FERNHILL ESTATE, MULGOA, NSW

AHIP Application for Proposed Residential Subdivision

Updated Aboriginal Cultural Heritage Assessment Report

FINAL REPORT

THIS VERSION SUITABLE FOR PUBLIC ACCESS AND EXHIBITION

Prepared by

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Austral Archaeology Pty Ltd
Archaeological & Cultural Heritage Consultants

For

Cubelic Holdings Pty Ltd

On behalf of

Simon & Brenda Tripp and Angas Securities

Penrith Local Government Authority

15 August 2014

Project No: 1306

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EXECUTIVE SUMMARY

Preamble

This report details the Aboriginal cultural and archaeological heritage assessment of a proposed residential subdivision within parts of the Fernhill Estate, located immediately north-west of Mulgoa, New South Wales, which comprises of the Lots and DPs outlined in Table 1.1.

For the following assessment, the term "study area" will be used to refer to the Fernhill Estate as a whole, while the terms "eastern precinct" and "western precinct" refer to the particular Lots and DPs which are described in Table 1.1.

The study area is bounded by Mulgoa Road on the east, the Greater Blue Mountains World Heritage site on the west, various semi-rural residential properties associated with Fairlight Road on the south and a large, semi-pastoral estate to the north. The study area is approximately 75 kilometres west of Sydney (Figure 1.1, Figure 1.2 and Figure 1.3, Figure 1.4 and Figure 1.5).

Austral Archaeology Pty Ltd (Austral Archaeology) was initially commissioned by Cubelic Holdings Pty Ltd on behalf of Simon & Brenda Tripp and Angas Securities (the proponent) to review and if necessary update the recommendations presented in the Aboriginal archaeological and cultural heritage assessment prepared by Austral Archaeology in 2010, which in turn was based upon the Aboriginal archaeological and cultural heritage assessment completed by Austral Archaeology in 2006.

Following the completion of the initial Aboriginal cultural heritage assessment report, the proponent created alternative concept designs for the subdivision of both the eastern and western precincts in response to wider consultation with the local community. Amongst minor changes to the location of impacts relating to roads and tracks, the amended subdivision plans allow for increased preservation of existing vegetation and sight-lines along the central ridgeway in the eastern precinct, and the overall development footprint of the western precinct has been reduced.

This report has been amended to reflect the revised plans for the subdivision of the eastern and western precincts and considers the potential impacts associated with the subdivision on the known Aboriginal cultural heritage of the study area. It should be noted that the initial assessment covered a larger footprint in the western precinct compared to the new concept plan. Where detailed mapping of the proposed development footprint is required, both the original and amended footprint has been included on the relevant maps.

In practical terms the development project would entail, among other things, large scale ground works including extensive earth excavation and leveling, removal of some vegetation, the construction of roads and associated infrastructure, and the introduction of imported fill material.

Summary of Results

Austral Archaeology initially undertook a pedestrian survey which identified nine sites of Aboriginal cultural heritage and three areas containing a Potential Archaeological Deposit (PAD) within the study area. It was recommended that either the sites be avoided by the proposed development or that an archaeological test excavation program take place which specifically targeted areas of proposed impact (Austral Archaeology 2006:i-ii). However, the project was put on hold prior to any further archaeological work proceeding.

Austral Archaeology was subsequently commissioned to update the original 2006 assessment upon resumption of the project in 2010. A second pedestrian survey was undertaken which identified a further two isolated artefacts. Again, recommendations were made to either avoid disturbance in areas of known Aboriginal cultural heritage or to undertake an archaeological test excavation (Austral Archaeology 2006:ii). The project again stalled and no further archaeological work was undertaken.

This study demonstrated the presence of widespread and variable buried deposit interspersed with occasional clusters of artefacts in several landscape settings.

A new search of the AHIMS database was undertaken on 10 April 2013, AHIMS client number 97367. The results from the AHIMS search identified 59 previously recorded sites within a 2 to 3 kilometre radius of the study area. Of these sites, 12 were located within the study area while six were located within the eastern precinct. No sites were located within the western precinct. All the sites within the study area were initially recorded by Austral Archaeology in 2006, and do not include the two additional isolated artefacts identified by Austral Archaeology in 2010.

In updating this report, Austral Archaeology Pty Ltd re-started community consultation and updated the previous archaeological assessment as a precursor to an application for a new Aboriginal Heritage Impact Permit (AHIP). All groups who had registered were given the opportunity to review the updated version of the report and provide input if they so desired. Comments received were documented and reflected in the recommendations below.

Following the amendment of the concept plans in July 2014, this report has been updated with the new subdivision plans for the eastern and western precincts, and the registered Aboriginal stakeholders have been offered an opportunity to provide further input if they so desire. All comments received during this new phase of consultation are documented and reflected in the recommendations below.

In summary, the changes to the concept design for the western precinct has resulted in the reduction of the overall development footprint, while the amended concept design for the eastern precinct has involved repositioning of the lots to improve the preservation of significant vistas from Mulgoa Road. In addition, the amended designs of both precincts allow for greater amounts of land to be locked into the BioBanking scheme and preserved.

Summary of Test Excavation Results

Full details of the methodology and results of the archaeological assessment are documented in the archaeological report, contained in the appendices of this document.

The fieldwork was conducted over 10 days between 15 July and 26 July 2013. The project was directed by David Marcus of Austral Archaeology with the assistance of Damien Huffer (Austral Archaeology) and Alandre Tasire (Austral Archaeology). The proponent selected representatives from the registered Aboriginal stakeholders to attend the fieldwork, and invited participants from DACHA, DALI, DLO and DTAC to assist with the test excavations. An invitation was also made for DLALC to send a representative, although no response was received.

In line with the Code of Practice, a 25 metre grid was placed over the entirety of the eastern precinct, with initial pit locations placed in sections of the PAD which are to be impacted by the proposed construction work. If Aboriginal cultural material was identified in a test pit and the excavation director decided that additional test pits were required, these additional test pits were aligned on the cardinal axes of a ten metre grid based on the original test pit location. The location of each test pit was determined in the field using a hand-held GPS. Where either dense vegetation or unsuitable topography meant that the test pit needed to be relocated, test pits were moved to the closest possible location in the landscape.

In general, the soil profile across all the excavated pits consisted of three layers; a thin dark brown humic deposit, a light to dark brown silty topsoil, and a light yellowish orange clay. Depending on localised erosion levels, the topsoil layer could be absent, while the humic layer was only present when the test pit was located in areas containing decomposing leaf litter. Alternative soil profiles were recorded from within the drainage channel between the ridgelines and along the edge of the southern dam.

A total of 90 test pits were excavated during the course of the test excavation, with 74 original test pits proposed and an additional 16 test pits excavated to further investigate the PAD. Variations between exposed soil profiles across the study area were minimal and all exposed soil profiles were generally representative of the Luddenham (**lu**) soil. Profile depths of excavated test pits on this site ranged from 100 to 700 millimetres but the average depth was approximately 300 millimetres. Full descriptions of test pits by spit are included in Appendix I.

The test pits showed that the depth of the soil profile varied significantly across the eastern precinct, and even test pits located within similar landforms showed variability in depth of clay. As a general rule, pits located on hillslopes and outside of heavily vegetated areas tended to have the deepest soil profiles (of between 300 to 600 millimetres), while pits located either on hilltops and crests or those located in areas of heavier vegetation tended to be shallower (between 100 to 300 millimetres).

Prior to the test excavations commencing, it was noted that the area immediately north of test pit 63 appeared to show evidence of previous ground levelling occurring, possibly in relation to a structure shown on the 1978 aerial map. As a result, the test pit was relocated slightly in order provide better results regarding potential subsurface Aboriginal cultural heritage.

Although modern material was identified during the test excavations, none of the test pits actually showed any evidence that the subsurface site stratigraphy had been directly disturbed through activities such as soil extraction or deposition.

A total of 95 whole and broken artefacts were recorded during this analysis along with 28 non-artefactual fragments. Flakes are the most frequently occurring type (84.3%) in the assemblage with a total of 80 recovered from the test excavations. The second most frequent category of artefact are flaked pieces (7 or 7.4%) closely followed by retouched flakes (6 or 6.3%). One core and one hammerstone fragment were also recovered.

In summary, the results of the test excavation show that while the majority of the study area does not contain any Aboriginal cultural material, the central and northern parts of the study area contains a widespread but unevenly dispersed and extremely low density deposit of Aboriginal cultural heritage, interspersed with occasional higher density clusters.

Please note: Descriptions and locational data relating to Aboriginal archaeological and cultural material and sites have been removed from this version of the report. This is in accordance with the legislative protection afforded to Aboriginal archaeological and cultural materials sites by Section 90 of the *National Parks and Wildlife Act 1974*. Furthermore this information is considered sensitive and of great importance to the Aboriginal community and therefore not suitable for public display. This redacted version of the document has been prepared by Austral Archaeology Pty Ltd specifically for the purposes of public exhibition.

Summary of Recommendations

The following recommendations are derived from the results of the Aboriginal archaeological and cultural heritage assessment and the previous test excavation results. The recommendations have been developed after considering the archaeological context, environmental information, earlier consultation with the local Aboriginal community, the findings of the survey results, the previous excavation results, the predicted impact of the proposed development on archaeological resources and comments received from the current stakeholders on the draft report.

1. The proponent should apply for an AHIP under Section 90 of the *National Parks and Wildlife Act 1974* for the "community collection" and "harm to certain Aboriginal objects through the proposed works" for the site Fernhill Mulgoa 7 (#45-5-3242) and Fernhill Mulgoa 12 (#45-5-3230) which both lie within the development footprint in the eastern precinct. The AHIP must be granted prior to any work occurring which has potential to harm these sites.
2. For cultural reasons, Aboriginal community members may wish to monitor bulk excavation work conducted as part of the construction process. Prior to excavation in this area, the client should notify the participating Aboriginal groups of this work.
3. All artefacts obtained from the test excavations are to be repatriated in a location chosen within the Fernhill Estate specifically for this purpose, chosen in consultation with the proponent and the Aboriginal community.
4. If there are any changes to the Proposal then a re-analysis of the Aboriginal archaeological constraints should be untaken by a qualified archaeological consultant.
5. All contractors undertaking earthworks on site should be briefed on the protection of Aboriginal heritage objects under the *National Parks and Wildlife Act 1974* and the penalties for damage to these objects.

6. This report contains descriptions and locational data relating to Aboriginal archaeological and cultural material and sites. Should public exhibition of this document be required, it is advisable that Austral Archaeology be contacted in order to ascertain information which should be removed prior to public release.
7. A copy of this report must be made available to all Aboriginal stakeholders who have registered an interest in this project. Their contact details are available in Appendix L.
8. A copy of this report and a signed copy of an Aboriginal Cultural Heritage Assessment Report Cover Sheet (included as Appendix M) must be forwarded to the AHIMS registrar at the following address:

   AHIMS Registrar
   PO Box 1967
   Hurstville NSW 1481

CONTENTS

FIGURES

TABLES

1 INTRODUCTION

1.1 Introduction

This report details the Aboriginal cultural and archaeological heritage assessment of a proposed residential subdivision within parts of the Fernhill Estate, located immediately north-west of Mulgoa, New South Wales, in the parish of Mulgoa, and which comprises of the Lots and DPs outlined in Table 1.1.

For the following assessment, the term "study area" will be used to refer to the Fernhill Estate as a whole, while the terms "eastern precinct" and "western precinct" refer to the particular Lots and DPs which are described in Table 1.1.

The study area is bounded by Mulgoa Road on the east, the Greater Blue Mountains World Heritage site on the west, various semi-rural residential properties associated with Fairlight Road on the south and a large, semi-pastoral estate to the north. The study area is approximately 75 kilometres west of Sydney (Figure 1.1, Figure 1.2 and Figure 1.3, Figure 1.4 and Figure 1.5) and lies within the Penrith Shire Council Local Government Area (LGA). The nearest town to the proposed development is Mulgoa, a small town consisting of shops and housing supporting a small community of over 2000 people.

Table 1.1: Summary of Lot numbers, DP's and land ownership within the study area.

Lot and DP number	Land Owner	Precinct
Lot 1 DP 570484	Receivers of Owston Nominees No. 2 Pty Ltd	Eastern
Lot 6 DP 173159	Receivers of Owston Nominees No. 2 Pty Ltd	Eastern
Lot 1 DP 549247	Receivers of Owston Nominees No. 2 Pty Ltd	Western
Lot 1 DP 237163	Receivers of Owston Nominees No. 2 Pty Ltd	Western

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Austral Archaeology was subsequently commissioned to update the original 2006 assessment upon resumption of the project in 2010. A second pedestrian survey was undertaken which identified a further two isolated artefacts. Again, recommendations were made to either avoid disturbance in areas of known Aboriginal cultural heritage or to undertake an archaeological test excavation (Austral Archaeology 2006:ii). The project again stalled and no further archaeological work was undertaken.

The aim of the original 2014 assessment was to update the results of the earlier 2010 Aboriginal cultural heritage assessments in light of new legislation which came into force through various amendments made to the *National Parks and Wildlife Act* in late 2010, and to create an assessment suitable to accompany an Aboriginal Heritage Impact Permit (AHIP) application. As the known Aboriginal cultural heritage of the proposed development area has already been characterised through previous pedestrian surveys, the recommendations for the management of known Aboriginal heritage have not changed materially from the previous assessment report.

Following the completion of the initial 2014 Aboriginal cultural heritage assessment report, the proponent created alternative concept designs in July 2014 for the subdivision of both the eastern and western precincts in response to consultation with the local Council and the wider community. Amongst minor changes to the location of impacts relating to roads and tracks, the amended subdivision plans allow for increased preservation of existing vegetation and sight-lines along the central ridgeway in the eastern precinct, and the overall development footprint of the western precinct has been reduced.

This report has been amended (July 2014) to reflect the revised plans for the subdivision of the eastern and western precincts and considers the potential impacts associated with the subdivision on the known Aboriginal cultural heritage of the study area. It should be noted that the initial assessment covered a larger footprint in the western precinct compared to the new concept plan. While all relevant mapping has been updated, some differences may still occur between the areas discussed in the text and the areas shown on mapping.

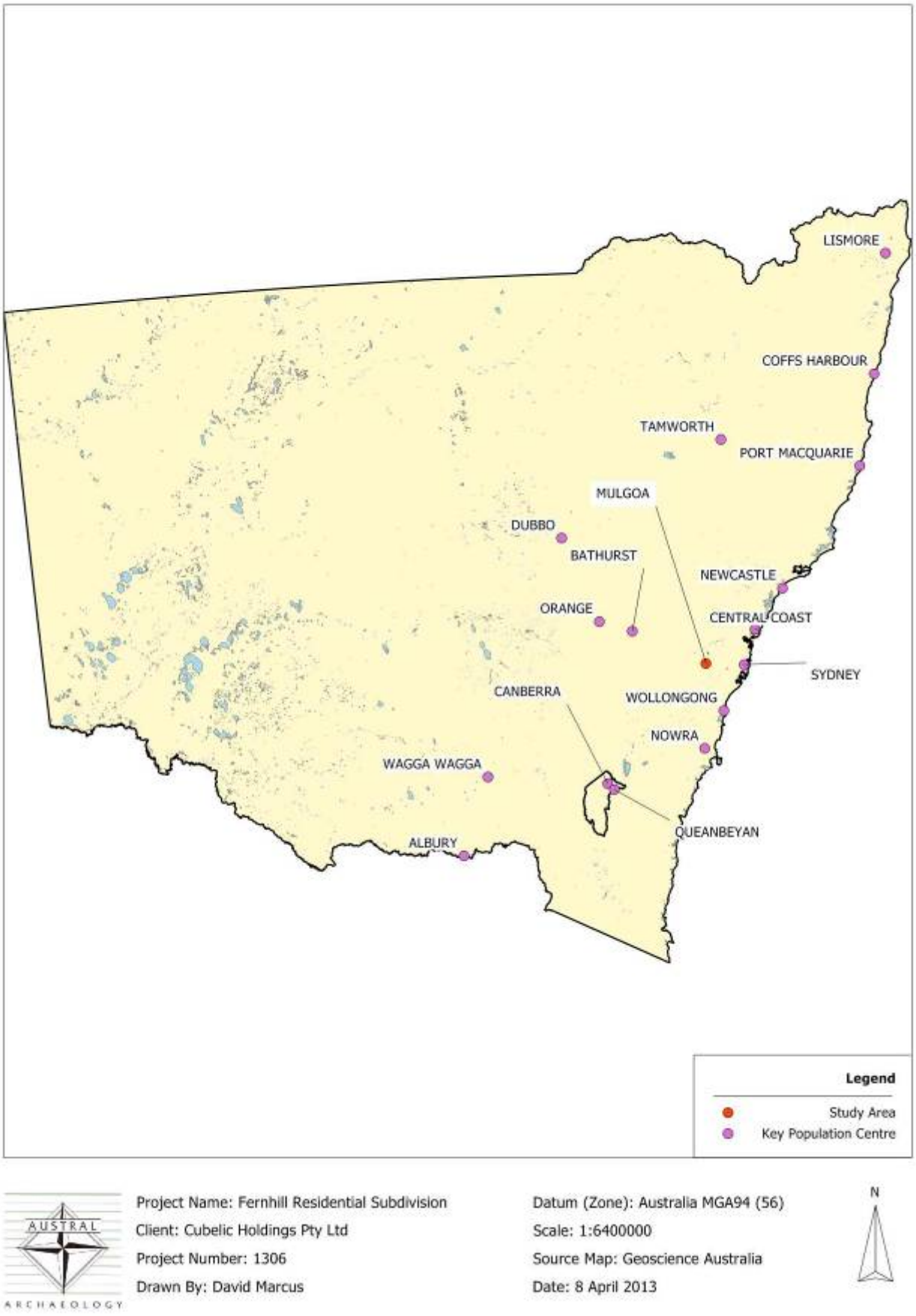

Figure 1.1 Map of NSW showing the location of the study area in relation to major population centres

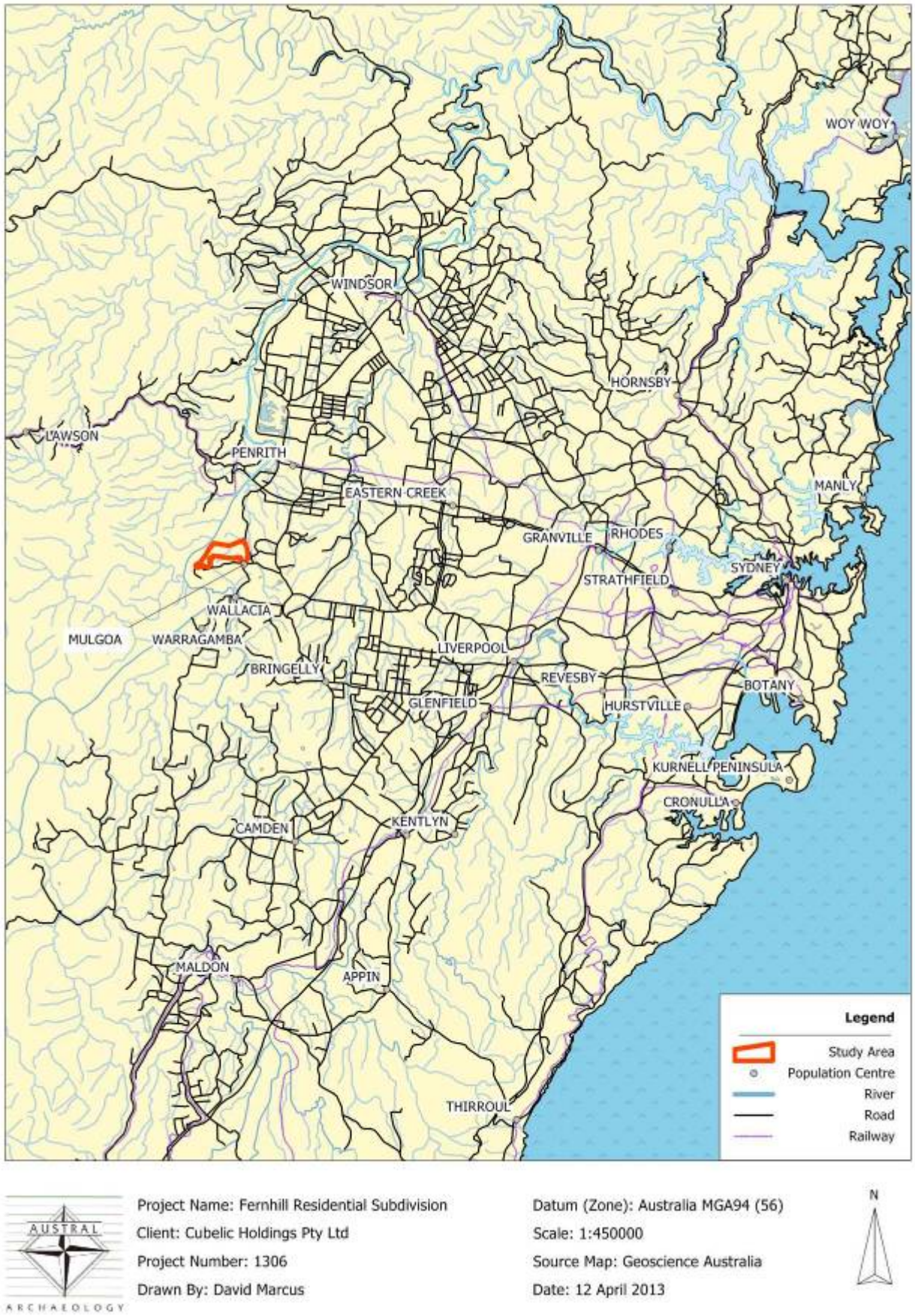

Figure 1.2 Location of the study area in relation to the Sydney Region.

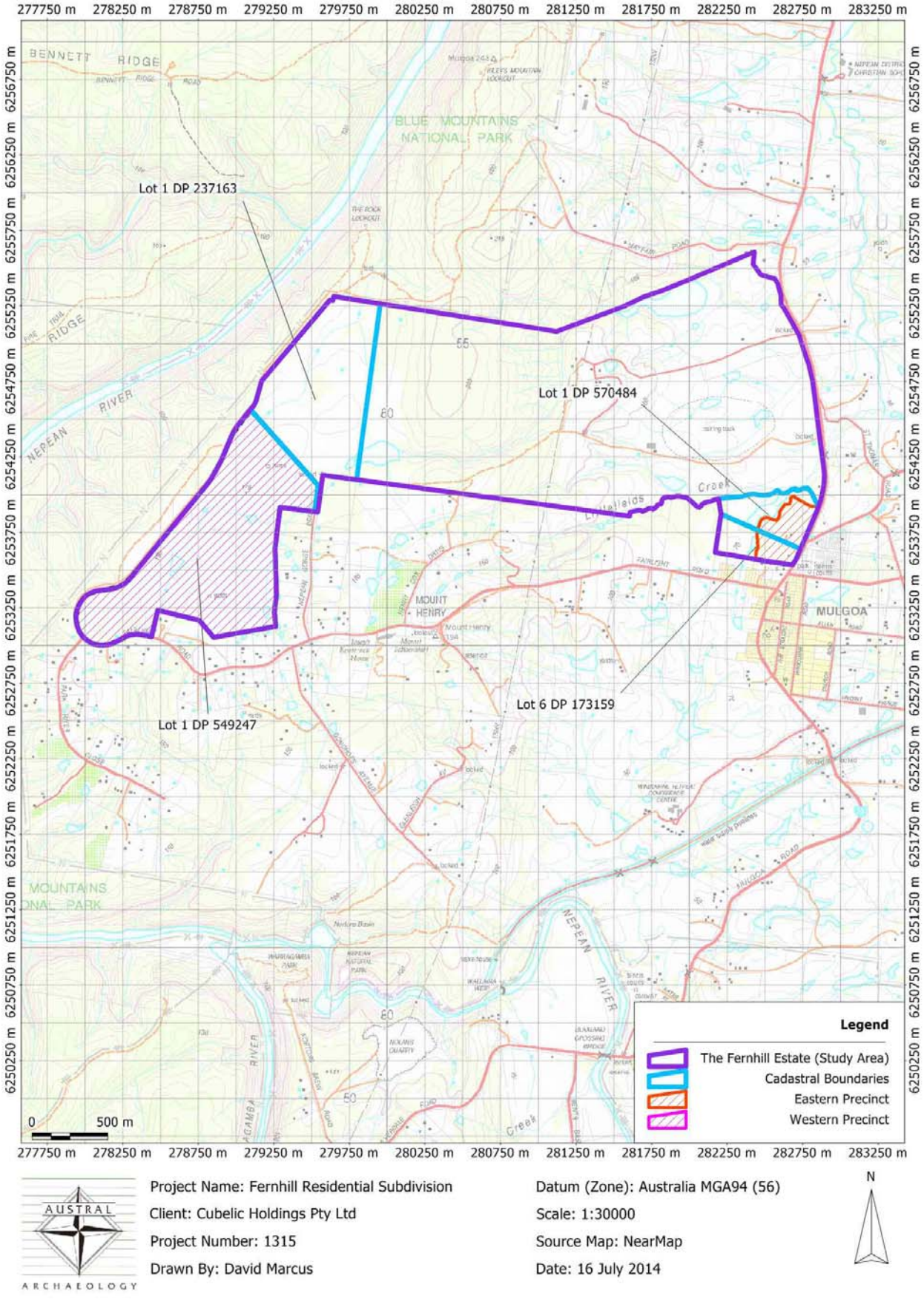

Figure 1.3 Location of the study area showing the eastern and western precinct in relation to the surrounding area.

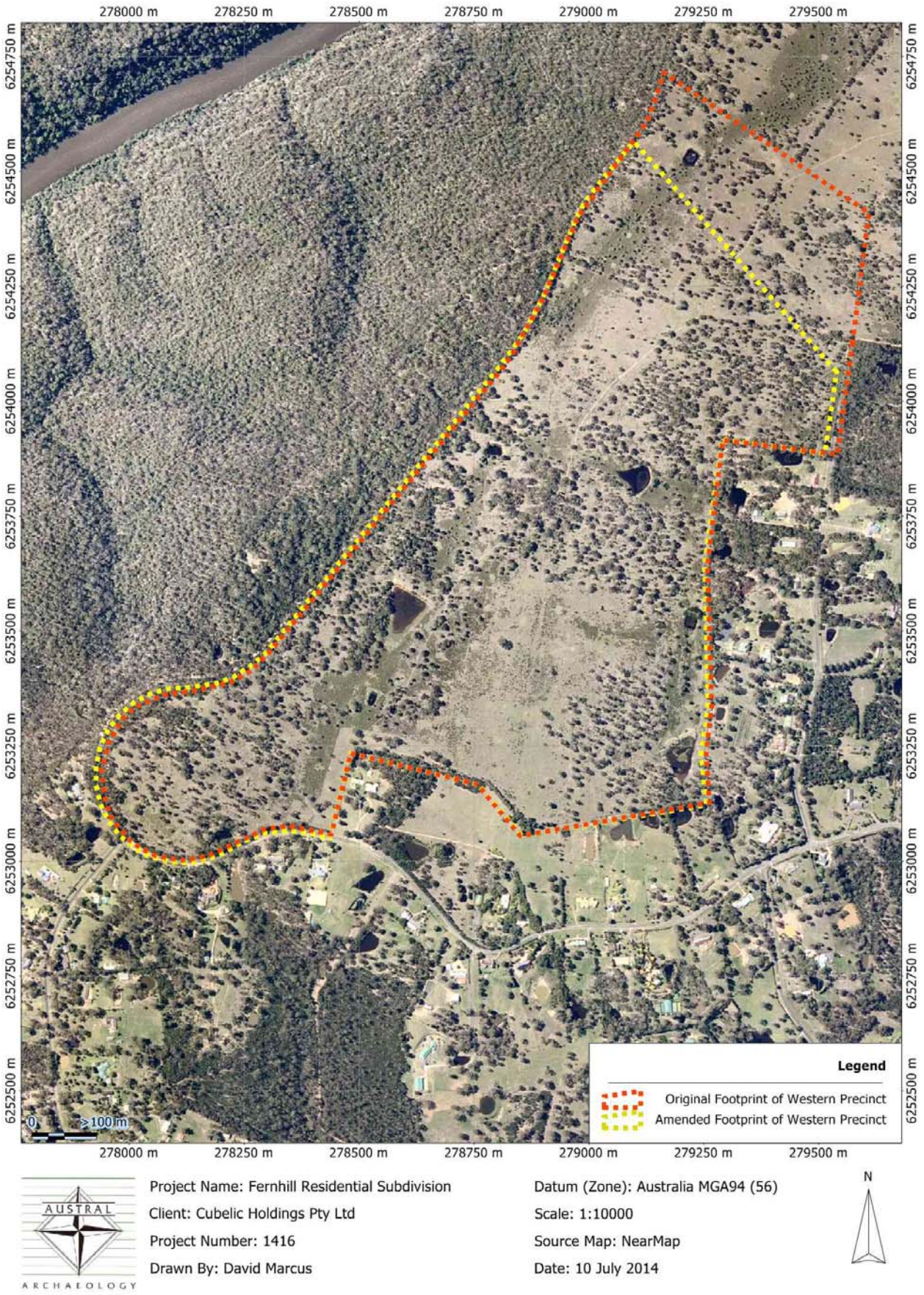

Figure 1.4 Aerial photograph showing original and amended boundary of western precinct.

Figure 1.5 Aerial photograph showing eastern precinct.

1.2 Project Description

The proponent proposes to construct a new rural residential development within the eastern and western precincts of the study area. The overall development proposal is in its early stages and proposed subdivision plans are included as Figure 1.6 and Figure 1.7. The development will include subdivision of the land for rural residences, the construction of multiple domestic buildings and associated infrastructure, and the construction of services and roads throughout the study area.

This assessment deals with considering the archaeological potential within both the eastern and western precinct, and to determine a methodology for assisting the proponent in reducing the impact to areas of known Aboriginal cultural heritage. As specific details regarding the subdivision are still under consideration, this report will include an assessment of all Aboriginal cultural heritage previously identified in both the eastern and western precinct.

The proposed works associated with the residential subdivision will include:

- The clearance of existing vegetation within areas marked for development;
- Major earthworks associated with the installation of infrastructure, such as roads, services and houses;
- The creation of drainage basins.

1.3 Predicted Impact on the Potential Archaeological Resource

The Aboriginal cultural heritage present within the study area has been well documented by Austral Archaeology (2006 and 2010). As such, 11 sites of Aboriginal cultural heritage and three PADs are known to be present within the study area. However, as the proponent has scaled back the proposed development within the western precinct, neither the previously identified Aboriginal cultural heritage nor the PADs are to be impacted by the currently proposed development in this area.

With regards to the eastern precinct, the proposed development may impact on previously recorded artefact scatters, isolated artefacts and PADs. The excavation and construction of the infrastructure associated with the creation of the subdivision will cause subsurface impacts, which could potentially significantly damage any archaeological material present within the eastern precinct.

The construction works associated with the subdivision will directly impact on the sites listed in Table 1.2.

Table 1.2: Previously recorded sites of Aboriginal cultural heritage within the eastern precinct.

Site Name	AHIMS Site Number
Fernhill Mulgoa 6	45-5-3241
Fernhill Mulgoa 7	45-5-3242
Fernhill Mulgoa 8	45-5-3243
Fernhill Mulgoa 9	45-5-3244
Fernhill Mulgoa Site 11	45-5-3229
Fernhill Mulgoa Site 12	45-5-3230
Fernhill Mulgoa 13	Not currently recorded
Fernhill Mulgoa 14	Not currently recorded

Note that sites Fernhill Mulgoa 13 and Fernhill Mulgoa 14 are isolated artefacts which were identified by Austral Archaeology during the pedestrian survey undertaken in 2010. The report states that these sites were registered on the Aboriginal Heritage Information Management System (AHIMS) database, although neither site appears on the search results described in Section 2.1.1.

Figure 1.6 Proposed subdivision within the western precinct. Note areas of biobanking marked with green hatching (image provided by client).

Figure 1.7 Proposed subdivision within the eastern precinct. Note the area of biobanking, marked with green hatching (image provided by client).

1.4 Assessment Objectives

The scope of the assessment was based on the legal requirements, guidelines and policies of the Office of Environment and Heritage (OEH), formerly the Department of Environment, Climate Change and Water (DECCW).

The guiding document for this assessment is the *Guide to Investigating, Assessing and Reporting on Aboriginal Cultural Heritage in NSW* (DECCW 2011).

The scope of works includes the following:

- Undertake a literary review of available data, including previous studies/investigations from in and around the study area.
- Undertake necessary consultation with relevant Government Agencies, Council authorities, and key Aboriginal stakeholders (i.e. Local Aboriginal Land Council).
- Update the report on the Aboriginal archaeology of the study area, which was completed by Austral Archaeology in 2010, in order to provide adequate recommendations to guide further investigation of the archaeological record, if necessary.

1.5 Federal and State Legislation

Aboriginal archaeological and cultural heritage assessments in New South Wales are carried out under the auspices of a range of State and Federal acts, regulations and guidelines. The acts allow for the management and protection of Aboriginal places and objects, and the guidelines and recommendations set out best practice for community consultation in accordance with the requirements of the acts.

Table 1.3 details the Australian acts, guidelines and regulations which have been identified as being applicable or with the potential to be triggered with regards to the proposed development.

Table 1.3: Federal and State Acts

Federal Acts

Federal Acts:	Applicability and implications
Environment Protection and Biodiversity Conservation Act 1999	This act has not been triggered and so does not apply. • No sites listed on the National Heritage List (NHL) are present or in close proximity to the study area. • No sites listed on the Commonwealth Heritage List (CHL) are present or in close proximity to the study area.
Aboriginal and Torres Strait Islander Heritage Protection Amendment Act 1987	Applies. • This Act provides blanket protection for Aboriginal heritage in circumstances where such protection is not available at the State level. This Act may also override State and Territory provisions.

State Acts

State Acts:	Applicability and implications
National Parks and Wildlife Act 1974 (NP&W Act)	Applies. • Section 86 – Prohibits unknowingly causing harm or desecration to any Aboriginal object or place without an AHIP or other suitable defence from the Act. • Section 87 – Allows for activities carried out under an AHIP or following due diligence to be a defence against harm of an Aboriginal object. • Section 89A – Requires that OEH must be notified of any Aboriginal objects discovered within a reasonable time. • Section 90 – Requires an application for an AHIP in the case of destruction of site through development or relocation.
National Parks and Wildlife Regulations 2009 (NP&W Reg.)	Applies. • Section 80A – States minimum standards of due diligence to have been carried out • Section 80C – Requires Aboriginal community consultation process to be undertaken before applying for an AHIP. • Section 80D – Requires the production of a cultural heritage assessment report to accompany AHIP applications.
The Environmental Planning and Assessment Act 1979 (EP&A Act)	Applies. • This project is being assessed under Part 4 of the EP&A Act. • Sections 86, 87, 89A and 90 of the NP&W Act will apply. • The Part 3A Guidelines will not apply.
NSW Heritage Act 1977	This act has not been triggered and so does not apply. • No Aboriginal sites listed on the State Heritage Register are present or in close proximity to the study area.

State and Local Planning Instruments

Planning Instruments	Applicability and implications
Local Environmental Plans (LEP)	The following LEP is applicable • *Penrith Local Environmental Plan 2010*

Aboriginal Community Consultation Guidelines

Guidelines	Applicability and implications
OEH *Aboriginal cultural heritage consultation requirements for proponents 2010*.	The development is to be conducted in accordance with Part 4 of the EP&A Act 1979. • As the project is to be assessed under Part 6 of the NP&W Act, approvals under Section 90 of the NP&W Act 1974 as amended 2010 will be required, S89A of the Act will apply, and the Part 4 Guidelines will apply.

1.6 Section Summary

Aboriginal Places and Objects, both known and unknown, are protected in New South Wales by State and Federal legislation. The present assessment is being conducted under the *Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales* (DECCW 2010a) [the Code of Practice], the *Aboriginal Cultural Heritage Consultation Requirements for Proponents* (DECCW 2010b) [the Consultation Requirements], under Section 80 of the NP&W Reg. and under Part 6 of the NP&W Act in respect to the identification of Aboriginal stakeholders. As the work is not classified as a State significant project, the procedures under Part 5 of the EP&A Act do not apply.

Searches of the Australian Heritage Places Inventory (AHPI), the Register of the National Estate (RNE), the National Heritage List and the NSW Heritage Council State Heritage Register (SHR) websites identified no recorded sites of Aboriginal cultural heritage within the study area.

At the State level, the works are to be assessed under the NP&W Act and the EP&A Act. The relevant sections of the NP&W Act are Section 86, Section 87, Section 89A and Section 90. The *Penrith Local Environmental Plan 2010*, produced in accordance with the EP&A Act, makes provision for the protection of Aboriginal heritage, archaeological sites and potential archaeological sites, although no such places or objects are recorded.

1.7 Project Team and Qualifications

The Aboriginal heritage assessment was supervised by Justin McCarthy (Director, Austral Archaeology) and project management was overseen by David Marcus (Senior Archaeologist, Austral Archaeology). The assessment and management recommendations were written by David Marcus and all GIS mapping was created by David Marcus. Justin McCarthy reviewed the draft reports and management recommendations. Alan Hay (Austral Archaeology) and James Puustinen (Austral Archaeology) proof-read the draft report.

Justin McCarthy (B.A. Archaeology)

Justin McCarthy is the Managing Director of Austral Archaeology Pty Ltd, having started the company in 1987 in Adelaide and opened offices in Sydney in 1994 and Hobart in 1996 (now known as Austral Tasmania Pty Ltd). Prior to this Justin was an archaeological consultant to the South Australian Dept of Environment & Planning State Heritage Branch from 1983 to 1987. Justin has directed numerous projects involving Aboriginal heritage in NSW in the past 17 years and has a good working knowledge of the *National Parks and Wildlife Act (1974*) and the requirements of the OEH and the *Environmental Protection and Assessment Act 1979 (amended 2005)*. Justin has also been closely involved in consultation with Aboriginal stakeholders for a wide variety of projects including wind farms, pipeline and transmission line corridors, road construction and urban development. He has wide experience in all aspects of cultural resource management for both private and public sector clients.

Justin has directed regional and thematic heritage surveys, environmental impact assessments, conservation plans, heritage assessments, urban excavations, research projects, industrial archaeological surveys, interpretative design for historic sites, assessment of cultural landscapes and project management.

David Marcus (B.A. (Hons.) Archaeology, Ma. Archaeology)

David Marcus is an archaeologist with experience in both Aboriginal cultural heritage and historic cultural heritage projects. David has been involved as a field archaeologist and project manager, as well as conducting heritage consultation between clients and Aboriginal stakeholders. As well as conducting field surveys, he has also written and co-authored several archaeological reports. Having worked within archaeology for almost ten years, David has had ample experience of carrying out background research, and is familiar with the current legislative requirements for archaeology projects.

Prior to joining Austral Archaeology, David worked as an archaeologist in a cultural heritage consultancy with offices in Victoria and New South Wales, where he was responsible for projects in both states.

1.8 Data Restriction and Naming of Deceased Persons

Aboriginal readers should be aware that this report may contain the names of members of the Aboriginal community who are now deceased. Austral Archaeology apologise for any distress which this may cause.

Please note: Descriptions and locational data relating to Aboriginal archaeological and cultural material and sites have been removed from this version of the report. This is in accordance with the legislative protection afforded to Aboriginal archaeological and cultural materials sites by Section 90 of the *National Parks and Wildlife Act 1974*. Furthermore this information is considered sensitive and of great importance to the Aboriginal community and therefore not suitable for public display. This redacted version of the document has been prepared by Austral Archaeology Pty Ltd specifically for the purposes of public exhibition.

1.9 Acknowledgements

Austral Archaeology would like to acknowledge the participation of the following people who contributed to the preparation of the current report:

Paul Cubelic	Cubelic Holdings

The following individuals are also acknowledged for their participation in the original 2006 Austral Archaeology report. Department names have since changed but the originals are left here for authenticity.

Stephanie Barker	Urbis
Adrian Villella	Urbis
Paul Davies	Paul Davies Architects Pty Ltd
David Gordon	DECCW
Megan Mebberson	Department of Aboriginal Affairs, NSW
Nakari Thorpe	National Native Title Tribunal

1.10 Abbreviations

AGD84	Australian Geodetic Datum 1984
AHIP	Aboriginal Heritage Impact Permit
AHPI	Australian Heritage Places Inventory
BP	Before Present (1950 A.D.)
Burra Charter, the	ICOMOS Australia Burra Charter 1999
CMA	Catchment Management Authority
DACHA	Darug Aboriginal Cultural Heritage Assessments
DCAC	Darug Custodian Aboriginal Corporation
DEC	Department of Environment and Conservation, now the OEH
DECCW	Department of Environment, Climate Change and Water, now the OEH
DLALC	Deerubbin Local Aboriginal Land Council
DoP	Department of Planning
DTAC	Darug Tribal Aboriginal Corporation
EA	Environmental Assessment
EIS	Environmental Impact Statement
EP&A Act	Environmental Planning and Assessment Act 1979
EPBC Act	Environmental Planning and Biodiversity Conservation Act 1979
FGS	Fine Grained Siliceous
GDA94	Geocentric Datum of Australia 1994
GTCAC	Gundungurra Tribal Council Aboriginal Corporation
IM/T	Indurated Mudstone or Tuff
LCS	Longitudinal Cone Split
LGA	Local Government Area
LEP	Local Environmental Plan
NNTT	National Native Title Tribunal
NP&W Act	National Parks and Wildlife Act 1974, amended 2010
NP&W Reg.	National Parks and Wildlife Regulations 2009
NPWS	National Parks and Wildlife Service
NTSCORP	Native Title Services Corporation
OEH	Office of Environment and Heritage, formerly DECCW
PAD	Potential Archaeological Deposit
RNE	Register of the National Estate
SHR	New South Wales Heritage Office State Heritage Register
S90	Section 90 of the NP&W Act

2 ABORIGINAL ARCHAEOLOGICAL CONTEXT

2.1 Heritage Database Search Results

2.1.1 Aboriginal Heritage Information Management System Search Results

An updated search of the AHIMS database was undertaken on 10 April 2013, AHIMS client number 97367. The results from the AHIMS search identified 59 previously recorded sites within a 2 to 3 kilometre radius of the study area (Table 2.2, Figure 2.1 and Appendix B). Of these sites, 12 were located within the study area while six were located within the eastern precinct. No sites were located within the western precinct. All the sites within the study area were initially recorded by Austral Archaeology in 2006 and do not include the two additional isolated artefacts identified by Austral Archaeology in 2010.

It should be noted that there are several duplications in the results provided by AHIMS. The following sites have been duplicated in the AHIMS database:

Table 2.1: A summary of duplicate sites on the AHIMS database

Duplicate Site Names	AHIMS Site Number
St Thomas Church Isolated Artefact 2 (STC IA 2) St Thomas Isolated Artefact 2 (STC1A 2)	#45-5-3399 #45-5-3436
St Thomas Church Artefact Scatter 1 (STC AS 1) STC AS 1	#45-5-3400 #45-5-3418
St Thomas Church Artefact Scatter 5 (STC AS 5) stc as 5	#45-5-3404 #45-5-3407
St Thomas Church Isolated Artefact 1 (STC IA 1) stc ia 1	#45-5-3405 #45-5-3408
St Thomas Church Artefact Scatter 4 (STC AS 4) stc as 4	#45-5-3403 #45-5-3406
Winbourne 5 WB/5 Winbourne 6 WB/6	#45-5-0609 #45-5-0610

Austral Archaeology has previously advised the AHIMS Registrar of the duplicated data regarding the St Thomas' Church sites in 2011 (Austral Archaeology in prep:17). The AHIMS Registrar has again been notified of these duplications and the duplicated sites have been removed from the following discussion.

With regards to sites Winbourne 5 WB/5 (#45-5-609) and Winbourne 6 WB/6 (#45-5-6010), it appears that they represent two different sites that have been recorded with the same coordinates. The AHIMS Registrar has been notified of the apparent issue, but both sites are included in the discussion below.

In addition, two further sites recorded by Austral Archaeology as a result of the pedestrian survey undertaken in 2010 have not been included on the dataset provided by AHIMS. Both site Fernhill Mulgoa 13 and Fernhill Mulgoa 14 are considered as registered sites for the purpose of this report.

It should be noted that although the spatial accuracy of the sites located within the study area has been confirmed, the spatial integrity of sites located outside of the study area have not been checked for accuracy.

Table 2.2: Summary of sites recorded [redacted].

Feature Type	Total	%
Stone Artefact (Isolated or Scatter)	41	73.2
Modified Tree (Carved or Scarred)	5	8.9
Art (Pigment or Engraved)	4	7.1
Potential Archaeological Deposit (PAD)	3	5.4
Grinding Grooves	2	3.6
Artefact and Art	1	1.8
TOTAL	**56**	**100%**

Table 2.2 shows that there are five different site types represented by the search results: stone artefacts, culturally modified trees, art sites, PADs and grinding grooves. One rock shelter is recorded as containing a combination of rock art and stone artefacts. The spatial distribution of these sites are shown on Figure 2.2.

This information has been omitted from the current document due to its potentially culturally sensitive nature. Such data is presented in the restricted version only.

Figure 2.1 Distribution of previously recorded Aboriginal archaeological sites in the area surrounding the eastern and western precincts.

The vast majority of the registered sites are stone artefacts (both isolated finds and open artefact scatters). This site type represents 41 reported sites, or 73.2% of the overall site type frequency in the localised search. In comparison, the second most common site type are culturally modified trees, which account for five, or 8.9% of the overall site type frequency. The remaining 17.9% of sites are art sites (4), PADs (3), grinding groove sites (2) and a rock shelter containing both art and stone artefacts (1).

The distribution of the sites shows a clear spatial differentiation which relates to both land use history and geological aspects of the landscape. While stone artefacts have been identified throughout the region, [redacted]. Hence, the vast majority of previously recorded rock art sites are located west of the Nepean River, [redacted]. Similarly, grinding grooves require the presence of a suitable outcrop of sandstone rock located near to a creek, which strongly dictates the location of grinding groove sites. In the case of this study, they predominantly occur on the deeply incised creeks which feed into the Nepean River through the Nepean Gorge, while such sandstone outcrops in relation to a creek are not present within the eastern or western precincts.

In terms of land use history, culturally modified trees are most frequently recorded in areas where minimal land clearance has occurred. While the eastern side of the Nepean River has been extensively farmed from the early 19th century onwards, the terrain and inaccessibility of the western side of the Nepean River has precluded farming and general occupation of the area by European settlers. As such, the only recorded scarred trees within the search area were all located west of the river in the Blue Mountains, [redacted].

2.1.2 Other Heritage Register Search Results

As previously stated in Section 1.6, searches of the AHPI, the RNE and the SHR databases were undertaken in 2006, 2010 and again in 2013. The searches did not identify any recorded Aboriginal Objects or Places in or around the development area. No Aboriginal objects or places are listed as significant in the *Penrith Local Environmental Plan 2010*.

This information has been omitted from the current document due to its potentially culturally sensitive nature. Such data is presented in the restricted version only.

Figure 2.2 Sites and PADs previously identified by Austral Archaeology within or within close proximity to the original and amended western precinct.

This information has been omitted from the current document due to its potentially culturally sensitive nature. Such data is presented in the restricted version only.

Figure 2.3 Sites and PADs previously identified within or within close proximity to the eastern precinct.

3 LANDSCAPE CONTEXT

The natural environment of an area influences not only the availability of local resources, such as animals, plants and raw materials for artefacts, but also determines the likely presence and/or absence of various archaeological site types which may be encountered during a field investigation.

Resource distribution and availability is strongly influenced by the environment. The location of different site-types (such as rock-shelters, middens, open camp-sites, axe grinding grooves, engravings etc) are strongly influenced by the nature of soils, the composition of vegetation cover and the climatic characteristics of any given region, along with a range of other associated characteristics which are specific to different land systems and bedrock geology. In turn this affects resource availability of e.g. fresh drinking water, plant and animal foods, raw materials for stone tools, wood and vegetable fibre used for tool production and maintenance.

Therefore examining the environmental context of a study area is essential in accurately assessing potential past Aboriginal land-use practices and/or predicting site types and distribution patterns within any given landscape, cultural or not. The information that is outlined below is applicable for the assessment of site potential of the current study area.

3.1 Geological Context and Soil Landscapes

The study area lies at the border of two different physiographic regions, with the Cumberland Lowlands in the east and the Blue Mountains Plateau in the west. The Cumberland Plains physiographic unit comprises low lying and gently undulating plains and low hills, on Wianamatta Group shales and sandstones, while in contrast the Blue Mountains Plateau consists of deeply incised Hawkesbury Sandstone overlying Narrabeen sandstone, with occasional outcrops of the Narrabeen Group on valley floors and rare volcanic intrusions. Wianamatta Group shales and sandstones can occur as a thin capping on the eastern fringes of the plateau (Bannerman & Hazelton 1989:2).

The underlying geology of the study area, the Wianamatta Group, is a Middle Triassic deposit with major outcrops in the Liverpool to Picton and Appin to Mittagong areas. The Wianamatta Group consists of Ashfield Shale, derived from black sideritic claystone and limonite, underlying Bringelly Shale, a predominantly shale sequence with sandstone. Increasing occurrences of sandstone fragments are noted in the upper-most sections of the shale, while occasional calcareous claystone, laminate and coal can also be present. Most of the igneous rocks which are found in the Wianamatta Group are of basaltic composition (Hazelton and Tille 1990:3, 27, 70).

Where present, the Narrabeen Group, a Triassic deposit, has been mainly exposed in the lower reaches of the Blue Mountains by the erosion and down-cutting of the overlying Hawkesbury Sandstone. The Narrabeen Group consist of sediments of interbedded laminite, shale, quartz sandstone and lithic sandstone (Bannerman & Hazleton 1989:2).

The study area itself falls into three soil landscapes, identified mainly as Blacktown (**bt**) with a small section of Gymea (**gy**) in the western precinct and Luddenham (**lu**) on the western fringe of the study area (Figure 3.1). The soil landscapes are summarised below.

3.1.1 Blacktown (bt)

The Blacktown (**bt**) soil landscape is a residual landscape characterised by low undulating rises on Wianamatta Group shale. Local relief is generally between 10 to 30 metres, while slopes are generally less than 5%, but occasionally up to 10%. Crests and ridges are broad (200 to 600 metres) with rounded tops and convex upper slopes morphing into concave lower slopes. Drainage lines are often broad and valleys are flat. Minor to moderate amounts of sheet and gully erosion have occurred in specific locales within the soil landscape (Hazelton & Tille 1990:27-28).

Topsoil consists of a friable greyish brown loam (**bt1**) that can contain rounded, fine gravel shale and charcoal fragments. This overlies a hard setting brown clay loam (**bt2**) that is classed as a subsoil. It commonly contains ironstone gravel shale fragments while charcoal and roots are rarely present. Below this is a strongly pedal, mottled brown, light clay (**bt3**) containing increasing amounts of gravel shale fragments. Finally, there is a light grey, plastic mottled clay (**bt4**) containing weathered ironstone, with occasional gravel shale fragments and roots. Soil depth or the presence of the different soil materials can vary considerably, dependant on location within the landscape (Hazelton & Tille 1990:28-29).

3.1.2 Gymea (gy)

The Gymea (**gy**) soil landscape is an erosional landscape characterised by undulating to rolling hills on Hawkesbury Sandstone, with a local relief of between 20 to 80 metres and slopes of between 10 and 25%. Rock outcrops are present over an average of less that 25% of the soil landscape, while crests are broad and with convex crests. Lower slopes are moderately inclined with wide benches and localised rock outcrops on scarps (Bannerman & Hazelton 1989:56).

Soils are generally thin and often highly eroded, with stratigraphy being highly dependent on location in the landscape. The topsoil generally consists of a loose, coarse sandy loam (**gy1**) which contains sandstone, ironstone and charcoal fragments. This overlies a yellowish brown, clayey sand (**gy2**) that is classed as a subsoil when present above sandstone. It commonly contains ironstone and larger sandstone fragments concentrated in the upper parts of the soil, while charcoal is also relatively common. Below this is generally a yellowish sandy clay (**gy3**) containing weathered sandstone, overlying a strongly pedal, yellowish brown clay (**gy4**) (Bannerman & Hazleton 1989:57).

3.1.3 Luddenham (lu)

The Luddenham (**lu**) soil landscape is an erosional landscape characterised by rolling to steep hills with relief of between 50 to 80 metres and slopes of between 5% and 20%, but generally averaging between 10% to 15%. Ridges are narrow and convex, often between 20 to 300 metres in width, with hillcrests which morph into moderately inclined slopes with narrow, concave drainage lines. The underlying geology is the Wianamatta Group; Ashfield Shale and Bringelly Shale, but with fine to medium grained lithic sandstone from the Minchinbury Sandstone. Gully and rill erosion is common throughout the soil group, with sheet erosion occurring where topsoil removal has occurred (Hazelton & Tille 1990:70-71).

The Luddenham soils consist of the following soils (from Hazelton & Tille 1990:71-72):

- A loose dark brown loam (**lu1**) which occurs as a topsoil. Few small, shale fragments occur and roots are common in the top 100 millimetres, although charcoal fragments are rare.
- A brown, clay loam (**lu2**) with frequent shale rock fragments, charcoal fragments and roots.
- A “whole-coloured”, strongly pedal clay (**lu3**) which varies in colour from brownish black to dark reddish brown. Shale rock fragments are common while roots are rare and charcoal fragments are absent.
- A mottled bright brown plastic clay (**lu4**) which occurs as a deep subsoil. Shale rock fragments and gravels are common, while roots are rare.
- An apedal brown sandy clay (**lu5**) with up to 10% inclusions of small, well-weathered shale fragments. All other inclusions are absent.

The occurrences and relationships between these soils vary considerably, dependant on location. On crests, 100 millimetres of **lu1** can overlie up to 400 millimetres of **lu5**, which lies directly on bedrock or, more rarely, **lu4**. Dependant on erosion, **lu1** can be absent entirely. On the upper slopes, **lu1** can be identified as a topsoil overlying **lu2**, **lu3** and **lu4**, while on lower slopes, eroded soil can form a greyish brown loam purely overlying **lu5** and bedrock. In other examples, known sequences of the Luddenham soils can be **lu2**, **lu5**, **lu3** and **lu4** (Hazelton & Tille 1990:72-73).

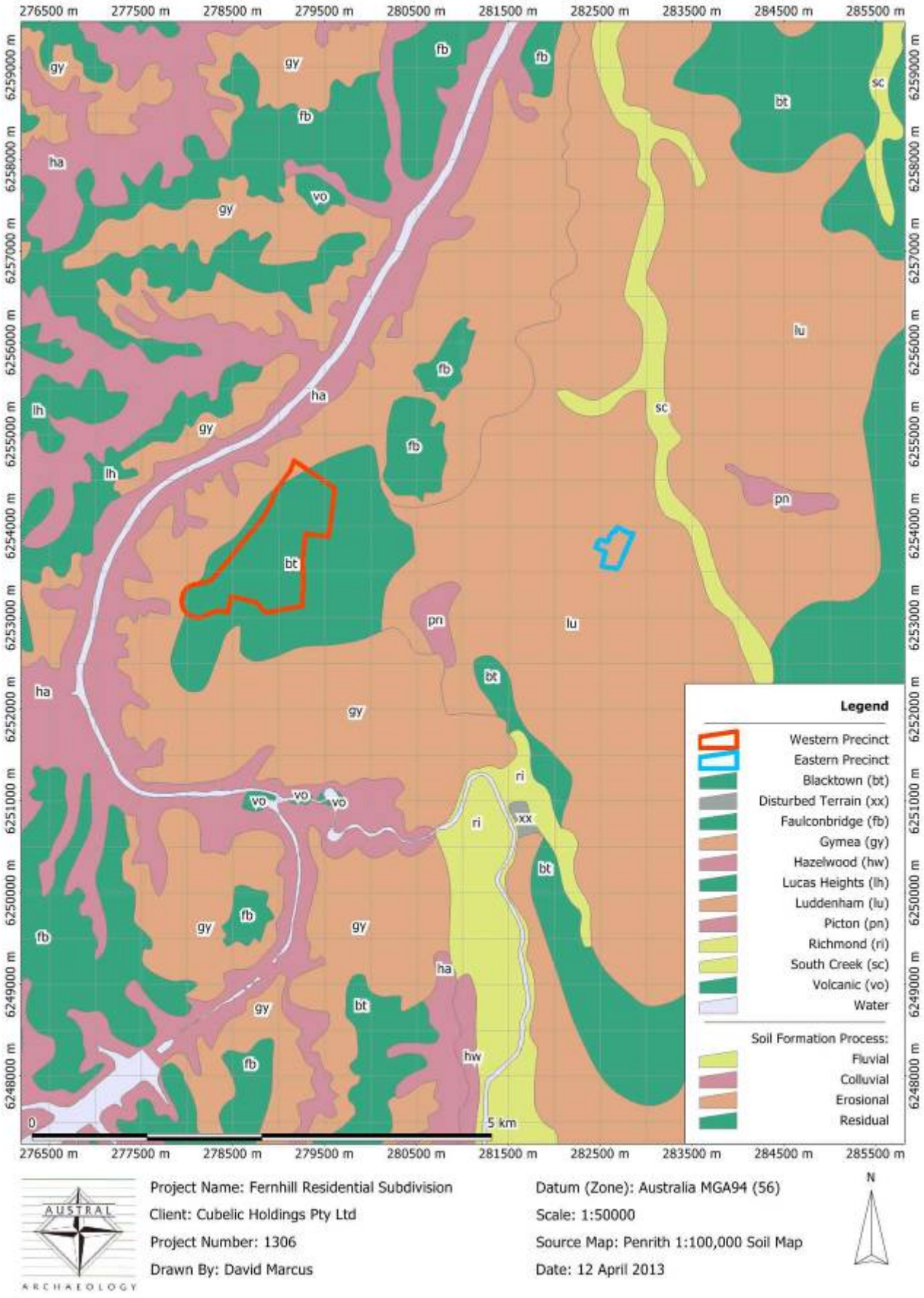

Figure 3.1 Soil landscapes map showing eastern and western precinct locations.

3.2 Topography and Landform

The study area is located within the Cumberland Plain subregion Sydney Basin bioregion, and is located at the western extremity of the Sydney Metropolitan Area. The study area is bounded on the western side by the Blue Mountains National Park, which incorporates both banks of the Nepean River. The typical topography of the Cumberland Plain includes low rolling hills with wide valleys, and at least three terrace levels evident in gravel splays. Swamps and lagoons can form on the floodplain of the Nepean River, while volcanic materials are present in the low hills of shale landscapes (NPWS 2003:193).

Specifically, the study area encompasses a variety of terrain types. The eastern precinct is characterised by undulating topography with a number of high rises. In the centre of the eastern precinct is a lake which appears to be a dammed former gully or a 2nd order steam. To the east and west of the wetland formed by the dammed creek are substantial rises or high points.

In comparison, the western precinct consists of gently undulating topography which forms the crest of the Nepean Gorge to the west. There are only minor 1st and 2nd order creeks running through the western precinct, and the course of these creeks have been modified through the construction of dams.

The landforms present within the study area formed the basis of survey units in the earlier pedestrian studies and are shown below on Figure 3.2.

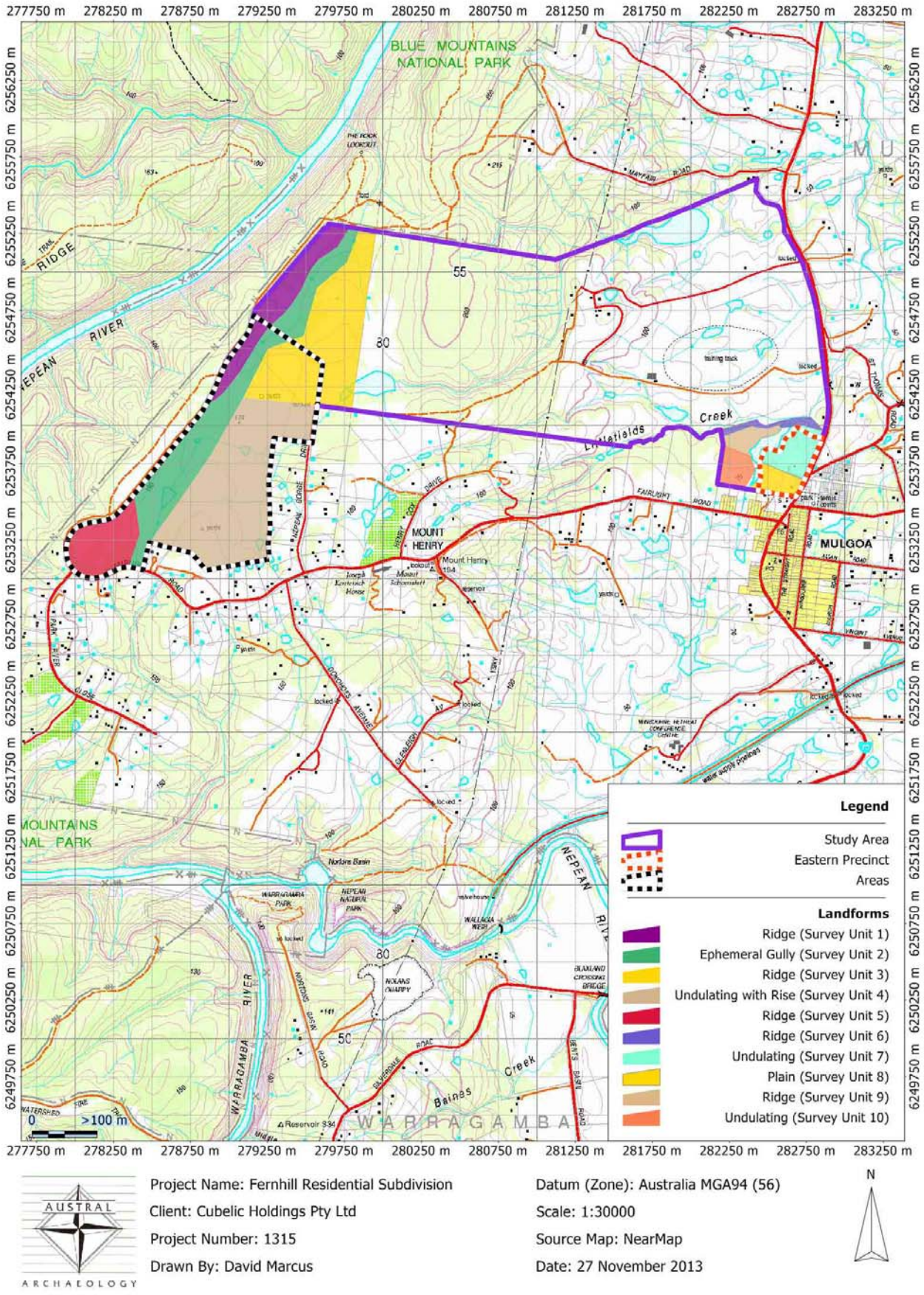

Figure 3.2 Map showing landform units and corresponding survey units identified during the 2006 pedestrian survey.

3.3 Hydrology

The subject land is located within the Nepean-Hawkesbury River catchment. The major watercourse in the vicinity of the subject land is the Nepean River which flows 300 metres west of the western part of the study area. The Nepean River forms a heavily forested deep gorge in the region and is an integral part of the extensive Blue Mountains National Park. The headwaters of the Nepean River rise near the town of Robertson on the western slopes of the Illawarra Escarpment, about 100 kilometres south of Sydney. The Nepean River flows in a generally north direction past Mulgoa, continuing northwards until the Grose River joins the Nepean River near Penrith and the river changes its name to the Hawkesbury River. As the Hawkesbury River, it flows approximately north-east before it enters the sea approximately 50 kilometres north of Sydney at Broken Bay. The total length of the Nepean-Hawkesbury River from source to sea is about 265 kilometres.

Littlefields Creek forms the northern boundary of the eastern part of the study area. Littlefields Creek rises at Mount Henry, which is located to the south of the study area. Littlefields Creek flows in an easterly direction where it joins Mulgoa Creek, which in turn flows north to join the Nepean River near Penrith. In the eastern precinct there is a lake, which is formed through the damming of a gully. There are also a number of smaller drainage lines within the western precinct, many of which have been modified and banked up into dams to provide drinking water for stock. The drainage lines in the western part of the study area are 1st order streams, the wetland/gully in the eastern part of the study area is a 2nd order stream, Littlefields Creek is a 3rd order stream and the Nepean River is considered the major waterway in the region (Figure 3.3). For the discussion on stream order relevance for archaeological site patterning, please refer to accompanying Aboriginal archaeological report (Appendix H).

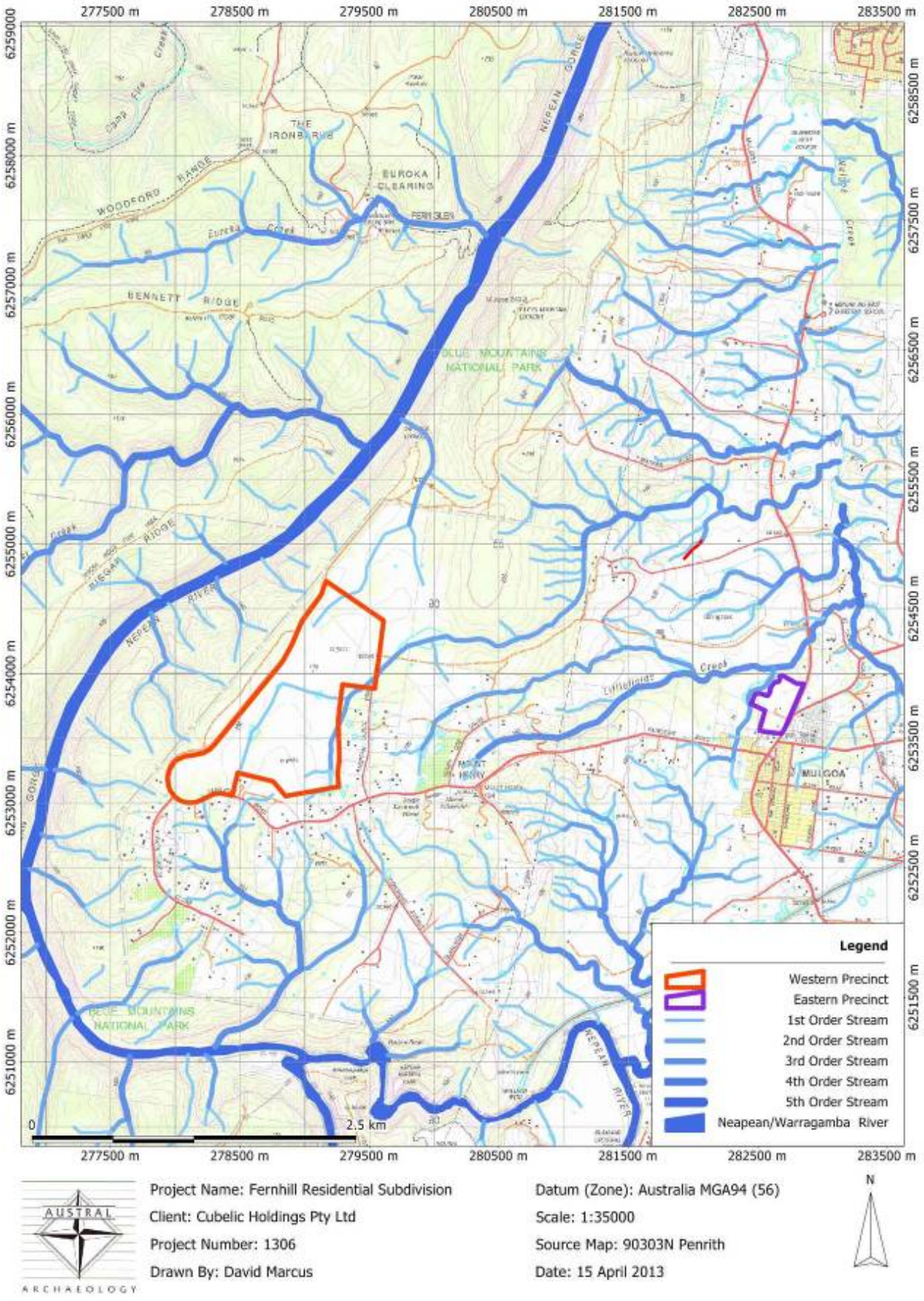

Figure 3.3 Map showing hydrology and stream order of the eastern and western precincts.

3.4 Flora and Fauna

Prior to the removal of the natural vegetation, the ecological diversity of the area would have provided a wide range of resources for Aboriginal people. Aboriginal people frequenting the study area would have exploited resources from the nearby Nepean River as well those within the smaller drainage lines such as Littlefields and Mulgoa Creek.

The dominant native vegetation community in the region surrounding the study area is characterised as a 'Sandstone Shale Transition Forest' (NPWS 2000: map 4). This forest community "*occurs around the margins of the Cumberland Plain on soils derived from Wianamatta Shale…the community is only found in close proximity to a transition in parent geology from Wianamatta Shale to high-quartz sedimentary substrates*" (NPWS 2000:47). Forests in this zone are "dominated by *Eucalyptus tereticornis* (Forest Red Gum) with *E. eugeniodes* (Thin-leaved stringybark)*, E. crebra* (Narrow leafed ironbark), *E. fibrosa* (Broad-leaved ironbark) and *E. punctata* (Grey Gum) occurring less frequently. A small tree stratum is usually present and dominated by *Eucalyptus* species*.* A shrub layer dominated by *Bursaria spinosa* is usually present" (NPWS 2000: 47). Additional species present within the Nepean Gorge also include Blackbutt (*Eucalyptus deanei*), River Oaks (*Casuarina cunninghamiana*) and Red Cedar (*Toona australis*) (Benson & Howell 1990:84).

The Fernhill estate is also specifically mentioned by Benson & Howell for the selective clearance undertaken by Edward Cox along the driveway to the estate, where "all but the locally abundant Rough-barked Apples, *Angophora floribunda*, [were] removed. These trees...gave his estate a desired park-like landscape" (Benson & Howell 1990:85).

The study area still incorporates tall open forest remnants in the south-west and north-east corners and along Littlefields Creek in the north of the eastern precinct. Stands of eucalypts occur sporadically throughout the western precinct in parts forming open woodland.

The study area and its nearby surroundings would have provided habitats for the usual variety of macropods found in the Cumberland Plain, most notably the grey eastern kangaroo. Meanwhile, the rivers and creeks would provide access to addition faunal resources such as fish species, a range of water birds and a variety of lizards.

3.5 Past Land Use Practices

The early settlement and economy of the Mulgoa region focused on the large-scale land grants given to early settlers in the 1810s. The Cox family were the first to settle in the Mulgoa Valley, while in 1821 Governor Macquarie gave grants of land to Nathaniel, James and John Norton, which were extensively farmed. By the end of the 19th century, the subject land had been cleared and was used for grazing livestock. This land use has continued into the present time. In 2001 a large bushfire ripped through the Blue Mountains and leaped the Nepean River into the Mulgoa Valley. The ensuing inferno burnt much of the subject land. A number of bushfires have been recorded in the Mulgoa area throughout the historical period and it is likely that in the pre-European period bushfires intermittently scorched the area.

The study area itself has been affected by vegetation clearance and as a result is now covered predominantly in a young regrowth of native vegetation, especially along the creeks and gullies.

The study area has been cleared and partially flooded by the creation of a dam on the creekline. While it is unknown when land clearance first occurred, the clearance was thorough and the eastern precinct contains almost no old-growth vegetation. Since the original vegetation removal, the main paddock has remained as pasture and a thick re-growth of wattle (primarily *Acacia decurrens*) has occurred in the southern part of the eastern precinct.

Historic land-use has mainly been limited to pastoral activities, although various parts of the eastern precinct have been almost continuously developed since the 1870s through to the 1980s. The earliest known structures are associated with a main building, slab hut and collection of outbuildings known as the Woodlands property. The main building acted as the Mulgoa post office between 1877 and 1893 and was the residence of Elizabeth Fowler and her 14 children (Austral Archaeology 2010:43). Both the main property and the outbuildings are visible on aerial photographs from the 1940s through to 1978, but by 1986 only the slab hut remained. The hut itself was burnt in a large bushfire in 2001, and only fragmentary remains of the site are currently visible on the surface (Austral Archaeology 2010:55).

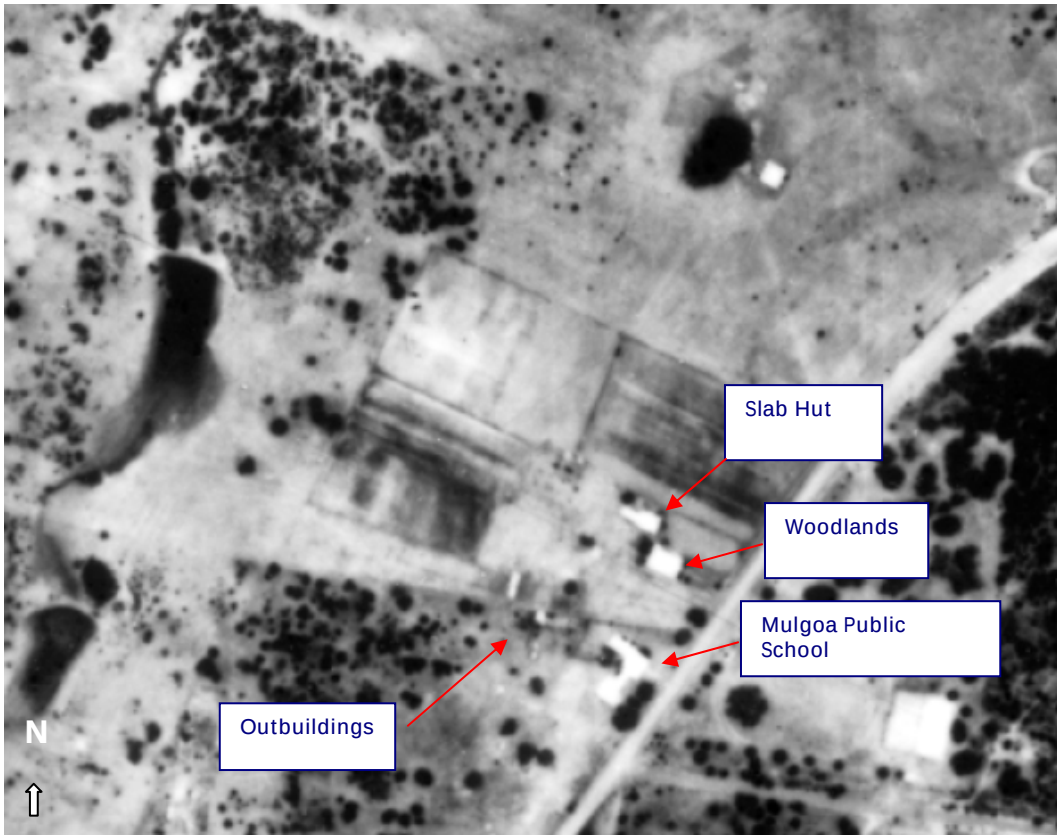

Figure 3.4 Aerial photograph of slab hut and southern part of the eastern precinct from 1947 (Austral Archaeology 2010:44).

In addition, several other buildings are known to have been constructed within the area of the eastern precinct, including the current farmhouse and associated outbuildings. These are marked on the following images.

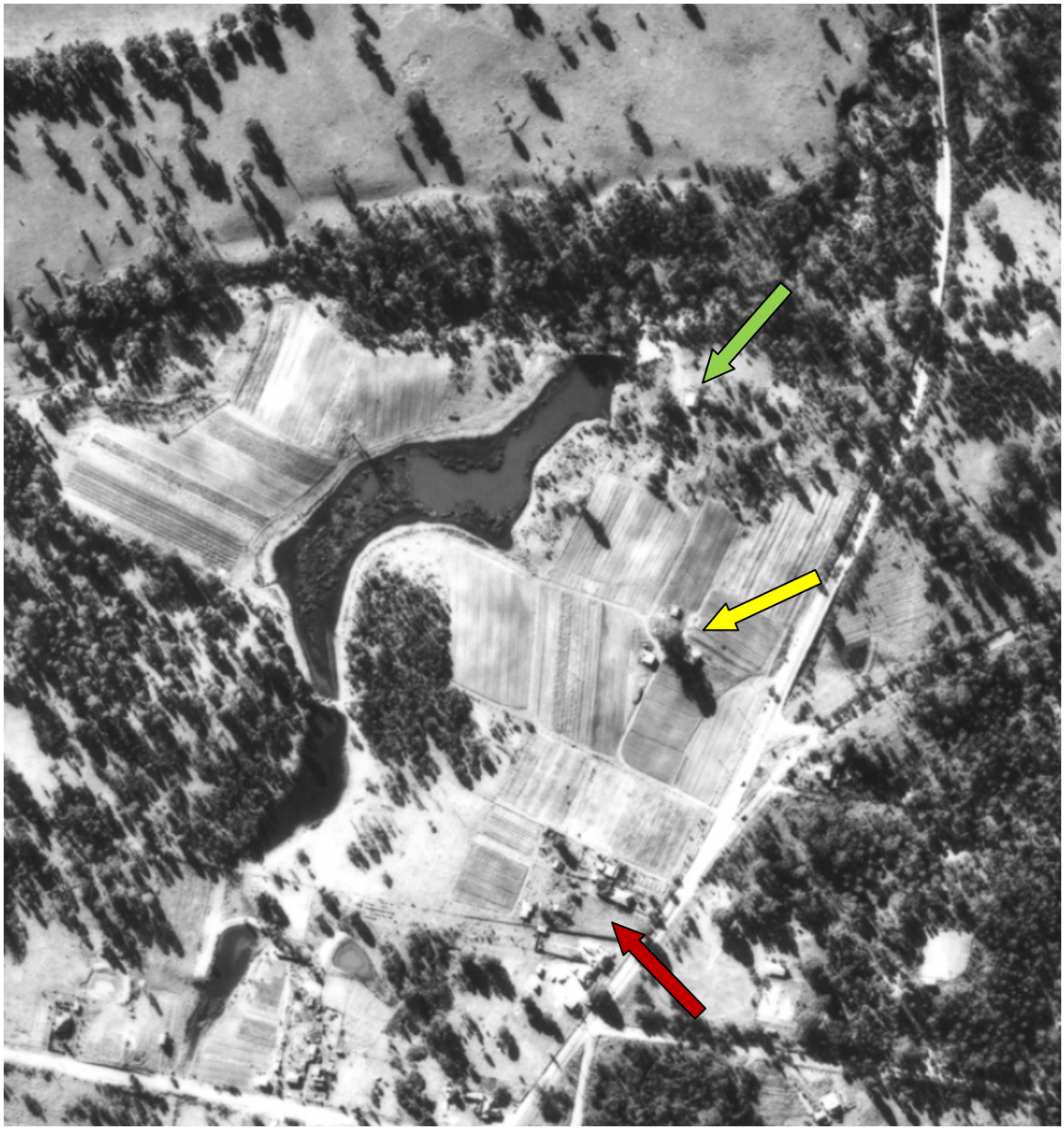

Figure 3.5 Aerial photograph of eastern precinct from 1961. Note the slab hut and outbuildings marked with a red arrow, cluster of structures in the centre marked with a yellow arrow and a building in the northern part of the precinct marked with a green arrow (Austral Archaeology 2010:44).

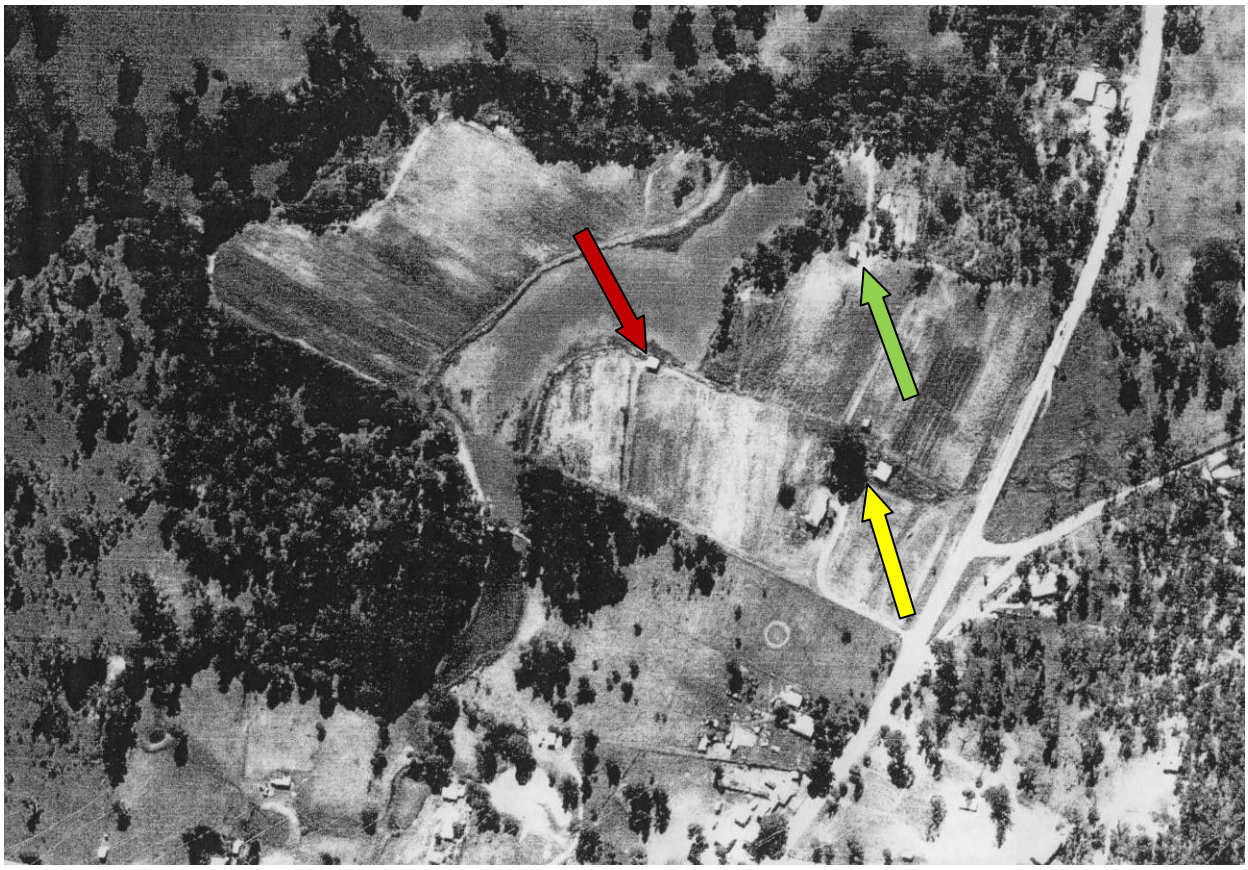

Figure 3.6 Aerial photograph of eastern precinct from 1978. Note new construction of a pumphouse marked with a red arrow, the farmhouse marked with a yellow arrow and building in the northern part of the precinct marked with a green arrow (Austral Archaeology 2010:45).

Figure 3.7 Aerial photograph of eastern precinct from 1986. Note that several buildings have been demolished since the 1978 aerial photo, with the exception of a new building on central ridgeline marked with a red arrow (Austral Archaeology 2010:45).

The buildings noted above served as a hub for the extensive agricultural development of the study area, which included practices such as vegetation clearance and stock grazing. The extent of vegetation clearance within the study area is noted from the various aerial images, which show that at various points since the 1940s, almost the entirety of the study area has been denuded of trees. Despite the thick growth of vegetation in the southern part of the study area, it is apparent that these trees have re-grown since 1986.

Land clearance would have resulted in soil disturbance and as a result, the archaeological resource is likely to have been affected to some degree by this activity as well as by stock grazing. However, this is likely to have resulted in localised artefact displacement rather than destruction of Aboriginal sites.

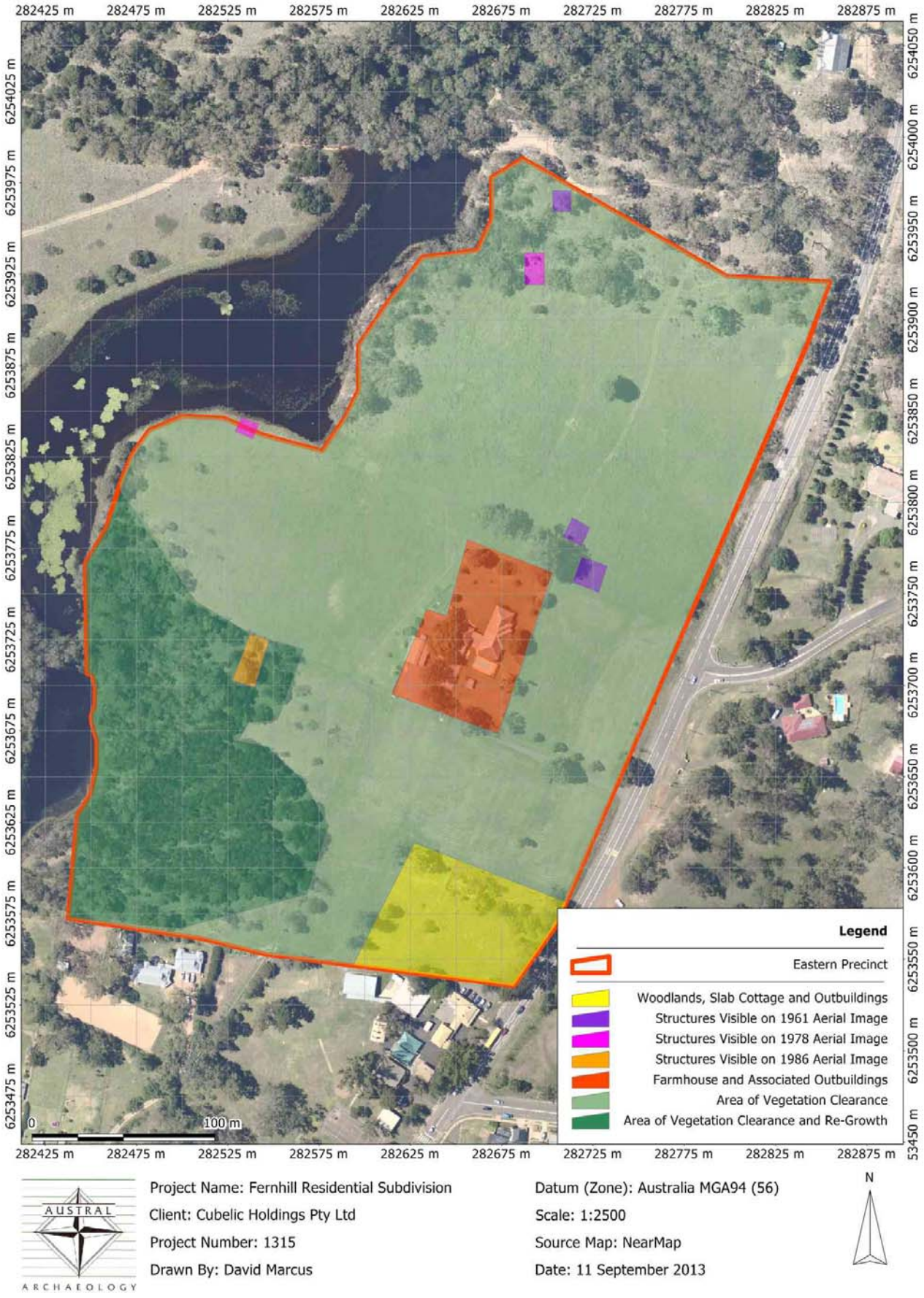

Figure 3.8 Overview of historic disturbances within the eastern precinct.

3.6 Potential Land Use Impacts on the Archaeological Resource

The main impacts on the subject land relate to past land use. The past land uses of the subject land and their potential impact on archaeological resources are summarised in Table 3.1 below.

Table 3.1: Summary of past land uses within the study area, and the potential impacts on archaeological resources.

Past Land Uses	Potential Impacts on Archaeological Resources
Historical vegetation clearance	The potential loss of scarred trees from the subject land as well as substantial erosion.
Use and maintenance of farm-tracks	Earth disturbance leading to the potential disturbance and dispersal of ground artefact scatters. Usage of the tracks by vehicles may also crush and damage artefacts.
Livestock grazing on the subject land	Loss of native grasses and trampling on the ground has lead to increased erosion and potential dispersal of ground artefact scatters.
The damming of gullies to create fresh water dams for livestock	Earth disturbance leading to the potential disturbance and dispersal of ground artefact scatters.
Construction and demolition of buildings	Significant ground disturbances within the footprint of the building, leaving to the potential disturbance distribution or destruction of artefacts and other subsurface Aboriginal cultural heritage.
Bushfires	The potential loss of scarred trees. The loss of vegetation leading to increased levels of erosion and the potential dispersal of artefact scatters as well as heat damage to surface artefacts.

4 SUMMARY AND ANALYSIS OF BACKGROUND INFORMATION

The range of environments and landscapes within the Cumberland Plains and Nepean River region had a profound influence upon the lives of the Aboriginal people who lived there. As hunters and gatherers, Aboriginal people were reliant on their surroundings to provide food. Their transitory lifestyle controlled population size, social interactions and the degree of mobility. This can be confirmed in the archaeological record. Ethnographic accounts were once the primary source of archaeological investigation. However with the recent spread of urban development within New South Wales, archaeological investigations have increased in frequency.

The pre-European context of the Cumberland Plain and the Nepean River region is one of small bands of Aboriginal people living a mobile hunting and gathering lifestyle. The Darug tribe were inhabitants of the western area of the Cumberland Plains. Population estimations at the time of contact were difficult to estimate due to disease that decimated populations. The social structure of pre-European groups was slightly stratified with elders of clans holding decision-making capabilities. Subsistence activities were arranged by gender and the spirituality of groups is detailed and explained through an oral tradition of Dreamtime. Material culture, such as tools, were made of a variety of materials such as bark, resin, shell, bone and reeds. Hard stone raw material that was made into stone tools is the main element of this tool kit to remain in the archaeological record.

The Cumberland Plain region's pre-European environment provided an extensive resource base associated with the multitude of water sources, both seasonal and perennial. These water sources are fresh, permanent major rivers (the Nepean River) and smaller creeks (e.g. Littlefields creeks). Habitats associated with these water systems would have supported a wide range of animals, fish, birds and mammals, all of which would be rich in proteins and would have been in abundant supply. The pre-European Cumberland Plains landscape would have been the setting for a variety of human activity. This human activity would have included camping, hunting, gathering, cooking, ceremonies, and other cultural activities associated with semi-permanent settlement sites in the region.

Early archaeological investigations of the Cumberland Plains by McDonald led to methods of predicting Aboriginal sites within the landscape. It was based on the presence of reliable water sources. A general rule is that within 100 metres of fresh water creeks, the likelihood of Aboriginal site occurrences increases. Further to this, a more specific site predictive tool, stream ordering, is used. This states that the more permanent and reliable the water sources the more frequent and complex Aboriginal activities become.

Several archaeological investigations of the landscape surrounding the study area have helped build an understanding of the Aboriginal archaeological record in this area. Site distribution is more prevalent on the creeks which are frequently found on the Cumberland Plains, with a secondary concentration of sites on ridgeways. Scarred trees are unlikely to be present due to the removal of most remnant native vegetation within the study area, but they are known from the immediate surrounds.

Artefact scatters within the search area include formal artefact groups such as ground stone axes, cores, hammer stones and debitage flakes. Flakable stone material has been shown to be locally available both within the local region and from known locales such as Picton.

4.1 The Cumberland Plain and Nepean River Archaeological Context

Archaeological investigations on the Cumberland Plains and along the floodplains of the Nepean River have been conducted in direct response to the spread of urban development. The limited ethnographic accounts of early settlers and explorers were once considered the primary source for archaeological enquiry. However, with the recent spread of urban development within the Cumberland Plain environs, archaeological investigations have undergone a corresponding increase.

The major studies which have contributed to our understanding of the Cumberland Plains, and those with direct relevance to the study area through their proximity, are outlined below. Reference is made to the main trends garnered from these investigations which serve to provide a broad framework in which to base the current study.

Aboriginal occupation of the Cumberland Plain and Nepean River Valley extends back well into the Pleistocene, around 10,000 years Before Present (BP). Currently the oldest accepted date for an archaeological site in the Sydney region is a date of about 14,700 years BP which was obtained from Shaws Creek Rockshelter K2, located to the north of Penrith and not far from the present study area (Attenbrow 2002:20). Relatively early dates were obtained by McDonald *et al* (1996) for artefact-bearing deposits at open site RS1 (45-5-982) at Mulgoa Creek, Regentville – but the reliability of these is uncertain (McDonald *et al* 1996:61-62), while Austral Archaeology have also recorded similar dates within the sand body associated with the Hawkesbury River at Windsor (Austral Archaeology 2011).

4.1.1 Population and Contact History

Population estimations at the time of contact are notoriously problematic as Aboriginal groups avoided the early settlers and were highly mobile. Another factor which complicates an accurate estimation is the effect of European diseases, which decimated Aboriginal populations soon after contact.

Aboriginal people formed part of a dynamic culture which encouraged movement throughout the landscape in order to assist in the ceremonial and functional practicalities of daily life (Helms 1895:389; Niche 2010:17). As such, defined borders for tribal groups need to be recognised as an artificial constraint designed by anthropologists (Organ 1990:xliii).

With these constraints in place, it is possible to examine the early history of the area. The present study area is thought to lie near the boundary of two major Aboriginal language groups. Darug (alternatively spelt Dharug or various other spellings – see Attenbrow 2002:table 3.3) speakers occupied the region to the north and east of the Mulgoa valley while the Gundungarra speakers were located to the south and west (Kohen 2009:3). Anthropologist and linguist R.H. Mathews stated that:

> The *Dhar-rook* dialect, very closely resembling the *Gundungarra*, was spoken at Campbelltown, Liverpool, Camden, Penrith, and possibly as far east as Sydney, where it merged into the *Thurrawal* (in Mathews & Everitt 1900:265).

According to Kohen “the band that lived in the [Mulgoa] valley at the time of contact were Dharug, and were known from the early part of the 19th century as the Mulgoa Tribe” (Kohen 1982:3). ‘Mulgoa,’ or ‘*mulgowy*,’ or ‘*mulgaway*,’ meaning ‘black swan’ is believed to be the Dharug name for the area (Kohen 1982:4), while an alternative is also suggested based on the word *Mulgowrie*, meaning “a place for water” in a local dialect (Nepean Times, 18 May 1939).

The pre-contact population numbers for the study area are not known and, due to smallpox and influenza epidemics preceding the arrival of European settlers into the region (Attenbrow 2002:21), it is unlikely that the early European explorers were able to successfully grasp the traditional population size.

In the early days of the Sydney Cove settlement, Governor Phillip estimated that about 1500 Aboriginal people lived in the Sydney district; more recent estimates of the contact period population of the greater Sydney region place the number between five and eight thousand, although other estimates are much lower (Kohen 1995:1; Turbet 2001:25-26). For the western Cumberland Plain, Kohen has estimated a pre-contact population of 500 to 1000 people, or a minimum overall density of about 0.5 persons per square kilometre (Attenbrow 2002:17; Kohen 2009:4).

The Aboriginal population of the Sydney district declined dramatically following European settlement; even before European explorers reached Mulgoa, many Aboriginal people had been killed by the smallpox epidemic which spread through the area in 1789. The epidemic is thought to have caused the deaths of at least half of the Aboriginal population of the Sydney district, while some accounts testify that 90% of the population were decimated (Attenbrow 2002: 21; Kohen 1995:2).

While early contact between Aboriginals and Europeans in the area was initially neutral, conflict over limited resources resulted in tensions rising dramatically between 1794 and 1800. Increased farming along the banks of the Hawkesbury River replaced areas of natural resources which had traditionally been harvested by the Darug people. As a result, Aboriginal people were reduced to taking corn from the settler's fields which, in 1794, led to the farmers capturing, torturing and killing an Aboriginal boy. Retaliations followed and, although the Aboriginal people then tried to sue for peace, soldiers were sent to the region to indiscriminately kill and drive away the remaining Aboriginal survivors. A General Order proclaimed in 1801 stated that all Aboriginal people were to be "driven back from the settlers habitations by firing at them". By this time, an estimated 150 to 200 Darug people had been killed (Kohen 2009:4-5).

While the spirit of the Darug people had been damaged by the start of the 19th century, the take-up of land in the Mulgoa valley sparked the beginning of clashes between European settlers and the Gundungarra (or mountain) people (Kohen 1982:3-4). The Sydney Gazette of 7 May 1814 (not July as recorded in Kohen [1982:4]) reported that:

> The mountain natives have lately become troublesome to the occupiers of remote grounds. Mr Cox's people at Mulgoa have been several times attacked within the last month, and compelled to defend themselves with their muskets, which the assailants seemed less in dread of than could possibly have been expected. On Sunday last, Mr Campbell's servants at Shancomore were attacked by nearly 400; the overseer was speared through the shoulder, several pigs were killed, one of which, a very large one, was taken away, together with a quantity of corn, and other provisions; the overseer's wearing apparel, and cooking utensils.
>
> Similar outrages have been committed in other places; which it is to be hoped will cease without a necessity of our resorting to measures equally violent to suppress the outrages (Sydney Gazette, 7 May 1814).

The Shancomore Estate, located at Bringelly, is approximately 15 kilometres south-east of the current study area.

Hostilities in the local region continued for the next two years and were characterised by killings on both sides. In 1816, a white shepherd was killed at Mulgoa along with most of the flock of 200 sheep under his care, which were either forced off a cliff or were mutilated and killed (Sydney Gazette, 31 August 1816). Again, according to Kohen, these killings were carried out by Gundungarra people while "the Mulgoa 'Tribe' apparently remained peaceful, but their numbers were rapidly declining" (Kohen 1982:5).

By 1820, it appears the violence had ended in the Mulgoa valley and a form of a co-operative, often exploitive, relationship had developed between the settlers and the Aboriginal people. In 1826 Cox reported that Aboriginal people had been employed on the Fernhill estate, and that:

> ...the tribe of Mulgoa reaped upwards of thirty acres of wheat for me within the last fourteen days; the work was as well executed as if performed by my best English labourers. The blacks are willing to work if well fed; but the generality of settlers, I regret to say, think these unfortunate people sufficiently renumerated for their days labour by a gift of a small piece of tobacco and a drink of sour milk. I gave to them and their wives three good meals a day, and a moderate quantity of weak rum punch (or what they call bull) in the afternoon. They went to their camp at sun down, in high spirits, and were amongst the first in the field (Sydney Gazette, 23 December 2826).

Fifteen Aboriginal people were recorded as living at Mulgoa two years later in 1828, and people in the region are believed to have lived in a 'semi-traditional' way up until about the 1840's. One open artefact scatter site recorded at Mulgoa Park contained 19th century glassware and ceramic sherds along with stone artefacts (Kohen 1982:7). This may be suggestive of a post-contact date for this site, but it is not possible to establish a definite connection between the artefacts.

Even despite all the setbacks and obstacles represented by the arrival of the Europeans, there were reports of Aboriginal people further south in the Camden area still hunting using traditional methods and camping along the Nepean River right up to the late 19th century (AECOM 2010:14, Atkinson 1988:7).

It is worth noting that this ethnohistory should be employed with caution and Hiscock (2008:17) has recently argued that even very early historical accounts may not be a suitable basis for analogy. As Aboriginal groups had to change their economic, cultural and political practices in order to cope with the social impacts of disease in the historic period, he argues that it is likely that similar drastic changes happened in the past in response to "altered cultural and environmental circumstances" following the arrival of Europeans. Social disruption in the Cumberland Plains region caused by European settlement pushing Aboriginal people to the fringes of their traditional lands would have caused such drastic changes.

4.1.2 Material Culture

The material culture of the Aboriginal people of the Sydney region at the time of European contact was diverse, and utilised materials derived from a variety of plants, birds and animals as well as stone. Below is only a short summary of the types of material known to have been used by the Aboriginal people of the Sydney region.

Spears in the Sydney region were usually made of a grasstree spike (for the shaft) with a hardwood point, or alternatively with a hardwood shaft and barbs made of stone, bone, shell or wood (Turbet 2001:40). Thin and straight spear-throwers, or *woomera*, were made from wattle and other hardwoods (Turbet 2001:40). Fishing spears were usually tipped with four hardwood prongs with bone points (Attenbrow 2002:117, 119; Turbet 2001:42), while fish were also caught by means of shell or bird talon fish hooks attached to twine (Attenbrow 2002:117; Turbet 2001:45).

Bark of various types were used for making such diverse items as wrappings for new-born babies, shelters (*gunyahs*), canoes, paddles, shields, water carriers (*coolamon*) and torches (Attenbrow 2002:Table 10.1). Resin from the grasstree was also used as an adhesive for tool and weapon making (Attenbrow 2002:116; Turbet 2001:36).

Various kinds of clubs and throwing sticks were made from hardwoods, as were other useful items such as digging sticks. The word *boomerang* is believed to be from the Darug language and the returning variety originated from the Sydney basin. In conjunction with larger, two-handed throwing sticks, it complemented the range of hunting tools available for taking down larger prey (Turbet 2001:37-39, 45; Attenbrow 2002:112).

Stone artefacts are often the only physical indication of Aboriginal use of an area. The knapping of stone artefacts can indicate one of two things, the knapping of stone to create tools and the discard of these tools once they have been used, or sometimes both. The knapping of stone creates a large amount of stone debris in very little time. Large knapping events tend to occur in proximity to sources of permanent water (McDonald 2000). This is probably because the availability and resources made these good places to camp for short periods of time. Small scale knapping events can occur anywhere in the landscape and are associated with the manufacture or maintenance of stone tools as a direct result of a specific need. This implies that locations of sites away from water courses will be more diffuse.

Stone was commonly used for tools and, apart from discarded shell in coastal middens, is the most common material found in archaeological sites of the Sydney region. Stone or stone tools were used for axe heads, spear barbs and as woodworking tools, amongst other things. James Charles Cox, the grandson of William Cox, was a keen naturalist who grew up playing in the bush with Aboriginal children around Mulgoa (Teale 1969). During a talk he gave to the Linnaean Society of New South Wales in 1877 describing edge-ground stone axes, Cox reminisced on how such tools were once "in the hands of the greater number of the natives of the tribes which once inhabited the Valley of Mulgoa near Penrith" (Cox 1877:21).

Aboriginal people made good use of local stone raw materials sourced from the known quarries on the Cumberland Plain and from the Hawkesbury-Nepean River gravels. Knowledge of source locations for raw materials such as silcrete, basalt, quartz, tuff and chert is of great importance in determining movements, trade and exchange patterns of the people who inhabited the area (Attenbrow 2002; Austral Archaeology in prep:24). There is evidence, in the form of stone artefacts and axes from inland sources (possibly the Nepean River gravels) for trade between the inland Darug people with the coastal Guringai (Smith 1990:20).

The closest quarry site with regards to the present study area is a known silcrete quarry at St Marys (Corkill 1999:66). Corkill has also noted the presence of flakeable, and therefore knappable, stone, including quartz, quartzite and igneous rocks in gravel outcrops above the Warragamba River, not far south from the present study area (Corkill 1999:80). Additionally, the valley of Mulgoa Creek has also been noted as a potential source of silcrete (Attenbrow 2002:43).

Archaeological investigation has resulted in the recognition of changes in the types of stone tools used by Aboriginal people in the Sydney region through time. A sequence of changes in stone tool types in eastern New South Wales was first noticed by archaeologist FD McCarthy who named it the 'Eastern Regional Sequence' (McCarthy 1976:96-98). McCarthy identified the '*Capertian*,' '*Bondaian'* and '*Eloueran'* phases of the sequence which together appear to span the last 15,000 years in the Sydney region.

McCarthy's sequence was argued against, and Stockton & Holland (1974:53-56) modified McCarthy's theory by proposing four phases of the Eastern Regional Sequence instead. After *Capertian*, they described the *Early Bondaian* and *Middle Bondaian* phases, where Bondi points and other small tools become apparent in assemblages in Eastern New South Wales. *Late Bondaian* of Stockton & Holland's sequence referred to McCarthy's *Eloueran* phase. Stockton & Holland's terminology proved more useful to archaeologists and are used throughout the Sydney region today (Attenbrow 2002:156).

Broadly speaking, the earliest, *Capertian* period assemblages typically contain tools which are larger in size than later assemblages, although smaller tools, such as thumbnail scrapers and dentated saws can also be present.

In the late Holocene (from approximately 5,000 years ago), backed artefacts such as Bondi points, Elouera and geometric microliths appear in archaeological assemblages in the Sydney region and these tools are characteristically much smaller than those of earlier phases. McCarthy (1976) used these formal tools to define this period as Bondaian while for Stockton & Holland (1974:53-56) the appearance of this tools marked the *Early Bondaian* and *Middle Bondaian* phases. Edge ground implements also started appear in regional assemblages for the first time at about 4,500 to 4,000 years ago.

From about 1,600 year ago, Bondi points and geometric microliths began to drop out of use in the coastal parts of the Sydney region, although Elouera continued to be used. This is known as the *Late Bondaian* phase. On the Cumberland Plain, however, dated archaeological sites suggest that all of these backed artefact types continued to be used "until at least 650-500 years ago, although probably not [as late as the time of] British colonisation" (Attenbrow 2002:156). In coastal areas, and possibly throughout the Sydney Basin, both the use of quartz and of the bipolar flaking technique increased through time, although this tendency is less marked on the western Cumberland Plain (Attenbrow 2002:153-159; Corkill 1999:135).

4.1.3 Food

A wide range of land mammals were hunted for food, including kangaroos, possums, wombats and echidnas as well as native rats and mice (Attenbrow 2002:70). Birds, such as the mutton bird and brush turkey, were eaten and it is recorded that eggs were a favourite food (Attenbrow 2002: Table 7.3, p75-76). In 1810, the diet of the Gundungarra people was described as consisting of a variety of foods including "possums, eels, snakes, blue-tongued lizards, freshwater mussels and a variety of birds" (Kohen 1982:3).

Attenbrow has noted that "Sydney vegetation communities include over 200 species that have edible parts, such as seeds, fruits, tubers/roots/rhizomes, leaves, flowers and nectar (Attenbrow 2002:76). Several other plants have medicinal functions, many of which have only recently been discovered by science, although these were traditionally known to the Aboriginal people.

Observations from the earliest European settlers describe Aboriginal people in the Sydney region roasting fern-roots, eating small fruits the size of a cherry as well as a type of nut and the root of "a species of the orchid" amongst other types of plant food, and it was noted that their diet consisted of "a few berries, the yam and fern-root, the flowers of the different Banksia, and at times some honey" (Collins 1804:361). At other times, the Aboriginal people living in woods would "make a paste formed of the fern-root and the ant bruised together; in the season, they also add the eggs of this insect" (Collins 1804:362).

However, as Attenbrow notes, the settlers' lack of knowledge of the local plant species make actual identification of the various plants being discussed difficult, beyond vague terminology which compared plants to those which were known to the settlers' (Attenbrow 2002:76-79).

Of the numerous species which are known to have been used by Aboriginal people in the past, the *murrnong*, or yam daisy (*Microseris lanceolata*), was the most important staple food and it was the destruction of these plants that contributed to an increased strain on resources in the early 19th century (Kohen 1995:4). Other important species to the Darug people included the *burrawang* (*Macrozamia communis*), whose seeds had to be treated before being turned into flour, and the native yam (*Dioscorea transversa*) (Kohen 2009:5; Stewart & Percival 1997:19).

In summary, the Cumberland Plain and the Nepean River environment provided a wide variety of plants and animals which were used by the local Aboriginal populations for artefact manufacture, medicinal purposes, ceremonial items and food.

4.2 Summary of Aboriginal Material Traces Within the Local Region

Based upon analysis of information obtained from the OEH AHIMS search, the local and regional archaeological and environmental contexts, the types of sites which occur in the wider region and may occur within the current subject land are considered below.

Ceremonial Grounds (bora rings): Ceremonial Grounds are where initiation ceremonies, marriages and other important social functions were held. They are places of great significance to Aboriginal people. Some are raised earth rings or rings of stone. Generally they are located in prominent locations. These sites are considered rare.

Grinding Grooves are abrasions in the surface of rocks from the repeated use of the rock surface for sharpening implements of stone, but also may have been used for bone and shell implements. Grinding grooves are generally situated near a water source and may consist of a single groove or a number of grooves on a sandstone slab. This site type is usually found in open contexts but has also been known to occur within rock shelters.

Open camp sites or isolated finds of durable material of flaked or ground stone that have been discarded across the site may be present. The presence of *manuports* potentially could occur at the study area. Manuports are stone artefacts of raw materials not naturally occurring within the soil profiles of a given site; essentially they have been brought onto the site by Aboriginal people from somewhere else.

Rock Shelter Sites are rock overhangs, which have artefacts on the surface of the deposit or within the deposit itself. Other forms of archaeological evidence commonly found within shelter sites are occupation deposit (i.e. stone artefacts, bone, shell, charcoal and artwork).

Scarred trees are the result of the removal of bark and/or wood for the purpose of manufacturing shelters, canoes and shields and/or for designs carved into wood for a range of aesthetic, functional and ceremonial reasons which are currently not fully understood. Evidence for tree scarification is more likely to be observed on large and mature trees (depending upon the species). Unless the tree is at least 100 years old, scarring is unlikely to be of Aboriginal origin.

Shell Middens range from thin scatters of shell to deep, layered deposits which have built up over time. They are generally found on the coast, but can be around inland lakes, swamps, and river banks. Shell middens are places where the debris from eating shellfish and other food has accumulated over time.

5 CONSULTATION PROCESS

5.1 Stakeholder Consultation

Stakeholder consultation for this project is undertaken following the Consultation Requirements. The OEH (DECCW 2010b:iii) recognises that:

- Aboriginal people should have the right to maintain their culture;
- Aboriginal people should have the right to directly participate in matters that may affect their heritage; and,
- Aboriginal people are the primary determinants of the cultural significance of their heritage.

5.2 Stakeholder Consultation for 2006 and 2010 Assessment

Consultation with key stakeholder groups has been ongoing throughout the cultural heritage assessment. The initial consultation process undertaken by Austral Archaeology in 2006 proceeded under the *Interim Community Consultation Requirements for Applicants* (DEC 2005) and identified five Aboriginal stakeholder groups; Deerubbin Local Aboriginal Land Council (DLALC), Darug Aboriginal Cultural Heritage Assessments (DACHA), Darug Custodian Aboriginal Corporation (DCAC), Darug Tribal Aboriginal Corporation (DTAC) and Gundungurra Tribal Council Aboriginal Corporation (GTCAC). These groups were also involved in the 2010 assessment undertaken by Austral Archaeology.

The Aboriginal stakeholder groups were given the opportunity to participate in the field survey and comment on the potential impacts on the archaeological and cultural values of the local area. The views of the local Aboriginal community groups were sought as to whether there were any known or potential archaeological and/or cultural constraints that may warrant consideration during the project. Where concerns were raised, these are presented throughout the report. A draft archaeological report was reviewed by these groups and a submission sought from each organisation with regards to the project.

5.3 Stakeholder Consultation for Current Project

As the project has recommenced following the implementation of the new Consultation Requirements, consultation has been re-started from the initial stage providing the opportunity for new stakeholders to register.

To commence the consultation procedure, an advert was placed in the *Penrith Star* to run on 28 March 2013, requesting the registration of cultural knowledge holders relevant to the project area by 15 April 2013. Letters were also written to the bodies suggested in Section 4.1.2 of the Consultation Requirements (DECCW 2010) on 25 March 2013 and a search was made of the Native Title Tribunal on the 13 May 2013 following verbal confirmation from an OEH representative that an online search of the Native Title register was acceptable. A copy of all relevant documents have been included in the Appendices.

As a result of the consultation procedure, the following groups and individuals are registered Aboriginal parties with an interest in this project:

- Amanda Hickey
- Darug Aboriginal Cultural Heritage Assessments (DACHA)
- Darug Aboriginal Landcare Inc. (DALI)
- Darug Land Observations (DLO)
- Darug Tribal Aboriginal Corporation (DTAC)
- Deerubbin Local Aboriginal Land Council (DLALC)
- Tocomwall Pty Ltd
- Widescope Indigenous Group (WIG)

A letter confirming all registered stakeholders was sent to the Local Aboriginal Land Council and OEH on 14 May 2013, in line with Section 4.1.6 of the Consultation Requirements (DECCW 2010b). Copies of all correspondence relating to this phase of stakeholder consultation is included in Appendix C, and Austral Archaeology's responses to specific comments are included below.

- Tocomwall - *...we understand the proposed methodology to be the single paragraph in your letter dated 25 July 2012 and due to the brief information provided, we are unable to comment until a more detailed methodology is provided for comment* (16 April 2013)

No methodology had been sent to Mr. Franks at this point, and a letter had been sent to his organisation regarding a different project on 25 July 2012. Therefore, this comment references another project of Austral Archaeology and is not relevant to Fernhill assessment.

5.4 Consultation on the Proposed Methodology

All registered Aboriginal stakeholders were provided with information outlining the proposed development, a copy of the draft archaeological report and a draft methodology for conducting test excavations within the eastern precinct on 4 June 2013, requesting a response by 2 July 2013. A response was only received from Amanda Hickey who supported the proposed test excavation methodology. Copies of all correspondence relating to the draft methodology from registered Aboriginal stakeholders are included in the appendices.

5.5 Stakeholder Involvement in Fieldwork

The proponent selected registered Aboriginal stakeholders to participate in the archaeological test excavations. In line with the Consultation Requirements (DECCW 2010b), the proponent was not required to involve all Aboriginal stakeholders who registered for consultation in the fieldwork. Consultation as per the Consultation Requirements (DECCW 2010b) continued with all Aboriginal stakeholders who had registered an interest in the project regardless of involvement in the fieldwork.

5.6 Consultation on the Draft Archaeological Report

All registered Aboriginal stakeholders were provided with a draft copy of the final archaeological report for review on 19 September 2013, with a response requested by 17 October 2013. A response was received from DACHA supporting the proposed recommendations and another received from Scott Franks which was noncommittal.

All registered Aboriginal stakeholders were also provided with a draft copy of the Aboriginal cultural heritage assessment report and Aboriginal archaeological report following the updating of the proposed impacts. All comments received during the review process are to be included in this assessment.

6 ASSESSMENT OF HERITAGE SIGNIFICANCE

6.1 Aboriginal Sites within the Study Area

The 2006 survey investigation located and recorded nine new Aboriginal archaeological sites which included six artefact scatters and three isolated artefacts. In addition, three PADs were identified on the subject land. Site cards for each of the Aboriginal archaeological sites were completed and registered with DECCW, who assigned AHIMS Site Numbers for each site. Four of the sites were located in the western part of the study area and the other five sites were located in the eastern part of the study area. In total, 132 artefacts were recorded across all of the nine sites. In terms of the PADs, one was located in the north-western corner of the western precinct with the remaining two located in the eastern precinct.

The Aboriginal archaeological sites are summarised in Table 6.1 and discussed in Appendix E below. The location of the Aboriginal archaeological sites are shown on Figure 2.2 and Figure 2.3.

Table 6.1: Aboriginal Archaeological Sites recorded during the 2006 investigation

This information has been omitted from the current document due to its potentially culturally sensitive nature. Such data is presented in the restricted version only.

During the survey to relocate sites originally recorded in 2006 in the eastern precinct, the 2010 investigation located and recorded two new Aboriginal archaeological sites in the eastern precinct. Both sites were isolated artefacts. Site cards for each of the Aboriginal archaeological sites were completed and submitted to DECCW for registration and to be included on the AHIMS database. However, it appears that neither site has officially been registered. The newly recorded Aboriginal archaeological sites are summarised in Table 6.. See Appendix E for detailed descriptions of the survey units and Aboriginal archaeological site recordings. The location of the Aboriginal archaeological sites are shown on Figure 2.2 and Figure 2.3.

No sites were located during the survey of the service easement. As the survey area is not located within the eastern or western precincts, detailed information on GSV is not necessary in terms of the current assessment. In summary, survey unit 1, Littlefield's Creek provided very poor visibility. Ground surface visibility improved within survey unit 2 along the access track through the woodland, although the soil profile along the track was skeletal with a large amount of ironstone and sandstone eroding out of the track. The ground surface visibility was also very poor for the remainder of the survey within survey unit 3.

Table 6.2: Aboriginal archaeological sites recorded during the 2010 investigation

This information has been omitted from the current document due to its potentially culturally sensitive nature. Such data is presented in the restricted version only.

6.2 Discussion of Aboriginal Archaeology

The 2006 survey located and recorded nine new sites of Aboriginal cultural heritage which included six artefact scatters and three isolated artefacts. In addition, three PADs were identified. Across the nine Aboriginal archaeological sites, a total of 132 artefacts were recorded during the initial survey. A brief analysis of the artefacts took place in the field and revealed general trends regarding Aboriginal archaeology in the Mulgoa area. Artefacts were flaked from five different raw materials: 42% of the artefacts were silcrete, 35% were chert, 19% quartz, 2% basalt and 1% quartzite. The findings from this analysis fit in well with the predictive archaeological models for the Cumberland Plain, in which similar raw materials have previously been recorded for other Aboriginal archaeological sites in the wider region. Attenbrow (2002:156) noted that silcrete and chert are the dominant raw materials on the Cumberland Plain with quartz being a minor constituent of the overall assemblage.

In terms of artefact types across the nine Aboriginal archaeological sites, 17% of the artefacts are formal tool types, with 8% comprising of cores, and the remaining 75% being waste flakes and debitage. This is a relatively high percentage of formal tools types for the Cumberland Plain when compared with other Aboriginal archaeological sites in the region, although the low overall numbers of artefacts recorded from the surface may have skewed the result.

Most of the formal tools, including Bondi points and a ground edge axe, were located in the eastern precinct close to the confluence of the wetland and Littlefields Creek. Bondi points are the signature tools of the *Early*, *Middle* and *Late Bondaian* phases discussed in Section 4.1.2 and relate to late Holocene period (or the last 5000 years). The stream confluence is the location of five artefact scatters and is considered to have the highest archaeological potential within the study area. This is also the location of two identified PADs, with their boundaries forming a 100 metre buffer zone from the waterways.

The 2010 survey investigation located two new Aboriginal archaeological sites, which were two isolated artefacts from within the eastern precinct. The findings from this survey fit in well with the 2006 investigations and the predictive archaeological models for the Cumberland Plain in regards to their location and composition.

Based on McDonald's (2000:19) model for stream order, archaeological evidence encountered within 100 metres of Littlefield Creek (which is 3rd order) may be in the form of frequent occupation with possible sites types including knapping floors and other concentrated activities. Furthermore, Aboriginal sites located at the confluence of streams are predicted to be larger and more complex than sites not on creek junctions.

Given the above characteristics, there is likelihood that the surface scatters in these locations are just a small component of much larger and multifaceted subsurface artefact deposits relating to pre-European utilisation of the locale. Aboriginal knapping sites indicating tool manufacture and multi visitation camping sites due to the presence of potable water could be expected to occur at this confluence.

6.3 Results of the 2013 Test Excavations

A summary of the results of the excavation program are presented in Figure 6.1. These diagrams show both the placement of individual test pits as well as the number of artefacts recovered from each square.

Out of the 91 pits which were excavated, 59 test pits, or 65% of the test pits, did not contain artefacts. Of the 32 test pits which contained Aboriginal cultural material, the artefact count ranged from one artefact up to 11 artefacts, with 28 test pits containing four or less artefacts. The four test pits with more than four artefacts yielded 6, 8, 10 and 11 artefacts.

This information has been omitted from the current document due to its potentially culturally sensitive nature. Such data is presented in the restricted version only.

Figure 6.1 Location of test pits containing Aboriginal cultural heritage and areas of artefact concentrations in the eastern precinct.

For the purpose of clarifying the horizontal distribution of artefacts within the study area, three areas of artefact concentrations have been noted based on both artefact density within specific test pits and the landform surrounding the test pits. This assumes that artefacts on the ridgeline are more likely to remain close to their original point of deposition, while artefacts on hillslopes and the surrounding flats are more likely to have been subject to post-depositional movement, including erosion.

Two main artefact concentrations were identified [redacted], with an additional third, smaller artefact concentration identified [redacted].

The largest concentration of artefacts occurred [redacted]. Several of these test pits contained the highest recorded artefact densities from the test excavations and a total of 56 artefacts (or 59% of the total) came from this area alone, although [redacted] was also located within this area and did not contain any Aboriginal cultural heritage. Based solely on the results of the archaeological test excavations, this area may have an average artefact density of 5 artefacts per test pit. However, this figure assumes a consistent spread of artefacts across the entirety of the hilltop, which is unlikely to be the case considering that no artefacts were identified in one of the test pits.

A second concentration was identified [redacted] containing 14 artefacts (or 15% of the total). Based solely on the results of the archaeological test excavations, this area may have an average artefact density of 2.8 artefacts per test pit.

Finally, a third, smaller concentration was identified [redacted], consisting of two quartz fragments and part of a ground axe-head and Fernhill Mulgoa 13, consisting of a single silcrete core. [redacted] contained 4 artefacts, which was the highest number of artefacts recorded from a single test pit outside of the main artefact concentrations. For this reason, it has been noted as a separate area of artefact concentration, along with [redacted], which contained a single artefact.

In addition to these main artefact concentrations, an extremely low density scatter of artefacts was identified on the hillside [redacted]. These test pits generally contained only individual artefacts and were probably the result of erosion washing artefacts downslope from the main ridgeline which contained the main artefact concentration.

In summary, the results of the test excavation show that while the majority of the study area does not contain any Aboriginal cultural material, the [redacted] parts of the study area contains a widespread but unevenly dispersed and extremely low density deposit of Aboriginal cultural heritage, with occasional higher density clusters.

6.3.1 Vertical Distribution

The dispersal of buried artefacts within the excavated deposit can provide information on the relationship between individual artefacts in an assemblage as well as indicate the thickness of the archaeological deposit or the degree of site disturbance that may exist. Layers of artefacts at the base of the A-horizon can indicate that natural bioturbation processes have caused all the artefacts to move down the profile. If artefacts are located in a discrete layer within the A-horizon it is possible that these relate to an occupation layer deposited in a single event or series of events before the sediments accumulated above them. As the Fernhill assemblage is relatively small, this analysis will plot the distribution of all artefacts from each square rather than dividing the collection into type or raw material groups.

Despite a wide variation in test pit depth, from 100 millimetres to 700 millimetres, no artefacts were recorded from below 300 millimetres anywhere within the study area, and with a sharp drop-off in artefact numbers noted below 200 millimetres. While 41 artefacts (or 43% of the total) were recovered from between 0 and 100 millimetres, 43 artefacts (or 45% of the total) were recovered from between 100 and 200 millimetres, and the remaining 12% of artefacts were recorded from between 200 to 300 millimetres.

It is evident from this data that the archaeological deposit within the study area is not deep, and that artefacts are concentrated in the top 200 or 300 millimetres. While there is no evidence of bioturbation having created a single artificial layer at the base of the A-horizon, it is evident that the archaeological material is not deeply stratified and is contained within the uppermost portion of the soil unit.

6.3.2 Distribution of Historic Artefacts

An additional indicator of recent site disturbance is the presence of modern materials in the same levels from which Aboriginal stone artefacts were found.

A total of 18 pits contained modern or early European glass, ceramic, metal, plastic and asbestos fragments. Of these 18 pits, 15 contained non-Aboriginal artefacts concentrated in the upper 200 millimetres of the deposit, with only two test pits containing European material below 300 millimetres from the surface. The presence of post-contact materials below the surface suggests that activities such as tree clearing, ploughing and building works have occurred within the study area.

Although the European artefacts were disbursed over a wider area than the Aboriginal cultural material, both datasets demonstrate the shallow nature of the deposit within the study area, which appears limited to a maximum depth of 300 millimetres. Where European material was encountered at greater depth, this reflects more of a localised post-European impact rather than providing evidence of disturbance occurring at depth across the entirety of the study area.

The presence of modern materials within a test pit indicated a considerable level of impact upon the original vertical distribution of stone artefacts to a depth of 300 millimetres. Post depositional site disturbance can impact upon the types of distribution analyses that can be undertaken on stone artefacts but does not affect the review of the composition of the assemblage. Although site disturbance does reduce the range of potential investigations relating to spatial associations between artefacts, it does not extinguish the scientific significance of the material.

6.3.3 Section Summary

- 31 of the 91 excavated squares contained artefacts.
- 12 of the 31 squares only contained a single artefact, 15 of the 31 squares yielded between two to four artefacts.
- The two highest artefact densities for individual test pits were 11 artefacts and 10 artefacts.
- Highest artefact densities came from [redacted], with average artefact densities of 5 artefacts per test pit [redacted], 2.8 artefacts per test pit [redacted] and 2.5 artefacts per test pit [redacted].
- The study area generally contains a widespread but low density buried deposit interspersed with occasional higher density clusters.
- Material is spread throughout the profile which provides strong evidence against the assumption that bioturbation will conflate artefacts into a single artificial layer at the bottom of the A-horizon soil.
- The presence of post-contact materials below the surface suggests that activities such as tree clearing, ploughing and earthworks have occurred within the study area.
- The range of materials and artefacts are typical of flaked artefacts from people with ready access to the alluvial gravels of the Hawkesbury River.
- Formal tool types including backed artefacts were present, but with no indication that these tools were made *in situ*.

6.4 Regional Comparison

In this section, the content and density of the assemblage from the Eastern Precinct at Fernhill is compared to collections excavated from other sites in the vicinity. However, this comparison is complicated by the lack of excavation data from the surrounding area and a disparity amongst terminology used to describe excavation results in the literature.

Data is available for an excavated site [redacted] at Regentville (Silcox 1997) and a second excavation undertaken at Erskine Park, [redacted] (Navin Officer 2005). These sites have been chosen due to similarity with the Fernhill landscape locations or through having artefact numbers to provide a similar comparison.

To simplify this comparative analysis a limited number of artefact and site attributes are examined, including artefact raw material and artefact densities. Further discussion regarding the tool composition of the artefact scatters are discussed in greater detail below.

Table 6.3: Average artefact densities and raw material types in each of the assemblages.

Site Name and Author	Silcrete	IM/T	Quartz	Other
Fernhill	34.75%	36.85%	23.2%	5.2%
Regentville (Silcox 1997)	23.4%	59.6%	6.4%	10.6%
Erskine Park (Navin Officer 2005)	69.09%	12.7%	11.84%	6.37%

Within a broad regional perspective the assemblage from Fernhill shows a significantly different distribution of artefact raw materials when compared to the other sites. Silcrete is by far the most dominant material from Erskine Park, as it generally is across the Cumberland Plains (Austral Archaeology, *in prep*), while the Regentville site shows a preference for IM/T, although the site also contained other materials "commonly found in open campsites on the Cumberland Plain" (Silcox 1997). At the Fernhill site it can be seen that silcrete, IM/T and quartz are all equally well represented in the assembly.

One possible explanation for the variation in material relates to site location in the wider landscape. At Erskine Park, none of the material displayed evidence of long-distance procurement, and silcrete cobbles could be sourced locally from relict river gravels within the Cumberland Plain or other local sources (Navin Officer 2005:34). In contrast, the proximity of the Hawkesbury-Nepean River gravels would provide campsites in the Mulgoa valley with easy access to a wider variety of raw material types, and this is what is reflected in the Regentville and Fernhill assemblages.

Table 6.4: Number and percentage of artefact types in each of the assemblages.

Site Name and Author	Flaked Piece	Flake	Retouched Flake	Core	Hammer-stone
Fernhill	7 (7.3%)	80 (84.2%)	6 (6.3%)	1 (1.1%)	1 (1.1%)
Regentville (Silcox 1997)	12 (25.5%)	33 (70.3%)	1 (2.1%)	1 (2.1%)	
Erskine Park (Navin Officer 2005)	109 (46.2%)	92 (39%)	29 (12.3%)	6 (2.5%)	

* Note that Silcox recovered 45 artefacts in these categories, but only describes them as "amorphous flakes, broken flakes and flaked pieces" (Silcox 1997:19).

The vast majority of all three assemblages consist of either flaked pieces, in the case of Erskine Park, or flakes. Formal artefact types were noticeably low across all three artefact assemblages. The consistently low incidence of cores compared to flakes at all sites should be noted. This has implications for the explanations of raw material importation.

The high percentage of retouched artefacts present at Erskine Park is attributable to the presence of infrequent *in situ* microblade production within parts of the study area coupled with a limited range of other normal artefact manufacture techniques (Navin Officer 2005:33, 37). While no microlithes were identified at either Fernhill or Regentville, Silcox did determine that the Regentville assemblage only represented a typical open campsite assemblage on the Cumberland Plain (Silcox 1997:22).

In light of this clear illustration of the relatively consistent relationship between the incidences of these four artefact types within sites, it is possible to conclude that the Fernhill assemblage is consistent with the regional pattern of site content.

Obtaining comparable data on artefact density can be difficult as measurements of density can be expressed in a number of ways, such as number per square metre, density per cubic metre or as weight by area or volume. Another factor influencing comparability of data is the aperture size of sieves used to screen excavated sediments. Larger samples of smaller artefacts are recovered by sieve aperture sizes of 3 millimetre compared to a 5 millimetre sieve. Although artefact number per square metre is not the optimal comparative index it is employed in this intersite comparison as these data are readily available from the reports listed above in the introduction to this section. Maximum number of artefacts for any individual square excavated at each site plus average density within adjacent squares in separate excavation units (i.e. trench or site sample) were selected for comparison.

Table 6.5: Maximum artefact density per area and average density for assemblages.

Site/Area	Max. Artefact Density	Av. Density (per metre²)
Fernhill (Entire Eastern Precinct)	-/-	4.2
Fernhill (Southern Ridgeline)	13	20
Fernhill (North-eastern Ridgeline)	4	11.2
Fernhill (Central Ridgeline)	4	10
Fernhill (Excluding Ridgeline Concentrations)	-/-	0.3
Regentville (RL2)	6	0.8
Regentville (RL3)	25	8
Erskine Park (Entire Project)	33	1.2

While individual artefact densities for each test area within the Erskine Project are included as an appendix within the main report, Navin Officer note that the highest artefact density within the project was 10.5 per metre^2 (Navin Officer 2005).

In the wider regional perspective the maximum number of artefacts from an individual test pit on the Fernhill project (13) is considerably lower than that from either Regentville (25) or Erskine Park (28).

The overall average artefact densities for the entirety of the Eastern Precinct are relatively high when compared to both Regentville (RL2) and the entirety of the Erskine Park project. However, the overall density for the Fernhill project is skewed by the fact that almost 79% of the artefacts came from three concentrated areas within the Eastern Precinct. Once these three ridgeline locations have been removed from consideration, the artefact density over the remainder of the Eastern Precinct is 0.3 artefacts per square metre, well below the average density at both Regentville and Erskine Park.

Average artefact densities within the three areas of artefact concentrations at Fernhill are high (20 [redacted], 11.2 [redacted] and 10 [redacted]), and even the lowest recorded concentration at Fernhill is only equal to the highest concentration recorded at Erskine Park. However, a key consideration in these figures is the relative area of each artefact concentration. While the [redacted] contained an artefact density rate of 20 artefacts per square metre, the majority of the artefacts came from three test pits in a 20 metre^2 area, and additional test pits were excavated to ensure that the full extent of the artefact scatter was known. In contrast, the test areas which contained the highest densities of artefacts from Erskine Park extended over larger areas, and the full extent of each artefact scatter within the test areas were rarely fully defined (Navin Officer 2005:40-57). As such, the Erskine Park site contains a larger artefact scatter spread over a wider area than [redacted] at Fernhill.

Similarly, the high artefact density [redacted] are based on relatively few pits within a focussed area, while the total size of the artefact scatter at both Erskine Park and Regentville are considerably larger than the Fernhill scatters.

The use of artefact density as the only measure of scientific significance is simplistic. It fails to recognize the potential for large area, low intensity or high intensity, and concentrated single event artefact scatters to skew results. On the basis of data presented in Table 6.5, it is possible to conclude that while the maximum and average densities within the study area are relatively high in comparison to other sites in the local vicinity. However, in contrast to both Erskine Park and Regentville, once identified, the testing methodology for this project allowed for the full extent of the artefact scatters to be determined through the excavation of additional test pits. Therefore, while the artefact densities are higher than those from the other projects, the testing has provided clear indications of the spatial extent and overall number of artefacts. In comparison, both Erskine Park and Regentville contain artefact scatters which extend over a larger area and the extents were not fully defined.

Overall, artefact assemblage recovered from the study area shares similar aspects to other artefact scatters in the local region when considered in comparison to the size of the relative scatters. In line with the regional significance attributed to the Erskine Park artefact scatters (Navin Officer 2005:59) and the Regentville artefact scatter (Silcox 1997:23-24), the assemblage is therefore of low to moderate significance in a local regional perspective.

6.4.1 Section Summary

- It is possible to conclude that the Fernhill artefact assemblage is consistent with the regional pattern of artefact types.
- The Fernhill assemblage raw material content is both similar to artefact assemblages with easy access to gravels of the Nepean River, but different to other assemblages located on other waterways and may reflect the relative availability of material types.
- In the wider regional perspective, discounting the results of the three artefact concentrations, the average density from the eastern precinct is generally on the lower end of the density measured at other sites.
- Within the three areas of artefact concentration, although artefact concentrations were higher than elsewhere in the local region, the overall size of the artefact scatters in both metres and artefact numbers are lower than elsewhere in the general vicinity.
- The assemblage is of low to moderate significance in a local regional perspective in comparison to assemblages from similar landforms at Erskine Park and Regentville.

6.5 Introduction to the Heritage Assessment Process

An assessment of significance seeks to determine and establish the importance or value that a place, site or item may have to the community at large. The concept of cultural significance is intrinsically connected to the physical fabric of the item or place, its location, setting and relationship with other items in its surrounds. The assessment of cultural significance is ideally a holistic approach that draws upon the response these factors evoke from the community.

Archaeological sites require a different approach to significance assessment because the extent of the heritage resource and the degree to which it can contribute to our understanding of the past is not fully known at the outset. For example it is the significance of the potential of the site to reveal information about the past that needs to be assessed when establishing the cultural significance of archaeological deposits.

Similarly, it is the significance of the type of information that can be revealed by the archaeological deposits, especially where the information is not available through any other source and the contribution it can make to our understanding of a place, which may also be of cultural heritage significance.

6.6 Basis for Assessment of Aboriginal Sites

The OEH Aboriginal Heritage Unit assessment criteria for archaeological significance have been developed to deal specifically with archaeological resources and cover:

A) Research Potential. This criterion is designed to qualify the significance of potential research which may be carried out at a site. Significance is apportioned according to the amount of new information which might be contained in the deposit, rather than the potential to yield a large number of artefacts. A site may have high significance under this criterion if it has an intact stratigraphic sequence and good integrity, the potential to provide a chronology extending into the past, or if it is connected to other sites within the region. Within this criterion are the subsets of representativeness and rarity. Representativeness is the ability of the site to demonstrate a representative type of site or deposit. This is important to maintain a contingency sample of all site types. Rarity is often described within the framework of representativeness as it relates to the distinctive features of a site which set it apart from similar sites.

B) Educational Potential. This allows the educational value of a site to be considered as a component of significance. Under this criterion, an archaeologist may assess the potential of a site to educate the general public. The OEH has acknowledged that this criterion is open to misinterpretation by archaeologists who have the ability to convey the value of a site to other archaeologists. The OEH recommends that, in cases where significance is determined on educational potential, the onus is on the archaeologist go to the public for an assessment of this value.

C) Aesthetic Significance. Aesthetic significance is not inherent in a place, but arises from the response that people have to it. It is pertinent to remember that this response can vary dramatically between cultures and social groups; therefore an assessment of significance based on aesthetic value should incorporate the views of different cultures.

For a full description of assessment procedures refer to the Aboriginal Cultural Heritage: Standards and Guidelines Kit (NPWS 1997). These criteria have been designed to deal specifically with the archaeological resource; however they do not provide a framework for the assessment of social significance to the Aboriginal community. For this reason, the criteria for assessment provided in the *Australia ICOMOS Charter for the Conservation of Places of Cultural Significance* (the Burra Charter) are sometimes also used to assess significance as they provide a framework for a more holistic assessment of significance.

6.7 Assessment of areas identified in this study

The comments made in this section are a reflection of significance from a scientific perspective only, based on established OEH approved significance assessment criteria. They are not intended as a reflection of cultural significance. Please refer to stakeholder comments for relevant views and statements of cultural significance (Appendices C, D and K).

Each of the criteria of assessment outlined in the previous section will now be considered in the sub-sections below.

6.7.1 Research Potential

As described in Section 6.6, the research potential of Aboriginal archaeological sites are based on the amount of new information which might be obtained from more detailed investigation of the site; the representativeness or ability of the site to demonstrate a type of site or deposit; and, the rarity or distinctiveness of the site in relation to other sites.

The results of the fieldwork have demonstrated that although parts of the eastern precinct contain a deep and partially stratified soil deposit, these areas only contained extremely low densities of Aboriginal cultural material. Areas which contained the highest artefact densities ([redacted]) corresponded with several of the shallowest test pits which were excavated, and rarely exceeded a depth of 300 millimetres. However, none of the three artefact scatters demonstrated an intact stratigraphic sequence or ability to provide a chronological sequence. While further excavation in the location of the three artefact concentrations would provide a larger dataset of Aboriginal lithics, it is unlikely that analysis of the recovered artefacts would provide new information on the Aboriginal occupation of the study area, which is a key requirement of the research potential criterion.

The test excavations have identified three, relatively small, open artefact scatters [redacted] which possibly represent either concurrent or consecutive camp locations which, while it may have been visited over a period of time, was not subject to intense occupation. As such, the artefact assemblage is representative of other such artefact scatters within the local, Hawkesbury-Nepean catchment area, and as such is considered typical of the region. While it is interesting to note two distinct artefact scatters located in close proximity, the presence of open campsites without *in situ* evidence of artefact production are relatively common on the Cumberland Plain and as such, the sites do not provide evidence of any particular rarity in terms of the their archaeology.

In summary, the overall research value of the study area is considered to be low for the following reasons:

- Limited potential for new information.
- Representative other artefact assemblages obtained from the local region.
- In the absence of distinctive features, open camp sites are not considered rare in the Cumberland Plain.
- If excavation yields further artefacts, these are unlikely to increase the research potential of the study area.

6.7.2 Educational Potential

The educational potential of a study area is best considered in light of its value to the general public, the Aboriginal stakeholders, and other researchers: those people whom the archaeologist has a duty to inform. Therefore the educational potential of the current study area is directly linked to its research potential: what can be learnt from further archaeological investigation, and whom will that knowledge benefit.

The educational value of a site to the general public is the most important criterion. The educational potential must be linked to something that can add to the public's knowledge of the Aboriginal past of a particular area.

The Aboriginal archaeology contained within the study area is not considered to be of high educational value. It is regarded that the excavation undertaken has been sufficient to successfully characterise the archaeological resource present. Although the present data does have value in the support of information to understanding past Aboriginal use of the landscape, it is considered that further examination of the eastern precinct would not add new information to the public's knowledge of past Aboriginal use of the study area.

The perspective of Aboriginal stakeholders is likely to differ from that of the archaeologist and that of the general public: for Aboriginal people, the archaeological record is a component of Aboriginal oral history and prehistory. As a non-Aboriginal person, the consultant is unable to offer such a valuation as has been provided in consideration of the general public or other researchers.

What can be offered in terms of considering educational value and Aboriginal stakeholders is that which has been offered before in this consideration of overall potential. That is, that the information from the current study area is unlikely to shed new light on Aboriginal people's use of landscape in times past, and may also be assessed as low. However, it is appreciated that perspectives do differ and unlike the general public or other researchers, Aboriginal stakeholders may see the compilation of further archaeological data of the same type as a confirmation of their story, which may be high educational value to them.

Lastly, although the consultant acknowledges that in consideration of a study area's educational potential, that its value in educating other archaeologists and researchers is not paramount, it is still of importance. Sufficient data currently exists to satisfy questions of site distribution on this landform type, and therefore the educational value of the current study area for other researchers is considered to be low.

The overall educational value of the study area is therefore considered to be low.

6.7.3 Aesthetic Significance

Professional archaeologists view aesthetic significance as an attribute that can only be culturally determined by Aboriginal stakeholders. As noted in Section 6.6, the concept of aesthetic significance deals with the response that people have to a particular place. This criterion differs from the other two in that it is not so readily quantifiable but takes into account a subjective or emotive response to a place as opposed to providing comment upon a tangible item (such as an Aboriginal artefact) or an issue of research relevance (such as an area of PAD).

The criteria that deal with research and educational significance are almost wholly concerned with the archaeological or 'scientific' significance. These are values that are determined by archaeologists, as has been included in sections 6.7.1 and 6.7.2. However this report must also take into account the Aboriginal cultural heritage value of a site or study area. It is this criterion that is utilised to such an end. Only members of the local Aboriginal community can advise of the Aboriginal cultural significance of an area or place.

To gain a determination of cultural significance, the consultant has approached and consulted with the identified Aboriginal stakeholders. This is in keeping with the OEH Aboriginal community consultation guidelines and ethical consultative practice. Each stakeholder organisation was asked to consider the study area from the perspective of the Aboriginal cultural heritage and offer any insights and/or knowledge they may have specific to the current study area.

7 IMPACT ASSESSMENT AND MANAGEMENT RECOMMENDATIONS

7.1 Conclusions

In accordance with the key aims of the archaeological assessment programme, the pedestrian survey identified a total of 11 sites of Aboriginal cultural heritage and three soil deposits with potential to contain further *in situ* cultural material within the eastern and western precincts of the Fernhill Estate.

A poor level of ground surface visibility was observed across the majority of the subject land. Visibility was generally limited to vehicle and access tracks, small erosional scars near gullies and under trees. Consequently, the numerous sites which were identified during the investigations were generally located in such limited areas of ground surface visibility. These sites are considered to represent a sample of the existing archaeological resource currently present within the subject land. Additional Aboriginal cultural heritage is to be expected within the study area but could not be detected as a result of the dense ground cover which reduced visibility.

Following the pedestrian survey, the eastern precinct was considered more archaeologically sensitive than the western precinct due to the presence of a substantial wetland and the confluence of a 2nd order creek with Littlefields Creek. [redacted]

Subsurface archaeological test excavations were undertaken in accordance to the Code of Practice in order to adequately demonstrate the nature of archaeological deposit [redacted]. The testing was only undertaken within the footprint of the proposed subdivision, and did therefore not fully test [redacted]. The subsurface testing showed [redacted] areas with higher artefact densities, [redacted] an overall density of artefacts considered as being below the background average for the Cumberland Plain.

Artefact concentrations were located on [redacted]. Despite test pits containing relatively high densities per pit, the results of the test excavations show that artefact numbers rapidly decrease in surrounding test pits and that artefact scatters are highly concentrated in size. Following the completion of an artefact analysis, the artefact assemblage obtained from the PAD is considered to be locally representative and does not contain associated archaeological features. In addition, the artefact concentrations have been adequately sampled through the test excavation process, and it is unlikely that further salvage excavations would provide additional information relating to the Aboriginal occupation of the Mulgoa Valley.

As a result of the test excavations, the following sites are to be updated on the AHIMS database:

- Fernhill Mulgoa 7 (#45-5-3242) is to be updated [redacted].
- Fernhill Mulgoa 12 (#45-5-3230) is to be updated [redacted], as well as artefact scatters Fernhill Mulgoa 13 and Fernhill Mulgoa 14.

In summary, although identified Aboriginal heritage has been recorded within the study area, there are no current constraints on the proposed rezoning of the western precinct. With regards to the eastern precinct, subsurface archaeological testing has confirmed that the majority [redacted] does not contain Aboriginal cultural heritage. Where artefact concentrations are present, the test excavations have adequately characterised both the nature and extent of the artefact scatters.

7.2 The Proposed Work and Potential Impacts

As described in Section 1.2, the study area consists of the boundaries of the entire Fernhill estate while the eastern and western precincts refer to the respective parts of the proposed development. The proponent proposes to construct a new rural residential development within the eastern and western precincts of the study area. The overall development proposal is due to be submitted to the Council and proposed subdivision plans are included as 1.2 and Figure 1.7. The development will include subdivision of the land for rural residences, the construction of multiple domestic buildings and associated infrastructure, and the construction of services and roads throughout the study area.

This assessment deals with considering the archaeological potential within both the eastern and western precinct, and to determine a methodology for assisting the proponent in reducing the impact to areas of known Aboriginal cultural heritage. Although the specific locations of impacts to the Aboriginal cultural material have been determined, this report will include an assessment of all Aboriginal cultural heritage previously identified in both the eastern and western precinct.

The proposed works associated with the residential subdivision will include:

- The clearance of existing vegetation within areas marked for development;
- Major earthworks associated with the installation of infrastructure, such as roads, services and houses;
- The creation of drainage basins.

Works are expected to commence upon receiving all applicable permits and consent in 2014 and are to be completed within five years.

7.3 Predicted Impact on the Potential Archaeological Resource

On the basis of the archaeological fieldwork detailed in this report, no sites of Aboriginal cultural heritage are likely to be impacted by the proposed subdivision in the western precinct. The proposed subdivision in the eastern precinct will impact on artefact scatter Fernhill Mulgoa 7 (#45-5-3242) and Fernhill Mulgoa 12 (#45-5-3230). However, large parts of the site Fernhill Mulgoa 12 (#45-5-3230) will not be affected by the proposed subdivision and will remain undisturbed during the construction process. These areas include parts of the southern ridgeline and north-eastern ridgeline which included the highest concentrations of artefacts.

While the clearance of existing vegetation is unlikely to significantly impact upon any archaeological material present, there is likely to be the greatest impact from the excavation work associated with the construction of roads and houses within eastern precinct and from excavation and construction of infrastructure associated with the residential subdivision. These works are focused in the locations shown on Figure 7.1.

It should also be noted that the harm occurring to Fernhill Mulgoa 12 (#45-5-3230) will, to a certain extent, be offset by the biobanking of land to the north and west of the subdivion. This land contains part of site Fernhill Mulgoa 12 (#45-5-3230) and the site Fernhill Mulgoa 11 (45-5-3229). This will ensure the ongoing preservation of Aboriginal cultural heritage within the Fernhill estate.In addition, the proponent has stated that other lands to be biobanked include previously recorded Aboriginal cultural heritage in the form of artefact scatter Fernhill Mulgoa 2 (#45-5-3237) and isolated artefacts Fernhill Mulgoa 3 (#45-5-3238) and Fernhill Mulgoa 4 (#45-5-3239).

The assessed heritage significance of the sites Fernhill Mulgoa 7 (#45-5-3242) and Fernhill Mulgoa 12 (#45-5-3230) were determined as being low (Section 6.5). Following consultation with the registered Aboriginal parties, no mitigation strategies were deemed necessary for the site.

This information has been omitted from the current document due to its potentially culturally sensitive nature. Such data is presented in the restricted version only.

Figure 7.1 Proposed plan of subdivision in eastern precinct in relation to known Aboriginal cultural heritage.

7.4 Recommendations

The following recommendations are derived from the results of the Aboriginal archaeological and cultural heritage assessment and the previous test excavation results. The recommendations have been developed after considering the archaeological context, environmental information, earlier consultation with the local Aboriginal community, the findings of the survey results, the previous excavation results, the predicted impact of the proposed development on archaeological resources and comments received from the current stakeholders on the draft report.

1. The proponent should apply for an AHIP under Section 90 of the *National Parks and Wildlife Act 1974* for the "community collection" and "harm to certain Aboriginal objects through the proposed works" for the site Fernhill Mulgoa 7 (#45-5-3242) and Fernhill Mulgoa 12 (#45-5-3230) which both lie within the development footprint in the eastern precinct. The AHIP must be granted prior to any work occurring which has potential to harm these sites.
2. For cultural reasons, Aboriginal community members may wish to monitor bulk excavation work conducted as part of the construction process. Prior to excavation in this area, the client should notify the participating Aboriginal groups of this work.
3. All artefacts obtained from the test excavations are to be repatriated in a location chosen within the Fernhill Estate specifically for this purpose, chosen in consultation with the proponent and the Aboriginal community.
4. If there are any changes to the Proposal then a re-analysis of the Aboriginal archaeological constraints should be untaken by a qualified archaeological consultant.
5. All contractors undertaking earthworks on site should be briefed on the protection of Aboriginal heritage objects under the *National Parks and Wildlife Act 1974* and the penalties for damage to these objects.
6. This report contains descriptions and locational data relating to Aboriginal archaeological and cultural material and sites. Should public exhibition of this document be required, it is advisable that Austral Archaeology be contacted in order to ascertain information which should be removed prior to public release.
7. A copy of this report must be made available to all Aboriginal stakeholders who have registered an interest in this project. Their contact details are available in Appendix L.
8. A copy of this report and a signed copy of an Aboriginal Cultural Heritage Assessment Report Cover Sheet (included as Appendix M) must be forwarded to the AHIMS registrar at the following address:

   AHIMS Registrar

   PO Box 1967

   Hurstville NSW 1481

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APPENDICES

Appendix A: Consultation Log

Date	Method	From	To	Notes
25/3/2013	Letter	David Marcus (AA)	OEH, Registrar, CMA, DLALC, Council, NTSCORP	Initial notification letters
26/3/2013	Email	Margaret Bottrell (CMA)	David Marcus (AA)	Advising that the CMA is unable to provide Austral with information regarding stakeholders, but will pass our letter on to the advisory committee.
28/4/2013	Advert	Penrith Star		Advert placed with closing date of 15 April 2013
2/4/2013	Letter	Shannon Williams (Office of the Registrar)	David Marcus (AA)	Advising that no Registered Aboriginal Owners are present, but recommending to contact DLALC.
3/4/2013	Letter/Email	Steve Randall (DLALC)	David Marcus (AA)	Steve Randall registered an interest on the project on behalf of DLALC
10/4/2013	Letter	Lou Ewins (OEH)	David Marcus (AA)	List of possible Aboriginal stakeholders provided from OEH
11/04/2013	Letter	David Marcus	Leanne Watson DCAC	Sent stakeholders registration letter with response of 29 April
11/04/2013	Letter	David Marcus	Sandra Lee DTAC	Sent stakeholders registration letter with response of 29 April
11/04/2013	Letter	David Marcus	Gordon Morton DACHA	Sent stakeholders registration letter with response of 29 April
11/04/2013	Letter	David Marcus	Gordon Workman DLO	Sent stakeholders registration letter with response of 29 April
11/04/2013	Letter	David Marcus	Des Dryer DALC Inc	Sent stakeholders registration letter with response of 29 April
11/04/2013	Letter	David Marcus	Cherie Carroll Turrise GCHAC	Sent stakeholders registration letter with response of 29 April

Date	Method	From	To	Notes
11/04/2013	Letter	David Marcus	Scott Franks	Sent stakeholders registration letter with response of 29 April
11/04/2013	Letter	David Marcus	Amanda Hickey AHCS	Sent stakeholders registration letter with response of 29 April
15/4/2013	Phone	Celestine Everingham (DACHA)	David Marcus (AA)	Registering interest on behalf of DACHA
16/4/2013	Email	Steven Hickey (WIG)	David Marcus (AA)	Registering interest on behalf of Widescope Indigenous Group
16/4/2013	Email	Amanda Hickey	David Marcus (AA)	Registering interest as an individual
17/4/2013	Email/Letter	Des Dyer (DALI)	David Marcus (AA)	Registering interest on behalf of Darug Aboriginal Landcare Incorporated
17/4/2013	Email/Letter	Scott Franks (Tocomwall)	David Marcus (AA)	Registering interest on behalf of Tocomwall
19/4/2013	Email/Letter	Gordon Workman (DLO)	David Marcus (AA)	Registering interest on behalf of Darug Land Observations
29/4/2013	Email	Gai Marheine (DTAC)	David Marcus (AA)	Registering interest on behalf of Darug Tribal Aboriginal Corporation
13/5/2013				Updated search done on Native Title website to confirm absence of NT claim
14/5/2013	Letter	David Marcus (AA)	OEH and DLALC	Letter confirming registered stakeholders
4/6/2013	Letter	David Marcus (AA)	All registered stakeholders	Copy of draft assessment and proposed subsurface testing methodology sent with closing date of **2 July 2013**
19/6/2013	Email/Letter	Amanda Hickey	David Marcus (AA)	Letter confirming consultation on methodology. No issues raised.
19/6/2013	Letter	David Marcus (AA)	OEH	Letter advising fieldwork methodology and start date.
19/9/2013	Letter	David Marcus (AA)	All registered stakeholders	Copy of draft assessment report and excavation results sent for review with closing date of **17 October 2013**
24/9/2013	Phone Call	Scott Franks (Tocomwall)	David Marcus (AA)	Phone call to raise various issues regarding consultation process and lack of opportunity of involvement on fieldwork
24/9/2013	Email	David Marcus	Scott Franks	Email to request clarification of issues at hand and to request that all further contact

Date	Method	From	To	Notes
		(AA)	(Tocomwall)	be in writing to prevent miscommunication
24/9/2013	Email	Scott Franks (Tocomwall)	David Marcus/Justin McCarthy (AA)	Response stating that not involving Tocomwall in fieldwork was "indirect discrimination" and that Tocomwall had not been consulted on the project.
25/9/2013	Email	Justin McCarthy (AA)	Scott Frank (Tocomwall)	Email advising that Justin was out of the country but would respond when back.
30/9/2013	Phone Call	Justin McCarthy (AA)	Scott Franks (Tocomwall)	Phone call to discuss issues relating to consultation process raised in earlier call.
8/10/2013	Fax	Celestine Everingham (DACHA)	David Marcus (AA)	Letter confirming support of recommendations and requesting monitoring of works when construction begins.
28/10/2013	Letter	David Marcus (AA)	All registered stakeholders	Letter
28/10/2013	Letter	David Marcus (AA)	All registered stakeholders	Letter confirming end of consultation period
TBA		David Marcus (AA)	All registered stakeholders	Additional review of amended report

Log of all correspondence undertaken as part of the *Aboriginal cultural heritage consultation requirements for proponents 2010*. Yellow text denotes correspondence registering an Aboriginal group as a stakeholder.

Appendix B: AHIMS Search Results

This information has been omitted from the current document due to its potentially culturally sensitive nature. Such data is presented in the restricted version only.

Appendix C: Community Consultation

Our ref: 1306
22 May 2013

Metropolitan Branch
Office of Environment and Heritage
Planning and Aboriginal Heritage Section
PO Box 668
Parramatta NSW 2124

Re: Aboriginal Heritage Impact Permit Application for the Proposed Part-Subdivision of the Fernhill Estate, Mulgoa, New South Wales

To whom it may concern,

I am writing to advise you that Simon & Brenda Tripp of 117 Mulgoa Road, Mulgoa NSW 2745 with Angas Securities Pty Ltd have commissioned Austral Archaeology Pty Ltd to undertake an Aboriginal cultural heritage assessment in regards to a proposed partial subdivision within Fernhill Estate, located between Mulgoa Road and Fairlight Road, north-west of Mulgoa. The study area is situated within the City of Penrith LGA and is located within the boundaries of the Deerubbin Local Aboriginal Land Council.

This project will include individuals from the Deerubbin Local Aboriginal Land Council and other local Aboriginal community representatives who register their interest. Aboriginal stakeholders will be invited to register their interest through a public notice to be published in a local newspaper in accordance with the OEH's *Aboriginal Cultural Heritage Consultation Requirements for Proponents 2010*. Registration of interest will close 14 days after the advert appears in the newspaper. Aboriginal stakeholders may still register their interest after this date however formal consultation may commence from this time.

Placement of these public notices and advisement of the project's commencement to local councils, Catchment Management Authorities and the Registrar is a requirement under the OEH's *Aboriginal Cultural Heritage Consultation Requirements for Proponents 2010*. Austral Archaeology welcomes any advice and assistance your organisation may provide in identifying Aboriginal owners in the Mulgoa area.

Yours faithfully,

David Marcus
Senior Archaeologist
Austral Archaeology Pty Ltd
Shop 1, 92 Percival Road, Stanmore 2048, NSW
T 02 9568 6701
F 02 9568 6702
M 0417 084 396
E davidm@australarchaeology.com.au

Example of letters sent to OEH, the Local Aboriginal Land Council, the Registrar of the *Aboriginal Land Rights Act 1983*, the Native Title Services Corporation Limited, the Local Government Authority and the local Catchment Management Authority.

Public Notices

Proposed Part-Subdivision, Fernhill Estate Aboriginal Assessment

Registration of Interest Simon & Brenda Tripp of 117 Mulgoa Road, Mulgoa NSW 2745 with Angas Securities Pty Ltd propose to subdivide part of the land in the Fernhill Estate, Mulgoa. On behalf of Simon & Brenda Tripp, Austral Archaeology Pty Ltd wish to consult Aboriginal people to assist in a cultural heritage assessment which may result in an AHIP. Consultation is required to help the Director General of the OEH consider the application. Consultation will be accordance with the OEH's Consultation Requirements 2010. Parties with cultural knowledge relevant to the significance of Aboriginal object(s) and/or place(s) are invited to register interest. More information about the project will be provided after registration. Please note, registration does not guarantee employment.

Contact: David Marcus
Austral Archaeology Pty Ltd, Shop 1 92 Percival Road Stanmore NSW 2048
Tel: 0295686701 Fax: 0295686702
Email: davidm@australarchaeology.com.au

Registration closes 15 April 2013.

Copy of the advert which was placed in the Penrith Star on 28 April 2013.

David Marcus

From: Margaret Bottrell [Margaret.Bottrell@cma.nsw.gov.au]
Sent: Tuesday, 26 March 2013 2:43 PM
To: davidm@australarchaeology.com.au
Subject: Fernhill Estate Mulgoa

To David Marcus

Under the act that we work under I am not allowed to pass on the information that you requested in your letter dated 25 March 2013 **Re: Aboriginal Heritage Impact Permit Application for the proposed Fernhill Estate Residential Subdivision, Mulgoa, New South Wales**

The Hawkesbury Nepean CMA has no interest in this project, and will pass your letters on to the members of our Advisory Committee for their information. If they comment on this, it is an individual person and not a representative of the Hawkesbury Nepean Catchment Management Authority.

Regards,

Margaret Bottrell | **Aboriginal Community support Officer**
Hawkesbury-Nepean Catchment Management Authority
NSW Government Office Block Level 4, 2-6 Station St | Penrith | PO Box 4515 | Penrith Westfield NSW 2750
T: 02 472 53049 | F: 02 4725 3088 E:margaret.bottrell@cma.nsw.gov.au
W: www.hn.cma.nsw.gov.au

1

Response from Catchment Management Authority

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

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

David Marcus
Senior Archaeologist
Austral Archaeology Pty Ltd
Shop 1, 92 Percival Road
STANMORE NSW 2048

2nd April, 2013

Dear David

Re: Request - Search for Registered Aboriginal Owners

I refer to your letter dated 25th March, 2013 regarding Aboriginal Cultural Heritage Assessment within Mulgoa in NSW.

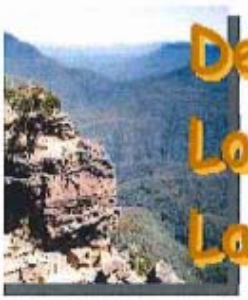
I have searched the Register of Aboriginal Owners and the project area described *does not appear* to have Registered Aboriginal Owners pursuant to Division 3 of the *Aboriginal Land Rights Act* 1983 (NSW).

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

Yours sincerely

Shannon Williams
Project Officer
Office of the Registrar, *Aboriginal Land Rights Act* (1983)

Response from Office of the Registrar.



Deerubbin Local Aboriginal Land Council

Level 2, 9 Tindale Street
PENRITH NSW 2750

PO Box 40
Penrith BC
NSW 2751 AUSTRALIA

T: (02) 4724 5600
F: (02) 4722 9713
E: Staff@deerubbin.org.au
W: http://www.deerubbin.org.au

Austral Archaeology Pty Ltd
Shop 1, 92 Percival Road
STANMORE NSW 2042

3 April 2013

SUBJECT: PROTECTION OF ABORIGINAL CULTURAL HERITAGE
Register of Interest to participate in this project.
Fernhill Estate Residential Subdivision,
Mulgoa NSW

Attention: David Marcus: Senior Archaeologist

I refer to your letter of 25th March 2013

Deerubbin Local Aboriginal Land Council ("Deerubbin LALC") wishes you to formally register our requirement to participate in the Aboriginal cultural heritage of Fernhill Estate Residential Subdivision, Mulgoa NSW.

Should you require any further information please do not hesitate to contact me on (02) 4724 5600

Yours Faithfully

S Randall
Steve Randall
(Aboriginal Cultural Heritage Officer)

Response from Deerubbin Local Aboriginal Land Council registering an interest in the project.

NSW GOVERNMENT | Office of Environment & Heritage

Our reference: DOC13/11875

Mr David Marcus
Senior Archaeologist
Austral Archaeology
Shop 1, 92 Percival Road
STANMORE NSW 2048

Dear Mr Marcus,

Thank you for your letter dated 25/3/2013 to the Office of Environment and Heritage (OEH) regarding obtaining a list of the Aboriginal stakeholders that may have an interest in the project at Fernhill Estate, Mulgoa (Penrith LGA).

Before making an application for the issue of an Aboriginal Heritage Impact Permit, the applicant must carry out an Aboriginal community consultation process in accordance with the National Parks and Wildlife Regulation 2009 and completed to the stage described in subclause 80C.

Please find attached the list of Aboriginal stakeholders known to OEH that may have an interest in the project. OEH's list of regional stakeholders is a list of groups, organisations or individuals who may hold cultural knowledge relevant to a proposal in a region. Consultation with Aboriginal people should not be confused with employment. Inclusion on the OEH's list is not an automatic right to employment. It is the decision of a proponent on who they choose to engage to deliver services based on a range of considerations including skills, relevant experience, and OHS considerations. To be clear, the proponent is under no obligation to employ Aboriginal people registered for consultation.

Further, receipt of this information does not remove the requirement of a proponent/consultant to advertise in local print media and contact other bodies seeking interested Aboriginal parties. Consultation with Aboriginal stakeholders must be in accordance with the *Aboriginal Cultural Heritage Consultation Requirements for Proponents 2010* which can be found on the Office of Environment and Heritage (OEH) public website by accessing the following link:

http://www.environment.nsw.gov.au/resources/cultureheritage/commconsultation/09781ACHconsultreq.pdf

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

Yours sincerely

3/4/13

LOU EWINS
Manager Planning & Aboriginal Heritage
Office of Environment and Heritage
Department of Premier and Cabinet

PO Box 668 Parramatta NSW 2124
Level 7, 79 George St Parramatta NSW 2150
Tel: (02) 9995 5000 Fax: (02) 9995 6900
ABN 30 841 387 271
www.environment.nsw.gov.au

Aboriginal Stakeholders that may have an interest in the Western Sydney area and surrounds

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
Darug Aboriginal Land Care Inc	Des Dyer	0408 360 814	18a Perigee Close, Doonside 2767
Gunjeewong Cultural Heritage Aboriginal Corporation	Cherie Carroll Turrise	(02) 6355 4110	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.
Scott Franks		0404 171 544	PO Box 76, Caringbah NSW 1495
Deerubbin LALC – Blacktown LGA	Kevin Cavanagh	(02) 4724 5600	2/9 Tindale St, Penrith NSW 2750
Amanda Hickey Cultural Services	Amanda Hickey	0434 480 588	41 Dempsey Street, Emu Heights, NSW 2750 *Amanda is Wonnarua

Response from the Office of Environment and Heritage providing contact details for Aboriginal stakeholders with a potential interest in the project.

Reference: 1306_Fernhill
22 May 2013

Leanne Watson
Darug Custodial Aboriginal Corporation
PO Box 81
Windsor NSW 2756

Re: Aboriginal Archaeological and Cultural Heritage Project, Proposed Fernhill Estate, Mulgoa NSW

Dear Leanne,

I am writing to advise you that Simon & Brenda Tripp of 117 Mulgoa Road, Mulgoa NSW 2745 with Angas Securities Pty Ltd has commissioned Austral Archaeology Pty Ltd to undertake an Aboriginal cultural heritage assessment in regards to a proposed residential subdivision within Fernhill Estate, located between Mulgoa Road and Fairlight Road, north-west of Mulgoa. The study area is situated within the City of Penrith LGA and is located within the boundaries of the Deerubbin Local Aboriginal Land Council

I have been advised by the Office of Environment and Heritage (OEH) that your organisation may have an interest in registering for this project as an Aboriginal Stakeholder.

Austral Archaeology will actively seek to involve stakeholders in decisions regarding Aboriginal cultural heritage issues arising from this project. Additional information will be made available to all registered Aboriginal stakeholders as the project progresses. The purpose of consultation is to assist the proposed applicant in the preparation of an AHIP and to assist the Director General of the OEH in his or her consideration and determination of the application.

Applications for Stakeholder registration will close on 29 April 2013. At this time, details of all Aboriginal stakeholders will be forwarded to the OEH and DLALC unless your organisation specifically requests otherwise.

Please do not hesitate to contact me for further information.

Yours sincerely,

David Marcus
Archaeologist
Austral Archaeology Pty Ltd
Shop 1, 92 Percival Road, Stanmore 2048, NSW
davidm@australarchaeology.com.au
T 02 9568 6701
F 02 9568 6702
M 0417 084 396

Example of letter sent to potential Aboriginal stakeholders requesting registration.

From: WIDESCOPE . [widescope.group@live.com]

Sent: Tuesday, 16 April 2013 2:48 PM

To: davidm@australarchaeology.com.au

Subject: Registration

Widescope Indigenous Group
Head Office Contact : **0425 232 056**

Address H/O: 73 Russell St, Emu Plains NSW 2750

Contact : Steven Hickey Mobile : 0425230693

E-mail : **Widescope.group@live.com**

David Marcus,

Thank you for your consideration, Widescope would like to register their interest in the cultural heritage assessment and any upcoming survey fieldwork at Fernhill estate Mulgoa NSW.

Please feel free to contact me on the details supplied above, I look forward to hearing from you.

Thank you

Steven Hickey

Registration of Widescope Indigenous Group by email.

From: Amanda Hickey [amandahickey@live.com.au]

Sent: Tuesday, 16 April 2013 2:56 PM

To: davidm@australarchaeology.com.au

Subject: Registration

Contact Details
Contact : **Amanda Hickey**
Address : 41 Dempsey Street, Emu Heights
Mobile : 0434 480 558

Email : amandahickey@live.com.au
ABN : 498 242 132 40

Primary Contact Person

ATT : David Marcus

Archaeologist

Thank you for your consideration, I would like to register my interest in the cultural heritage assessment, and any upcoming survey fieldwork at fernhill estate, Mulgoa NSW.

Please feel free to contact me on the details supplied above, I look forward to hearing from you.

Thank you

Amanda Hickey

Registration of Amanda Hickey by email.

Darug Aboriginal Landcare Incorporated

18a Perigee Close

Doonside 2767NSW

ABN 71 301 006 047

David Marcus
Archaeologist
Austral Archaeology Pty Ltd
SHOP 1, 92 Percival Road
Stanmore 2048
NSW

Re: 'Fernhill Estate Mulgoa NSW'.

Dear David,

The Darug Aboriginal Landcare has no objections to the proposed development to Fernhill Estate Mulgoa as this area is on Darug Land.

Our organization would like to register and be consulted and take part in any field Heritage assessment.

We look forward to working with you in the future.

Kind regards

Des Dyer
Public Officer
Darug Aboriginal Landcare Incorporated
Mobile 0408 360 814

Email desmond4552@hotmail.com

Registration of Darug Aboriginal Landcare Incorporated by letter.

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

16 April 2013

David Marcus
Senior Archaeologist
Austral Archaeology Pty Ltd
Via email: davidm@australarchaeology.com

Dear David

RE: Aboriginal Archaeological & Cultural Heritage Project,
Proposed Fernhill Estate, Mulgoa NSW

Tocomwall is seeking *primary involvement* in all consultation meetings and field work 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 understand the proposed methodology to be the single paragraph in your letter dated 25 July 2012 and due to the brief information provided, we are unable to comment until a more detailed methodology is provided for comment.

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.

Yours faithfully

Scott Franks
Native Title & Environmental Services Manager

Integrating Landscape Science & Aboriginal Cultural Knowledge for our Sustainable Future

Registration of Tocomwall by letter.

DARUG - LAND - OBSERVATIONS

ABN: 87239202455
E-MAIL: gordow51@bigpond.net.au
PO BOX: 571 Plumpton. NSW 2761
Phone: 029831 8868 or 0415 663 763

18-4-2013

David Marcus
Austral Archaeology Pty Ltd

Notification and Registration of ALL Aboriginal Interests
Re: ***Fernhill Estate Mulgoa NSW***

Please be advice that D.L.O is seeking to be involved in any and all consultation meetings and field work.
This office specializes in Aboriginal and community consultation. An has a membership that comprises of Traditional owners from the area in question those retain strong story and song lines and oral history and continued contact. We would also like to state that we do not except or support any person or organization that are NOT from the DARUG Nation that comments regarding the said area.
Please also be advised that this aboriginal Organization does not do volunteer work or attend unpaid meetings. I hope that you advise your client of this so that, This Group will not be discriminated against and refused paid field work.

All Correspondence should be emailed to the following
gordow51@bigpond.net.au

Yours faithfully

Uncle
Gordon Workman
Darug Elder

Sites Officer

Registration of Darug Land Observations by letter.

From: Sandra Lee [darug_tribal@live.com.au]

Sent: Monday, 29 April 2013 11:23 AM

To: David Marcus

Subject: Aboriginal Archaeological and Cultural Heritage Project, Proposed Fernhill Estate, Mulgoa NSW

Good Morning David
Darug Tribal Aboriginal Corporation would like to register their interest for Aboriginal Archaeological and Cultural Heritage Project, Proposed Fernhill Estate, Mulgoa NSW.

Regards
Gai Marheine
Admin Coordinator

Darug Tribal Aboriginal Corporation
PO Box 441 Blacktown NSW 2148
PH/FAX: (02) 9622 4081

Mob:0415 439 325

ABN: 77184151969 ICN:2734

Darug People

The True owners & Spiritual Custodians of Darug Land

www.darug.org.au

Registration of Darug Tribal Aboriginal Corporation by email.

Our ref: 1306
22 May 2013

Metropolitan Branch
Planning and Aboriginal Heritage
Environment Protection and Regulation Group
Office of Environment and Heritage
PO Box 668
Parramatta NSW 2124

Re: Aboriginal Heritage Impact Permit Application for the Proposed Fernhill Estate Residential Subdivision, Mulgoa, New South Wales

Your ref: DOC13/11875

To whom it may concern,

I refer to your letter of 3 April 2013 and write to advise you that the period of Stakeholder consultation undertaken by Austral Archaeology Pty Ltd in relation to this project has now closed. In accordance with Section 4.1.6 of the DECCW's *Aboriginal cultural heritage consultation requirements for proponents 2010* (henceforth, the Requirements), I am writing to provide details of the Aboriginal people who have registered an interest in this project.

Deerubbin Local Aboriginal Land Council (DLALC) were contacted under Section 4.1.2 of the Requirements on 22 May 2012 with a request 25 March 2013 for information on Aboriginal people who may hold cultural knowledge related to the study area. Although DLALC did not provide information regarding other organisations who may hold cultural knowledge, DLALC registered an interest in the project on 3 March 2013.

A public notice was placed in the *Penrith Star* on 28 March 2013, and a copy of the notice is included for your records.

A search of the Online Native Title Vision database of the National Native Title Tribunal showed no Native Title claims within the study area. These results have been confirmed on 13 May 2013.

Of the groups which the OEH advised contacting, the following replies were received:

- Darug Tribal Aboriginal Corporation registered an interest on 29 April 2013 by email. A copy of the registration letter is included.
- Darug Aboriginal Cultural Heritage Assessments registered an interest on 15 April 2013 by phone.
- Darug Land Observations registered an interest on 19 April 2013 by email and letter. A copy of the registration letter is included.
- Darug Aboriginal Land Care Inc. registered an interest on 17 April 2013 by email and letter. A copy of the registration letter is included.
- Scott Franks registered an interest on behalf of Tocomwall on 17 April 2013 by email and letter. A copy of the registration letter is included.
- Amanda Hickey registered an interest as an individual stakeholder on 16 April 2013 by email. A copy of the registration letter is included.

In addition to the stakeholders which the OEH recommended contacting, please note that the following response was also received:

- Stephen Hickey registered an interest on behalf of Widescope Indigenous Group on 16 April 2013 by email. A copy of the registration letter is included.

AUSTRAL ARCHAEOLOGY PTY. LTD. SHOP 1, 92-96 PERCIVAL ROAD, STANMORE NEW SOUTH WALES 2048
TELEPHONE 02 9568 6701 FAX 02 9568 6702 AUSTRAL ARCHAEOLOGY PTY LTD ABN 25008 174 829

No reply has been received from the following organisations which we were also advised to contact:

- Darug Custodial Aboriginal Corporation
- Gunjeewong Cultural Heritage Aboriginal Corporation

Please do not hesitate to contact me if you require any further information in regards to the above.

Yours faithfully,

David Marcus
Senior Archaeologist
Austral Archaeology Pty Ltd

p: 02 9568 6701
f: 02 9568 6702
m: 0417 084 396

Example of letter sent to OEH and the Deerubbin Local Aboriginal Land Council following the completion of the stakeholder registration period.

Appendix D: Aboriginal Community Review of Draft Excavation Methodology

Reference: 1306_Fernhill
11 September 2013

Celestine Everingham
Darug Aboriginal Cultural Heritage Assessments
90 Hermitage Road
Kurrajong Hills NSW 2758

Re: Proposed Aboriginal Archaeological Test Excavations, Fernhill Estate Residential Subdivision, Mulgoa, New South Wales.

Dear Celestine,

I am writing to you as your organisation has previously registered an interest in our Aboriginal archaeological and cultural heritage assessment for the Fernhill Estate, Mulgoa, New South Wales. I can advise that Austral Archaeology have now finished writing the draft assessment and I am pleased to include a copy for you to review.

As a consequence of the assessment, we have identified that the proposed subdivision of the eastern precinct will disturb known Aboriginal artefact scatters, and that the area may contain a Potential Archaeological Deposit (PAD). The western precinct will not affect any known Aboriginal cultural heritage and previous archaeological investigations have noted that the area is unlikely to contain any PADs.

In line with the *Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales* (DECCW 2010) [the Code of Practice], Austral Archaeology have recommended that subsurface test excavations are undertaken in order to characterise the nature and significance of the subsurface deposit present within PAD Fernhill Mulgoa 12 (AHIMS #45-5-3230). This is the only PAD which is to be directly affected by the proposed development.

In line with our recommendations in the Aboriginal cultural heritage assessment, Cubelic Holdings Pty Ltd has requested that Austral Archaeology undertake the necessary subsurface test excavations as a preliminary step in the possible application for an Aboriginal Heritage Impact Permit (AHIP) for the eastern precinct.

The proposed development will have a direct impact upon the following sites:

- Artefact scatter Fernhill Mulgoa 7 (AHIMS #45-5-3242; a low density artefact scatter consisting of two quartz fragments and one fragment of a ground basalt axe.
- PAD Fernhill Mulgoa 12 (AHIMS #45-5-3230); a PAD located on the eastern bank of a 2nd order stream..

In addition, the proposed development may adversely impact the following site:

- Artefact scatter Fernhill Mulgoa 6 (AHIMS #45-5-3241); an artefact scatter consisting of 23 artefacts located along low ground to the east of the creek. The artefact scatter is located in an area which is to be preserved, between the edge of the creek and the proposed subdivision.

The archaeological testing is intended to characterise the nature of the subsurface stratigraphy within the PAD, which will assist in confirming whether further Aboriginal cultural heritage is likely to be present and whether further mitigation strategies are required.

In order to fully assess the nature and extent of these sites prior to applying for an AHIP, Austral Archaeology Pty Ltd have developed an archaeological testing methodology which follows the requirements of the Code of Practice.

Excavation Strategy

- We have determined that a sample of at least 74 pits will be required to test the area of the PAD. These test pits will be used to identify the archaeological potential within areas of proposed development across the PAD (Figure 1).
- Should a test pit contain Aboriginal artefacts, dependant on artefact frequencies it will be necessary to either extend the initial test pit or to excavate new test pits at 5 or 10 metres from the initial test pit along the cardinal axis'. This decision will need to be made by the excavation director, based on consultation in the field with the Aboriginal stakeholders.
- All test pit locations are based on a grid system which have been arranged on a GIS program as per Requirement 16a (1) of the Code of Practice. The exact co-ordinates of each test pit are to be determined prior to field work commencing. Each test pit will be located in the field using a combination of a handheld GPS, topographic features and baseline and offset measurement.
- Each test pit will be 500 millimetres^2 in size and will be manually excavated by spit. Spit depths will be set at between 50 and 100 millimetres to ensure that the vertical distribution of archaeological material can be more accurately monitored and recorded.
- All test pits will be excavated to a culturally sterile deposit, which in most instances will be the b-horizon. In the case of Blacktown (bt) soil, which is found within the study area, this is typically a yellow or reddish compact clay and unless contradicted by direct observation of cultural material, this deposit will be considered to be sterile and serve as the limits of excavations.
- Should intact features and/or artefact concentrations be uncovered, spit depths will be reduced to 50 millimetres to ensure that vertical distribution of archaeological material can be monitored.
- Recording of each test pit will be conducted during excavation with any disturbance or features noted. Each finds bag will be marked with the site name, pit number and date to allow accurate tracking of all excavated materials throughout each stage of fieldwork to avoid cross contamination. At least one finds bag will be retained for each spit even if no artefacts are recovered to ensure each excavation unit is accounted for.
- When wet sieving is utilised, all excavated material will be transferred to a sieving station for processing. In the case of dry sieving, all excavated material will be sieved near to the test pit from which it was excavated, allowing for a 1 metre buffer zone around the test pit.
- 100% of excavated deposit will be sieved through a 5 millimetre and 3 millimetre nested sieve. Wet sieving is the preferred option and water for the sieving station would be provided by a water tanker and pump. Should dry sieving be used at any point during the excavation, the use of a 3 millimetre sieve is optional, dependant on the soil conditions encountered, as per Regulation 16a (8) of the Code of Practice.
- Artefacts will be collected from the sieves and bagged according to excavation pit provenance.
- Any non-Aboriginal cultural material (post-1788) will also be collected from the sieve to document disturbance through the deposit.
- Should historical archaeological features be present then excavation may need to cease so that officials of the NSW Heritage Branch may assess the find.
- In the case that human skeletal remains are uncovered during the testing of the study area, all work is to cease immediately; the NSW Police are to be informed and the Office of the Environment and Heritage is to be contacted on the Environment Line (131555). It is likely that a suitably qualified anthropologist will need to be brought in to determine whether the remains are of European or Indigenous origins. If the skeletal remains are of European origin, then subsequent advice will be required from the NSW Heritage Branch. If the skeletal remains are of Indigenous origin, then subsequent advice and consultation will be required from the OEH, Local Aboriginal Land Council and stakeholder groups;

- If dry sieving has been used, material from each test pit will be returned to the pit for backfilling.
- If wet sieving has been used, no backfilling will be undertaken.
- All Aboriginal material recovered will be analysed on site by a suitably qualified specialist, who is conversant with the material being studied.

Artefact Collection and Storage

Collection and salvage of all artefacts will be undertaken according to the following methodology.

- Each artefact identified during the subsurface testing will be relocated and temporarily stored at Austral's office located at Shop 1/92 Percival Road, Stanmore NSW 2048. After the submission of the final subsurface testing report, the collected Aboriginal material will be taken to a location within or near to the Fernhill study area agreed upon by all registered Aboriginal stakeholders.
- The land owner on whose property this area may be located is to be approached for consent to return the Aboriginal archaeological material to site. If the site where the artefacts are to be returned is situated upon Crown Land then the appropriate Local Government Area is to be approached and informed.
- A representative of all registered Aboriginal stakeholders and the Client are to be invited to attend/participate in the return of artefacts to country.
- A GPS recording of the location is to be made and recorded as a new Aboriginal site. A site card will be completed and the resulting site registered on the OEH's Aboriginal Heritage Information Management System (AHIMS).
- Should it be necessary to move these artefacts at a later date it is a requirement that the identified Aboriginal stakeholders and the OEH be contacted and a suitable relocation site agreed upon. This new site will also require GPS co-ordinates and all necessary details to be recorded with the OEH AHIMS.

Consultation

The *Aboriginal Cultural Heritage Consultation Requirements for Proponents 2010*, Section 3.4 on page 9 states that consultation "is not to be confused with employment" and that consultation "does not include the employment of Aboriginal people to assist in [a] field assessment". However, all Aboriginal stakeholders who have registered an interest on this project will still be fully consulted as per the guidelines.

At this stage, the proponent has requested that all registered Aboriginal stakeholders provide confirmation that they have the relevant insurances in place and details of hourly or daily rates charged for providing a site officer to assist with the subsurface test excavations.

Consultation

Please take the time to read this letter and the associated report, and please feel free to contact me on any of the numbers provided below should you wish to raise any concerns or if you require additional information.

In summary, at this stage each stakeholder is being asked to provide the following:

- A letter stating that, on behalf of your organisation, you have been consulted in regards to the proposed archaeological test excavations within the Fernhill estate, Mulgoa. In this letter could you please make reference to the methodology and whether you agree/disagree with the methodology or have any additional comments on it?
- Information regarding the relevant insurance policies held by your organisation and an hourly or daily rate charged for having a site officer assist with the excavation.

- Details on the availability of your site officer for June and July. Please note that final dates for the excavation have not been decided but may occur in early July, dependant on the results of consultation with other Aboriginal stakeholders.

In order to allow me to plan for the commencement of fieldwork, I would request that your reply reaches this office no later than **2 July 2012**, and I thank you for your help with this matter.

Yours sincerely,

David Marcus
Archaeologist
Austral Archaeology Pty Ltd
Shop 1, 92 Percival Road, Stanmore 2048, NSW
E davidm@australarchaeology.com.au
T 02 9568 6701
F 02 9568 6702
M 0417 084 396

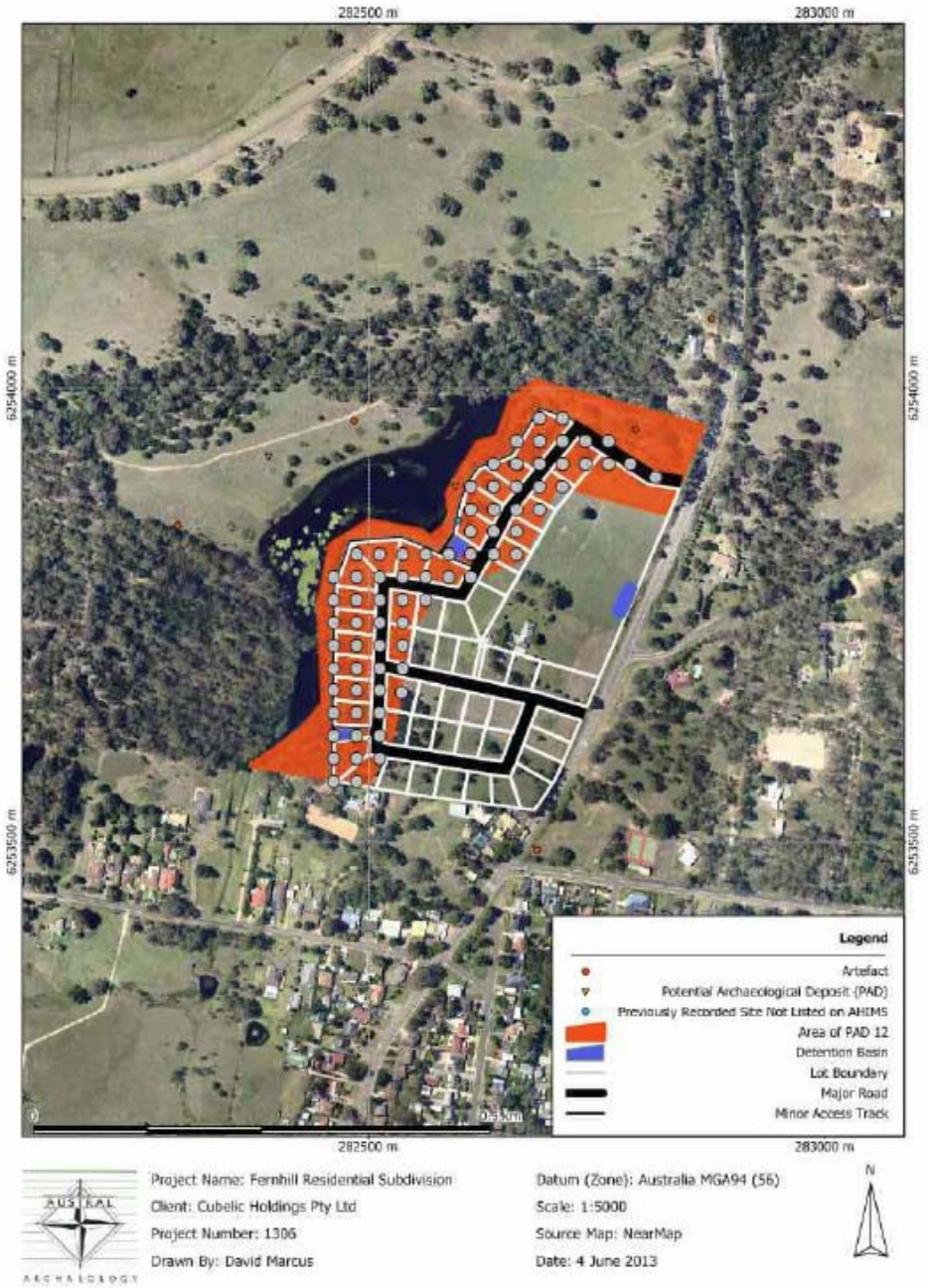


Figure 1 Proposed test pit locations.

Example of fieldwork methodology letter sent to all registered Aboriginal stakeholders and OEH. Note that registered Aboriginal stakeholders were also supplied a copy of the draft assessment.

Contact Details
Contact : Amanda Hickey
Address : 41 Dempsey Street, Emu Heights
Mobile : 0434 480 558
Email : amandahickey@live.com.au
ABN : 498 242 132 40

Contact Details
Contact : **Amanda Hickey**
Address : 41 Dempsey Street, Emu Heights
Mobile : 0434 480 558
Email : amandahickey@live.com.au
ABN : 498 242 132 40

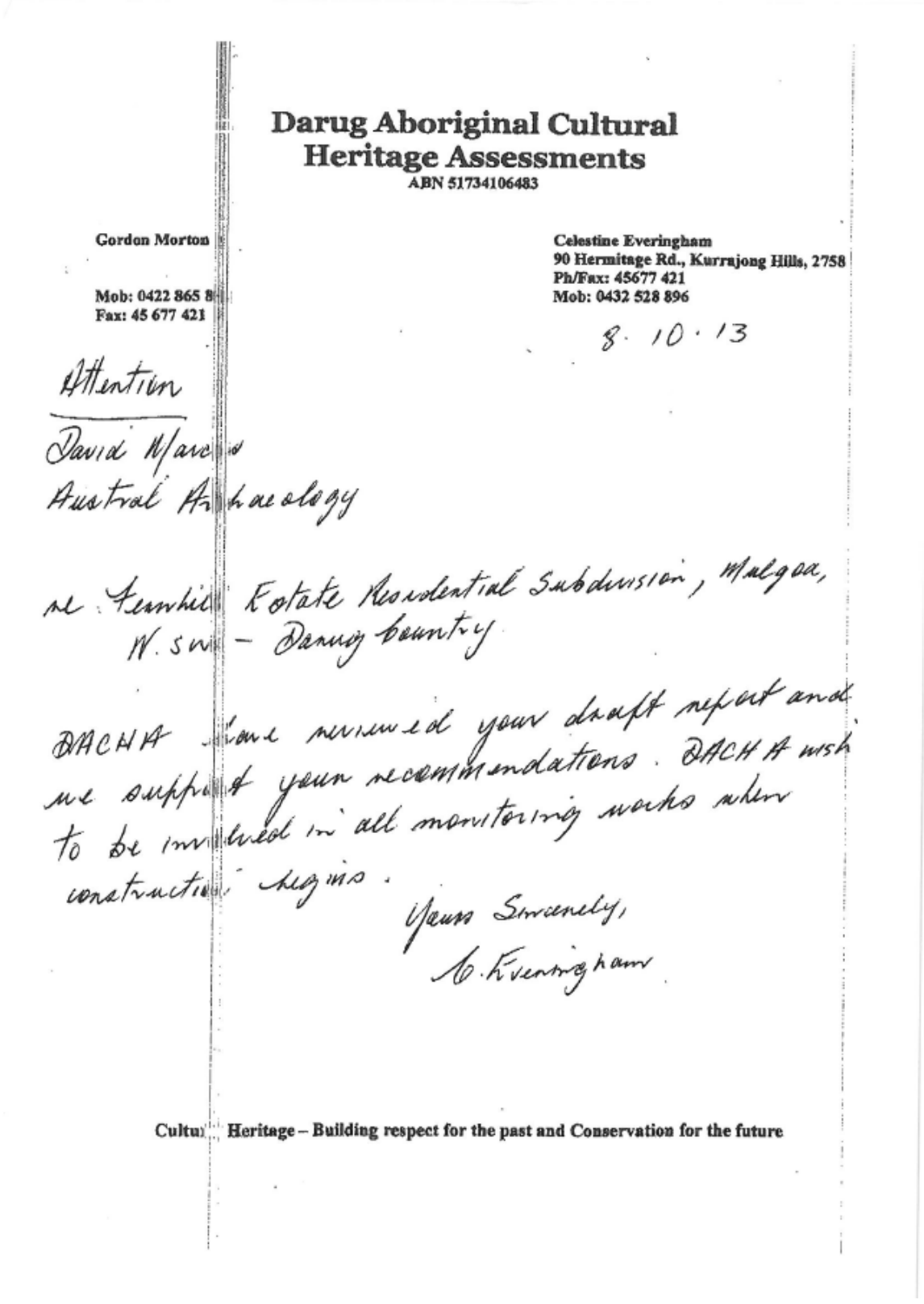
Primary Contact Person
ATT : David Marcus
Archaeologist
Austral Archaeology Pty Ltd

Austral Archaeology Pty Ltd has consulted Amanda Hickey Cultural Services in regards to the proposed archaeological test excavations within the fernhill estate, Mulgoa.
Amanda Hickey Cultural Services agrees with the methodology.

Please feel free to contact me on the details supplied above, I look forward to hearing from you.

Response to fieldwork methodology from Amanda Hickey.

Appendix E: Aboriginal Community Review of Draft Excavation Assessment



Darug Aboriginal Cultural Heritage Assessments
ABN 51734106483

Gordon Morton
Mob: 0422 865 8
Fax: 45 677 421

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

8. 10. 13

Attention
David Ma[illegible]
Austral Archaeology

re Fernhill Estate Residential Subdivision, Mulgoa, W. S[illegible] – Darug country

DACHA have reviewed your draft report and we support your recommendations. DACHA wish to be involved in all monitoring works when construction begins.

Yours Sincerely,
C. Everingham

Cultu[illegible] Heritage – Building respect for the past and Conservation for the future

Copy of response to review of draft assessment by DACHA

Appendix F: Contact Details for Registered Aboriginal Stakeholders

Stakeholder Group	Contact Name	Contact Email Address	Postal Address
	Amanda Hickey	amandahickey@live.com.au	41 Dempsey Street, Emu Heights NSW 2750
Darug Aboriginal Cultural Heritage Assessments (DACHA)	Celestine Everingham / Gordon Morton	-/-	90 Hermitage Road, Kurrajong Hills NSW 2758
Darug Aboriginal Landcare Incorporated (DALI)	Des Dyer	Desmond4552@hotmail.com	18a Perigee Close, Doonside NSW 2767
Deerubbin Local Aboriginal Land Council (DLALC)	Steve Randall / Kevin Cavanagh	staff@deerubbin.org.au	2/9 Tindale Street, Penrith NSW 2750
Darug Land Observations (DLO)	Gordon Workman	Gordow51@bigpond.net.au	PO Box 571, Plumpton NSW 2761
Darug Tribal Aboriginal Corporation (DTAC)	Gai Marheine	Darug_tribal@live.com.au	PO Box 441 Blacktown NSW 2148
Tocomwall Pty Ltd	Scott Franks	scott@tocomwall.com.au sarah@tocomwall.com.au	PO Box 76, Caringbah NSW 1495
Widescope Indigenous Group (WIG)	Steven Hickey	Widescope.group@live.com	73 Russell Street, Emu Plains NSW 2750

Appendix G: Aboriginal Cultural Heritage Assessment Report Cover Sheet

Office of Environment & Heritage

Aboriginal Cultural Heritage Assessment Report Cover Sheet

Report Title

Author(s) Name

Author(s)' Organisation Name (if applicable)

Author(s) contact details

Email:
Phone:
Fax:

Address of Subject Area

No: Street:
Suburb: State: Postcode:
Title Reference:
Local Government Area:
Other:

Report prepared for

Company Name:

Contact Person:
Address:

Email:
Phone:
Fax:

Date of Report

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Appendix H: Archaeological Report