Rouse Hill Anglican College Masterplan

Aboriginal Cultural Heritage Assessment Report and Archaeological Technical Report

Report prepared for Anglican Schools Corporation

January 2018

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Report Register

The following report register documents the development and issue of the report entitled Rouse Hill Anglican College Masterplan—Aboriginal Cultural Heritage Assessment Report and Archaeological Technical Report, undertaken by GML Heritage Pty Ltd in accordance with its quality management system.

Job No.	Issue No.	Notes/Description	Issue Date
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15-0448A	2	Final Report	16 January 2018

Quality Assurance

GML Heritage Pty Ltd operates under a quality management system which has been certified as complying with the Australian/New Zealand Standard for quality management systems AS/NZS ISO 9001:2008.

The report has been reviewed and approved for issue in accordance with the GML quality assurance policy and procedures.

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Date:	16 January 2018	Date:	16 January 2018

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Contents Page

Executive Summary

GML Heritage Pty Ltd (GML) was engaged by Sydney Anglican Schools Corporation to prepare an Aboriginal Cultural Heritage Assessment Report (ACHAR) for Rouse Hill Anglican College (RHAC). This report forms part of the Environmental Assessment for the study area prepared under Part 4 of the *Environmental Planning and Assessment Act 1979* (NSW). The project is a State Significant Development (SSD), and the Director General has provided State Environmental Assessment Requirements (SEARs) in relation to requirements for the environmental assessment of Aboriginal heritage. The RHAC redevelopment project is located in Blacktown Local Government Area, Rouse Hill, NSW.

This report forms the ACHAR with the Archaeological Technical Report (ATR) to support the State Significant Development Application (SSDA) for the RHAC redevelopment. The ACHAR combines the results of the ATR which provides evidence about the material traces of Aboriginal land use that is integrated with the other findings from the cultural values assessment of Aboriginal heritage to support the conclusions and management recommendations in the ACHAR.

The results of the ATR identified that while previous archaeological races have previously found regionally and locally to the study area, that many of the sites have since been impacted by development. A search of the Office of Environment and Heritage's (OEH) Aboriginal Heritage Information Management System (AHIMS) identified four Aboriginal heritage sites within the study area (AHIMS 45-5-2573, 45-5-2574, 45-5-2575 and 45-5-3920), and another 42 within a 1km radius of the study area. From further investigation, three of the sites (45-5-2573, 45-5-2574, 45-5-2575) were found to have been excavated and destroyed through test excavation in 2000, by Stephanie Garling Consulting Archaeologists (SGAC).

The SGAC test excavation aimed to test two unregistered PADs: "RHAC/PAD1" and "RHAC/PAD2.". The test excavation of RHAC/PAD1 led to the identification of 45-5-2573 "RHAC 2", and the testing of RHAC/PAD2 led to the identification of 45-5-2574 "RHAC 3". However, the AHIMS records were not updated to capture the destruction of the three known sites. As such, GML has updated the Aboriginal Site Impact Recording Forms (ASIRFs) for these three sites and submitted these to the OEH's AHIMS register (Appendix E).

GML's initial assessment identified that RHAC/PAD2 held the potential to yield further stone artefacts. To manage the project's risk to Aboriginal heritage, this current assessment test excavated the remainder of this unregistered PAD. The results identify that there is no further archaeological potential for sites within unregistered site RHAC/PAD2, and it requires no further Aboriginal heritage management.

The scientific values assessment of these sites has defined that RH/A20P 04 (45-5-3920), an isolated find, is the only known Aboriginal site within the study area and is of limited scientific significance. No other associated Aboriginal objects or sites were identified through test excavation of the area. This is likely due to the highly eroded nature of the site, previous construction, and significant disturbance to the northern playing field.

The results of the cultural values assessment, and Aboriginal heritage community consultation undertaken, has identified that the site is located close to significant cultural landscapes such as Second Ponds Creek, and other known Aboriginal sites, yet that there are no specific ascribed cultural heritage values within the study area. The cultural values relate to the wider landscape in which

Representative Aboriginal Parties' (RAPs) ancestors would have traversed and frequented, as evidenced by the presence of previous known physical sites, now mostly destroyed.

An impact assessment relating to the proposed activity has defined that the RHAC proposed masterplan and redevelopment is likely to impact 45-5-3920 through the proposed works. Field survey could not relocate the site. Therefore, 45-5-3920—an isolated find—will require approval from the DoPE to impact the site through the works. A site card update and ASIRF has been submitted to reflect the outcome of these test excavations (Appendix E).

This assessment complies with and fulfils the State Environmental Assessment Requirements (SEARs) stipulated for SSD 8006:

> *Address Aboriginal Heritage in accordance with the* Guide to investigating, assessing and reporting on Aboriginal Cultural Heritage in NSW *(OEH, 2011) and* Aboriginal Cultural Heritage Consultation Requirements for Proponents 2010.

The detailed steps which are fulfilled are summarised in the table below.

Table 1 Guide to Investigating, Assessing and Reporting—Steps Fulfilled by this Report.

Process	Description	Document/Section of this Document which Fulfils Process
Step 1	Determine if proposed activity could harm Aboriginal objects	Further investigation determined as required
Step 2.2	Review background information	Section 2.0 of this report
Step 2.3	Initiate ongoing consultation	Section 3.0 of this report
Step 2.4	Identify and assess the cultural heritage values	Section 3.0 and Section 4.0 of this report
Step 2.5	Assess harm	Section 5.0 of this report
Step 2.6	Avoid harm	Section 6.0 of this report
Where harm cannot be avoided		
2.7	Minimise the impacts	Section 6.0 of this report
2.8	Document your findings, prepare an ACHAR	The current report
Apply for an AHIP	Not relevant to the current approvals pathway	ACHAR/ATR for the submission for SSDA approval

Table 2 Aboriginal Cultural Heritage Consultation Requirements for Proponents—Steps Fulfilled by this Report.

Requirements	Description	Document/Section of this Document which Fulfils Process
Stage 1	Notification of project proposal and registration of interest	Section 3.0 Appendix C—Aboriginal community consultation log
Stage 2	Presentation of information about the proposed project	Section 3.0 Section 2.0—Finalised Archaeological Research Design Appendix D—Archaeological Research Design review by RAPs

Requirements	Description	Document/Section of this Document which Fulfils Process
Stage 3	Gathering information about cultural significant	Section 3.0 Appendix C—Aboriginal community consultation log
Stage 4	Review of draft cultural heritage assessment report	This report integrates the finalised ACHAR/ATR incorporating review by Representative Aboriginal Parties. Appendix C—Aboriginal community consultation log

The recommendations arising from this report are that:

1. An SSD approval should be sought from the Department of Planning and Environment (DoPE) to impact the AHIMS site 45-5-3920 as a result of the proposed RHAC redevelopment project.

2. A cultural heritage induction may be incorporated into the program before works start to assist Sydney Anglican Schools of their obligations under the NPW Act.

3. In the unlikely event of the unanticipated discovery of archaeological material or suspected human remains, a stop works procedure be adopted and complied with during construction activities involving ground surface disturbance and excavation.

4. The required Aboriginal heritage management and outcomes of this assessment are as below (Table 3).

Table 3 Aboriginal Heritage Management Outcomes of this Assessment and Required Aboriginal Management for Each Site.

AHIMS Number	Site Name	Registered on AHIMS?	Description	Required Aboriginal Heritage Management
45-5-2573	RHAC 2	Yes	Testing of unregistered PAD 'RHAC/PAD1' transect Q which resulted in the identification of an open artefact site, that is RHAC 2.	Destroyed—updated in Aboriginal Site Impact Recording Form (ASIRF, Appendix E).
45-5-2574	RHAC 3	Yes	Open artefact site (7 artefacts) identified through testing of unregistered PAD 'RHAC/PAD2' transect Q which resulted in the identification of an open artefact site, that is RHAC 3.	Destroyed—updated in ASIRF (Appendix E).
45-5-2575	RHAC 1	Yes	Surface isolated artefact in location of high disturbance	Destroyed—updated in ASIRF (Appendix E).

AHIMS Number	Site Name	Registered on AHIMS?	Description	Required Aboriginal Heritage Management
45-5-3920	RH/A20P 04	Yes	Open artefact site (1 artefact)	Present but could not be relocated. 1. SSD Approval required from the DoPE prior to impact. 2. The final ACHAR/ATR be provided to RAPs within 14 days of submission of the SSDA application.
N/A	RHAC/PAD2	No	Remaining section of 'RHAC/PAD2' is not a PAD	Test excavated by GML 2017, not a PAD, will not be registered. No further Aboriginal heritage management required.

Abbreviations

AAIS	Archaeological Assessment and Impact Statement
ACHAR	Aboriginal Cultural Heritage Assessment Report
AHIMS	Aboriginal Heritage Information Management System
AHIP	Aboriginal Heritage Impact Permit
AMU	Archaeological Management Unit
ASIRF	Aboriginal Site Impact Recording Form
ATR	Archaeological Technical Report
AZP	Archaeological Zoning Plan
Burra Charter	*The Burra Charter: the Australia ICOMOS Charter for Places of Cultural Significance, 2013*—Australian best heritage practice reference that provides guidance for the conservation and management of places of cultural significance (cultural heritage places)
DA	Development Application
DCP	Development Control Plan
DECC	Department of Environment and Climate Change (now OEH)
DECCW	Department of Environment, Climate Change and Water (now OEH)
DG	Director General
ECA	Effective Coverage Area (percentage of landform effectively surveyed)
EPA Act	*Environmental Planning and Assessment Act 1979* (NSW)
ESD	Ecologically Sustainable Development
EU	Excavation Unit
GML	GML Heritage Pty Ltd
HA	Heritage Assessment
ICOMOS	International Council on Monuments and Sites
LA	Landform Area
LALC	Local Aboriginal Land Council
LEP	Local Environmental Plan
LGA	Local Government Area
NPW Act	*NSW National Parks and Wildlife Act 1974* (NSW)
OEH	Office of Environment and Heritage

PAD	Potential Archaeological Deposit
PHALMS	Parramatta Historical Archaeological Landscape Management Study
RAP/s	Registered Aboriginal Party/ies
REP	Regional Environmental Plan
SHR	State Heritage Register
The Code of Practice	*Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales*
WHS	Work Health and Safety

1.0 Introduction

1.1 Project Background

GML Heritage Pty Ltd (GML) was originally engaged by the Anglican Schools Corporation (ASC) to prepare the necessary reports to accompany an application for an Aboriginal Heritage Impact Permit (AHIP)—under Section 90 of the *National Parks and Wildlife Act 1974* (NSW) (NPW Act)—for implementation of the Rouse Hill Anglican College (RHAC) Masterplan. Since the initial due diligence was undertaken the proponent has been issued with a state significant development (SSD) SSD 8006.

This report is in line with NSW state Aboriginal heritage processes for best practice after the stipulated requirements in the State Environmental Assessment Requirements (SEARs). The purpose of this document is to provide Registered Aboriginal Parties (RAPs) with information about RHAC and an opportunity to comment on this report, which forms the Aboriginal Cultural Heritage Assessment (ACHAR) and Archaeological Technical Report (ATR) to support the proposed redevelopment of RHAC under SSD 8006 State Significant Development Application (SSDA). The current ACHAR is being undertaken to:

- ensure Aboriginal archaeological constraints and opportunities are adequately addressed and appropriately managed throughout the project;
- consult with the Aboriginal community regarding the cultural significance of the study area; and
- ensure that any risks to Aboriginal heritage values (both intangible and tangible) are appropriately identified and mitigated.

1.2 Study Area Location and Project Brief

The study area is located within the Blacktown City Council Local Government Area (LGA) in the suburb of Rouse Hill, approximately 35km northwest of the Sydney CBD (Figure 1.1). The RHAC is bounded to the east by Worcester Road, to the south by Rouse Road, to the west by Cudgegong Road, and to the north by an extended driveway for the school (Figure 1.2). The study area is located at Lot 130 DP1138775 and Lot 14 DP1120290.

The proposed project is for the Rouse Hill Anglican College Redevelopment (SSD 8006). The plan includes a junior school area at the north of the site with three new classroom modules, new roadway and carparking and associated landscaped areas. A senior school area will be extended at the south of the site with demolition and replacement of previous teaching modules with new teaching spaces, new roadways and associated landscaped areas. A new library is also planned along with a multi-purpose hall, and associated landscaped areas shared between the junior school and senior school. The proposed development is shown in Figure 1.4. Appendix C contains the detailed architectural drawings, and identified bulk earthworks for the proposed works' civil engineering drawings.

1.3 Objectives for the Assessment

The objectives of this assessment were to:

- understand the number, extent, type, condition, integrity and archaeological potential of Aboriginal heritage sites and places within the study area;

- determine whether the identified Aboriginal sites and places are a component of a wider Aboriginal cultural landscape;
- understand how the physical Aboriginal sites relate to Aboriginal tradition within the wider area;
- prepare a scientific cultural values assessment for all identified aspects of Aboriginal cultural heritage, as identified within this report;
- determine how the proposed project may impact the identified Aboriginal cultural heritage;
- aim to minimise impacts to Aboriginal cultural heritage through sensible and pragmatic site and land management;
- determine where impacts are unavoidable and develop a series of impact mitigation strategies that benefit Aboriginal cultural heritage and the proponent; and
- provide clear recommendations for the conservation of archaeological values and mitigation of impacts to these values.

1.4 Heritage Context

In December 2015, GML identified that there are (or are likely to be) the following Aboriginal objects in the area of the proposed activity:

- RHAC/PAD2, an unregistered Potential Archaeological Deposit (PAD) previously assessed as having moderate archaeological significance and potential;[1]
- stone artefact sites, either above or subsurface, consisting of low density 'background scatters' with higher density artefact concentrations marking discrete areas of focused activity (such as stone tool manufacture); and
- subsurface evidence associated with the construction and use of Aboriginal hearths or ovens.[2]

It was as a result of this preliminary assessment that GML advised the proponent that an AHIP was likely to be required, thereby necessitating the preparation of an Aboriginal Cultural Heritage Assessment Report (ACHAR) in consultation with relevant Aboriginal stakeholders. Initially, a process of Aboriginal community consultation was started for this AHIP process, but ceased after Aboriginal community consultation Stage 1, due to project constraints.

The current Aboriginal cultural heritage assessment represents the documentation of a new consultation process (Stages 1, 2, 3 and 4), due to the lapse of the first consultation process, and a break in communication of more than 12 months. Similarly, the approvals process has changed to a SSD application. This report satisfies part of the SEARs. However, the final approvals process will be under Part 4 SSD and determined by the Department of Planning and Environment (DoPE). Therefore, an AHIP application will not be required for the project.

The SEARs stipulate the following environmental assessment requirements for Aboriginal heritage:

> *Address Aboriginal Heritage in accordance with the* Guide to investigating, assessing and reporting on Aboriginal Cultural Heritage in NSW *(OEH, 2011) and* Aboriginal Cultural Heritage Consultation Requirements for Proponents 2010*.*

As such, the Aboriginal heritage assessment process to satisfy the SEARs mirrors the NSW Aboriginal heritage requirements; however, an Aboriginal Heritage Impact Permit (AHIP) will not be necessary. This ACHAR/ATR will be provided to support the SSDA application.

1.5 NSW Legislation Relevant to Aboriginal Heritage

In NSW, Aboriginal heritage is principally protected under two Acts:

- the *Environmental Planning and Assessment Act 1979* (EPA Act 1979); and
- the *National Parks and Wildlife Act 1974* (NPW Act 1974).

1.5.1 Environmental Planning and Assessment Act 1979

The EPA Act provides a statutory framework for the determination of development proposals. It provides for the identification, protection and management of heritage items through inclusion in schedules to planning instruments such as Local Environmental Plans (LEPs) or State Environmental Planning Policies (SEPPs). Heritage items in planning instruments are usually historic sites but can include Aboriginal objects and places. The EPA Act requires that appropriate measures be taken for the management of the potential archaeological resource by means consistent with practices and standards adopted in meeting the requirements of the NPW Act 1974.

The study area is located within the Blacktown City Council LGA; however, the proposed works are not subject to the Blacktown LEP 2015, as Section 36 of the EPA Act provides that SEPPs generally prevail over LEPs. The proposed works within the study area are governed under the EPA Act by the SEPP 2006—Sydney Region Growth Centres (SEPP 2006) and the SEPP (Infrastructure) 2007 (SEPP 2007).

State Environmental Planning Policy—Sydney Region Growth Centres 2006

Appendix 12 (the Blacktown Growth Centres Precinct Plan) of the SEPP 2006 provides requirements for heritage conservation in Section 5.10. The heritage conservation objectives, outlined in Section 5.10(1) are:

> *a) to conserve the environmental heritage of the Blacktown Growth Centres Precinct,*
>
> *b) to conserve the heritage significance of heritage items and heritage conservation areas including associated fabric, settings and views,*
>
> *c) to conserve archaeological sites,*
>
> *d) to conserve Aboriginal objects and Aboriginal places of heritage significance.*[3]

The requirement for development consent in relation to heritage items is outlined in Section 5.10(2) of the SEPP 2006. Development consent is required for any of the following:

> *a) demolishing or moving any of the following or altering the exterior of any of the following (including, in the case of a building, making changes to its detail, fabric, finish or appearance):*
>
> *(i) a heritage item,*
>
> *(ii) an Aboriginal object,*
>
> *(iii) a building, work, relic of tree within a heritage conservation area,*

b) altering a heritage item that is a building by making structural changes to its interior or by making changes to anything inside the item that is specified in Schedule 5 in relation to the item,

c) disturbing or excavating an archaeological site while knowing, or having reasonable cause to suspect, that the disturbance or excavation will or is likely to result in a relic being discovered, exposed, moved, damaged or destroyed,

d) disturbing or excavating an Aboriginal place of heritage significance,

e) erecting a building on land:

(i) on which a heritage item is located or that is within a heritage conservation area, or

(ii) on which an Aboriginal object is located or that is within an Aboriginal place of heritage significance,

f) subdividing land:

(i) on which a heritage item is located or that is within a heritage conservation area, or

(ii) on which an Aboriginal object is located or that is within an Aboriginal place of heritage significance.[4]

Section 5.10(8) of the SEPP 2006 outlines requirements for development of Aboriginal places of heritage significance, including the following:

The consent authority must, before granting consent under this clause to the carrying out of development in an Aboriginal place of heritage significance:

a) consider the effect of the proposed development on the heritage significance of the place and any Aboriginal object known or reasonably likely to be located at the place by means of an adequate investigation and assessment (which may involve consideration of a heritage impact statement), and

b) notify the local Aboriginal communities, in writing or in such other manner as may be appropriate, about the application and take into consideration any response received within 28 days after the notice is sent.[5]

The study area does not contain any heritage items listed on Schedule 5 of the 2006 SEPP. As this project is SSD, a report that addresses the SEARs is required. This ACHAR is a partial fulfillment of that requirement.

State Environmental Planning Policy (Sydney Regional Growth Centres) Amendment (Area 20 Precinct) 2015—Indicative Layout Plan

The SEPP for Sydney Regional Growth Centres was amended to finalise the mapping (Figure 1.3). In the finalised mapping, RHAC is zoned as a school, and the northern property recently acquired is zoned for low density residential.

State Environmental Planning Policy (Infrastructure) 2007

The proposed works at the Rouse Hill Anglican College would be covered under Part 3 (Development Controls) Division 3 (Educational Establishments). Aboriginal objects or heritage values are not addressed in the SEPP 2007.

1.5.2 National Parks and Wildlife Act 1974

The NPW Act provides statutory protection for all Aboriginal 'objects' (consisting of any material evidence of the Indigenous occupation of New South Wales) under Section 90 of the NPW Act, and for 'Aboriginal Places' (areas of cultural significance to the Aboriginal community) under Section 84 of the NPW Act. Aboriginal objects and places are afforded automatic statutory protection in New South

Wales whereby it is an offence (without the Minister's consent) to harm an Aboriginal object or declared Aboriginal Place.

The NPW Act defines an Aboriginal object as:

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

The protection provided to Aboriginal objects and places applies irrespective of the level of their significance or issues of land tenure. Sites of traditional significance that do not necessarily contain material remains may be gazetted as 'Aboriginal Places' and thereby be protected under the NPW Act. However, areas are only gazetted if the Minister is satisfied that sufficient evidence exists to demonstrate that the location was and/or is of special significance to Aboriginal culture.

A strict liability offence applies for harm to or desecration of an Aboriginal object or declared Aboriginal Place.[6] The definition of 'harm' includes destroying, defacing, damaging or moving an Aboriginal object or declared Aboriginal Place. The strict liability offence of harming Aboriginal objects has a number of defences. The two defences relevant to the proposed development are the statutory defence of due diligence through complying with an adopted industry code, or compliance with the conditions of an Aboriginal Heritage Impact Permit (AHIP) or other relevant approval.

The potential for Aboriginal objects, sites, places and/or values within the study area, and for the proposed development to impact on such objects, has been assessed and the results presented in this report.

1.6 Approach to Aboriginal Heritage Management

In order to administer the NPW Act and EPA Act, the Office of Environment and Heritage (OEH) has issued a series of best practice guidelines and policies. The applicability of these depends upon the approval mechanism for a project. The current project will be assessed and granted approval under Part 4 of the EPA Act. Therefore, the approach to the preparation of this document was based on the following current best practice guidelines:

- *Guide to Determining and Issuing Aboriginal Heritage Impact Permits;*[7]
- *Operational Policy: Protecting Aboriginal Cultural Heritage;*[8]
- *Aboriginal cultural heritage consultation requirements for proponents 2010,* Part 6, National Parks and Wildlife Act 1974;[9]
- *Due Diligence Code of Practice for the Protection of Aboriginal Objects in NSW* (the Due Diligence Code);[10]
- *Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales* (the Code of Practice);[11]
- *Guide to investigating, assessing and reporting on Aboriginal cultural heritage in NSW*;[12] and
- the *Australia ICOMOS Burra Charter 2013* (the Burra Charter).[13]

1.6.1 Due Diligence and Previous Assessment

The OEH adheres to the Due Diligence Code, which defines a 'due diligence' approach to Aboriginal heritage. The Due Diligence Code is designed to assist individuals and organisations to exercise due diligence when carrying out activities that may harm Aboriginal objects, and/or Aboriginal Places, and to determine whether they should apply for consent in the form of an AHIP.

Due diligence is a legal concept that describes a standard of care in considering the likely risks a proposed activity may have and any obligations that may apply. In the case of the NPW Act, the OEH has defined due diligence as:

> *… taking reasonable and practical steps to determine whether a person's actions will harm an Aboriginal object and, if so, what measures can be taken to avoid that harm.*[14]

The Due Diligence Code sets out the reasonable and practicable steps that individuals and organisations need to take in order to:

- identify whether or not Aboriginal objects are, or are likely to be, present in an area;
- determine whether or not their activities are likely to harm Aboriginal objects (if present); and
- determine whether an AHIP application is required.

In December 2015, GML prepared a Preliminary Aboriginal Heritage Assessment for Rouse Hill Anglican College (December 2015 Assessment).[15] In preparing the 2015 report, GML complied with the Due Diligence Code guidelines. In accordance with Step 1 of the Due Diligence Code it was identified that the proposed development within the RHAC property would disturb the ground surface of the study area.

The December 2015 Assessment carried out most of the steps required to follow the due diligence process. The report was updated in 2017 in order to assist the proponent in requesting SEARs for the project. That report included (Appendix B):

- searching the Aboriginal Heritage Information Management System (AHIMS);
- checking for landscape features which may indicate the presence of Aboriginal objects;
- developing strategies to avoid harming Aboriginal objects; and
- undertaking desktop assessment to confirm the presence of Aboriginal objects.[16]

A site inspection was not undertaken as the AHIMS search and desktop assessment confirmed the presence of previously registered sites within the study area, including remnant PADs defined in previous reports but not registered.[17] Further, a high concentration of sites was also registered on the AHIMS in the immediate vicinity of the study area. On this determination, the due diligence process ceased as it became clear that the study area retains the potential for Aboriginal objects. However, the AHIMS search is now updated in this ARD report, as more than six months have passed since the initial AHIMS search.

The results of the AHIMS search suggest that artefact sites and artefact concentrations are the most commonly recorded Aboriginal site features found in the Rouse Hill area. A low-density background scatter of Aboriginal stone artefacts is known to be present across the Rouse Hill area, as with much of the Cumberland Plain, due to its association with extensive use of the landscape by Aboriginal people.

Archaeological excavations at the Rouse Hill Anglican College property in 2000 encountered a low-density background scatter of stone artefacts marked with discrete areas of higher artefact densities providing evidence of focused activity, such as stone tool manufacture.[18]

Previous excavation of 45-5-2573, one of the sites within the study area, also provided potential evidence of Aboriginal hearths and ovens. There is some possibility that archaeological evidence associated with these types of features might be encountered elsewhere within the RHAC study area.[19] Where the proposed implementation of the RHAC Masterplan would impact on areas of Aboriginal archaeological potential, an approval under Part 4 is required before works commence. Prior to preparation and submission of the supporting document, archaeological testing is proposed under the Code of Practice to further investigate and understand the potential Aboriginal archaeological resource of the study area.

Application to the Current Assessment

In preparing this report, GML complied with the guidelines set out in the Due Diligence Code. The extent of land covered by the due diligence process is described as the study area (Figure 1.1).

The scope of work included the following tasks:

- a review of historical and Aboriginal cultural and archaeological research within the vicinity of the study area;
- collation of any additional existing information on the ethnohistory of the study area;
- a search of the AHIMS for known Aboriginal objects and/or sites within the vicinity of the study area;
- evaluation of the previous predictive model and significance assessment for the study area based on the background research;
- examination of aerial photographs to identify any disturbances or changes to the study area since 2009;
- preparation of a report that complies with relevant OEH guidelines; and
- updating recommendations for management of Aboriginal and historical heritage within the study area in the future.

1.6.2 The Burra Charter Process

The Burra Charter process (Article 6) defines a broad three-stage process—comprising seven smaller steps—for the management of heritage. The three stages involve:

1. developing an understanding of significance;
2. ensuring policy is developed appropriate to the significance; and
3. ensuring management is undertaken in accordance with that policy.

The definitions presented in the Burra Charter have provided the basis for definitions used in this report. The Burra Charter's Indigenous Practice Note provides further guidance for application of the Burra Charter to Aboriginal heritage. Of relevance are the following definitions:

Article 1.1—Place

Place means a geographically defined area. It may include elements, objects, spaces and views. Place may have tangible and intangible dimensions.[20]

'Place' includes locations that embody spiritual value (such as Dreaming places, sacred landscapes, and stone arrangements), social and historical value (such as massacre sites), as well as scientific value (such as archaeological sites). In fact, one place may be all of these things or may embody all of these values at the same time.[21]

Article 1.2—Cultural Significance

Cultural significance means aesthetic, historic, scientific, social or spiritual value for past, present or future generations. Cultural significance is embodied in the place itself, its fabric, setting, use, associations, meanings, records, related places and related objects. Places may have a range of values for different individuals or groups.[22]

Article 1.10—Use

Use means the functions of a place, including the activities and traditional and customary practices that may occur at the place or are dependent on the place.[23]

Article 1.11—Compatible Use

Compatible use means a use which respects the cultural significance of a place. Such a use involves no, or minimal, impact on cultural significance.

Article 8—Setting

Conservation requires the retention of an appropriate setting. This includes retention of the visual and sensory setting, as well as the retention of spiritual and other cultural relationships that contribute to the cultural significance of the place.[24]

Places of significance to Indigenous people require a holistic approach to 'setting'. 'Setting' may encompass the broadest of experiential factors including a sense of 'intrusion' occasioned when people of the 'wrong' gender, age or level of initiation trespass on defined areas, as well as auditory and visual intrusion.

For some Indigenous peoples, nature and culture are indivisible. The social significance and spiritual significance of a place for Indigenous people may be wholly or partly dependent on the natural environment that the place forms a part of, including aspects such as biodiversity, and totemic and resource species.[25]

Application to the Current Assessment

Stages 1 and 2 of the Burra Charter Process have been applied during the current project. The following steps have thus been undertaken:

Step 1—Understand the Place

This involved desk-based investigation into the environment, archaeology, history and literature relevant to the study area. Field survey was undertaken in collaboration with the Aboriginal community. The outcome of the Step 1 investigations was the development of archaeological and landscape zoning plans, which show the known sites, places and values connected to the study area. The approach followed the notion that the study area is part of an Aboriginal cultural landscape, and the study area represents a small zone within this landscape.

Step 2—Assess Cultural Significance

A preliminary indication of cultural significance considered aesthetic, historic, scientific and social aspects to the study area. This preliminary assessment of value should be used for future assessments, noting both that 'cultural significance may change'[26] and 'tangible heritage should not be emphasised at the expense of intangible heritage'.[27]

Step 3—Identify Factors and Issues

The results from Steps 1 and 2 were used to identify obligations arising as key future management factors and/or issues. The issues and factors define future needs, opportunities and constraints connected with possible future compatible use.

Step 4—Develop Policy

The outcome from Step 3 was applied to develop appropriate management policy, in consultation with the Aboriginal community and in accordance with relevant NSW statutory processes.

1.7 Reporting Approach

This archaeological report is a standalone technical report which provides evidence about the material traces of Aboriginal land use that is integrated with the other findings from the assessment of Aboriginal heritage to support the conclusions and management recommendations in the ACHAR. This ATR is an appendix to the ACHAR.

This report has been prepared following the requirements for reporting as established in the Code of Practice.

1.8 Investigators, Contributors and Authorship

This project has undertaken by the personnel listed in Table 1.1. Each person's role, qualification and affiliations are detailed in the table below.

Table 1.1 Investigators and Contributors.

Person (Qualification)	Affiliation	Role
Martin Rowney, BA (Hons) Archaeology	GML	Project Director, report reviewer and quality control
Shezani Nasoordeen, MA (Anthropology), BA (Hons) Anthropology	GML	Project Manager, report author
Mr John Binney	Rouse Hill Anglican College	Facilities Manager
Jodi Cameron, BA (Hons) Archaeology	GML	Excavation Director
Peter Woodley	GML	Archaeologist
Lara Tooby, BA (Hons) Archaeology	GML	Fieldwork Coordinator
John Reilly	Darug Tribal Aboriginal Corporation (DTAC)	Archaeological Assistant and RAP
Justine Copelin/Taylor Blunden	Darug Custodian Aboriginal Corporation (DCAC)	Archaeological Assistant and RAP

Person (Qualification)	Affiliation	Role
Joshua Barnsley/Denis Paterson	Darug Aboriginal Cultural Heritage Assessments (DACHA)	Archaeological Assistant and RAP
Mark Newnham	Darug Land Observations (DLO)	Archaeological Assistant and RAP

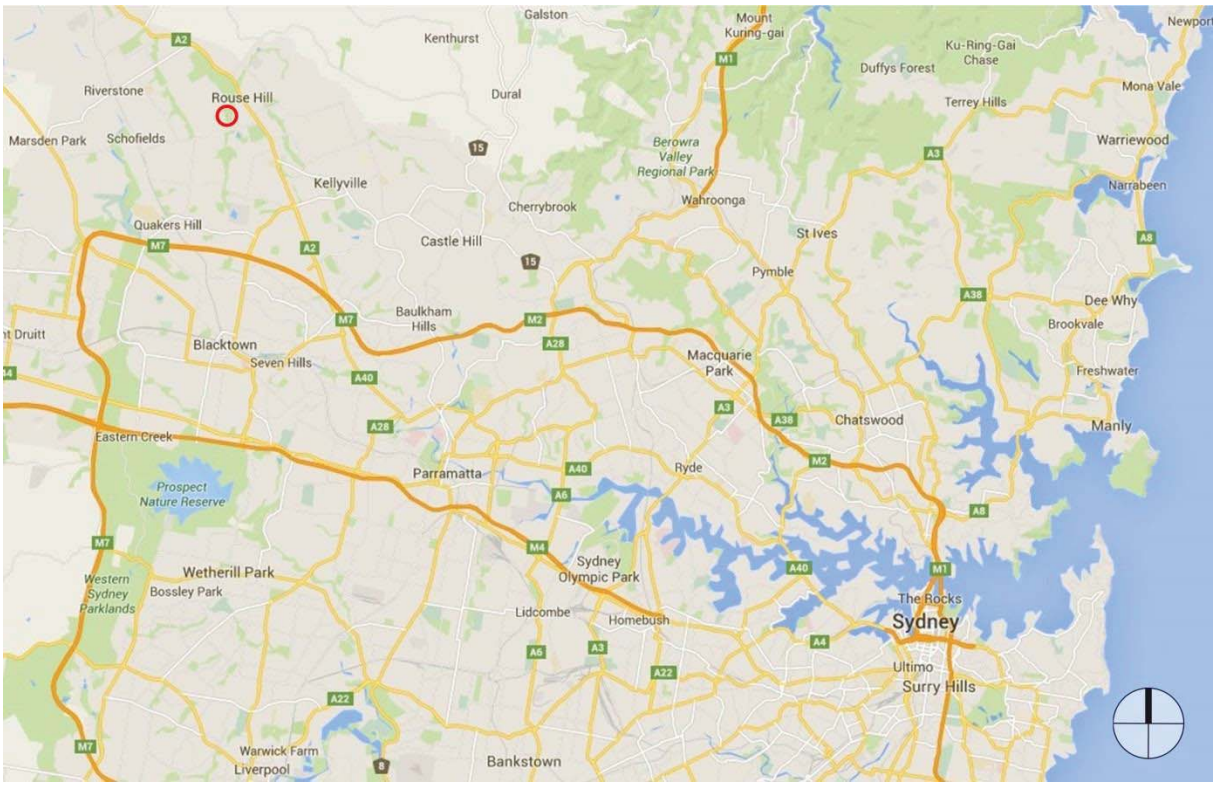


Figure 1.1 Location map with the approximate location of the study area outlined in red. (Source: Google Maps with GML overlay, 2015)

Figure 1.2 The subject site in its local context, with the Rouse Hill Anglican College study area boundary outlined in red. (Source: Nearmap with GML overlay, 2015)

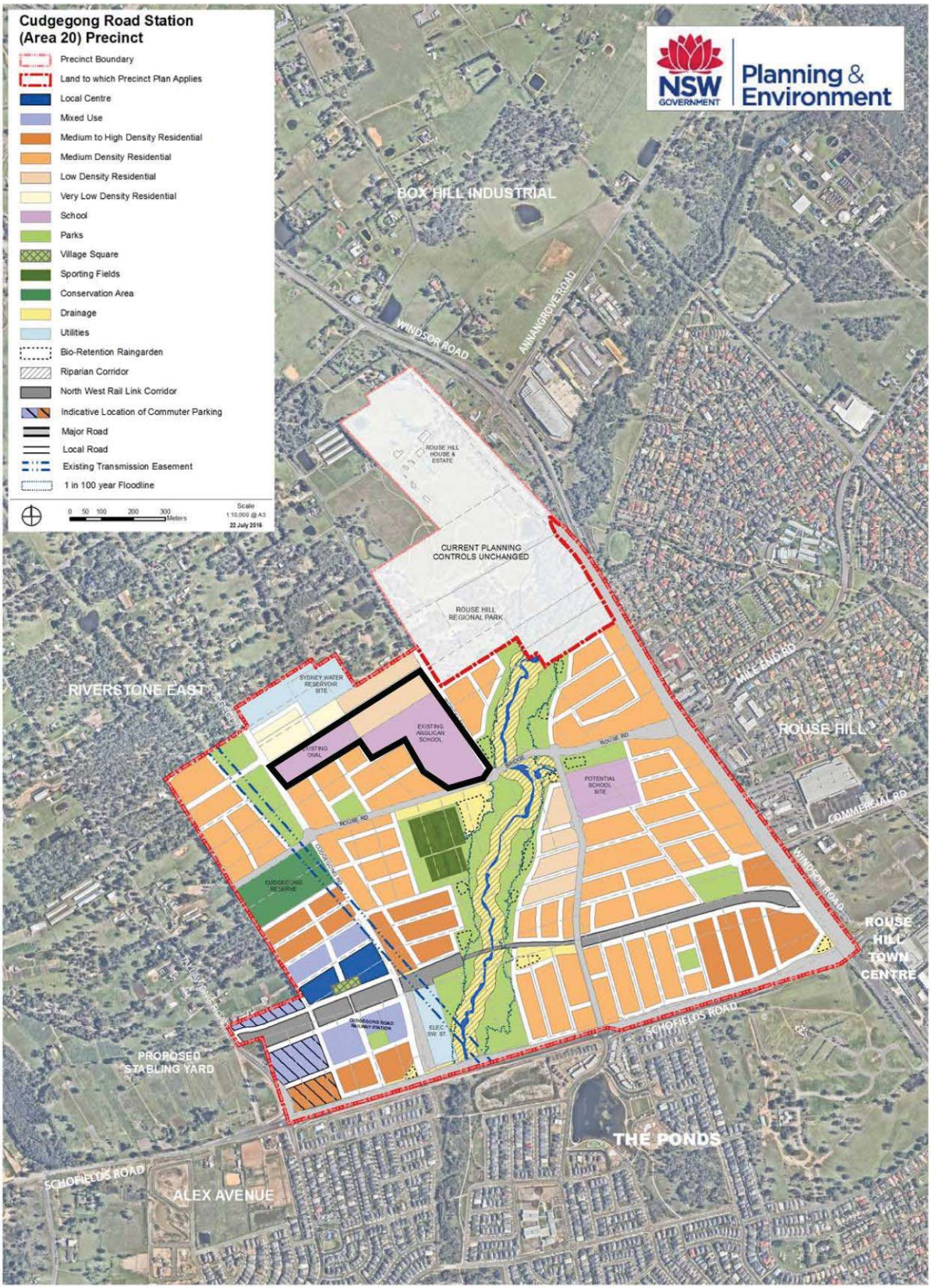
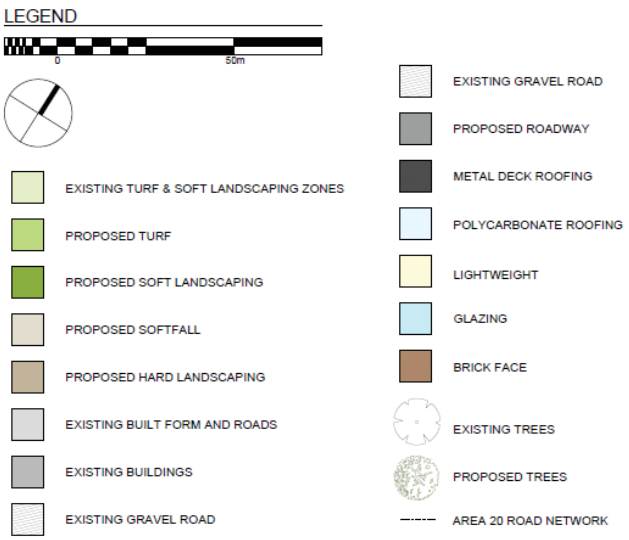


Figure 1.3 The RHAC study area boundary outlined in black within Area 20 Precinct finalised Indicative Layout Plan. (Source: NSW Department of Planning and Environment, 2014)

Figure 1.4 The proposed RHAC layout of the masterplan. (Source: Terroir Architects, 2017)



1.9 Endnotes

1 Stephanie Garling Archaeological Consulting, Archaeological Test Excavation of Two Areas of Archaeological Potential (RHAC/PAD1 & RHAC/PAD2), Proposed Rouse Hill Anglican College, Rouse Road, Rouse Hill, NSW, report prepared for the Sydney Anglican Schools Corporation, 2000.

2 GML Heritage, Rouse Hill Anglican College—Preliminary Aboriginal Heritage Assessment, report prepared for the Sydney Anglican Schools Corporation, December 2015.

3 *State Environmental Planning Policy—Sydney Regional Growth Centres 2006*, Appendix 12 'Blacktown Growth Centres Precinct Plan', Section 5.10(1).
4 *State Environmental Planning Policy—Sydney Regional Growth Centres 2006*, Appendix 12 'Blacktown Growth Centres Precinct Plan', Section 5.10(2).
5 *State Environmental Planning Policy—Sydney Regional Growth Centres 2006*, Appendix 12 'Blacktown Growth Centres Precinct Plan', Section 5.10(8).
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18 Stephanie Garling Archaeological Consulting, Archaeological Test Excavation of Two Areas of Archaeological Potential (RHAC/PAD1 & RHAC/PAD2), Proposed Rouse Hill Anglican College, Rouse Road, Rouse Hill, NSW, report prepared for the Sydney Anglican Schools Corporation, 2000.
19 Stephanie Garling Archaeological Consulting, Archaeological Test Excavation of Two Areas of Archaeological Potential (RHAC/PAD1 & RHAC/PAD2), Proposed Rouse Hill Anglican College, Rouse Road, Rouse Hill, NSW, repot prepared for the Sydney Anglican Schools Corporation, 2000, p 46.
20 Australia ICOMOS Inc., *The Burra Charter: The Australia ICOMOS Charter for Places of Cultural Significance, 2013*, Australia ICOMOS Inc., Burwood, VIC, 2013, Article 1.1.
21 Australia ICOMOS Inc., *Burra Charter Practice Note 2013*, Australia ICOMOS Inc., Burwood VIC 2013, p 2.
22 Australia ICOMOS Inc., *The Burra Charter: The Australia ICOMOS Charter for Places of Cultural Significance, 2013*, Australia ICOMOS Inc., Burwood, VIC, 2013, Article 1.2.
23 Australia ICOMOS Inc., *The Burra Charter: The Australia ICOMOS Charter for Places of Cultural Significance, 2013*, Australia ICOMOS Inc., Burwood, VIC, 2013, Article 1.10.
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25 Australia ICOMOS Inc., *Burra Charter Practice Note 2013*, Australia ICOMOS Inc., Burwood, VIC, 2013, p 5.
26 Australia ICOMOS Inc., *Burra Charter Practice Note 2013*, Australia ICOMOS Inc., Burwood, VIC, 2013, p 4.
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2.0 Background

In line with OEH reporting requirements,[1] this section provides a review of the landscape context, previous archaeological work, regional character and an Aboriginal heritage predictive model.

2.1 Landscape Context

This section provides contextual information which informed the development of a predictive model relating to evidence of Aboriginal occupation and land use in the study area. Interactions between people and their surroundings are of integral importance in both the initial formation and the subsequent preservation of the archaeological record. The nature and availability of resources, including water, flora and fauna and suitable raw materials for the manufacture of stone tools and other items, had (and continues to have) a significant influence over the way in which people utilise the landscape.

Alterations to the natural environment also impact upon the preservation and integrity of any cultural materials that may have been deposited, whilst current vegetation and erosional regimes affect the visibility and detectability of Aboriginal sites and objects. For these reasons, it is essential to consider the environmental context as a component of any Aboriginal heritage assessment.

2.1.1 Geology, Soils and Landforms

Soil landscape mapping by Chapman and Murphy situates the study area within the residual soils of the Blacktown soil landscape. Soils range from shallow to moderately deep (<1m), consisting of friable brownish-black loam topsoil overlying hard-setting brown clay loam, mottled brown light clay (B horizon) and light-grey plastic mottled clay.[2] Within the Blacktown soil landscape, generally only the upper 100mm to 300mm has the potential to contain Aboriginal archaeological deposits.[3]

The Blacktown soil landscape is on the Wianamatta Group shales and Hawkesbury shale, with a landscape characterised by gently undulating rises with broad, rounded crests and ridges with gently inclined slopes. The entirety of the study area slopes down gently to the southeast, towards Second Ponds Creek. Within the study area is a board simple slope of <3%, modified simple slopes (levelled) and a flat, which slopes gently down to Second Ponds Creek. The area of the school is a part of this flat, which has been cut and levelled for the construction of the school (Figure 2.2).

Rock outcrops are absent in the Blacktown soil landscape but may occur where soils have been removed.[4] The primary modes of geomorphological activity within the study area are minor sheet and gully erosion. The Wianamatta geological group consists of mostly shale with some carbonaceous claystone, laminate, and occasional fine to medium-changed lithic sandstones.[5]

The nearest known source of silcrete, petrified wood and quartz suitable for flaked stone artefact/tool manufacture is in the vicinity of Riverstone, approximately 3km to the west. Silcrete, silicified tuff, petrified wood, quartzite and igneous rock (such as basalt or teschenite) suitable for the manufacture of flaked and ground stone tools is available 8km to the west at Echo Vale, near South Creek and Wianamatta Creek at Marsden Park.[6]

2.1.2 Hydrology

Rouse Hill Anglican College (RHAC) is located approximately 100m west of Second Ponds Creek, a minor tributary (second order creek) that feeds into the Hawkesbury River to the north (Figure 2.1). The nearest creek junction (confluence) is 2.9km northeast of the study area where Second Ponds Creek joins Smalls Creek. First Ponds Creek is located 1.4km west of the study area, and an unnamed

headwater that feeds into First Ponds Creek is located 1.3km north of the study area. The nearest major waterway to the study area is the Hawkesbury River, which is situated 11km to the northwest.

2.1.3 Fauna and Flora

The Cumberland Plain originally contained a complex of woodland and forest adapted to mostly clayey soils.[7] The vegetation community surrounding the study area includes trees such as the grey box (*E. moluccana*) and the forest red gum (*E. tereticornis*). Ironbarks (mainly red ironbark or mugga—*E. sideroxylon*) also survive in stands or in isolation. Blackthorn (*Bursaria spinosa*) and paperbark (*Melaleuca spp*) are also representative of the woodland in the area. Species such as swamp oak (*Casuarina glauca*) continue to dominate the closed woodlands along creek lines.[8]

Aboriginal groups living between Parramatta and the Blue Mountains relied on small animals and plant food in addition to seasonally available freshwater resources, including mullet and eel. Wallabies, bandicoots and birds were often snared along creeks and rivers, while possums and gliders were a common food source in the open woodlands across the Cumberland Plain. Ethnohistorical accounts of Aboriginal people on the Cumberland Plain mention a variety of wild yam, found in large quantities along the Hawkesbury and Nepean Rivers, being dug out of the earth as a source of food. Wild honey, the burrawang nut, berries and banksia flowers were also significant sources of food.[9]

2.2 Ethnography

Aboriginal tribal boundaries in Australia have been primarily reconstructed based on surviving linguistic evidence and are therefore only approximations. It is further noted that social interaction, boundaries and linguistic evidence may not always correlate, and it is likely boundaries as well as interaction and communication levels varied and fluctuated over time.

Observations made about the traditional Aboriginal inhabitants of the Cumberland Plain region are plentiful, with European settlers first coming into contact with the local Aboriginal populations in the vicinity of the study area in the late eighteenth and early nineteenth centuries. These early European settlers described the area as being part of the Darug language group.[10]

Twentieth-century ethnologist Norman Tindale's map of Aboriginal tribes of Australia shows the study area to be occupied by the 'Daruk'. A map of Aboriginal Australia by Horton, another ethnologist, shows the same area as 'Dharug'.[11] At the beginning of the twentieth century, anthropologist and linguist RH Matthews documented the location of this language group:

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

Determining the population of Aboriginal people at the time of European contact is notoriously difficult. Aboriginal people were largely mobile and avoided contact with Europeans. Impacts from transmissible diseases, such as smallpox, would have reduced Aboriginal populations in greater Sydney, so population statistics gathered in the early years are not accurate or reliable. However, population estimates for the greater Sydney region, including the lower Blue Mountains, generally range from 4000 to 8000 at the time of European contact.[13]

The Aboriginal population of the Sydney region declined significantly following the arrival of Europeans, as they brought diseases to which the Aboriginal inhabitants had little or no resistance. A major epidemic occurred in 1789. By the time of Governor Phillip's expedition to the Hawkesbury–Nepean River in April 1791, the epidemic had already struck and likely impacted on the Aboriginal populations observed. The smallpox epidemic is thought to have caused the death of over half of the Aboriginal population of the

Sydney region within one year.[14] Other estimates would suggest that the smallpox epidemic in southeastern Australia killed up to 80 per cent of the Aboriginal population.[15]

The widespread deaths from smallpox would have had an enormous impact on the social life of Aboriginal people in the Sydney region at the time. It is very probable that such an aggressive spread of smallpox would have caused some loss of traditional knowledge, with survivors likely to have fled inland to escape the disease, and some areas becoming depopulated.

2.2.1 Material Culture

The material culture of local Aboriginal groups is also recorded to some extent in early historical accounts, and is reinforced by the archaeological record. Aboriginal people made and used a suite of stone tools, one of the most ubiquitous forms of archaeological evidence across Australia. Following contact there are numerous examples of glass, and sometimes ceramic, being knapped (shaped by striking) in the same way as stone was used to produce tools. Many of the tools were multi-purpose and portable, allowing groups to practise subsistence activities and cultural traditions broadly across the landscape.

Tools were often made of organic materials and are underrepresented or absent from the archaeological record as they decompose over time, such as string bags or bark canoes (although some preserved examples are now located in museum and private collections). Some organic materials, such as shell and bone, survive better than others, and are well represented in the historical and archaeological records.

Fish hooks are the most commonly represented shell artefacts in the archaeological record of the Sydney area; however, they are unique in Australia in the area between Port Stephens and the NSW/Victorian border and all date within the last 1000 years.[16]

2.2.2 Patterns of Land Use

The Cumberland Plain and Rouse Hill were heavily used and visited, with Aboriginal people producing an extensive array of archaeological material ranging from low density background stone artefact scatter to more complex, high density artefact concentrations with evidence of multiple activities. The entirety of the Rouse Hill area was a cultural landscape on which a range of activities were conducted, resulting in artefact densities and distributions that suggest large-scale and long-term patterns of use.[17]

Second Ponds Creek—a second order stream located approximately 100m east of the study area (see Figure 2.1)—has been shown, through extensive survey and archaeological excavation of adjacent sites, to be a significant resource zone to past Aboriginal people.[18]

2.3 Land Use History

For the purpose of understanding the likelihood of Aboriginal archaeological potential within the study area, it is necessary to assess the level of disturbance that occurred within the site.

The study area is located within a historical land use zone that is predominantly rural in nature. Since European colonisation, the dominant land use in the vicinity of the study area has been agricultural. This would have historically been dominated by vegetation clearing, construction of dams, horse agistment, market gardens and cattle grazing. Ploughing of fields for planting is likely to have occurred in locations across the study area.

Ploughing has been shown to affect the integrity of the upper 300mm of deposits.[19] Clearing of vegetation has a localised effect on subsurface deposits, and the effect differs depending on the method of vegetation removal.

Construction of the RHAC from 2001 onwards would have resulted in major disturbance to Aboriginal archaeological deposits within its construction footprint. Prior to construction, archaeological survey and excavation was undertaken by Stephanie Garling Archaeological Consultants (SGAC). There is some potential that ongoing use at the school (including hard landscaping) has resulted in further impacts to intact soil deposits.[20]

Similarly, the lot abutting Cudgegong Road has had significant disturbance and earthmoving, including the construction of a dam, a brick water tower, sheds and gravel paths (Appendix D). The cumulative surface and subsurface impact is identified from surveys of land condition prior to the construction of the school, including the cumulative construction of RHAC buildings from 2000 onwards, and is illustrated in Figure 2.5.

2.4 Previous Archaeological Work

The purpose of this section is to synthesise available information from previous archaeological and ethnohistorical studies to provide a context and baseline for what is known about Aboriginal cultural heritage in the study area.

2.4.1 Regional Character

The Cumberland Plain is one of Australia's most archaeologically excavated landscapes—the past 20 years has seen hundreds of excavations across many locations and landforms. The vast majority of sites recorded and excavated are stone artefact sites due to the preferential preservation of non-organic material.

Aboriginal burials have been found in sand bodies across the wider Sydney region, although these are found predominantly along the coast with only six per cent found in river banks.[21] Further, the few available radiocarbon determinations mostly date to the last 1000–2000 years; again, this is likely only indicative of the preferential preservation of organic material (charcoal) from more recent sites.

The Eastern Regional Sequence (ERS) is a framework for chronologically understanding changes in stone tool (lithic) technologies in South Eastern Australia, particularly in the Sydney region. A summary of temporal change and characteristics of lithic technologies within the Bondaian phases of the ERS for the Sydney region is presented in Table 2.1.

Table 2.1 Eastern Regional Sequence.

Period	Age	Description
Pre-Bondaian	c30,000–8000 BP	Preferential use of silicified tuff in assemblages. Cores and tools vary widely in size. No backed artefacts, elouera or ground stone. Predominant technique is unifacial flaking. Bipolar flakes are rare.
Early Bondaian	c8000–3000 BP	Decline in use of silicified tuff. Shift in rare material usage. Appearance of backed artefacts. Wide use of bipolar flaking.
Middle Bondaian	c3000–1000 BP	Main phase of backed artefacts. Introduction of asymmetric alternating flaking. Smaller tools and cores. Increase in bipolar flaking.

Period	Age	Description
Late Bondaian	c1000 BP–European contact	Backed artefacts become rare or absent from most sites.

Archaeological excavations have revealed a number of open site deposits in the region with assemblages that are Pre-Bondaian in nature, but not all of these have been dated using absolute dating methods. It is likely, therefore, that the available determinations underestimate the number of assemblages over 5000 years old.

2.4.2 Aboriginal Occupation of the Cumberland Plain during the Pleistocene

Evidence of multiple phases of Aboriginal occupation, from the late Pleistocene (c25–30ka) to mid-Bondaian (c3–5ka), have been retrieved and radiocarbon dated from the Parramatta Sand Sheet, a sandy river terrace deposit.[22]

The radiocarbon determinations from site RTA-G1 (45-6-2976) at 109–113 George Street, Parramatta, demonstrate multiple occupation events over a considerable time period. Charcoal samples near the base of the deposit at RTA-G1 recovered a date of 30,735 ± 407 BP, the earliest date for human occupation along the eastern coast of Australia.[23] The RTA-G1 determinations further confirm that a transition from preferential use of silicified tuff to substantial use of silcrete for stone artefact manufacture was made between c6000 and 8000 years ago. Prior to dating of RTA-G1, a firm indication of age for silicified tuff assemblages across the Cumberland Plain (and the broader Sydney region) was lacking. These assemblages generally underlie silcrete dominant assemblages in stratigraphically intact contexts.

A date of 9,376 ± 61 BP (Wk-16167), calibrated to 10,700 BP (95.4 per cent probability), was recovered for a small, weathered silicified tuff assemblage within the former grounds of Tempe House, the earliest date for an occupation site in the coastal strip of the Sydney Basin.[24]

The preferential use of silicified tuff as a Pre-Bondaian signature was also encountered in two rock shelters at the base of the Darling Mills State Forest—with dates of 6740 ± 120 BP (Wk-2963) and 10,150 ± 130 BP (Wk-2511).[25] These radiocarbon determinations also indicate that use of glossy silcrete (ie potentially heat-treated silcrete)—common in most silcrete assemblages on the Cumberland Plain—may have been adopted as early as c6700 and 5050 Cal BP. This is significantly earlier than had been suggested by previous studies of heat treatment in the region.[26]

2.4.3 Cumberland Plain Predictive Model

A number of key Aboriginal heritage archaeological excavations have been undertaken that provided the basis for predictive modelling on the Cumberland Plain, in particular sites excavated by Jo McDonald Cultural Heritage Management (JMcDCHM) in the Rouse Hill Development Area.[27]

The Cumberland Plain Predictive Model hypothesises how the nature of Aboriginal sites across the Cumberland Plain can vary according to landform and landscape. Stream order forms the basis of the primary model used, based on JMcDCHM's work, and assumes that people would have preferentially selected places where the water supply was more permanent and predictable for semi-permanent camping locations.[28] The Cumberland Plain Predictive Model predicts that the size (density and complexity) and nature of archaeological features will vary according to the permanence of water (ie ascending stream order), landscape unit and proximity to lithic resources in the following ways:

- In any landscape location across the Cumberland Plain, there is a chance that a 'background scatter' of Aboriginal objects exists—that is, objects deposited as a consequence of one-off

manufacture and/or use, where no correlation would be associated with a landform or a more permanent activity area. Such areas are unlikely to contain a subsurface archaeological deposit.

- Assessment of archaeological subsurface potential solely through surface manifestation of artefacts during surface survey is inadequate to accurately identify and assess the presence of subsurface deposits, as soils are largely aggrading across the Cumberland Plain, and therefore most artefacts are buried.
- In the headwaters of upper tributaries (ie first order creeks), archaeological evidence will be sparse and represent little more than a background scatter. Where distant from stone sources, it will demonstrate the use of stone rationing strategies. Based on previous excavations on the Cumberland Plain, artefact densities of approximately one artefact/m^2 would be expected in these areas.[29]
- In the middle reaches of minor tributaries (second order creeks) there will be archaeological evidence for sparse but focused activity (eg one-off camp locations, single episode knapping floors). Artefact densities of approximately 6.5 artefacts/m^2 would be expected in these areas.[30]
- In the lower reaches of tributary creeks (third order creeks) there will be archaeological evidence for more frequent occupation. This will include repeated occupation by small groups, knapping floors (perhaps used and re-used), and evidence of more concentrated activities. A regional analysis of artefact densities for third order creeks has not been undertaken as too few test squares have been excavated in these landscapes. However, based on the model it can be expected that artefact densities of between 8–13 artefacts/m^2 would be found in these areas.
- On major creek lines (fourth order) there will be archaeological evidence for more permanent or repeated occupation. Sites will be complex and may even be stratified. Artefacts will show less use of rationing strategies as people may have been less mobile and remained in the same location for several days, or even weeks. Evidence for the caching of raw materials may also be present. Artefact densities of approximately 14 artefacts/m^2 would be expected in these areas.
- Creek junctions may provide foci for site activity—the size of the confluence (in terms of stream ranking nodes) could be expected to influence the size of the site.
- Ridgetop locations between drainage lines will usually contain limited archaeological evidence, although isolated knapping floors or other forms of one-off occupation may be in evidence in such a location.
- Elevated terraces and flats overlooking higher order watercourses may contain archaeological evidence for more permanent or repeated occupation.
- Naturally outcropping silcrete will have been exploited and evidence for extraction activities (decortication, testing and limited knapping) would be found in such locations.

It has also been hypothesised that stone artefact based sites in close proximity to an identified stone source would cover a range of size and cortex characteristics. With distance away from the resource, the general size of artefacts in the assemblage should decrease, as should the percentage of cortex and rate of artefact discard (Distance–Decay Predictive Model). The validity of these models for all sites across the Cumberland Plain and/or purely within the Rouse Hill area is still to be confirmed, creating

the opportunity for comparative analysis and further development of predictive models on the plain and within sections of the Cumberland Plain.

2.4.4 Previous Archaeological Reports

A number of archaeological studies and academic works have been prepared that include the study area and areas immediately surrounding it. Those of direct relevance to this project are detailed below.

Jo McDonald Cultural Heritage Management 1999

Jo McDonald Cultural Heritage Management (JMcDCHM) undertook archaeological test excavations of two PADs (RH/SP9, 45-5-2290 and RH/CC2) in Rouse Hill as part of Stage 2 works on the Rouse Hill Infrastructure Project. A total of 18 1m x 1m test units were excavated at RH/SP9 and 15 1m x 1m test units were excavated at RH/CC2. Stone artefacts were found in all but one unit, with widespread evidence for stone tool manufacture recovered from both sites. RH/SP9 is situated approximately 500m northeast of the study area, also on the west side of Second Ponds Creek. The artefact assemblage from RH/SP9 is characterised by a low-density background scatter marked with five discrete isolated knapping events and their resultant artefact concentrations.

RH/CC2 is situated 7km southeast of the study area in Kellyville, at the confluence of Cattai Creek and a minor tributary. RH/CC2 had a generally moderate artefact density with deposits suggesting two distinct phases of occupation:

- an upper (more recent) deposit with an assemblage characterised by artefacts made of silcrete, with some quartz and indurated mudstone; and
- a lower (older) deposit contained an assemblage consisting of mostly indurated mudstone.

The artefact assemblages recovered from both sites were assessed as being consistent with the types of sites that could be anticipated in relation to a permanent water source (fourth order stream and the confluence of third and fourth order streams). Both sites, given the presence of deep sandy alluvium resulting in more substantial deposits, have the potential to demonstrate changes in material use and activities through time. Both sites were assessed as having moderate to high archaeological significance. Given their extent and potential significance it was recommended that, with the exception of areas disturbed to install necessary infrastructure, the sites be retained in situ.[31]

Stephanie Garling Archaeological Consultants 2000

Stephanie Garling Archaeological Consultants (SGAC) undertook a preliminary analysis and survey, which identified an isolated artefact (45-5-2575) and two PADs at the RHAC site—RHAC/PAD1 and RHAC/PAD2. The two PADs were tested and assessed for significance, but remain unregistered. From the testing of the two PADs came the identification of two new artefact sites (identified incorrectly in AHIMS as isolated stone artefacts). The testing of RHAC/PAD1 resulted in the identification of RHAC2 (45-5-2573). The testing of RHAC/PAD2 resulted in the identification of RHAC3 (45-5-2574), also incorrectly identified in AHIMS as an isolated artefact. The error in AHIMS is due to the lack of update following the SGAC 2000 excavations.

RHAC 2 (45-5-2573) was an open camp site and artefact site with two knapping floors, totalling 972 stone artefacts, and a burnt tree,[32] which may relate to Aboriginal oven or hearth use. A total of 32 test units measuring 1m x 1m were placed across RHAC/PAD1 (which contained the artefact site, 45-5-2573). Six of these units were part of a transect (Transect Q) which contained test units at 20m intervals. Concentrations of artefacts were recovered in units Q20 and Q40. Expansion around these areas

identified two concentrations, where Q20 held 100 stone artefacts, and Q40 and its expansion units totalled 872 stone artefacts.

Of the stone artefacts, 812 of the 972 artefacts recovered from 45-5-2573 (RHAC2) were associated with the units surrounding Q40. A peak density of 100 artefacts/m^2 was recovered from unit Q38.[33] The main knapping floor contained evidence of production and discard of mainly silcrete artefacts, though silicified tuff, quartz and petrified wood flakes were also recovered. A high quantity of backed artefacts were recovered within this knapping floor (n=47), the majority of which were Bondi points.[34] A smaller second knapping floor, which consisted mainly of silicified tuff, was located towards the eastern end of the units excavated around Q40.

Evidence from the larger knapping floor at Q40 indicates that Bondi points were being produced and/or discarded, suggesting that this knapping floor dates to the Middle Bondaian phase (3000–1000 BP). The heavily weathered nature of the second knapping event suggests that it represents occupation of the site in an earlier period.[35] The dispersed nature of the debitage, indicated by patterns of refit, suggests that the area has been ploughed, resulting in reduced soil profile integrity.

RHAC3 (45-5-2574) was an artefact site which contained seven stone artefacts, identified from the test excavation of RHAC/PAD2. Test excavation included the placement of 15 1m x 1m test units along a single transect (Transect D) spaced at 10m intervals. Seven stone artefacts of silcrete, silicified tuff and quartz were recovered from five test units. Little could be interpreted from these excavations except that this represents a low-density background scatter consistent with the Rouse Hill area more generally. These artefacts provided evidence of Aboriginal use of the area and indicated that stones from several sources were brought to the site.[36] Based on the moderate–high levels of disturbance and extremely low density of artefacts, RHAC3 was assessed as having low archaeological significance.[37]

No test excavations were undertaken at the site of 45-5-2575 (RHAC1) as it was located in an area of high disturbance. Initial survey encountered only one silcrete flake at the site, though an additional seven artefacts (six silcrete flakes and one quartz flake) were noted during subsequent visits. Given the level of previous disturbance in the area it was assessed as lacking the potential for intact subsurface deposits.[38] Given the low potential for intact deposits as a result of disturbance and the low density of surface artefacts, RHAC1 was assessed as having low archaeological significance.[39]

At the cessation of excavations, part of 45-5-2574 (RHAC3) was retained within the RHAC property as part of the ‘protected woodland’. Given its similarity in landform to 45-5-2573 (RHAC2) and evidence of minimal impacts to subsurface deposits from European land use, 45-5-2574 (RHAC3) was assessed as having moderate archaeological potential and significance.[40] Following the recommendations of this SGAC report, RHAC1, RHAC2 and RHAC3 were destroyed with consent during construction of the RHAC. Part of RHAC/PAD2 still remains as an unregistered site within the study area, protected by the woodland. The location of previously test excavated areas, the remnants of RHAC/PAD2, and an isolated artefact (45-5-3920) recorded in 2010 are illustrated in Figure 2.2.

Jo McDonald Cultural Heritage Management 2002, 2005 and 2008

JMcDCHM has conducted several studies, beginning in 2002, associated with the Rouse Hill Infrastructure Project (RHIP) Stage 3—approximately 850m south of the current study area. Proposed development comprised the installation of a number of water, sewerage and drainage related facilities for the Rouse Hill Development Area (RHDA) along the Second Ponds Creek corridor.

A total of 22 archaeological sites and/or isolated finds and eight PADs were recorded within the area. Most of these were found during earlier investigations (Stages 1 and 2).[41]

JMcDCHM undertook several salvage excavations as part of RHIP 3 and Landcom developments. Excavation work focused initially on eight PADs[42] and then two more[43] surrounding Second Ponds Creek, in a range of representative landforms from the lower hill slope landform units to the east and northeast of the watershed ridgeline between Second Ponds Creek and Eastern Creek. These investigations were undertaken in undisturbed PADs and were generally within 50–160m of the creek. The conclusions of this study were:

- Much of the silcrete imported into the Second Ponds Creek area was heat treated prior to transport, although specific heat treatment locales were identified on several sites.
- Backed artefact production is frequent across the study area, and the production of particular shaped blades is identifiable in different knapping floors.
- 'Background scatter' is common across the landscape and represents low levels of accumulated activity. Once average artefact densities reach more than 20 lithics/m^2, knapping concentrations are likely to be found.
- Occupation of the Second Ponds Creek area has been radiocarbon dated from approximately 8000 BP up until the more recent phases of prehistory (the last 500 years). From the generalised distribution of backed artefacts (thought to typically belong to the Middle Bondaian phase) most of the archaeology here probably dates to the last 3000 years.[44]

Kelleher Nightingale 2010

Kelleher Nightingale Consulting Pty Ltd prepared an Aboriginal heritage assessment in 2010 for the Area 20 precinct in the North West Growth Centre, which includes the study area. Several Aboriginal sites and PADs were identified during detailed investigation with registered Aboriginal stakeholders. The survey results included:

- 19 newly recorded Aboriginal archaeological sites within the Area 20 precinct (eight artefact sites and 11 isolated artefacts);
- eight newly recorded PADs within the precinct; and
- revised condition statements and boundaries for a number of the previously recorded sites and PADs.

The majority of the archaeological material was discovered within the Second Ponds Creek corridor. However, artefacts were also observed in lower numbers away from the drainage line, on raised areas above the creek and along a ridgeline where the ground surface visibility was consistently lower.

Survey at RHAC resulted in a fourth site, RH/AP20P 04, being registered within the study area (45-5-3920). Site RH/AP20P 04 consists of an isolated orange silcrete flake identified in a seemingly disturbed mid-slope location 250m southeast of a ridge crest and 240m northwest of Second Ponds Creek. The flake was recovered from within the boundaries of RHAC/PAD2. Ground disturbance in the area suggests that further development impacts have occurred within the PAD.[45]

2.4.5 Aboriginal Heritage Information Management System (AHIMS) Search

A search of the OEH AHIMS database for a zone with a 1km buffer surrounding the study area was undertaken on 28 August 2017. The search identified 52 recorded Aboriginal sites, four of which are located within the study area. The results of the search are shown in Table 2.2 and Figure 2.3.

The four registered sites within the study area are all stone artefact sites. Three of the sites—RHAC1 (45-5-2575), RHAC2 (45-5-2573) and RHAC3 (45-5-2574)—were destroyed with consent during initial construction of the RHAC in 2001. RHAC/PAD1 initially consisted of an isolated silcrete flake within a highly disturbed area, though later visitation of the site resulted in a total of eight artefacts recorded. RHAC2 represents the area tested as part of a previously unregistered PAD (RHAC/PAD1). It is situated on a low, gradual slope approximately 200m east of Second Ponds Creek. A total of 942 stone artefacts were recovered in low to moderate densities across 32 1m x 1m test excavation units at RHAC2. Two higher density stone artefact knapping floors were recovered, along with potential Aboriginal ovens or hearths evidenced by concentrations of clay balls and charcoal.[46]

RHAC3 represents the area tested as part of an identified PAD (RHAC/PAD2) situated towards the northern end of the study area on a moderate slope 341m west of Second Ponds Creek. A very low density of stone artefacts (n=7) was recovered from 15 1m x 1m test excavation units, only five of which contained one or two artefacts each. This was interpreted as general background scatter consistent with that elsewhere in the region.[47]

At the cessation of excavations, the southern and western portions of RHAC/PAD2 were retained. The southern portion of RHAC/PAD2 consists of 'protected woodland' immediately north of the RHAC amphitheatre. During an overview of Aboriginal archaeological studies in the Area 20 Growth Centre (North West Growth Centre), which includes the study area, an isolated silcrete flake was recorded during survey (RHA20/04, 45-5-3920). This artefact was located towards the eastern extent of RHAC/PAD2.

The general patterning of Aboriginal sites in the local area shows a strong association with Second Ponds Creek. There are also a number of sites recorded to the south of the study area, extending between Second Ponds Creek and First Ponds Creek to the west. On closer examination of the associated landforms, these sites are generally contained within a shallow basin sloping gradually down to Second Ponds Creek (Figure 2.1).

'Artefact sites' (which may contain isolated stone artefacts or concentrations of stone artefacts) with a total of one to seven stone artefacts were the most common site feature recorded, followed by artefact concentrations. Stone artefacts are a major component in nearly all sites recorded within 1km of the study area, and were recorded at 92.3 per cent of all sites (n=48). PADs were recorded at 9.6 per cent of all sites (n=5), including two rock shelters recorded as containing PADs. Only one site recorded in proximity to the study area (45-5-2807) had multiple components—a PAD with six artefacts.

Table 2.2 Results of AHIMS Search.

Site Feature	Frequency	Percentage
Isolated Find	3	5.8
Partially Destroyed Artefact Site	1	1.9
Destroyed Artefact Site	2	3.8
'Open Camp Site', Artefact Site	41	78.8
Potential Archaeological Deposit (PAD)	1	1.9
Partially Destroyed PAD	1	1.9
PAD and Artefact Site	1	1.9

Site Feature	Frequency	Percentage
Rock shelter with PAD	2	3.8
Total	52	100.0

2.5 Synopsis of Archaeological Potential and Predictive Model for the Study Area

The desktop assessment indicates that Aboriginal objects are present in the area of the proposed activity. The study area currently contains one extant registered site (three of the previously registered sites were destroyed with consent during construction of RHAC) and an unregistered PAD (RHAC/PAD2). The AHIMS search indicated that there is a concentration of previously recorded artefact sites immediately south of the study area, as well as another concentration of sites approximately 500m northeast of the study area. In the Rouse Hill area, recorded sites commonly consist of stone artefacts (in the form of low-density background scatters) associated with extensive use of the landscape by Aboriginal peoples. Discrete areas of higher artefact densities can provide evidence of focused activity, such as stone tool manufacture.

European occupation of the area has resulted in some disturbance to intact Aboriginal archaeological deposits across the study area. However, this would not necessarily have removed or destroyed the deposits, except for where the construction of the RHAC from 2001 has resulted in the complete loss of condition and integrity (ie within the footprints of the existing buildings). There is, however, the potential that Aboriginal objects remain in areas beyond the footprints of existing buildings, likely in a somewhat disturbed context, but nevertheless present.

The assessment of the environmental context within which the study area is located suggests that there is the potential for artefacts to still be present either in concentrations representing more focused activity or as part of a general low-density background scatter. There is also some potential for Aboriginal hearths and ovens, as indicated by concentrations of clay balls and charcoal encountered during the excavation of RHAC2 within the study area.[48]

Overall, it may be stated that the study area contains previously recorded Aboriginal sites and the potential for intact remnants of a previously recorded PAD. Given the nature and extent of previously recorded surface and subsurface sites within and around the study area, the RHAC property has the potential for Aboriginal artefacts to still be present associated with buried soil horizons.

Table 2.3 provides an overview of the types of Aboriginal sites and/or places that may occur within the study area based on previous archaeological work, likely preservation, historical impacts and ethnographic sources.

Table 2.3 Types of Aboriginal Sites that may be Located within the Study Area.

Feature	Description and Potential Location	Likelihood of Being Found in the Study Area
Stone artefact concentrations	Stone artefact concentrations are collections of stone, frequently brought from other areas, which demonstrate evidence for Aboriginal working, use and/or discard of the stone at a single location. Stone artefact concentrations may be associated with any of the site types listed below.	High

Feature	Description and Potential Location	Likelihood of Being Found in the Study Area
	Where such sites are buried by sediment they may not be noticeable unless exposed by erosion or disturbed by modern activities. These sites are found across the Cumberland Plain. However, densities and the complexity of stone artefact sites tend to increase in association with key resource gathering locations including permanent water sources. If alluvial sediments are found to be present within the study area, stone artefacts may be vertically stratified within the alluvial strata.	
Isolated stone artefacts	Sites consisting of a single stone artefact, isolated from any other artefacts or archaeological evidence—these are generally indicative of sporadic Aboriginal use of a location in the past. A distinction should be drawn between isolated finds that are a component of the background distribution of objects and specialised objects such as axes, hammer stones, grinding dishes etc (which would have been used repeatedly and may have been carried from place to place). These sites may occur across the Cumberland Plain in association with all landforms. Specialised objects such as grinding dishes and hammer stones are more likely to be found in association with key resource gathering locations where Aboriginal occupation was more regular and extended.	High
Heat retainer hearths	Heat retainer hearths are archaeological features found in some flood-prone alluvial landscapes across southern Australia.[49] Heat retainer hearths were small single-use items by which Aboriginal people cooked (steamed) plant and animal foods.[50] Heat retainer hearths are always associated with further archaeological evidence, notably stone artefacts, carbon deposits, clay or stone heat retainers.[51] The use of this site type appears to commence during the mid-Holocene, with a substantial use and proliferation in the last 2000 years.[52] Hearths were constructed by excavating a shallow depression into which hot stone heat retainers and food was placed for cooking.[53]	Moderate
Ground ovens	Ground ovens are archaeological features found in some flood-prone alluvial landscapes across southern Australia.[54] They were means by which Aboriginal people cooked (steamed) plant and animal foods.[55] As compared to heat retainer heaths, ground ovens were larger, more permanent items—and could, on repeated use and depending on the type of food cooked, turn into larger earth (oven) mounds. The use of these features appears to have commenced during the mid-Holocene, with a substantial use and proliferation in the last 2000 years.[56] Ground ovens are always associated with further archaeological evidence, notably stone artefacts, carbon deposits, clay or stone heat retainers.[57] Ground ovens contain carbon-rich blackened soils associated with their construction and use (the deposits may be analysed to determine the foodstuffs cooked).	Moderate

Feature	Description and Potential Location	Likelihood of Being Found in the Study Area
Shell middens	Middens predominantly consist of accumulations of shell that represent the exploitation and consumption of shellfish by Aboriginal people. Shell species may be marine, estuarine or freshwater depending on the environmental context. Middens frequently also include faunal remains, stone artefacts, hearths and charcoal. These sites may be found in close proximity to water bodies suitable for sustaining aquatic species.	Low
Burial sites	Burials may be of isolated individuals, or they may be part of complex burial grounds. Such sites are often associated with other site types such as middens, or mounds. Burials may be found in sand bodies where the ground is suitable for excavation.	Low
Historical Aboriginal objects	Materials such as ceramic or glass that were suitable for knapping and which demonstrate evidence of Aboriginal working. These may be found in isolation or in concentration. These objects may be found in early historical deposits where Aboriginal people camped in close proximity to European settlements.	Low

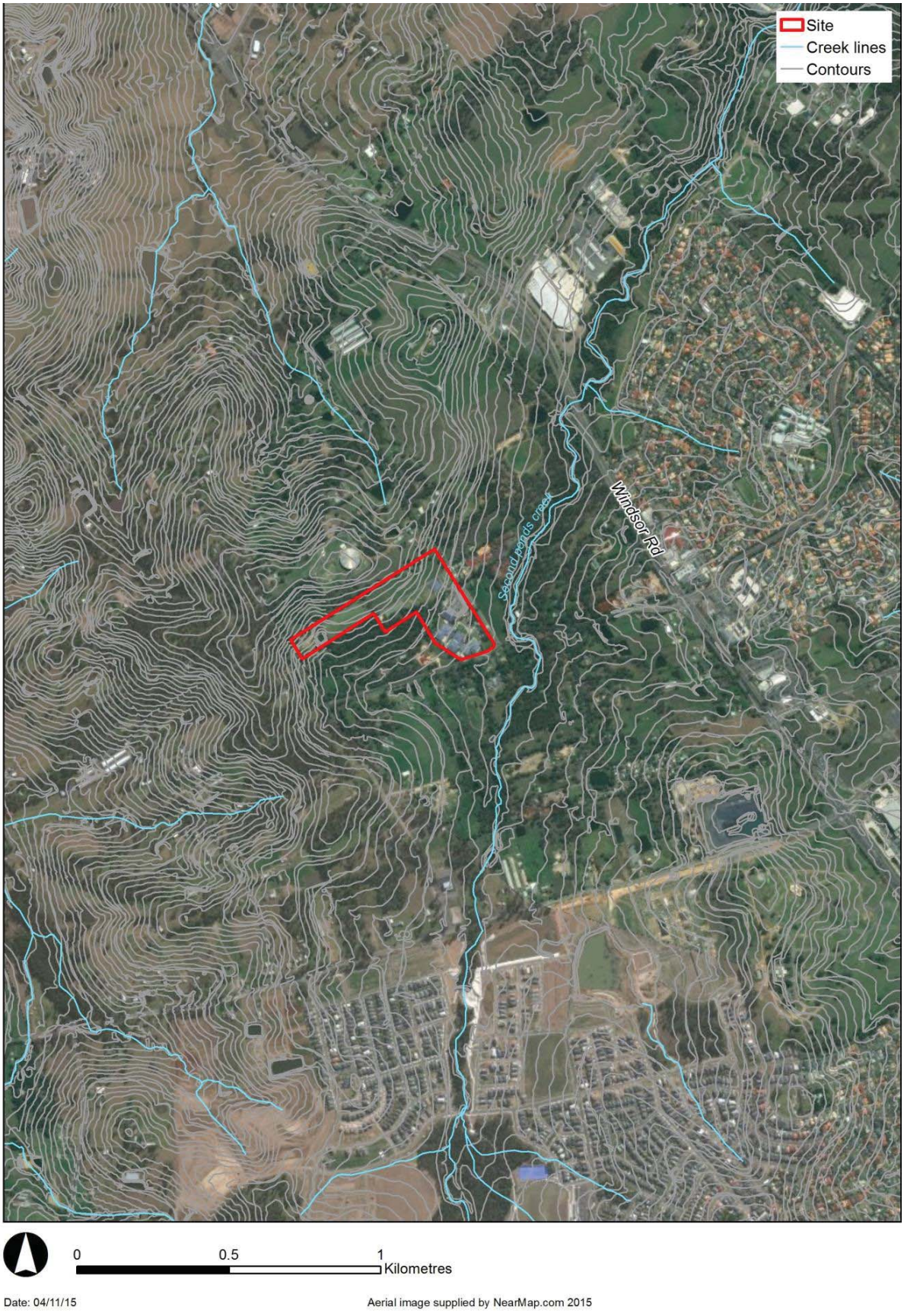

Figure 2.1 Topography and hydrology of the RHAC study area showing the natural slope of the terrain and location of watercourses. (Source: Environmental Mapping Services with GML additions, 2015)

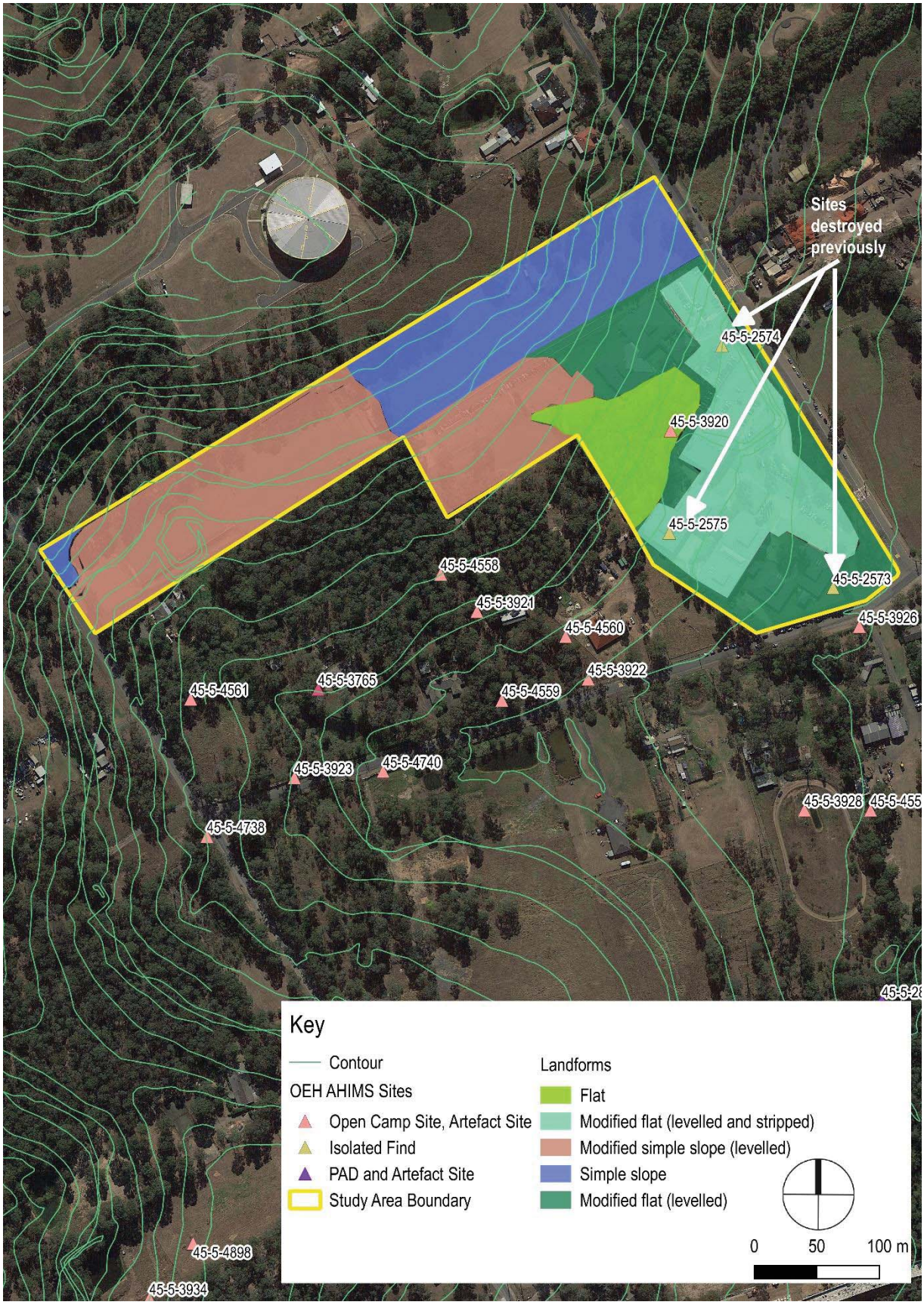

Figure 2.2 Topography and landforms of the RHAC study area including AHIMS sites. (Source: NSW Land and Property Information [LPI] with GML additions, 2017)

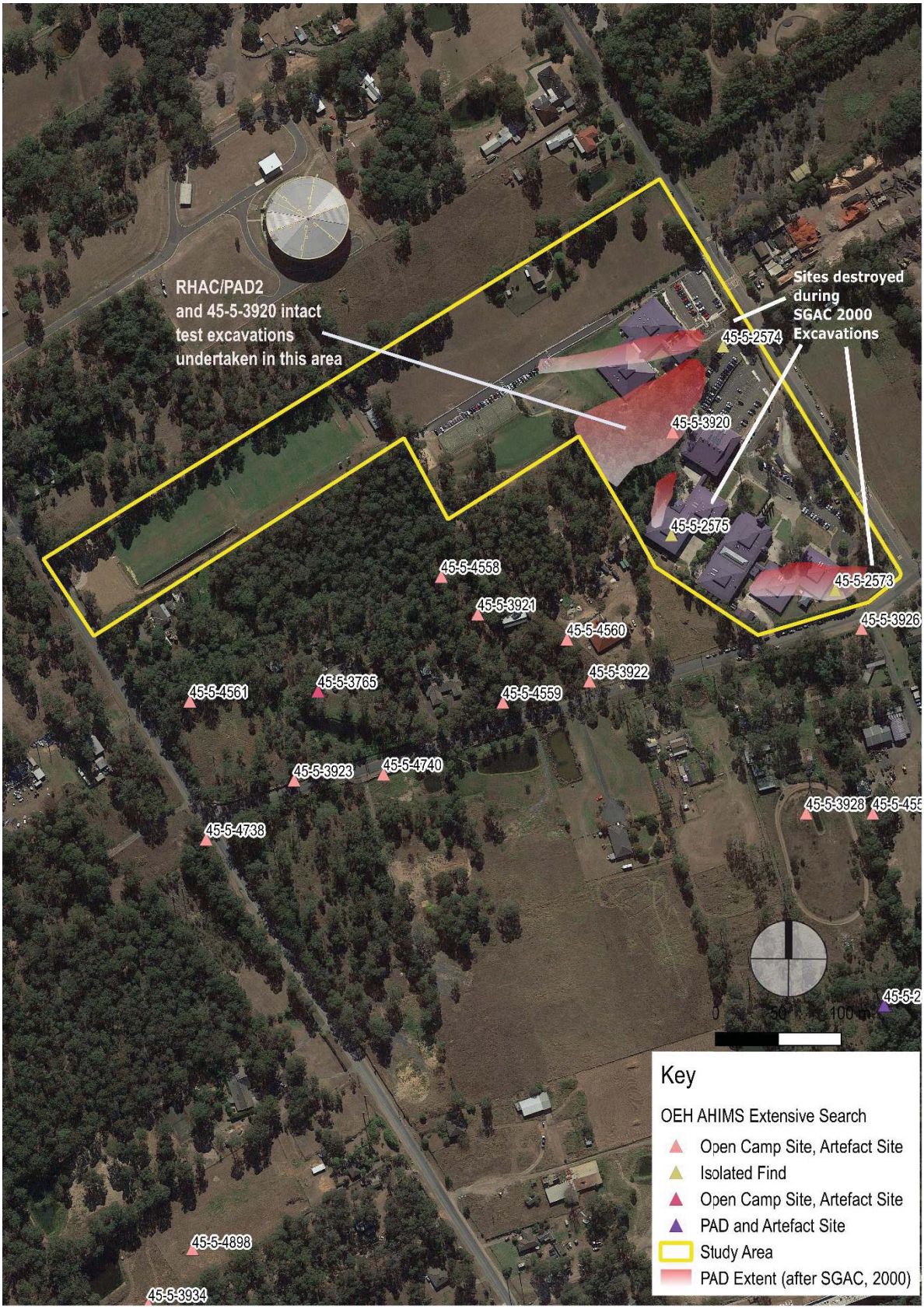

Figure 2.3 Locations of RHAC1 (45-5-2575), RHAC2 (45-5-2573), RHAC3 (45-5-2574), RHAC/PAD2 and RHA20/04 (45-5-3920) within the study area. Note that RHAC1 (45-5-2575), RHAC2 (45-5-2573) and RHAC3 (45-5-2574) were destroyed during construction of Rouse Hill Anglican College but RHAC/PAD2 and RHA20/04 (45-3-3920) remain. (Source: NSW LPI and SGAC, 2000, with GML additions)

Figure 2.4 Registered AHIMS sites within 1km of the study area (depicted in red). (Source: OEH/Environmental Mapping Services with GML additions, 2015)

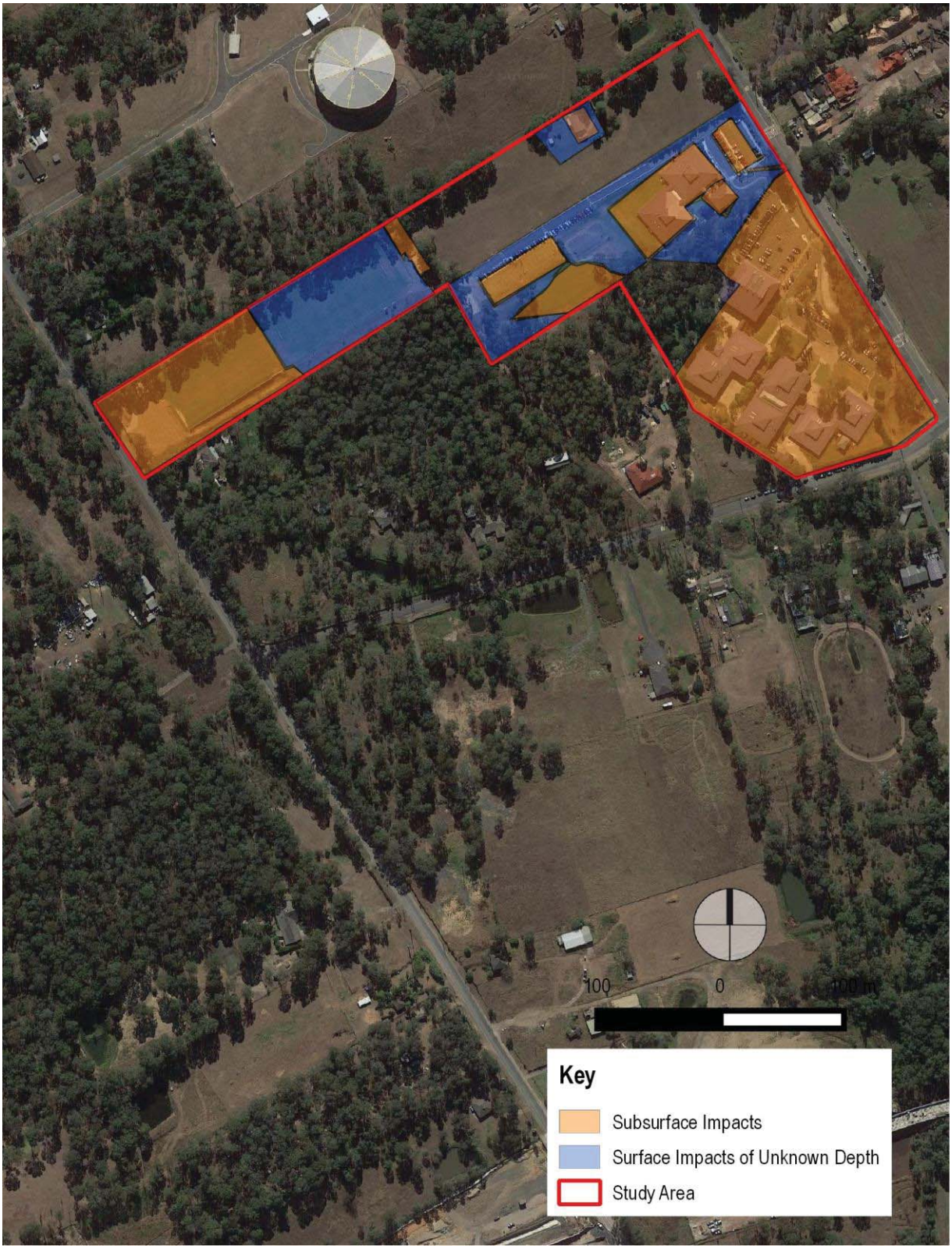

Figure 2.5 Total impacts to soils. (Source: NSW LPI with GML additions, 2017)

2.6 Archaeological Field Survey

The first aim of an archaeological survey is to identify all visible evidence of past Aboriginal occupation within the study area. The second aim is to determine zones that will have buried, subsurface archaeological deposits. Combining these two together will allow the creation of an Archaeological Zoning Plan (AZP) that defines where Aboriginal evidence is (and will be) located across the study area. In addition, consideration should be given to locations within the study area that do not contain physical evidence from Aboriginal occupation, but would have been significant to Aboriginal use of the landscape, eg walking tracks, ceremonial areas, Dreaming trails etc. These should also be recorded, mapped and considered within the framework of assessment and management for Aboriginal heritage.

It must be noted that practically all archaeological survey is limited by a number of factors such as ground surface visibility, access restrictions and tempered by environmental factors during the period of survey. These influences will affect the outcome of any survey, and introduce biases into the results.

2.7 Survey Sampling Strategy

The study area was surveyed by the study team and Aboriginal representatives on 3 October 2017. A linear pedestrian survey aimed to assess the whole study area, inspecting all soil exposures and zones with low vegetation that contained tracks and paths. Sampling included all landforms that will potentially be impacted by the proposed project.

The sampling strategy employed during the survey covered the area indicated in Figure 2.15. The surveyed area included the area where works are proposed, and significant subsurface impact was not identified through the desktop analysis (for example, school buildings, levelling and clearing). It excluded areas where works are not proposed (Figure 2.14).

A partial coverage survey was undertaken to confirm locations of disturbance and identify locations without archaeological potential, as well as the two previously defined locations of Aboriginal archaeological potential where test excavation was proposed.

2.7.1 Field Methods

In accordance with OEH guidelines,[58] the description of survey coverage includes landform units, the total area surveyed within that landform unit and a quantification of the level of exposure and visibility. The OEH has defined exposure and visibility thus:

> *Visibility is the amount of bare ground (or visibility) on the exposures which might reveal artefacts or other archaeological materials. It is important to note that visibility, on its own, is not a reliable indicator of the detectability of buried archaeological material. Things like vegetation, plant or leaf litter, loose sand, stony ground or introduced materials will affect the visibility. Put another way, visibility refers to 'what conceals'.*
>
> *Exposure is different to visibility because it estimates the area with a likelihood of revealing buried artefacts or deposits rather than just being an observation of the amount of bare ground. It is the percentage of land for which erosion and exposure was sufficient to reveal archaeological evidence on the surface of the ground. Put another way, exposure refers to 'what reveals'.*[59]

The calculation of effective coverage provides a means with which to describe the proportion of the study area in which it is possible to assess the presence or absence of archaeological material. This measure is expressed as a percentage and can be calculated using a number of different techniques. For this study, effective coverage was calculated by multiplying the area surveyed by the percentage of exposure

and visibility within the survey unit. The area of effective coverage was then expressed as a percentage of the whole survey unit.

A formal archaeological survey was undertaken by Jodi Cameron and the RAP representatives (as detailed in Table 1.1) on 3 October 2017. The linear pedestrian survey aimed to cover the whole footprint where works were proposed, and the desktop assessment had not identified significant disturbance. The team inspected all soil exposures and zones with low vegetation that contained tracks and paths. Sampling included all landforms that will potentially be impacted by the proposed commercial development project.

The sampling strategy employed during the survey included the following:

- One linear pedestrian transect, with three representatives spaced approximately 20m apart, was undertaken.
- Transects were approximately 10m wide for each participant. Participants zigzagged across the 10m width of the transects to optimise survey coverage.
- Targeted survey for areas of low vegetation occurred along the transect.
- The area specifically targeted the area of RHAC/PAD2, and 45-5-3920, as RAPs agreed that areas where disturbance was identified in the GML 2017 assessment was accurate.

The survey unit boundaries were defined by: landform boundaries; subject area boundary; proposed ham area boundary; and the level of archaeological potential as defined by the desktop based assessment and the archaeological zoning plan. The survey team attempted to relocate 45-5-3920, an isolated artefact, but were unsuccessful. No further Aboriginal sites were identified during the survey.

2.7.2 Archaeological Potential

Archaeological site formation is a complex combination of scientific factors, such as bioturbation, and environmental factors, such as erosion or burial through soil movement. Once discarded on the ground surface, artefacts are often readily incorporated into the topsoil horizons through the process of bioturbation. Most commonly, dense artefact deposits exist hidden beneath the upper surface, unobservable by the casual observer (c.f. Wandsnider and Camilli 1992;[60] Fanning and Holdaway 2001[61]). Archaeological assessments that do not employ appropriate methods of subsurface detection or prediction cannot reliably define an area's archaeological content. Most frequently, the eroded component of a larger subsurface deposit is detected and recorded as a site. Where soils are sandy, artefacts can occur at greater depths and erosion may frequently expose artefacts. Therefore it is crucial that soils, sands and geomorphology of an area are defined in an archaeological assessment and the archaeological implications defined. An understanding of these factors, linked further to the notions of site integrity and condition, yield an understanding of an area or site's archaeological potential.

It is important to note that the level of archaeological potential relates to the likelihood of discovering an Aboriginal object within a location. Further description should then be made as to the potential condition and integrity of the soil matrix and potential site itself. Only once all these factors have been considered can scientific value start to be assessed for an area with potential. Therefore, whilst scientific value and potential are linked, it must be noted that these values and potentials are not the same and can differ substantially for any single site or area with potential.

Areas with archaeological potential were identified according to the definitions in Table 2.4.

Table 2.4 Definitions of Archaeological Potential.

Rank	Definition	Example
No potential	Artefacts cannot occur in situ.	Eroded landforms, reconstructed landscapes, hazardous landscapes, developed areas. All building footprints associated with RHAC. Locations known to be stripped to clay.
Low potential	Artefacts are not normally found in comparable contexts but could occur in low densities making detection unlikely.	Landforms with no specific focus for use, ie with water sources or undifferentiated slopes.
Moderate to high potential	Artefacts are known to occur in comparable landforms in detectable densities (~1 artefact/m^2) and there is an unknown possibility for detection.	Landforms with an environmental focus which may have seen seasonal visitation. Undifferentiated slope on Blacktown soils without evidence for earthwork disturbance to subsurface soil profile.

2.8 Survey Results—Survey Units and Landforms

In accordance with OEH recording requirements, the study area was surveyed according to survey units, landforms and landscapes. All survey units are described in Table 2.5 and shown in Figure 2.15. Details with respect to landform coverage are provided in Table 2.5.

Previous inspections have included the whole study area; the current survey focused specifically on the area of high archaeological potential identified by the desktop based assessment. The desktop survey identified that most of the artefact bearing portion of the southern portion of the school has been removed through construction of the school—the current inspection confirmed this. In total, 32,799m^2 (3.27 hectares) were surveyed. There were few opportunities for visibility and exposure, which consisted of erosion of topsoil within the woodland clearings. No artefacts were identified in surface contexts.

Table 2.5 Survey Coverage.

Survey Unit (SU)	Landform	Survey Unit Area (SUA) (sq m)	Visibility (V) %	Exposure (E) %	Effective Coverage Area (ECA) (sq m) (=SUA* V%*E%)	Effective Coverage % (=ECA/SUA *100)
1	Simple slope (northern property test area)	11,080	0	0	0	0
2	Flat (within school grounds)	1,900	30	10	687	3
3	Modified slope (earthworks for hardcourt, parking)	19,819	0	0	0	0

Table 2.6 Landform Summary—Sampled Areas.

Landform	Landform Area (LA) (sq m)	ECA	% Landform Effectively Surveyed (=ECA/LA *100)	Number of Aboriginal Sites	Number of Artefacts or Features
Flat	21,643	687	3	1	1
Simple slopes	16,439	0	0	0	0

2.8.1 Survey Results—Aboriginal Sites/Places and Landscapes

The archaeological survey did not identify further Aboriginal sites/places or areas with PAD. An overview of these sites and areas of PAD is provided in Table 2.7. The locations of all recorded sites and PADs are shown in Figure 3.2. Site 45-5-3920 could not be relocated during the survey.

Table 2.7 Recorded Aboriginal Heritage Sites and Places.

Site Name	Features	Survey Unit	Landform
45-5-3920	Isolated Artefact	1	Flat

The effectiveness of survey coverage for SU1 and SU2 was very low due to grass coverage, and the presence of buildings/carparks. Where erosional exposures were identified, the survey team focused on surfaces on which stone artefact scatters may have been identified. The survey provided poor effectiveness for survey coverage across the area of high archaeological potential and test excavation was justified to determine the presence or absence of subsurface deposits.

The following observation was made during the survey: the study area could be separated into three broad landforms: broad slope (northern property); modified slope (carpark and hardcourt areas); and flat (location within the school).

2.9 Rouse Hill Anglican College Archaeological Zoning Plan

RHAC contained two zones with different archaeological potential. The Aboriginal Archaeological Zoning Plan (AZP) is shown in Figure 2.14. The two zones are:

- Moderate to high Aboriginal archaeological potential—the wooded zone identified as part of RHAC/PAD2. This area does not appear to have been disturbed by any substantial disturbance impacts. As such this area retains high soil condition and integrity. Also, the northern property, without evidence for disturbance and therefore retaining high soil condition and integrity.
- No Aboriginal archaeological potential—locations substantially excavated and impacted by historical disturbance. For example, the locations where buildings and consent to destroy sites by SGAC have been undertaken. These zones are unlikely to retain any soil integrity. Soil condition is likely to be low, with residual soils having been substantially moved from their original context.

Figure 2.6 View to the west from northern boundary of the study area from Worcester Road—northern property testing area, a long broad slope of three per cent. (Source: GML, 2017)

Figure 2.7 View southeast towards hardcourt and carpark adjacent to northern property testing area. (Source: GML, 2017)

Figure 2.8 Remnant Cumberland Plain vegetation in which RHAC/PAD2 was identified; view southeast towards main school area. (Source: GML, 2017)

Figure 2.9 High visibility of Cumberland woodland area, likely through use and soft landscaping over the course of the use of the school; view of RHAC/PAD2 looking southwest. (Source: GML, 2017)

Figure 2.10 View of northern part of RHAC/PAD2 with brick faced path and landscape modification of broad natural slope. (Source: GML, 2017)

Figure 2.11 View to the southeast towards main school, looking across RHAC/PAD2. (Source: GML, 2017)

Figure 2.12 View to the southeast across hardcourt and carpark modified slope landform, toward RHAC/PAD2. (Source: GML, 2017)

Figure 2.13 The survey team inspecting surface exposures for isolated find and additional expressions of RHAC/PAD2. (Source: GML, 2017)

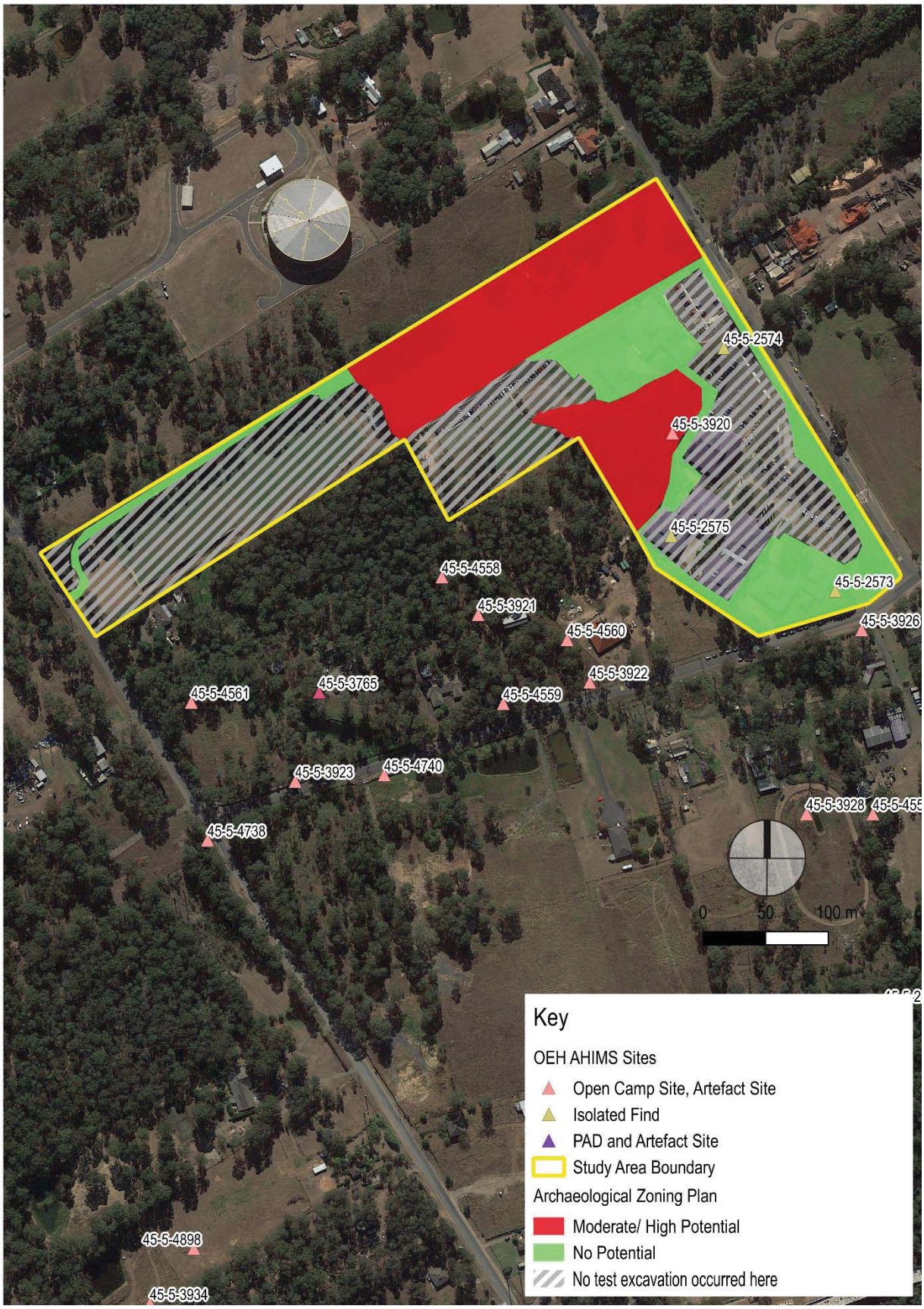

Figure 2.14 Archaeological Zoning Plan based on desktop based assessment. (Source: NSW LPI with GML additions)

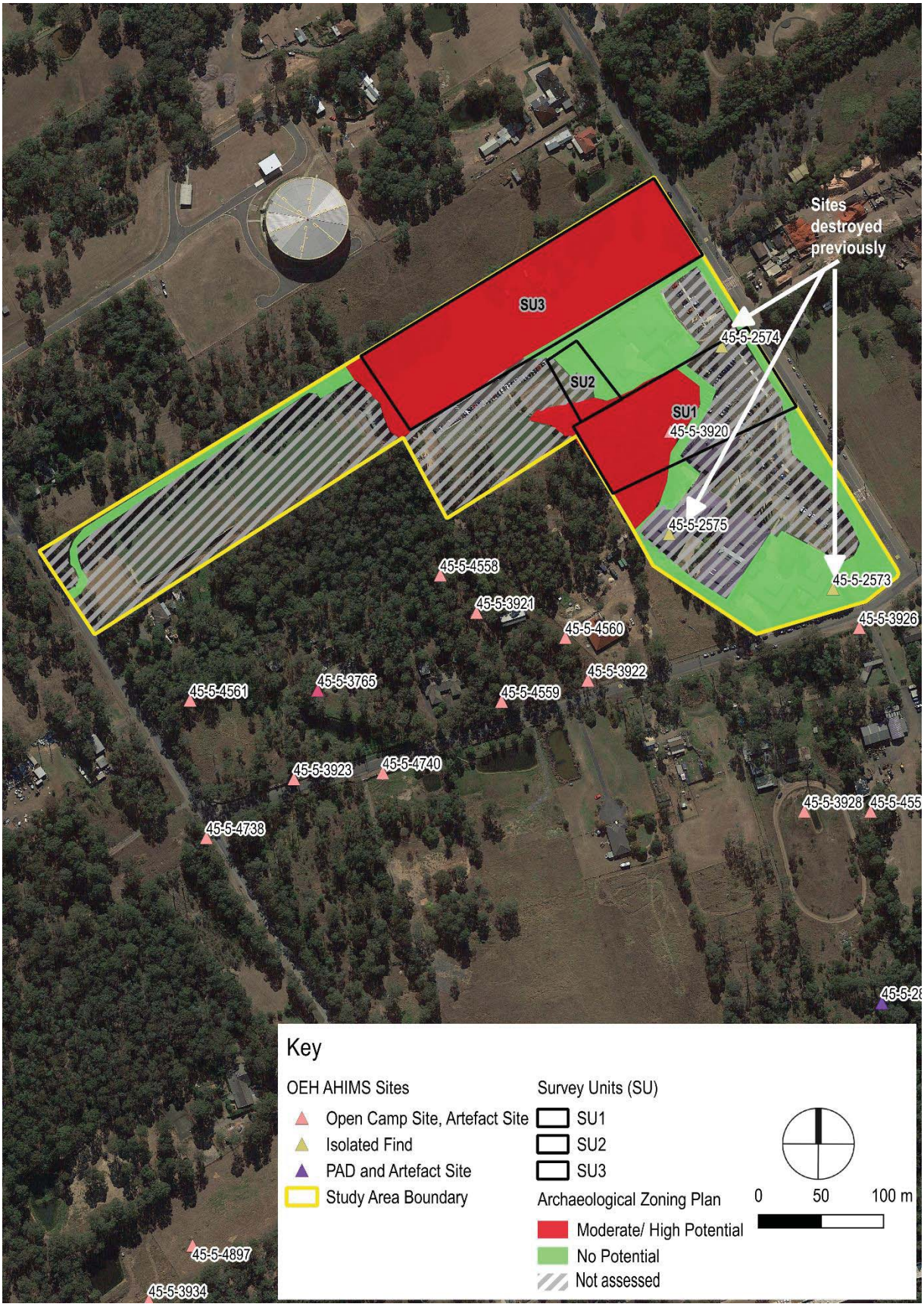

Figure 2.15 Survey results, with AZP overlay. (Source: NSW LPI with GML additions)

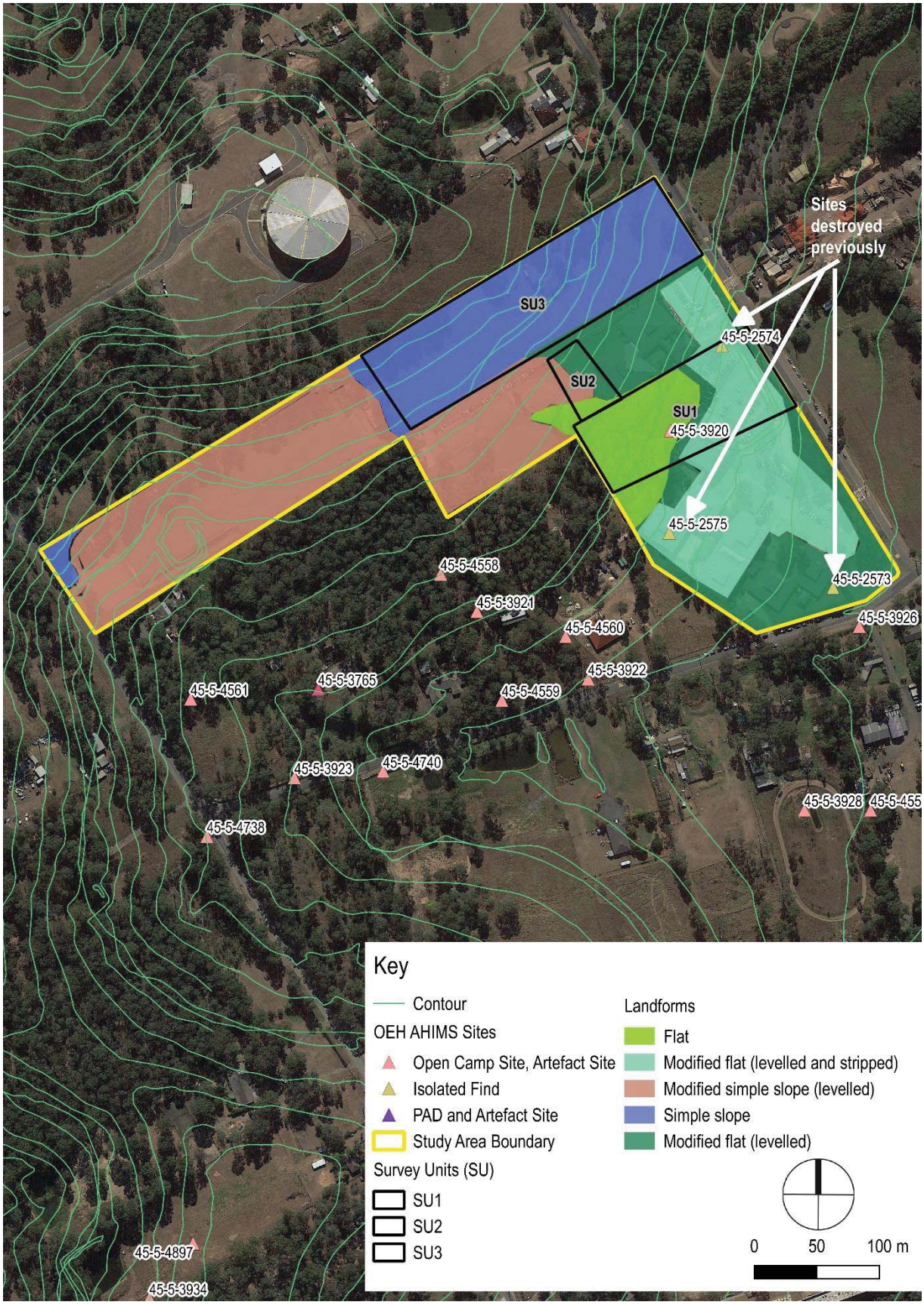

Figure 2.16 Survey results, with landforms overlay. (Source: NSW LPI with GML additions)

2.10 Archaeological Research Design

This ARD defines the methodology and research parameters for archaeological test excavation at RHAC. It has been prepared in response to the environmental background and previously recorded sites within the study area (Section 2.0). Field survey and consultation with RAPs following submission of this draft document may further refine the proposed test excavation methodology before it is finalised.

2.10.1 Mechanism for Archaeological Test Excavation

Archaeological test excavation is permitted under the Code of Practice[62] without the need for a Section 90 permit. That is, it is excluded from the definition of 'harm' under the NPW Act provided that the subsurface investigations are not carried out in the following areas:

- in or within 50m of an area where burial sites are known or are likely to exist;
- in or within 50m of a declared Aboriginal Place;
- in or within 50m of a rock shelter, shell midden or earth mound; and/or
- in areas known or suspected to be Aboriginal missions or previous Aboriginal reserves or institutes.

As described by the OEH, the purpose of test excavation is to:

> *... collect information about the nature and extent of sub-surface Aboriginal objects, based on a sample derived from sub-surface investigations. Test excavations contribute to the understanding of site characteristics and local and regional prehistory and they can be used to inform conservation goals and harm mitigation measures for the proposed activity.*[63]

This section provides details of the proposed archaeological test excavation in accordance with Requirements 14–17 of the Code of Practice. It includes:

- the test excavation sampling strategy;
- details of OEH notification; and
- the methodology for test excavation.

Aboriginal community consultation has been undertaken in accordance with NPW Regulation subclause 80C(6) prior to this proposed methodology being prepared and will continue throughout the project.

2.10.2 Test Excavation Sampling Strategy

An appropriate methodology for archaeological test excavation has been defined by the OEH.[64] However, the sampling strategy for undertaking test excavation should be developed in accordance with the needs of each project and be subject to the specific requirements of its study area. Locations which were not tested did not form a part of the proposed RHAC redevelopment (Chapter 1.0, Figure 1.4) and therefore were not assessed.

An understanding of previous archaeological work and AHIMS data provides a context for previously identified Aboriginal objects. Acknowledging the data and recording limitations of the AHIMS system, there is a basic correlation between densities of previously recorded Aboriginal features and zoning identified as having a potential for archaeological deposits.

In an ideal situation, where no post Aboriginal occupation impacts have occurred, all the zones identified as possessing archaeological potential would be sampled. However, in order to develop a strategic sampling model, consideration needs to be given to natural and historical processes that have impacted and/or removed archaeological deposits associated with the study area. The primary impact to Aboriginal archaeological deposits at RHAC was due to the construction and expansion of the college from 2001 onwards and the earthmoving impacts associated with the house and dam on the lot near Cudgegong Road. Ground surface impacts due to building construction will have been substantial although some areas of the school site will have been subject to disturbance of a lesser or unknown degree; this is mainly applicable to the oval and possibly also the carpark areas. This was confirmed through site survey (see Archaeological Zoning Plan).

Given the presence of registered and unregistered sites within the study area, the high concentration of recorded sites in the immediate vicinity on comparable landforms, and the limited size of the study area, GML undertook archaeological test excavations across the parts of the study area that have not been previously developed, and are associated with the current proposed development work.

The two goals of this test excavation were:

1. To identify whether the northern property acquired for expansion of the school has an intact Aboriginal archaeological signature.

2. To identify the extent and boundary of RHAC/PAD2, as potentially expressed by AHIMS 45-5-3920 (Isolated Find).

2.10.3 Archaeological Sampling Strategy

The archaeological sampling strategy employed during the excavation at RHAC is based on the methodology for sampling developed by Orton.[65] Orton presents a 12-step process for determining a suitable process of sampling and test excavation methodology. The test methodology developed by GML for the RHAC proposed redevelopment follows Orton's categories and is presented below.

Existing Knowledge

The existing knowledge collected for this report comprises:

- registered site data and prior reports;
- the landscape context; and
- known impacts to the study area that will affect archaeological potential.

The combination of these aspects defines the zones within the study area that are suitable for archaeological testing. Test excavation units were located in areas of varying archaeological potential. Where possible, locations which have been surveyed as disturbed during either the farming history of the lot abutting Cudgegong Road, or the known locations of major earthworks sampling, have been avoided as these locations have no potential for Aboriginal archaeology.

Population

The targeted population is defined by the extent of the study area boundary and the extent of significant impacts within the study area. Archaeological sampling was targeted to those areas that have archaeological potential (those zones that are likely to contain a residual deposit) and are not highly disturbed and/or posing a danger to the fieldworkers (ie service corridors were avoided). Two locations

were defined as containing archaeological potential; the area within the school without major disturbance where RHAC/PAD2 is located, and an adjacent property to the north of the school which is undeveloped.

Test Units (TUs) were placed extending across these landforms within the study area that will be subject to development as part of the RHAC Masterplan. Surveyor errors, in-the-field renumbering, and offsetting TUs around trees means that this report supersedes and updates the previous methodology in TU ID labels (Figure 2.17).

Figure 2.17 Updated TU layout following in-the-field offsetting. (Source: NSW LPI with GML additions, 2017)

Data Collection

Data was collected for each TU during the test excavation on a specific TU context sheet. Data collected included:

- TU number;
- TU location;
- TU landform;
- TU aspect;
- depth of each spit as excavated;
- number of stone objects (or other feature/s) per spit;
- total number of objects;
- any features or inclusions (such as carbon);
- taphonomic factors (disturbance, bioturbation etc); and
- soil characteristics.

Section and plan diagrams (where features are present) were created where appropriate (Appendix B), and justifications made as to why the TU was expanded (in accordance with OEH guidelines) or if further TUs were placed around the initial TU to better understand the extent of an archaeological deposit.

The excavation director supervised all TU recording and determined whether further TUs were excavated or expanded in consultation with RAPs on site (in addition to those defined by the sample grid).

A running total of features and Aboriginal objects was kept to determine an in-the-field comparison between sample areas.

Degree of Precision Required

The location of each sample transect was established using QGIS—based on landforms, disturbance factors and archaeological potential. For every sample transect, TUs were positioned using QGIS on transects at 20m intervals. The accuracy of this initial layout is high. All TU locations were set out by a surveyor, based upon the sample pattern developed in QGIS (with variation only where physical features on the ground necessitate this). TU placement was modified in the field and recorded using a total station to maintain high levels of accuracy. Excavation of each spit was determined by an archaeologist using a hand tape—the vertical control for excavating was around 100mm. Spatial control of TU locations and vertical excavation was sufficiently precise to define the location of Aboriginal deposits across the study area and to allow the research questions to be addressed.

Method of Measure

The natural background density of Aboriginal objects across the wider region is low: that is, less than one artefact per square metre (based upon an understanding of archaeological excavation results from regional work—Section 2.0). In this region, it is suggested that object densities over 20 per square metre represent a denser focused deposit. None of these features were identified during the test excavations.

The Frame for Sampling

With reference to the units of sampling, Orton states that:

> *… survey does not have to be based on grid squares or transects: other shapes (even ones without straight lines) are statistically permitted …*[66]

The OEH's requirements for sampling are fairly basic—the sampling framework for the test excavation has been based upon 20m grids (where TUs will be excavated in transects, with 20m spacing [intervals] between TUs). Transects are located within the Blacktown soil landscape on a simple slope, and flat landform, avoiding all known limitations. Similarly, locations which were not identified as subject to impact for the proposed redevelopment were omitted from testing strategies. TUs are positioned to intersect known surface expressions of archaeology and to sample areas that have been identified as potentially associated with Aboriginal traditions and activity.

In order to ensure a reasonable sample of the study area, two key areas of test excavation have been identified. The offset between transects is 20m, thus allowing for a regular pattern of sample TUs. Orton[67] has examined the relationship between site area to grid interval and the probability of discovering a site. He contrasted a square grid against a staggered square grid and found that 'a staggered grid is considerably more efficient than a square grid …'[68] with an increased probability of discovering sites using the staggered grid.

TUs 1 to 24 sample the newly purchased property to the north of the existing school. The second location is to locate the boundary of the PAD (RHAC/PAD2—TUs 27 to 40) that was previously identified by SGAC in the archaeological excavations at RHAC in 2000.[69] The TUs in each of the locations are positioned on a staggered offset pattern, where trees and paths did not prevent access. Forty TUs were excavated across the two sampling locations (Figure 2.17).

The Pre-Test or Pilot Survey

Orton notes that the best field research designs can be made when the activity is over and that a pilot can serve to remove some of the 'bugs' from the sampling process.[70] The current test excavation design has been based upon detailed background research and will be updated with any new information arising from the field survey, with GPS-based identification of areas that are suitable for subsurface sampling.

The archaeological research design allowed that if a specific portion of the area with PAD should be identified to hold no potential, because of historical impacts, then excavation in that area may be terminated prior to the completion of all TUs, or TUs skipped to a location that may yield intact soil horizons, provided that both archaeologists and Aboriginal stakeholders agree on this course of action.

During the test excavation, the Aboriginal representatives and field archaeologists responded to the initial results of excavation and determined whether all of the PAD area should be tested. Asbestos contamination prevented TUs 6 and 7 from being excavated or offset; test excavation did not occur in these TUs. Localised disturbance was not identified within the test excavations; however, the northern property was identified as containing an imported A horizon fill, and appears to have been variously stripped to A_2/B_1 horizons—below the expected artefact bearing horizons.

Organisation

The test excavation was undertaken by a team which included an archaeological director, two field archaeologists and four Aboriginal representatives (from the RAPs). Excavation teams of two people hand-excavated TUs within RHAC/PAD2 initially, then along the two transects within the northern

property. Wet sieving occurred near the carpark area within the northern property. The client backfilled each test unit with clean fill following the completion of testing and recording of the two areas. All information relating to each TU was recorded on a context sheet. All excavated soil with archaeological potential was wet sieved through a 5mm sieve.

Running totals of artefacts and features were kept during the excavation in order to keep track of Aboriginal object yields on a sample transect, so that a logical progression to expanding a sample transect could be made.

Objectives (and Research Questions)

The first objective of the archaeological test excavation at RHAC was to undertake excavation that allows for the clarification, characterisation, description and archaeological potential of soil horizons across the study area.

The second objective is to determine whether these soil profiles contain archaeological materials and to undertake an assessment of them within a regional context.

In order to achieve these two objectives, research questions have been established to guide the archaeological process and provide the basis for questioning the data collected. Relevant research questions include:

1. What are the characteristics of soil horizons across the study area?
    - How has the land use history impacted the study area and survival of soils and thus archaeological material?
    - At each location, is the deposit consistent? Or does it possess characteristics that tell of different depositional or formation events?
2. Is there an archaeological deposit present?
    - Is the deposit stratified?
    - Is there archaeological evidence which can be dated (through scientific methods, carbon dating, optically-stimulated luminescence [OSL] and/or relative dating)?
    - Does the deposit have different degrees of archaeological potential with depth?
    - What evidence—if any—other than stone artefacts is present for Aboriginal occupation and/or use of the study area?
3. What is the general nature of stone artefacts recovered from the site? How can the stone artefact assemblage be characterised?
    - What raw materials are represented in the stone artefact assemblage?
    - Can any information be ascertained from the stone artefact assemblage regarding the intensity of stone artefact reduction and discard?
    - Can a difference between stone artefact deposits be identified by different strata in the assemblage over time? If so, what is the nature of that difference?
4. How can the deposit be interpreted?

- Is there any evidence for variation in landscape use and selection strategies?
- Can deposits or features be dated? What is the antiquity of the evidence?
- Does the archaeological deposit vary spatially within one location/site? How?
- What does the archaeological deposit tell us about Aboriginal use of this specific landscape?

5. Can the archaeology be interpreted in a regional context?
   - What is the source of the artefactual stone? How does this correlate with current regional research and knowledge of stone resources?
     - Is raw stone material for artefact manufacture readily present within or near to the study area?
     - Has stone been brought into the study area? From how far away has the stone been brought?
     - Why might stone have been imported (eg because it is high value/quality material or due to raw material scarcity or lack of variety on the Cumberland Plain)?
     - What is the main discard and reduction strategy pattern that can be observed for different raw materials at RHAC? How does this compare with other sites on the Cumberland Plain?
     - Attenbrow suggests that 'the proportion of silcrete in sites is generally higher as distance from the Nepean River in an easterly direction increases; at the same time tuff, chert, quartz and basalt decreases in proportion'.[71] Do the relative proportions of stone raw materials, as compared to other sites in the broader Cumberland Plains landscape, support this theory?
   - Does the archaeological deposit within this study area conform to the distance from water regional predictive model and theories or not? Does it fit better with other predictive models?
6. Is the archaeological deposit culturally significant?
   - What is the heritage value of the deposit, both scientifically and culturally?
   - How does the Aboriginal community view and value the deposit identified?
7. Is there a deposit worthy of conservation or of future research?
   - Where and what deposits should be conserved for future generations?
   - Which deposits should be subject to more extensive investigations?

Summary and Analysis

Following test excavation, technical analysis was prepared below that summarised the RHAC test excavation results. No Aboriginal objects or faunal remains, nor shell material and/or human skeletal material, were identified during the test excavation.

Analysis of the local Aboriginal cultural landscape and reporting was undertaken by GML. The results are assessed with the assistance of QGIS, and mapping of sites, places, landscapes and heritage values is GIS based.

This test excavation report was provided to the RAPs for review and comment on 4 December 2017 to satisfy the SEARs for the SSD 8006 RHAC proposed redevelopment. Following Aboriginal community review, the report will be forwarded to the DoPE for the lodgement of an SSD application.

Information Gained for Future Study

The information derived from test excavation is used to expand the heritage values assessment of the study area. This report provides direction for conservation of Aboriginal heritage and an impact analysis for all known objects, sites, places and values within the study area.

The report also contrasts and compares the study area to other sites within the wider region and provides direction for future studies.

2.11 Test Excavation Results

2.11.1 Organisation

The OEH was notified in writing 14 days before the commencement of test excavation, in accordance with Requirement 15c of the Code. Notification was provided to Susan Harrison, Senior Team Leader Planning, of Greater Sydney Region, OEH, on 15 September 2017.

Archaeological test excavation was undertaken between 3 October and 6 October 2017 in accordance with the ARD (Appendix D), outlined above, and previously reviewed by the RAPs; the individuals involved in the work are detailed in Table 2.8. The total lateral area excavated was 14m^2.

Table 2.8 Individuals Involved in Archaeological Test Excavation.

Person/Qualification	Affiliation	Role
Jodi Cameron, BA(Hons1) Archaeology	GML	Excavation Director
Peter Woodley, BA(Hons1) Archaeology	GML	Supervisor/Archaeologist
Susan Whitby, BA(Hons1) Archaeology	GML	Archaeologist
Lara Tooby, BA(Hons1) Archaeology	GML	Fieldwork Coordinator
Justine Copelin	Darug Custodian Aboriginal Corporation (DCAC)	Archaeological Assistant and RAP
Taylor Blunden	DCAC	Archaeological Assistant and RAP
Mark Newnham	Darug Land Observations (DLO)	Archaeological Assistant and RAP
John Reilly	Darug Tribal Aboriginal Corporation (DTAC)	Archaeological Assistant and RAP
Dennis Paterson	Darug Aboriginal Cultural Heritage Assessments (DACHA)	Archaeological Assistant and RAP

Person/Qualification	Affiliation	Role
Joshua Barnsley	DACHA	Archaeological Assistant and RAP

Each TU was recorded by the excavation team on a TU recording sheet during excavation (Appendix B) and photographed and recorded by the Excavation Director after excavation was completed. Details recorded included TU number, soil texture, compaction, inclusions, moisture content, evidence for bioturbation, and stratigraphic profile (A_1, A_2, B profiles where present). The locations of each test unit are documented in Table 2.9.

The sedimentary profile was recorded across the study area and led to the classification of 11 soil profile types—all components of the Blacktown soil landscape, all with completely absent A_1 soil horizons. As no stone objects or cultural features were observed during the test excavations, no samples of these were collected.

2.11.2 Synopsis of Excavation Results

A total of 40 test units were excavated in accordance with the methodology above. Soils identified belonged to the Blacktown (bt) soil landscape. No culturally derived stone materials were recovered.

All of the soil profiles lacked an intact A_1 horizon of the Blacktown soil landscape, and the first two spits of each TU were characteristic of variously truncated A_2 horizons. The results of the survey and the landscape analysis through the identification of soils identified that the absence of artefacts was likely to be due to a number of factors:

- The truncation of the A_1 horizon disturbed the potential for Aboriginal archaeology. No intact or remaining archaeological deposits were identified across the site.
- RH/AP20P 04, 45-5-3920, an isolated find was identified in a seemingly disturbed mid-slope in 2010. It was located 250m southeast of a ridge crest and 240m northwest of Second Ponds Creek. The flake was recovered from within the boundaries of unregistered PAD RHAC/PAD2.
- Ground disturbance in the area suggests that further development impacts have occurred within the PAD, and this has been confirmed through test excavation.[72]
- On the grounds that the 45-5-3920 was identified within a disturbed context, and the area of PAD was identified as disturbed through the current test excavation, it is likely that the isolated find (45-5-3920) identified by KNC in 2010 has eroded out from a secondary context, rather than a primary context such as a PAD.
- On that basis, the excavation demonstrated that the area designated as unregistered site RHAC/PAD2 was not a PAD and had no archaeological deposits.

Table 2.9 Location of TUs Excavated and Updated TU ID, due to In-the-Field Offset and Surveyor Errors in Set-out of TU.

TU ID (in Proposed Methodology)	Renumbered TU ID (from In-the-Field Recording—Matches Context Sheets)	Notes	Updated Easting	Updated Northing	Total Stone Objects (Heat Shatters and Stone Artefacts)
1	1		306086.991	6271065.992	0
2	2		306070.070	6271055.358	0
3	3		306053.128	6271044.711	0
4	4		306036.203	6271034.066	0
5	5		306019.259	6271023.427	0
6	25	Renumbered from TU6 to TU25—not excavated or surveyed—in asbestos area	—	—	0
7	26	Renumbered from 7 to TU26—not excavated or surveyed—in asbestos area	—	—	0
8	6		305951.536	6270980.866	0
9	7		305934.603	6270970.213	0
10	8		305917.663	6270959.573	0
11	9		305900.741	6270948.930	0
12	10		305883.801	6270938.285	0
13	24		305866.870	6270927.639	0
14	11		305900.741	6270948.930	0
15	12		306072.242	6271033.109	0
16	13		306055.305	6271022.458	0
17	14		306038.377	6271011.813	0
18	15		306021.443	6271001.177	0
19	16		306004.511	6270990.531	0
20	17		305987.582	6270979.890	0
21	18		305970.652	6270969.247	0
22	19		305953.707	6270958.607	0
23	20		305936.779	6270947.975	0
24	21		305919.841	6270937.318	0
25	22		305902.915	6270926.678	0
26	23		305885.979	6270916.030	0
27	Not renumbered	On SW boundary line—deleted	—	—	0

TU ID (in Proposed Methodology)	Renumbered TU ID (from In-the-Field Recording—Matches Context Sheets)	Notes	Updated Easting	Updated Northing	Total Stone Objects (Heat Shatters and Stone Artefacts)
28	Not renumbered	On SW boundary line—deleted	—	—	0
29	27		306036.995	6270917.999	0
30	28		306017.307	6270907.995	0
31	30		306086.829	6270913.895	0
32	Not renumbered	Point on path—deleted, unable to be offset	—	—	0
33	31		306054.542	6270899.507	0
34	32		306039.172	6270895.744	0
35	33		306091.300	6270904.891	0
36	34		306075.218	6270894.773	0
37	35		306058.284	6270884.140	0
38	36		306041.352	6270873.494	0
39	Not renumbered	Point on path—deleted, unable to be offset	—	—	0
40	37		306077.398	6270872.519	0
41	38	Excavation stopped due to the identification of asbestos in modern fill	306060.463	6270861.880	0
42	39		306088.041	6270855.594	0
43	40		306071.110	6270844.950	0
—	29	Point added during mark-out of TUs (not in ARD)	306101.102	6270928.762	0

2.11.3 Soil Conditions (Integrity and Condition)

Soils observed throughout the two testing areas differed beyond the A_2 horizon characterisation. However, across the study area, A_1 soil horizons were notably truncated in soil profiles. Commonly, across the two testing areas the A_1 was absent, or heavily truncated, and A_2 horizons were variously truncated, between 10cm and 4cm in depth. The northern property showed evidence for complete stripping of the area, to A_2 soil horizons, with an imported A_1 fill evident across the transects. The A_1 stripping had not been evidenced in historical aerial photography, yet ploughing and clearing was known from previous assessments.

The soil profiles identified during test excavations can generally be categorised into six typical soil profiles across the two testing areas. The complete photographic records and context sheets of the stratigraphy of each TU is in Appendix B. Type 1 soils appear localised in areas of the northern property, and are common across RHAC/PAD2. This soil type is characterised by the absence of the A_1 horizon, with a new A_1 being developed, overlying a truncated light brown silty A_2, and a gradual interface where clay increases with depth into a silt/clay B_2 horizon. Type 2 soils were the most common soil type within the study area. The A_1 horizon is absent, usually through stripping, with a truncated gradual boundary to a grey clayey silt A_2 soil with ironstone inclusions, overlying a B silty clay horizon. The other various soil types identified captured differing localised disturbance to the A_1/A_2 profiles, as well as B horizon shale inclusions.

The six soil types and their interpretation of integrity (Table 2.16) were mapped (Figure 2.25) to understand the nature and integrity of soils and how these relate to different land use impacts. It was identified that various localised impacts had occurred to the soil profiles including a combination of erosion from slope inclines and localised earthworks. Largely, soil types related to post depositional impact to soil profiles, through ongoing land use impact on the site.

The seven types are as follows:

- Type 1: Heavily truncated (~5–10cm) thin natural A_1, with newly developing A_1, a thick grey-brown silty A_2 horizon (20cm), and a thick orange red B horizon—interpreted as truncated partially intact A horizon.
- Type 2: Heavily truncated thin A_1 (~5cm), a thick grey silty A_2 horizon (~20cm) overlying red B horizon—interpreted as truncated partially intact A horizon.
- Type 3: Heavily truncated A_1, with newly developing A_1, a truncated grey silty A_2, overlying thick orange red B_2 horizon, with shale inclusions at base—interpreted as highly disturbed and truncated from localised impact.
- Type 4: Imported A_1 horizon, overlying C horizon—interpreted as completely truncated and disturbed profile.
- Type 5: Imported A_1 horizon and fill capping the natural, truncated grey silty A_2 horizon with a gradual interface between silt and clay. Excavated in the interface (B horizon).
- Type 6: Compacted deposit original A_1 horizon completely truncated with a newly developing thin A_1 horizon being developed. Thin A_2 horizon, truncated, with decomposed shale (C horizon) redeposited from upslope overlying thick B horizon.

The following section provides a detailed analysis and description for these six soil profile types. These descriptions underpin the archaeological interpretation and site formation process, and are therefore important in the context of the consequential scientific significance assessment.

Type 1

Heavily truncated (~5–10cm) thin natural A_1, with newly developing A_1, a thick grey-brown silty A_2 horizon (20cm), and a thick orange red B horizon—interpreted as truncated partially intact A horizon (Table 2.10 and Figure 2.18).

Table 2.10 Type 1 Soil Profile Description.

Spit	Depth (mm)	Soil Description
1	50–~100mm	A_1 horizon (Blacktown 1): shallow horizon of loose, friable, silty clay with a shallow root zone (60%). Surface truncated, with new medium greyish brown soil forming.
2	~50–200mm	A_2 horizon (Blacktown 2 gradual boundary): very compact silty clay soil with fine iron/ manganese inclusions (25%), gradual transition with reddish brown clay.
3	200–300mm	A_2 horizon (Blacktown 2 gradual boundary): very compact silty clay soil with fine iron/ manganese inclusions (25%), gradual transition with reddish brown clay.
4	300–400mm	A_2 horizon (Blacktown 2 gradual boundary) / B horizon (Blacktown 3): orange red clay, ironstone nodules (2%), charcoal flecks, compact, moist, sterile basal layer.

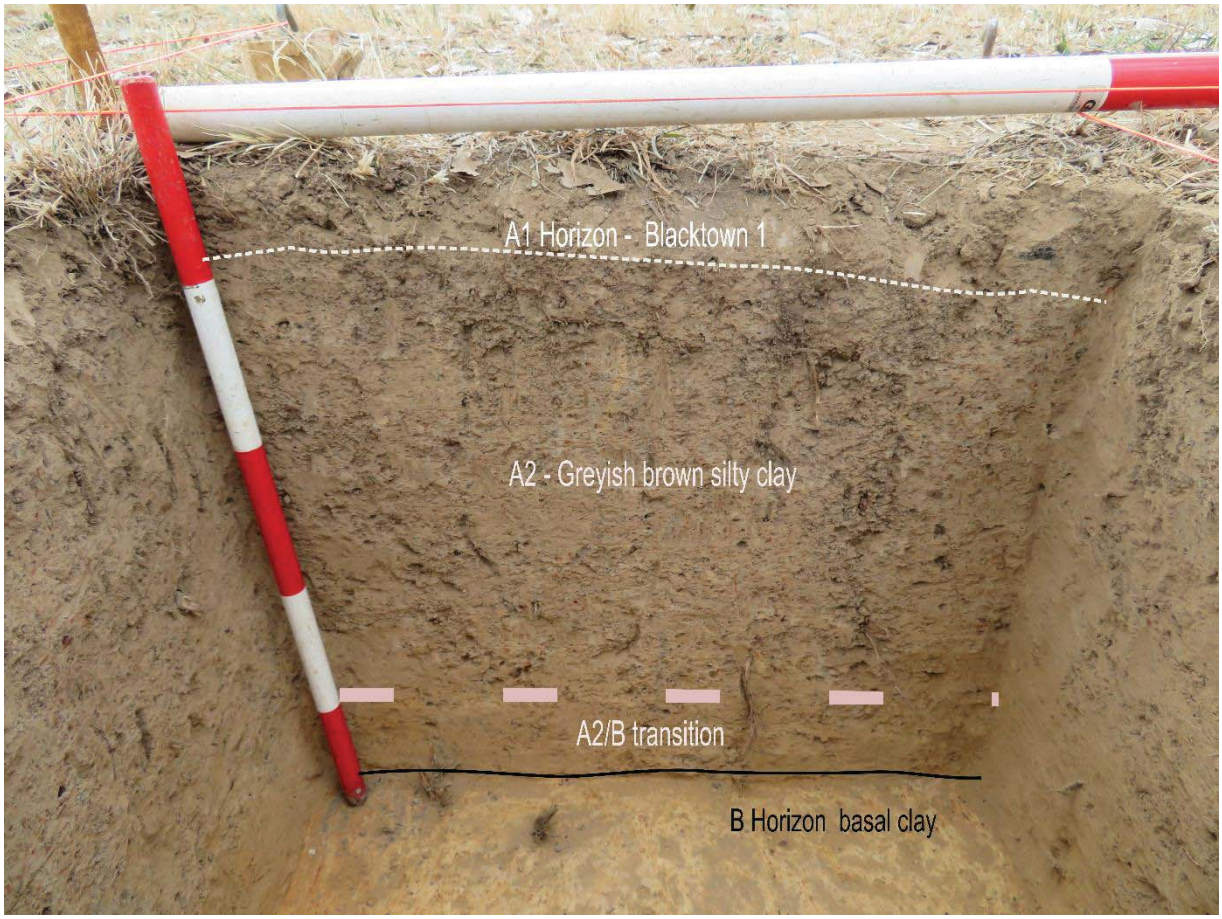

Figure 2.18 TU 32, a characteristic Type 1 soil profile—scale bar segment = 100mm. (Source: GML, 2017)

Type 2

Type 2, a truncated thin A_1 (~5cm), is common but can measure up to 10cm in depth, a thick grey silty A_2 horizon (~30cm) overlying yellow orange red B horizon—interpreted as truncated partially intact A horizon (Table 2.11 and Figure 2.19).

Table 2.11 Type 2 Soil Profile Description.

Spit	Depth (mm)	Soil Description
1	0–~50	A_1 horizon (Blacktown 1): very shallow horizon, probably eroded/truncated with incipient A_1 forming. Greyish brown friable silt, fine grass roots 2%, bioturbation, charcoal flecks, soil streaking, silty loam, firm compaction, dry.
2	~50–250	A_2 horizon (Blacktown 2 gradual boundary): greyish brown silty clay matrix, very compact with iron and manganese fine inclusions. Fine rootlets throughout, reddish brown clay content increases with depth, also subrounded ironstone gravels, transition to clay begins at 250mm through to 300mm.
3	250–~300	A_2 horizon transition (Blacktown 2) / B horizon: reddish brown clay with subrounded ironstone nodules, friable, some uplifting of clay into A_2 suggestive of ant nest or root disturbance.

Figure 2.19 TU 36, a characteristic Type 2 soil profile—scale bar segment = 100mm. (Source: GML, 2017)

Type 3

Heavily truncated A_1 (~5cm), with newly developing A_1, an indurated compact grey silty A_2, overlying a thick (~25cm) reddish brown transition from A_2 to the orange red clay B horizon, with some profiles containing shale inclusions at base—interpreted as highly disturbed and truncated from localised impact (Table 2.12 and Figure 2.20).

Table 2.12 Type 3 Soil Profile Description.

Spit	Depth (mm)	Soil Description
1	0–~50	A_1 horizon (Blacktown 1): greyish brown friable silty clay, fine grass roots 20 to 50%, bioturbation, original A_1 probably eroded or truncated, new incipient A_1 forming, firm compaction, dry.
2	~50–250	A_2 horizon (Blacktown 2 gradual boundary): very compacted pale greyish brown, grass roots 1%, streaking, small ironstone nodules (25%), dry silty clay.
3	250–300	B horizon (Blacktown 3): dark reddish brown compacted silty clay, grass roots 1%, streaking, small ironstone nodules, increase in compaction, compact, moist, sterile basal layer.

Figure 2.20 TU 34, a characteristic Type 3 soil profile—scale bar segment = 100mm. (Source: GML, 2017)

Type 4

Imported A_1 horizon, overlying C horizon—interpreted as completely truncated and disturbed profile (Table 2.13 and Figure 2.21).

Table 2.13 Type 4 Soil Profile Description.

Spit	Depth (mm)	Soil Description
1	0–~50	A_1 horizon (Blacktown 1): greyish brown friable silty clay, fine grass roots 20 to 50%, bioturbation, original A_1 probably eroded or truncated, new incipient A_1 forming, firm compaction, dry.

Spit	Depth (mm)	Soil Description
2	~50–250	A_2 horizon (Blacktown 2 gradual boundary): very compacted pale greyish brown, grass roots 1%, streaking, small ironstone nodules (25%), dry silty clay.

Figure 2.21 TU 40, a characteristic Type 4 soil profile—scale bar segment = 100mm. (Source: GML, 2017)

Type 5

Imported A_1 horizon which has removed natural A_1 topsoil. A_2 has been heavily truncated (approximately 15cm). There is a gradual transition from A_2 to the B horizon, with some profiles containing large deposits of decomposed shale present (Table 2.14 and Figure 2.22).

Table 2.14 Type 5 Soil Profile Description.

Spit	Depth (mm)	Soil Description
1	0–~150	A_1 horizon (imported): sandy silt, dark brown, friable, root inclusions, evidence of bioturbation, imported turf, fine grass roots 20 to 50%, bioturbation, original A_1 probably eroded or truncated, new incipient A_1 forming, firm compaction, dry.
2	~150–300	A_2 horizon (Blacktown 2 gradual boundary): very compacted pale greyish brown, grass roots 1%, streaking, small ironstone nodules (25%), dry silty clay.
3	250–300	B horizon (Blacktown 3): dark reddish brown compacted silty clay, grass roots 1%, streaking, small ironstone nodules, increase in compaction, compact, moist, sterile basal layer.

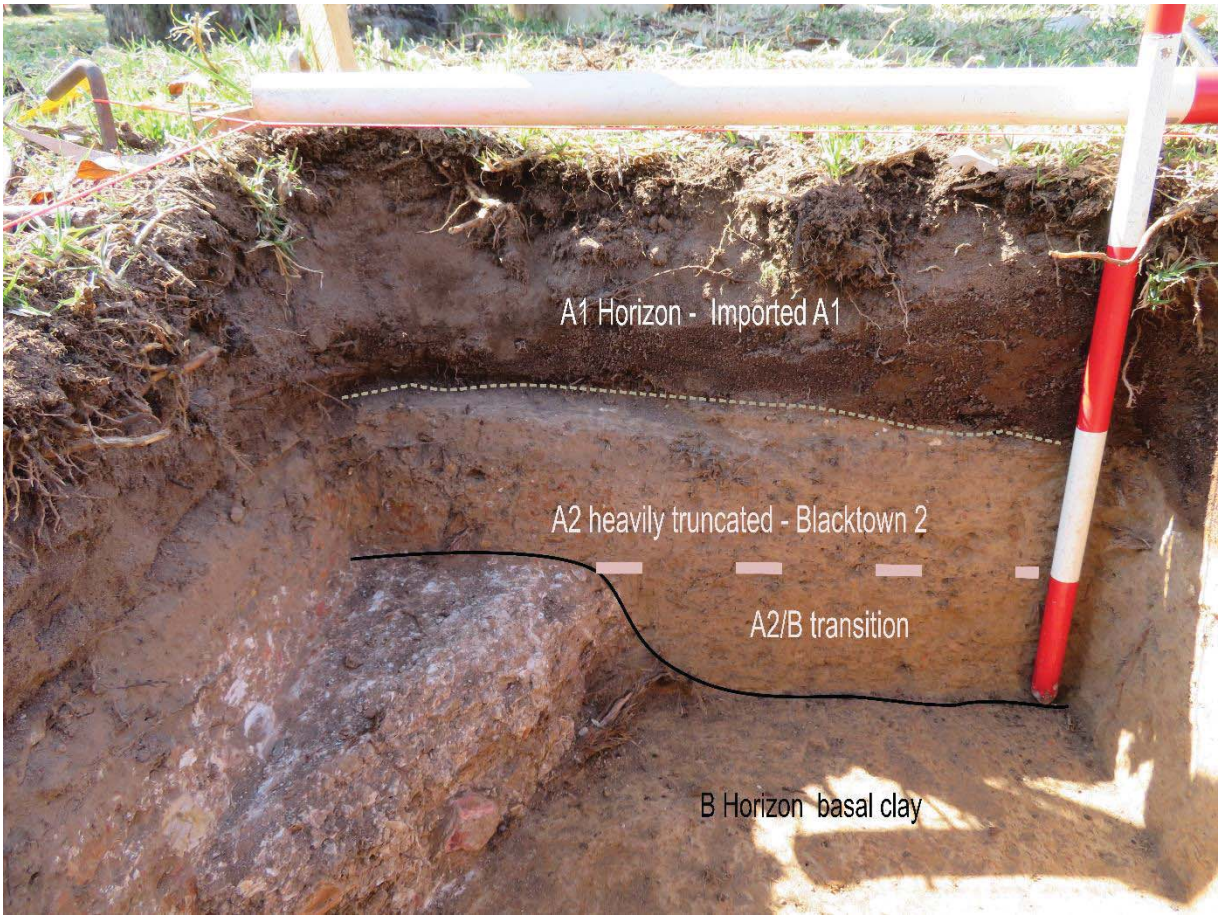

Figure 2.22 TU 39, a characteristic Type 5 soil profile—scale bar segment = 100mm. (Source: GML, 2017)

Type 6

Compacted deposit original A_1 horizon completely truncated with a newly developing thin A_1 horizon being developed. Thin A_2 horizon, truncated, with decomposed shale (C horizon) redeposited from upslope overlying thick B horizon (Table 2.11 and Figure 2.23).

Table 2.15 Type 6 Soil Profile Description.

Spit	Depth (mm)	Soil Description
1	0–~150	A_1 horizon (imported): sandy silt, dark brown, friable, root inclusions, evidence of bioturbation, imported turf, fine grass roots 20 to 50%, bioturbation, original A_1 probably eroded or truncated, new incipient A_1 forming, firm compaction, dry.
2	~150–300	A_2 horizon (Blacktown 2 gradual boundary): very compacted pale greyish brown, grass roots 1%, streaking, small ironstone nodules (25%), dry silty clay.
3	250–300	B horizon (Blacktown 3): dark reddish brown compacted silty clay, grass roots 1%, streaking, small ironstone nodules, increase in compaction, compact, moist, sterile basal layer.

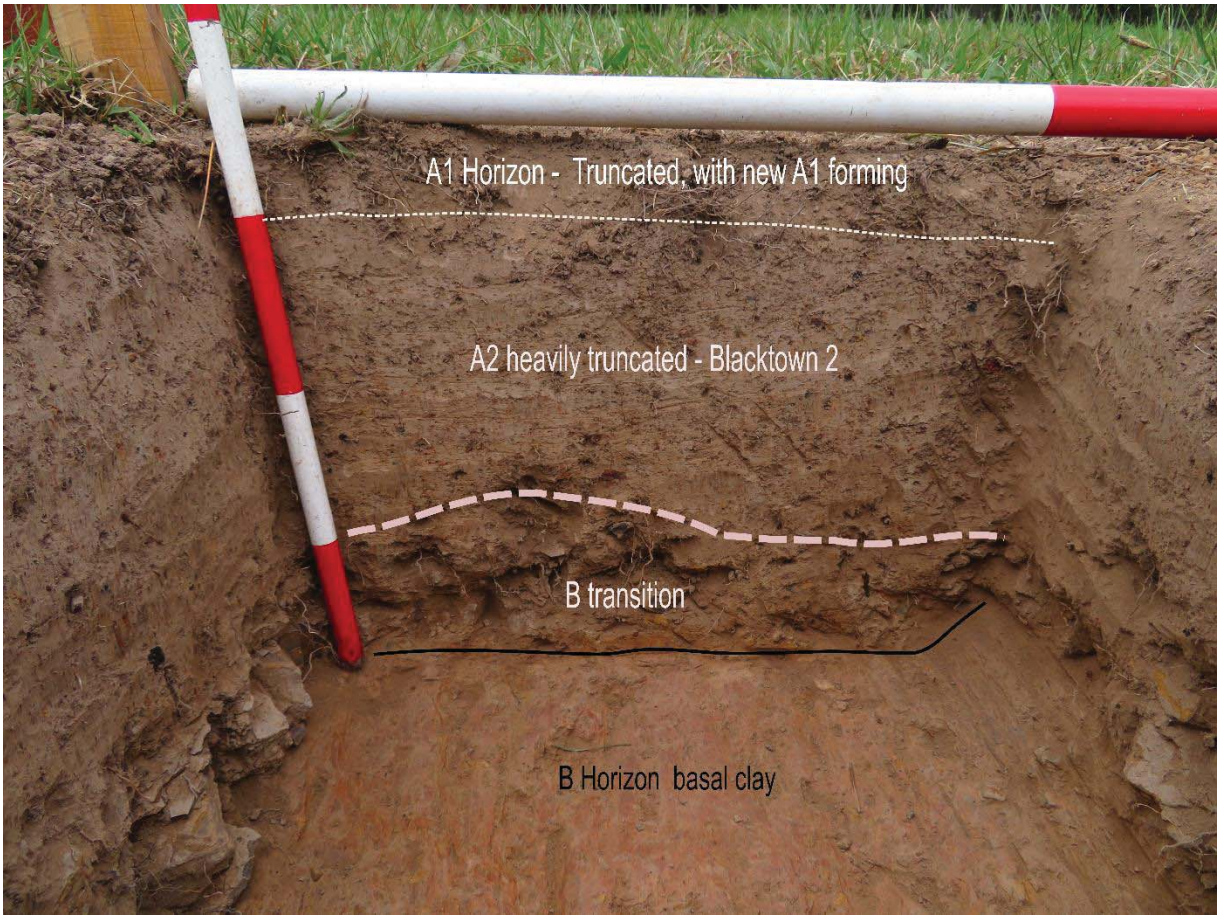

Figure 2.23 TU 15, a characteristic Type 6 soil profile—scale bar segment = 100mm. (Source: GML, 2017)

Table 2.16 TU Description of Soil Profiles and Interpretation of Integrity.

Test Unit (TU) (as updated)	Area Excavated (m^2)	Final Depth (cm)	Number of Spits	TU Description	Interpretation of Integrity	Soil Profile	Count of Artefacts
1	0.25	40	8	Excavated in 5cm spits. Brick rubble. Close to the road.	Partially disturbed soil profile	Type 2	0
2	0.25	22	2	Very compacted soil.	Partially disturbed soil profile	Type 1	0
3	0.25	42	4	Very compacted soil.	Partially disturbed soil profile	Type 2	0
4	0.25	35	4	Very compacted soil.	Partially disturbed soil profile	Type 2	0
5	0.25	45	5	Compact deposit. Evidence of bioturbation. Park of driveway, cars etc constantly driving over and compacting the soils. Flecks of charcoal in A_2 and B horizons.	Partially disturbed soil profile	Type 2	0

Test Unit (TU) (as updated)	Area Excavated (m^2)	Final Depth (cm)	Number of Spits	TU Description	Interpretation of Integrity	Soil Profile	Count of Artefacts
6	0.25	30	3	Compact deposit.	Partially disturbed soil profile	Type 2	0
7	0.25	30	3	Compact deposit. Flecks of ironstone in A_2 horizon.	Partially disturbed soil profile	Type 2	0
8	0.25	30	3	Very compacted soil. B horizon appears to be sloping W. Land reformation? Bioturbation from clay being churned up into A_2 horizon.	Partially disturbed soil profile	Type 2	0
9	0.25	20	2	Compact deposit.	Partially disturbed soil profile	Type 2	0
10	0.25	2	3	Compact deposit. Small flecks of decomposed shale (C horizon) in the B horizon.	Partially disturbed soil profile	Type 1	0
11	0.25	27	3	Compact deposit. Evidence of bioturbation.	Partially disturbed soil profile	Type 1	0
12	0.25	45	5	Compact deposit. Evidence of bioturbation.	Partially disturbed soil profile	Type 2	0
13	0.25	35	4	Compact deposit. Evidence of bioturbation.	Partially disturbed soil profile	Type 6	0
14	0.25	30	3	Very compacted soil.	Partially disturbed soil profile	Type 2	0
15	0.25	35	4	Very compacted soil. Decomposed shale (C horizon) on top of B horizon. Excavated to basal clay. Southern section of test pit has cut in clay and shale has filled the cut. Layer of shale has potentially been washed down slope to TU15. Cut could be modern trench or old tree root? Cut does not appear in section.	Partially disturbed soil profile	Type 6	0
16	0.25	30	3	Compact deposit. Tree root in B horizon.	Partially disturbed soil profile	Type 2	0
17	0.25	32	3	Compact deposit.	Partially disturbed soil profile	Type 2	0
18	0.25	40	4	Compact deposit.	Partially disturbed soil profile	Type 2	0

Test Unit (TU) (as updated)	Area Excavated (m^2)	Final Depth (cm)	Number of Spits	TU Description	Interpretation of Integrity	Soil Profile	Count of Artefacts
19	0.25	30	3	Compact deposit.	Partially disturbed soil profile	Type 2	0
20	0.25	30	3	Compact deposit.	Partially disturbed soil profile	Type 2	0
21	0.25	30	3	Compact deposit.	Partially disturbed soil profile	Type 2	0
22	0.25	30	3	Compact deposit.	Partially disturbed soil profile	Type 2	0
23	0.25	30	3	Compact deposit. Specks of charcoal and tree roots into/on top of the B horizon.	Partially disturbed soil profile	Type 2	0
24	0.25	35	4	Compact deposit. Lots of ironstone inclusions and charcoal flecks. The B horizon appears to slope to the west. Suggesting modern land disturbance.	Partially disturbed soil profile	Type 2	0
25	Not excavated—in asbestos area						0
26	Not excavated—in asbestos area						0
27	0.25	44	5	Imported A_1 horizon and fill capping the natural, truncated A_2 horizon. Gradual interface between silt and clay. Excavated in the interface (B horizon).	Highly eroded and capped soil profile	Type 5	8
28	0.25	53	5	Imported A_1 horizon and fill capping the natural, truncated A_2 horizon. Gradual interface between silt and clay. Excavated in the interface (B horizon).	Highly eroded and capped soil profile	Type 5	0
29	0.25	16	2	Ironstone and decomposed shale inclusions. Bioturbation from ants.	Highly eroded soil profile	Type 1	0
30	0.25	20	2	Heavily compacted. Evidence of bioturbation. Decomposed shale and ironstone.	Highly eroded soil profile	Type 1	0

Test Unit (TU) (as updated)	Area Excavated (m^2)	Final Depth (cm)	Number of Spits	TU Description	Interpretation of Integrity	Soil Profile	Count of Artefacts
31	0.25	40	4	Heavily compact light brown Silt. A_1 horizon completely stripped (erosion?). Thin, new horizon has been formed. Very gradual interface between silt and basal clay. Excavated into interface (80% clay, 20% silt).	Highly eroded soil profile	Type 1	0
32	0.25	45	5	Heavily compact light brown silt. A_1 horizon completely stripped (erosion?). Thin, new horizon has been formed. Very gradual interface between silt and basal clay. Excavated into interface (80% clay, 20% silt).	Highly eroded soil profile	Type 1	0
33	0.25	23	2	Clay nodule found in spit 1. Heavily compacted deposit. Natural A_1 and most of A_2 completely truncated. New A_1 being formed. Gradual interface between silt to clay. Lots of ironstone and tree root inclusions.	Highly eroded soil profile	Type 1	0
34	0.25	33	3	Heavily compact light brown silt. A_1 horizon completely stripped (erosion?). Thin, new horizon has been formed. Very gradual interface between silt and basal clay. Excavated into interface (80% clay, 20% silt). Shale inclusions appearing in B_1 horizon.	Highly eroded soil profile	Type 3	0
35	0.25	30	3	Heavily compact light brown silt. A_1 horizon completely stripped (erosion?). Thin, new horizon has been formed. Very gradual interface between silt and basal clay. Excavated into interface (80% clay, 20% silt). Large clay nodules appearing in B_1 horizon.	Highly eroded soil profile	Type 1	0
36	0.25	32	3	Heavily compact light brown silt. A_1 horizon completely stripped (erosion?). Very gradual interface between silt and basal clay. Excavated to basal clay.	Highly eroded soil profile	Type 2	0
37	0.25	30	3	Heavily compact light brown silt. A_1 horizon completely stripped (erosion?). Thin, new horizon has been formed. Very gradual interface between silt and basal clay. Excavated into interface (80% clay, 20% silt). Peg in SW corner due to concrete for seat.	Highly eroded soil profile	Type 4	0

Test Unit (TU) (as updated)	Area Excavated (m^2)	Final Depth (cm)	Number of Spits	TU Description	Interpretation of Integrity	Soil Profile	Count of Artefacts
38	0.25	10	2	Excavation stopped due to the identification of asbestos in modern fill.	Highly disturbed	Asbestos	0
39	0.25	35	4	Imported A_1 horizon. Therefore spit 1 not sieved. Natural horizons truncated, A_1 and most of A_2 absent. Gradual interface within B_1 horizon, with increase in clay content. Large deposit of decomposed shale in the NW corner of the test pit. Excavated into interface.	Highly disturbed	Type 5	0
40	0.25	10	2	Imported A_1 horizon overlying basal clay.	Highly disturbed	Type 4	0
TOTAL	$14m^2$						0

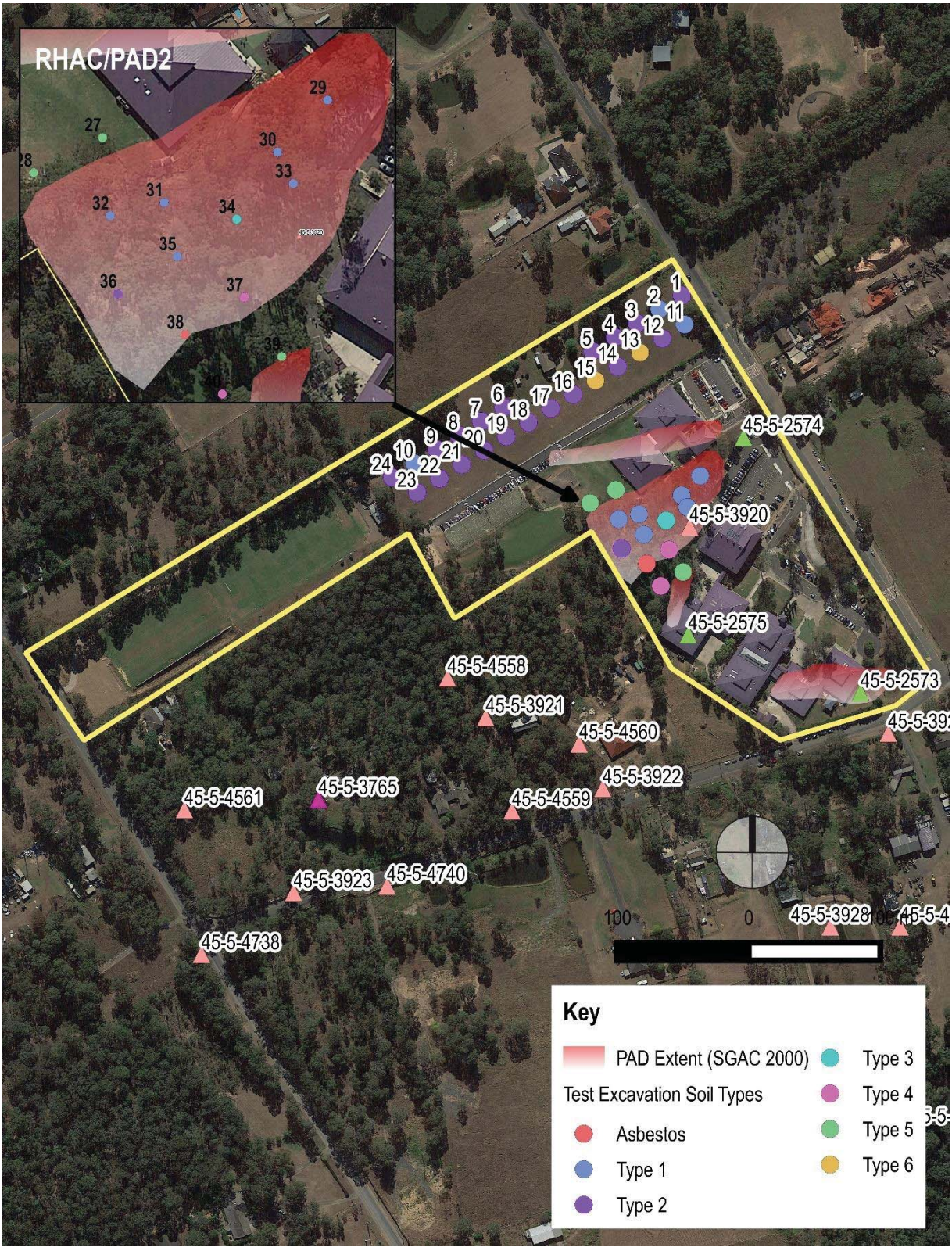

Figure 2.24 Soil types across the two test excavation locations. (Source: NSW LPI with GML additions, 2017)

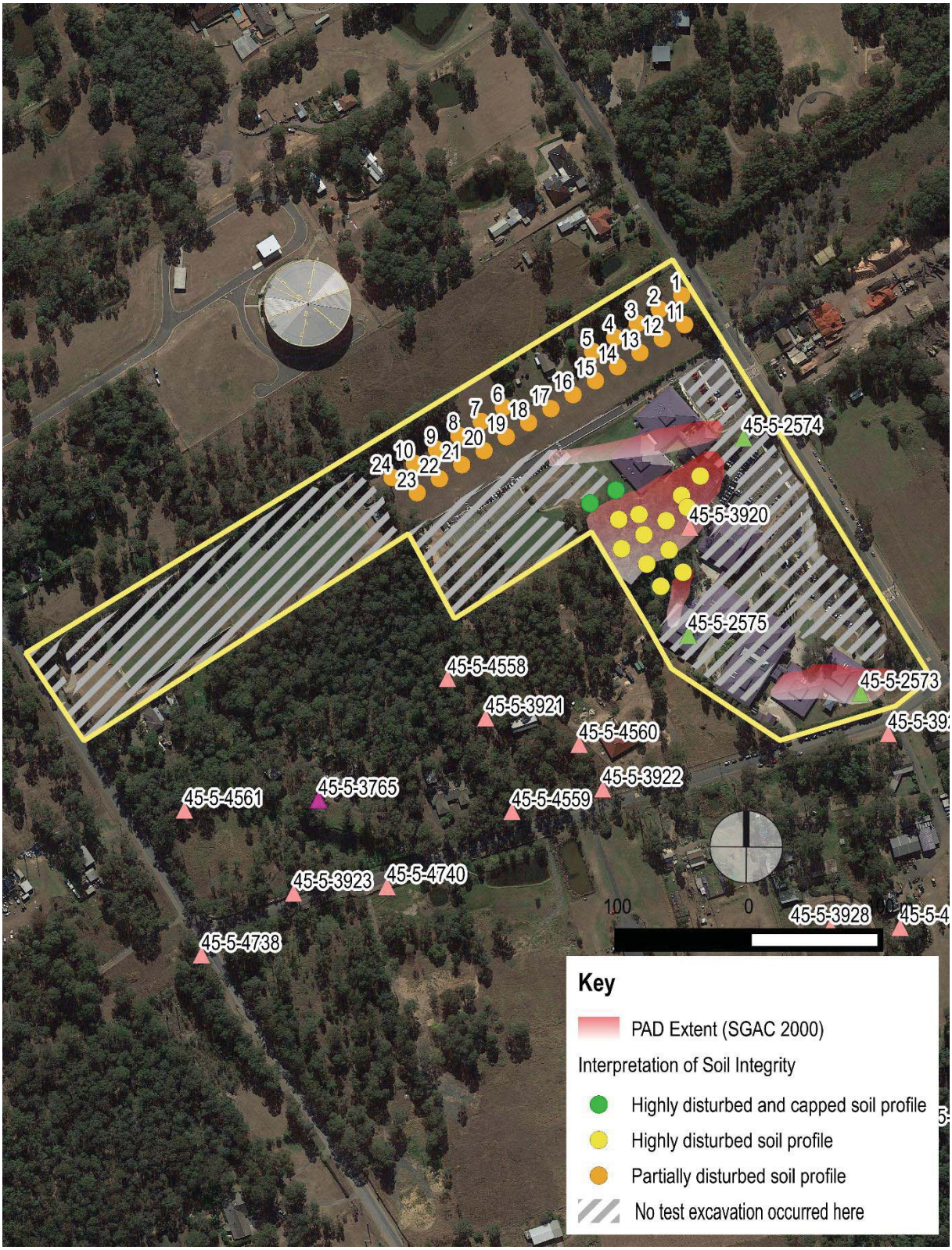

Figure 2.25 Soil integrity interpretation from soil types. (Source: NSW LPI with GML additions, 2017)

2.11.4 Observed Landform and Aspect

Two landforms were identified during the survey: a simple slope, and a flat landform at the base of the simple slope which occurs in the southern boundary of the site (Table 2.17). The major regional landforms observed surrounding the study area are a ridgeline to the north, and Second Ponds Creek to the east and south of the study area. The slope in the northern property would have had views towards Second Ponds Creek.

The northern property was identified as a broad simple slope of less than 3 degrees. The simple slope is a natural continuation of a high point in the north which is currently occupied by a water tower (part of the ridgeline to the north of the study area). The flat is characterised as base of the simple slope where a decrease in elevation to the Second Ponds Creek riparian corridor occurs.

Table 2.17 Landform Number of TUs Excavated and Stone Object Frequency.

Landform	Number of TUs	Total Stone Objects	Total Stone Artefacts
Simple slope	26	0	0
Flat	14	0	(1) Isolated Find 45-5-3920

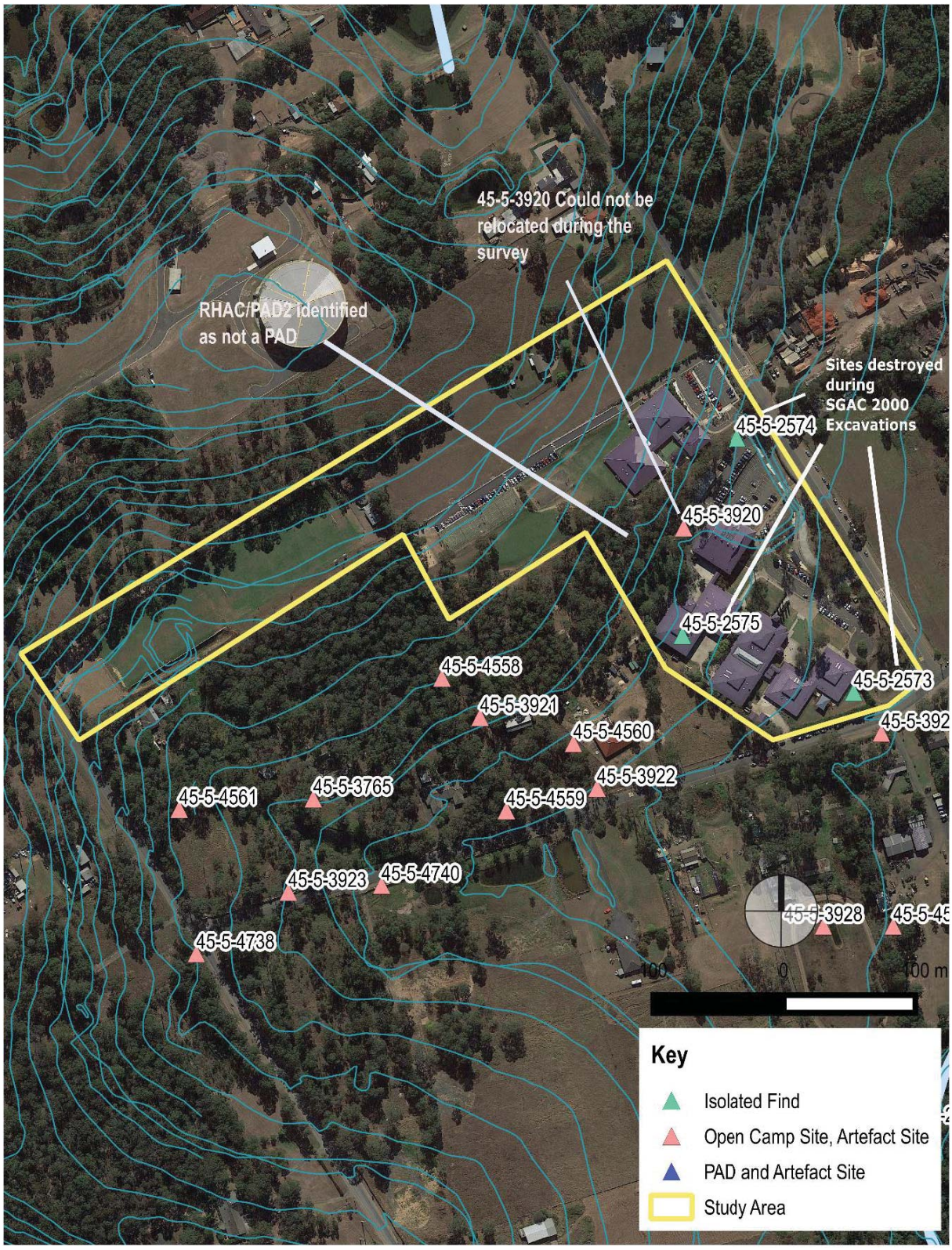

Figure 2.26 Aboriginal sites within the study area. (Source: NSW LPI with GML additions, 2017)

2.12 Interpretation, Analysis and Discussion

The ridges and flats of the Second Ponds Creek landscapes often contain Aboriginal archaeology. However, it is less common for simple slopes to contain stone artefact sites, though background scatters are expected in such a rich archaeological landscape. The absence of Aboriginal archaeology is partly attributed to the simple slope, but more significantly the disturbance to the A_1 profile, in which Aboriginal artefacts are usually observed.

2.12.1 Addressing the Research Questions

A set of detailed research questions were outlined above in Section 2.10.3. Given the sparse nature of the archaeological results, the responses to these questions are summarised together rather than being addressed individually.

Research question 1 aimed to understand the soil landscapes of the study area. The Blacktown soil landscape is present across the study area. The study area represents various levels of truncation of the A_1 horizon (~50mm), including importing of topsoils for surfacing different locations. The use of the land for the construction of the school, and farming on the northern property, has impacted the study area. A_1 horizons have not survived well and even some A_2 horizons appear to have been truncated. The deposit seems relatively consistent across the two testing areas, with exceptions in the form of localised impact, either through importing A_1 horizons, or truncating existing A horizon profiles. The range of soil profiles indicate that the tested section of RHAC/PAD2 is heavily impacted, and that the northern property area has similarly had profiles truncated.

Research questions 2 to 4 and 6 aimed at analysing the details of the archaeological deposits on the site, and the nature of the artefact assemblage. In the case of RHAC, no deposits were found and therefore there is no data relevant to these questions.

Research question 5 addresses the interpretation of the results of test excavation in a regional context. Broadly speaking, the identified absence of archaeological features during test excavation does not conform to the predictive model. It is likely that the ongoing cumulative impact to the site has removed or disturbed potential for archaeology—the seven artefacts from 45-5-2574, the other tested part of RHAC/PAD2, would support the notion that the location is disturbed due to the low artefact numbers.

Research question 7 relates to future management of the archaeological resource within the study area. One extant AHIMS site remains within the study area (45-5-3920—an isolated stone artefact). It was thought to be an expression of the RHAC/PAD2 site—which previously was identified to yield seven artefacts at 45-5-2574. However, it is unlikely to have formed part of the PAD, based on the lack of artefacts identified during this test excavation. The results of the testing of what was thought to be the remnant part of RHAC/PAD2 show that it did not contain any archaeological deposits suitable for the preservation of Aboriginal archaeology.

Site 45-5-3920 is an isolated artefact, located within the boundary of an unregistered RHAC/PAD2. Based on the outcome of these test excavations, it is likely to have been displaced during the development of the school. Due to the displaced context of this isolated find, GML does not believe that the site is worthy of conservation or more extensive investigation. Thus the results of this test excavation has refined the spatial extent of the RHAC/PAD2 specifically to the location where seven artefacts were identified (45-5-2574). Site 45-4-3920 is considered an isolated artefact.

2.13 Summary and Analysis of Background Information

This background assessment compiles, analyses and synthesises previous information and relevant contextual information to gain an initial understanding of the cultural landscape. Figure 4.1 (Section 4.0) provides an overview of Aboriginal tangible and intangible values, sites and places associated with the study area.

2.13.1 The Physical Setting and Landscape Description

The Cumberland Plain and Rouse Hill area was heavily used and visited, with Aboriginal people producing an extensive array of archaeological material ranging from low density background stone artefact scatter to more complex, high density artefact concentrations with evidence of multiple activities. The entirety of the Rouse Hill area was a cultural landscape on which a range of activities were conducted, resulting in artefact densities and distributions that suggest large-scale and long-term patterns of use.[73]

Second Ponds Creek, a second order stream located approximately 100m east of the study area (see Figure 2.3), has been shown through extensive survey and archaeological excavation of adjacent sites to have been a significant resource zone to past Aboriginal people.[74]

However, the current study area contains minimal potential for further Aboriginal archaeology due to the high level of disturbance across the study area.

2.13.2 History of the Peoples Living on the Land

Observations made about the traditional Aboriginal inhabitants of the Cumberland Plain region are plentiful, with European settlers first coming into contact with the local Aboriginal populations in the vicinity of the study area in the late eighteenth and early nineteenth centuries. These early European settlers described the area as being part of the Darug language group.[75]

2.13.3 Material Evidence of Aboriginal Land Use

Three sites have previously been excavated within the study area. These sites were identified as habitation sites through test excavation in 2000. One previously identified PAD was found to not be an archaeological deposit during the test excavations reported here. No further Aboriginal objects or sites were identified through survey and test excavation.

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3.0 Aboriginal Community Consultation

3.1 Introduction

Aboriginal community consultation is required for any assessment of Aboriginal heritage in order to make a valid assessment of Aboriginal (heritage) 'values', especially those Aboriginal memories, stories and associations between the Aboriginal people and their traditional lands or Country. Aboriginal people frequently express an enduring connection to their Country, a connection that transcends generations, both past and present. The connection is frequently expressed as a sense of belonging, which may manifest through physical objects or place; alternatively, it may be presented as an intangible idea, where an appreciation of an unseen quality or non-materialistic value connects a place in the landscape, tradition, observance, custom, lore, belief and/or history to the person or group describing the item, event or value. The notion of intangible, social, or community values is essential to Aboriginal people as 'the effective protection and conservation of this heritage is important in maintaining the identity, health and wellbeing of Aboriginal people'.[1]

In order to gather social and community views and opinions with respect to Aboriginal heritage and identify and address Aboriginal heritage values, the OEH requires proponents to adhere to the guideline document *Aboriginal cultural heritage consultation requirements for proponents 2010.*[2] In addition to providing a mechanism for engaging the Aboriginal community, the directives in the guidelines must be followed for any study that might eventually be used to support an application for an AHIP under Part 6 of the NPW Act.

GML recognises and acknowledges the continuing Indigenous ownership of the traditional knowledge, traditional cultural expressions, practices, innovations and intellectual property rights in the materials provided by RAPs, on which research and assessments in our reports may be based, and endeavours to protect the privacy, integrity and wellbeing of participants in this research.

3.2 The Process of Consultation

These consultation guidelines set out a process involving identification, registration, engagement and consultation with Aboriginal peoples who may hold cultural knowledge relevant to determining the significance of an Aboriginal object and/or Place.

Adherence with guidelines involves following a number of stages, which includes:

- informing Aboriginal people about the nature and scope of the proposal;
- understanding what might be present in the landscape and its cultural significance;
- determining the potential impacts and the proposed strategies to deal with them; and
- reviewing the report.[3]

Aboriginal groups are invited to register interest as a party to consultation (including the placing of a local press advertisement), responses are sought from the RAPs on the proposed assessment methodology, and an opportunity to comment on the assessment reports and recommendations is provided to the RAPs. The guidelines specify timeframes for each stage of the consultation process. Further details pertaining to these stages are described below.

The Aboriginal community consultation for this project has been carried out in accordance with the OEH guideline. This section contains specific details of Aboriginal community consultation with regard to the heritage assessment of the study area.

The complete log of all communications between GML and RAPs, and all letters, responses and details pertaining to this consultation, is provided in Appendix C. Relevant community protocols that were observed include withholding contact details for one RAP at the specific request of the group.

3.2.1 Stage 1—Notification of Project

The aim of Stage 1 is to 'identify, notify and register Aboriginal people who hold cultural knowledge relevant to determining the cultural significance of Aboriginal objects and/or places in the area of the proposed project'.[4] The identification process involves:

- initial letters being sent to select government agencies to determine relevant Aboriginal stakeholder groups to contact; and
- placement of a notice in local press, inviting Aboriginal people who hold relevant cultural knowledge to register in the process of community consultation.

A letter must be sent to each individual notifying those nominated Aboriginal people and/or groups identified through the above stages, and to the Local Aboriginal Land Council (LALC), about the proposed project. The Aboriginal parties have a minimum of 14 days after the letter was sent or the notice was published in the newspaper to register an interest in the project.

The outcome of Stage 1 is a list of Aboriginal people who have registered for being involved in consultation—the 'Registered Aboriginal Parties' (RAPs). The RAP is to be involved for the remainder of the project; no Aboriginal consultation outside of the RAP is required.

Letters requesting contact details of Aboriginal people or organisations who may hold cultural knowledge relevant to the study area, and any known heritage issues to be taken into consideration in the area (Step 1 notifications), were sent via email on 25 July 2017 to:

- NSW OEH (Susan Harrison);
- Registrar, Aboriginal Land Rights Act 1983 (NSW);
- the National Native Title Tribunal;
- Native Title Services Corporation (NTSCorp);
- relevant local council(s) (Blacktown City Council);
- relevant catchment management authorities (Greater Sydney Catchment Management Authority); and
- Deerubbin Local Area Land Council (LALC).

Responses were received from the following groups:

- NSW OEH (Ms Susan Harrison);
- Registrar, Aboriginal Land Rights Act 1983 (NSW);

- the National Native Title Tribunal;
- Blacktown City Council;
- Greater Sydney Catchment Management Authority; and
- Deerubbin Local Area Land Council (LALC).

Subsequently, those Aboriginal parties who were identified during the Step 1 notifications were contacted via letter on 11 August 2017, providing information regarding the project and inviting them to register an interest (Step 2 notifications). A notification was also placed in the *Rouse Hill Courier* on 3 August 2017, inviting registrations of interest by Aboriginal people with cultural knowledge relevant to the project area.

A total of 17 organisations registered as RAPs. Registration closed on 25 August 2017. A copy of the notification and the details of RAPs was provided to the OEH and the LALC on 6 September 2017.

Registered Aboriginal Parties

In line with the outcomes of Stage 1 following OEH 2010 (Appendix B),[5] the RAPs are:

- A1 Indigenous Services;
- Aboriginal Archaeology Services (AAS);
- Amanda Hickey Cultural Services;
- Biamanga;
- Darug Aboriginal Cultural Heritage Assessments;
- Darug Aboriginal Land Care;
- Darug Custodian Aboriginal Corporation;
- Darug Land Observations;
- Darug Tribal Aboriginal Corporation;
- Gunjeewong Cultural Heritage Aboriginal Corporation;
- Goobah Developments;
- Kamilaroi-Yankuntjara Working Group (Phil Kahn);;
- Murra Bidgee Mullungari Aboriginal Corporation Cultural Heritage
- Murramarang;
- Murugadi Heritage Indigenous Corporation;
- Tocomwall; and
- Widescope Indigenous Group.

3.2.2 Stage 2—Presentation of Information and Gathering Significance

A letter was sent to all RAPs, with an attached archaeological research design and methodology document (Appendix C), informing them of the project outline, project impacts, timeline and milestones of the project.

The OEH has determined that Stage 2 must allow 28 days for the RAPs to respond.

Each group was provided with written details of the proposed project and a survey/test excavation/salvage excavation sampling strategy, by post and email on 4 September 2017. All stakeholders agreed to the proposed assessment methodology. AAS also recommended that GML consult with stakeholders on site to determine the potential site. Methodology for test unit expansions were discussed with RAPs on site to determine where areas required expansion, based on artefact yields.

Further details of the Aboriginal consultation undertaken for the study area are provided in Appendix C. Table 3.1 summarises the comments from RAPs with respect to cultural heritage values.

Table 3.1 RAP Comments to the ARD with Respect to Cultural Heritage Values Within or Associated with the Study Area.

Submission Number	RAP	Date of Submission	Format	Comment
1	A1 Indigenous Services and Amanda Hickey Cultural Services	11 September 2017	Email	A1 and AHCS support the Methodology created by GML for the Rouse Hill Anglican College (RHAC) Redevelopment.
2	Widescope Indigenous Group	18 November 2017	Email	I have reviewed the proposed project methodology and field survey methodology. I am satisfied and seek to endorse the methodology's [sic].
3	Kamilaroi-Yankuntjara Working Group (Phil Kahn)	15 September 2017	Letter	I have read your report and am happy with it and support all your recommendations and looking forward to be working with you and your team on this project.
4	Darug Land Observations	15 September 2017	Email and Letter	Darug Land Observations Pty Ltd has reviewed the Aboriginal cultural heritage assessment and Aboriginal technical report, and supports the methodology for the proposed redevelopment of the Rouse Hill Anglican College at Lot 14 DP 1120290 and Lot 130 DP 1138775 at the intersection of Rouse Road and Worcester Road, in Rouse Hill.

Table 3.2 GML Responses to RAP Comments.

#	GML's Response	#	GML's Response
1	Noted.	3	Noted.
2	Noted.	4	Noted.

Opportunity to Visit the Study Area

Test excavation for the assessment was undertaken between 2 October and 6 October 2017 and included representatives from DACHA, DCAC, DLO, and DTAC. Details of those representatives who participated in the excavation can be found in Section 2.0.

The test excavation aimed to:

- identify the nature and extent of Aboriginal archaeological deposits within the study area;
- ground-truth the predictive model described in the test excavation methodology; and
- ground-truth the desktop assessment of historical disturbance and integrity of the area.

Results of the test excavation are discussed in detail in Section 2.0 of this report.

During the survey for the current study area (2 October 2017), GML archaeologists discussed local Aboriginal heritage values and patterning with the community representatives. Submissions were also received during the project methodology review process that assisted in understanding some local intangible values.

All participants were involved in identifying Aboriginal objects, recording sites and determining the potential archaeological extent of deposits. At the completion of the survey an open discussion was held, during which the objects were recorded, the archaeological potential and required test excavation was discussed and agreed upon by all present. The outcomes of this consultation underwrite this heritage assessment.

3.2.3 Stage 3—Gathering Information, Review of Draft Cultural Heritage Assessment Report

GML sent the draft ATR and ACHAR to the RAPs for their review and input into the GML recommendations and comment on recommended heritage management strategies identified on 4 December 2017. The minimum requirement for RAP review is 28 days; however, due to the Christmas period, GML allowed 42 days. Comments were received by 15 January 2018. The report presented heritage recommendations for mitigation of impact and potential management options relating to the reburial of excavated material. Table 3.3 details all submissions made by the RAPs with respect to the cultural heritage values of the study area. Submissions that were provided in a written format are presented in their original form in Appendix C.

Table 3.3 RAP Comments Regarding Cultural Heritage Values Within or Associated with the Study Area.

Submission Number	RAP	Date of Submission	Format	Comment
1	Darug Custodian Aboriginal Corporation	4 December 2017	Email and letter	*We have received and reviewed the Rous Hill* [sic] *Anglican College—Aboriginal Cultural Heritage Assessment Report and Archaeological Technical Report—. The report and findings are very inclusive and informative, documented to a high standard. Surrounding this area are many highly significant sites. Although there is not a major finding of artefacts here this area is still important for the information that we have collected here to assess the bigger picture and add information to our overall studies of how Darug people moved, lived and survived in this landscape.* *We support the findings and recommendations in this report.* *Please contact us with all further enquiries on the above contacts.*
2	Murra Bidgee Mullungari Aboriginal Corporation Cultural Heritage	5 December 2017	Email	*Due to the fact that we did not work on this project, we will not be making comments, as you can appreciate the time it takes to read a report and makes notes can take well over 3 hours unless you have been on site for the project.*
3	Darug Aboriginal Land Care	5 December 2017	Email and letter	*The Darug Aboriginal Land Care/ Uncle Des Dyer, has no objections to the planned development. We have read your report and agree with the recommendation. We ask that all artefacts be reburied on site out of harm's way, that any rock cravens, and scared tree be preserved, were* [sic] *possible. The Darug Aboriginal Land care have and always will holds* [sic] *all land* [sic] *specific social, spiritual and cultural values to our organisation.*
4	Gunjeewong Cultural Heritage Aboriginal Corporation	6 December 2017	Email	*Please be advised that Gunjeewong will not be making comments on the above project. Sorry but I find it very time consuming reading reports unless I have been involved in the projects so that I have insite* [sic] *and knowledge. If you require further details please contact me via email.*
5	Kamilaroi-Yankuntjara Working Group (Phil Kahn)	9 December 2017	Letter	*I have received and read your Aboriginal Cultural Heritage Assessment Report and Archaeologically* [sic] *Technical Report of the Rouse Hill Anglican College. I am happy with your report and support all your recommendations and without further needs of Archaeological Investigations* [sic].
6	Aboriginal Archaeology Services (AAS)	12 December 2017	Email	*As traditional owners AAS (Rane) has no problems with your report.*

Submission Number	RAP	Date of Submission	Format	Comment
7	Darug Land Observations	11 January 2018	Email and letter	*Darug Land Observations Pty Ltd has reviewed the draft Aboriginal Cultural Heritage Assessment and the Archaeological Technical Report, and supports the methodology for the proposed redevelopment of the Rouse Hill Anglican College at Lot 14 DP 1120290 and Lot 130 DP 1138775 at the intersection of Rouse Road and Worcester Road, in Rouse Hill. In addition, we support the recommendation that an SSD approval be sought from the Department of Planning and Environment to impact the AHIMS site 45-5-3920 due to no artefacts being recovered during test excavations at the rouse* [sic] *Hill Anglican College site.* *Furthermore, Darug Land Observations Pty Ltd would be involved in the monitoring of the topsoil removal and/or any other form of work to be carried out on the site.*

Table 3.4 GML Responses to RAP Comments regarding Cultural Values.

RAP Submission Number	GML's Response
1	Noted.
2	Noted.
3	Noted.
4	Noted.
5	Noted.
6	Noted.
7	Noted.

3.2.4 Required Future Cultural Heritage Management

The works proposed are likely to impact one known AHIMS site 45-5-3920—an isolated artefact. No other Aboriginal objects will be impacted through the works, as determined through test excavation. This is due to the disturbed nature of natural soil profiles (A horizon profiles). The draft ACHAR/ATR was submitted to the RAPs for their review and comment on the findings and recommendations of this report. The ACHAR/ATR can be used to lodge an SSDA approval to impact 45-5-3920 through the works. The required future heritage management is summarised in Table 3.5.

Table 3.5 GML Responses to RAP Comments regarding Cultural Values.

AHIMS Number	Site Name	Registered on AHIMS	Description	Required Aboriginal Heritage Management
45-5-2573	RHAC 2	Yes	Testing of unregistered PAD 'RHAC/PAD1' transect Q which resulted in the identification of an open artefact site, that is RHAC 2.	Destroyed—updated in Aboriginal Site Impact Recording Form (ASIRF, Appendix E). No further Aboriginal heritage management required.
45-5-2574	RHAC 3	Yes	Open artefact site (7 artefacts) identified through testing of unregistered PAD 'RHAC/PAD2' transect Q which resulted in the identification of an open artefact site, that is RHAC 3.	Destroyed—updated in ASIRF (Appendix E). No further Aboriginal heritage management required.
45-5-2575	RHAC 1	Yes	Surface isolated artefact in location of high disturbance.	Destroyed—updated in ASIRF (Appendix E). No further Aboriginal heritage management required.
45-5-3920	RH/A20P 04	Yes	Open artefact site (one artefact).	Present but could not be relocated. 1. SSD Approval required from the DoPE prior to impact.
N/A	RHAC/PAD2	No	Remaining section of 'RHAC/PAD2' is not a PAD.	Test excavated by GML 2017, not a PAD, will not be registered. No further Aboriginal heritage management required.

3.3 Endnotes

1 Department of Environment and Climate Change NSW, 'Aboriginal Cultural Heritage Consultation Requirements for Proponents', *National Parks and Wildlife Act 1974,* April 2010.

2 Department of Environment and Climate Change NSW, 'Aboriginal Cultural Heritage Consultation Requirements for Proponents', *National Parks and Wildlife Act 1974,* April 2010.

3 List taken from Department of Environment and Climate Change NSW, 'Aboriginal Cultural Heritage Consultation Requirements for Proponents', *National Parks and Wildlife Act 1974,* Part 10, April 2010.

4 Department of Environment and Climate Change NSW, 'Aboriginal Cultural Heritage Consultation Requirements for Proponents', *National Parks and Wildlife Act 1974,* Part 10, April 2010.

5 Department of Environment and Climate Change NSW, 'Aboriginal Cultural Heritage Consultation Requirements for Proponents', *National Parks and Wildlife Act 1974,* April 2010.

4.0 Cultural Heritage Values and Statement of Significance

4.1 Preamble

The primary guide to the management of heritage places is the Burra Charter. The Burra Charter defines cultural significance as:

> *Cultural significance means aesthetic, historic, scientific, social or spiritual value for past, present or future generations. Cultural significance is embodied in the place itself, its fabric, setting, use, associations, meanings, records, related places and related objects. Places may have a range of values for different individuals or groups.*

In line with the Burra Charter's four principal values (social, historical, scientific and aesthetic) and the NSW Heritage Office's publication *Assessing Heritage Significance,*[1] four assessment criteria can be used to assess the Aboriginal heritage values of the study area.[2]

The four criteria are:

- Social value:[3] 'an item has strong or special association with a particular community or cultural group in NSW (or the local area) for social, cultural or spiritual reasons'.
- Historic value:[4] 'an item is important in the course, or patterning, of NSW's cultural or natural history (or the cultural or natural history of the local area)'.
- Scientific value:[5] 'an item has potential to yield information that will contribute to an understanding of NSW's cultural or natural history (or the cultural or natural history of the local area)'.
- Aesthetic value:[6] 'an item is important in demonstrating aesthetic characteristics and/or a high degree of creative or technical achievement in NSW (or the local area)'.

Consultation with the RAPs, investigation into the background history of the study area and local region, and the field inspection have allowed for an understanding of the key values associated with social value, historic value and scientific value.

4.1.1 Scientific Value Assessment Criteria

This assessment has sought to identify Aboriginal heritage objects and sites within the study area and obtain sufficient information to allow the values of those objects and sites to be determined. Following OEH guidelines for assessing scientific value,[7] five key criteria have been considered during the examination of the scientific value/significance of the identified sites and places within the subject area. These criteria are:

- Research potential: does the evidence suggest any potential to contribute to an understanding of the area and/or region and/or state's natural and cultural history?
  - Integrity and condition—integrity refers to the level of modification a site has been subject to (the cultural and natural formation process) and whether the site could yield intact archaeological deposits, which could be spatially meaningful. Condition takes into account the state of the material, which is especially relevant for organic materials.
  - Complexity—the demonstrated or potential ability of a site to yield a complex assemblage (stone, bone and/or shell) and/or features (hearths, fire pits, activity areas).

  - Archaeological potential—the potential to yield information (from subsurface materials which retain integrity, stratigraphical or not) that will contribute to an understanding of contemporary archaeological interest, or which could be saved for future research potential.
  - Connectedness—whether the site can be connected to other sites at the local or regional level through aspects such as type, chronology, content (ie materials present, manufacturing processes), spatial patterning or ethnohistorical information.

- Representativeness: how much variability (outside and/or inside the subject area) exists, what is already conserved, how much connectivity is there?
- Rarity: is the subject area important in demonstrating a distinctive way of life, custom, process, land use, function or design no longer practised? Is it in danger of being lost or of exceptional interest?
- Education potential: does the subject area contain teaching sites or sites that might have teaching potential?
- Archaeological landscapes—the study of the cultural sites relating to Aboriginal peoples within the context of their interactions in the wider social and natural environment they inhabited. Landscapes can be large or small depending upon specific contexts (ie local or regional conditions); they may also may be influenced by Aboriginal social and demographic factors (which may no longer be apparent).

A statement of Aboriginal scientific significance has been prepared that summarises the salient values as drawn from the above criteria.

4.1.2 Gradings of Significance

Following OEH 2011 the values, as assessed above, will be graded in accordance with a basic ranking of high, moderate or low. The ranking is based upon the research potential, representativeness, rarity and educational potential of each value. The grading is stated at the end of each value assessment.

4.2 Aboriginal Cultural Values Assessment

4.2.1 Social Value

The study area has some social value to the Aboriginal community, in relation to its location within the Second Ponds Creek cultural landscape. The study area meets this criterion at the moderate level, in connection with previously excavated site 45-5-2573, which yielded 972 stone artefacts. Although current excavation shows that the archaeological deposits have been subject to further disturbance, the site has previously been demonstrated to be part of an active landscape through which Aboriginal people traversed. The remaining archaeological resource is an isolated artefact which is a remnant of that signature.

During consultation, the Aboriginal community identified that this location is one they recognise their ancestors would have traversed. They also identified that the site has a good outlook at the top of the hill, to view the wider area, and identified that they would have expected further archaeological sites demonstrating occupation in this landscape.

4.2.2 Historical Value

The study area has some historical value, due to the known links to the wider regional networks of the Cumberland Plain Aboriginal groups. The study area meets this criterion at the low level because of previously excavated sites in the eastern section of the school.

4.2.3 Scientific Value

The subject area has been assessed against each of the scientific criteria, defined above:

Research Potential

There is limited further research potential within the study area. Based on the results of test excavation, it is likely that the area has been variously impacted, removing archaeological resources. Areas where development is not proposed by the RHAC redevelopment have not been assessed, and may require further investigation if future development is proposed.

Integrity and Condition

The integrity and condition of soils within the tested locations is poor, and unlikely to yield significant archaeological evidence.

Complexity

The study area has been known to contain sites of varying complexity. However, the one intact site (45-5-3920) is not considered a complex site, as it is an isolated artefact identified in a secondary eroding/displaced context.

Archaeological Potential

There is an unassessed level of archaeological potential in locations not proposed for redevelopment within the RHAC redevelopment project. The test excavated locations hold no further archaeological potential.

Connectedness

The subject area holds low connectedness, as it is considered a more distant location from the Second Ponds creek landscape, where strong patterns of occupation and habitation are noted through Aboriginal archaeological remains. Whilst some of these archaeological remains of some complexity have been found elsewhere on the site, the subject area is moderate to highly disturbed and unlikely to yield archaeological remains in the tested areas.

Representativeness

Does not meet this criterion.

Rarity

This category cannot be addressed.

Education Potential

This category cannot be addressed.

Archaeological Landscapes

This category cannot be addressed.

4.2.4 Aesthetic Value

The study area has been modified through the construction of the school. The landforms present have a generic aesthetic value, particularly in relation to assessing views to the wider area. As such, the study area holds a low level of aesthetic value.

4.3 Statement of Significance

The study area holds a moderate level of social value to the Aboriginal community, and low levels of historical, scientific and aesthetic value. Table 4.1 summarises the manifestation of the values. The social values are manifest through the Aboriginal community connection and value of the previously excavated archaeological deposits, and their connection to the Second Ponds Creek archaeological landscape. Similarly, the historic and scientific values are also manifest in association with the previously excavated archaeological deposits. As these sites have now been destroyed, their grading of significance is low. The aesthetic values of the study area are manifest through the appreciable views to Second Ponds Creek. Overall, the study area assessed through test excavation (excluding locations not proposed for redevelopment within the RHAC) has overall low significance, excluding moderate cultural significance to the Aboriginal community.

An overview of how these cultural values are manifest within the study area is presented in Table 4.1.

Table 4.1 Summary of Aboriginal Cultural Heritage Values.

Value	Manifest Through	Grade of Significance
Social	Archaeological deposits previously excavated; Second Ponds Archaeological Landscape	Moderate
Historic	Previously excavated archaeological deposits	Low
Scientific	Previously excavated archaeological deposits	Low
Aesthetic	Landforms and appreciable views connected to Second Ponds Creek	Low

4.4 Endnotes

1 NSW Heritage Office 2001, *Assessing Heritage Significance*.

2 OEH 2011 provides a background to undertaking an Aboriginal cultural heritage values assessment in accordance with the Burra Charter and NSW Heritage Office's *Assessing Heritage Significance*, 2001. The approach recommended by OEH has been adhered to for this report.

3 NSW Heritage Office 2001, *Assessing Heritage Significance,* Criteria D.

4 NSW Heritage Office 2001, *Assessing Heritage Significance,* Criteria A.

5 NSW Heritage Office 2001, *Assessing Heritage Significance,* Criteria E.

6 NSW Heritage Office 2001, *Assessing Heritage Significance,* Criteria C.

7 OEH 2011, *Guide to Investigating, Assessing and Reporting on Aboriginal Cultural Heritage in NSW*, p 10.

5.0 Impact Assessment

5.1 Preamble

An objective of the NPW Act is the 'conservation of objects, places and features … of cultural value within the landscape, including … places, objects and features of significance to Aboriginal people …' (s.2A(1(b)(i)).

To achieve this objective, the OEH needs to balance the requirements of development activities with those of environment protection; this is particularly important in light of the destructive nature that development activities can have on Aboriginal archaeological resource and cultural heritage. This balance is managed through decision making which relies on the principles of Ecologically Sustainable Development.

5.2 Ecologically Sustainable Development

The publication—*Operational Policy: Protecting Aboriginal Cultural Heritage*[1]—provides guidance to proponents in terms of Ecologically Sustainable Development (ESD). The following discussion provides an overview of ESD and its application to the current project.

The OEH frames its ESD obligations as follows:

> *Avoiding or Reducing Impact to Aboriginal Sites*
>
> *DECC [OEH] needs to balance the sometimes competing tensions between development activities and environment protection when we make decisions. Although the NPW Act gives a high level of protection to known Aboriginal objects [and since the NPW Amendment Regulation 2010 all unknown Aboriginal sites], recent court decisions have reinforced that Part 6 gives the Director General (DG) express powers to consent to the damage, destruction or defacement of Aboriginal objects by development activities. The powers in Part 6 are not inconsistent with the objects of the Act or a requirement to give effect to ESD.*[2]

The OEH has three policies that provide guidance with respect to avoiding or reducing impact to Aboriginal sites:

> *Policy 20*
>
> *Impacts to significant Aboriginal objects and places should always be avoided wherever possible. We [the OEH] will promote the development (or amendment) of proposals to avoid impacts and therefore avoid the need for s.90 AHIPs.*
>
> *Policy 21*
>
> *Where impacts to Aboriginal objects and places cannot be avoided, we will require the proponent or AHIP applicant to develop (or amend) proposals so as to reduce the extent and severity of impacts to significant Aboriginal objects and places through the use of reasonable and feasible measures. Any measures proposed should be negotiated between the proponent or AHIP applicant and the Aboriginal community.*
>
> *Policy 22*
>
> *Once all avoidance, minimisation and mitigation options have been adequately explored, we may also consider the appropriateness of any proposed actions having potential Aboriginal cultural heritage benefit. Any actions proposed should be negotiated between the proponent or AHIP applicant and the Aboriginal community.*

5.2.1 Principles of Ecologically Sustainable Development

ESD has been defined in Section 6 of the *Protection of the Environment Administration Act 1991* (NSW). This requires the integration of economic and environmental considerations (including cultural heritage) in the decision-making process. In regard to Aboriginal cultural heritage, ESD can be achieved by applying the principle of intergenerational equity and the precautionary principle.[3]

Intergenerational Equity

Intergenerational equity is the principle whereby the present generation should ensure the health, diversity and productivity of the environment for the benefit of future generations.

In terms of Aboriginal heritage, intergenerational equity can be considered in terms of the cumulative impacts to Aboriginal objects and places in a region. If few Aboriginal objects and places remain in a region (for example, because of impacts under previous AHIPs), fewer opportunities remain for future generations of Aboriginal people to enjoy the cultural benefits of those Aboriginal objects and places.

Information about the integrity, rarity or representativeness of the Aboriginal objects and places proposed to be impacted, and how they illustrate the occupation and use of land by Aboriginal people across the region, will be relevant to the consideration of intergenerational equity and the understanding of the cumulative impacts of a proposal.

Where there is uncertainty, the precautionary principle should also be followed.[4]

The Precautionary Principle

The precautionary principle states that if there are threats of serious or irreversible environmental damage, lack of full scientific certainty should not be used as a reason for postponing cost-effective measures to prevent environmental degradation.

In applying the precautionary principle, decisions should be guided by:

- *a careful evaluation to avoid, wherever practicable, serious or irreversible damage to the environment*
- *an assessment of the risk-weighted consequences of various options.*

The precautionary principle is relevant to DECC's consideration of potential impacts to Aboriginal cultural heritage where:

- *the proposal involves a risk of serious or irreversible damage to Aboriginal objects or places or to the value of those objects or places, and*
- *there is uncertainty about the Aboriginal cultural heritage values or scientific or archaeological values, including in relation to the integrity, rarity or representativeness of the Aboriginal objects or places proposed to be impacted.*

Where this is the case, a precautionary approach should be taken and all cost-effective measures implemented to prevent or reduce damage to the objects/place.[5]

With respect to the above OEH policies (Policy 20–22) and ESD, the following sections detail specifications for conservation, potential impact, and possible reductions to impact on the identified Aboriginal sites and values in the current study area.

5.3 Description of Proposed Development

The proposed project is for the RHAC redevelopment (SSD 8006). The plan includes a junior school area at the north of the site expanded via relocation and further student growth with three new classroom modules, new roadway and carparking, and associated landscaped areas. A senior school

area will be extended at the south of the site with demolition and replacement of previous teaching modules with new teaching spaces including for specialist teaching streams, new roadways and associated landscaped areas. A new library is also planned along with a multipurpose hall, and associated landscaped areas shared between the junior school and senior school. Appendix C contains the detailed architectural drawings, and identified bulk earthworks for the proposed works' civil engineering drawings.

5.3.1 Impact Assessment

The study area contains one known Aboriginal site (45-5-3920), which will be impacted by the proposed RHAC redevelopment. The test excavation of soils has revealed that it is unlikely that the proposed redevelopment will affect further archaeological deposits, due to the disturbed nature of natural soil profiles (A horizon profiles).

5.3.2 Potential Effects Arising from Proposed Impacts

The activities of the proposed development, the degree of impacts and harm they may cause to Aboriginal sites are summarised in Table 5.1 below.

Table 5.1 Summary of Potential Effects Arising from Proposed Impacts.

Activity	Type of Harm	Degree of Harm	Consequence of Harm
Landscaping and general redevelopment of RHAC	Indirect	Whole	Loss of value

5.3.3 Project Justification

The proposed development would harm AHIMS site 45-5-3920. However, it is anticipated that no other sites would be harmed during the proposed redevelopment as defined by the NPW Act. The extent of direct harm cannot be limited due to the constrained nature of the development area. An approval (not a Section 90 under the NPW Act) is required to allow harm resultant from the proposed development, in line with the SSD 8006 SEARs.

5.4 Mitigation of Impacts

To mitigate impacts to the study area's potential Aboriginal archaeological resources, knowledge of the excavated sites could be integrated into an education/activity kit for the school. This would mitigate the cumulative loss of sites across the RHAC grounds, and supplement any implementation of the Australian Curriculum for key learning stage objectives. Archaeological education kits have been developed to inform these objectives.

The draft ACHAR/ATR was provided to the RAPs in accordance with OEH consultation guidelines as part of the submission of the SSDA application, for their review and comment to satisfy Stages 3 and 4 of the DECCW Consultation requirements.

5.5 Summary of Sites, Conservation, Impacts and Effects

Impacts and conservation for all of the known Aboriginal sites, places, landscape and values and areas of archaeological potential (as assessed in Section 4.0) are detailed in Table 5.2.[6]

Table 5.2 Conservation and Impact to Aboriginal Heritage.

Site	Type of Harm	Degree of Harm	Consequence of Harm
AHIMS site 45-5-3920	Indirect—landscaping and incidental ongoing maintenance of school	Total	Total loss of value

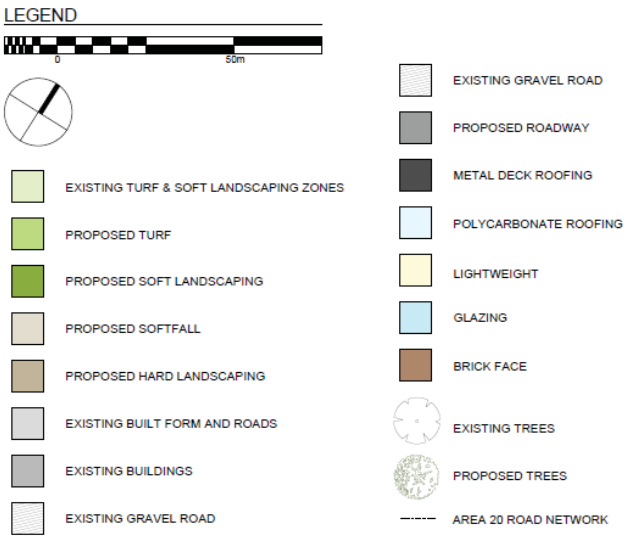

Figure 5.1 Proposed RHAC redevelopment. (Source: Terroir Architects, 2017)

Figure 5.2 Proposed impacts to Aboriginal heritage—approval required to impact 45-5-3920 under SSDA application for SSD 8006. (Source: Terroir Architects, 2017)

5.6 Endnotes

1 DECC 2009,*Operational Policy: Protecting Aboriginal Cultural Heritage*, viewed 1 November 2017 <http://www.environment.nsw.gov.au/resources/cultureheritage/09122ACHOpPolicy.pdf>.

2 DECC 2009, *Guide to Determining and Issuing Aboriginal Heritage Impact Permits*, viewed 1 November 2017 <http://www.environment.nsw.gov.au/resources/cultureheritage/09121AHIPGuide.pdf>, Section 3.8.

3 D DECC 2009, *Guide to Determining and Issuing Aboriginal Heritage Impact Permits*, viewed 1 November 2017 <http://www.environment.nsw.gov.au/resources/cultureheritage/09121AHIPGuide.pdf>, p 26.

4 D DECC 2009, *Guide to Determining and Issuing Aboriginal Heritage Impact Permits*, viewed 1 November 2017 <http://www.environment.nsw.gov.au/resources/cultureheritage/09121AHIPGuide.pdf>, p 26.

5 DECC 2009, *Guide to Determining and Issuing Aboriginal Heritage Impact Permits*, viewed 1 November 2017 <http://www.environment.nsw.gov.au/resources/cultureheritage/09121AHIPGuide.pdf>, p 26.

6 After DECCW Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales, Requirement 11.

6.0 Management, Mitigation and Recommendations

The following management and mitigation statements are made in light of the findings of the study area inspection, background research, predictive modelling, heritage significance assessment, relevant NSW legislation protecting Aboriginal heritage, the OEH Aboriginal Cultural Heritage Assessment Guidelines and consultation with local Aboriginal stakeholders.

A total of one heritage site (45-5-3920) could be impacted by the proposed project. Impacts are unlikely to be practically avoided, since the site could not be relocated. Mitigation strategies could involve integration of the post-excavation material into education kits which include the National Learning Curriculum for key learning stage objectives. Other mitigation strategies apply to unlikely but potential harm to any other unknown Aboriginal archaeology, including but not limited to human remains. Areas not identified as forming part of the proposed development area are not assessed. Should modifications to the redevelopment footprint occur, this would need to be evaluated.

The following management and mitigation statements are based on consideration of:

- legal requirements under the terms of the NPW Act, as amended—which states that it is illegal to harm or desecrate an Aboriginal object without first obtaining an AHIP (not applicable to this project) or an SSD/SSI from the Director-General, OEH, NSW;
- abiding by the new OEH Code of Practice, which was adopted by the *NPW Regulation 2009* (NPW Regulation) made under the NPW Act, and which came into force on 1 October 2010;
- the assessment of the Aboriginal cultural heritage values in the subject area;
- the interests of the local Aboriginal community members who participated in this project; and
- the size of the study area, the size of the remaining areas with archaeological sensitivity and likely impacts posed by the project proposal.

6.1 Strategy—Avoidance

Avoidance of heritage sites represents the best heritage outcome as it means no impact to the identified heritage features. However, the site (45-5-3920) has not been able to be relocated. Practically speaking, it is unlikely that the site will be relocated. Further, test excavation has identified this is likely from a secondary context and it is unlikely that further archaeological deposits exist.

If avoidance cannot be used as a strategy then a different heritage strategy (see below) will need to be employed for the site.

6.2 Strategy—SSDA Approval Without Community Collection

An SSDA approval should be sought to approve the impact of the AHIMS site 45-5-3920, in accordance with the NPW Act permitting harm to Aboriginal objects. This draft ACHAR must be reviewed by the RAPs prior to SSDA approval being sought to impact the site. SSDA approval application does not include locations where redevelopment is not proposed, nor will it be submitted to impact unknown (unlikely) potential human remains.

6.3 Strategy—Cultural Heritage Induction and Stop Works Procedure

As part of the pre-construction process, any Aboriginal cultural heritage conditions of the SSDA would need to be implemented as noted in the Conditions of Approval. This includes any requirements for cultural heritage inductions or unexpected finds procedures (including the discovery of human remains), and identification of approvals boundaries would assist contractors in understanding their obligations under the SSDA and the NPW Act. This would assist in mitigating impact to unexpected Aboriginal heritage remains not identified in this assessment.

6.4 Strategy—Interpretation Strategy

As cumulative impact has occurred to the Aboriginal archaeological resource, there is potential to mitigate the loss of knowledge and value by employing an interpretation strategy for the excavated sites. The interpretation strategy could look at integrating the known information about the excavated assemblages into part of an education kit for the RHAC.

6.5 Recommendation

Table 6.1 provides a summary of management recommendation for all of the known Aboriginal sites, places, landscape and values and areas of archaeological potential (as assessed in Section 4.0, and detailed in Table 5.1).

Table 6.1 Summary of Recommendations for Aboriginal Heritage.

Site	Potential of Harm to the Site	Is an SSDA Permit Required?	Recommended Mitigation Strategy
45-5-3920	Indirect	Yes	SSDA Approval without Community Collection Cultural Heritage Induction and Unexpected Finds Stop Works Procedure Possible development of Archaeological Interpretation Kit

If impacts cannot be avoided then the relevant SSDA approval should be sought from the Department of Planning and Environment.

Should any previously unrecorded Aboriginal heritage sites or objects be uncovered during the course of works that are not covered under an SSDA, then work in the vicinity of the item should cease and the site should be reported to the OEH in order to determine the appropriate course of action.

It is recommended that copies of this report be provided to registered Aboriginal Parties within 14 days of submission of the SSDA approval.

GML has submitted all Aboriginal Site Impact Recording Forms cards for previously excavated Aboriginal sites to the OEH for updating in the AHIMS database.

7.0 Appendices

Appendix A

AHIMS Search Results

Appendix B

Test Excavation Records

Appendix C

Consultation Log

Appendix D

ARD

Appendix E

Site Impact Recording Forms

Appendix F

Proposed Works