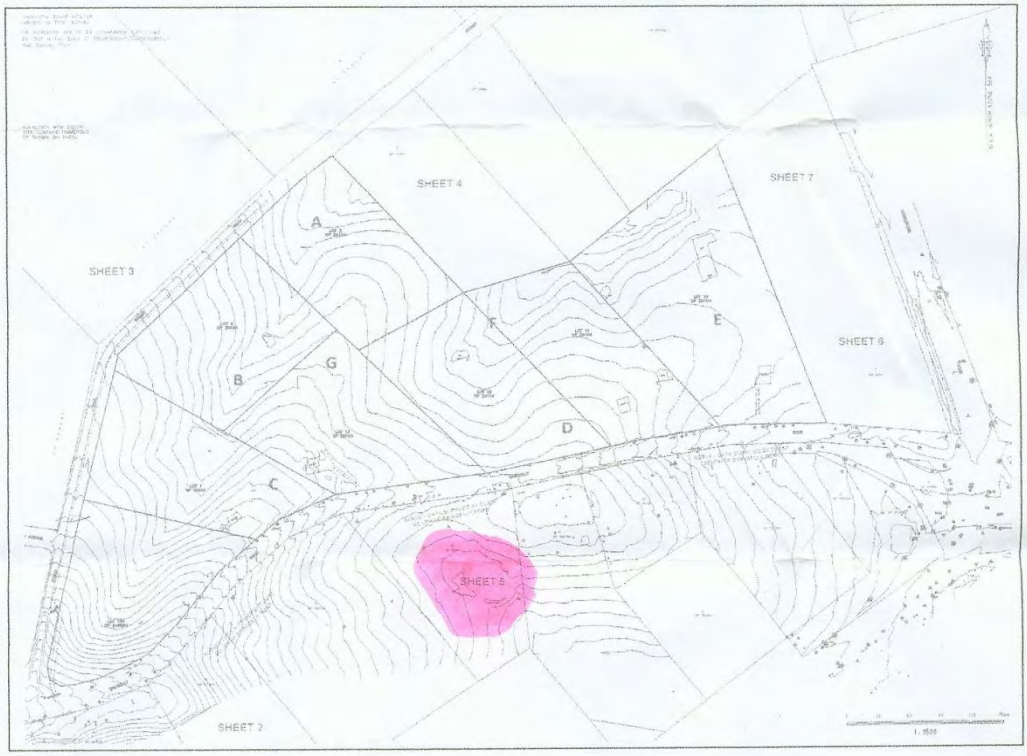
For your information on page 56, the report mentions the property being sold to John Robert English. John English is probably a relative, and a Dharawal descendant. I have not done any further research to substantiate this, but by great great grandmother married a James English in the year 1869. The family was quite large and it is possible that he is a descendant, especially with ties still to Camden.

Yours faithfully,

G. Chalker

Glenda Chalker
Hon. Chairperson
Phone/Fax 0246841129 0427218425
kgchalker@bigpond.com

Figure 5.5: Possible locations which possess flat to gently sloping ground on suitable landforms for past Aboriginal visitation and use.



Dominic Steele

From: Heritage Officer [heritage@tharawal.com.au]
Sent: Wednesday, 1 October 2014 9:58 AM
To: Dominic Steele
Attachments: img-X01095449-0001111111111111111111111111.pdf

Good Morning Dominic,

Attached is just a formal letter to withdraw us from the Bringelly project and I will send an invoice once the accountant has done it for you.

Thankyou,

Abbi Whillock
Tharawal Local Aboriginal Land Council
Aboriginal Cultural & Heritage Officer
P: (02) 4681 0059 F: (02) 4681 0866 M: 0448 002 042
E: heritage@tharawal.com.au
220 West Parade, Couridjah NSW 2571

Darug Aboriginal Cultural Heritage Assessments

ABN 51734106483

Gordon Morton
Mob: 0422 865 831
Fax: 941 036 65

Celestine Everingham
9/6 Chapman Ave
Chatswood, 2067.
Phone/Fax: 941 03665
Mobile: 0432 528 896

19.11.14

Attention
Dominic Steele
DSCA.

re: Bringelly Road Business Hub - Western Sydney Parklands Trust.

DACHA have reviewed your report on the proposed Business Hub and we support your conclusions and summary, we look forward to working with you on this project.

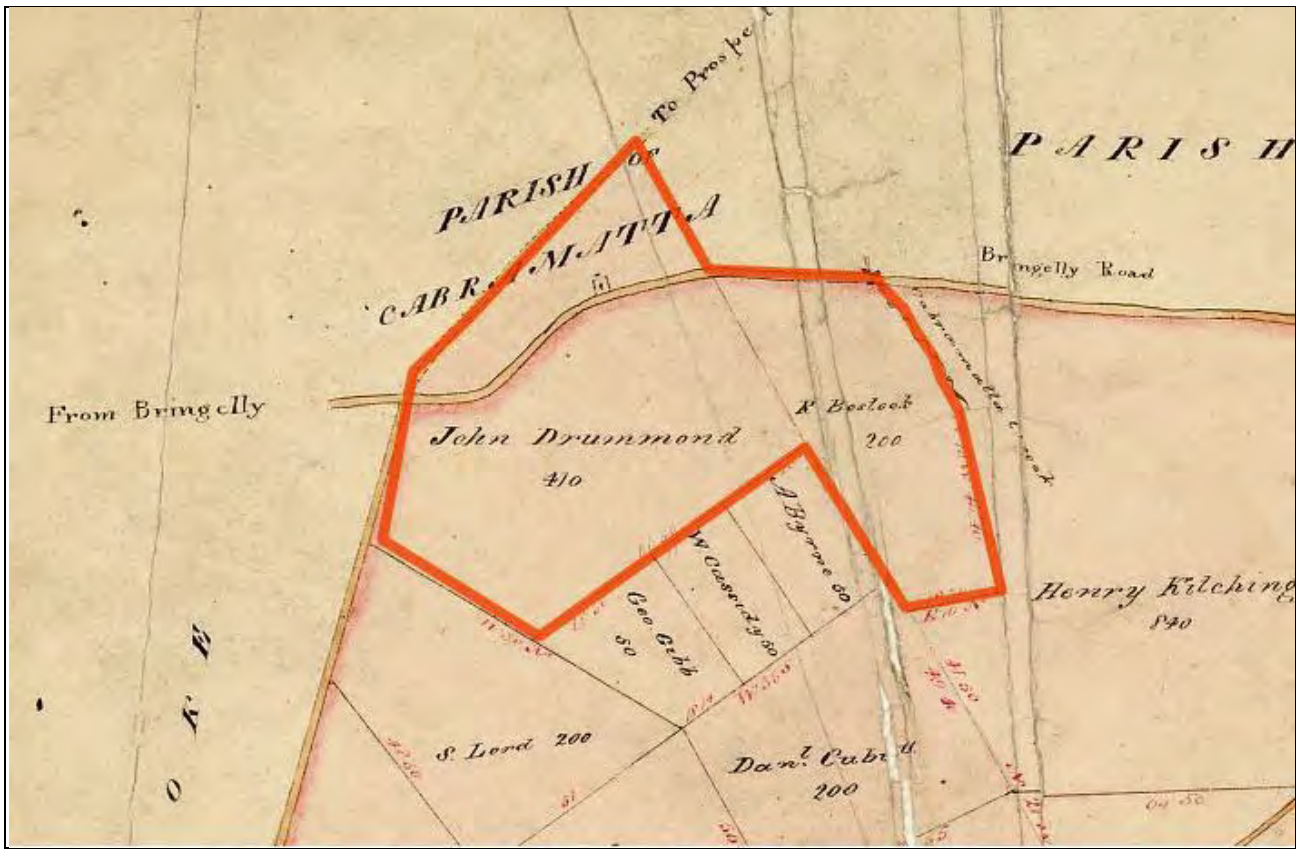
Yours Sincerely,

C. Everingham

Appendix 5

Owners 1816-188/9? (Source: Land and Property Information)

Owners 1816-188/9? (Source: Land and Property Information)



Source: Land and Property Information

Detail from an undated (c.1830s) map of the parish of Minto depicting the extent of the grants 400 and 210 acres

Year	Owner
1816	25th June CROWN GRANT 410 acres John Drummond
1820	7th December Recited in PA14611 Conveyance 200 acres From: Robert Bostock To: John Drummond
1827	Death of John Drummond 410 acres and 200 acres Bequeathed to Ann Drummond

1828	Death of Ann Drummond 410 acres and 200 acres Bequeathed to Joseph Thompson
184?	Death of Joseph Thompson 410 acres and 200 acres Bequeathed to Ann Jane Drummond Thompson
1852	13th June BOOK 23 NO. 816 Conveyance 550 acres at Lower Minto (being grants of 410 acres and 200 acres) From: Joshua Cooper, Jerry's Plains, gentleman, and wife Ann Jane Drummond Cooper (formerly Ann Jane Drummond Thompson) To: Timothy Beard, Cabramatta, farmer 725 pounds
1858	1st March BOOK 62 NO. 524 Lease for 10 years Farm known as Drummondsville on Cowpasture Road 40050 acres (sic) From: Timothy Beard To: John Green 35 pounds per annum Witness Joseph Rolfe
1862	2nd October BOOK 80 NO. 158 410 acres and 200 acres Conveyance From: Timothy Beard, Cabramatta, farmer Michael McNamara, Sydney, licensed victualler Ann Gentley, Cabramatta, widow To: George Minchin Payment of life annuity of 26 pounds to Timothy Beard
1865	24th October BOOK 95 NO. 823 410 acres and 200 acres Conveyance From: George Minchin, Cabramatta, farmer, and Timothy Beard, Sydney, gentleman To: George Rowley and Richard Holdsworth, Sydney, solicitors 600 pounds (to Minchin)

1865	16th November BOOK 96 NO. 148 Conveyance 410 acres and 200 acres From: George Rowley and Richard Holdsworth, Sydney, solicitors To: Patrick Cahalan and Edward Cahalan, farmers 750 pounds
1878	11th December BOOK 188 NO. 229 Conveyance 410 acres and 200 acres From: Patrick Cahalan, near Liverpool, farmer, & Edward Cahalan, near Liverpool, farmer To: John Moore, younger, Glenmore, grazier 1,487 pounds

Owners 184/9?-1958 (Source: Land and Property Information)

Source: Land and Property Information

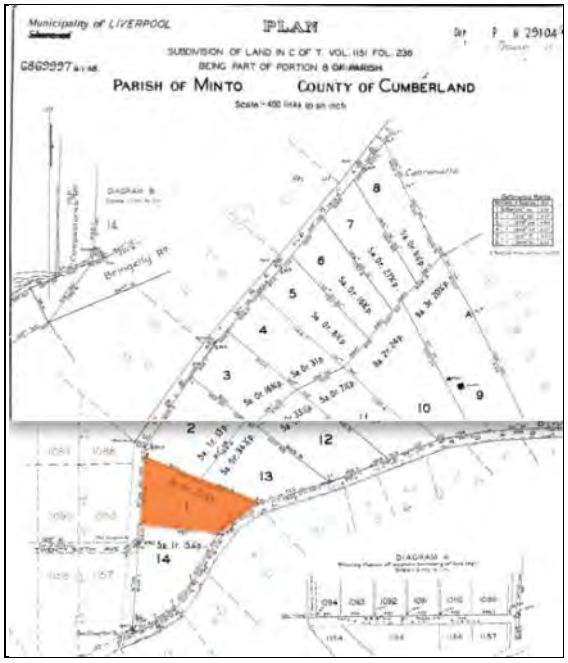
Detail from an undated (c.1830s) map of the parish of Minto depicting the extent of the farm of 81 acres

Year	Owner
	TO BE COMPLETED BOOK NO. Conveyance From: Cahalan To: Oprey
1893	6th February BOOK 525 NO. 486 81 acres 15½ perches Mortgage From: James Oprey, Carnes Hill, farmer To: Alfred Hyndes Hatfield, Sydney, auctioneer 450 pounds

1893	6th February BOOK 525 NO. 487 81 acres 15½ perches Transfer of Mortgage From: Alfred Hyndes Hatfield, Sydney, auctioneer To: Neal Collins, Sydney, solicitor 450 pounds
1894	1st February PRIMARY APPLICATION 9297 James Oprey, Carnes Hill, farmer 81 acres 6 roods 15½ perches In occupation of James Oprey Value £811
1895	15th February CERTIFICATE OF TITLE Vol. 1151 Fol. 236 81 acres 6 roods 15½ perches James Oprey, Carnes Hill, farmer
1921	28th February Dealing A747475 Transfer John Robert English, Hoxton Park, farmer
1942	10th November Dealing D166587 Transfer Beatrice Bertha English, Hoxton Park, widow George Thomas Wheeler, Seven Hills, dairy farmer
1942	10th November (registered) Dealing D166589 Transfer Eliza May Bernier, Northbridge, widow
1958	Subdivision in Deposited Plan 29104

Owners 1958-c.1980s (Source: Land and Property Information)

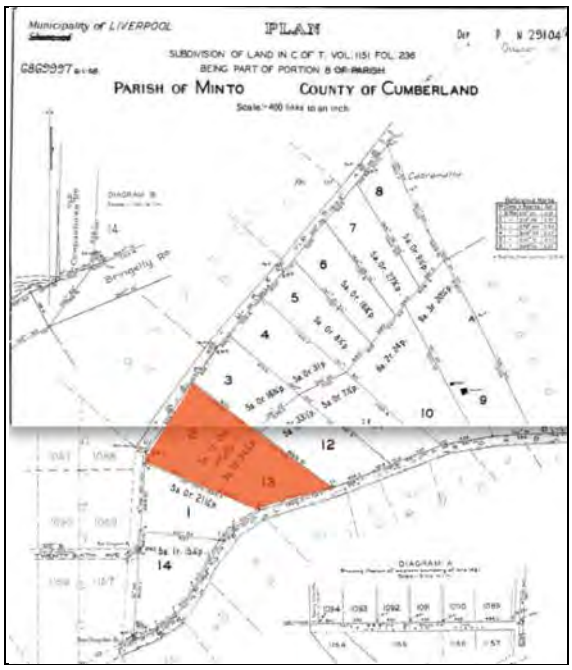
Lot 1 in Deposited Plan 29104



Source: Land and Property Information
Deposited Plan 29104

Year	Owner
1958	Subdivision in Deposited Plan 29104
1959	15th October CERTIFICATE OF TITLE Vol. 7781 Fol. 76 Lot 1 in Deposited Plan 29104 5 acres 0 rood 15¼ perches Rene Raymond Cailly, Punchbowl, fitter
1977	30th March Dealing Q111154 Transfer New South Wales Planning and Environment Commission
Dealings in Auto Folio not searched	

Lots 2 & 13 in Deposited Plan 29104

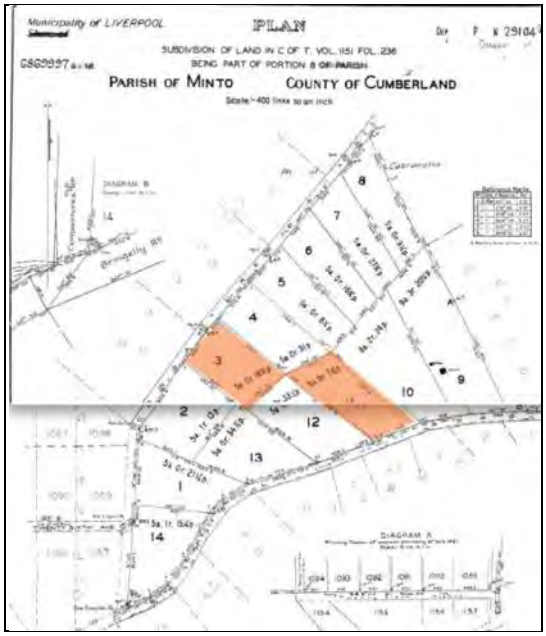


Source: Land and Property Information
Deposited Plan 29104

Year	Owner
1958	Subdivision in Deposited Plan 29104
1958	17th February Dealing G913360 Transfer Lots 1-13 in Deposited Plan 29104 Matthew Gergich, senior; Matthew Gergich, junior; Thomas Gergich
1958	6th November CERTIFICATE OF TITLE Vol. 7595 Fols. 147-149 Lots 1-13 in Deposited Plan 29104 Matthew Gergich, senior; Matthew Gergich, junior; Thomas Gergich; all of Leppington, farmers
1958	16th May Dealing G986089 Transfer Lots 2 and 13 in Deposited Plan 29104 Morris Novakovich, Leppington, farmer
1958	29th December CERTIFICATE OF TITLE Vol. 7624 Fol. 188 Lots 2 and 13 in Deposited Plan 29104 10 acres 2 rood 7 perches Morris Novakovich, Leppington, farmer

1976	26th March Dealing P676253 Transfer of Lot 2 New South Wales Planning and Environment Commission
	Transfer of Lot 2 not determined (post 1976)
Dealings in Auto Folios not searched	

Lots 3 and 11 in Deposited Plan 29104

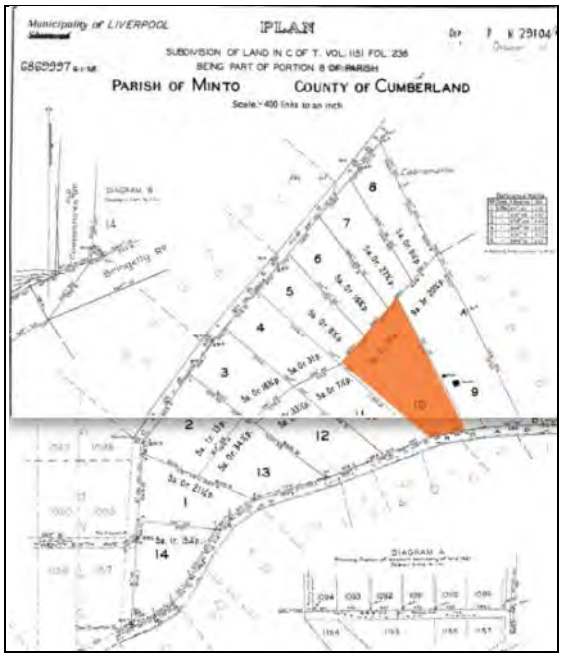


Source: Land and Property Information
Deposited Plan 29104

Year	Owner
1958	Subdivision in Deposited Plan 29104
1958	17th February Dealing G913360 Transfer Lots 1-13 Matthew Gergich, senior; Matthew Gergich, junior; Thomas Gergich
1958	6th November CERTIFICATE OF TITLE Vol. 7595 Fols. 147-149 Lots 1-13 in Deposited Plan 29104 Matthew Gergich, senior; Matthew Gergich, junior; Thomas Gergich; all of Leppington, farmers
1958	20th May Dealing G986087 Transfer Lots 3 and 11 in Deposited Plan 29104 Lazar Radusavlevic

1958	29th December CERTIFICATE OF TITLE Vol. 7624 Fol. 189 Lots 3 and 11 in Deposited Plan 29104 10 acres 0 rood 24¼ perches Lazar Radusavlevic, Blacktown, farmer, and wife Maria
1979	16th August Dealing R285471 Transfer of Lot 3 New South Wales Planning and Environment Commission
	Transfer of Lot 11 not determined (post 1979)
Dealings in Auto Folios not searched	

Lot 10 in Deposited Plan 29104

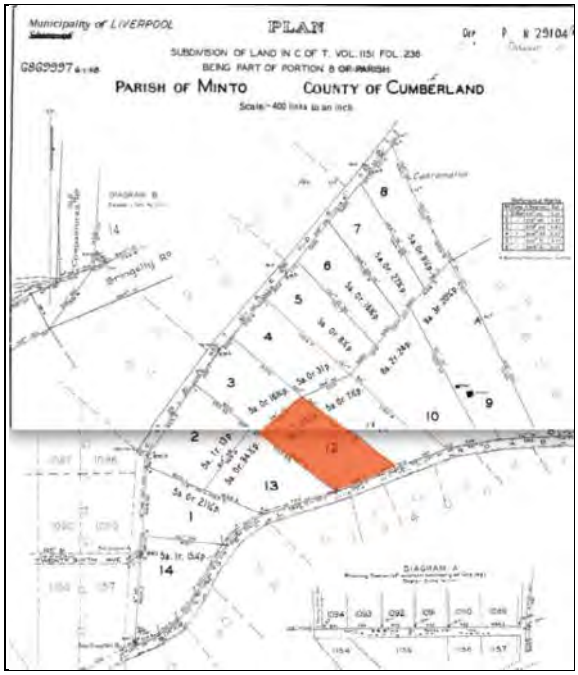


Source: Land and Property Information
Deposited Plan 29104

Year	Owner
1958	Subdivision in Deposited Plan 29104
1959	18th February CERTIFICATE OF TITLE Vol. 7647 Fol. 7 Lot 10 in Deposited Plan 29104 8 acres 2 roods 24 perches Frederick Thomas Walter, Fairfield Park, poultry farmer, and wife Marie

1960	26th August Dealing H58899 Transfer Antonis Pierubon, Enfield, farmer
Dealings in Auto Folio not searched	

Lot 12 in Deposited Plan 29104

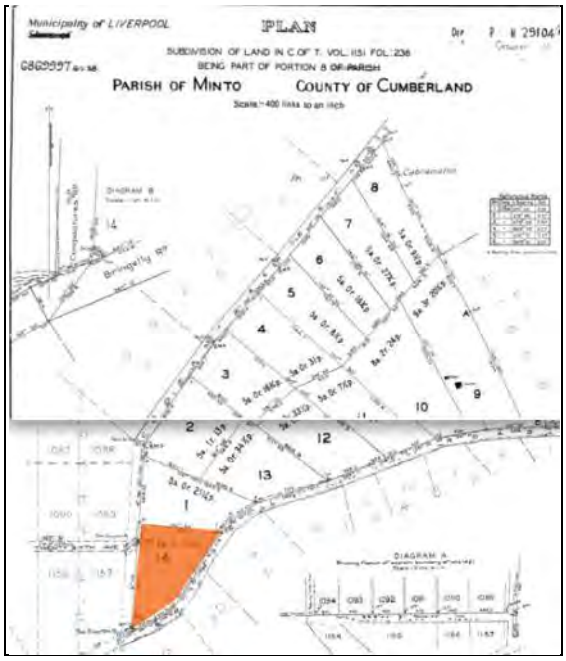


Source: Land and Property Information
Deposited Plan 29104

Year	Owner
1958	Subdivision in Deposited Plan 29104
1958	17th February Dealing G913360 Transfer Lots 1-13 Matthew Gergich, senior; Matthew Gergich, junior; Thomas Gergich
1958	6th November CERTIFICATE OF TITLE Vol. 7595 Fols. 147-149 Lots 1-13 in Deposited Plan 29104 Matthew Gergich, senior; Matthew Gergich, junior; Thomas Gergich; all of Leppington, farmers
1958	19th May Dealing H65684 Transfer Lot 12 in Deposited Plan 29104 Nikola Milenov, Liverpool, farmer

1958	29th December CERTIFICATE OF TITLE Vol. 7624 Fol. 187 Lot 12 in Deposited Plan 29104 5 acres 0 rood 33½ perches Nikola Milenov, Liverpool, farmer
1960	16th September Dealing J64546 Transfer Lazar Radusavlevic, Blacktown, farmer, and wife Maria
1979	16th August Dealing R285471 Transfer New South Wales Planning and Environment Commission
Dealings in Auto Folio not searched	

Lot 14 in Deposited Plan 29104



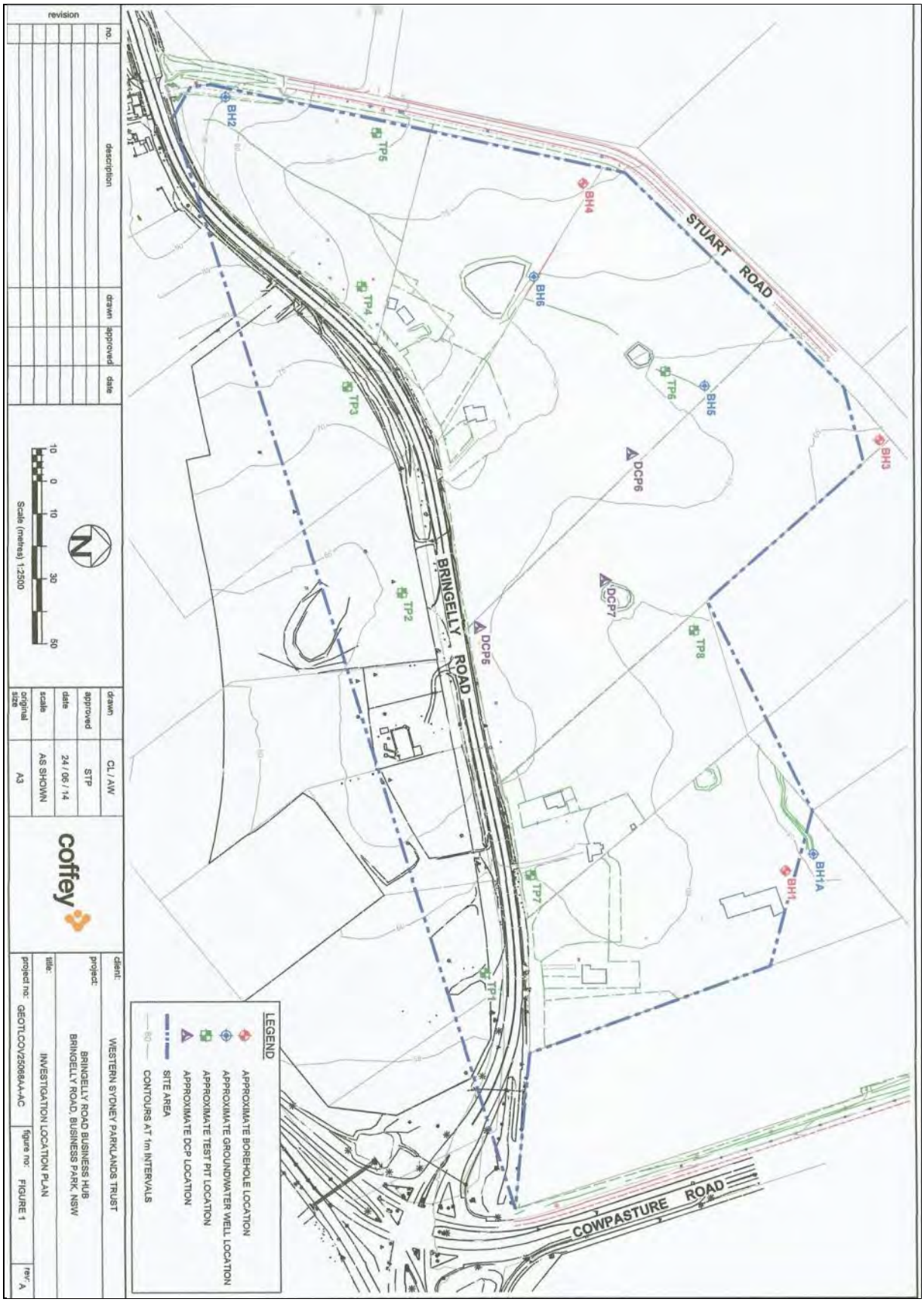
Source: Land and Property Information
Deposited Plan 29104

Year	Owner
1958	Subdivision in Deposited Plan 29104
1958	17th February Dealing G922531 Transfer Lot 14 Grace Denham Ollis

1958	6th November CERTIFICATE OF TITLE Vol. 7595 Fol. 150 Lot 14 in Deposited Plan 29104 5 acres 1 rood 15¼ perches Grace Denham Ollis, wife of Frank Edwin Ollis, Liverpool, printer
1961	9th August Dealing H859232 Transfer Salvatore Rizzo, Hoxton Park, labourer, and wife
1976	17th December Dealing Q9829 Transfer New South Wales Planning and Environment Commission
Dealings in Auto Folio 14/29104 not searched	

Appendix 6

Geotechnical Bore Hole Data


STUART ROAD
BRINGELLY ROAD
COWPASTURE ROAD
BH1
BH1A
BH2
BH3
BH4
BH5
BH6
TP1
TP2
TP3
TP4
TP5
TP6
TP7
TP8
DCP5
DCP6
DCP7
LEGEND
APPROXIMATE BOREHOLE LOCATION
APPROXIMATE GROUNDWATER WELL LOCATION
APPROXIMATE TEST PIT LOCATION
APPROXIMATE DCP LOCATION
SITE AREA
CONTOURS AT 1m INTERVALS
Scale (metres) 1:2500
revision
no.
description
drawn
approved
date
client:
WESTERN SYDNEY PARKLANDS TRUST
project:
BRINGELLY ROAD BUSINESS HUB
BRINGELLY ROAD, BUSINESS PARK, NSW
title:
INVESTIGATION LOCATION PLAN
project no:
GEOTLCOV25068AA-AC
figure no:
FIGURE 1
rev:
A
coffey
original size
A3
scale
AS SHOWN
date
24 / 06 / 14
approved
STP
drawn
CL / AW

coffey

Engineering Log - Borehole

client:	*Western Sydney Parklands Trust*	Borehole ID.	*BH1*
principal:		sheet:	1 of 1
project:	*Bringelly Park Business Hub*	project no.	*GEOTLCOV25068AA*
location:	*Bringelly Road, Business Park, NSW*	date started:	*28 May 2014*
		date completed:	*28 May 2014*
		logged by:	*CL*
		checked by:	*AH*

position: Not Specified | surface elevation: Not Specified | angle from horizontal: 90°
drill model: Drillcat, Track mounted | hole diameter : 100 mm

drilling information | **material substance**

method & support	penetration	water	samples & field tests	RL (m)	depth (m)	graphic log	classification symbol	material description	moisture condition	consistency / relative density	hand penetrometer (kPa)	structure and additional observations
AD/T	1 2 3	Not Encountered	SPT 3, 8, 10 N*=18		1.0		CH	**TOPSOIL: Silty CLAY**: high plasticity, brown, with a trace of rootlets.	<Wp	St / VSt	100 200 300 400	TOPSOIL
								Silty CLAY: high plasticity, red brown and pale grey.				RESIDUAL SOIL
					2.0			**SHALE**: extremely weathered, brown and yellow brown, estimated very low strength.				EXTREMELY WEATHERED BEDROCK
			SPT 15/90mm N*=R		3.0			Borehole BH1 terminated at 2.75 m Refusal				
					4.0							
					5.0							
					6.0							
					7.0							

CDF_0_9_04BB.GLB Log COF BOREHOLE NON CORED GEOTLCOV25068AA.GPJ <<DrawingFile>> 20/06/2014 15:23

method
AD auger drilling*
AS auger screwing*
HA hand auger
W washbore
* bit shown by suffix
e.g. AD/T
B blank bit
T TC bit
V V bit

support
M mud
C casing
N nil

penetration
no resistance ranging to refusal

water
10-Oct-12 water level on date shown
water inflow
water outflow

samples & field tests
B bulk disturbed sample
D disturbed sample
E environmental sample
SS split spoon sample
U## undisturbed sample ##mm diameter
HP hand penetrometer (kPa)
N standard penetration test (SPT)
N* SPT - sample recovered
Nc SPT with solid cone
VS vane shear; peak/remoulded (kPa)
R refusal
HB hammer bouncing

classification symbol & soil description
based on Unified Classification System

moisture
D dry
M moist
W wet
Wp plastic limit
Wl liquid limit

consistency / relative density

VS	very soft
S	soft
F	firm
St	stiff
VSt	very stiff
H	hard
Fb	friable
VL	very loose
L	loose
MD	medium dense
D	dense
VD	very dense

coffey

Engineering Log - Borehole

Borehole ID.	BH1A
sheet:	1 of 1
project no.	GEOTLCOV25068AA
client:	Western Sydney Parklands Trust
date started:	28 May 2014
principal:	
date completed:	28 May 2014
project:	Bringelly Park Business Hub
logged by:	CL
location:	Bringelly Road, Business Park, NSW
checked by:	AH

position: Not Specified | surface elevation: Not Specified | angle from horizontal: 90°

drill model: Drillcat, Track mounted | hole diameter : 100 mm

drilling information						material substance					
method & support	penetration 1 2 3	water	samples & field tests	RL (m)	depth (m)	graphic log	classification symbol	material description SOIL TYPE: plasticity or particle characteristic, colour, secondary and minor components	moisture condition	consistency / relative density	hand penetrometer (kPa) 100 200 300 400	structure and additional observations
AD/T		Not Encountered 05/06/14	SPT 6, 7, 8 N*=15		1.0		CH	**TOPSOIL: Silty CLAY**: high plasticity, brown, with some rootlets.	<Wp	St / VSt		TOPSOIL
								Silty CLAY: high plasticity, yellow brown and brown, with some iron induration.				RESIDUAL SOIL
			SPT 3, 7, 12 N*=19		2.0							
			D		3.0		CH	**Silty CLAY**: high plasticity, pale grey and yellow brown, with some iron induration.		H		EXTREMELY WEATHERED BEDROCK
								SHALE: extremely weathered, brown and grey, estimated very low strength.				Hammer bouncing at 2.9m
					4.0			3.3 m: becoming dark grey Borehole BH1A terminated at 4.0 m Refusal				
					5.0							
					6.0							
					7.0							

CDF_0_9_0488.GLB Log CDF BOREHOLE: NON CORED GEOTLCOV25068AA.GPJ <<DrawingFile>> 20/09/2014 15:23

method
- AD auger drilling*
- AS auger screwing*
- HA hand auger
- W washbore
- * bit shown by suffix
- e.g. AD/T
- B blank bit
- T TC bit
- V V bit

support
- M mud
- C casing
- N nil

penetration
- no resistance
- ranging to refusal

water
- 10-Oct-12 water level on date shown
- water inflow
- water outflow

samples & field tests
- B bulk disturbed sample
- D disturbed sample
- E environmental sample
- SS split spoon sample
- U## undisturbed sample ##mm diameter
- HP hand penetrometer (kPa)
- N standard penetration test (SPT)
- N* SPT - sample recovered
- Nc SPT with solid cone
- VS vane shear; peak/remouded (kPa)
- R refusal
- HB hammer bouncing

classification symbol & soil description based on Unified Classification System

moisture
- D dry
- M moist
- W wet
- Wp plastic limit
- Wl liquid limit

consistency / relative density

VS	very soft
S	soft
F	firm
St	stiff
VSt	very stiff
H	hard
Fb	friable
VL	very loose
L	loose
MD	medium dense
D	dense
VD	very dense

coffey

Engineering Log - Borehole

client:	**Western Sydney Parklands Trust**	Borehole ID.	**BH2**
principal:		sheet:	1 of 1
project:	**Bringelly Park Business Hub**	project no.	**GEOTLCOV25068AA**
location:	**Bringelly Road, Business Park, NSW**	date started:	**28 May 2014**
		date completed:	**28 May 2014**
		logged by:	**CL**
		checked by:	**AH**

position: Not Specified | surface elevation: Not Specified | angle from horizontal: 90°

drill model: Drillcat, Track mounted | hole diameter : 100 mm

drilling information						material substance					
method & support	penetration 1 2 3	water	samples & field tests	RL (m)	depth (m)	graphic log	classification symbol	material description SOIL TYPE: plasticity or particle characteristic, colour, secondary and minor components	moisture condition	consistency / relative density	hand penetrometer (kPa) 100 200 300 400	structure and additional observations
AD/T		Not Encountered	SPT 3, 9, 16 N*=25		1.0		CH	**TOPSOIL: Silty CLAY**: high plasticity, brown, with some rootlets.	<Wp	VSt		TOPSOIL
								Silty CLAY: high plasticity, brown, with a trace of fine grained gravel and some iron induration.				RESIDUAL SOIL
							CH	**Silty CLAY**: high plasticity, red brown and pale grey.		H		
								SHALE: extremely weathered, grey, extimated very low strength.				EXTREMELY WEATHERED BEDROCK
					2.0			Borehole BH2 terminated at 1.6 m Refusal				
					3.0							
					4.0							
					5.0							
					6.0							
					7.0							

CDF_0_9_04B5.GLB Log COF BOREHOLE: NON CORED GEOTLCOV25068AA.GPJ <<DrawingFile>> 20/06/2014 15:23

method
AD auger drilling*
AS auger screwing*
HA hand auger
W washbore
* bit shown by suffix
e.g. AD/T
B blank bit
T TC bit
V V bit

support
M mud
C casing
N nil

penetration
no resistance ranging to refusal

water
10-Oct-12 water level on date shown
water inflow
water outflow

samples & field tests
B bulk disturbed sample
D disturbed sample
E environmental sample
SS split spoon sample
U## undisturbed sample ##mm diameter
HP hand penetrometer (kPa)
N standard penetration test (SPT)
N* SPT - sample recovered
Nc SPT with solid cone
VS vane shear; peak/remoulded (kPa)
R refusal
HB hammer bouncing

classification symbol & soil description
based on Unified Classification System

moisture
D dry
M moist
W wet
Wp plastic limit
Wl liquid limit

consistency / relative density

VS	very soft
S	soft
F	firm
St	stiff
VSt	very stiff
H	hard
Fb	friable
VL	very loose
L	loose
MD	medium dense
D	dense
VD	very dense

coffey

Engineering Log - Borehole

		Borehole ID.	**BH3**
		sheet:	1 of 1
		project no.	**GEOTLCOV25068AA**
client:	**Western Sydney Parklands Trust**	date started:	**28 May 2014**
principal:		date completed:	**28 May 2014**
project:	**Bringelly Park Business Hub**	logged by:	**CL**
location:	**Bringelly Road, Business Park, NSW**	checked by:	**AH**

position: Not Specified — surface elevation: Not Specified — angle from horizontal: 90°

drill model: Drillcat, Track mounted — hole diameter : 100 mm

drilling information						material substance					
method & support	penetration	water	samples & field tests	RL (m)	depth (m)	graphic log	classification symbol	material description SOIL TYPE: plasticity or particle characteristic, colour, secondary and minor components	moisture condition	consistency / relative density	hand penetrometer (kPa) 100 200 300 400	structure and additional observations
AD/T	1 2 3	Not Encountered	SPT 2, 2, 2 N*=4		1.0		CH	**TOPSOIL: Silty CLAY**: high plasticity, brown, with some rootlets. **Silty CLAY**: high plasticity, red brown and orange brown.	=Wp	S		**TOPSOIL** **RESIDUAL SOIL**
			SPT 5, 6, 10 N*=16		2.0 3.0		CH	**Silty CLAY**: high plasticity, pale grey, red brown and yellow brown.	<Wp	H		
			SPT 15/80mm N*=R		4.0			**SHALE**: extremely weathered, pale grey, estimated very low strength.				**EXTREMELY WEATHERED BEDROCK**
					5.0 6.0 7.0			Borehole BH3 terminated at 4.6 m Refusal				

CDF_0_9_04BB.GLB Log_COF BOREHOLE: NON CORED GEOTLCOV25068AA.GPJ <<DrawingFile>> 20/06/2014 15:25

method
AD auger drilling*
AS auger screwing*
HA hand auger
W washbore
* bit shown by suffix e.g. AD/T
B blank bit
T TC bit
V V bit

support
M mud — N nil
C casing

penetration
no resistance ranging to refusal

water
10-Oct-12 water level on date shown
water inflow
water outflow

samples & field tests
B bulk disturbed sample
D disturbed sample
E environmental sample
SS split spoon sample
U## undisturbed sample ##mm diameter
HP hand penetrometer (kPa)
N standard penetration test (SPT)
N* SPT - sample recovered
Nc SPT with solid cone
VS vane shear; peak/remouded (kPa)
R refusal
HB hammer bouncing

classification symbol & soil description
based on Unified Classification System

moisture
D dry
M moist
W wet
Wp plastic limit
Wl liquid limit

consistency / relative density

VS	very soft
S	soft
F	firm
St	stiff
VSt	very stiff
H	hard
Fb	friable
VL	very loose
L	loose
MD	medium dense
D	dense
VD	very dense

coffey

Engineering Log - Borehole

		Borehole ID.	**BH4**
		sheet:	1 of 1
		project no.	**GEOTLCOV25068AA**
client:	**Western Sydney Parklands Trust**	date started:	**28 May 2014**
principal:		date completed:	**28 May 2014**
project:	**Bringelly Park Business Hub**	logged by:	**CL**
location:	**Bringelly Road, Business Park, NSW**	checked by:	**AH**

position: Not Specified | surface elevation: Not Specified | angle from horizontal: 90°

drill model: Drillcat, Track mounted | hole diameter : 100 mm

drilling information						material substance						
method & support	penetration 1 2 3	water	samples & field tests	RL (m)	depth (m)	graphic log	classification symbol	material description **SOIL TYPE:** plasticity or particle characteristic, colour, secondary and minor components	moisture condition	consistency / relative density	hand penetrometer (kPa) 100 200 300 400	structure and additional observations
AD/T		Not Encountered	SPT 4, 17 N*=R		1.0		CH	**TOPSOIL: Silty CLAY**: high plasticity, brown, with a trace of rootlets.	<Wp	St / VSt		TOPSOIL
								Silty CLAY: high plasticity, red brown, pale grey, orange brown and yellow brown, with some iron induration.				RESIDUAL SOIL
					2.0			**SHALE**: extremely weathered, pale grey and grey, estimated very low strength.				EXTREMELY WEATHERED BEDROCK
			SPT 5/0mm N=R					Borehole BH4 terminated at 2.5 m Refusal				
					3.0							
					4.0							
					5.0							
					6.0							
					7.0							

CDF_0_9_04BB.GLB Log COF BOREHOLE: NON CORED GEOTLCOV25068AA.GPJ <<DrawingFile>> 20/06/2014 15:23

method
- AD auger drilling*
- AS auger screwing*
- HA hand auger
- W washbore

* bit shown by suffix, e.g. AD/T
- B blank bit
- T TC bit
- V V bit

support
- M mud
- C casing
- N nil

penetration
- no resistance ranging to refusal

water
- 10-Oct-12 water level on date shown
- water inflow
- water outflow

samples & field tests
- B bulk disturbed sample
- D disturbed sample
- E environmental sample
- SS split spoon sample
- U## undisturbed sample ##mm diameter
- HP hand penetrometer (kPa)
- N standard penetration test (SPT)
- N* SPT - sample recovered
- Nc SPT with solid cone
- VS vane shear; peak/remouded (kPa)
- R refusal
- HB hammer bouncing

classification symbol & soil description based on Unified Classification System

moisture
- D dry
- M moist
- W wet
- Wp plastic limit
- Wl liquid limit

consistency / relative density

VS	very soft
S	soft
F	firm
St	stiff
VSt	very stiff
H	hard
Fb	friable
VL	very loose
L	loose
MD	medium dense
D	dense
VD	very dense

coffey

Engineering Log - Borehole

client:	**Western Sydney Parklands Trust**	Borehole ID.	**BH5**
principal:		sheet:	1 of 1
project:	**Bringelly Park Business Hub**	project no.	**GEOTLCOV25068AA**
location:	**Bringelly Road, Business Park, NSW**	date started:	**28 May 2014**
		date completed:	**28 May 2014**
		logged by:	**CL**
		checked by:	**AH**

position: Not Specified — surface elevation: Not Specified — angle from horizontal: 90°

drill model: Drillcat, Track mounted — hole diameter : 100 mm

drilling information						material substance					
method & support	penetration 1 2 3	water	samples & field tests	RL (m)	depth (m)	graphic log	classification symbol	material description SOIL TYPE: plasticity or particle characteristic, colour, secondary and minor components	moisture condition	consistency / relative density	hand penetrometer (kPa) 100 200 300 400	structure and additional observations
AD/T		Not Encountered					CH	**TOPSOIL: Silty CLAY**: high plasticity, brown, with a trace of rootlets.	<Wp	St		TOPSOIL
								Silty CLAY: high plasticity, red brown, with a trace of fine grained gravel.				RESIDUAL SOIL
			SPT 4, 5, 7 N*=12		1.0		CH	**Silty CLAY**: high plasticity, pale grey and red brown.		VSt		
			SPT 10/60mm N*=R		2.0			**SHALE**: extremely weathered, brown and grey, estimated very low strength.				EXTREMELY WEATHERED BEDROCK
					3.0			3.1 m: becoming brown				
								3.7 m: becoming dark grey				
					4.0			Borehole BH5 terminated at 4.0 m Refusal				
					5.0							
					6.0							
					7.0							

CDF_0_9_0488.GLB Log COF BOREHOLE NON CORED GEOTLCOV25068AA.GPJ <<DrawingFile>> 20/06/2014 15:23

method
AD auger drilling*
AS auger screwing*
HA hand auger
W washbore
* bit shown by suffix
e.g. AD/T
B blank bit
T TC bit
V V bit

support
M mud — N nil
C casing

penetration
no resistance ranging to refusal

water
10-Oct-12 water level on date shown
water inflow
water outflow

samples & field tests
B bulk disturbed sample
D disturbed sample
E environmental sample
SS split spoon sample
U## undisturbed sample ##mm diameter
HP hand penetrometer (kPa)
N standard penetration test (SPT)
N* SPT - sample recovered
Nc SPT with solid cone
VS vane shear; peak/remouded (kPa)
R refusal
HB hammer bouncing

classification symbol & soil description
based on Unified Classification System

moisture
D dry
M moist
W wet
Wp plastic limit
Wl liquid limit

consistency / relative density

VS	very soft
S	soft
F	firm
St	stiff
VSt	very stiff
H	hard
Fb	friable
VL	very loose
L	loose
MD	medium dense
D	dense
VD	very dense

Coffey

Engineering Log - Borehole

client:	**Western Sydney Parklands Trust**	Borehole ID.	**BH6**
principal:		sheet:	1 of 1
project:	**Bringelly Park Business Hub**	project no.	**GEOTLCOV25068AA**
location:	**Bringelly Road, Business Park, NSW**	date started:	**28 May 2014**
		date completed:	**28 May 2014**
		logged by:	**CL**
		checked by:	**AH**

position: Not Specified — surface elevation: Not Specified — angle from horizontal: 90°

drill model: Drillcat, Track mounted — hole diameter : 100 mm

drilling information | **material substance**

method & support	penetration	water	samples & field tests	RL (m)	depth (m)	graphic log	classification symbol	material description (SOIL TYPE: plasticity or particle characteristic, colour, secondary and minor components)	moisture condition	consistency / relative density	hand penetrometer (kPa)	structure and additional observations
AD/T		Not Encountered ▽ 06/04/14	SPT 5, 13, 15/80mm N*=R		0.0			**TOPSOIL: Silty CLAY**: high plasticity, brown, with a trace of rootlets.	<Wp	VSt		**TOPSOIL**
							CH	**Silty CLAY**: high plasticity, red brown and orange brown.				**RESIDUAL SOIL**
					1.0		CH	**Silty CLAY**: high plasticity, grey mottled yellow brown.				
			SPT 10/50mm N*=R		2.0			**SHALE**: extremely weathered, grey and brown, estimated very low strength.				**EXTREMELY WEATHERED BEDROCK**
					3.0			3.7 m: becoming dark grey				
					4.0			Borehole BH6 terminated at 4.0 m Refusal				
					5.0							
					6.0							
					7.0							

CDF_0_9_04BB.GLB Log COF BOREHOLE: NON CORED GEOTLCOV25068AA.GPJ <<DrawingFile>> 20/06/2014 15:23

method
AD auger drilling*
AS auger screwing*
HA hand auger
W washbore
* bit shown by suffix
e.g. AD/T
B blank bit
T TC bit
V V bit

support
M mud
C casing
N nil

penetration
no resistance ranging to refusal

water
10-Oct-12 water level on date shown
water inflow
water outflow

samples & field tests
B bulk disturbed sample
D disturbed sample
E environmental sample
SS split spoon sample
U## undisturbed sample ##mm diameter
HP hand penetrometer (kPa)
N standard penetration test (SPT)
N* SPT - sample recovered
Nc SPT with solid cone
VS vane shear; peak/remoulded (kPa)
R refusal
HB hammer bouncing

classification symbol & soil description
based on Unified Classification System

moisture
D dry
M moist
W wet
Wp plastic limit
Wl liquid limit

consistency / relative density
VS very soft
S soft
F firm
St stiff
VSt very stiff
H hard
Fb friable
VL very loose
L loose
MD medium dense
D dense
VD very dense

coffey

Engineering Log - Excavation

		Excavation ID.	**TP1**
		sheet:	1 of 1
		project no.	**GEOTLCOV25068AA**
client:	**Western Sydney Parklands Trust**	date excavated:	**04 Jun 2014**
principal:		date completed:	**04 Jun 2014**
project:	**Bringelly Park Business Hub**	logged by:	**CL**
location:	**Bringelly Road, Business Park, NSW**	checked by:	**PLV**

position: Not Specified | surface elevation: Not Specified | pit orientation:

equipment type: Backhoe | excavation method: | excavation dimensions: 3.2 m long 0.5 m wide

excavation information | **material substance**

method	support	penetration (1 2 3)	water	samples & field tests	RL (m)	depth (m)	graphic log	classification symbol	material description (SOIL TYPE: plasticity or particle characteristic, colour, secondary and minor components)	moisture condition	consistency / relative density	hand penetrometer (kPa) 100 200 300 400	structure and additional observations
E			Not Encountered			0.5			**FILL: CLAY**: low plasticity, brown, with some silt and fine to medium grained gravel and a trace of rootlets.	<Wp			**FILL**
						1.0		CH	**Silty CLAY**: high plasticity, red brown and grey.		VSt		**RESIDUAL SOIL**
				B		1.5		CH	**Silty CLAY**: high plasticity, grey mottled red brown and yellow brown.		H		
				D		2.0			**SHALE**: extremely weathered, grey, estimated very low strength.				**EXTREMELY WEATHERED BEDROCK**
						2.5							
						3.0			Test pit TP1 terminated at 2.9 m Refusal				
						3.5							

CDF_0_9_04BB.GLB Log COF EXCAVATION GEOTLCOV25068AA.GPJ <<DrawingFile>> 13/06/2014 10:28

method
N natural exposure
X existing excavation
BH backhoe bucket
B bulldozer blade
R ripper
E excavator

support
N none
S shoring

penetration
1 2 3
no resistance ranging to refusal

water
10-Oct-12 water level on date shown
water inflow
water outflow

samples & field tests
U## undisturbed sample ##mm diameter
D disturbed sample
B bulk disturbed sample
E environmental sample
HP hand penetrometer (kPa)
N standard penetration test (SPT)
N* SPT - sample recovered
Nc SPT with solid cone
VS vane shearpeak/remoulded (uncorrected kPa)
R refusal

classification symbol & soil description based on Unified Classification System

moisture
D dry
M moist
W wet
W_P plastic limit
W_L liquid limit

consistency / relative density

VS	very soft
S	soft
F	firm
St	stiff
VSt	very stiff
H	hard
Fb	friable
VL	very loose
L	loose
MD	medium dense
D	dense
VD	very dense

coffey

Engineering Log - Excavation

		Excavation ID.	TP2
		sheet:	1 of 1
		project no.	GEOTLCOV25068AA
client:	Western Sydney Parklands Trust	date excavated:	04 Jun 2014
principal:		date completed:	04 Jun 2014
project:	Bringelly Park Business Hub	logged by:	CL
location:	Bringelly Road, Business Park, NSW	checked by:	PLV

position: Not Specified | surface elevation: Not Specified | pit orientation:

equipment type: Backhoe | excavation method: | excavation dimensions: 3.1 m long 0.5 m wide

excavation information							material substance						
method	support	penetration 1 2 3	water	samples & field tests	RL (m)	depth (m)	graphic log	classification symbol	material description SOIL TYPE: plasticity or particle characteristic, colour, secondary and minor components	moisture condition	consistency / relative density	hand penetrometer (kPa) 100 200 300 400	structure and additional observations
E			Not Encountered	B		0.0			TOPSOIL: Silty CLAY: high plasticity, brown, with a trace of rootlets.	<Wp			TOPSOIL
								CH	Silty CLAY: high plasticity, red brown and grey.		H		RESIDUAL SOIL
						0.5			0.7 m: becoming grey mottled red brown				
				D		1.0							
						1.5			SHALE: extremely weathered, grey, estimated very low strength.				EXTREMELY WEATHERED BEDROCK
						2.0			2.1 m: becoming dark grey/grey				
						2.5							
						3.0			Test pit TP2 terminated at 2.7 m Refusal				
						3.5							

CDF_0_9_048B.GLB Log COF EXCAVATION GEOTLCOV25068AA.GPJ <<DrawingFile>> 20/06/2014 11:06

method
N natural exposure
X existing excavation
BH backhoe bucket
B bulldozer blade
R ripper
E excavator

support
N none
S shoring

penetration
1 2 3
no resistance ranging to refusal

water
10-Oct-12 water level on date shown
water inflow
water outflow

samples & field tests
U## undisturbed sample ##mm diameter
D disturbed sample
B bulk disturbed sample
E environmental sample
HP hand penetrometer (kPa)
N standard penetration test (SPT)
N* SPT - sample recovered
Nc SPT with solid cone
VS vane shearpeak/remouded (uncorrected kPa)
R refusal

classification symbol & soil description
based on Unified Classification System

moisture
D dry
M moist
W wet
W_p plastic limit
W_L liquid limit

consistency / relative density

VS	very soft
S	soft
F	firm
St	stiff
VSt	very stiff
H	hard
Fb	friable
VL	very loose
L	loose
MD	medium dense
D	dense
VD	very dense

coffey

Engineering Log - Excavation

client:	**Western Sydney Parklands Trust**	Excavation ID.	**TP3**
principal:		sheet:	1 of 1
project:	**Bringelly Park Business Hub**	project no.	**GEOTLCOV25068AA**
location:	**Bringelly Road, Business Park, NSW**	date excavated:	**04 Jun 2014**
		date completed:	**04 Jun 2014**
		logged by:	**CL**
		checked by:	**PLV**

position: Not Specified | surface elevation: Not Specified | pit orientation:

equipment type: Backhoe | excavation method: | excavation dimensions: 3.3 m long 0.5 m wide

excavation information | **material substance**

method	support	penetration (1 2 3)	water	samples & field tests	RL (m)	depth (m)	graphic log	classification symbol	material description (SOIL TYPE: plasticity or particle characteristic, colour, secondary and minor components)	moisture condition	consistency / relative density	hand penetrometer (kPa) 100 200 300 400	structure and additional observations
E			Not Encountered	B + D		0.5		CH	**TOPSOIL: Silty CLAY**: high plasticity, brown, with some rootlets.	<Wp			**TOPSOIL**
									Silty CLAY: high plasticity, red brown, with a trace of fine grained ironstone gravel.		H		**RESIDUAL SOIL**
				D		1.0			0.8 m: becoming mottled grey, red brown and yellow brown				
				D		1.5			**SHALE**: extremely weathered, grey and red brown, estimated very low strength.				**EXTREMELY WEATHERED BEDROCK**
				D		2.0							
						2.5							
						3.0			Test pit TP3 terminated at 2.8 m Refusal				
						3.5							

CDF_0_9_04BB.GLB Log COF EXCAVATION GEOTLCOV25068AA.GPJ <<DrawingFile>> 20/06/2014 11:06

method
N natural exposure
X existing excavation
BH backhoe bucket
B bulldozer blade
R ripper
E excavator

support
N none
S shoring

penetration
no resistance ranging to refusal

water
10-Oct-12 water level on date shown
water inflow
water outflow

samples & field tests
U## undisturbed sample ##mm diameter
D disturbed sample
B bulk disturbed sample
E environmental sample
HP hand penetrometer (kPa)
N standard penetration test (SPT)
N* SPT - sample recovered
Nc SPT with solid cone
VS vane shear peak/remoulded (uncorrected kPa)
R refusal

classification symbol & soil description based on Unified Classification System

moisture
D dry
M moist
W wet
W_P plastic limit
W_L liquid limit

consistency / relative density

VS	very soft
S	soft
F	firm
St	stiff
VSt	very stiff
H	hard
Fb	friable
VL	very loose
L	loose
MD	medium dense
D	dense
VD	very dense

coffey

Engineering Log - Excavation

		Excavation ID.	TP4
		sheet:	1 of 1
		project no.	GEOTLCOV25068AA
client:	Western Sydney Parklands Trust	date excavated:	04 Jun 2014
principal:		date completed:	04 Jun 2014
project:	Bringelly Park Business Hub	logged by:	CL
location:	Bringelly Road, Business Park, NSW	checked by:	PLV

position: Not Specified | surface elevation: Not Specified | pit orientation:

equipment type: Backhoe | excavation method: | excavation dimensions: 3.3 m long 0.6 m wide

excavation information						material substance						
method	support	penetration 1 2 3	water	samples & field tests	RL (m)	depth (m)	graphic log	classification symbol	material description SOIL TYPE: plasticity or particle characteristic, colour, secondary and minor components	moisture condition	consistency / relative density	hand penetrometer (kPa) 100 200 300 400	structure and additional observations
E			Not Encountered	B		0.0			**TOPSOIL: Silty CLAY**: high plasticity, brown, with some rootlets.	<Wp			TOPSOIL
				B				CH	**Silty CLAY**: high plasticity, red brown.		H		RESIDUAL SOIL
				D		0.5			0.8 m: becoming grey mottled red brown				
				D		1.0			**SHALE**: extremely weathered, grey, estimated very low strength.				EXTREMELY WEATHERED BEDROCK
						1.5							
						2.0							
						2.5							
						3.0			*Test pit TP4 terminated at 3.0 m* Target depth				
						3.5							

CDF_0_9_04BB.GLB Log COF EXCAVATION GEOTLCOV25068AA.GPJ <<DrawingFile>> 20/06/2014 11:06

method
N natural exposure
X existing excavation
BH backhoe bucket
B bulldozer blade
R ripper
E excavator

support
N none
S shoring

penetration
1 2 3
no resistance ranging to refusal

water
10-Oct-12 water level on date shown
water inflow
water outflow

samples & field tests
U## undisturbed sample ##mm diameter
D disturbed sample
B bulk disturbed sample
E environmental sample
HP hand penetrometer (kPa)
N standard penetration test (SPT)
N* SPT - sample recovered
Nc SPT with solid cone
VS vane shearpeak/remouded (uncorrected kPa)
R refusal

classification symbol & soil description
based on Unified Classification System

moisture
D dry
M moist
W wet
W_P plastic limit
W_L liquid limit

consistency / relative density

VS	very soft
S	soft
F	firm
St	stiff
VSt	very stiff
H	hard
Fb	friable
VL	very loose
L	loose
MD	medium dense
D	dense
VD	very dense

coffey

Engineering Log - Excavation

client:	*Western Sydney Parklands Trust*	Excavation ID.	*TP5*
principal:		sheet:	1 of 1
project:	*Bringelly Park Business Hub*	project no.	*GEOTLCOV25068AA*
location:	*Bringelly Road, Business Park, NSW*	date excavated:	*04 Jun 2014*
		date completed:	*04 Jun 2014*
		logged by:	*CL*
		checked by:	*PLV*

position: Not Specified | surface elevation: Not Specified | pit orientation:

equipment type: Backhoe | excavation method: | excavation dimensions: 3.3 m long 0.6 m wide

excavation information | **material substance**

method	support	penetration (1 2 3)	water	samples & field tests	RL (m)	depth (m)	graphic log	classification symbol	material description (SOIL TYPE: plasticity or particle characteristic, colour, secondary and minor components)	moisture condition	consistency / relative density	hand penetrometer (kPa) 100 200 300 400	structure and additional observations
E			Not Encountered	B					**TOPSOIL: Silty CLAY**: high plasticity, brown, with some rootlets.	<Wp			**TOPSOIL**
								CH	**Silty CLAY**: high plasticity, red brown, yellow brown and grey, with a trace of ironstone gravel.		VSt / St		**RESIDUAL SOIL**
				D		0.5							
				B + D		1.0			**SHALE**: extremely weathered, grey, estimated very low strength.				**EXTREMELY WEATHERED BEDROCK**
						1.5							
						2.0							
						2.5							
						3.0			Test pit TP5 terminated at 2.8 m Refusal				
						3.5							

CDF_0_9_04BB.GLB Log COF EXCAVATION GEOTLCOV25068AA.GPJ <<DrawingFile>> 20/06/2014 11:06

method
- N natural exposure
- X existing excavation
- BH backhoe bucket
- B bulldozer blade
- R ripper
- E excavator

support
- N none
- S shoring

penetration
1 2 3
- no resistance ranging to refusal

water
- 10-Oct-12 water level on date shown
- water inflow
- water outflow

samples & field tests
- U## undisturbed sample ##mm diameter
- D disturbed sample
- B bulk disturbed sample
- E environmental sample
- HP hand penetrometer (kPa)
- N standard penetration test (SPT)
- N* SPT - sample recovered
- Nc SPT with solid cone
- VS vane shearpeak/remouded (uncorrected kPa)
- R refusal

classification symbol & soil description based on Unified Classification System

moisture
- D dry
- M moist
- W wet
- W_P plastic limit
- W_L liquid limit

consistency / relative density

VS	very soft
S	soft
F	firm
St	stiff
VSt	very stiff
H	hard
Fb	friable
VL	very loose
L	loose
MD	medium dense
D	dense
VD	very dense

coffey

Engineering Log - Excavation

client:	**Western Sydney Parklands Trust**	Excavation ID.	**TP6**
principal:		sheet:	1 of 1
project:	**Bringelly Park Business Hub**	project no.	**GEOTLCOV25068AA**
location:	**Bringelly Road, Business Park, NSW**	date excavated:	**04 Jun 2014**
		date completed:	**04 Jun 2014**
		logged by:	**CL**
		checked by:	**PLV**

position: Not Specified | surface elevation: Not Specified | pit orientation:

equipment type: Backhoe | excavation method: | excavation dimensions: 3.1 m long 0.6 m wide

excavation information | **material substance**

method	support	penetration	water	samples & field tests	RL (m)	depth (m)	graphic log	classification symbol	material description (SOIL TYPE: plasticity or particle characteristic, colour, secondary and minor components)	moisture condition	consistency / relative density	hand penetrometer (kPa)	structure and additional observations
E			Not Encountered	B + D		0.0			**TOPSOIL: Silty CLAY**: high plasticity, brown, with a trace of gravel and some rootlets.	<Wp			TOPSOIL
								CH	**Silty CLAY**: high plasticity, red brown mottled grey.		VSt		RESIDUAL SOIL
						0.5							
						1.0		CH	**Silty CLAY**: high plasticity, grey mottled red brown, with a trace of fine grained ironstone gravel.		St		
				D									
				B		1.5							
				D					**SHALE**: extremely weathered, grey, estimated very low strength.				EXTREMELY WEATHERED BEDROCK
						2.0							
						2.5			Test pit TP6 terminated at 2.5 m Refusal				
						3.0							
						3.5							

CDF_0_9_04BB.GLB Log COF EXCAVATION GEOTLCOV25068AA.GPJ <<Drawing>> 23/06/2014 11:39

method
N natural exposure
X existing excavation
BH backhoe bucket
B bulldozer blade
R ripper
E excavator

support
N none
S shoring

penetration
no resistance ranging to refusal

water
10-Oct-12 water level on date shown
water inflow
water outflow

samples & field tests
U## undisturbed sample ##mm diameter
D disturbed sample
B bulk disturbed sample
E environmental sample
HP hand penetrometer (kPa)
N standard penetration test (SPT)
N* SPT - sample recovered
Nc SPT with solid cone
VS vane shearpeak/remouded (uncorrected kPa)
R refusal

classification symbol & soil description based on Unified Classification System

moisture
D dry
M moist
W wet
W_P plastic limit
W_L liquid limit

consistency / relative density

VS	very soft
S	soft
F	firm
St	stiff
VSt	very stiff
H	hard
Fb	friable
VL	very loose
L	loose
MD	medium dense
D	dense
VD	very dense

coffey

Engineering Log - Excavation

		Excavation ID.	TP7
		sheet:	1 of 1
		project no.	GEOTLCOV25068AA
client:	Western Sydney Parklands Trust	date excavated:	04 Jun 2014
principal:		date completed:	04 Jun 2014
project:	Bringelly Park Business Hub	logged by:	CL
location:	Bringelly Road, Business Park, NSW	checked by:	PLV

position: Not Specified | surface elevation: Not Specified | pit orientation:

equipment type: Backhoe | excavation method: | excavation dimensions: 3.1 m long 0.5 m wide

excavation information | **material substance**

method	support	penetration	water	samples & field tests	RL (m)	depth (m)	graphic log	classification symbol	material description (SOIL TYPE: plasticity or particle characteristic, colour, secondary and minor components)	moisture condition	consistency / relative density	hand penetrometer (kPa)	structure and additional observations
E		1 2 3	Not Encountered	B		0.5		CH	**TOPSOIL: Silty CLAY**: high plasticity, brown and dark brown, with a trace of fine grained gravel and rootlets.	<Wp		100 200 300 400	TOPSOIL
									Silty CLAY: high plasticity, red brown mottled grey.		VSt		RESIDUAL SOIL
						1.0			1 m: becoming red brown and grey				
						1.5			**SHALE**: extremely weathered, pale grey and red brown, estimated very low strength.				EXTREMELY WEATHERED BEDROCK
						2.0							
						2.5			Test pit TP7 terminated at 2.5 m Refusal				
						3.0							
						3.5							

CDF_0_9_0468.GLB Log COF EXCAVATION GEOTLCOV25068AA.GPJ <<DrawingFile>> 20/06/2014 11:06

method
N natural exposure
X existing excavation
BH backhoe bucket
B bulldozer blade
R ripper
E excavator

support
N none
S shoring

penetration
1 2 3
no resistance
ranging to
refusal

water
10-Oct-12 water level on date shown
water inflow
water outflow

samples & field tests
U## undisturbed sample ##mm diameter
D disturbed sample
B bulk disturbed sample
E environmental sample
HP hand penetrometer (kPa)
N standard penetration test (SPT)
N* SPT - sample recovered
Nc SPT with solid cone
VS vane shearpeak/remouded (uncorrected kPa)
R refusal

classification symbol & soil description
based on Unified Classification System

moisture
D dry
M moist
W wet
W_P plastic limit
W_L liquid limit

consistency / relative density

VS	very soft
S	soft
F	firm
St	stiff
VSt	very stiff
H	hard
Fb	friable
VL	very loose
L	loose
MD	medium dense
D	dense
VD	very dense

coffey

Engineering Log - Excavation

		Excavation ID.	**TP8**
		sheet:	1 of 1
		project no.	**GEOTLCOV25068AA**
client:	**Western Sydney Parklands Trust**	date excavated:	**04 Jun 2014**
principal:		date completed:	**04 Jun 2014**
project:	**Bringelly Park Business Hub**	logged by:	**CL**
location:	**Bringelly Road, Business Park, NSW**	checked by:	**PLV**

position: Not Specified | surface elevation: Not Specified | pit orientation:

equipment type: Backhoe | excavation method: | excavation dimensions: 3.4 m long 0.6 m wide

excavation information | **material substance**

method	support	penetration	water	samples & field tests	RL (m)	depth (m)	graphic log	classification symbol	material description (SOIL TYPE: plasticity or particle characteristic, colour, secondary and minor components)	moisture condition	consistency / relative density	hand penetrometer (kPa)	structure and additional observations
E			Not Encountered	B + D		0.0			**TOPSOIL: Silty CLAY**: high plasticity, brown and dark brown, with a trace of fine gravel and rootlets.	<Wp			**TOPSOIL**
									Silty CLAY: high plasticity, red brown mottled grey.		VSt		**RESIDUAL SOIL**
						0.5							
				D		1.0			**Silty CLAY**: high plasticity, grey mottled red brown and yellow brown, with some ironstone gravel.		St		
						1.5			**SHALE**: extremely weathered, grey and brown, estimated very low strength.				**EXTREMELY WEATHERED BEDROCK**
				D		2.0			Test pit TP8 terminated at 2.0 m Refusal				
						2.5							
						3.0							
						3.5							

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method
N natural exposure
X existing excavation
BH backhoe bucket
B bulldozer blade
R ripper
E excavator

support
N none
S shoring

penetration
no resistance ranging to refusal

water
10-Oct-12 water level on date shown
water inflow
water outflow

samples & field tests
U## undisturbed sample ##mm diameter
D disturbed sample
B bulk disturbed sample
E environmental sample
HP hand penetrometer (kPa)
N standard penetration test (SPT)
N* SPT - sample recovered
Nc SPT with solid cone
VS vane shear peak/remoulded (uncorrected kPa)
R refusal

classification symbol & soil description based on Unified Classification System

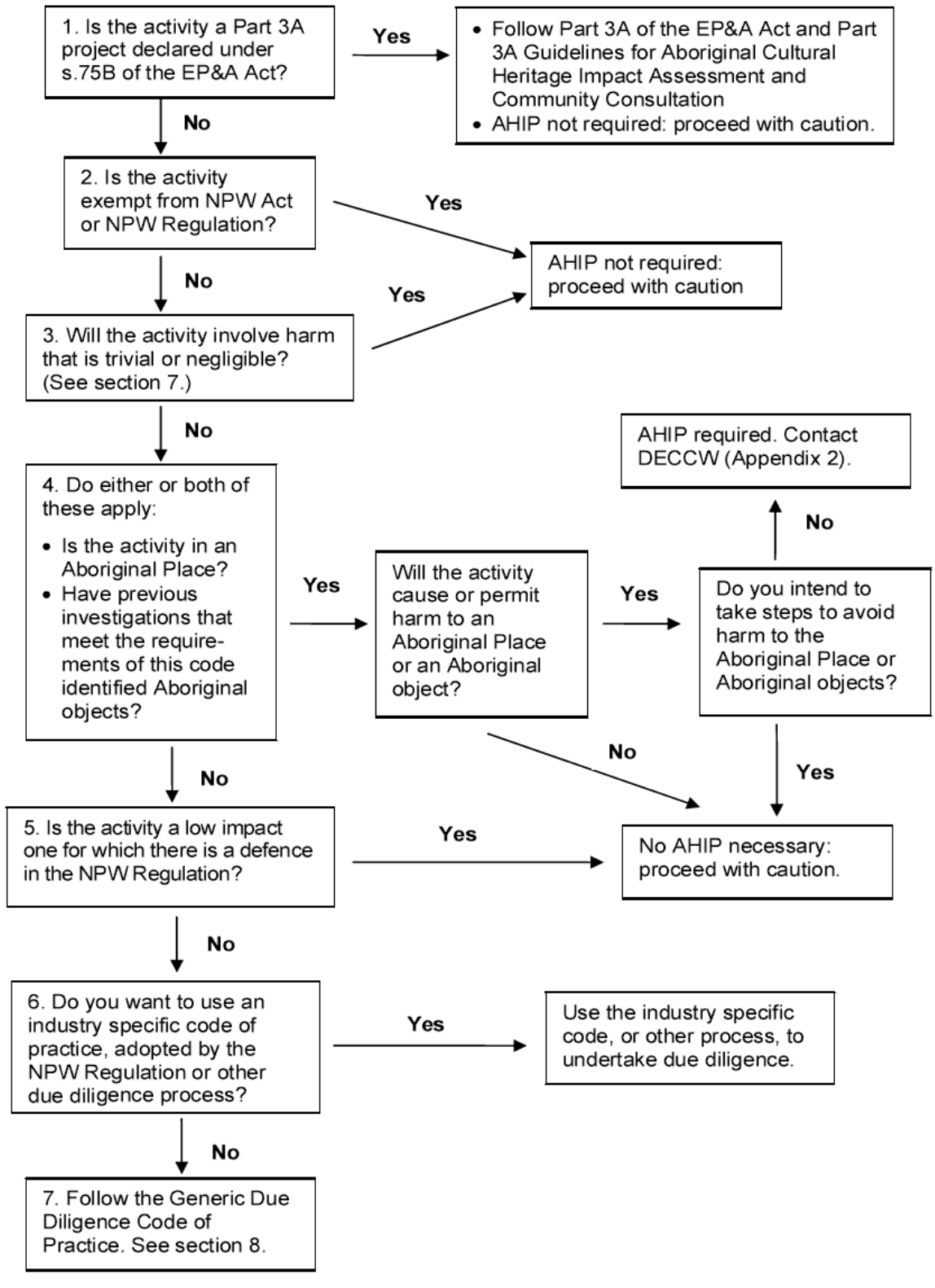
moisture
D dry
M moist
W wet
W_P plastic limit
W_L liquid limit

consistency / relative density
VS very soft
S soft
F firm
St stiff
VSt very stiff
H hard
Fb friable
VL very loose
L loose
MD medium dense
D dense
VD very dense

Appendix 7

OEH Due Diligence Flow Chart

1 Do you need to use this due diligence code?



8 The generic due diligence process