ABORIGINAL CULTURAL HERITAGE ASSESSMENT REPORT

New High School for
Leppington and Denham Court
Lot A & B/-/DP411211
128-134 Rickard Road
Leppington
NSW 2179
(Camden LGA)

AMAC
Archaeological

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Archaeo*logical* Management & Consulting Group

for

NSW GOVERNMENT Education School Infrastructure

January 2025

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Cover Image
Study area outlined in red. Six Maps. LRS Online (accessed 18/12/2023).

Internal Review

Version	Written/Edited By	Date	Document Status	Reviewed By	Issue Date
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6	Ivana Vetta (AMAC Group)	10/01/25	Final reissue amended plan	I.Vetta	10/01/25

ACKNOWLEDGEMENT OF COUNTRY

SINSW and AMAC Group would like to acknowledge the Traditional Custodians of the Southwest Growth Area – the Dharawal[1], Gandangara and Dharug Peoples– and pay respect to their cultural heritage, beliefs and continuing relationship with the land.

SINSW and AMAC Group would also like to acknowledge the post contact experiences of Aboriginal peoples who have attachment to the Southwest Growth Area.

"We pay our respect to the Elders – past, present and future – for they hold the memories, traditions, culture and hopes of Aboriginal Peoples in the area".

SINSW and AMAC Group recognises the role of the registered Aboriginal parties in the management of the Aboriginal cultural heritage sites, landscape features and values of this project.

SINSW and AMAC Group would like to thank the Registered Aboriginal Parties for their participation in this project and for their valuable contribution to this Aboriginal Cultural Heritage Assessment which has been enriched by their willingness to share valuable aspects of their cultural knowledge especially in respect of Caring for Country.

[1] Also spelt Tharawal, Turawal, Thurwal (Dharawal - The story of the Dharawal speaking people of Southern Sydney (UOW 2001).

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The proposed activity is for the construction of a new high school located at 128-134 Rickard Road, Leppington, NSW, 2179 (the site).

Aboriginal Consultation

Consultation for this report has been undertaken in accordance with the *Part 6: National Parks and Wildlife Act 1974: Aboriginal Cultural Heritage Consultation Requirements for Proponents* (DECCW 2010c). Per the guidelines, for the initial stages of this ACHAR, a Research Design and Testing Methodology was sent to the list of Registered Aboriginal Stakeholders for a mandatory 28-day review period. The results of this initial consultation and subsequent archaeological test excavation have been included in this document and the ACHAR was distributed to all registered stakeholders for a final review phase prior to being finalised.

Physical Evidence

There was no confirmed Aboriginal archaeological site records located within the study area on the Aboriginal Heritage Information Management System (AHIMS), however, there are 19 registered sites within 1000m of the study area. The site is also located within 200m of waters (1st order water course/ intermittent stream) which indicates that sub-surface Aboriginal objects and/or deposits are likely in undisturbed areas. Archaeological test excavation was conducted in May 2024 under the *Code of Practice* (DECCW 2010b) and found no Aboriginal objects or features of cultural or archaeological significance at the site.

Significance

Only a single piece of raw material was located during test excavation which was found to have limited research potential and thus no scientific significance. No social or cultural significance has been identified for the site however consultation with the Registered Aboriginal Parties is ongoing.

Mitigation Measures

Systematic archaeological test excavation found no objects of Aboriginal cultural heritage within the study area. Based on these findings, the proposed activity at the site is unlikely to impact objects of aboriginal cultural heritage significance and therefore can proceed with caution and implement the Unexpected Finds Protocol described in the Aboriginal Archaeological Technical Report (Appendix A).

Consultation with the registered Aboriginal stakeholders should continue throughout the duration of the activity of the site. Registered Aboriginal Parties will be emailed every 6 months in order to maintain this process (OEH 2011, p.11) and in the event of any unexpected finds. Stakeholders have been given the opportunity to comment on the recommendations outlined in this report.

CONTACT DETAILS

The contact details for the following archaeologist, NSW Police, Heritage NSW and the Local Aboriginal Land Council are as follows:

Organisation	Contact	Contact Details
NSW Environment Line		131 555
NSW Camden Police Area Command		PAC Office: Cnr Caden Valley Way and Wilson Crescent Narellan NSW 2567 Ph: (02) 4632 4499 Fax: (02) 4632 4411
Archaeological Management & Consulting Group	Mr. Benjamin Streat or Mr. Martin Carney	122c-d Percival Road Stanmore NSW 2048 Ph:(02) 9568 6093 Fax:(02) 9568 6093 Mob: 0405 455 869 Mob: 0411 727 395 benjaminstreat@archaeological.com.au
Heritage NSW	Archaeologist – Head Office	Level 6 Valentine Avenue Parramatta, NSW 2150 Ph: (02) 9873 8500 heritagemailbox@environment.nsw.gov.au
Tharawal Local Aboriginal Land Council (TLALC)	Cultural Heritage Officer	220 West Parade Couridjah NSW 2571 Ph: (02) 4681 0059 informationofficer@tharawal.com.au

1.0 INTRODUCTION

1.1 BACKGROUND

This Aboriginal Cultural Heritage Assessment Report, including full consultation, and Aboriginal Archaeological Technical Report (Appendix A) has been prepared to support a Review of Environmental Factors (REF) for the Department of Education (DoE) for the new high school for Leppington and Denham Court (the activity). The purpose of the REF is to assess the potential environmental impacts of the activity prescribed by State Environmental Planning Policy (Transport and Infrastructure) 2021 (T&I SEPP) as "development permitted without consent" on land carried out by or on behalf of a public authority under Part 5 of the Environmental Planning and Assessment Act 1979 (EP&A Act). The activity is to be undertaken pursuant to Chapter 3, Part 3.4, Section 3.37A of the T&I SEPP.

The proposed activity is for the construction of a new high school located at 128-134 Rickard Road, Leppington, NSW, 2179 (the site).

This report follows a Preliminary Indigenous Heritage Assessment and Impact Report carried out by AMAC Group (June 2023) which recommended that an Aboriginal Cultural Heritage Assessment Report (ACHAR) along with an Aboriginal Archaeological Technical Report be prepared in order to address the potential for Aboriginal objects and/or features of archaeological and cultural heritage significance to be present within the study area.

This report has been written in accordance with *the Guide to Investigating, Assessing and Reporting on Cultural Heritage in New South Wales, Part 6 National Parks and Wildlife Act 1974*, (OEH 2011).

1.2 SCOPE

The document aims to provide registered Aboriginal persons and/or organisations an opportunity to comment on the cultural significance of Aboriginal object(s) and/or place(s) within the vicinity of the area of the proposed activity. This knowledge is then presented for synthesis, analysis and compilation into a Cultural Heritage Assessment about the study area.

This report will assess the impact of the proposed activity on any identified items or places of Aboriginal cultural heritage value and to develop mitigative strategies under the appropriate legislation for the management of Aboriginal archaeological and cultural heritage values of the study area. This document communicates the project details to participating Aboriginal stakeholders. Registered Aboriginal Parties will be able to identify the significance of the site, to assess the impact of the project, and contribute to mitigative strategies (if necessary).

This assessment is intended for submission in conjunction with the Appendix A: Aboriginal Archaeological Technical Report.

1.3 AUTHOR IDENTIFICATION

The analysis of the archaeological background and the reporting were undertaken by Mr. Steven J. Vasilakis (B. Arts. Hons.), senior archaeologist, and Ms. Sarah

Hannan (B. Arts, B. Science), graduate archaeologist, under the guidance of Dr Ivana Vetta, Director of Heritage at AMAC Group.

1.4 LEGISLATIVE CONTEXT AND STATUTORY CONTROLS

This section of the report provides a brief outline of the relevant legislation and statutory instruments that protect Aboriginal archaeological and cultural heritage sites within the state of New South Wales. Some of the legislation and statutory instruments operate at a federal or local level and as such are applicable to Aboriginal archaeological and cultural heritage sites in New South Wales. This material is not legal advice and is based purely on the author's understanding of the legislation and statutory instruments. This document seeks to meet the requirements of the legislation and statutory instruments set out within this section of the report.

1.4.1 Commonwealth Heritage Legislation and Lists

One piece of legislation and two statutory lists are maintained and were consulted as part of this report: *the Environmental Protection and Biodiversity Conservation Act 1999*, the National Heritage List and the Commonwealth Heritage List.

1.4.1.1 Environmental Protection and Biodiversity Conservation Act 1999

The *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) offers provisions to protect matters of national environmental significance. This act establishes the National Heritage List and the Commonwealth Heritage List which can include natural, Indigenous and historic places of value to the nation. This Act helps ensure that the natural, Aboriginal and historic heritage values of places under Commonwealth ownership or control are identified, protected and managed (Australian Government 1999).

1.4.1.2 National Heritage List

The National Heritage List is a list which contains places, items and areas of outstanding heritage value to Australia; this can include places, items and areas overseas as well as items of Aboriginal significance and origin. These places are protected under the Australian Government's EPBC Act.

1.4.1.3 Commonwealth Heritage List

The Commonwealth Heritage List can include natural, Indigenous and historic places of value to the nation. Items on this list are under Commonwealth ownership or control and as such are identified, protected and managed by the Federal Government.

1.4.2 New South Wales State Heritage Legislation and Lists

The state (NSW) based legislation that is of relevance to this assessment comes in the form of the acts which are outlined below.

1.4.2.1 National Parks and Wildlife Act 1974

The NSW National Parks and Wildlife Act 1974 (as amended*)* defines Aboriginal objects and provides protection to any and all material remains which may be

evidence of the Aboriginal occupation of lands continued within the state of New South Wales. The relevant sections of the Act are sections 84, 86, 87 and 90. An Aboriginal object, formerly known as a relic is defined 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 (NSW Government, 1974).

It is an offence to harm or desecrate an Aboriginal object or places under Part 6, Section 86 of the NPW Act:

Part 6, Division 1, Section 86: Harming or desecrating Aboriginal objects and Aboriginal places:

(1) A person must not harm or desecrate an object that the person knows is an Aboriginal object.

Maximum penalty:

(a) in the case of an individual—2,500 penalty units or imprisonment for 1 year, or both, or (in circumstances of aggravation) 5,000 penalty units or imprisonment for 2 years, or both, or

(b) in the case of a corporation—10,000 penalty units.

(2) A person must not harm an Aboriginal object.

Maximum penalty:

(a) in the case of an individual—500 penalty units or (in circumstances of aggravation) 1,000 penalty units, or

(b) in the case of a corporation—2,000 penalty units.

(3) For the purposes of this section, ***circumstances of aggravation*** *are:*

(a) that the offence was committed in the course of carrying out a commercial activity, or

(b) that the offence was the second or subsequent occasion on which the offender was convicted of an offence under this section.

This subsection does not apply unless the circumstances of aggravation were identified in the court attendance notice or summons for the offence.

(4) A person must not harm or desecrate an Aboriginal place.

Maximum penalty:

(a) in the case of an individual—5,000 penalty units or imprisonment for 2 years, or both, or

(b) in the case of a corporation—10,000 penalty units.

(5) The offences under subsections (2) and (4) are offences of strict liability and the defence of honest and reasonable mistake of fact applies.

(6) Subsections (1) and (2) do not apply with respect to an Aboriginal object that is dealt with in accordance with section 85A.

(7) A single prosecution for an offence under subsection (1) or (2) may relate to a single Aboriginal object or a group of Aboriginal objects.

(8) If, in proceedings for an offence under subsection (1), the court is satisfied that, at the time the accused harmed the Aboriginal object concerned, the accused did not know that the object was an Aboriginal object, the court may find an offence proved under subsection (2).

1.4.2.2 Environmental Planning & Assessment Act 1979

The Environmental Planning and Assessment Act 1979 (EP&A Act) states that environmental impacts of proposed developments must be considered in land use planning procedures. Four parts of this act relate to Aboriginal cultural heritage.

- Part 3, divisions 3, 4 and 4A refer to Regional strategic plans and both Local Environmental Plans (LEP) and Development Control Plans (DCP), which are environmental planning instruments and call for the assessment of Aboriginal heritage among other requirements.
- Part 5 of this Act requires that impacts on a locality which may have an impact on the aesthetic, anthropological, architectural, cultural, historic, scientific, recreational or scenic value are considered as part of the development application process (NSW Government, 1979).

1.4.2.3 The Aboriginal Land Rights Act 1983

The NSW *Aboriginal Land Rights Act 1983* (ALR Act), administered by the NSW Department of Aboriginal Affairs, established the NSW Aboriginal Land Council (NSWALC) and Local Aboriginal Land Councils (LALCs). The ALR Act requires these bodies to:

- take action to protect the culture and heritage of Aboriginal persons in the council's area, subject to any other law;
- promote awareness in the community of the culture and heritage of Aboriginal persons in the council's area.

These requirements recognise and acknowledge the statutory role and responsibilities of New South Wales Aboriginal Land Council and Local Aboriginal Land Councils.
The ALR Act also establishes the Office of the Registrar whose functions include but are not limited to, maintaining the Register of Aboriginal Land Claims and the Register of Aboriginal Owners.

Under the ALR Act the Office of the Registrar is to give priority to the entry in the Register of the names of Aboriginal persons who have a cultural association with:

- lands listed in Schedule 14 to the NPW Act;
- lands to which section 36A of the ALR Act applies (NSW Government, 1974 & DECCW 2010).

1.4.2.4 The Native Title Act 1993

The *Native Title Act 1993* (NTA) provides the legislative framework to:

- recognise and protect native title;
- establish ways in which future dealings affecting native title may proceed, and to set standards for those dealings, including providing certain procedural rights for registered native title claimants and native title holders in relation to acts which affect native title;
- establish a mechanism for determining claims to native title;
- provide for, or permit, the validation of past acts invalidated because of the existence of native title.

The National Native Title Tribunal has a number of functions under the NTA including maintaining the Register of Native Title Claims, the National Native Title

Register and the Register of Indigenous Land Use Agreements and mediating native title claims (NSW Government, 1974 & DECCW 2010).

1.4.2.5 New South Wales Heritage Register and Inventory 1999

The State Heritage Register is a list of places and objects of particular importance to the people of NSW. The register lists a diverse range of over 1,500 items, in both private and public ownership. Places can be nominated by any person to be considered to be listed on the Heritage register. To be placed an item must be significant for the whole of NSW. The State Heritage Inventory lists items that are listed in local council's local environmental plan (LEP) or in a regional environmental plan (REP) and are of local significance.

1.4.2.6 Register of Declared Aboriginal Places 1999

The *NPW Act* protects areas of land that have recognised values of significance to Aboriginal people. These areas may or may not contain Aboriginal objects (i.e. any physical evidence of Aboriginal occupation or use). Places can be nominated by any person to be considered for Aboriginal Place gazettal. Once nominated, a recommendation can be made Heritage NSW, DCCEEW for consideration by the Minister. The Minister declares an area to be an 'Aboriginal place' if the Minister believes that the place is or was of special significance to Aboriginal culture. An area can have spiritual, natural resource usage, historical, social, educational or other type of significance.

Under section 86 of the NPW Act it is an offence to harm or desecrate a declared Aboriginal place. Harm includes destroying, defacing or damaging an Aboriginal place. The potential impacts of the development on an Aboriginal place must be assessed if the development will be in the vicinity of an Aboriginal place (DECCW 2010a).

1.4.3 Local Planning Instruments

1.4.3.1 State Environmental Planning Policy (Precincts—Western Parkland City) 2021

The State Environmental Planning Policy (Precincts – Western Parkland City) was endorsed in 2021. Chapter 3 provides planning controls for the Sydney region growth centres with Section 3.10 outlining the controls related to specific growth centre precincts; the study site forms part of the Leppington North Precinct. Controls for this precinct are stipulated in Appendix 5: Camden Growth Centres Precinct plan 2013.

Heritage Conservation is discussed in Appendix 5 Part 5 section 5.10 and highlights objectives to conserve archaeological sites, Aboriginal objects and places of heritage significance (Part 5 section 5.10(1)).

Development consent is required when proposed works may disturb or excavate archaeological sites, Aboriginal objects or and Aboriginal places of heritage significance (Part 5 section 5.10(2)(a-f)). Conservation incentives through development mitigation and preservation of significant sites is detailed in Part 5 section 10(10). Specific consent requirements surrounding proposed development to Aboriginal places of heritage significance is stated in Part 5 section 5.10(8):

(8) Aboriginal places of heritage significance

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.

1.4.3.2 Camden Growth Centre Precincts Development Control Plan 2023

The Camden Growth Centre Precincts Development Control Plan was endorsed in 2023 by Camden City Council.

The study site is located within the Austral and Leppington North Precinct (Schedule 1). Aboriginal Culture and Heritage is discussed in Chapter 2 –Precinct Planning Outcomes, Section 2.3, Subsection 2.3.4 - Aboriginal and European Heritage of the DCP. The following outlines Aboriginal heritage requirements specifically discussed in this section (Controls 5 – 14 address European or built heritage and have not been included here).

Objectives

a. To manage Aboriginal heritage values to ensure enduring conservation outcomes.

b. To ensure areas identified as European cultural heritage sites or archaeological sites are managed appropriately.

Controls

1. Development applications must identify any areas of Aboriginal heritage value that are within or adjoining the area of the proposed development, including any areas within the development site that are to be retained and protected (and identify the management protocols for these).

2. Developments or other activities that will impact on Aboriginal heritage may require consent from the Office of Environment and Heritage (OEH) under the *National Parks and Wildlife Act 1974* and consultation with the relevant Aboriginal communities.

3. Any development application that is within or adjacent to land that contains a known Aboriginal cultural heritage site, as indicated on the Aboriginal cultural heritage sites figure, in the relevant Precinct Schedule, must consider and comply with the requirements of the *National Parks and Wildlife Act 1974.*

4. Where the necessary consents under the *National Parks and Wildlife Act 1974* have been obtained, the development application must demonstrate that the development will be undertaken in accordance with any requirements of that consent.

1.4.4 Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales

Any further work resulting from recommendations should be carried out in conformation with the Code of Practice (DECCW, 2010b).

1.4.5 Guidelines

This report has been carried out in consultation with the following documents which advocate best practice in New South Wales:

- Aboriginal Archaeological Survey, Guidelines for Archaeological Survey Reporting (NSW NPWS 1998);
- Aboriginal Cultural Heritage Standards and Guidelines Kit (NPWS 1998);
- Australia ICOMOS 'Burra' Charter for the conservation of culturally significant places (Australia ICOMOS 1999, revised 2013);
- Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales, Part 6 National Parks and Wildlife Act 1974, (DECCW 2010b);
- Due Diligence Code of Practice for the Protection of Aboriginal Objects in New South Wales, Part 6 National Parks and Wildlife Act 1974, (DECCW 2010a);
- Guide to Investigating, Assessing and Reporting on Aboriginal Cultural Heritage in NSW, Part 6 National Parks and Wildlife Act 1974 (OEH 2011)
- Part 6; National Parks and Wildlife Act Aboriginal Cultural Heritage Consultation Requirements for Proponents (DECCW 2010c);
- Protecting Local Heritage Places: A Guide for Communities (Australian Heritage Commission 1999).

1.4.6 Heritage Listings

The organisation of heritage databases and listing have been altered since the publishing of the original guidelines above. The Australian Heritage Database, the State Heritage Inventory, the National Native Title Register and Local council legislation currently contain all registered heritage sites within Australia. These databases were searched:

Heritage Listings/ Register/ Other	Result
National Heritage List	Not Listed
Commonwealth Heritage List	Not Listed
NSW State Heritage Register	Not Listed
National Native Title Register	Not Listed
Camden Local Environmental Plan 2010	Not Listed
Camden Growth Centre Precincts Development Control Plan – Schedule One Austral and Leppington North Precinct	Moderate Archaeological Sensitivity Area.

1.5 ACKNOWLEDGEMENTS

The author would like to thank the following for advice and/or input into this assessment:

- School Infrastructure NSW (SINSW)
- Tharawal Local Aboriginal Land Council
- Kamilaroi Yankuntjatjara Working Group
- Registered Aboriginal Parties
- Any others (update as works proceed. Guidelines specify reviewers, advisors, participants in survey activities)

2.0 DESCRIPTION OF STUDY AREA

The site is known as 128-134 Rickard Road, Leppington, NSW, 2179 and is legally described as Lots A and B in Deposited Plan 411211. The site is located on the eastern side of Rickard Road and is approximately 4.1ha in area. The site is located immediately south of the existing Leppington Public School at 144 Rickard Road and is approximately 700m south of Leppington Train Station. (Figure 2-1 – Figure 2-2). The northern portion of the site is currently used for residential purposes. The southern portion of the site is used for agricultural purposes, with multiple greenhouses and an existing pond on the property.

Lot	Section	Deposited Plan
A	-	411211
B	-	411211

2.1 REGISTERED ARCHAEOLOGICAL SITES WITHIN THE STUDY AREA

There are no registered sites within the study area of which the author is aware.

Figure 2-1 **Aerial of study location.**
NearMap (provided by GYDE).

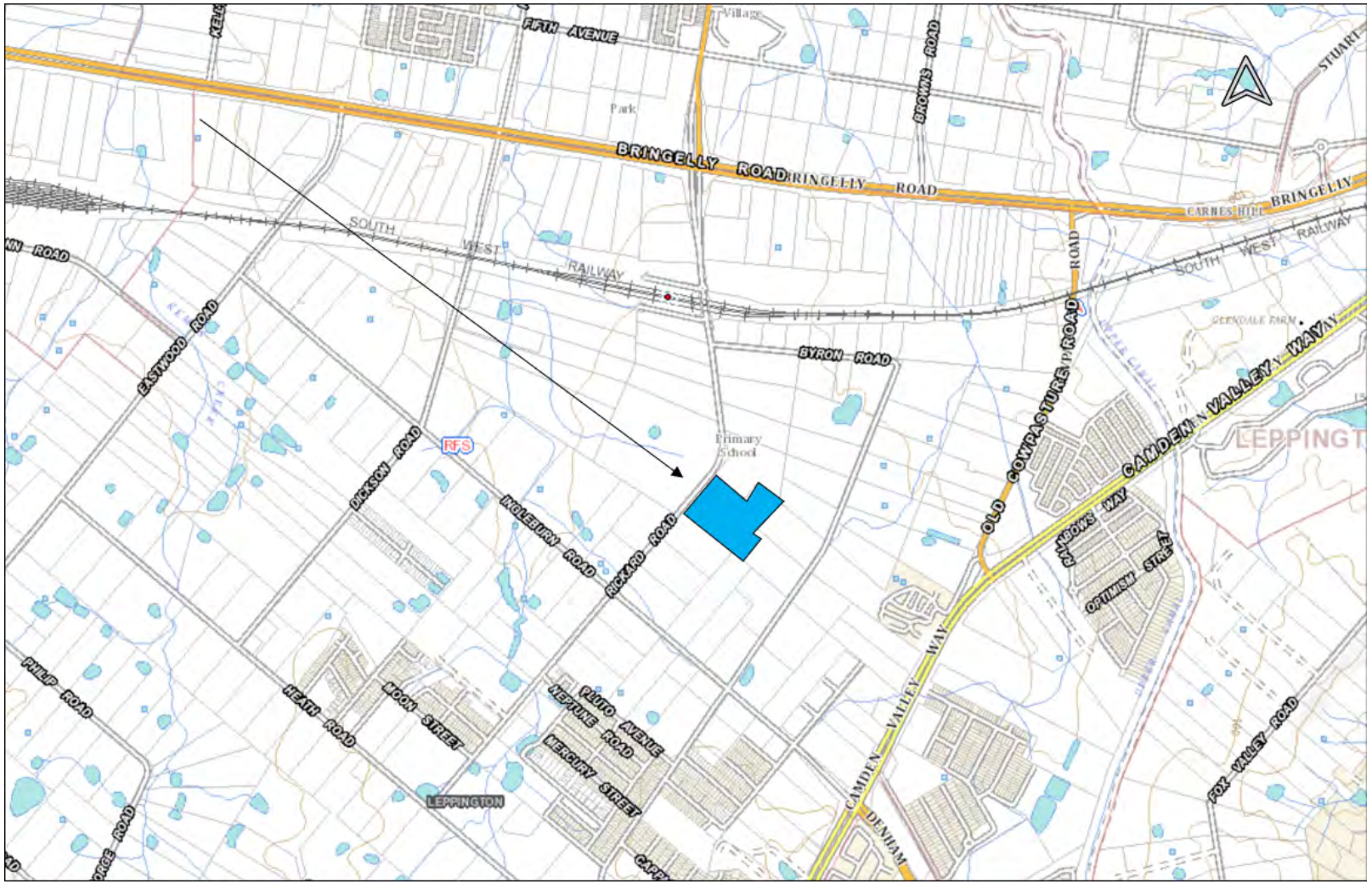

Figure 2-2 Topographic map with site location.
Study area outlined in blue with black arrow. Six Maps, LRS Online (accessed 18/12/2023).

2.2 ENVIRONMENTAL CONTEXT

To adequately understand and assess the potential Aboriginal archaeological resource that may be present within the study area it is vital to understand the environment in which the Aboriginal inhabitants of the study area carried out their activities. The environment that Aboriginal inhabitants lived in is a dominant factor in shaping their activity and therefore the archaeological evidence created by this activity. Not only will the resources available to the Aboriginal population have an influence on the evidence created but the survival of said evidence will also be influenced by the environment.

2.2.1 Topography

The study site is located within the township of Leppington and represents a minimally built-up area and partly modified landscape. The town is located inland and is relatively flat. Until recently, dominant European land use in Leppington was for horticulture and animal husbandry. The study site comprises gentle slopes rising to the west, with the highest elevation (100m) towards Rickard Road. Intermittent streams/ minor tributaries stemming from Kemps Creek are situated to the east, south and west of the study site.

The wider study area lies between the terraces of the Hawkesbury/Nepean River System and Georges River system. It is in the vicinity of major tributaries, such as the Georges River (9.3km east) as well as minor ones including Kemps Creek (1.6km west) and Upper Canal (1.2km east of site). The Blacktown (bt) soil landscape consists of mostly gently undulating rises on Wianamatta Shale with a local relief 10-30m and slopes generally <5%. The crests and ridges are found to be broad and rounded (200-600m). Shale outcrops are not naturally located but can be the result of the removal of upper soils.

2.2.2 Geology and Soils

The Blacktown (bt) soil profile is located over much of the Cumberland Lowlands. The geology is Ashfield laminite and siltstone and Bringelly shale containing occasional claystone, laminite and coal. Soils are typically shallow to moderately deep red and brown podsols on crests and upper slopes and deeper yellow podsols and soloths on lower slopes along drainage lines. Soil acidity, ironstone and gravel shale fragments tend to increase with depth. Total soil depth is generally <100cm on crests, <200cm on upper and mid slopes and >200cm on lower slopes.

2.2.3 Watercourses

The study area lies c. 9. 3km to the west of Georges River, a major freshwater tributary. In the past it would have channelled Aboriginal activity as a major resource of food and water. There are also a number of drainage channels, manmade dams and minor tributaries within the vicinity as a result of European occupation and past land use. Some of the creeks within the area consist of Rileys Creek (west approx. 4.2km), Kemps Creek (west approx. 1.6km), Upper Canal (east approx. 1.2km), as well as a number of unnamed intermittent streams/minor tributaries and drainage channels off Kemps Creek. One minor tributary is located approximately 120m to the west and a second one located approximately 211m to the east.

2.2.4 Vegetation

The vegetation found in the study area is no longer in a native state and is comprised of a variety of introduced and noxious types of vegetation. This

movement away from the natural vegetation is a result of previous land clearing for farming, residential and urban development. These lands were cleared soon after European settlement due to the relatively high agricultural value of the soils upon which they are situated.

The native vegetation of this area probably comprised of dry sclerophyll forests and woodlands that are associated with the Wianamatta and Bringelly Shale Groups. These vegetative communities principally contain Grey Box (*Eucalyptus hemipholia*), Forest Red Gum (*Eucalyptus teraticornis*), Sydney Blue Gum (*Eucalyptus saligna*), Spotted gum (*Eucalyptus maculate*) and Blackbutt (*Eucalyptus pilularis*).

Secondary populations of Cabbage Gum (*Eucalyptus amplifolia*), Broad Leaved Apple (*Angophora subvelutina*) and Narrow Leaved Apple (*Angophora bakeri*) may have existed along the banks of rivers and creeks in association with swamp communities of Swamp Sheoak (*Casuarina glauca*) and Tea Tree (*Melaleuca alternafolia*) (Bannerman and Hazelton 1990 p. 29 and 64).

Understorey species included grasses, such as spear grass, shrub species such as Blackthorn, ferns including Bracken and vines such as Sarsaparilla. This type of forest is typical of those located in podsoloc deposits. For the most part this indigenous vegetation has been cleared for grazing, urban residential and light industry land use throughout the Cumberland Plain (Walker 1975, p. 11–13).

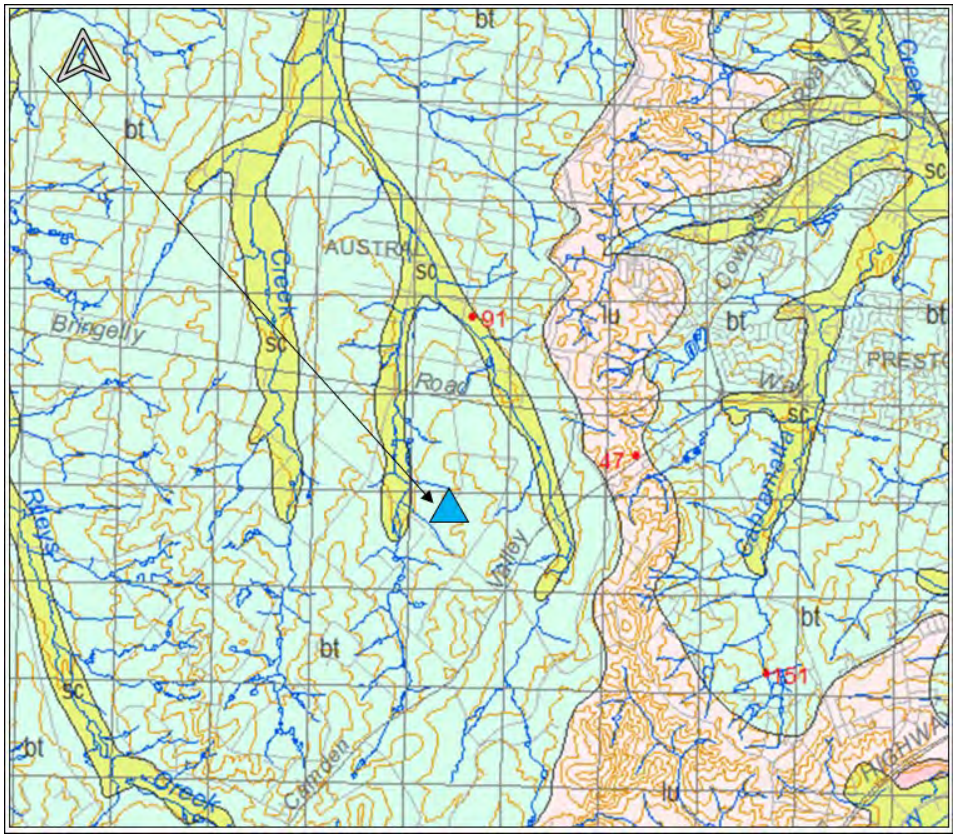

Figure 2-3 **Study area indicated by blue triangle and black arrow on soil map.** Soil Landscapes of the Penrith 1:100 000 Sheet Report (Bannerman and Hazelton 1990).

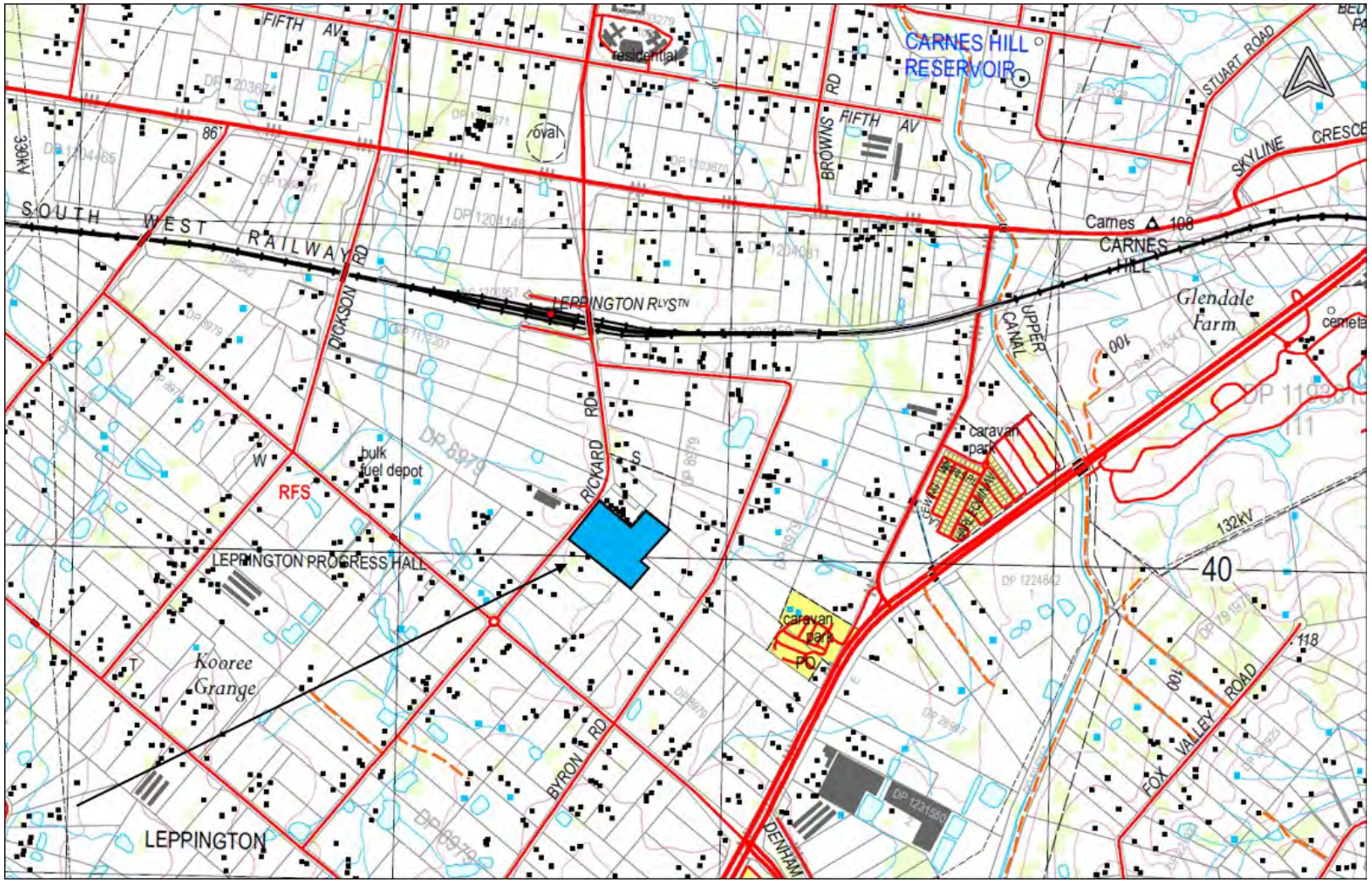

Figure 2-4 Topography Map indicating watercourses in blue.
Study site in blue indicated by black arrow. Six Maps. LRS Online (accessed 15/01/2024).

3.0 ABORIGINAL CONSULTATION

This section documents the requirements of the Aboriginal consultation process that should be undertaken as part of any Aboriginal archaeological and cultural heritage assessment where an Aboriginal Heritage Impact Permit (AHIP) or test excavation is required. Section 3.1 outlines the guidelines for Aboriginal consultation issued by the DECCW. Section 3.2 documents the steps taken for this Aboriginal cultural assessment and the outcomes of the consultation. Further information, including copies of correspondence to and from registered parties is included in Appendix B.

3.1 CONSULTATION REQUIREMENTS

The Aboriginal Cultural Heritage Consultation Requirements for Proponents (DECCW 2010c), referring to Part 6 Approvals under the NPW Act were released in April 2010. The responsibilities of the proponent when test excavation is to take place and/or permit under section 90 of the NPW Act are listed below.

Stage 1 – Notification of project proposal and registration of interest

- Contact relevant authorities to establish Registered Aboriginal Parties
- Notify Registered Aboriginal Parties of works, inviting them to register interest, in addition to posting a local advertisement about works. 14 days' notice must be given.

Stage 2 – Presentation of information about the proposed project

- Facilitate discussion about the proposed works and significance of the study area.

Stage 3 – Gathering information about cultural significance

- Facilitate discussion of the methodology report findings and management of heritage with Registered Aboriginal Parties. A period of 28 days must be given for report responses.
- Document all feedback received in response to proposed works.

Stage 4 – Review of draft Cultural Heritage Assessment Report

- Facilitate discussion of the Aboriginal Cultural Heritage Assessment Report findings and management of heritage with Registered Aboriginal Parties
- After the review period of 28 days, the report should be submitted to Heritage NSW with the accompanying AHIP (If applicable).

3.2 CONSULTATION SUMMARY

Consultation for this report was undertaken in accordance with Consultation Requirements (DECCW 2010c).

A list of 80 potentially interested parties was provided by Heritage NSW. No additional groups were provided by contacted authorities. Information was sent to all listed stakeholders and 18 groups registered their interest. All registered stakeholders were given a copy of a proposed Aboriginal Cultural Heritage Research Methodology and test excavation methodology with 28 days to respond to this methodology. Six registered stakeholders responded to this document and this methodology guided test excavation on the 7th and 8th May 2024. Stakeholders that

registered and provided rates and insurance documents were contacted for fieldwork. As fieldwork was completed over two days, not all Registered Groups could be included in fieldwork, however all registered stakeholders were provided a copy of this report and given a minimum of 28 days to review and comment. Four registered stakeholders responded to the ACHAR review, agreeing with management recommendations. No specific responses to the research design questions were supplied to AMAC Group as part of the consultation process.

Table 3-1 Consultation Log

STAGE 1						
Authority Letters & Advertisement						
Authority Body/ Organisation	**Contact Person**	**Contact Details**	**Date Sent**	**Method**	**Response Received**	**Date**
Camden City Council	Heritage Officer	PO Box 183, Camden NSW 2570	30/10/2023	Email	Yes Email	2/11/2023
Sydney LLS	Heritage Officer	2-6 Station Street, Sydney NSW 2750	30/10/2023	Email	No	
Tharawal Local Aboriginal Land Council	Heritage Officer	PO Box 245, Thirlmere NSW 2572	30/10/2023	Email	No	
National Native Title Tribunal (NNTT)	Heritage Officer	GPO BOX 9973, Sydney NSW 2001	30/10/2023	Email	Yes Email	30/10/2023
NTSCORP	Heritage Officer	PO BOX 2105, Strawberry Hills NSW 2012	30/10/2023	Email	No	
Heritage NSW	Archaeologist	PO BOX 644, Parramatta NSW 2124	30/10/2023	Email	Yes Email	6/11/2023
Office of Registrar	Heritage Officer	PO BOX 787, Parramatta NSW 2124	30/10/2023	Email	No	
Newspaper Advertisement:	The District Reporter	-	Ad Placed: 05/12/2023		Date printed: 08/12/2023	End Period: 22/12/2023
Stakeholders Contacted	**Minimum 14 days to register**	**(07/11/2024) - (21/11/2024)**				
Name/Organisation	**Contact Person**	**Contact Details**	**Date Sent**	**Method**	**Notes**	
A1 Indigenous Services	Carolyn Hickey	[redacted]	7/11/2024	Email	e.g., Email Bounced/Letter Returned	

Amanda Hickey Cultural Services	Amanda Hickey	[redacted]	7/11/2024	Email	Heritage NSW List - Postal Address Invalid
Aragung Aboriginal Cultural Heritage Site Assessments	Jamie Eastwood	[redacted]	7/11/2024	Email	
B.H. Heritage Consultants	Ralph & Nola Hampton	[redacted]	7/11/2024	Email	
Badu (Murrin Clan/Peoples)	Karia Lea Bond	[redacted]	7/11/2024	Email	
Barking Owl Aboriginal Corporation	Mrs Jody Kulakowski (Director)	[redacted]	7/11/2024	Email	
Barraby Cultural Services	Lee Field (Manager)	[redacted]	7/11/2024	Email	
Biamanga (Murrin Clan/Peoples)	Seli Storer	[redacted]	7/11/2024	Email	
Bidjawong Aboriginal Corporation	James Carroll	[redacted]	7/11/2024	Email	
Bilinga (Murrin Clan/Peoples)	Simalene Carriage	[redacted]	7/11/2024	Email	
Butucarbin Aboriginal Corporation	Jennifer Beale	[redacted]	7/11/2024	Email	
Clive Freeman	Clive Freeman	[redacted]	7/11/2024	Email	
Corroboree Aboriginal Corporation	Marilyn Carroll-Johnson	[redacted]	7/11/2024	Email	
Cubbitch Barta	Glenda & Rebecca Chalker	[redacted]	7/11/2024	Posted	
Cullendulla (Murrin Clan/Peoples)	Corey Smith	[redacted]	7/11/2024	Email	
D'harawal Mens Aboriginal Corporation	Elwyn Brown	[redacted]	7/11/2024	Posted	

Darug Aboriginal Cultural Heritage Assessments	Gordon Morton	[redacted]	7/11/2024	Posted	
Darug Aboriginal Land Care	Mark Dyer	[redacted]	7/11/2024	Email	
Darug Boorooberongal Elders Aboriginal Corporation	Paul Hand (chairperson)	[redacted]	7/11/2024	Email	
Darug Custodian Aboriginal Corporation	Justine Coplin	[redacted]	7/11/2024	Email	
Darug Land Observations	Jamie & Anna Workman; Anna O'Hara	[redacted]	7/11/2024	Email	
Dharug (Murrin Clan/Peoples)	Andrew Bond	[redacted]	7/11/2024	Email	
Dharug Ngurra Aboriginal Corporation	Dirk Schmitt	[redacted]	7/11/2024	Email	
Didge Ngunawal Clan	Lillie Carroll & Paul Boyd	[redacted]	7/11/2024	Email	
Duncan Falk Consultancy	Duncan Falk	[redacted]	7/11/2024	Email	
Galamaay Cultural Consultants (GCC)	Robert Slater	[redacted]	7/11/2024	Email	
Garrara Aboriginal Corporation	Raymond Ingrey	[redacted]	7/11/2024	Email	
Gilay Consultants	Carol Slater	[redacted]	7/11/2024	Email	
Ginninderra Aboriginal Corporation	Steven Johnson & Krystle Carroll	[redacted]	7/11/2024	Email	
Goobah Development PTY LTD (Murrin Clan/Peoples)	Basil Smith	[redacted]	7/11/2024	Email	

Goodradigbee Cultural & Heritage Aboriginal Corporation	Caine Carroll	[redacted]	7/11/2024	Email	
Gulaga	Wendy Smith	[redacted]	7/11/2024	Email	
Gunjeewong Cultural Heritage Aboriginal Corporation	Shayne Dickson	[redacted]	7/11/2024	Email	
Guntawang Aboriginal Resources Incorporated	Wendy Morgan	[redacted]	7/11/2024	Email	
Gunyuu (Murrin Clan/Peoples)	Kylie Ann Bell	[redacted]	7/11/2024	Email	
James Davis	James Davis	[redacted]	7/11/2024	Email	
Jerringong (Murrin Clan/Peoples)	Joanne Anne Stewart	[redacted]	7/11/2024	Email	
Kamilaroi Yankuntjatjara Working Group	Phil Khan	[redacted]	7/11/2024	Email	
Konanggo Aboriginal Cultural Heritage Services	Robert Young	[redacted]	7/11/2024	Email	
Koori Digs Services	Korri Currell	[redacted]	7/11/2024	Email	
Lyndsay Urquhart	Lyndsay Urquhart	[redacted]	7/11/2024	Email	
Minnamunnung	Aaron Broad	[redacted]	7/11/2024	Posted	
Mundawari Heritage Consultants	Dean Delponte	[redacted]	7/11/2024	Email	
Munyunga (Murrin Clan/Peoples)	Kaya Dawn Bell	[redacted]	7/11/2024	Email	
Mura Indigenous Corporation (icn:8991)	Phillip Carroll	[redacted]	7/11/2024	Email	

Muragadi Heritage Indigenous Corporation	Jesse Johnson	[redacted]	7/11/2024	Email
Murra Bidgee Mullangari Aboriginal Corporation	Darleen & Ryan Johnson	[redacted]	7/11/2024	Email
Murramarang (Murrin Clan/Peoples)	Roxanne Smith	[redacted]	7/11/2024	Email
Murrumbul (Murrin Clan/Peoples)	Mark Henry	[redacted]	7/11/2024	Email
A&K Cultural Heritage	Ali Maher	[redacted]	7/11/2024	Email
Ngambaa Cultural Connections	Kaarina Slater	[redacted]	7/11/2024	Email
Nundagurri (Murrin Clan/Peoples)	Newton Carriage	[redacted]	7/11/2024	Email
Pemulwuy (Murrin Clan/Peoples)	Pemulwuy Johnson	[redacted]	7/11/2024	Email
Tharawal Local Aboriginal Land Council	Robyn Straub (CEO)	[redacted]	7/11/2024	Email
Thauaira	Shane Carriage	[redacted]	7/11/2024	Email
Thawun Aboriginal Consultancy	Jason Mitchell	[redacted]	7/11/2024	Email
Thomas Dahlstrom Offers ACH value by using 3D Laser and Drone technology	Thomas Dahlstrom	[redacted]	7/11/2024	Email
Thoorga Nura	John Carriage (Chief Executive Officer)	[redacted]	7/11/2024	Email
Scott Franks on the behalf of Wonnarua & Yarrawalk	Scott Franks	[redacted]	7/11/2024	Email
Waawaar Awaa Aboriginal Corporation	Rodney Gunther Barry Gunther	[redacted]	7/11/2024	Email
Wailwan Aboriginal Group	Philip Boney	[redacted]	7/11/2024	Email

Walbunja (Murrin Clan/Peoples)	Hika Te Kowhai	[redacted]	7/11/2024	Email
Walgalu (Murrin Clan/Peoples)	Ronald Stewart	[redacted]	7/11/2024	Email
Warragil Cultural Services	Aaron Slater (Manager)	[redacted]	7/11/2024	Email
Wingikara (Murrin Clan/Peoples)	Hayley Bell	[redacted]	7/11/2024	Email
Woka Aboriginal Corporation	Steven Johnson	[redacted]	7/11/2024	Email
Wori Wooilywa	Daniel Chalker	[redacted]	7/11/2024	Email
Wullung (Murrin Clan/Peoples)	Lee-Roy James Boota	[redacted]	7/11/2024	Email
Wurrumay Pty Ltd	Kerrie Slater; Vicky Slater	[redacted]	7/11/2024	Email
Yerramurra (Murrin Clan/Peoples) and Taste of Tradition Native Aboriginal Corporation	Robert Parson	[redacted]	7/11/2024	Email
Yulay Cultural Services	Arika Jalomaki (Manager)	[redacted]	7/11/2024	Email
Yurrandaali	Bo Field (Manager)	[redacted]	7/11/2024	Email
Yurwang Gundana Consultancy Cultural Heritage Services.	Dean & Merekai Bell	[redacted]	7/11/2024	Email
Bariyan Cultural Connections	Kayelene Terry	[redacted]	7/11/2024	Email
Wallanbah Aboriginal Site Conveyancing	Kelvin Boney	[redacted]	7/11/2024	Email
RAW Cultural Healing	Raymond Weatherall	[redacted]	7/11/2024	Email
Dharramalin	Gary Dunn	[redacted]	7/11/2024	Email

Ninnum	Kevin Campbell & Marnya Donovan	[redacted]	7/11/2024	Email	
Gadu chts	Colin Walker – Chairperson	[redacted]	7/11/2024	Email	
Pearl Depoma	Pearl Depoma	[redacted]	7/11/2024	Email	
Registering Organisation/ Individuals	**Contact Person**	**Email Address**	**Date**	**Method**	**Notes**
Tharawal Local Aboriginal Land Council	Robyn Straub	[redacted]			
Mundawari Heritage Consultants	Dean Delponte	[redacted]	7/11/2023	Email	
Guntawang Aboriginal Resources Inc	Wendy Morgan	[redacted]	7/11/2023	Email	
Woka Aboriginal Corporation	Steven Johnson	[redacted]	7/11/2023	Email	
Thomas Dahlstrom Offers ACH value by using 3D Laser and Drone technology	Thomas Dahlstrom	[redacted]	7/11/2023	Email	
Kamilaroi Yankuntjatjara Working Group	Phil Kahn	[redacted]	8/11/2023	Email	
Ngambaa Cultural Connections	Kaarina Slater	[redacted]	10/11/2023	Email	
Didge Ngunawal Clan	Lillie Carroll; Paul Boyd	[redacted]	9/11/2023	Email	
Konanggo Aboriginal Cultural Heritage Services	Robert Young	[redacted]	9/11/2023	Email	
Gunjeewong	Shayne Dickson	[redacted]	7/11/2023	Email	
Koori Digs	Korri Currell	[redacted]	14/11/2023	Email	

Murrabidgee Mullangari	Darleen Johnson	[redacted]	15/11/2023	Email	
Corroboree Aboriginal Corporation	Marilyn Carroll-Johnson	[redacted]	18/11/2023	Email	
A1 Indigenous Services	Carolyn Hickey	[redacted]	20/11/2023	Email	
Amanda Hickey Cultural Services	Amanda Hickey	[redacted]	20/11/2023	Email	
Cubbitch Barta	Glenda Chalker	[redacted]	21/11/2023	Email	
Butucarbin Aboriginal Corporation	Jennifer Beale	[redacted]	21/11/2023	Email	
Muragadi Heritage Indigenous Corporation	Jesse Johnson	[redacted]	22/11/2023	Email	
Wodi Wodi Dharawal Pty Ltd	James Davis	[redacted]	19/12/2023	Email	
Notification of Registered Stakeholders					
Heritage NSW	Heritage Officer	PO BOX 644, Parramatta NSW 2124	19/12/2023	Email	
Tharawal Local Aboriginal Land Council	Heritage Officer	PO Box 245, Thirlmere NSW 2572	19/12/2023	Email	
STAGE 2 & 3					
ACHAR Methodology Review	**Minimum 28 days to respond**	**(18/03/2024) - (15/04/2024)**			
Contacted Organisation/ Individuals	**Contacted by Organisation/ Individual**	**Subject**	**Date**	**Method**	**Notes**
All RAPs	Steven J. Vasilakis/AMAC	Dispatch ACHAR Research Design & Testing Methodology	18/03/2024	Email	

Contacted Organisation/ Individuals	Contacted Organisation/ Individuals	Subject	Date	Method	Notes
Steven J. Vasilakis/AMAC	A1 Indigenous Services/ Carolyn Hickey	ACHAR Research Design & Methodology Review	26/03/2024	Email	Supports Recommendations
Steven J. Vasilakis/AMAC	Corroboree Aboriginal Corporation/ Marilyn Carroll-Johnson	ACHAR Research Design & Methodology Review	21/03/2024	Email	Supports Recommendations
Steven J. Vasilakis/AMAC	Murrabidgee Mullangari/ Darleen Johnson	ACHAR Research Design & Methodology Review	19/03/2024	Email	Supports Recommendations
Steven J. Vasilakis/AMAC	Didge Ngunawal Clan/ Paul Boyd	ACHAR Research Design & Methodology Review	18/03/2024	Email	Supports Recommendations
Steven J. Vasilakis/AMAC	Ngambaa Cultural Connections/ Kaarina Slater	ACHAR Research Design & Methodology Review	19/03/2024	Email	Supports Recommendations
Steven J. Vasilakis/AMAC	Guntawang Aboriginal Resources Inc/ Wendy Morgan	ACHAR Research Design & Methodology Review	20/03/2024	Email	Supports Recommendations

Contacted Organisation	Contact Person	Email Address	Date	Method	Notes
A1 Indigenous Services	Carolyn Hickey	[redacted]	06/05/2024	Phone	RAPs contacted re: fieldwork
Guntawang Aboriginal Resources Inc	Wendy Morgan	[redacted]	06/05/2024	Phone	
Kamilaroi Yankuntjatjara Working Group	Phil Kahn	[redacted]	06/05/2024	Phone	

STAGE 4					
ACHAR/AATR Report	Minimum 28 days to respond	TBA			
Contacted Organisation/ Individuals	Contacted by Organisation/ Individual	Subject	Date	Method	Notes
All RAPs	Ivana Vetta	Dispatch ACHAR/AATR Report	30/08/2024	Email	
Contacted Organisation/ Individuals	Contacted by Organisation/ Individual	Subject	Date	Method	Notes
Cubbitch Barta	Glenda Chalker	Response to Final ACHAR and AATR	30/08/2024	Email	No further comment. Expressed concern about not being involved in test excavation
Didge Ngunawal Clan	Lilly Carroll	Response to Final ACHAR and AATR	30/08/2024	Email	Happy with reports.
Murrabidgee Mullangari	Darleen Johnson	Response to Final ACHAR and AATR	03/09/2024	Email	Endorses recommendations
Guntawang Aboriginal Resources Inc	Wendy Morgan	Response to Final ACHAR and AATR	12/09/2024	Email	Endorses recommendations

4.0 BACKGROUND INFORMATION

Background research consisted of an analysis and synthesis of data to determine the nature of the potential archaeological and cultural heritage resource in the region. Searches were undertaken on the relevant databases outlined in *Code of Practice* (DECCW 2010a).

4.1 PREVIOUS ARCHAEOLOGICAL STUDIES WITHIN THE STUDY AREA

As part of the research process of this report, the library of archaeological assessments, test excavation and open area salvage excavation reports which is maintained by Heritage NSW Offices was searched. Presented below are summaries of indigenous archaeological survey assessments which have been carried. This list is by no means exhaustive and is merely a representative sample of the most recent archaeological activity within the vicinity of the study area.

- Biosis Pty Ltd – Sydney (September 2017), 55 Byron Bay Leppington Aboriginal Cultural Heritage Assessment Report Prepared for Crownland Leppington No 3 Pty Ltd AHIP C0003357.

  In September 2017, Biosis assessed a site at 55 Byron Road for demolition and remediation works. Testing was undertaken and one stone artefact was recovered from a test pit on a gentle slope. This was identified in a clayey loam, a material similar to the Blacktown A horizon predicted for the study site.

- Kelleher Nightingale Consulting Pty Ltd. (August 2019), South West Growth Centre Second Release Precincts Wastewater Infrastructure Leppington & Leppington North: Aboriginal Archaeological Salvage Report, Prepared for Sydney Water.

  KNC completed a full archaeological assessment with test excavation at the Leppington and Leppington North Wastewater area. This resulted in the identification of multiple AHIMS sites, which were of varying densities and required variable management strategies. ELWW1 ELWW2 and ELWW3 were comprised of artefact scatters, including cores, backed artefacts, retouched flakes and hammerstones. The first site was partially destroyed with 255 artefacts recovered. The second was completely destroyed with 1258 artefacts recorded and the third remains valid. A Potential Archaeological Deposit was also identified (ELWW PAD 1). The majority of sites were located on lower slopes close to waterways. Management included salvage excavation and community collection.

- AMAC Group (July 2022), Aboriginal Cultural Heritage Report. 133 Ingleburn Road, Leppington, prepared for Mr and Mrs Kokoris.

  In May 2022 AMAC Group completed test excavation in association with an ACHAR for 133 Leppington Road. This was completed in response to triggers being met, such as water within 200m and a registered site on the boundary of the area. Notably this site is located over the same profile, the Blacktown Soil landscape. Excavation revealed no Aboriginal objects and or

deposits of archaeological significance, with the soil profile generally contained a reformed topsoil and modified/reformed A horizon (artefact bearing deposit), due to previous agricultural use of the area. It was recommended that the subdivision be allowed to proceed with caution.

The list of reports above has only considered those most recently conducted, however a substantial number of reports have been completed within the area. This is due to the urban growth within Leppington and surrounds. Within these studies, evidence of intact natural soil profiles was frequently encountered, such as 133 Ingleburn Road Leppington. Sites were not frequently identified, however when present, the most common site type consisted of artefact scatters. Consistent with predictive models, these are generally found near watercourses (Foley, 1981). The aforementioned studies were similarly located in flat- gently sloping plains. The soil type and landforms present within Kelleher Nightingale Consulting (2019) and Amac Group (2022) are similar to the current study area.

The practical ramifications of the aforementioned archaeological assessments and excavations is a low-moderate potential for Aboriginal archaeological objects to be present within the study area, particularly if intact original soil profiles are present.

4.2 AHIMS SEARCH RESULTS

The Archaeological Heritage and Information Management System Database (AHIMS) is an online database maintained by Heritage NSW Offices. This database comprises information regarding all the previously recorded Aboriginal archaeological sites registered with Heritage NSW. Further to the site card information that is present about each recorded site, the assessments and excavation reports that are associated with the location of many of these sites are present in the library of reports.

Location of these sites must be viewed as purely indicative as errors in recording due to the disparate nature of the recording process, the varying level of experience of those locating the sites and the errors that can occur when transferring data. If possible, sites that appear to be located near a study area should be relocated.

An AHIMS extensive 1km search was conducted on the 02/07/2024 (ID-906211). This search resulted 19 registered sites within 1000m of the study area (see Appendix One). No registered sites were identified within the study area. The most common site type within this search was artefacts, which comprised almost 90% of sites. Of these artefact sites, five have been completely destroyed and five partially destroyed. Two Potential Archaeological Deposits (PADs) were also identified. Notably the majority of sites identified in the search were located close to mapped watercourses, regardless of site type. Additionally, the majority of sites were located on very low slopes and were more frequently identified when exposure was higher. The details of the site IDs, name, status and features is summarised in Appendix Two.

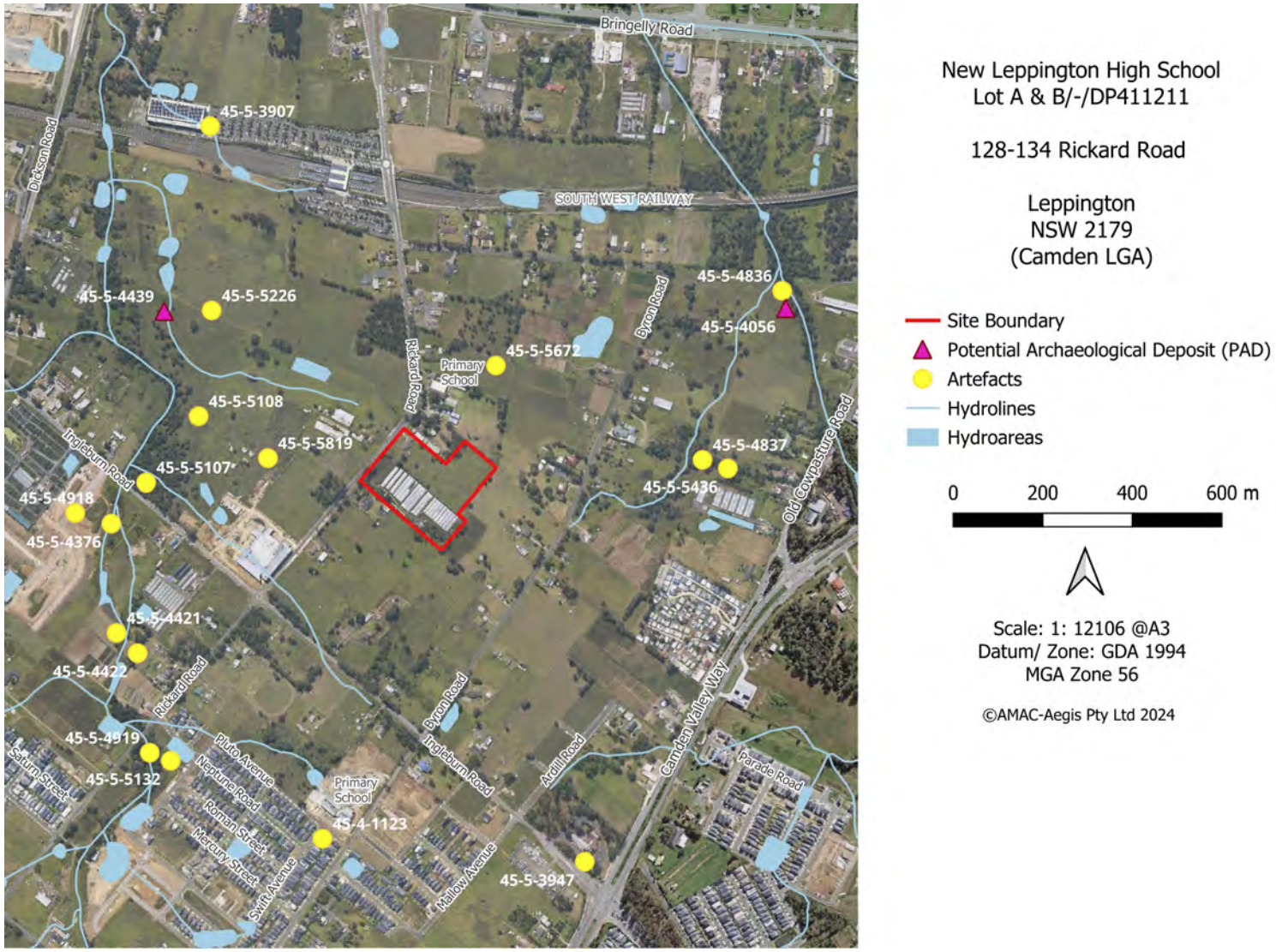

Figure 4-1 AHIMS Search Results.
AMAC Group. Six Maps. LRS Online (accessed 04/07/2024).

4.3 ABORIGINAL AUSTRALIA

It is generally accepted that Aboriginal occupation of Australia dates back at least 40,000 years (Attenbrow 2002; Kohen et al 1983) and to as long as 60,000 years (Mulvaney and Kamminga 1999). The majority of reliably dated archaeological sites within the region are less than 5,000 years old which places them in the mid to late Holocene period. A combination of reasons has been suggested for this collection of relatively recent dates; There is an argument that an increase in population and 'intensification' of much of the continent took place around this time, leading to a significant increase in evidence being deposited than was deposited as a result of the sparser prior occupation period. In addition, it is also true that the acidic soils which are predominate around the region do not allow for longer-term survival of sites (Hiscock 2008).

It is estimated that around 250 distinct languages were in use throughout the Australian continent at the time of contact. The exact number cannot be known for certain, however 250 is a conservative estimate. These languages fell within two language groups: the *Pama-Nyungan* and *Non Pama-Nyungan* languages. Knowledge of the different language groups in a given area is variable. Early European recordings noted the names of particular Aboriginal individuals and groups but were not always clear about which named groups represented a language rather than some other social grouping (Hardy and Streat 2008).

Within these large language groups resource access and ownership was centred on extended family groups or 'clans' which appear to have had ownership of land (Attenbrow 2002). As it was unlikely to be acceptable to find sexual partners within the family grouping and for other reasons such as resource sharing, a number of clans would often travel together in a larger group. These groups are referred to as *bands*. Whether the clan or the band was the most important group politically to an individual is likely to have varied from place to place. Group borders were generally physical characteristics of the landscape inhabited, such as waterways or the limits of a particular resource. Groups also shared spiritual affiliations, often a common dreaming ancestor, history, knowledge, and dialect (Hardy 2008).

A wide variety of activities comprised the lifestyle of the Aboriginal groups across the region. Some behaviours leave traces which can be retrieved by archaeological study of material remains. Many of these can only be reconstructed by oral history, observations of European explorers and ethnologists, and other forms of past recording such as photography or art. Some of the details of the complexity and sophistication of the past lifestyles of Aboriginal people in the area have been lost, but many can be reconstructed using the sources available.

Different landscape units not only influence the preservation of sites but can determine where certain site types will be located. Across the whole of the Sydney Basin, the most common Aboriginal archaeological site type is occupation evidence within Rock Shelters. However, the most common Aboriginal archaeological site type in the Cumberland Lowlands is Open Artefact Scatters or Open Campsites, which are locations where two or more pieces of stone show evidence of human modification. These sites can sometimes be very large, with up to thousands of artefacts and include other habitation remains such as animal bone, shell or fireplaces [known as hearths] (Attenbrow 2002 p. 75–76). Many hundreds of artefact sites have been recorded within the Cumberland Lowlands. This is despite the fact that at least 50% of the Cumberland Lowlands has already been developed to such an extent that any archaeological evidence which may have once been present has been destroyed.

4.4 THE CUMBERLAND LOWLANDS; THARAWAL, DARUG AND GANDANGARA NATIONS LANDS

It is estimated that around 250 distinct languages were in use throughout the Australian continent at the time of contact. The exact number cannot be known for certain, however 250 is a conservative estimate. These languages fell within two language groups: the *Pama-Nyungan* and *Non Pama-Nyungan* languages. Knowledge of the different language groups in a given area is variable. Early European recordings noted the names of particular Aboriginal individuals and groups but were not always clear about which named groups represented a language rather than some other social grouping (Hardy and Streat 2008).

The current study site is located near the boundary of three groups – the Darug, Gandangara and Tharawal. Various spelling of these names exists, in addition to different estimates of occupational extents. These groups acknowledged have been identified on the maps by Tindale (1974) and the Australian Institute of Aboriginal and Torres Strait Islander Studies (2000). There may have been a significant amount of interaction both cultural and linguistic between these nations and it is probable that the territorial boundary altered from time to time.

Of these language groups, the Darug, was divided into two dialects, a coastal dialect and a hinterland dialect; the later may have been spoken by the inhabitants of the Cumberland Lowlands (Attenbrow 2002). The boundary between the territories of these two language groups and dialect groups is unclear. Attenbrow (2002) suggests that speakers of the hinterland dialect of the Darug were spread across the Cumberland Lowlands, from the Hawkesbury River in the north to Appin in the area south-west of the Georges River, Parramatta, the Lane Cove River and Berowra Creek. Bursill and Kurranulla Aboriginal Corporation (2007) specified the Tharawal boundary as extending from below Botany Bay, west to Appin and almost to Goulburn. The Gandangara inhabited the southern rim of the Cumberland Lowlands, west of the Georges River and into the southern Blue Mountains. Kohen (1993) suggests that the boundary between the hinterland dialect speakers of the Darug language and the Gandangara was the Nepean River and the Gandangara occupied an area that “extended from the Blue Mountains at Hartley and Lithgow through the Burragong and Megalong Valleys at least as far as the Nepean River” (Kohen, 1993).

4.5 ABORIGINAL LAND USE

The study area lies in a resource zone which had resources that may have been exploited on either a regular or repeated basis. Reliable access to fresh water may have been present nearby to the study area.

Sites containing fresh water and sedentary food sources, coupled with the presence of other resources which may have been exploited or available on a seasonal basis, would suggest that Aboriginal land use of the region was regular and repeated, with this reflected in the archaeological record (Goodwin, 1999). The study is located within 200m of an ephemeral water source and therefore retains archaeological potential as an area people may have traversed.

The study area is within close proximity to multiple creek lines including two unnamed first order tributaries 120m and 211m away, Rileys Creek a third order tributary located 4.2km to the west, Kemps Creek a third order water source 1.6km to the west and the formalised Upper Canal. The Georges River is additionally

located within 10km and provides water year-round. In the past the accessibility of permanent water and resources along the creek banks would have channeled Aboriginal movement and land use to this location and would have been a major resource of food and water There are a number of manmade dams within the vicinity as a result of European occupation and past land use.

4.6 SURVEY RESULTS

The field inspection was undertaken on 13th February 2024 by archaeologist Steven Vasilakis of AMAC Group Pty Ltd. The study site was inspected on foot. Where practical, the whole of the study area was inspected, however there were a number of limiting factors such as dense grass/weeds and structures encompassing areas of the site. Any areas of exposed soil or areas of erosion were inspected in detail.

All visible landscape units were inspected as well as photographed where informative details as to land use and disturbance could be ascertained. Information was also collected regarding land surface and vegetation conditions as encountered during the survey.

The following broadly outlines the methods adopted;

- field inspection was carried out on foot;
- highly disturbed areas indicated on plans were inspected to verify the level of disturbance and depending on level of disturbance were included or excluded from the additional survey;
- undisturbed areas were inspected in as much detail as the remaining surface coverage and environment allowed and the results recorded;
- areas of exposed ground such as tracks or eroded surfaces which allow good surface visibility formed the focus of the field inspections;

4.7 INSPECTION RESULTS

The study area contained a landscape that had been modified for agricultural use. This included introduced vegetation, structures and accessways encompassing the majority of the site. While mature trees were identified on the site, there was no evidence of modification. While disturbance, and in some areas, removal of natural soils was evident in some location, intact soils were thought to be possible in areas, due to the predicted deep profile.

Table 4-1 Inspection Coverage

Unit	Landform	Area (sq. m)	Visibility (%)	Exposure (%)	Effective Coverage (sq. m)	Effective Coverage (%)
Unit 1	Flat	40650	10%	5%	203.25	0.5%

Figure 4-2 **View of structures on 134 Rickard Road.**
Amac Group (13/02/2024).

Figure 4-3 **Mature trees and vegetation upon 134 Rickard Rd.**
Amac Group (13/02/2024).

Figure 4-4 **Agricultural structure and modified soils, view towards road boundary.**
Amac Group (13/02/2024).

Figure 4-5 **View of dam in southern corner of site.**
Amac Group (13/02/2024).

Figure 4-6 **Area of soil exposure, due to compaction from vehicular access.**
Amac Group (13/02/2024).

Figure 4-7 **A secondary area of exposure.**
Amac Group (13/02/2024).

5.0 PROPOSED ACTIVITY

This section outlines the proposed activity including the staging and timeframes along with the potential harm of the activity on Aboriginal objects and or declared Aboriginal places, assessing both the direct and indirect result of the activity on any cultural heritage values associated with the study area.

It also aims to outline the justification for harm with the intention of avoiding and minimising harm where possible.

5.1 EUROPEAN LAND USE AND DISTURBANCE

The archaeological potential of the site is based on the level of previous disturbance that has occurred. The Code of Practice (DECCW 2010b) defines disturbed land as:

> *…if it has been the subject of a human activity that has changed the land's surface, these being changes that remain clear and observable. Examples include ploughing, construction of rural infrastructure (such as dams and fences), construction of roads, trails and tracks (including fire trails and tracks and walking tracks), clearing vegetation, construction of buildings and the erection of other structures, construction or installation of utilities and other similar services (such as above or below ground electrical infrastructure, water or sewerage pipelines, stormwater drainage and other similar infrastructure and construction of earthworks)*

This definition is based on the types of disturbance as classified in The Australian Soil and Land Survey Field Handbook (CSIRO 2010). The following is a scale formulated by CSIRO (2010) of the levels of disturbances and their classification.

Minor Disturbance		Moderate Disturbance		Major Disturbance	
0	No effective disturbance; natural	**3**	Extensive clearing (e.g.: poisoning and ringbarking)	**6**	Cultivation: grain fed
1	No effective disturbance other than grazing by hoofed animals	**4**	Complete clearing: pasture native or improved, but never cultivated	**7**	Cultivation; irrigated, past or present
2	Limited clearing (e.g.: selected logging)	**5**	Complete clearing: pasture native or improved, cultivated at some stage	**8**	Highly disturbed (quarrying, road works, mining, landfill, urban)

The above scale is used in determining the level of disturbance of the study area and its impact on the potential archaeology which may be present.

It is important to note that the following assessments describe the *archaeological* potential of the study area. It is acknowledged if the study area has little or no archaeological potential the study area may still have cultural significance to the Aboriginal community.

Background research indicates that past European land use has led to extensive land clearing for early agricultural activities. The study area formed part of a larger land grant known as Raby Estate, which formed predominantly cleared land (Figure 5-1), and began to be subdivided for private sale of smaller farming allotments in the

early 20th century (Figure 5-2). Aerial photographs indicate that the wider study site area and much of the Leppington suburb had been substantially cleared of thick vegetation prior to the 1940s (Figure 5-3). Residential dwellings had been constructed on the study area by 1947, in association with cultivation activities. Instances of redevelopment for dwelling relocation had occurred by the 1960s (Figure 5-4) and within the last 50 years.

No deep excavations are known to have been undertaken on the site, with the few standing structures (e.g. greenhouses) and buildings being one storey domestic residences with associated services, pathways, and outbuildings. However, the study area appears to have had significant disturbance due to continued and multiple instances of cultivation activities throughout the 20th century.

In light of this, and in the context of the information provided about the land use of the site, its proximity to nearby watercourses/intermittent streams and thus likelihood for the presence of subsurface Aboriginal cultural heritage material, the following has been predicted:

Moderate-High disturbance to sections of the landscape: Sub-surface Aboriginal objects with potential conservation value have a low-moderate probability of being present within the study area.

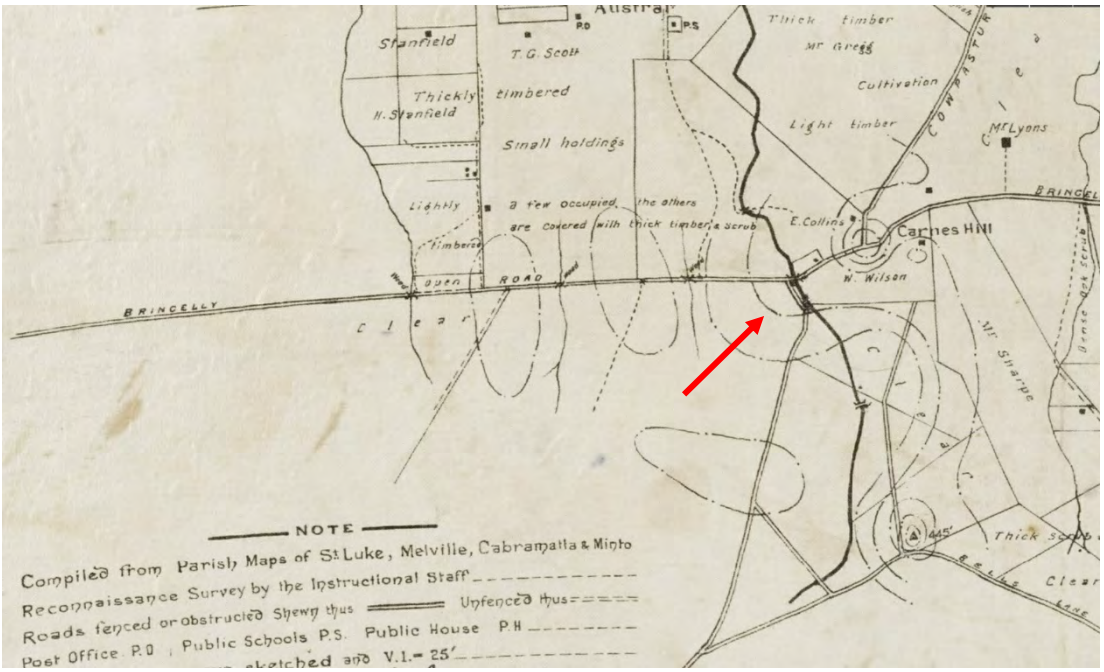

Figure 5-1 **Extract of a 1906 plan of Liverpool.**
Approximate study area indicated by red arrow. Note “clear” is written on plan for parts of Leppington indicating vegetation removal.
NSW State Library. Reconnaissance map of Liverpool, 1906. Call no. DSM981/21A.

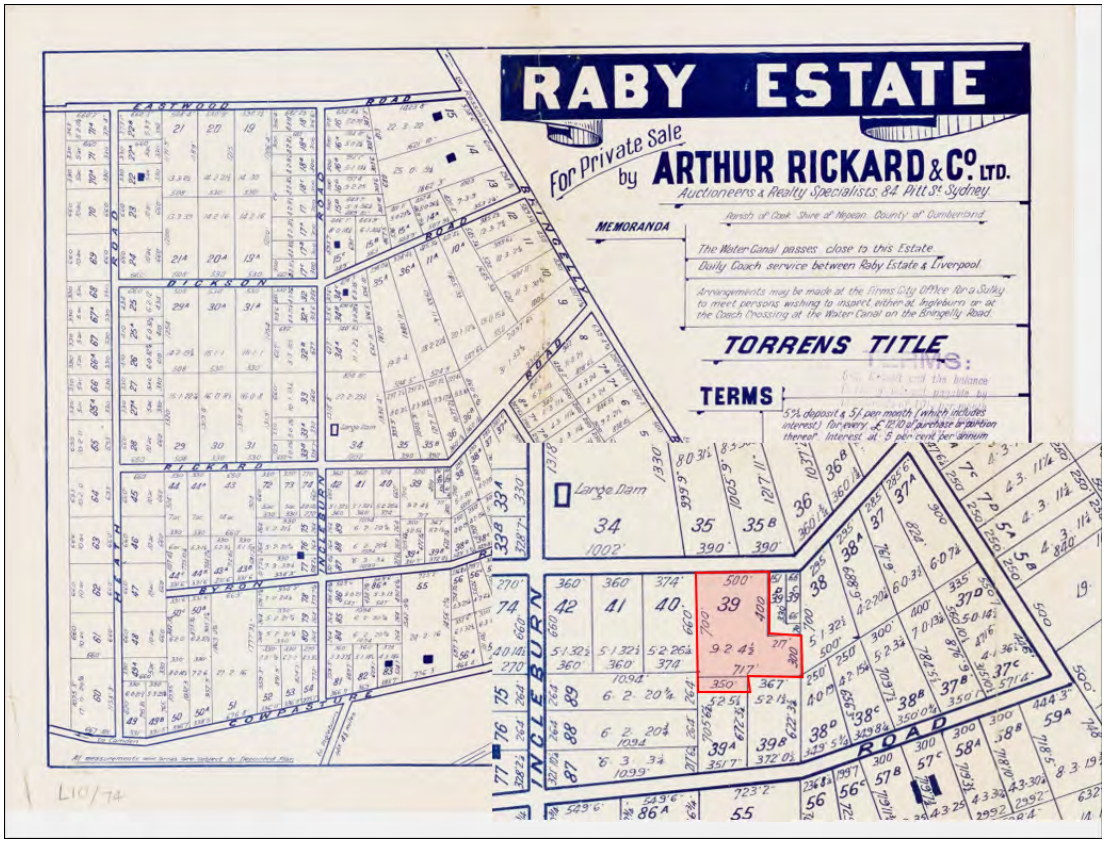

Figure 5-2 **Early 20th century subdivision – Raby Estate.**
Study area in red outline. NSW State Library. Raby Estate subdivision plan, n.d. Call no. Z/SP/L10/74.

Figure 5-3 **1947 aerial photograph.**
Study area in red outline. NSW Government. Historical Imagery (accessed 15/01/2024).

Figure 5-4 **1965 aerial photograph.**
Study area in red outline. NSW Government. Historical Imagery (accessed 15/01/2024).

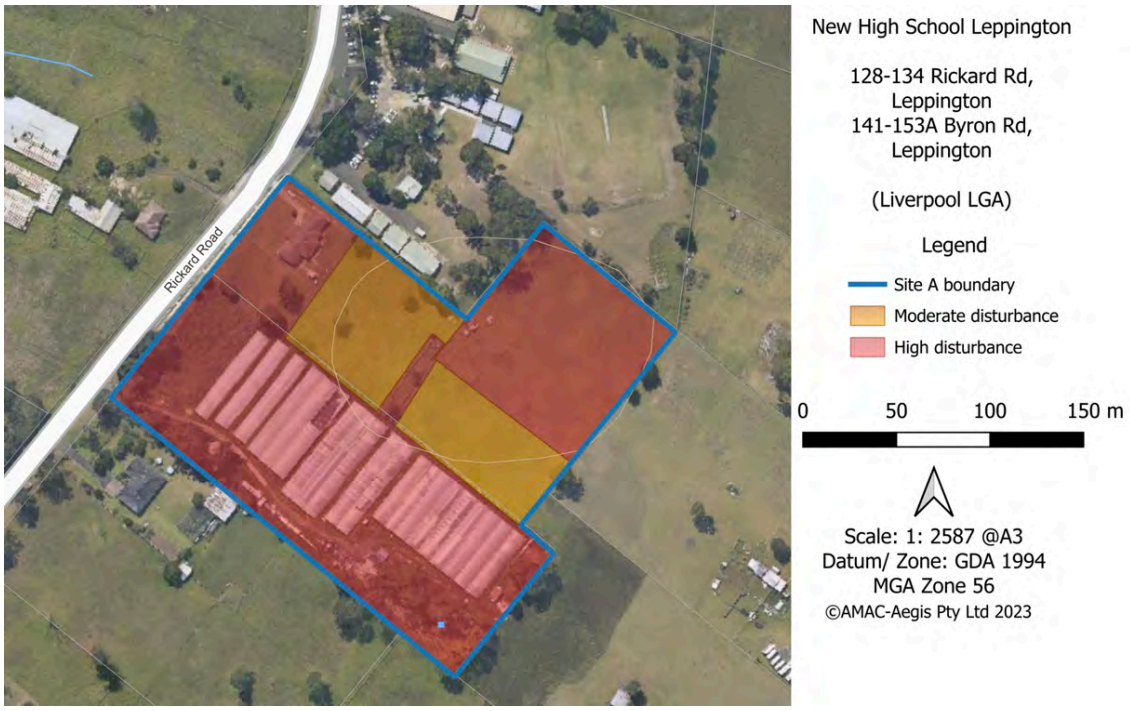

Figure 5-5 **Disturbance map of study area.**
Study area indicated by blue outline. Red indicates high disturbance – Orange moderate disturbance. Six Maps. LRS Online (accessed 15/01/2024).

6.0 IDENTIFIED VALUES

6.1 TEST EXCAVATION RESULTS

Test excavation was completed in accordance with the *Code of Practice* (DECCW 2010b) over two days - the 7th and 8th May 2024 (Figure 6-1). Twelve test trenches were proposed for excavation through the archaeological assessment program. These were situated evenly across the proposed activity footprint in order to systematically determine a distribution and/or density pattern within the site. One trench (ATT06) was abandoned due to significant disturbance with remnant building material. All other test pits had an identified remnant A/A2 overlaying a sterile B horizon. One piece of raw silcrete was identified within the first spit of ATT02.

A background analysis of the environmental and archaeological context, revealed that parts of the study area were likely to contain Aboriginal archaeological material, however, test excavation revealed no subsurface Aboriginal objects and/or features. The site contains a disturbed landscape from past agricultural and urban activity. The majority of trenches had an A horizon overlying a B horizon, however test trenches ATT01 and ATT04 contained a A2 horizon. Test trench ATT06 additionally varied from the Blacktown soil landscape, with only fill visible. While a piece of raw material was located, no artefacts or deposits of archaeological significance were located.

As part of the programme of test excavation, areas with lower levels of disturbance were targeted for analysis. All test trenches were excavated and found to be sterile. All remnant A2 horizons remained sterile. Based on the results of test excavation, the disturbance map for the site has been amended (Figure 6-2).

Figure 6-1 Test Trench Locations.
Test trenches indicated in yellow. AMAC (2024). SixMaps LPI Online (accessed 01/05/2024).

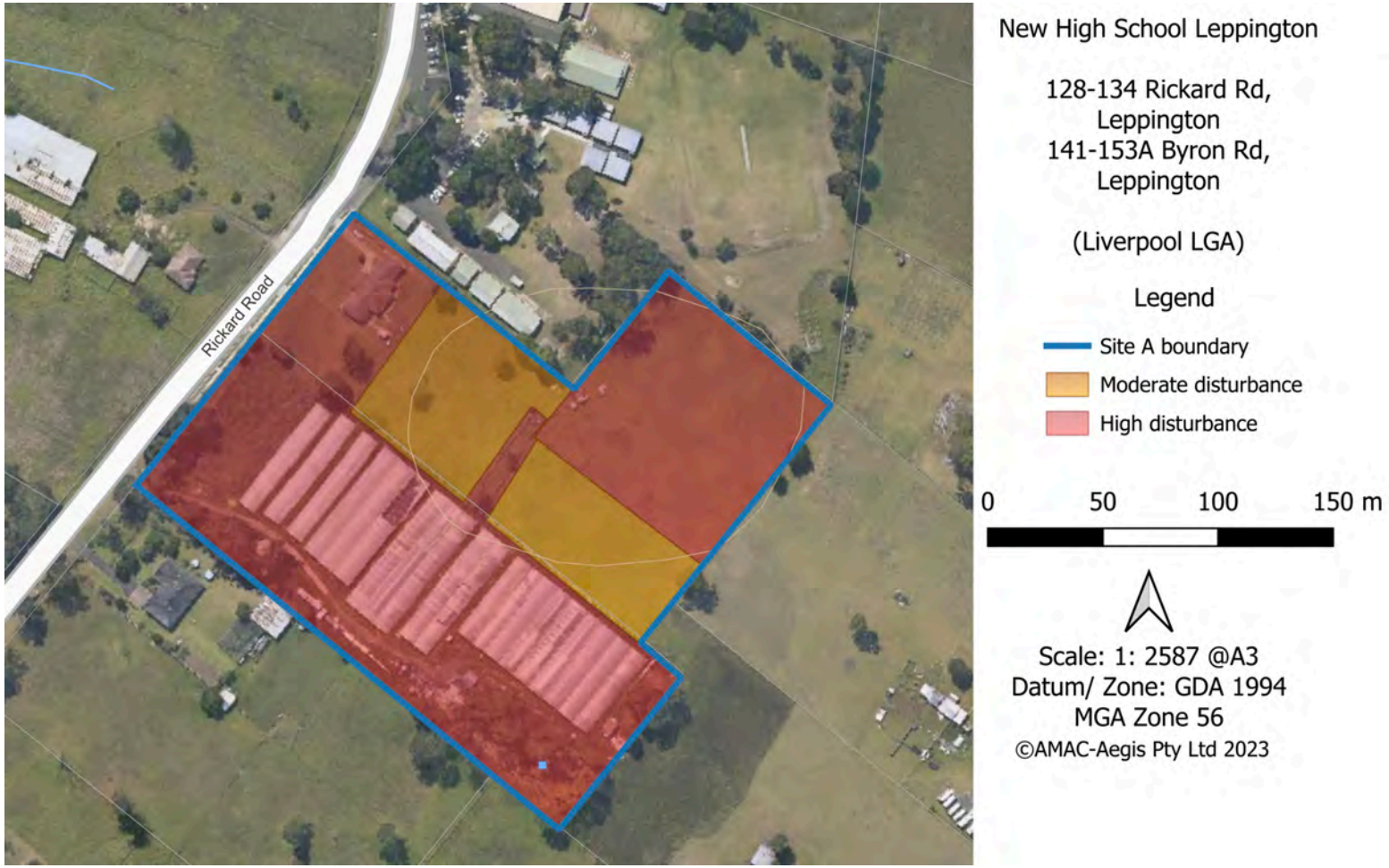

Figure 6-2 **Revised Disturbance map of study area.**
Study area indicated by blue outline. Red indicates high disturbance – Orange moderate disturbance. Six Maps. LRS Online (accessed 15/01/2024).

6.2 REGISTERED STAKEHOLDER QUESTIONS

All registered stakeholders will be given a copy of this report with minimum of 28 days to provide comments and/ or feedback. All comments will be incorporated into these reports. The following research questions were the focus of consultation for the ACHAR to determine the cultural significance of the study area.

Intangible Significance

1. Does the study area hold any social, spiritual or cultural values? If so, what are these values and are they confined to particular parts of the study area?
2. Are unrecorded places or resources of cultural, natural or archaeologically significance present within the study area? If so, where are they located?
3. Are there any traditional stories or legends associated with the study area?
4. Are there any gender specific cultural values associated with the study area which cannot be raised in general meeting? If so, how would the Aboriginal stakeholders like these managed?

Tangible Remains and Significance

1. Are there any recollections of Aboriginal people living within the study area?
2. Is there any information to suggest the presence of burials within the study area?

6.2.1 Registered Stakeholder Submissions to Questions

Of the registered stakeholders who provided a response to the draft ACHAR supplied for review, no specific responses to the research design questions were supplied to AMAC Group.

6.2.2 Registered Stakeholder Submissions to ACHAR and AATR

Four registered stakeholders responded via email to the ACHAR review. All groups agreed with the management recommendations of this document but did not offer specific comments regarding cultural heritage significance of the study area.

6.3 ARCHAEOLOGICAL & CULTURAL SIGNIFICANCE

The processes of assessing significance for items of cultural heritage value are set out in *The Australian ICOMOS Charter for the Conservation of Places of Cultural Significance: the Burra Charter* (amended 1999; 2013) formulated in 1979 and based largely on the Venice Charter of International Heritage established in 1966. As part of the archaeological assessment for significance, a key step in the process is to assess the potential impact of a proposed activity to reflect the cultural significance or value of an object, site, or place in the recommendations for conservation, management, or mitigation. As defined in the 'Burra Charter' (ICOMOS 1988) cultural significance is broken into four parts: aesthetic, historic, scientific, and social value for past, present, or future generations. Cultural significance is a concept which assists in understanding the value of (pre-) historical places as a means to enrich the present and be of value to future generations (ICOMOS 1988). The Burra Charter is considered best practice standard for cultural heritage management and conservation for archaeological and cultural significance

for Aboriginal people in Australia. The Burra Charter Guidelines (ICOMOS 1988) set out the following four criteria for the assessment of archaeological and cultural significance.

6.3.1 Social Significance

The Social value embraces the qualities for which a place, object, or site has become a focus of spiritual, political, national, or other cultural sentiment to a majority or minority group. (Australia ICOMOS 1988). According to the *Guide to investigating, assessing, and reporting on Aboriginal cultural heritage in NSW*, "social or cultural value can only be identified though consultation with Aboriginal people" (OEH 2011:8).

No specific social significance has, of yet, been assigned to the study area by Stakeholders. Previous assessments within this area have received statements that the entire area is culturally significant, including the flora, fauna, landforms and associated histories.

6.3.2 Historic Significance

A place may have historic value because it has influenced, or has been influenced by, an historic figure, event, phase, or activity. It may also have historic value as the site of an important event. For any given place the significance will be greater where evidence of the association or event survives in situ, or where the settings are substantially intact, than where it has been changed or evidence does not survive. However, some events or associations may be so important that the place retains significance regardless of subsequent treatment (Australia ICOMOS 1988).

Historical research did not locate any specific historical significance of identified Aboriginal archaeological sites within the study area nor has any specific historical significance been assigned to the study area by any of the registered Aboriginal Stakeholders, as yet.

6.3.3 Scientific Significance

The scientific value of any given location will depend on the importance of the data that can be obtained from any archaeological material located on its rarity, quality, and on the degree to which this may contribute further substantial information to a scientific research process (Australia ICOMOS 1988).

One piece of raw silcrete material was identified within the site. This material is widely identified within the Cumberland Lowlands, with evidence of heat treatment, retouch and reuse apparent in multiple assemblages (Doelman et al., 2015, McLaren et al., 2018). Contrastingly, no modification was apparent on this piece. As this is a common material, without evidence of treatment or processing, a nil scientific significance has been assigned.

6.3.4 Aesthetic Significance

Aesthetic value includes aspects of sensory perception for which criteria can and should be stated. Such criteria may include consideration of the form, scale, colour, texture, and material of the fabric; the smells and sounds associated with the place and its use (Australia ICOMOS 1988).

No specific aesthetic values have, as yet, been assigned to the study area by any of the registered Aboriginal stakeholders.

7.0 AVOIDING AND MINIMISING HARM

7.1 DESCRIPTION OF PROPOSED ACTIVITY

The proposed activity is for a new high school for Leppington and Denham Court. The new high school will accommodate up to 1,000 students across 3 new buildings that will comprise 48 permanent teaching spaces (PTS), 3 support teaching spaces (STS), 19 specialist labs/workshops/kitchens and a hall. Buildings 1, 2 and 3 will be clustered along the southern boundary and the hall will be located in south-east corner of the site. The activity also includes the construction of a sports field in the centre of the site and multipurpose courts along the northern boundary.

A sample of the proposed new High School design plans are shown in Figure 7-1.

The proposed activity will impact the entirety of the study area with deep excavations taking place for bulk earthworks, foundation piers, cutting, grading, and levelling. Due to the deep soil profile of the study area, further testing was recommended as intact soils were thought to remain in some areas. Testing resulted in the identification of no Aboriginal object and or deposits of archaeological significance.

No formal areas of exclusion have been identified in the current plans.

Figure 7-1 **New High School for Leppington and Denham Court SINSW (2025)**
Djrd Architects

7.2 CUMULATIVE IMPACT ASSESSMENT

Located in the South West Growth Area (SWGA), the site and surrounding areas are poised for substantial growth and densification. Leppington is undergoing significant change and transition following recent rezoning by the NSW Government. Further transformation is anticipated with the future rezoning of the Leppington Town Centre. This town centre is the focus of an active Planning Proposal which, if approved, is expected to greatly impact the character and context of the surrounding area.
In addition, numerous residential subdivisions in both the immediate and broader vicinity are set to reshape the area, further contributing to the evolving landscape.

7.2.1 Proposed Development Justification

The new high school aims to facilitate the teaching of the growing population of Leppington. The design will enable 1000 students to be taught within the facility. The school is to include multidisciplinary teaching spaces, an intensive English centre and sports fields.

7.2.2 Potential Harm to Aboriginal Objects and Cultural Heritage

No Aboriginal objects and/or features of cultural and archaeological significance have been identified within the study area. The landscape was found to be modified due to previous land use. This suggests there is nil possibility of their being artefacts. As such, no harm has been identified associated with the proposed works.

7.2.3 Ecologically Sustainable Development and Intergenerational Equity

The ability of any development to be completely ecologically sustainable will be limited by definition. However, the proponents of this development appear to have made significant efforts to meet the needs of the current generation without compromising the ability of future generations to meet their own needs. This has been accomplished by proposing a plan on a manageable and affordable scale and establishing a nil likelihood of archaeological material is present.

8.0 CONCULSION

The management recommendations presented in the following section of the report take into account the following:

- Legislation outlined in this report which protects Aboriginal cultural and archaeological objects and places in New South Wales
- Research and assessment carried out by the author/s of this report
- Results of previous archaeological assessment and excavation in the vicinity of the study area
- The concerns and views of the Aboriginal stakeholders listed in this report
- The impact of the proposed activity on any Aboriginal archaeological material that may be present
- The requirements of the consent authority.

8.1 EVALUATION OF ENVIRONMENTAL IMPACTS

The proposed activity will disturb the ground surface and intact soils which were assessed as having the potential for objects of Aboriginal archaeological and cultural significance. A programme of test excavation was conducted resulting in one piece of raw material being recovered but *no Aboriginal objects and/or features of cultural and archaeological significance located*. The findings from the test excavation indicate the site to be of nil archaeological significance. The soil profile generally contained A and B horizons; however, this was confirmed to be sterile. Therefore, the proposed activity should be allowed to proceed with caution.

It has therefore been assessed that the proposed activity will not have a *significant effect on the environment* in relation to Aboriginal Heritage.

8.2 MITIGATION MEASURES

The proposed activity at the site is unlikely to impact objects of aboriginal cultural heritage significance and therefore can proceed with caution. The following mitigation measures are recommended in case of the discovery of unexpected finds:

No.	Aspect	Mitigation Measure	Reason for Mitigation Measure
1	Unexpected finds of Aboriginal heritage during construction	The Unexpected Finds Protocol described in the Aboriginal Archaeological Technical Report (Appendix A) should be implemented throughout the redevelopment of the site.	In case of the discovery of unexpected Aboriginal heritage finds during construction
2	Throughout the life of the project.	Consultation with the registered Aboriginal stakeholders should continue throughout the duration of the planning and construction activities at the site. Registered Aboriginal Parties will be emailed every 6 months about the works to maintain this process.	Continuity of consultation is required in case of the discovery of unexpected finds. This consultation will form the basis for an AHIP application if required (OEH 2011, p.11).

Stakeholders have been given the opportunity to comment on the recommendations outlined in this report.

GLOSSARY

Term	Definition
Aboriginal Object	A term now used (formerly 'relic') within the NSW *National Parks and Wildlife Act, 1974* to refer to "…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."
AHIP	Aboriginal Heritage Impact Permit, issued under Part 6 of the National Parks and Wildlife Act 1974, where harm to an Aboriginal object or Aboriginal place cannot be avoided.
Alluvial	Describes material deposited by, or in transit in flowering water.
AMAC	Archaeological Management and Consulting Group.
Artefact	Any object, usually portable, that has been made or shaped by human hand.
Assemblage	A collection of artefacts found in close proximity with one another often excavated together.
Axe grinding Grooves	Areas on a stone surface where other items such as stone tools, wood or bones have been sharpened.
Basalt	A dark coloured, basic volcanic rock.
Bioturbation	Reworking of sediments through the action of ground dwelling life forms. This can also include soil cracking and root activity.
Broken Flake	A flake fragment which displays only part of the diagnostic features of a complete flake.
BP	Before present (AD1950).
Burial	Sites containing the physical remains of deceased Aboriginal people.
Ceremonial Sites	Places or objects of ceremonial, religious or ritual significance to Aboriginal people.
Chert	A herd siliceous rock suitable for flaking into tools.
DCP	Development Control Plan.
DP	Deposited Plan.
DPIE	Department of Planning, Industry and Environment formerly known as OEH.
Erosion	Process where particles are detached from rock or soil and transported away principally via water, wind and ice.
Flake	A piece of stone, detached by striking a core with another stone.
Flaking/Knapping	The process of making stone tools by detaching flakes from a piece of stone.
Friable	Easily crumbled or cultivated.
Hard setting	Soil which is compact and hard. It appears to have a pedal structure when dried out.
Heritage Division	Formerly known as the Heritage Branch
Holocene	The period of time since the last retreat of the polar icecaps, commencing approximately 10,000 – 110,000
Intensification	Increased social and economic complexity.
Landscape Unit	An area of land where topography and soils have distinct characteristics, are recognisable, describable by concise statements and capable of being represented on a map.
Laminite	A thinly bedded, fine grained sedimentary rock.
LEP	Local Environment Plan.
LGA	Local Government Area.
Lithics	A term used to describe stone and stone artefacts.
Loam	A medium textured soil of approximate composition of 10- 25% clay, 25-50% silt and 2% sand.
Loose	A soil which is not cohesive.

Term	Definition
Matrix	Finer grained fraction, typically a cementing agent within soil or rock in which larger particles are embedded.
Midden	Aboriginal occupation site consisting chiefly of shells, which can also include bone, stone artefacts and other debris.
NPW Act	National Parks and Wildlife Act 1974
OEH	NSW Office of Environment and Heritage (formerly known as the DECCW)
Open Campsite	A surface accumulation of stone artefacts and/ or other artefacts exposed on the ground surface.
Potential Archaeological Deposit (PAD)	An area where no surface archaeological remains are visible but where it has been assessed that there is some potential for sub-surface archaeological remains to be present.
Ped	An individual, natural soil aggregate.
Pedal	Describes a soil in which some or all of the soil material occurs in the form of peds in a moist state.
Plastic	Describes soil material which is in a condition which allows it to undergo permanent deformation without appreciable volume change or elastic rebound and without rupture.
Pleistocene	The epoch of geological time starting 1.8 million years ago.
Quartz	Common mineral with naturally sharp edges and poor fracturing properties. Colour ranging from clear, to milky white and pink.
Quartzite	Homogenous medium to coarse grained metamorphosed sandstone.
Rock Painting	Encompassing drawing, paintings or stencils that have been placed on a rock surface usually within a rock shelter.
Rock Engraving	Pictures which have been carved, pecked or abraded into a rock surface, usually sandstone and predominantly open, flat surfaces.
Sandstone	A detrital sedimentary rock with predominantly sand sized particles.
Scarred/ Carved Tree	A tree from which bark has been deliberately removed.
Sclerophyll	Denoting the presence of hard stiff leaves, typically used to classify forest and indicative of drier conditions.
Sedimentation	Deposition of sediment typically by water.
Silcrete	A sedimentary rock comprising of quartz grains in a matrix of fine grained – amorphous silica.
Silt	Fine soil particles in size ranges of 0.02 – 0.002mm.
Slope	A landform element inclined from the horizontal at an angle measured in degrees or as a percentage.
SHI	State Heritage Inventory
SHR	State Heritage Register
Subsoil	Subsurface material comprising the B and C horizons of soils with distinct profiles.
Stone Resource Site	A geological feature in the landscape from which raw material for the manufacture of stone tools was obtained.
Texture	The coarseness or fineness of a soil as measured by the behaviour of a moist ball of soil when pressed between the thumb and forefinger.
Topsoil	A part of the soil profile, typically the A1 Horizon, containing material which is usually darker, more fertile and better structured than the underlying layers.
Weathering	The physical and chemical disintegration, alteration and decomposition of rocks and minerals at or near the earth's surface by atmospheric and biological agents.

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APPENDIX A: ABORIGINAL ARCHAEOLOGICAL TECHNICAL REPORT

New High School for
Leppington and Denham Court
Lot A & B DP411211
128-134 Rickard Road
Leppington
NSW 2179
(Camden LGA)

Steven J. Vasilakis, Sarah Hannan and Dr Ivana Vetta

Archaeo*logical* Management & Consulting Group

for

NSW GOVERNMENT Education School Infrastructure

Final

January 2025

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The veracity of this report is not guaranteed unless it is a complete and original copy.

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Internal Review

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6	Ivana Vetta (AMAC Group)	10/01/25	Final reissue – updated plan	I.Vetta	10/01/25

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Study Area

This Aboriginal Archaeological Technical Report forms Appendix A of the Aboriginal Cultural Heritage Assessment Report has been prepared to support a Review of Environmental Factors (REF) for the Department of Education (DoE) for the new high school for Leppington and Denham Court (the activity).

The proposed activity is for the construction of a new high school located at 128-134 Rickard Road, Leppington, NSW, 2179 (the site).

Aboriginal Consultation

Archaeological test excavation had been conducted under the *Code of Practice for the Archaeological Investigation of Aboriginal Objects in NSW* (DECCW 2010b). Consultation for this report has been undertaken in accordance with the *Part 6: National Parks and Wildlife Act 1974: Aboriginal Cultural Heritage Consultation Requirements for Proponents* (DECCW 2010c).

A mandatory 28-day period for the Registered Aboriginal Parties (RAPs) to comment on this document will take place. All comments received will be included in this document.

Physical Evidence

Test excavation was undertaken over two days – the 7th and 8th May 2024. The programme was conducted under the *Code of Practice* (DECCW 2010b) and consisted of the excavation of 12 test trenches (50cm x 50cm). One trench was however abandoned, due to significant disturbance from previous residential and agricultural land use. In agreeance with the *Code of Practice* and independent Work Health and Safety Procedures, it was determined that this pit contained high disturbance and was unlikely to contain intact deposits and/ or objects or Archaeological significance.

During test excavation *no Aboriginal objects and/or features of cultural and archaeological significance were located* with only a single piece of silcrete, classed as unworked raw material, was found. The soils were consistent with the Blacktown soil profile, of which an A and B horizon were observed in all trenches except ATT06. An A2 horizon was additionally observed in ATT01 and ATT04. With the exception of ATT06, all trenches were excavated to depths that confirmed sterility.

Significance

One piece of raw material was located but no Aboriginal objects and/or deposits or features of cultural material were identified during the test excavation. As silcrete is a common material, the piece has no evidence of working and historical disturbance has occurred in the area, the site has reduced research potential and archaeological value. Therefore, the site has nil archaeological significance.

Mitigation Measures

Systematic archaeological test excavation found no objects of Aboriginal cultural heritage within the study area with sterile A and B horizon soils identified in most of the trenches. Based on these findings, the proposed activities at the site are unlikely to impact objects of aboriginal cultural heritage significance and therefore can

proceed with caution and implement the Unexpected Finds Protocol described below.

Unexpected Finds Protocol

Before any ground disturbance takes place all building staff, contractors and workers should be briefed prior to works commencing on site, as to the status of the area and their responsibilities in ensuring preservation of the said area. They should also be informed of their responsibilities regarding any Indigenous archaeological deposits and/or objects that may be located during the following site activites.

Should any Aboriginal archaeological deposits/objects be located during the proposed activity:

- All excavation in the vicinity of any objects and/or deposits shall cease immediately and the area secured
- Department of Education's Heritage Team is to be notified of the said deposits or objects.
- a suitably qualified archaeologist should be notified so the significance of the said deposits or objects can be evaluated and presented in a report and the study area recorded as an archaeological site
- Heritage NSW should be notified if the objects and or deposits are determined to be of Aboriginal significance
- The archaeological deposits or objects shall be subject to fulfilment of the relevant legislative requirements particularly section 90 of the NPW Act 1974 (as amended).

Should any human remains be located during the proposed activity:

- All excavation in the immediate vicinity of any objects of deposits shall cease immediately
- The NSW police and Heritage NSW Enviroline be informed as soon as possible

Once it has been established that the human remains are Aboriginal ancestral remains, Heritage NSW and the relevant Registered Aboriginal Parties will identify the appropriate course of action.

1.0 INTRODUCTION

1.1 BACKGROUND

Archaeological Management and Consulting Group (AMAC Group) was commissioned by School Infrastructure NSW (SINSW) in October 2023, to undertake an Aboriginal Archaeological Technical Report for the proposed New Leppington High School. This report should be read in conjunction with the Aboriginal Cultural Heritage Assessment Report.

This report has been written per Requirement 11 of the *Code of Practice* (DECCW 2010b) and in accordance with *the Guide to Investigating, Assessing and Reporting on Cultural Heritage in New South Wales, Part 6 National Parks and Wildlife Act 1974* (OEH 2011).

1.1.1 Study Area

The site is known as 128-134 Rickard Road, Leppington, NSW, 2179 and is legally described as Lots A and B in Deposited Plan 411211. The site is located on the eastern side of Rickard Road and is approximately 4.1ha in area. The site is located immediately south of the existing Leppington Public School at 144 Rickard Road and is approximately 700m south of Leppington Train Station. The northern portion of the site is currently used for residential purposes. The southern portion of the site is used for agricultural purposes, with multiple greenhouses and an existing pond on the property (Figure 1-1-Figure 1-2).

1.1.2 Proposed Activity

The proposed activity is for a new high school for Leppington and Denham Court. The new high school will accommodate up to 1,000 students across 3 new buildings that will comprise 48 permanent teaching spaces (PTS), 3 support teaching spaces (STS), 19 specialist labs/workshops/kitchens and a hall. Buildings 1, 2 and 3 will be clustered along the southern boundary and the hall will be located in south-east corner of the site. The activity also includes the construction of a sports field in the centre of the site and 3 x multipurpose courts along the northern boundary (Figure 1-3 New High School for Leppington and Denham Court SINSW (2025).

1.2 SCOPE

This report forms the results of the programme of test excavation that was conducted, including the synthesis and analysis of information of which may contribute to our understanding of the site characteristics and local and/or regional prehistory. The results of the test excavation will aid in the formalisation of appropriate management recommendations and conservation goals for the proposed activity and any archaeological material recovered.

This assessment is intended for submission in conjunction with an Aboriginal Cultural Heritage Assessment Report (AMAC 2024).

1.3 AUTHOR IDENTIFICATION

The analysis of the archaeological background and the reporting were undertaken by Mr. Steven J. Vasilakis (B. Arts. Hons.), senior archaeologist, and Ms. Sarah

Hannan (B. Arts, B. Science), graduate archaeologist, under the guidance of Dr Ivana Vetta, Associate Director of AMAC Group.

1.4 ACKNOWLEDGEMENTS

The authors would like to thank the following for advice and/or input into this assessment:

- School Infrastructure NSW (SINSW)
- Tharawal Local Aboriginal Land Council
- Kamilaroi Yankuntjatjara Working Group
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- Guntawang Aboriginal Resources Inc
- Woka Aboriginal Corporation
- Thomas Dahlstrom Offers ACH value by using 3D Laser and Drone technology
- Ngambaa Cultural Connections
- Didge Ngunawal Clan
- Konanggo Aboriginal Cultural Heritage Services
- Gunjeewong
- Koori Digs
- Murrabidgee Mullangari
- Corroboree Aboriginal Corporation
- A1 Indigenous Services
- Amanda Hickey Cultural Services
- Cubbitch Barta
- Butucarbin Aboriginal Corporation
- Muragadi Heritage Indigenous Corporation
- Wodi Wodi Dharawal Pty Ltd

1.5 GUIDELINES

This report has been carried out in consultation with the following documents which advocate best practice in New South Wales:

- Aboriginal Archaeological Survey, Guidelines for Archaeological Survey Reporting (NSW NPWS 1998);
- Aboriginal Cultural Heritage Standards and Guidelines Kit (NPWS 1998);
- Australia ICOMOS 'Burra' Charter for the conservation of culturally significant places (Australia ICOMOS 1999, revised 2013);
- Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales, Part 6 National Parks and Wildlife Act 1974, (DECCW 2010b);
- Due Diligence Code of Practice for the Protection of Aboriginal Objects in New South Wales, Part 6 National Parks and Wildlife Act 1974, (DECCW 2010a);
- Guide to Investigating, Assessing and Reporting on Aboriginal Cultural Heritage in NSW, Part 6 National Parks and Wildlife Act 1974 (OEH 2011)
- Part 6; National Parks and Wildlife Act Aboriginal Cultural Heritage Consultation Requirements for Proponents (DECCW 2010c);
- Protecting Local Heritage Places: A Guide for Communities (Australian Heritage Commission 1999).

Figure 1-1 Aerial of study location.
Six Maps, LRS Online (accessed 18/12/2023).

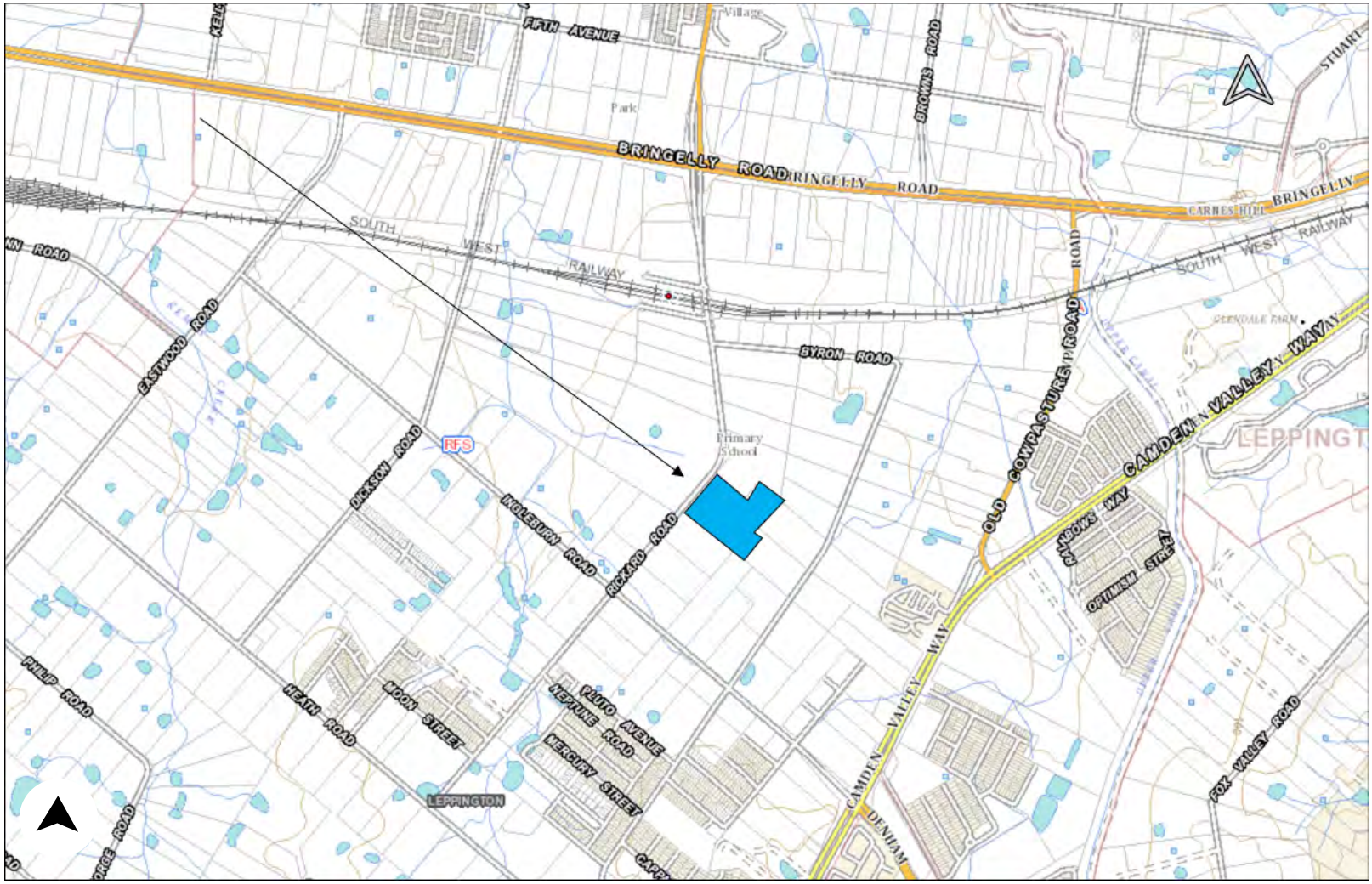

Figure 1-2 **Topographic map with site location.**
Study area outlined in blue with black arrow. Six Maps, LRS Online (accessed 18/12/2023).

Figure 1-3 **New High School for Leppington and Denham Court SINSW (2025)**
Djrd Architects

2.0 ENVIRONMENTAL AND LANDSCAPE CONTEXT

To adequately understand and assess the potential Aboriginal archaeological resource that may be present within the study area it is vital to understand the environment in which the Aboriginal inhabitants of the study area carried out their activities. The environment that Aboriginal inhabitants lived in is a dominant factor in shaping their activity and therefore the archaeological evidence created by this activity. Not only will the resources available to the Aboriginal population have an influence on the evidence created but the survival of said evidence will also be influenced by the environment.

2.2 TOPOGRAPHY

The study site is located within the suburb of Leppington in Greater Sydney and represents a minimally built-up area and partly modified landscape. The suburb is located inland and is relatively flat. Until recently, dominant European land use in Leppington was for horticulture and animal husbandry. The study site comprises gentle slopes rising to the west, with the highest elevation (100m) towards Rickard Road. Intermittent streams and minor tributaries stemming from Kemps Creek are situated to the east, south and west of the study site.

The wider study area lies between the terraces of the Hawkesbury/Nepean River System and Georges River system and is located within the Blacktown soil landscape. The Blacktown (bt) soil landscape consists of mostly gently undulating rises on Wianamatta Shale with a local relief 10-30m and slopes generally <5%. The crests and ridges are found to be broad and rounded (200-600m). Shale outcrops are not naturally located but can be the result of the removal of upper soils.

2.3 GEOLOGY AND SOILS

The Blacktown (bt) soil profile is located over much of the Cumberland Lowlands. The geology is Ashfield laminate and siltstone and Bringelly shale containing occasional claystone, laminate and coal. Soils are typically shallow to moderately deep red and brown podsols on crests and upper slopes and deeper yellow podsols and soloths on lower slopes along drainage lines. Soil acidity, ironstone and gravel shale fragments tend to increase with depth. Total soil depth is generally <100cm on crests, <200cm on upper and mid slopes and >200cm on lower slopes.

Table 2-1 Description of dominant soil material.

Dominant Soil	Soil Horizon	Description
bt1	A1	Friable brownish-black loam to clay loam, can range from dark reddish brown to dark yellowish-brown. Blocky structure with rounded iron indurated fine gravel-sized shale fragments and charcoal fragments.
bt2	A2	Hard-setting brown clay loam to silty clay loam, can range from dark reddish brown to dark brown. Weakly pedal structure with platy ironstone and gravel sized shale fragments as well as charcoal fragments.
bt3	B	Brown light- medium clay, can range from reddish brown to brown. Mottles of red, yellow and grey are common, increasing in depth. Strongly pedal polyhedral or sub angular blocky structure with fine coarse gravel sized shale fragments, these often occur in stratified bands.

Dominant Soil	Soil Horizon	Description
bt4	B/C	Plastic light grey silty clay to heavy clay can range from greyish yellow. Mottles of red, yellow and grey are common. Moderate pedal polyhedral to sub angular blocky structure and smooth faced dense ped fabric, contains gravel sized shale fragments as well as strongly weather ironstone concretions and rock fragments are common.

Table 2-2 Expected Blacktown soil profile depth based on landform.

Crest
➢ up to 30cm of greyish brown loam **(bt1)** ➢ 10-20cm of brown clay loam **(bt2)** ➢ up to 100cm of brown mottled light clay **(bt3)** *The total soil profile will not exceed 150cm, with the greyish loam (bt1) occasionally absent and the boundaries between the soil horizons generally clear.*
Upper Slopes and Mid Slopes
➢ up to 30cm of greyish brown loam **(bt1)** ➢ up to 30cm of brown mottled light clay **(bt3)** ➢ up to 100cm of light grey mottled clay **(bt4)** *The total soil profile will not exceed 200cm, with the greyish loam (bt1) occasionally absent and the boundaries between the soil horizons are generally clear up to 30 cm of greyish brown loam (bt1).*
Lower Slopes
➢ 10-30cm of brown clay loam **(bt2)** ➢ 40-100cm of brown mottled light clay **(bt3)** ➢ up to 100cm of light grey mottled clay **(bt4)** *The total soil profile will not exceed 200cm and the boundaries between the soil horizons are generally clear.*
Poor Drainage
➢ up to 20cm of greyish brown loam **(bt1)** ➢ brown mottled light clay **(bt3)** *The total soil profile will not exceed 200cm and the boundaries between the soil horizons are generally clear.*

2.4 WATERCOURSES

The study area lies approximately 9.3km to the west of Georges River, a major freshwater tributary. In the past it would have channelled Aboriginal activity as a major resource of food and water. There are also a number of drainage channels, manmade dams and minor tributaries within the vicinity as a result of European occupation and past land use. Some of the creeks within the area consist of Rileys Creek (west approximately 4.2km), Kemps Creek (west approximately 1.6km), Upper Canal (east approximately 1.2km), as well as a number of unnamed intermittent streams and minor tributaries and drainage channels off Kemps Creek. One minor tributary is located approximately 120m to the west and a second one located approximately 211m to the east.

2.5 VEGETATION

The vegetation found in the study area is no longer in a native state and is comprised of a variety of introduced and noxious types of vegetation. This movement away from the natural vegetation is a result of previous land clearing for

farming, residential and urban development. These lands were cleared soon after European settlement due to the relatively high agricultural value of the soils upon which they are situated.

The native vegetation of this area probably comprised of dry sclerophyll forests and woodlands that are associated with the Wianamatta and Bringelly Shale Groups. These vegetative communities principally contain Grey Box (*Eucalyptus hemipholia*), Forest Red Gum (*Eucalyptus teraticornis*), Sydney Blue Gum (*Eucalyptus saligna*), Spotted gum (*Eucalyptus maculate*) and Blackbutt (*Eucalyptus pilularis*).

Secondary populations of Cabbage Gum (*Eucalyptus amplifolia*), Broad Leaved Apple (*Angophora subvelutina*) and Narrow Leaved Apple (*Angophora bakeri*) may have existed along the banks of rivers and creeks in association with swamp communities of Swamp Sheoak (*Casuarina glauca*) and Tea Tree (*Melaleuca alternafolia*) (Bannerman and Hazelton 1990 p. 29 and 64).

Understorey species included grasses, such as spear grass, shrub species such as Blackthorn, ferns including Bracken and vines such as Sarsaparilla. This type of forest is typical of those located in podsoloc deposits. For the most part this indigenous vegetation has been cleared for grazing, urban residential and light industry land use throughout the Cumberland Plain (Walker 1975, p. 11–13).

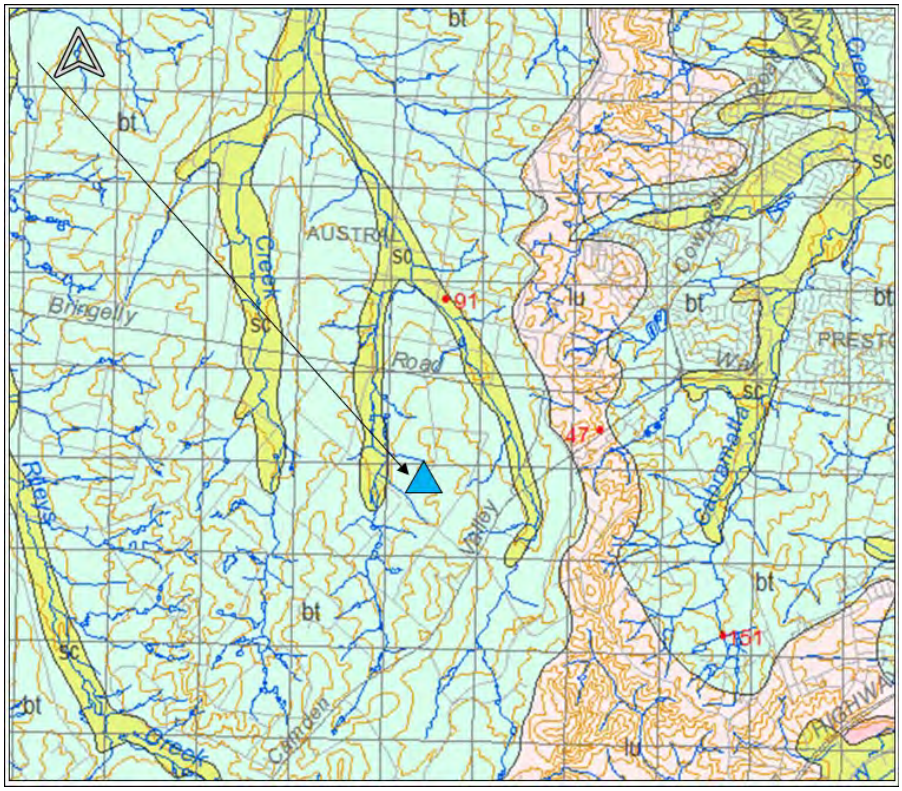

Figure 2-1 **Study area indicated by blue triangle and black arrow on soil map.** Soil Landscapes of the Penrith 1:100 000 Sheet Report (Bannerman and Hazelton 1990).

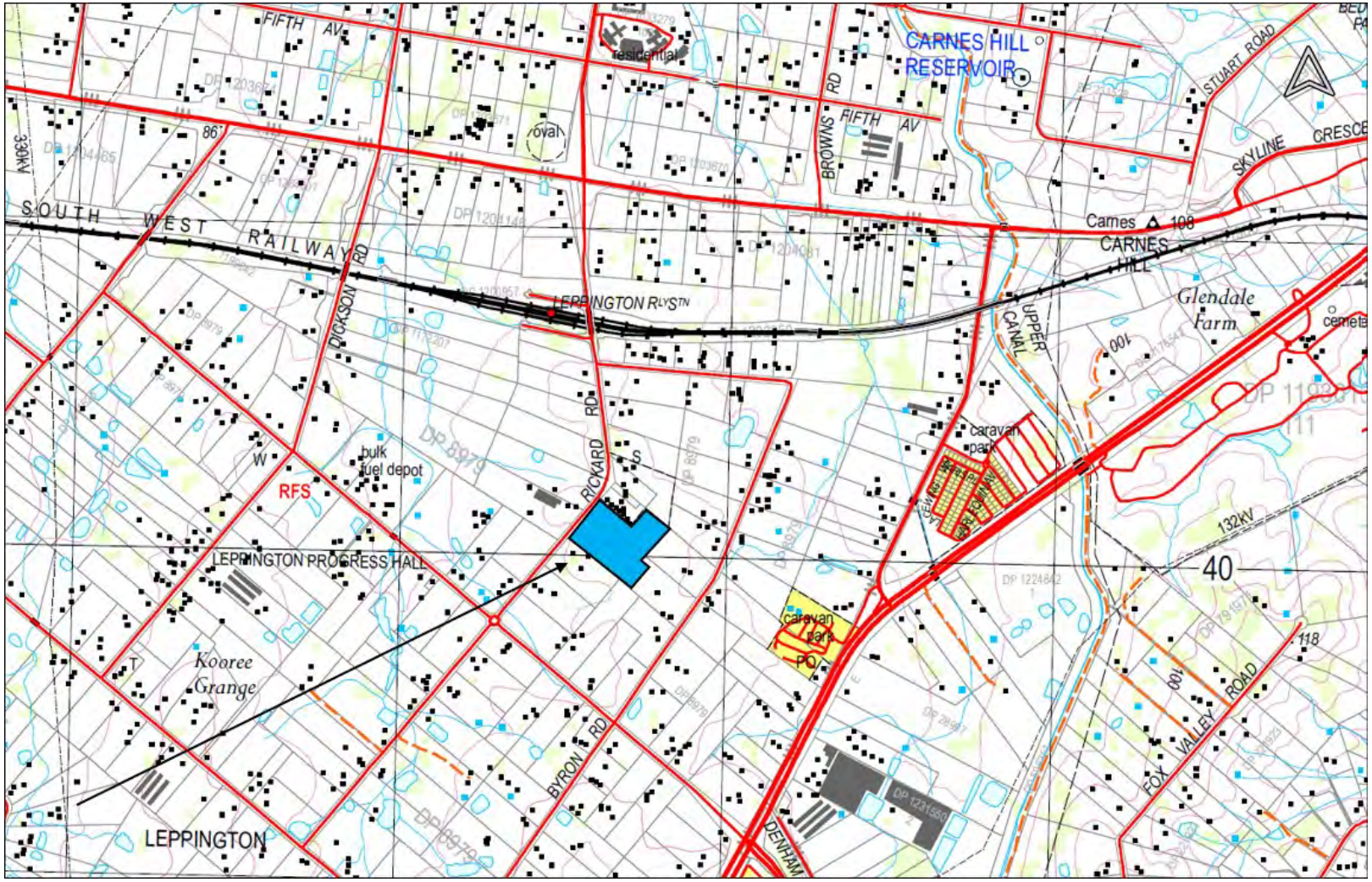

Figure 2-2 Topography Map indicating watercourses in blue.
Study site in blue indicated by black arrow. Six Maps. LRS Online (accessed 15/01/2024).

2.6 ABORIGINAL LAND USE AND RESOURCES

The study area lies in a resource zone which had resources that may have been exploited on either a regular or repeated basis. Reliable access to fresh water may have been present nearby to the study area.

Sites containing fresh water and sedentary food sources, coupled with the presence of other resources which may have been exploited or available on a seasonal basis, would suggest that Aboriginal land use of the study area was regular and repeated, with this reflected in the archaeological record. Concentrated and repeated occupation may be represented in areas that have reliable access to water and foods sources. These areas will possess a high archaeological potential (Goodwin 1999).

The study area is within close proximity to multiple creeklines including two unnamed first order tributaries, Rileys Creek a third order tributary located 4.2km to the west, Kemps Creek a third order water source 1.6km to the west and the formalised Upper Canal. The Georges River is additionally located within 10km and provides water year-round. In the past the accessibility of permanent water and resources along the creek banks would have channeled Aboriginal movement and land use to this location and would have been a major resource of food and water There are a number of manmade dams within the vicinity as a result of European occupation and past land use.

2.7 LAND USE AND DISTURBANCE FACTORS

This section of the report provides an assessment of land use, the level of disturbance and the likely archaeological potential of the study area. The archaeological potential is based on the level of previous disturbance as well as the previously discussed predictive model for the region.

The archaeological potential of the site is based on the level of previous disturbance that has occurred. The Code of Practice (DECCW 2010b) defines disturbed land as:

> "Land is disturbed if it has been the subject of a human activity that has changed the land's surface, these being changes that remain clear and observable. Examples include ploughing, construction of rural infrastructure (such as dams and fences), construction of roads, trails and tracks (including fire trails and tracks and walking tracks), clearing vegetation, construction of buildings and the erection of other structures, construction or installation of utilities and other similar services (such as above or below ground electrical infrastructure, water or sewerage pipelines, stormwater drainage and other similar infrastructure and construction of earthworks)."

This definition is based on the types of disturbance as classified in The Australian Soil and Land Survey Field Handbook (CSIRO 2010). The following is a scale formulated by CSIRO (2010) of the levels of disturbances and their classification.

Minor Disturbance		Moderate Disturbance		Major Disturbance	
0	No effective disturbance: natural	**3**	Extensive clearing (e.g.: poisoning and ringbarking)	**6**	Cultivation: grain fed
1	No effective disturbance other than grazing by hoofed animals	**4**	Complete clearing: pasture native or	**7**	Cultivation; irrigated, past or present

2	Limited clearing (e.g.: selected logging)	**5**	improved, but never cultivated Complete clearing: pasture native or improved, cultivated at some stage	**8**	Highly disturbed (quarrying, road works, mining, landfill, urban)

The above scale is used in determining the level of disturbance of the study area and its impact on the potential archaeology which may be present.

It is important to note that the following assessments describe the archaeological potential of the study area. It is acknowledged if the study area has little or no archaeological potential the study area may still have cultural significance to the Aboriginal community.

2.8 DISTURBANCE AND ARCHAEOLOGICAL POTENTIAL

Background research indicates that past European land use has led to extensive land clearing for early agricultural activities. The study area formed part of a larger land grant known as Raby Estate, which formed predominantly cleared land (Figure 2-3), and began to be subdivided for private sale of smaller farming allotments in the early 20th century (Figure 2-4). Aerial photographs indicate that the wider study site area and much of the Leppington suburb had been substantially cleared of thick vegetation prior to the 1940s (Figure 2-5). Residential dwellings had been constructed on the study area by 1947, in association with cultivation activities. Instances of redevelopment for dwelling relocation had occurred by the 1960s (Figure 2-6) and within the last 50 years.

No deep excavations are known to have been undertaken on the site, with the few standing structures (e.g. greenhouses) and buildings being one storey domestic residences with associated services, pathways, and outbuildings. However, the study area appears to have had significant disturbance due to continued and multiple instances of cultivation activities throughout the 20th century.

In light of this, and in the context of the information provided about the land use of the site, its proximity to nearby watercourses/intermittent streams and thus likelihood for the presence of subsurface Aboriginal cultural heritage material, the following has been predicted:

Moderate-High disturbance to sections of the landscape: Sub-surface Aboriginal objects with potential conservation value have a low-moderate probability of being present within the study area.

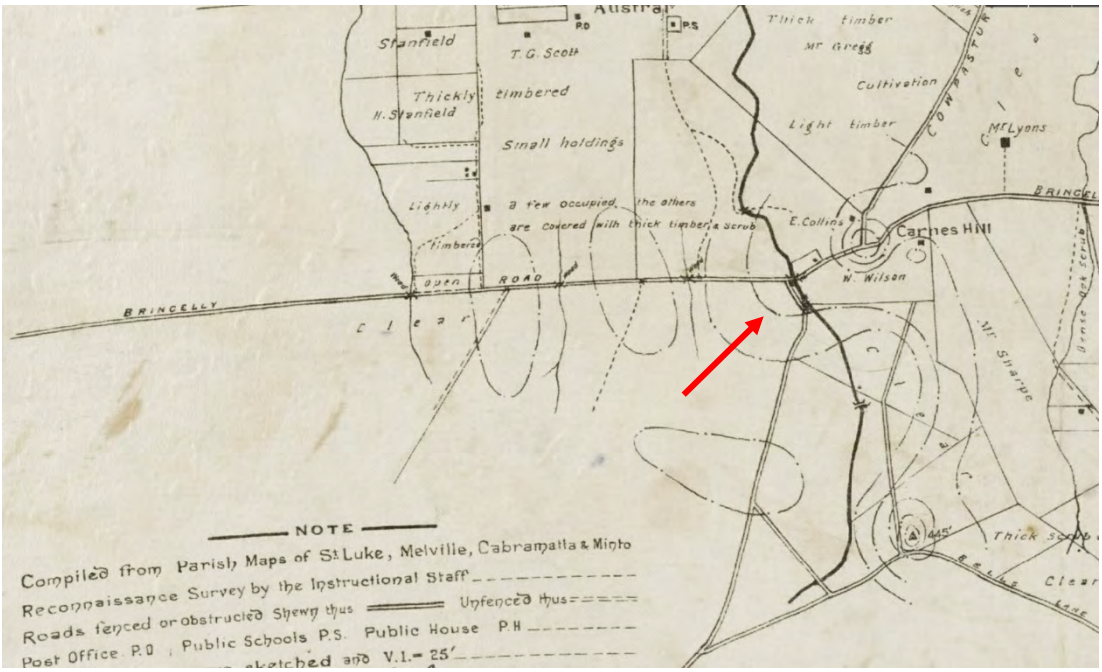

Figure 2-3 **Extract of a 1906 plan of Liverpool.**
Approximate study area indicated by red arrow. Note "clear" is written on plan for parts of Leppington indicating vegetation removal.
NSW State Library. Reconnaissance map of Liverpool, 1906. Call no. DSM981/21A.

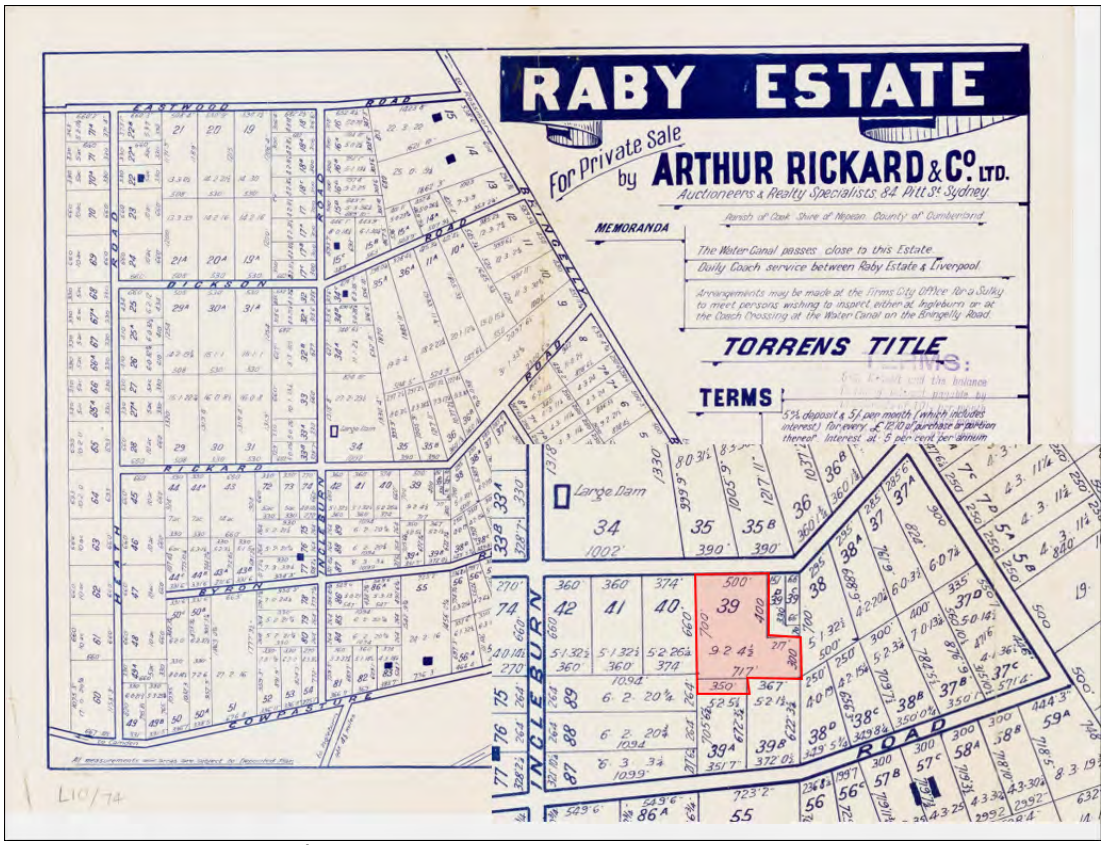

Figure 2-4 **Early 20th century subdivision – Raby Estate.**
Study area in red outline. NSW State Library. Raby Estate subdivision plan, n.d. Call no. Z/SP/L10/74.

Figure 2-5 **1947 aerial photograph.**
Study area in red outline. NSW Government. Historical Imagery (accessed 15/01/2024).

Figure 2-6 **1965 aerial photograph.**
Study area in red outline. NSW Government. Historical Imagery (accessed 15/01/2024).

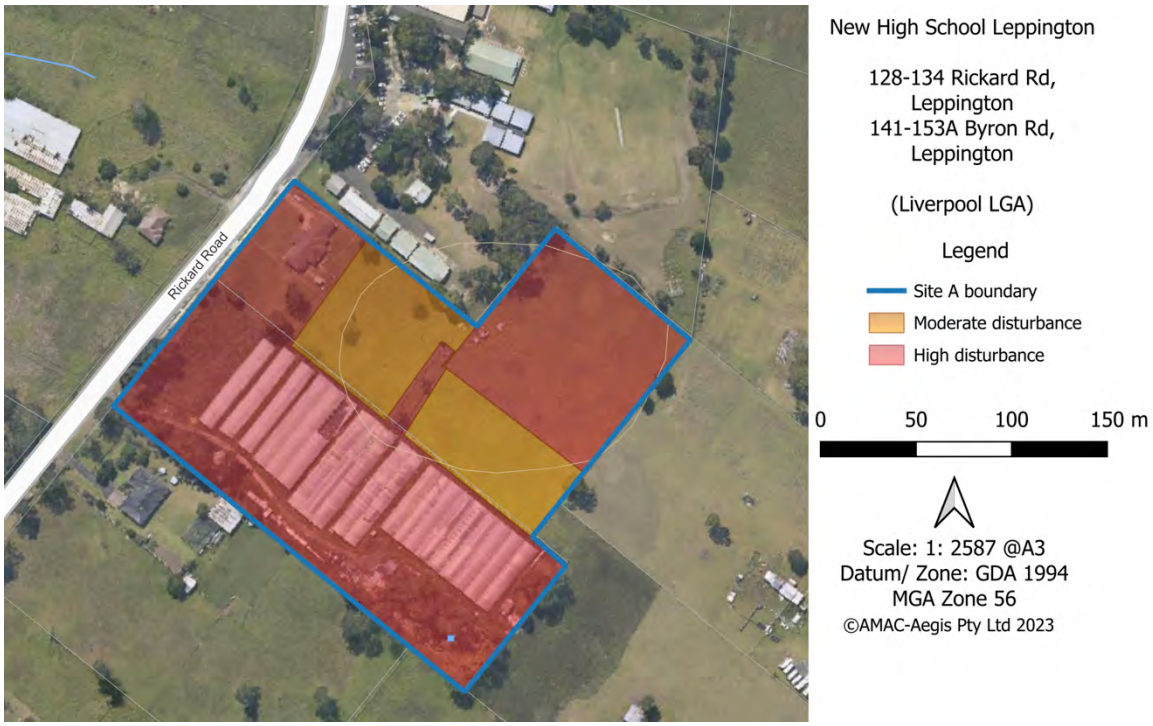

Figure 2-7 Disturbance map of study area.
Study area indicated by blue outline. Red indicates high disturbance – Orange moderate disturbance. Six Maps. LRS Online (accessed 15/01/2024).

2.9 GEOTECHNICAL INVESTIGATIONS – JK GEOTECHNICS

In November 2023, JK Geotechnics opened a total of 30 boreholes (BH1-BH30, see Figure 2-8). The following horizons were identified through the study; however, these materials were present to varying degrees within each borehole:

Topsoil – A Horizon (this is the potential artefact bearing layer) – was encountered in boreholes BH10-BH11, BH13-BH30 consisting of silty clay with high root content and ranging from low-high plasticity with depths between 0.1m-0.4m.

Topsoil – Fill Silty sand, silty clay, silty sandy clay and sandy silty clay fill was encountered in boreholes BH1-BH9, BH12 being of low plasticity and ranging in depths of 0.3m–0.5m. This fill was located within the place of the A Horizon (artefact bearing layer). Notably the location of this fill influenced the assessment of disturbance in Figure 2-7.

Natural soil – B Horizon – was encountered underlying the topsoil or fill in all boreholes, except BH29, comprising predominantly of a cohesive soil varying from grey mottled light brown, red brown, and grey mottled orange, brown silty clay with high plasticity and varying from firm to stiff. The natural soils were encountered at depths ranging from 0.4m–2.7m.

Bedrock - was encountered consisting of Bringelly Shale of either grey and/or grey-brown siltstone and claystone brown, of low-medium or medium strength. The upper bedrock profile was generally extremely weathered siltstone/claystone of hard soil strength with thickness ranging between 0.3m-3.7m and 0.5m-1.5m. The bedrock below was distinctly weathered with initial low-medium or medium strength and becoming

medium to high strength upon TC bit refusal at depths ranging between 1.3m-5.2m and 1.7m-3m.

Groundwater – No groundwater inflow was encountered in the boreholes during and on completion of testing.

An overview of the borehole termination depths is presented below in Table 2-3.

Table 2-3 Borehole Depth to Base of Unit (m) – below existing ground level

Borehole	Topsoil – A Horizon (m)	Fill (m)	Natural – B Horizon (m)	Bedrock Terminated Depths (m)
BH1	-	0.3	2.0	5.2
BH2	-	0.5	1.0	4.6
BH3	-	0.5	2.7	3.9
BH4	-	0.5	2.0	4.7
BH5	-	0.5	1.5	3.1
BH6	-	0.5	2.2	3.7
BH7	-	0.5	1.0	2.2
BH8	-	0.5	1.0	1.3
BH9	-	0.5	1.1	1.7
BH10	0.3	-	1.0	1.4
BH11	0.2	-	1.2	1.6
BH12	-	0.5	0.6	2.0
BH13	0.2	-	1.1	1.6
BH14	0.2	-	1.4	2.9
BH15	0.1	-	1.4	2.1
BH16	0.2	-	1.0	2.4
BH17	0.2	-	0.8	1.9
BH18	0.1	-	0.8	1.8
BH19	0.2	-	1.0	2.7
BH20	0.2	-	1.0	3.2
BH21	0.3	-	1.0	2.4
BH22	0.1	-	1.0	4.1
BH23	0.2	-	1.5	2,2
BH24	0.2	-	0.5	2.7
BH25	0.1	-	1.5	2.7
BH26	0.2	-	1.1	2.8
BH27	0.1	-	1.0	2.8
BH28	0.2	-	1.0	2.8
BH29	0.4	-	-	5.2
BH30	0.2	-	1.1	4.3

Overall, the boreholes that were most similar to the natural soil profile were theorised to have higher archaeological potential. This ideal profile consisted of a topsoil (A horizon) overlying a subsoil (B horizon) overlying bedrock. BH 10, BH 11, BH 13 – BH 28 and BH 30 were determined to reflect the least disturbance, whilst boreholes on the south of the site (BH1 – BH9) contained high disturbance. Some disturbance was also identified near the north of the site (BH12). This is reflected in the disturbance map and proposed location of test trenches.

Figure 2-8 Borehole Location Plan.
JK Geotechnics Pty Ltd (2024).

3.0 ARCHAEOLOGICAL CONTEXT

Background research consisted of an analysis and synthesis of data to determine the nature of the potential archaeological and cultural heritage resource in the region. Searches were undertaken on the relevant databases outlined in Requirement 1 of the *Code of Practice* (DECCW 2010b).

3.1 PREVIOUS ARCHAEOLOGICAL STUDIES WITHIN THE STUDY AREA

As part of the research process of this report, the library of archaeological assessments, test excavation and open area salvage excavation reports which is maintained by Heritage NSW Offices was searched. Presented below are summaries of indigenous archaeological survey assessments which have been carried out. This list is by no means exhaustive and is merely a representative sample of the most recent archaeological activity within the vicinity of the study area.

- Biosis Pty Ltd – Sydney (September 2017), 55 Byron Bay Leppington Aboriginal Cultural Heritage Assessment Report Prepared for Crownland Leppington No 3 Pty Ltd AHIP C0003357.

  In September 2017, Biosis assessed a site at 55 Byron Road for demolition and remediation works. Testing was undertaken and one stone artefact was recovered from a test pit on a gentle slope. This was identified in a clayey loam, a material similar to the Blacktown A horizon predicted for the study site.

- Kelleher Nightingale Consulting Pty Ltd. (August 2019), South West Growth Centre Second Release Precincts Wastewater Infrastructure Leppington & Leppington North: Aboriginal Archaeological Salvage Report, Prepared for Sydney Water.

  KNC completed a full archaeological assessment with test excavation at the Leppington and Leppington North Wastewater area. This resulted in the identification of multiple AHIMS sites, which were of varying densities and required variable management strategies. ELWW1 ELWW2 and ELWW3 were comprised of artefact scatters, including cores, backed artefacts, retouched flakes and hammerstones. The first site was partially destroyed with 255 artefacts recovered. The second was completely destroyed with 1258 artefacts recorded and the third remains valid. A Potential Archaeological Deposit was also identified (ELWW PAD 1). The majority of sites were located on lower slopes close to waterways. Management included salvage excavation and community collection.

- AMAC Group (July 2022), Aboriginal Cultural Heritage Report. 133 Ingleburn Road, Leppington, prepared for Mr and Mrs Kokoris.

  In May 2022 AMAC Group completed test excavation in association with an ACHAR for 133 Leppington Road. This was completed in response to triggers being met, such as water within 200m and a registered site on the boundary of the area. Notably this site is located over the same profile, the Blacktown Soil landscape. Excavation revealed no Aboriginal objects and or

deposits of archaeological significance, with the soil profile generally contained a reformed topsoil and modified/reformed A horizon (artefact bearing deposit), due to previous agricultural use of the area. It was recommended that the subdivision be allowed to proceed with caution.

The list of reports above has only considered those most recently conducted, however a substantial number of reports have been completed within the area. This is due to the urban growth within Leppington and surrounds. Within these studies, evidence of intact natural soil profiles was frequently encountered, such as 133 Ingleburn Road Leppington. Sites were not frequently identified, however when present, the most common site type consisted of artefact scatters. Consistent with predictive models, these are generally found near watercourses (Foley, 1981). The aforementioned studies were similarly located in flat- gently sloping plains. The soil type and landforms present within Kelleher Nightingale Consulting (2019) and Amac Group (2022) are similar to the current study area.

The practical ramifications of the aforementioned archaeological assessments and excavations is a low-moderate potential for Aboriginal archaeological objects to be present within the study area, particularly if intact original soil profiles are present.

3.2 AHIMS SEARCH RESULTS

The Aboriginal Heritage and Information Management System Database (AHIMS) is an online database maintained by Heritage NSW Offices. This database comprises information regarding all the previously recorded Aboriginal archaeological sites registered with Heritage NSW. Further to the site card information that is present about each recorded site, the assessments and excavation reports that are associated with the location of many of these sites are present in the library of reports.

Location of these sites must be viewed as purely indicative as errors in recording due to the disparate nature of the recording process, the varying level of experience of those locating the sites and the errors that can occur when transferring data. If possible, sites that appear to be located near a study area should be relocated.

An AHIMS extensive 1km search was conducted on the 02/07/2024 (ID-906211). This search resulted 19 registered sites within 1000m of the study area (see Appendix One). No registered sites were identified within the study area. The most common site type within this search was artefacts, which comprised almost 90% of sites. Of these artefact sites, five have been completely destroyed and five partially destroyed. Two Potential Archaeological Deposits (PADs) were also identified. Notably the majority of sites identified in the search were located close to mapped watercourses, regardless of site type. Additionally, the majority of sites were located on very low slopes and were more frequently identified when exposure was higher. The details of the site IDs, name, status and features is summarised in Appendix Two.

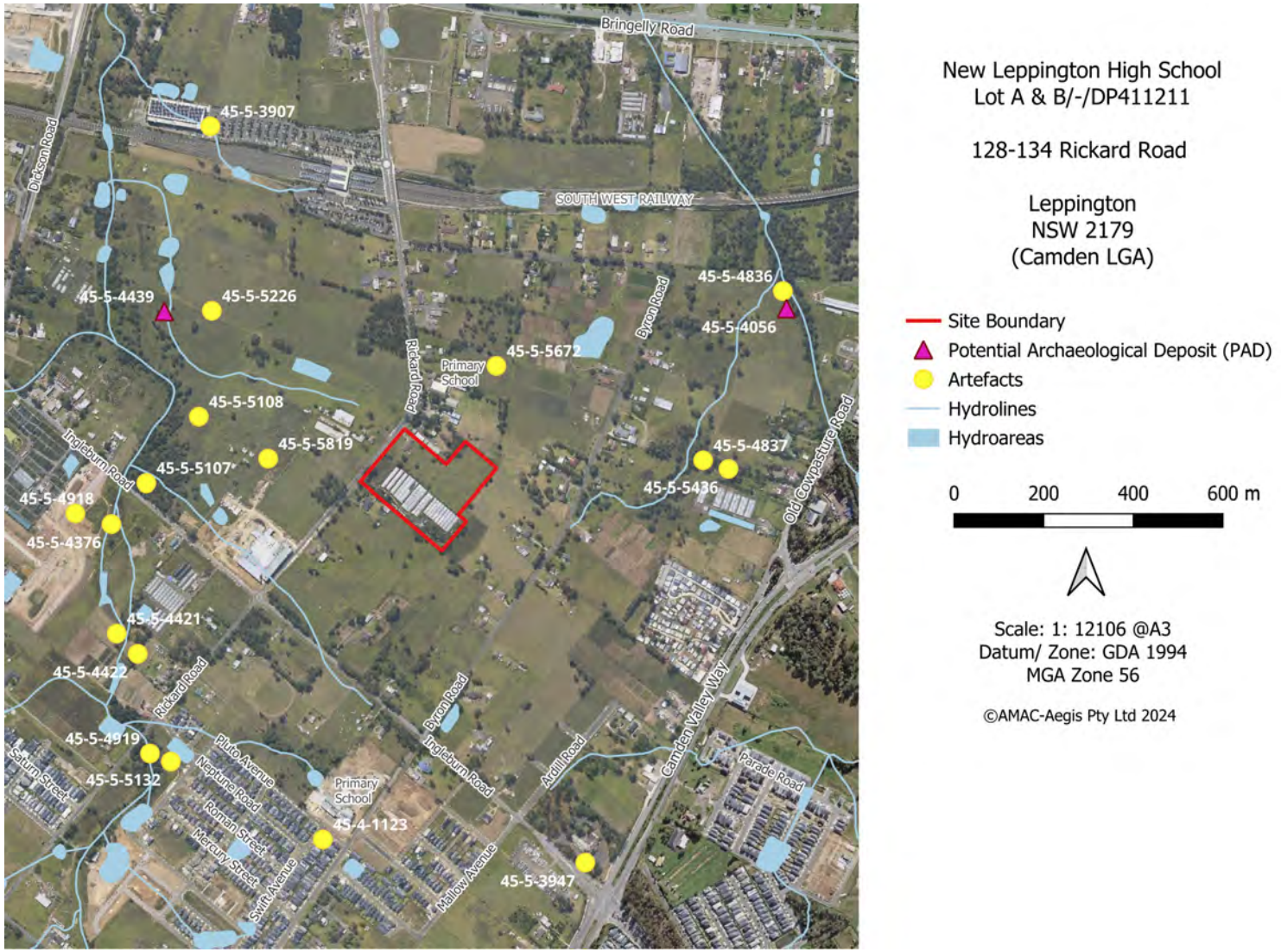

Figure 3-1 AHIMS Search Results.
AMAC Group. Six Maps. LRS Online (accessed 04/07/2024).

3.3 THE CUMBERLAND LOWLANDS; THARAWAL, DARUG AND GANDANGARA NATIONS LANDS

It is estimated that around 250 distinct languages were in use throughout the Australian continent at the time of contact. The exact number cannot be known for certain, however 250 is a conservative estimate. These languages fell within two language groups: the *Pama-Nyungan* and *Non Pama-Nyungan* languages. Knowledge of the different language groups in a given area is variable. Early European recordings noted the names of particular Aboriginal individuals and groups but were not always clear about which named groups represented a language rather than some other social grouping (Hardy and Streat 2008).

The current study site is located near the boundary of three groups – the Darug, Gandangara and Tharawal. Various spelling of these names exists, in addition to different estimates of occupational extents. These groups acknowledged have been identified on the maps by Tindale (1974) and the Australian Institute of Aboriginal and Torres Strait Islander Studies (2000). There may have been a significant amount of interaction both cultural and linguistic between these nations and it is probable that the territorial boundary altered from time to time.

Of these language groups, the Darug, was divided into two dialects, a coastal dialect and a hinterland dialect; the later may have been spoken by the inhabitants of the Cumberland Lowlands (Attenbrow 2002). The boundary between the territories of these two language groups and dialect groups is unclear. Attenbrow (2002) suggests that speakers of the hinterland dialect of the Darug were spread across the Cumberland Lowlands, from the Hawkesbury River in the north to Appin in the area south-west of the Georges River, Parramatta, the Lane Cove River and Berowra Creek. Bursill and Kurranulla Aboriginal Corporation (2007) specified the Tharawal boundary as extending from below Botany Bay, west to Appin and almost to Goulburn. The Gandangara inhabited the southern rim of the Cumberland Lowlands, west of the Georges River and into the southern Blue Mountains. Kohen (1993) suggests that the boundary between the hinterland dialect speakers of the Darug language and the Gandangara was the Nepean River and the Gandangara occupied an area that “extended from the Blue Mountains at Hartley and Lithgow through the Burragong and Megalong Valleys at least as far as the Nepean River” (Kohen, 1993)

3.4 PREDICTIVE MODELLING

Predictive modelling is an adaptive process which relies on a framework formulated by a number of factors, including but not limited to the use of local land systems, the environmental context, archaeological work and any distinctive sets of constraints that would influence land use patterns. This is based on the concept that different landscape zones may offer different constraints, which is then reflected in the spatial distributions and forms of archaeological evidence within the region (Hall and Lomax 1996).

Early settlement models focused on seasonal mobility, with the exploitation of inland resources being sought once local ones become less abundant. These principles were adopted by Foley (1981) who developed a site distribution model for forager settlement patterns. This model identifies two distinctive types of hunter-gather settlements; ‘residential base camps’ and ‘activities areas.’ Residential base camps are predominately found located in close proximity to a reliable source of permanent

water and shelter. From this point the surrounding landscape is explored and local resources gathered. This is reflected in the archaeological record, with high density artefact scatters being associated with camp bases, while low density and isolated artefacts are related to the travelling routes and activity areas (Foley 1981).

However, more recently, investigation into understanding the impacts of various episodes of occupation on the archaeological record has been explored, of which single or repeated events are being identified. This is often a complex process to establish, specifically within predictive models as land use and disturbance can often result in post depositional processes and the superimposition of archaeological materials by repeated episodes of occupation issues.

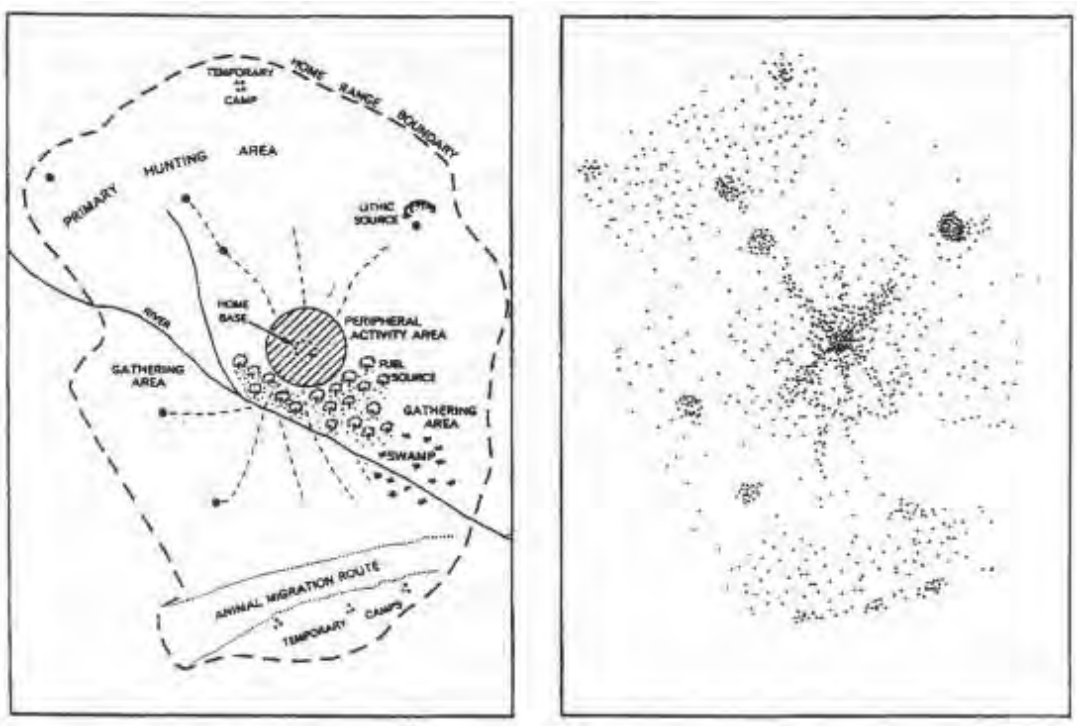

Figure 3-2 Examples of forager settlement patterns.
Foley (1981).

The principals behind this model have been incorporated into other predictive models such as that of McBryde (1976). McBryde's model is centred on the utilisation of food resources as a contributor to settlement patterns, specifically with reference to the predictability and reliability of food resources for Aboriginal people within the immediate coastal fringe and/or hinterland zone, with migratory behaviour being a possibility. Resources such as certain species of animals, particularly; small marsupials and reptiles, plant resources and nesting seabirds may have been exploited or only available on a seasonal or intermittent basis. As such, archaeological sites which represent these activities whilst not being representative of permanent occupation may be representative of brief, possibly repeated occupation.

Jo McDonald and Peter Mitchell have since contributed to this debate, with reference to Aboriginal archaeological sites and proximity to water using their Stream order model (1993). This model utilises Strahler's hierarchy of tributaries. This model correlates with the concept of proximity to permanent water and site locations and their relationship with topographical units. They identify that artefact densities are greatest on terraces and lower slopes within 100m of water.

Intermittent streams, however, also have an impact on the archaeological record. It was discovered that artefacts were most likely within 50-100m of higher (4th) order streams, within 50m (2nd) order streams and that artefact distributions around (1st) order streams were not significantly affected by distance from the watercourse. Landscapes associated with higher order streams (2nd) order streams were found to have higher artefact densities and more continuous distribution than lower order streams.

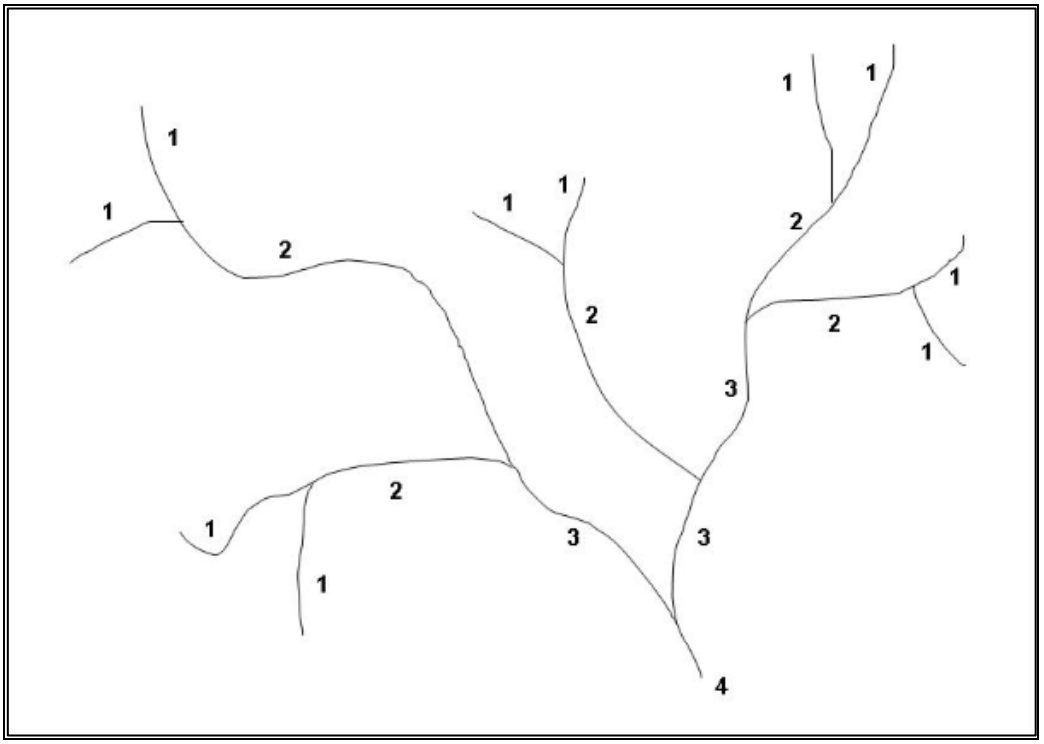

Figure 3-3 Strahler's hierarchy of tributaries.
Strahler (1957).

Table 3-1 Relationship between landscape unit and site distribution for region.

Landscape Unit /Site types	Site Distribution and activity
1st order stream	Archaeological evidence will be sparse and reflect little more than a background scatter
Middle reaches of 2nd order stream	Archaeological evidence will be sparse but focus activity (one-off camp locations, single episodes and knapping floor)
Upper reaches of 2nd order stream	Archaeological evidence will have a relatively sparse distribution and density. These sites contain evidence of localised one-off behaviour.
Lower reaches of 3rd order stream	Archaeological evidence for frequent occupation. This will include repeated occupation by small groups, knapping floors (used and unused material) and evidence of concentrated activities.
Major creek lines 4th order streams	Archaeological evidence for more permanent or repeated occupation. Sites will be complex and may be stratified with a high distribution and density.
Creek junctions	This landscape may provide foci for site activity, the size of the confluence in terms of stream rankings could be expected to influence the size of the site, with the expectation of there being higher artefact distribution and density.
Ridge top locations between drainage lines	Ridge tops 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.
Raw materials near water sources	The most common raw materials are silcrete and chert in sites closer to coastal headlands, though some indurated mudstone/silicified tuff and quartz artefacts may also be found.
Grinding grooves	Grinding grooves may be found in the sandstone or shale/sandstone transition areas.
Scarred trees	May occur in stands of remnant vegetation.
Ceremonial sites	Consultation with relevant Aboriginal Stakeholder groups, individuals and review of ethnographic sources often reveal the presence of ceremonial or social sites.

This predictive model has been refined with focus on the dominant environment and landscape zones of the Cumberland Lowlands, such as the Wianamatta Group Shales, Hawksbury Sandstone, Quaternary alluvium, Quaternary Aeolian and Tertiary alluvium.

Umwelt (2004), have identified similar environmental – archaeological relationships which contribute to the mapping and modelling of archaeological sites, such as:

- The pattern of watercourses and other landscape features such as ridge lines affected the ease with which people could move through the landscape

- Certain landscape features such as crests or gently sloping, well-drained landforms influenced the location of camping places or vantage points that provided outlooks across the countryside
- The morphology of different watercourses affected the persistence of water in dry periods and the diversity of aquatic resources and so influenced where, and for how long, people could camp or procure food
- The distribution of rock outcrops affected the availability of raw materials for flakes and ground stone tools
- The association of alluvial, colluvial and stable landforms affects the potential that sites will survive
- European land-use practices affect the potential for site survival and/or the capacity for sites to retain enough information for us to interpret the types of activities that took place at a specific location.

All models state that the primary requirement of all repeated, concentrated or permanent occupation is reliable access to fresh water. Brief and possibly repeated occupation may be represented in areas that have unreliable access to ephemeral water sources, however these areas will not possess a high archaeological potential (Goodwin 1999).

3.5 ARCHAEOLOGICAL PREDICITVE MODEL FOR THE STUDY AREA

Analysis of the environmental context, has found that the study site is located within 5kms of multiple watercourses, including unnamed tributaries, Kemps Creek, Rileys Creek and Upper Canal. The Georges River is additionally located within 10km. It can thus be identified as having potential for subsurface Aboriginal cultural deposits or materials.

It is important to acknowledge that the information provided in Code of Practice (DECCW 2010a, p.11-12) is, as with all predictive modelling, indicative. Aboriginal activity cannot be said to have ceased at a hard 200m from waters nor 20m from a cave or rock shelter and these parameters must be viewed as a guide. It must also be taken into account that the course of waterways change over time and even ephemeral watercourses mark potential features that may have once influenced Aboriginal settlement patterns.

In addition to this, McDonald's modelling only states that artefact density reduces as the distance from permanent water increases; it also states that the nature of the watercourse may influence artefact density, which may be reflected in the archaeological record.

The following section gives an indication of the likelihood of certain site types being located within the study area.

Table 3-2 Potential site types associated with the study area.

Site Type	Study Site	Likelihood
Open Artefact Scatters	A 1st order/ intermittent water course is located 120m from the study area. In accordance with Foley (1981) and Goodwin (1999), evidence of intermittent or transient occupation may be present. Areas closer to major water sources, such as the Georges River have a higher potential for high density or repeated occupation.	Likely within undisturbed parts of the study area.
Isolated Artefacts	A 1st order/ intermittent water course is located 120m from the study area. In accordance with Foley (1981) and Goodwin (1999), evidence of intermittent or transient occupation may be present. Areas closer to major water sources, such as the Georges River have a higher potential for high density or repeated occupation.	Likely within undisturbed parts of the study area.
Grinding Grooves	Boulders of sandstone or outcrops do not occur in the landscape units represented in the study area.	Unlikely
Stone Resource Sites	Rock outcrops of suitable flaking material are almost absent from the soil landscapes represented within the study area.	Unlikely
Scarred Trees	Trees of sufficient age are not located within the study area due to land clearing.	Unlikely
Sandstone Shelters	The soil landscapes of the study area do not contain sandstone overhangs.	Unlikely
Burials	There is an unknown potential for burials within the study site. The study area, has however been impacted by disturbance for agricultural land use.	Unlikely
Ceremonial Sites	Consultation with relevant Aboriginal parties and individuals is taking place and is possible that such information may become available in the future.	Possible that Ceremonial/Social sites will be present within the study area

4.0 TEST EXCAVATION METHODOLOGY

Test excavation was undertaken by AMAC Group in response to the proposed activity and its potential impact on Aboriginal archaeological and cultural deposits and/or objects. Test excavations were carried out by Steven J. Vasilakis and Paul Guzman of AMAC Group, in association with the following Registered Aboriginal Parties:

Organisation	Contact
Kamilaroi Yankuntjatjara Working Group	[redacted]

Test excavation was undertaken over two days – the 7th and 8th May 2024. The programme was conducted under the *Code of Practice* (DECCW 2010b) and consisted of the excavation of 12 test trenches (50cm x 50cm). One trench (ATT06) was however abandoned, due to significant disturbance. This disturbance is due to previous agricultural land use, which resulted in the displacement or removal of soil horizons. In agreeance with the *Code of Practice* and independent Work Health and Safety Procedures, it was determined that this pit contained high disturbance and was unlikely to contain intact deposits and/ or objects or Archaeological significance.

4.1 AIMS

The purpose of subsurface test excavation was to identify the nature and extent of any intact archaeological deposit and/ or objects which may be situated within the study area and its significance.

As detailed in the *Code of Practice* (DECCW 2010b). The purpose for 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

The test excavation programme aimed to collate additional information regarding any site characteristics which may enhance our understanding of the local and/or regional prehistory of the area. The results of the test excavation aid in the formalisation of appropriate management recommendations and conservation goals for the proposed activity and any archaeological material recovered.

The methodology and recommendations presented in the following section of the report take into account the following:

- Legislation which protects Aboriginal cultural and archaeological objects and places in New South Wales
- Research and assessment carried out by the author/s of this report and previous reports
- Results of previous archaeological assessment and excavation in the vicinity of the study area

- The impact of the proposed development on any Aboriginal archaeological material that may be present.

4.2 EXCAVATION METHODOLOGY

4.2.1 Test Excavation Under the Code of Practice

Archaeological test excavation was carried out under the *Code of Practice* (DECCW2010b) as the site is not locate:

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

For this reason, an Aboriginal Heritage Impact Permit was not required.

As set out in the *Code of Practice* (DECCW2010b):

> 'The test excavation should be sufficiently comprehensive to allow characterisation of the Aboriginal objects present without having a significant impact on the archaeological value of the subject area'

Any test excavation carried out under this requirement must cease when:

- suspected human remains are encountered;
- enough information has been recovered to adequately characterise the objects present, with regard to their nature and significance.

'Enough information' is defined as obtaining a sample that demonstrates the deposit's nature and significance, and may include things like:

- locally or regionally high object density
- presence of rare or representative objects
- presence of archaeological features or locally or regionally significant deposits, stratified or not.

Decisions regarding the nature and significance of the site and choices about discontinuing the test excavation program shall be made by the excavation director in consultation with the registered Aboriginal stakeholders and Heritage NSW if required. Information will be reviewed on a daily basis and the excavation director reserves the right to cease all excavation if he/she believes the nature and extent of the site is understood in accordance with the *Code of Practice* (DECCW2010b).

4.2.2 Test Excavation Methodology

The first priority in test excavations, and recording Aboriginal objects during test excavations, must always be to avoid or minimise, as far as practicable, the risk of harm to the objects under investigation. This means due care must be taken when excavating and collecting objects.

In compliance with the *Code of Practice* (DECCW 2010b) the following test excavation methodology was adhered to;

- Test excavation units were placed on a systematic grid at 25m intervals
- Any test excavation point was separated by at least 5 m.

- Test excavations units were excavated using hand tools only.
- Test excavations were excavated in 50 cm x 50 cm units.
- The first excavation unit was excavated and documented in 5cm spits. Based on the evidence of the first excavation unit, 10cm spits or sediment profile/stratigraphic excavation were then implemented.
- Test excavation units were excavated to at least the base of the identified Aboriginal object-bearing units and continued to confirm the soils below were culturally sterile.
- Photographic and scale-drawn records of the stratigraphy/soil profile, features and informative Aboriginal objects were made for each single excavation point.
- Test excavations units were backfilled at the end of the excavation programme.

4.3.1 Sieving

The excavated soil from each spit was placed in buckets of uniform size (9-10kg limit); these buckets were counted, and all material excavated from the test excavation units were wet sieved using a 5mm aperture wire-mesh sieve. Any potential archaeological material recovered from sieving was placed in a zip lock bag and labelled with the site number, date, trench and spit. All of the bags were then placed in a larger zip lock bag for processing.

4.3.2 Recording

A photographic record was kept of the progress of each test trench as well as photographic and scale-drawn records of the stratigraphy/soil profile and features were made for each single excavation point.

Details pertaining to individual spits were recorded through the completion of site forms. The details on the form included site name, pit number, location and landform, area, spit number, spit depth, soil horizon, artefacts, stratigraphic profile as well as additional notes relating to the soil deposits encountered.

4.3.3 Long Term Management Procedure

No objects of Aboriginal Heritage were recovered from test excavation and thus a Care and Control Agreement per requirement 26 of *the Code of Practice* (DECCW2010b) is not required.

4.4 TEST PIT LOCATION

Twelve test trenches were proposed for excavation through the archaeological assessment program. These were situated evenly across the proposed activity footprint in order to systematically determine a distribution and/or density pattern within the site (Figure 4-1). As part of the programme of test excavation, areas with lower levels of disturbance were targeted for analysis.

The order of excavation was established on site as logistics and site access were factors that needed to be considered.

Figure 4-1 **Test Trench Locations.**
Test trenches indicated in yellow. AMAC (2024). SixMaps LPI Online (accessed 01/05/2024).

5.0 Results of Test Excavation

One trench (ATT06) was abandoned due to significant disturbance with remnant building material. The remaining 11 test pits had an identified remnant A/A2 overlaying a sterile B horizon. One piece of raw silcrete was identified within the first spit of ATT02, however this trench was not expanded as the silcrete had no evidence human modification and no further material was located in Spits 2 and 3.

Test excavation revealed no subsurface Aboriginal objects and/or features within any of the trenches. The site contains a disturbed landscape from past agricultural and urban activity. The majority of trenches had an A horizon overlying a B horizon, however test trenches ATT01 and ATT04 contained an A2 horizon. Test trench ATT06 additionally varied from the Blacktown soil landscape, with only fill visible. While a piece of raw material was located, no artefacts or deposits of archaeological significance were found. All test trenches were excavated and found to be sterile. All remnant A2 horizons remained sterile.

Table 5-1 Test Trench Summary.

Test Trench No.	Area	No. Spits	Final depth (cm)	Description	No. Artefacts
ATT01	1	3	25	Approximately 5cm of brown clayey loam with roots and gravel inclusions (A horizon) overlay a grey-brown clayey loam with mottles (A2 horizon). This transitioned into a reddish brown clay with red, yellow and orange mottles (B horizon).	0
ATT02	1	3	20	Approximately 5cm of a dark brown clayey loam with roots and gravel inclusions (A horizon) overlay 15cm of reddish-brown stiff clay with yellow, orange and red mottles (B horizon).	0 (1 piece silcrete)
ATT03	1	3	18	5cm of brown clayey loam with roots and gravel inclusions (A horizon) overlay 130cm of reddish-brown stiff clay with yellow, orange and red mottles (B horizon).	0
ATT04	1	3	20	Approximately 5cm of brown clayey loam with roots and gravel inclusions (A horizon) overlay a brown medium clay (A2 horizon) which gradually became a reddish-brown stiff clay with various coloured mottles.	0
ATT05	1	2	12	Less than 5cm of brown clay loam (A1 Horizon) overlay at least 7cm of reddish brown stiff clay with red, yellow and orange mottles (B horizon).	0
ATT06	1	1	5	The top 5cm contained fill with a range of modern inclusions such and broken concrete, reinforced steel, road base. Due to the level of disturbance, this trench was abandoned.	0
ATT07	2	2	15	Less than 5cm of brown clayey loam with roots (A horizon) overlay a reddish-brown stiff clay (B horizon). This had red orange and yellow mottles and continued for at least 10cm.	0

Test Trench No.	Area	No. Spits	Final depth (cm)	Description	No. Artefacts
ATT08	2	2	15	Less than 5cm of brown clayey loam with roots (A horizon) overlay a reddish-brown stiff clay (B horizon). This had red orange and yellow mottles and continued for at least 10cm.	0
ATT09	2	2	15	Less than 5cm of brown clayey loam with roots (A horizon) overlay a reddish-brown stiff clay (B horizon). This had red orange and yellow mottles and continued for at least 10cm.	0
ATT10	2	3	20	Approximately 5cm of brown clayey loam with roots and gravel inclusions (A horizon) overlay 15cm of reddish-brown stiff clay with yellow, orange and red mottles (B horizon).	0
ATT11	2	2	15	Less than 5cm of brown clayey loam with roots (A horizon) overlay a reddish-brown stiff clay (B horizon). This had red orange and yellow mottles and continued for at least 10cm.	0
ATT12	2	2	13	Less than 5cm of brown clayey loam with roots (A horizon) overlay a reddish-brown stiff clay (B horizon). This had red orange and yellow mottles and continued for at least 8cm.	0

5.1.1 Test Trench Photographs

ATT1 Final Shot.
Facing North [Image no. 7947].

ATT2 Final Shot.
Facing North [Image no. 7953].

ATT3 Final Shot.
Facing North [Image no. 7971].

ATT4 Final Shot.
Facing North [Image no. 7960].

ATT5 Final Shot.
Facing North [Image no. 7967].

ATT6 Final Shot.
Facing North [Image no. 7979].

ATT7 Final Shot.
Facing North [Image no. 8013].

ATT8 Final Shot.
Facing North [Image no. 8007].

ATT9 Final Shot.
Facing North [Image no. 8001].

ATT10 Final Shot.
Facing North [Image no. 7986].

ATT11 Final Shot.
Facing North [Image no. 7991].

ATT12 Final Shot.
Facing XXXX [Image no. 7997].

5.1.2 Stratigraphic Analysis

The soils encountered on site were generally consistent with the Blacktown (bt) soil landscape, of which brown clay loams and reddish brown clays were observed. This profile is located over much of the Cumberland Plain, however some variations are present, due to past agricultural and urban land use. This was most notable in ATT06, of which natural horizons had been replaced by fill. The most common profile consisted of approximately 5cm of brown clay loam (A horizon) overlying up to 15cm of red brown clay (B horizon). In test trenches ATT01 and ATT04, grey-brown clayey loam with mottles or a brown medium clay were observed as intact A2 horizons above the B horizon.

The following table consists of the soil descriptions of each Blacktown soil landscape deposit encountered (Table 5-2).

Table 5-2 Identified soils within the study area.

Dominant Soil Material	Soil Horizon	Description
bt1	A1 Horizon	Friable brownish-black loam to clay loam, can range from dark reddish brown to dark yellowish-brown. Blocky structure with rounded iron indurated fine gravel-sized shale fragments and charcoal fragments.
bt2	A2 Horizon	Hard-setting brown clay loam to silty clay loam, can range from dark reddish brown to dark brown. Weakly pedal structure with platy ironstone and gravel sized shale fragments as well as charcoal fragments.
bt3	B Horizon	Brown light- medium clay, can range from reddish brown to brown. Mottles of red, yellow and grey are common, increasing in depth. Strongly pedal polyhedral or sub angular blocky structure with fine coarse gravel sized shale fragments, these often occur in stratified bands.

ATT1 Section Shot.
Facing South [Image no. 7951].

ATT4 Section Shot.
Facing North [Image no. 7957].

ATT8 Section Shot.
Facing North [Image no. 7993].

ATT9 Section Shot.
Facing North [Image no. 8004].

5.1.3 Raw Material Analysis

This section aims to analyse the raw material recovered from the test excavation. The most common raw material associated with archaeological sites specifically within the Cumberland Region, is silcrete. One small red silcrete raw material piece was identified in in the top stratigraphic layer of Trench 2 (ATT02, Spit 1).

Silcrete is formed by the silicification of the soil profile material (e.g., when a combination of surface soil, sand, and gravel are cemented together by dissolved silica) and associated with deeply weathered Tertiary sediments (Hughes et. al. 1973). Silcrete and silicified tuff (also known as mudstone) - overwhelmingly dominate the region's existing lithic raw materials for flaked stone artefact production and appear to have been routinely selected for this task, likely due to both basic raw material abundance locally occurring in alluvial and colluvial gravel deposits and for their desirable flaking qualities (Hiscock, 1986).

As this material is locally and regionally common material, the fragment identified is not considered to be rare or significant for the region. Larger and more complex sites/deposits are commonly identified along, or adjacent to wetlands and higher order watercourses. The low quantity of raw material recovered and lack of artefacts, suggests that it is unlikely that the site was used for occupation but rather as a transitory route utilised by Aboriginal people within the local region in search of resources and travelling to more permanent water sources, such as the Georges River, Rileys Creek or Kemps Creek.

Figure 5-1 The raw silcrete piece located within ATT02.

Figure 5-2 The reverse side of the raw silcrete piece.

6.0 Analysis and Discussion

A background analysis of the environmental and archaeological context, revealed that parts of the study area were likely to contain Aboriginal archaeological material. This was supported by recent studies which had been performed in response to urban growth in Leppington (AMAC Group, 2022, Kelleher Nightingale Consulting Pty Ltd, 2019). Artefacts were the most common site type within this location, with materials such as silcrete and tuff common. Test excavation revealed one piece of raw material within a Blacktown soil landscape. This had been disturbed to varying degrees across the site, due to previous agricultural and urban activity. All trenches, excluding ATT06 exhibited an A and B horizon, with ATT01 and ATT04 additionally containing an A2 horizon.

As the proposed activity is intending to impact the entirety of the study area, all landscape units identified as potentially either disturbed or intact were tested as part of the programme of test excavation. All test trenches excavated were found to be sterile. A remnant A2 horizon remained sterile. One piece of unmodified silcrete was identified, a material that is common for the Cumberland Lowlands.

As mentioned above, the low quantity of raw material recovered suggests that it is unlikely that the site was used for occupation but rather as a transitory route utilised by Aboriginal people within the local region in search of resources and travelling to more permanent water sources, such as the Georges River, Rileys Creek or Kemps Creek.

All *intact* soils were found to be sterile. Excavation of the test trenches ceased once the sterility of the soil could be confirmed. One raw silcrete piece was located, consistent with local geology and *no Aboriginal objects and/or deposits or features of cultural significance were identified during the programme of test excavation*.

The results of this exercise should form the basis of decisions for ongoing management and further action of which *further investigation is not warranted, however, caution is necessary*.

6.1 RESEARCH CONTEXT

The research questions are based on the information that has been gathered from previous excavations within and within the vicinity of the study area as well as making an attempt to place the site in a regional context and offer some explanation for the activities that may have taken place within the study area.

6.1.1 Response to Archaeological research questions

No Aboriginal objects or features were located as a result of the programme of test excavation therefore the following research questions could not be addressed.

- Are archaeological or cultural materials present in the Holocene Age deposits?

  Whilst some areas of the site retained intact soil horizons, no archaeological or cultural material was identified through excavation.

- If so, how do these artefact densities compare at a local and regional level?

  No, due to the lack of archaeological material recovered.

- Are rare or representative archaeological or cultural materials present?

  No, none were present.

- Are locally or regionally significant archaeological or cultural material present in the Holocene age deposits?

  No, none were present.

- Is it possible to assign a temporal framework to any of the excavated material?

  No, due to the lack of archaeological material recovered.

- What was the nature and extent of the activity that took place within the study area and how does the study area compare with other sites in the immediate vicinity and similar landforms to the study area?

  This could not be determined due to lack of archaeological evidence.

- What raw materials were chosen for the manufacture of stone implements?

  One raw piece of unmodified silcrete was located on site, indicating this material was readily available, however no artefact assemblage was present for assessment.

- Is the area suitable to be set aside for preservation of Aboriginal archaeological material?

  As the area did not contain archaeological material, it is not suitable to be retained for preservation.

7.0 SIGNIFICANCE ASSESSMENT

The processes of assessing significance for items of cultural heritage value are set out in *The Australian ICOMOS Charter for the Conservation of Places of Cultural Significance: the Burra Charter* (amended 1999; 2013) formulated in 1979 and based largely on the Venice Charter of International Heritage established in 1966. As part of the archaeological assessment for significance, a key step in the process is to assess the potential impact of a proposed activity to reflect the cultural significance or value of an object, site, or place in the recommendations for conservation, management, or mitigation. As defined in the 'Burra Charter' (ICOMOS 1988) cultural significance is broken into four parts: aesthetic, historic, scientific, and social value for past, present, or future generations. Cultural significance is a concept which assists in understanding the value of (pre-) historical places as a means to enrich the present and be of value to future generations (ICOMOS 1988). The Burra Charter is considered best practice standard for cultural heritage management and conservation for archaeological and cultural significance for Aboriginal people in Australia. The social, historical, and aesthetic significance has been discussed within the Aboriginal Cultural Heritage Assess Report. This report subsequently assesses the scientific significance through the analysis of the archaeological remains.

7.1 SCIENTIFIC SIGNIFICANCE

The scientific value of any given location will depend on the importance of the data that can be obtained from any archaeological material located on its rarity, quality, and on the degree to which this may contribute further substantial information to a scientific research process (Australia ICOMOS 1988).

One piece of raw silcrete material was identified within the site. This material is widely identified within the Cumberland Lowlands, with evidence of heat treatment, retouch and reuse apparent in multiple assemblages (Doelman et al., 2015, McLaren et al., 2018). Contrastingly, no modification was apparent on this piece. As this is a common material, without evidence of treatment or processing, a nil scientific significance has been assigned.

8.0 IMPACT ASSESSMENT

This section aims to evaluate and discuss the potential archaeological impact of the proposed activity.

One piece of unmodified silcrete was identified, with the remainder of the site confirmed to be sterile. No Aboriginal objects and/or deposits or features of cultural significance were identified. Due to the level of disturbance to the site, a nil – low possibility of artefacts is predicted.

8.1 POTENTIAL HARM AND AVOIDING, MINIMISING AND JUSTIFYING HARM TO ABORIGINAL OBJECTS AND CULTURAL HERITAGE

The proposed activity was assessed as having the potential to harm any potential Aboriginal objects and/or features that may be present. In light of this, a program of test excavation was conducted to assess the potential of the study area. No Aboriginal objects and/or features of cultural and archaeological significance have been identified within the study area. The landscape was found to be modified due to previous land use. This suggests there is nil possibility of there being artefacts. As such, no harm has been identified associated with the proposed works. As such works may '*proceed with caution*.'

8.2 EVALUATION OF ENVIRONMENTAL IMPACTS

The proposed activity will disturb the ground surface and intact soils which were assessed as having the potential for objects of Aboriginal archaeological and cultural significance. A programme of test excavation was conducted resulting in one piece of raw material being recovered but *no Aboriginal objects and/or features of cultural and archaeological significance located*. The findings from the test excavation indicate the site to be of nil archaeological significance. The soil profile generally contained A and B horizons; however, this was confirmed to be sterile. Therefore, the proposed activity should be allowed to proceed with caution.

It has therefore been assessed that the proposed activity will not have a *significant effect on the environment* in relation to Aboriginal Heritage.

9.0 MANAGEMENT AND MITIGATION

9.1 RESULTS

The proposed activity will disturb the ground surface and intact soils which were assessed as having the potential for objects of Aboriginal archaeological and cultural significance. A programme of test excavation was conducted resulting in one piece of raw material being recovered but *no Aboriginal objects and/or features of cultural and archaeological significance located*. The findings from the test excavation indicate the site to be of nil archaeological significance. The soil profile generally contained A and B horizons, however this was confirmed to be sterile. Therefore, the proposed activity should be allowed to proceed with caution.

9.2 MITIGATION MEASURES

Based on these findings, the proposed activity at the site is unlikely to impact objects of aboriginal cultural heritage significance and therefore can proceed with caution and implement the Unexpected Finds Protocol described below.

No.	Aspect	Mitigation Measure	Reason for Mitigation Measure
1	Unexpected finds of Aboriginal heritage during construction	The Unexpected Finds Protocol, Section 9.2.1 below, should be implemented throughout the redevelopment of the site.	In case of the discovery of unexpected Aboriginal heritage finds during construction

9.2.1 Unexpected Finds Protocol

Before any ground disturbance takes place all building staff, contractors and workers should be briefed prior to works commencing on site, as to the status of the area and their responsibilities in ensuring preservation of the said area. They should also be informed of their responsibilities regarding any Indigenous archaeological deposits and/or objects that may be located during the following site activites.

Should any Aboriginal archaeological deposits/objects be located during the proposed activity:

- All excavation in the vicinity of any objects and/or deposits shall cease immediately and the area secured
- Department of Education's Heritage Team is to be notified of the said deposits or objects.
- a suitably qualified archaeologist should be notified so the significance of the said deposits or objects can be evaluated and presented in a report and the study area recorded as an archaeological site
- Heritage NSW should be notified if the objects and or deposits are determined to be of Aboriginal significance
- The archaeological deposits or objects shall be subject to fulfilment of the relevant legislative requirements particularly section 90 of the NPW Act 1974 (as amended).

Should any human remains be located during the proposed activity:

- All excavation in the immediate vicinity of any objects of deposits shall cease immediately
- The NSW police and Heritage NSW Enviroline be informed as soon as possible

Once it has been established that the human remains are Aboriginal ancestral remains, Heritage NSW and the relevant Registered Aboriginal Parties will identify the appropriate course of action.

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APPENDICES

APPENDIX ONE - AHIMS SEARCH RESULT

Basic Search

AHIMS Web Services (AWS)
Search Result

Your Ref/PO Number : Leppington HS
Client Service ID : 906211

AMAC Group P/L
122c Percival Rd
Stanmore New South Wales 2048
Attention: Martin Carney
Email: amac@archaeological.com.au

Date: 02 July 2024

Dear Sir or Madam:

AHIMS Web Service search for the following area at Address : 128 RICKARD ROAD LEPPINGTON 2179 with a Buffer of 1000 meters, conducted by Martin Carney on 02 July 2024.

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

A search of Heritage NSW AHIMS Web Services (Aboriginal Heritage Information Management System) has shown that:

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

If your search shows Aboriginal sites or places what should you do?

- You must do an extensive search if AHIMS has shown that there are Aboriginal sites or places recorded in the search area.
- If you are checking AHIMS as a part of your due diligence, refer to the next steps of the Due Diligence Code of practice.
- You can get further information about Aboriginal places by looking at the gazettal notice that declared it. Aboriginal places gazetted after 2001 are available on the NSW Government Gazette (https://www.legislation.nsw.gov.au/gazette) website. Gazettal notices published prior to 2001 can be obtained from Heritage NSW upon request

Important information about your AHIMS search

- The information derived from the AHIMS search is only to be used for the purpose for which it was requested. It is not be made available to the public.
- AHIMS records information about Aboriginal sites that have been provided to Heritage NSW and Aboriginal places that have been declared by the Minister;
- Information recorded on AHIMS may vary in its accuracy and may not be up to date. Location details are recorded as grid references and it is important to note that there may be errors or omissions in these recordings.
- Some parts of New South Wales have not been investigated in detail and there may be fewer records of Aboriginal sites in those areas. These areas may contain Aboriginal sites which are not recorded on AHIMS.
- Aboriginal objects are protected under the National Parks and Wildlife Act 1974 even if they are not recorded as a site on AHIMS.
- This search can form part of your due diligence and remains valid for 12 months.

Level 6, 10 Valentine Ave, Parramatta 2150
Locked Bag 5020 Parramatta NSW 2124
Tel: (02) 9585 6345

ABN 34 945 244 274
Email: ahims@environment.nsw.gov.au
Web: www.heritage.nsw.gov.au

Extensive Search

AHIMS Web Services (AWS)

Extensive search - Site list report

Your Ref/PO Number : Leppington HS
Client Service ID : 906211

SiteID	SiteName	Datum	Zone	Easting	Northing	Context	Site Status **	SiteFeatures	SiteTypes	Reports
45-5-3947	LP-4	GDA	56	298036	6239221	Open site	Destroyed	Artefact : 2		
	Contact	Recorders	A Rawson,Kelleher Nightingale Consulting Pty Ltd,Kelleher Nightingale Consulting					Permits	3517	
45-5-5436	Cowpasture Rd IA 1	GDA	56	298337	6240102	Open site	Valid	Artefact : -		
	Contact	Recorders	Biosis Pty Ltd - Wollongong,Mrs.Samantha Keats					Permits		
45-5-4421	ELWW2	GDA	56	296979	6239708	Open site	Destroyed	Artefact : -		104749,105062
	Contact	Recorders	Mr.Mark Rawson,Mr.Matthew Kelleher,Kelleher Nightingale Consulting Pty Ltd (Ge					Permits	3731	
45-5-3907	SWRL SITE 13	GDA	56	297164	6240839	Open site	Destroyed	Artefact : 1		
	Contact	Recorders	Mrs.Jenna Weston,Ms.Georgia Burnett					Permits		
45-5-4439	ELWW PAD1	GDA	56	297070	6240425	Open site	Valid	Potential Archaeological Deposit (PAD) : -		
	Contact	Recorders	Kelleher Nightingale Consulting Pty Ltd					Permits		
45-5-4836	Byron Road APT 1	GDA	56	298450	6240500	Open site	Destroyed	Artefact : -		
	Contact	Recorders	Kelleher Nightingale Consulting Pty Ltd,Kelleher Nightingale Consulting Pty Ltd,Mr					Permits	4046	
45-5-4376	ELWW1	GDA	56	296962	6239951	Open site	Partially Destroyed	Artefact : -		104749,105062
	Contact	Recorders	Mr.Mark Rawson,Kelleher Nightingale Consulting Pty Ltd,Mr.Matthew Kelleher,Mr.					Permits	3731	
45-5-5107	Ingleburn AS-1	GDA	56	297038	6240043	Open site	Valid	Artefact : 1		
	Contact	Recorders	Eco Logical Australia Pty Ltd - Sydney - Individual users,Mr.Tyler (Virtus) Beebe					Permits		
45-5-5108	Ingleburn IF-1	GDA	56	297152	6240193	Open site	Valid	Artefact : 1		
	Contact	Recorders	Eco Logical Australia Pty Ltd - Sydney - Individual users,Mr.Tyler (Virtus) Beebe					Permits		
45-5-4056	PAD 2063-6	GDA	56	298459	6240461	Open site	Valid	Potential Archaeological Deposit (PAD) : -		
	Contact	Recorders	Mary Dallas Consulting Archaeologists (MDCA),Mary Dallas Consulting Archaeolog					Permits		
45-5-4422	ELWW3	GDA	56	297027	6239664	Open site	Valid	Artefact : -		104749
	Contact	Recorders	Mr.Mark Rawson					Permits	3731	
45-5-4837	Byron Road APT 2	GDA	56	298280	6240120	Open site	Partially Destroyed	Artefact : -		
	Contact	Recorders	Kelleher Nightingale Consulting Pty Ltd,Kelleher Nightingale Consulting Pty Ltd,Ble					Permits	4046	
45-5-5132	Rickard Road APT 2	GDA	56	297106	6239426	Open site	Partially Destroyed	Artefact : -		
	Contact	Recorders	Niche Environment and Heritage,Niche Environment and Heritage,Ms.Isabel Tickle					Permits	4507	
45-5-4919	Rickard Road APT 1	GDA	56	297059	6239443	Open site	Partially Destroyed	Artefact : -		105062
	Contact	Recorders	Kelleher Nightingale Consulting Pty Ltd,Miss.Kristen Taylor,Mr.Matthew Kelleher,I					Permits	4245	
45-5-5819	Rickard1	GDA	56	297309	6240103	Open site	Partially Destroyed	Artefact : -		
	Contact	Recorders	Mr.Lyndon Patterson,Austral Archaeology,Miss.Kara Oakley-Smith					Permits		

Report generated by AHIMS Web Service on 02/07/2024 for Martin Carney for the following area at Address : 128 RICKARD ROAD LEPPINGTON 2179 with a Buffer of 1000 meters.. Number of Aboriginal sites and Aboriginal objects found is 19

This information is not guaranteed to be free from error omission. Heritage NSW and its employees disclaim liability for any act done or omission made on the information and consequences of such acts or omission.

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AHIMS Web Services (AWS)

Extensive search - Site list report

Your Ref/PO Number : Leppington HS
Client Service ID : 906211

SiteID	SiteName	Datum	Zone	Easting	Northing	Context	Site Status **	SiteFeatures	SiteTypes	Reports
45-5-5226	Dickson Road ATF 01	GDA	56	297176	6240429	Open site	Valid	Artefact : 1		
	Contact	**Recorders**	Ms.Vanessa Hardy,Cultural Heritage Connections Pty Ltd					**Permits**		
45-4-1123	Byron Road 1	GDA	56	297449	6239260	Open site	Valid	Artefact : -		103923,104159
	Contact	**Recorders**	Biosis Pty Ltd - Sydney,Biosis Pty Ltd - Sydney,Mr.James Cole,Mr.James Cole					**Permits**	4215	
45-5-4910	Ingleburn Road AFT 1	GDA	56	296881	6239973	Open site	Destroyed	Artefact : -		105062
	Contact	**Recorders**	Kelleher Nightingale Consulting Pty Ltd,Kelleher Nightingale Consulting Pty Ltd,Mr					**Permits**	4245	
45-5-5672	Rickard Road Isolated Find 1	GDA	56	297814	6240320	Open site	Valid	Artefact : -		
	Contact	**Recorders**	Urbis Pty Ltd - Angel Place L8 123 Pitt Street,Mr.Owen Barrett					**Permits**		

**** Site Status**
Valid - The site has been recorded and accepted onto the system as valid
Destroyed - The site has been completely impacted or harmed usually as consequence of permit activity but sometimes also after natural events. There is nothing left of the site on the ground but proponents should proceed with caution.
Partially Destroyed - The site has been only partially impacted or harmed usually as consequence of permit activity but sometimes also after natural events. There might be parts or sections of the original site still present on the ground
Not a site - The site has been originally entered and accepted onto AHIMS as a valid site but after further investigations it was decided it is NOT an aboriginal site. Impact of this type of site does not require permit but Heritage NSW should be notified

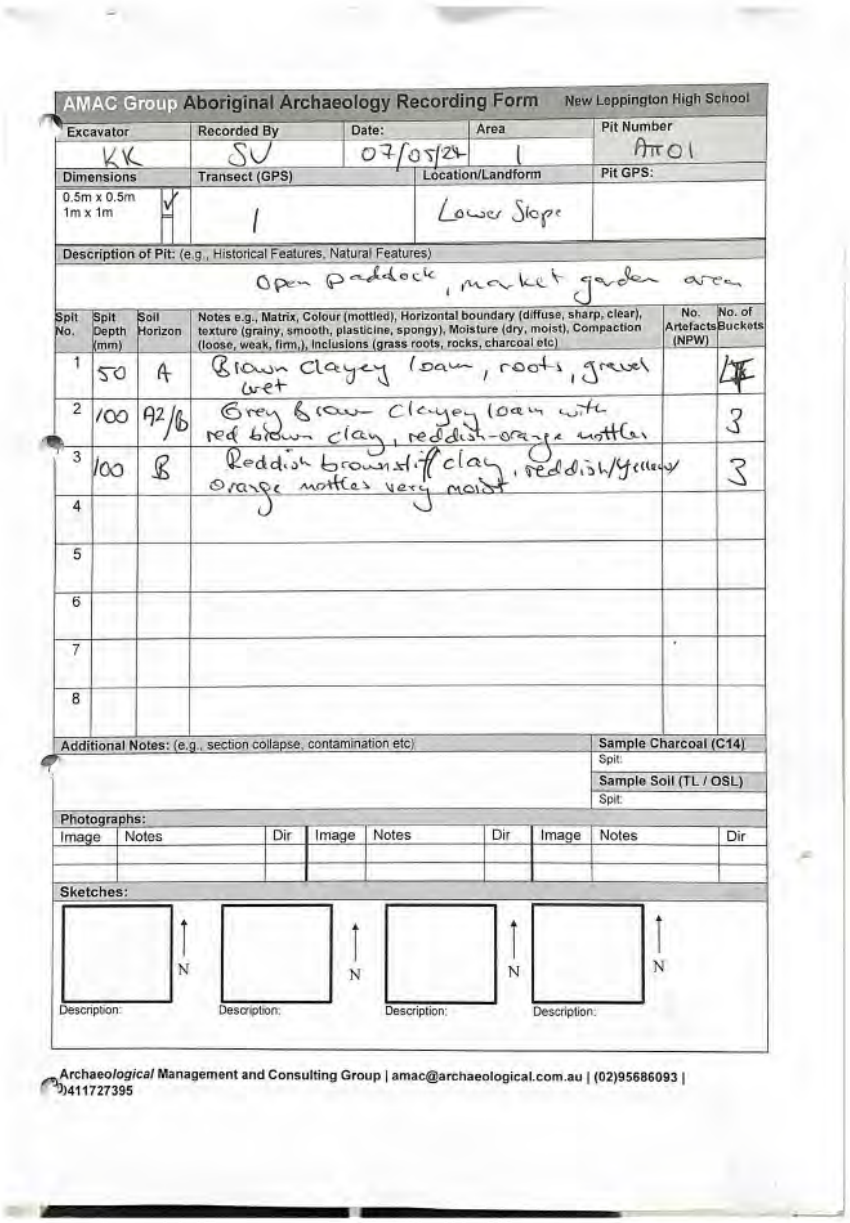
Report generated by AHIMS Web Service on 02/07/2024 for Martin Carney for the following area at Address : 129 RICKARD ROAD LEPPINGTON 2179 with a Buffer of 1000 meters.. Number of Aboriginal sites and Aboriginal objects found is 19

This information is not guaranteed to be free from error omission. Heritage NSW and its employees disclaim liability for any act done or omission made on the information and consequences of such acts or omission.

Page 2 of 2

APPENDIX TWO - EXCAVATION RECORDS

Context Sheets



AMAC Group Aboriginal Archaeology Recording Form New Leppington High School

Excavator	Recorded By	Date:	Area	Pit Number
KK	SV	07/05/24	1	APO1

Dimensions	Transect (GPS)	Location/Landform	Pit GPS:
0.5m x 0.5m / 1m x 1m ✓	1	Lower Slope	

Description of Pit: (e.g., Historical Features, Natural Features)

Open paddock, market garden area

Spit No.	Spit Depth (mm)	Soil Horizon	Notes e.g., Matrix, Colour (mottled), Horizontal boundary (diffuse, sharp, clear), texture (grainy, smooth, plasticine, spongy), Moisture (dry, moist), Compaction (loose, weak, firm,), Inclusions (grass roots, rocks, charcoal etc)	No. Artefacts (NPW)	No. of Buckets
1	50	A	Brown clayey loam, roots, gravel wet		4
2	100	A2/B	Grey Brown clayey loam with red brown clay, reddish-orange mottles		3
3	100	B	Reddish brown stiff clay, reddish/yellow orange mottles very moist		3
4					
5					
6					
7					
8					

Additional Notes: (e.g., section collapse, contamination etc)

Sample Charcoal (C14) Spit:

Sample Soil (TL / OSL) Spit:

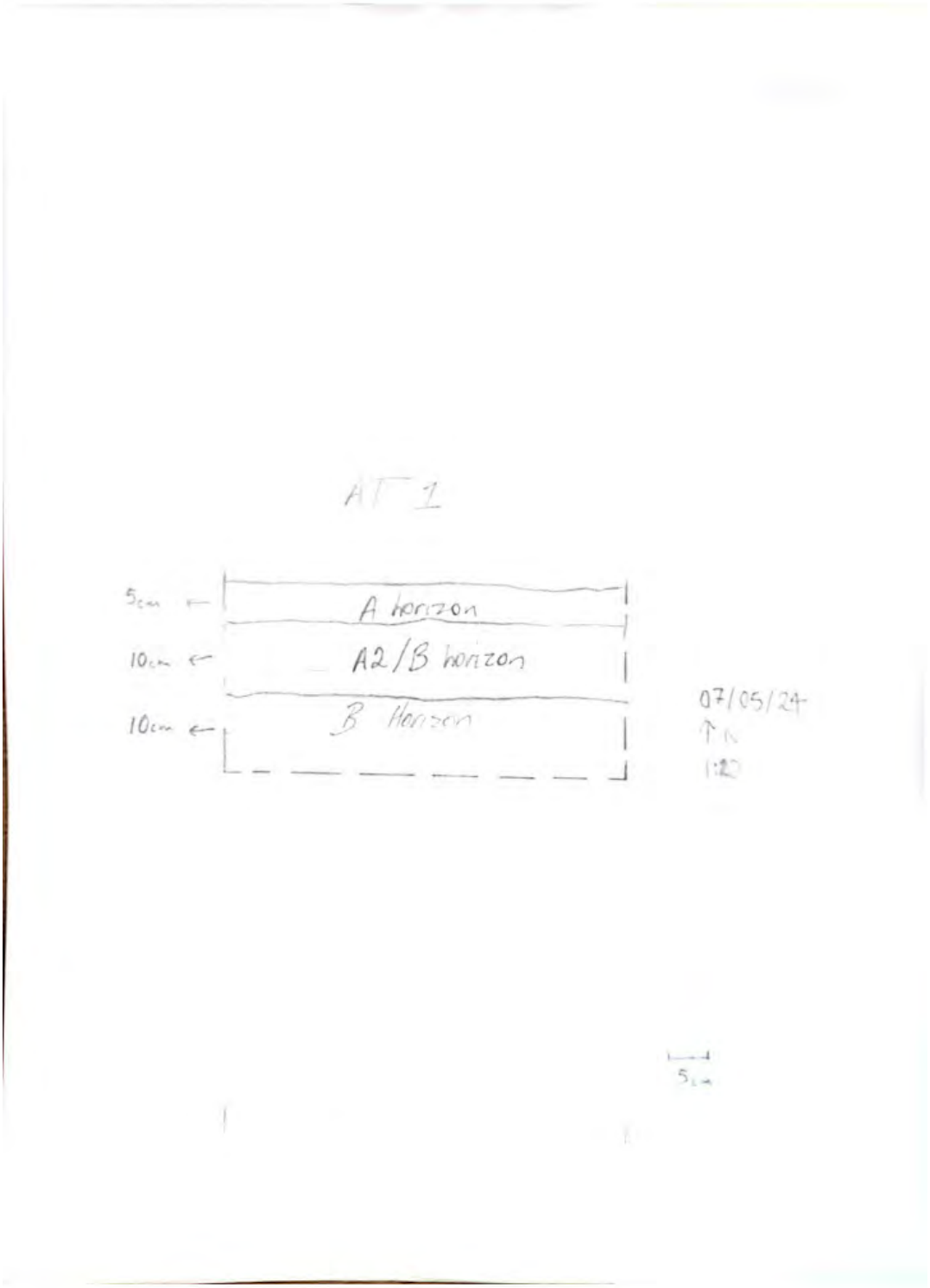
Photographs:

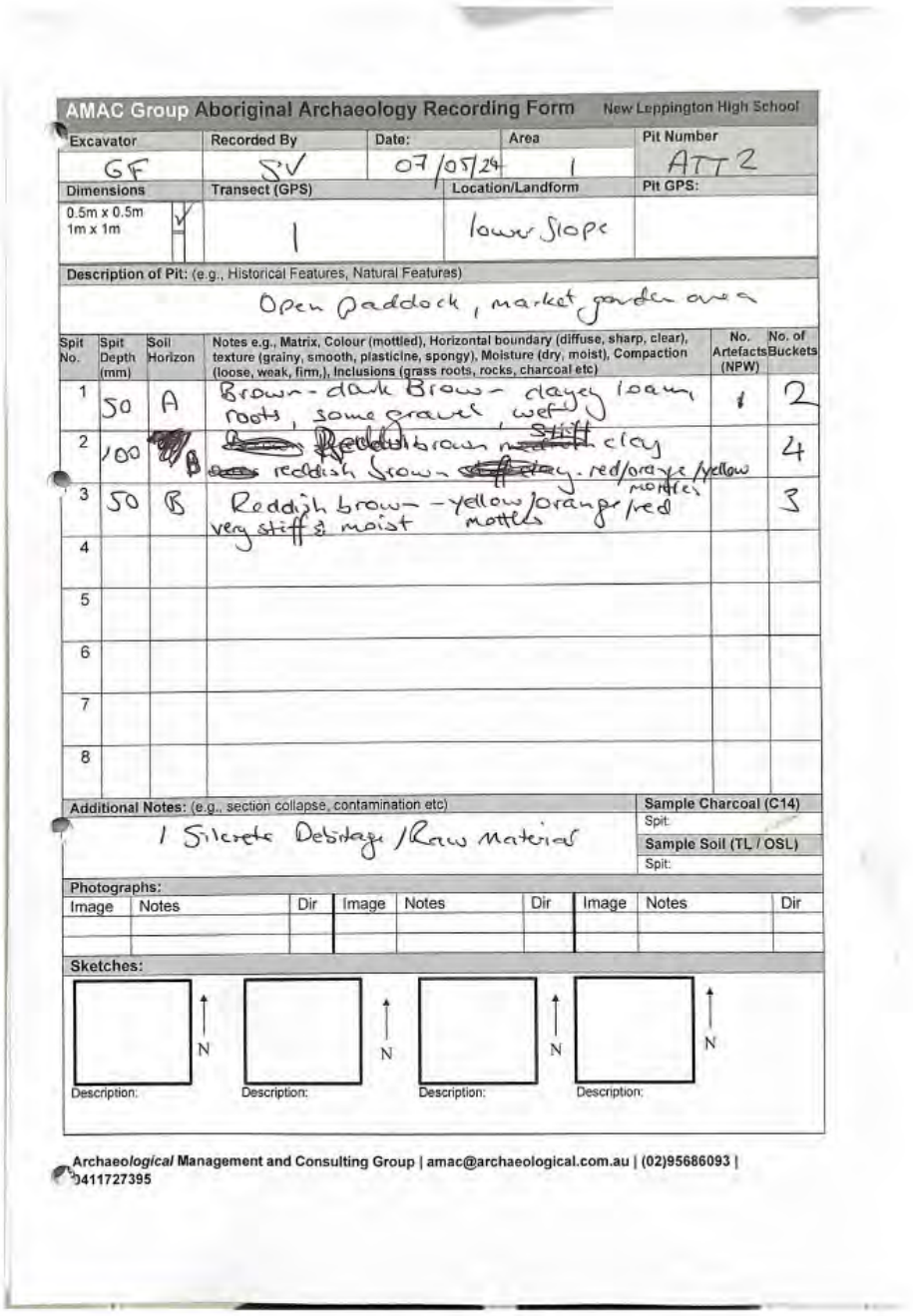
Image	Notes	Dir	Image	Notes	Dir	Image	Notes	Dir

Sketches:

N Description: N Description: N Description: N Description:

Archaeological Management and Consulting Group | amac@archaeological.com.au | (02)95686093 | 0411727395


AT 1
5cm
A horizon
10cm
A2/B horizon
10cm
B Horizon
07/05/24
1:20
5cm



AMAC Group Aboriginal Archaeology Recording Form New Leppington High School

Excavator	Recorded By	Date:	Area	Pit Number
GF	SV	07/05/24	1	ATT 2

Dimensions	Transect (GPS)	Location/Landform	Pit GPS:
0.5m x 0.5m ✓ 1m x 1m	1	lower Slope	

Description of Pit: (e.g., Historical Features, Natural Features)

Open paddock, market garden area

Spit No.	Spit Depth (mm)	Soil Horizon	Notes e.g., Matrix, Colour (mottled), Horizontal boundary (diffuse, sharp, clear), texture (grainy, smooth, plasticine, spongy), Moisture (dry, moist), Compaction (loose, weak, firm,), Inclusions (grass roots, rocks, charcoal etc)	No. Artefacts (NPW)	No. of Buckets
1	50	A	Brown - dark Brown - clayey loam, roots, some gravel, wet	1	2
2	100	B	~~Brown~~ ~~Reddish~~ brown ~~medium~~ ~~stiff~~ clay ~~brown~~ reddish brown - ~~clay~~ clay. red/orange/yellow mottles		4
3	50	B	Reddish brown - yellow/orange/red mottles very stiff & moist		3
4					
5					
6					
7					
8					

Additional Notes: (e.g., section collapse, contamination etc)

1 Silcrete Debitage / Raw Material

Sample Charcoal (C14) Spit:

Sample Soil (TL / OSL) Spit:

Photographs:

Image	Notes	Dir	Image	Notes	Dir	Image	Notes	Dir

Sketches:

Description: Description: Description: Description:

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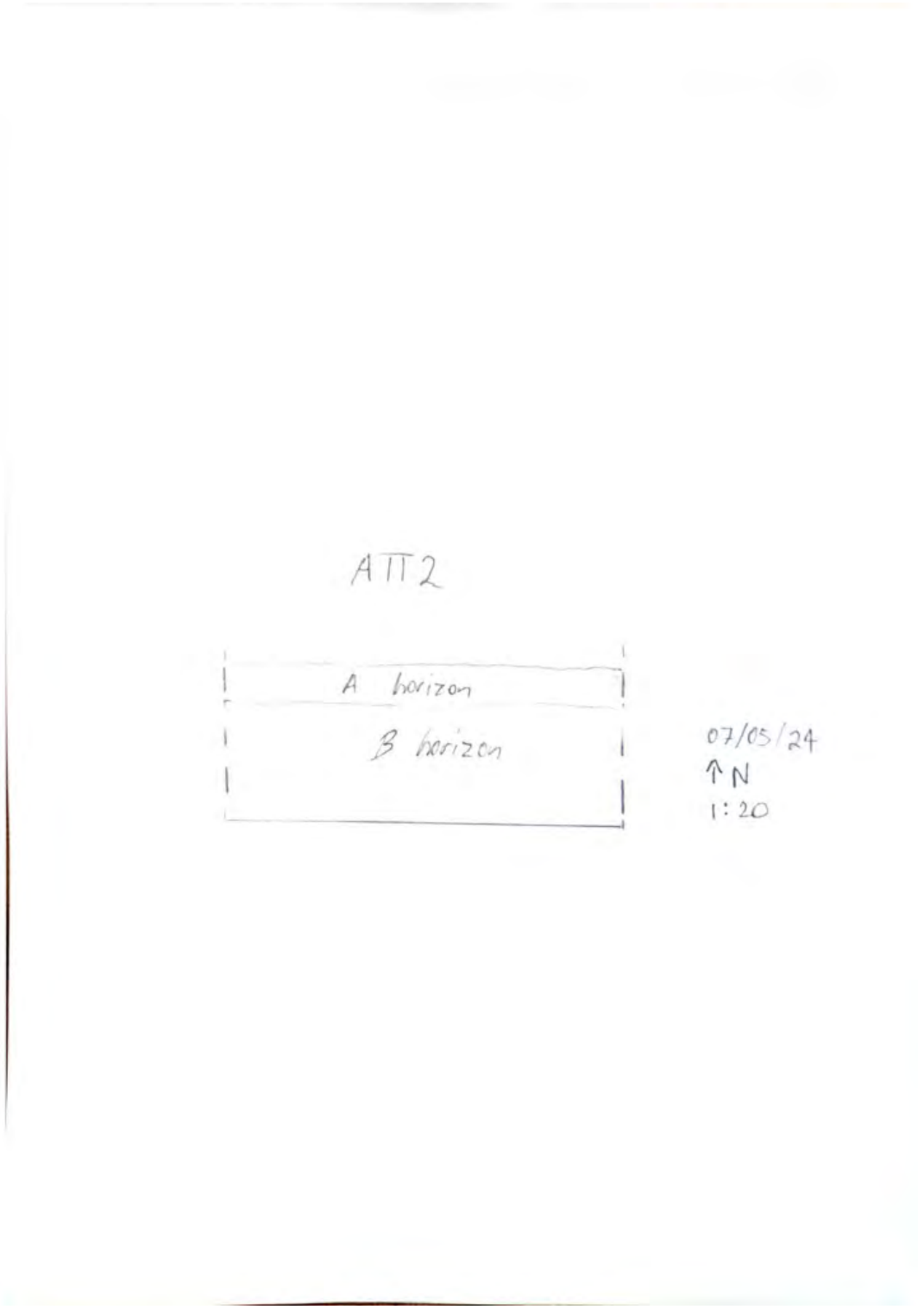
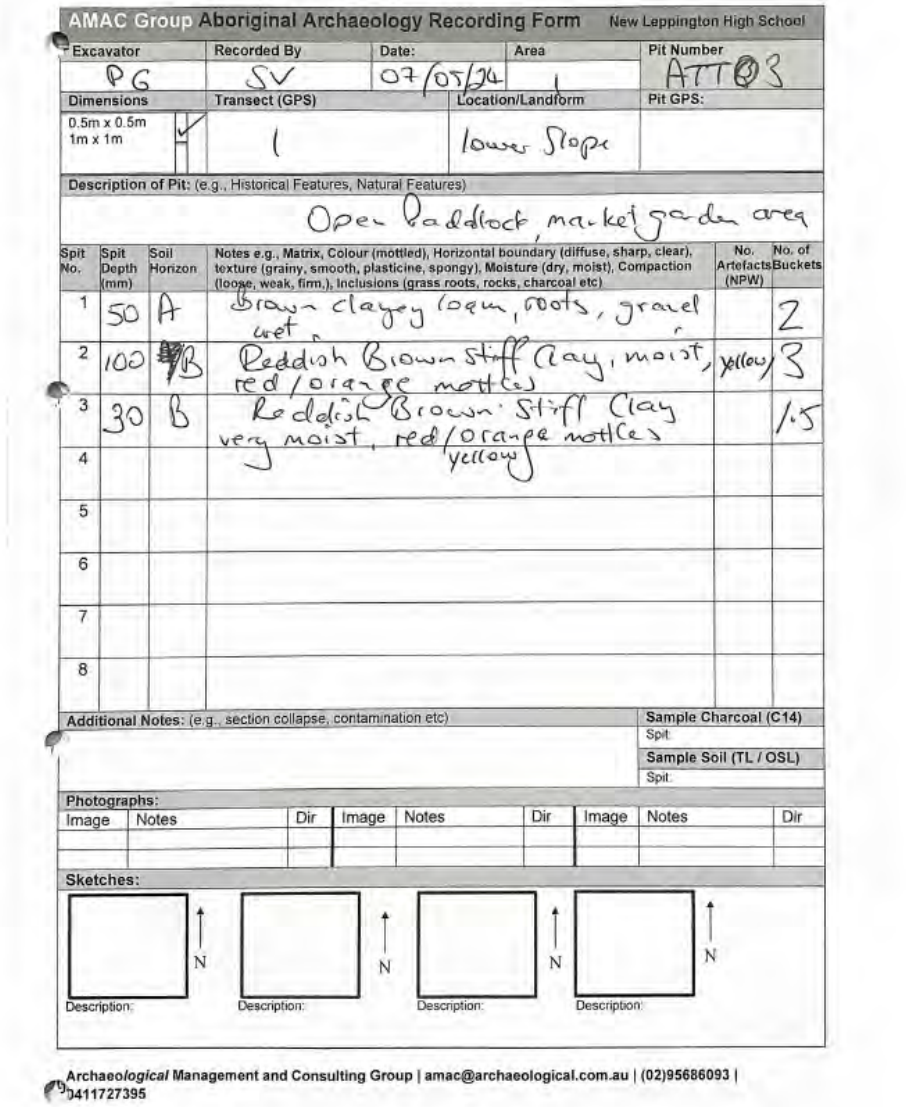

AT2
A horizon
B horizon
07/05/24
↑N
1:20



AMAC Group Aboriginal Archaeology Recording Form New Leppington High School

Excavator	Recorded By	Date:	Area	Pit Number
PG	SV	07/05/24	1	ATT03

Dimensions	Transect (GPS)	Location/Landform	Pit GPS:
0.5m x 0.5m ✓ 1m x 1m	1	lower Slope	

Description of Pit: (e.g., Historical Features, Natural Features)

Open paddock, market garden area

Spit No.	Spit Depth (mm)	Soil Horizon	Notes e.g., Matrix, Colour (mottled), Horizontal boundary (diffuse, sharp, clear), texture (grainy, smooth, plasticine, spongy), Moisture (dry, moist), Compaction (loose, weak, firm,), Inclusions (grass roots, rocks, charcoal etc)	No. Artefacts (NPW)	No. of Buckets
1	50	A	Brown clayey loam, roots, gravel wet		2
2	100	A/B	Reddish Brown stiff clay, moist, red/orange mottles	yellow	3
3	30	B	Reddish Brown stiff clay very moist, red/orange mottles yellow		1.5
4					
5					
6					
7					
8					

Additional Notes: (e.g., section collapse, contamination etc)

Sample Charcoal (C14) Spit:

Sample Soil (TL / OSL) Spit:

Photographs:

Image	Notes	Dir	Image	Notes	Dir	Image	Notes	Dir

Sketches:

N Description:

N Description:

N Description:

N Description:

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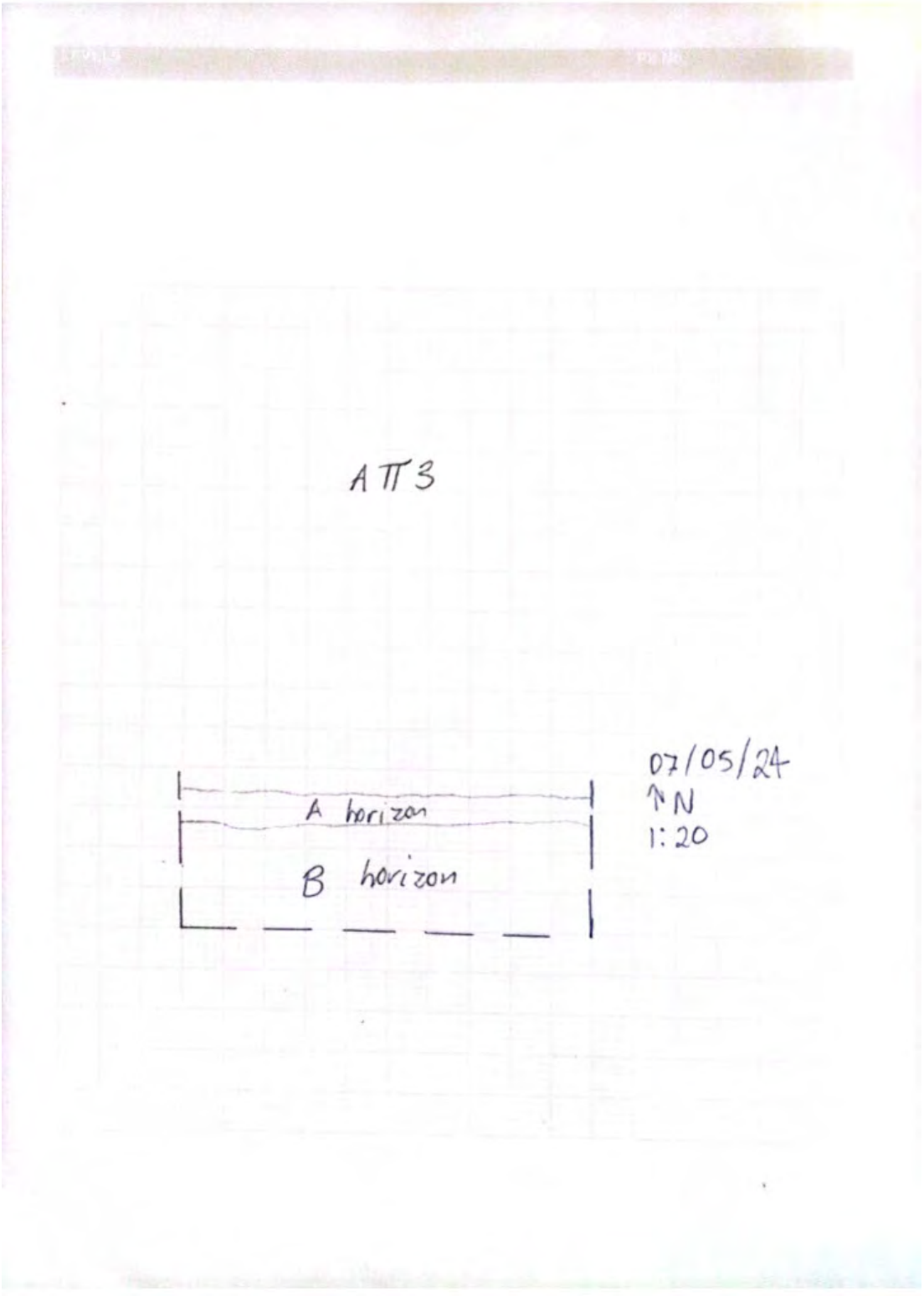
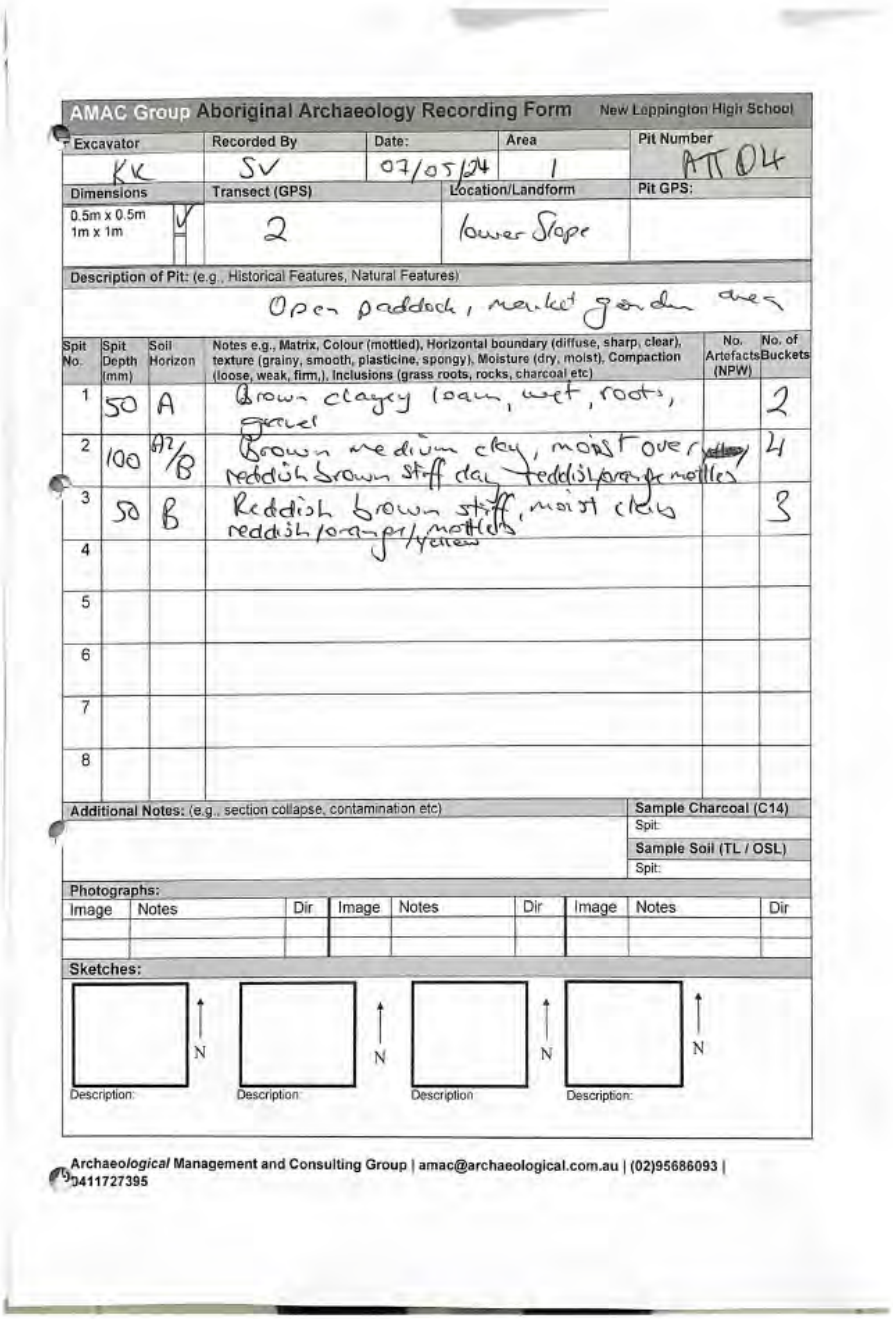

AT3
A horizon
B horizon
07/05/24
N
1:20



AMAC Group Aboriginal Archaeology Recording Form New Leppington High School

Excavator	Recorded By	Date:	Area	Pit Number
KK	SV	07/05/24	1	AT04

Dimensions	Transect (GPS)	Location/Landform	Pit GPS:
0.5m x 0.5m 1m x 1m	2	lower Slope	

Description of Pit: (e.g., Historical Features, Natural Features)

Open paddock, market garden area

Spit No.	Spit Depth (mm)	Soil Horizon	Notes e.g., Matrix, Colour (mottled), Horizontal boundary (diffuse, sharp, clear), texture (grainy, smooth, plasticine, spongy), Moisture (dry, moist), Compaction (loose, weak, firm,), Inclusions (grass roots, rocks, charcoal etc)	No. Artefacts (NPW)	No. of Buckets
1	50	A	Brown clayey loam, wet, roots, gravel		2
2	100	A2/B	Brown medium clay, moist over reddish brown stiff clay reddish/orange mottles		4
3	50	B	Reddish brown stiff, moist clay reddish/orange/yellow mottles		3
4					
5					
6					
7					
8					

Additional Notes: (e.g., section collapse, contamination etc)

Sample Charcoal (C14) Spit:

Sample Soil (TL / OSL) Spit:

Photographs:

Image	Notes	Dir	Image	Notes	Dir	Image	Notes	Dir

Sketches:

N Description:

N Description:

N Description

N Description:

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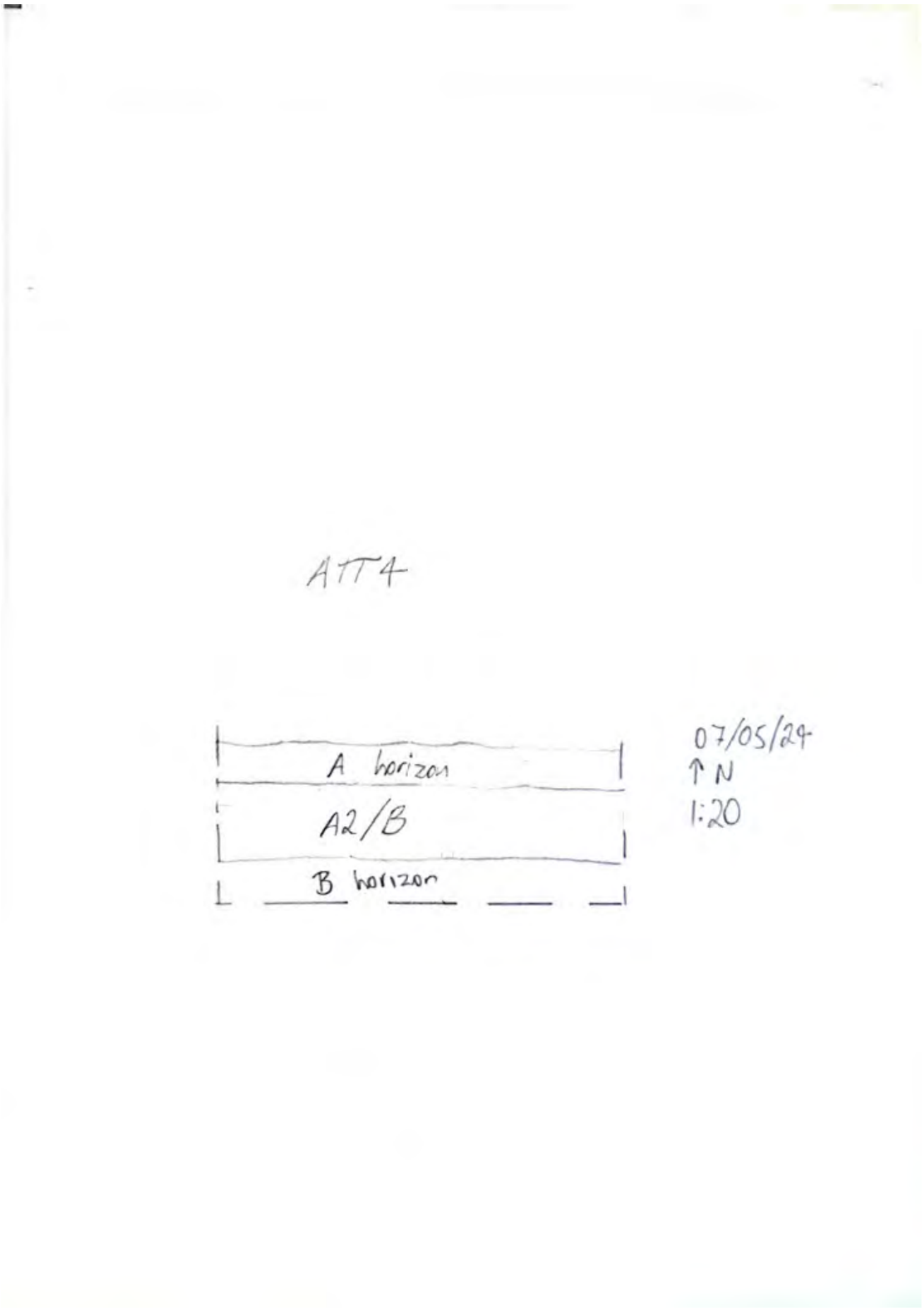

AT4
A horizon
A2/B
B horizon
07/05/24
↑N
1:20

AMAC Group Aboriginal Archaeology Recording Form New Leppington High School

Excavator	Recorded By	Date:	Area	Pit Number
GF	SV	07/05/24	1	AT05

Dimensions	Transect (GPS)	Location/Landform	Pit GPS:
0.5m x 0.5m 1m x 1m	2	lower Slope	

Description of Pit: (e.g., Historical Features, Natural Features)

Open Paddock, market garden area

Spit No.	Spit Depth (mm)	Soil Horizon	Notes e.g., Matrix, Colour (mottled), Horizontal boundary (diffuse, sharp, clear), texture (grainy, smooth, plasticine, spongy), Moisture (dry, moist), Compaction (loose, weak, firm,), Inclusions (grass roots, rocks, charcoal etc)	No. Artefacts (NPW)	No. of Buckets
1	50	A1/B	Brown Clay loam over reddish brown stiff clay reddish/orange mottles		2
2	~~50~~ 70	B	Reddish Brown stiff clay, moist reddish/orange/yellow mottles		3
3					
4					
5					
6					
7					
8					

Additional Notes: (e.g., section collapse, contamination etc)

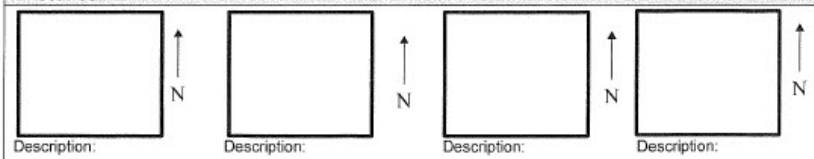
Sample Charcoal (C14)
Spit:

Sample Soil (TL / OSL)
Spit:

Photographs:

Image	Notes	Dir	Image	Notes	Dir	Image	Notes	Dir

Sketches:



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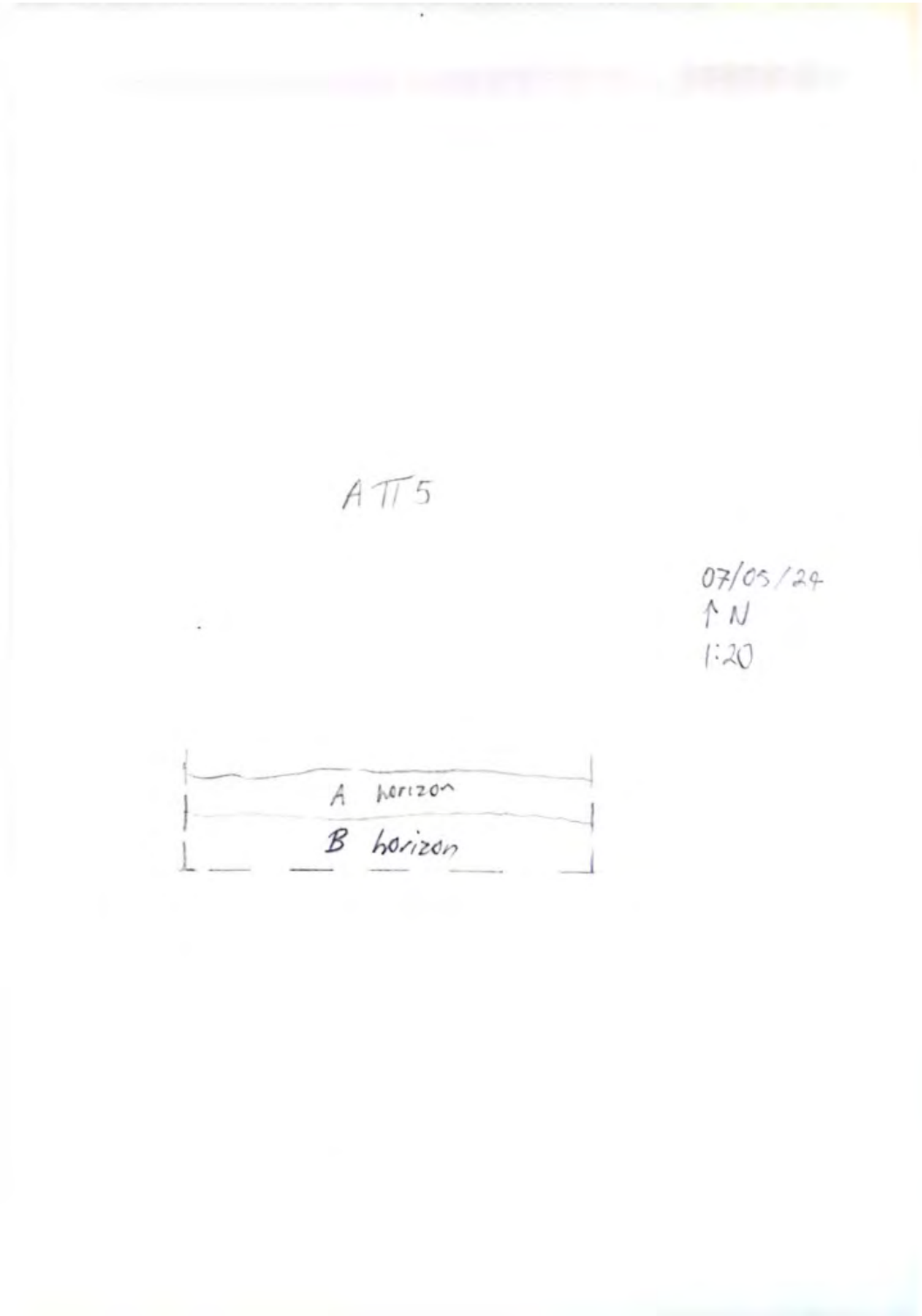
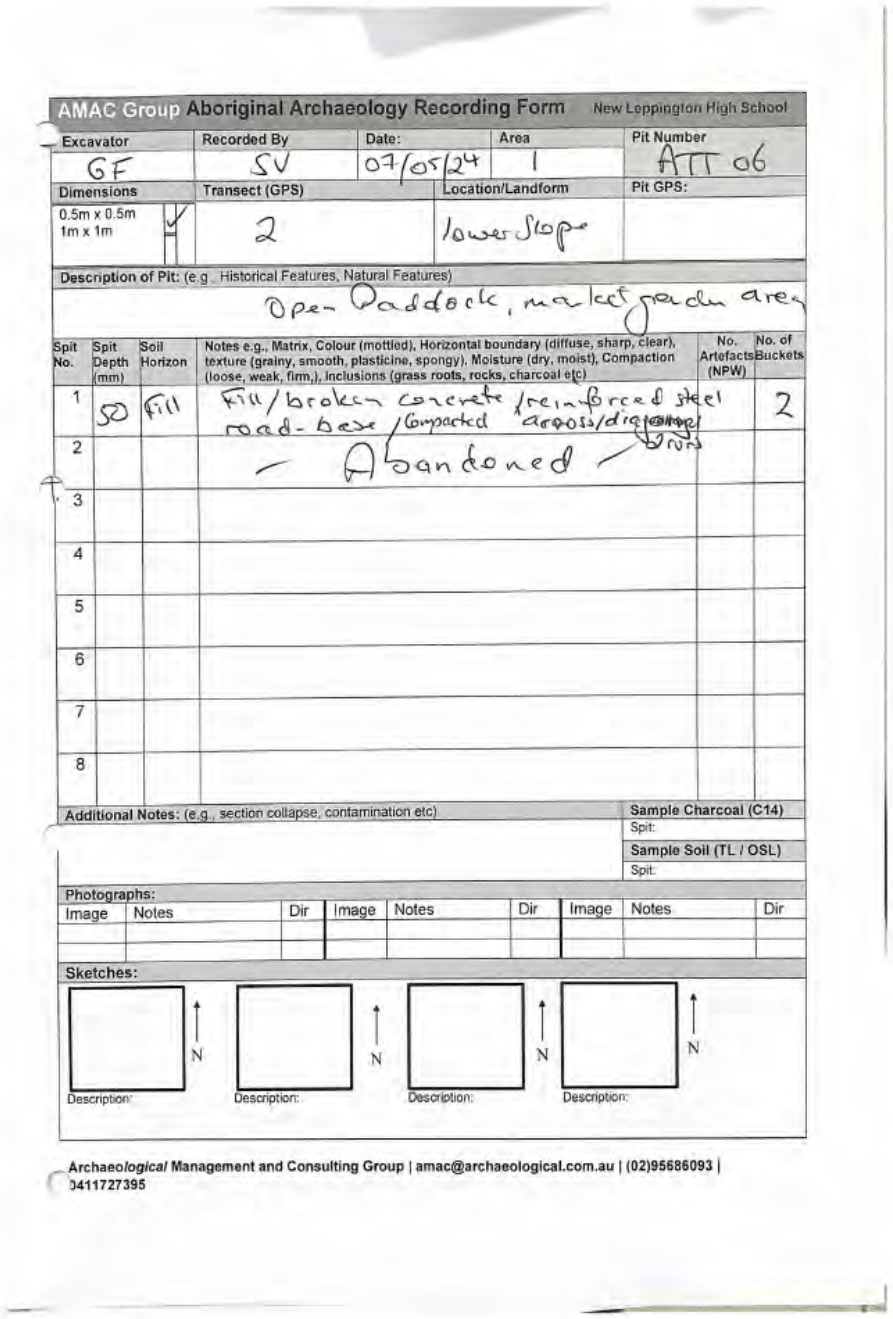

AT5
07/05/24
↑N
1:20
A horizon
B horizon



AMAC Group Aboriginal Archaeology Recording Form New Leppington High School

Excavator	Recorded By	Date:	Area	Pit Number
GF	SV	07/05/24	1	ATT 06

Dimensions	Transect (GPS)	Location/Landform	Pit GPS:
0.5m x 0.5m ✓ 1m x 1m	2	lower Slope	

Description of Pit: (e.g., Historical Features, Natural Features)
Open Paddock, market garden area

Spit No.	Spit Depth (mm)	Soil Horizon	Notes e.g., Matrix, Colour (mottled), Horizontal boundary (diffuse, sharp, clear), texture (grainy, smooth, plasticine, spongy), Moisture (dry, moist), Compaction (loose, weak, firm,), Inclusions (grass roots, rocks, charcoal etc)	No. Artefacts (NPW)	No. of Buckets
1	50	Fill	Fill/broken concrete/reinforced steel road-base/compacted across/dirt		2
2			– Abandoned –		
3					
4					
5					
6					
7					
8					

Additional Notes: (e.g., section collapse, contamination etc)

Sample Charcoal (C14) Spit:
Sample Soil (TL / OSL) Spit:

Photographs:

Image	Notes	Dir	Image	Notes	Dir	Image	Notes	Dir

Sketches:

N Description: N Description: N Description: N Description:

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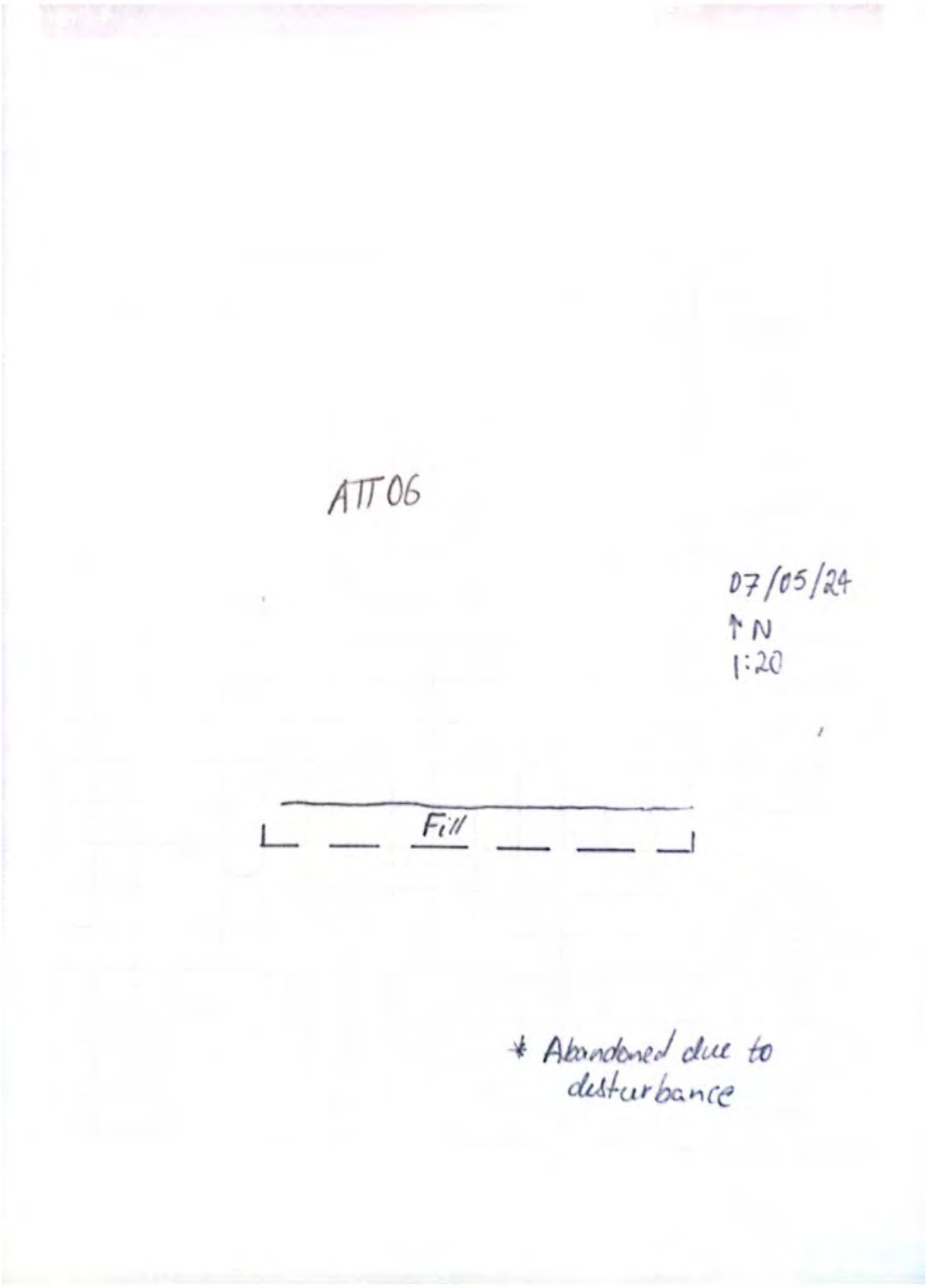
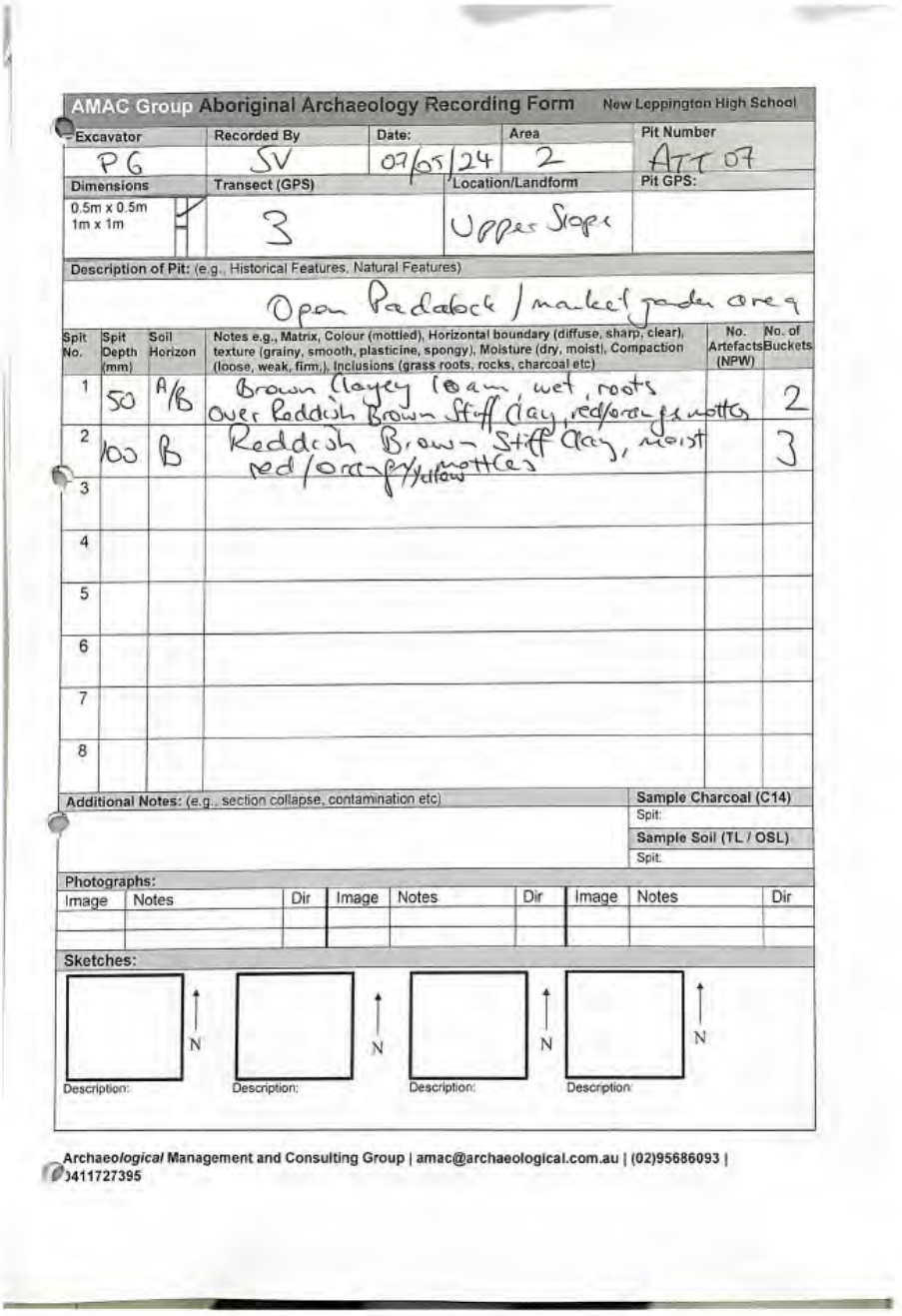

AT06
07/05/24
N
1:20
Fill
* Abandoned due to disturbance



AMAC Group Aboriginal Archaeology Recording Form New Leppington High School

Excavator	Recorded By	Date:	Area	Pit Number
PG	SV	07/05/24	2	ATT 07

Dimensions	Transect (GPS)	Location/Landform	Pit GPS:
0.5m x 0.5m 1m x 1m	3	Upper Slope	

Description of Pit: (e.g., Historical Features, Natural Features)

Open Paddock / market garden area

Spit No.	Spit Depth (mm)	Soil Horizon	Notes e.g., Matrix, Colour (mottled), Horizontal boundary (diffuse, sharp, clear), texture (grainy, smooth, plasticine, spongy), Moisture (dry, moist), Compaction (loose, weak, firm;), Inclusions (grass roots, rocks, charcoal etc)	No. Artefacts (NPW)	No. of Buckets
1	50	A/B	Brown clayey loam, wet, roots over Reddish Brown stiff clay, red/orange mottles		2
2	100	B	Reddish Brown- Stiff clay, moist red/orange/yellow mottles		3
3					
4					
5					
6					
7					
8					

Additional Notes: (e.g., section collapse, contamination etc)

Sample Charcoal (C14) Spit:

Sample Soil (TL / OSL) Spit:

Photographs:

Image	Notes	Dir	Image	Notes	Dir	Image	Notes	Dir

Sketches:

N Description:

N Description:

N Description:

N Description:

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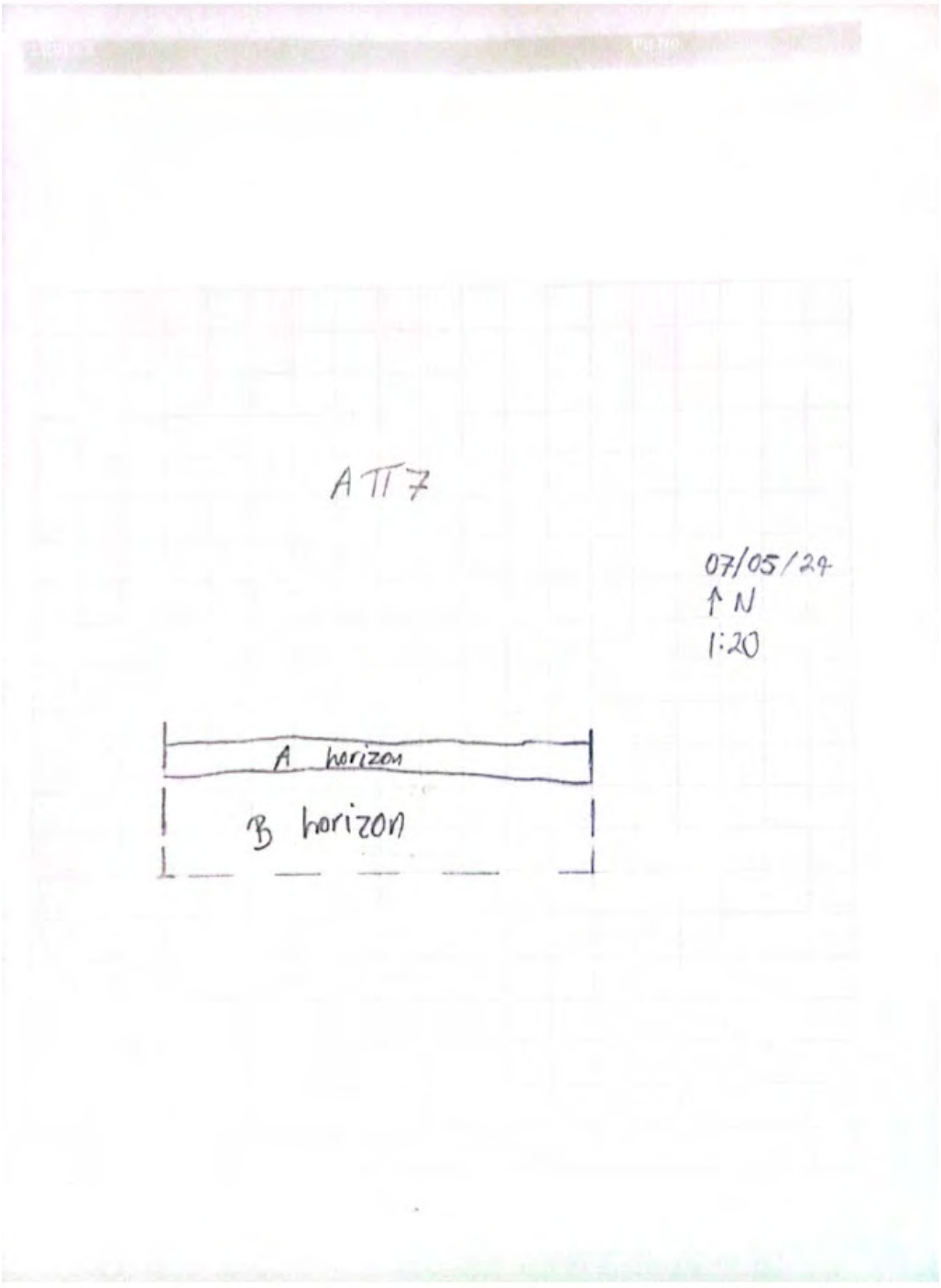
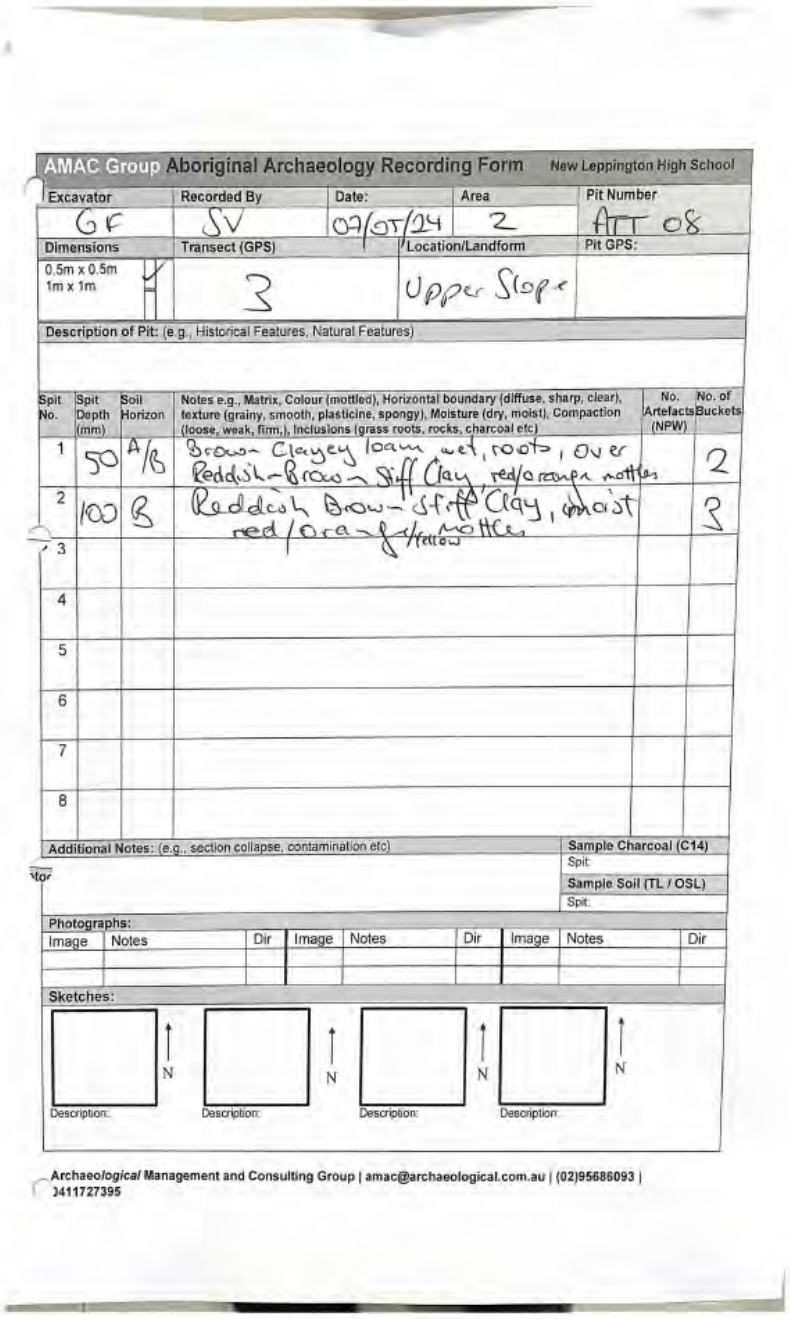

AT7
07/05/24
↑N
1:20
A horizon
B horizon



AMAC Group Aboriginal Archaeology Recording Form New Leppington High School

Excavator	Recorded By	Date:	Area	Pit Number
GF	SV	07/07/24	2	ATT 08

Dimensions	Transect (GPS)	Location/Landform	Pit GPS:
0.5m x 0.5m 1m x 1m	3	Upper Slope	

Description of Pit: (e.g., Historical Features, Natural Features)

Spit No.	Spit Depth (mm)	Soil Horizon	Notes e.g., Matrix, Colour (mottled), Horizontal boundary (diffuse, sharp, clear), texture (grainy, smooth, plasticine, spongy), Moisture (dry, moist), Compaction (loose, weak, firm,), Inclusions (grass roots, rocks, charcoal etc)	No. Artefacts (NPW)	No. of Buckets
1	50	A/B	Brown Clayey loam wet, roots, over Reddish-Brown Stiff Clay, red/orange mottles		2
2	100	B	Reddish Brow- stiff Clay, moist red/orange mottles		3
3					
4					
5					
6					
7					
8					

Additional Notes: (e.g., section collapse, contamination etc)

Sample Charcoal (C14) Spit:

Sample Soil (TL / OSL) Spit:

Photographs:

Image	Notes	Dir	Image	Notes	Dir	Image	Notes	Dir

Sketches:

N Description:

N Description:

N Description:

N Description:

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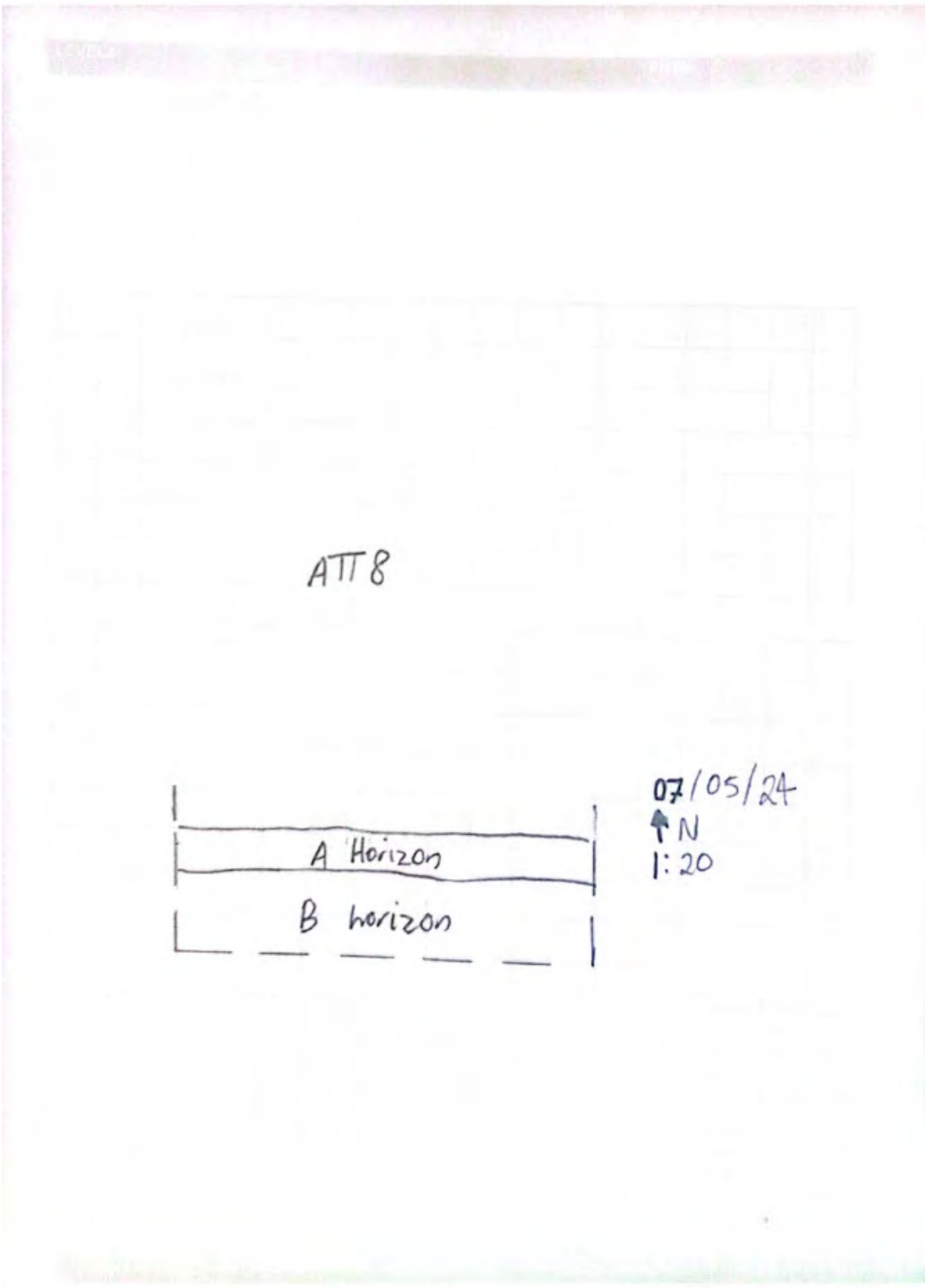
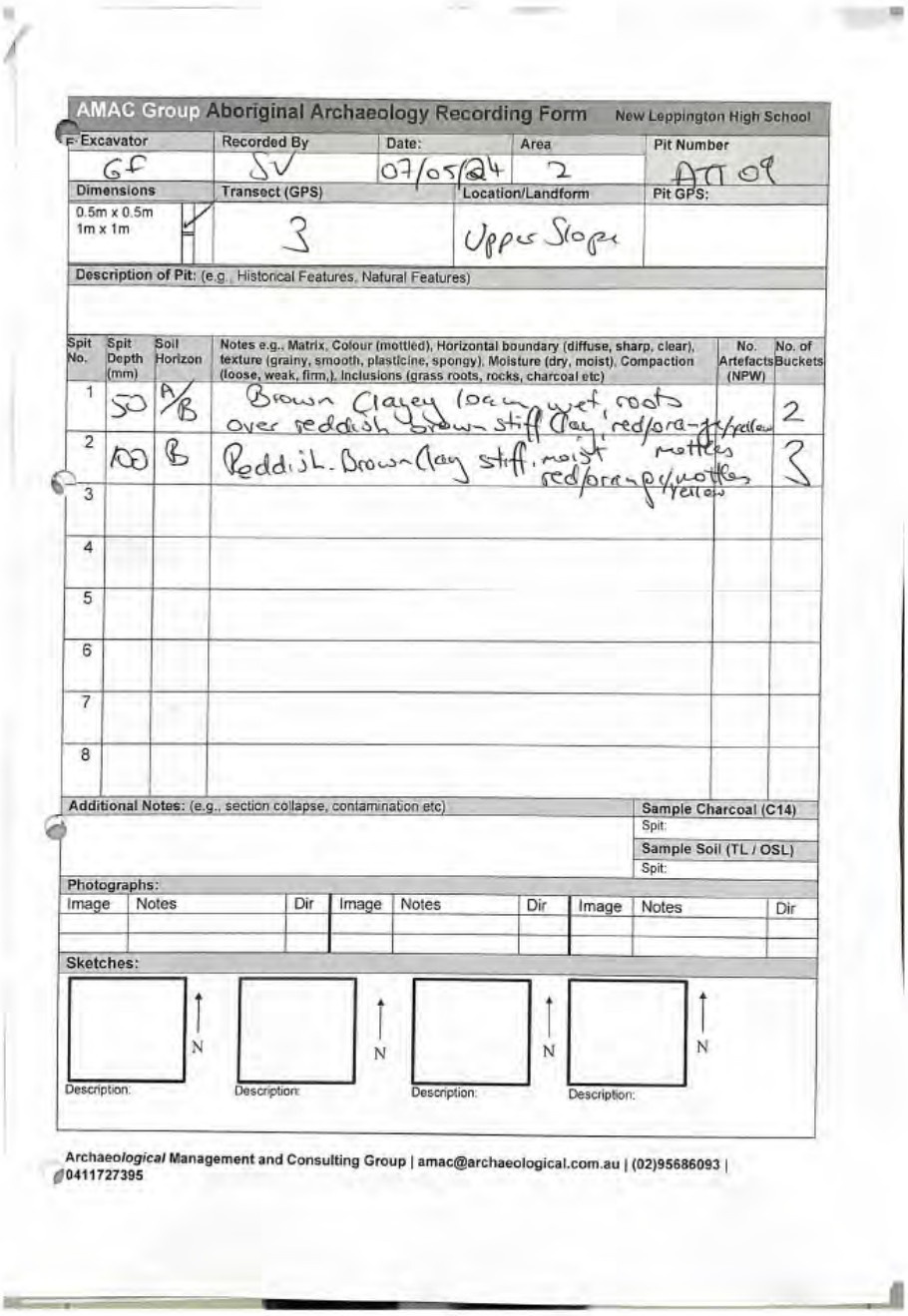

ATT 8
A Horizon
B horizon
07/05/24
N
1:20



AMAC Group Aboriginal Archaeology Recording Form New Leppington High School

Excavator	Recorded By	Date:	Area	Pit Number
GF	SV	07/05/24	2	AT 09

Dimensions	Transect (GPS)	Location/Landform	Pit GPS:
0.5m x 0.5m 1m x 1m	3	Upper Slope	

Description of Pit: (e.g., Historical Features, Natural Features)

Spit No.	Spit Depth (mm)	Soil Horizon	Notes e.g., Matrix, Colour (mottled), Horizontal boundary (diffuse, sharp, clear), texture (grainy, smooth, plasticine, spongy), Moisture (dry, moist), Compaction (loose, weak, firm,), Inclusions (grass roots, rocks, charcoal etc)	No. Artefacts (NPW)	No. of Buckets
1	50	A/B	Brown Clayey loam wet, roots over reddish brown stiff clay, red/ora-[illegible]/yellow		2
2	100	B	Reddish Brown Clay stiff, moist red/orange/yellow mottles		3
3					
4					
5					
6					
7					
8					

Additional Notes: (e.g., section collapse, contamination etc)

Sample Charcoal (C14) Spit:

Sample Soil (TL / OSL) Spit:

Photographs:

Image	Notes	Dir	Image	Notes	Dir	Image	Notes	Dir

Sketches:

N Description:

N Description:

N Description:

N Description:

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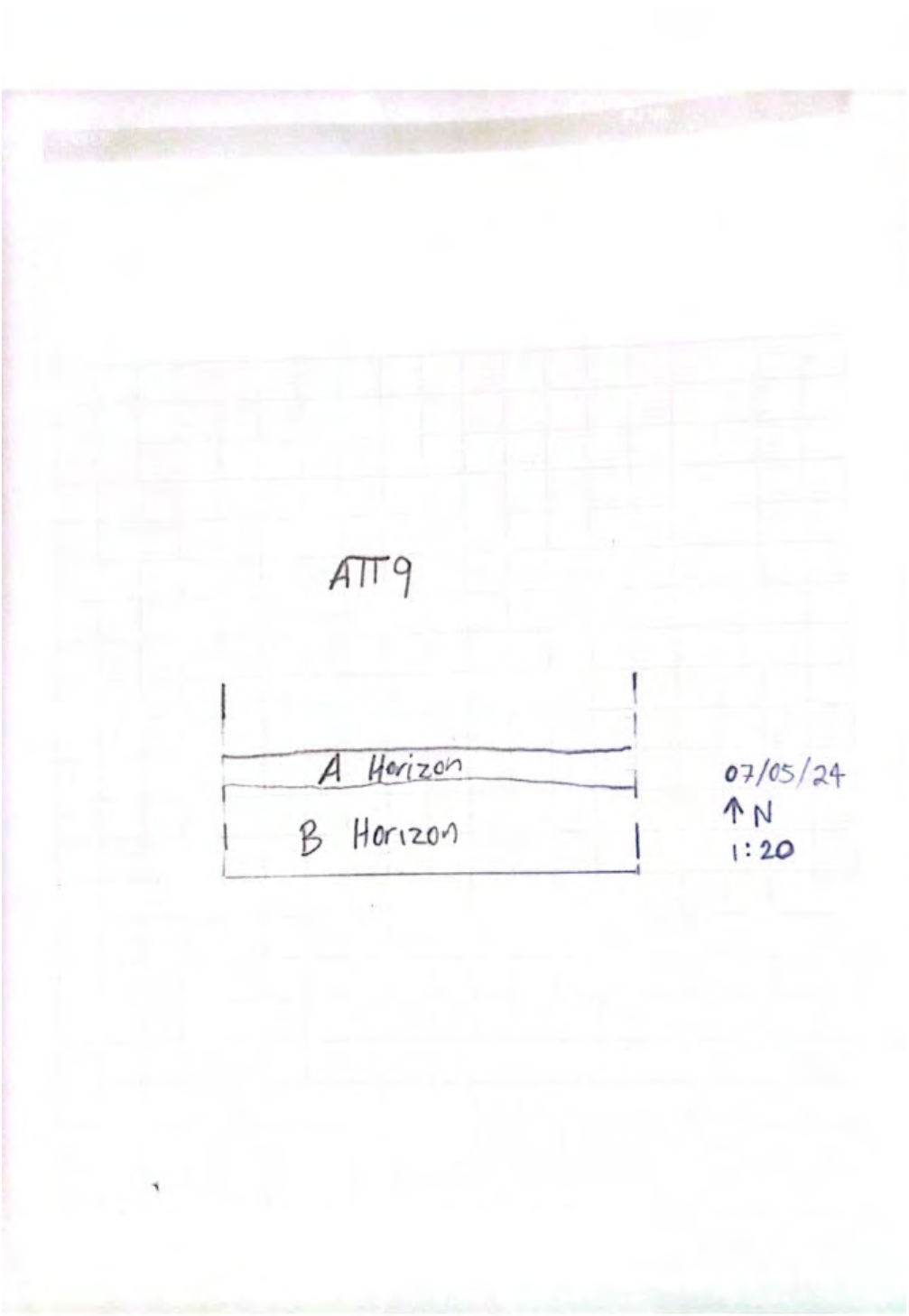
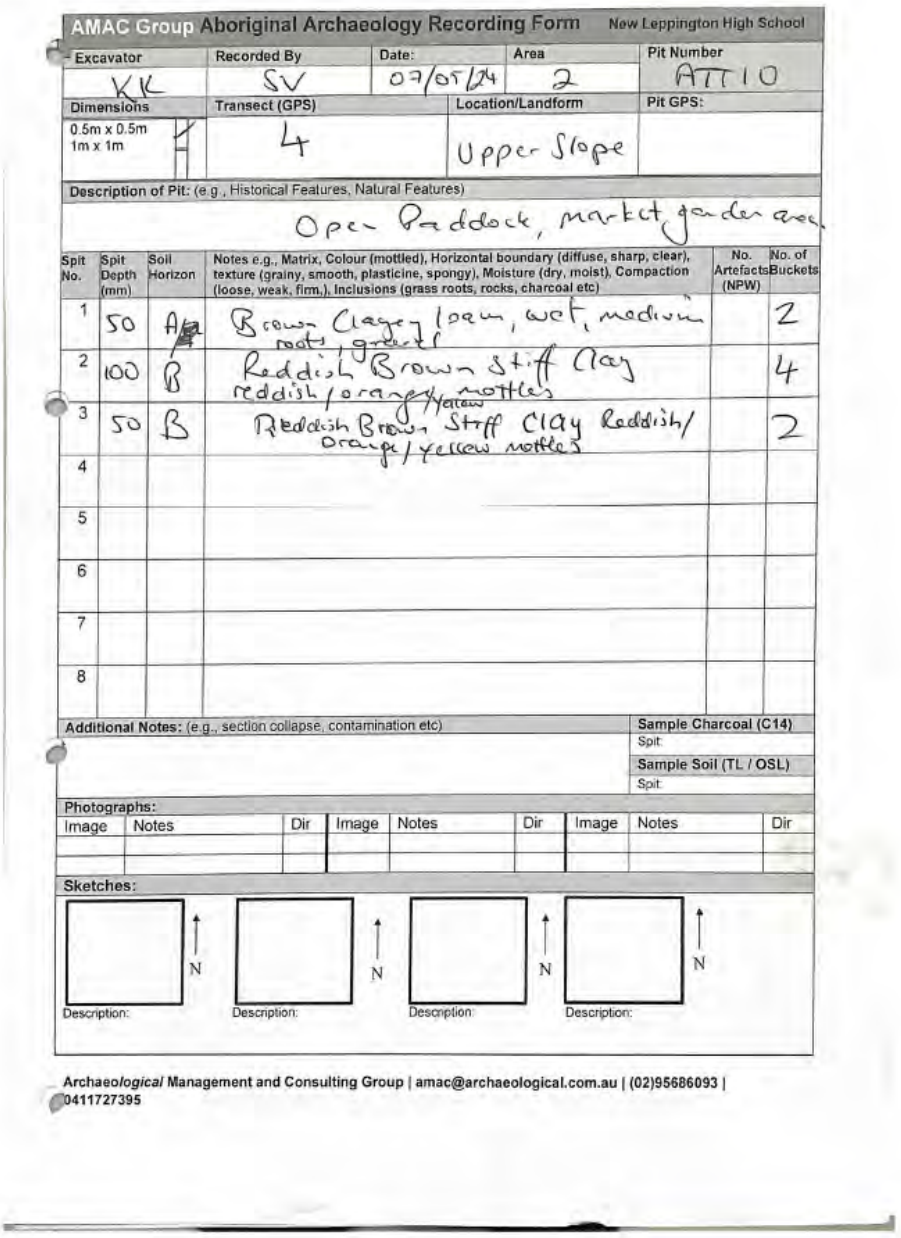

ATT9
A Horizon
B Horizon
07/05/24
↑N
1:20



AMAC Group Aboriginal Archaeology Recording Form New Leppington High School

Excavator	Recorded By	Date:	Area	Pit Number
KK	SV	07/05/24	2	ATT 10

Dimensions	Transect (GPS)	Location/Landform	Pit GPS:
0.5m x 0.5m 1m x 1m	4	Upper Slope	

Description of Pit: (e.g., Historical Features, Natural Features)

Open Paddock, market garden area.

Spit No.	Spit Depth (mm)	Soil Horizon	Notes e.g., Matrix, Colour (mottled), Horizontal boundary (diffuse, sharp, clear), texture (grainy, smooth, plasticine, spongy), Moisture (dry, moist), Compaction (loose, weak, firm,), Inclusions (grass roots, rocks, charcoal etc)	No. Artefacts (NPW)	No. of Buckets
1	50	A	Brown Clayey loam, wet, medium roots, gravel		2
2	100	B	Reddish Brown stiff clay reddish/orange/yellow mottles		4
3	50	B	Reddish Brown Stiff Clay Reddish/ Orange/yellow mottles		2
4					
5					
6					
7					
8					

Additional Notes: (e.g., section collapse, contamination etc)

Sample Charcoal (C14) Spit:

Sample Soil (TL / OSL) Spit:

Photographs:

Image	Notes	Dir	Image	Notes	Dir	Image	Notes	Dir

Sketches:

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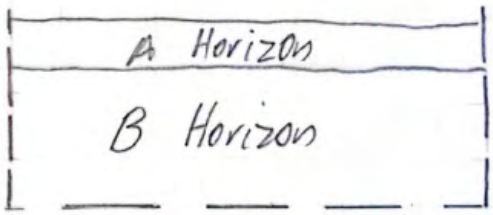
ATT 10



07/05/24
↑ N
1:20

AMAC Group Aboriginal Archaeology Recording Form New Leppington High School

Excavator	Recorded By	Date:	Area	Pit Number
GF	SV	07/05/24	2	AT11

Dimensions	Transect (GPS)	Location/Landform	Pit GPS:
0.5m x 0.5m 1m x 1m ✓	4	Upper Slope	

Description of Pit: (e.g., Historical Features, Natural Features)

Open Paddock / market garden area

Spit No.	Spit Depth (mm)	Soil Horizon	Notes e.g., Matrix, Colour (mottled), Horizontal boundary (diffuse, sharp, clear), texture (grainy, smooth, plasticine, spongy), Moisture (dry, moist), Compaction (loose, weak, firm.), Inclusions (grass roots, rocks, charcoal etc)	No. Artefacts (NPW)	No. of Buckets
1	50	A/B	Brown clayey loam wet, roots over Reddish Brown stiff clay red/orange/yellow mottles		2
2	100	B	Reddish Brown Stiff clay, moist reddish/orange/yellow mottles		3
3					
4					
5					
6					
7					
8					

Additional Notes: (e.g., section collapse, contamination etc)

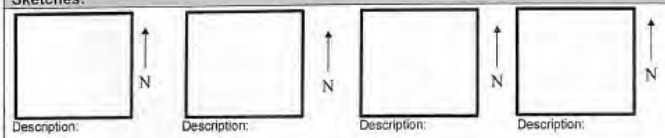
Sample Charcoal (C14) Spit:

Sample Soil (TL / OSL) Spit:

Photographs:

Image	Notes	Dir	Image	Notes	Dir	Image	Notes	Dir

Sketches:



Description: Description: Description: Description:

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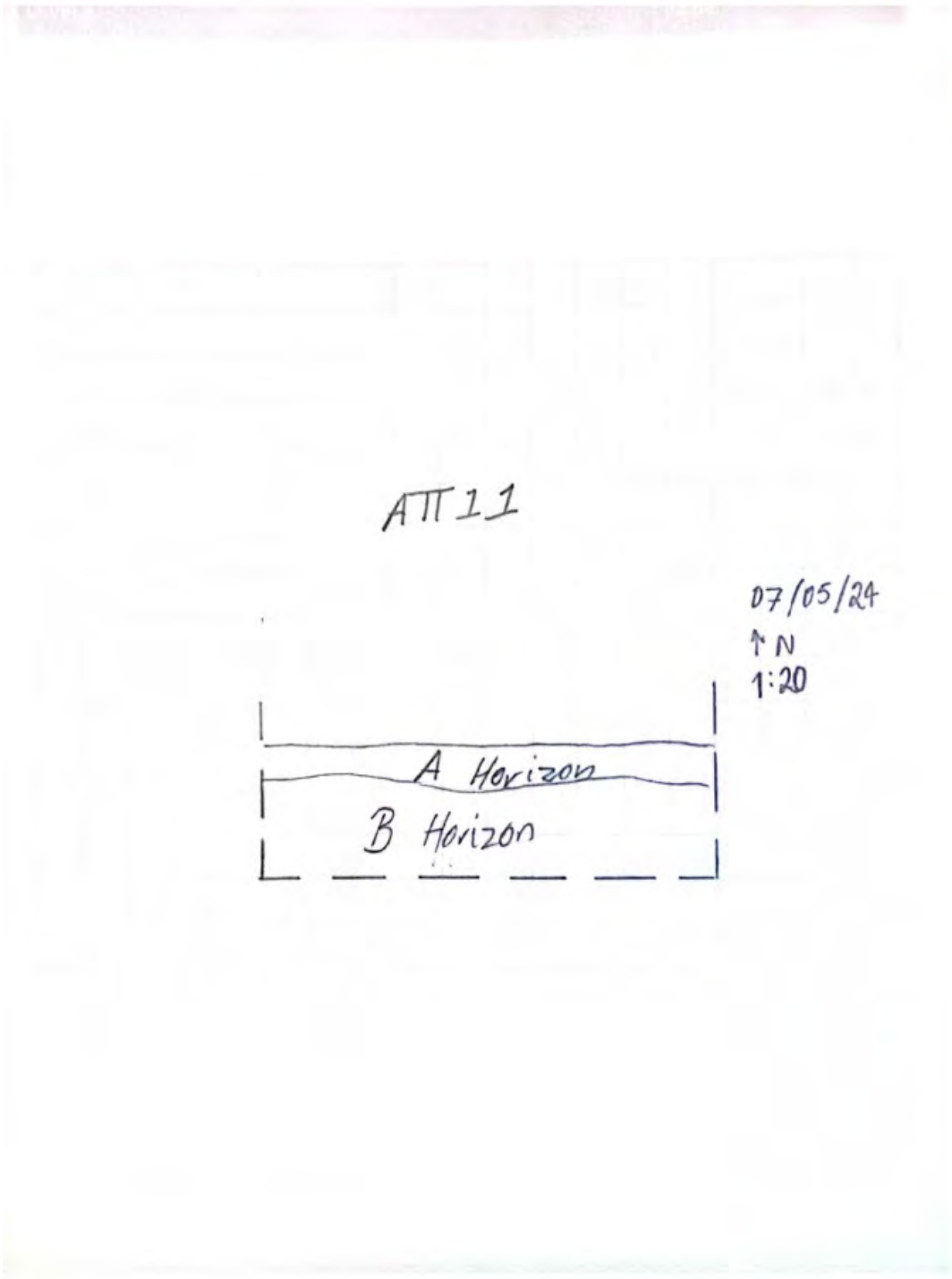
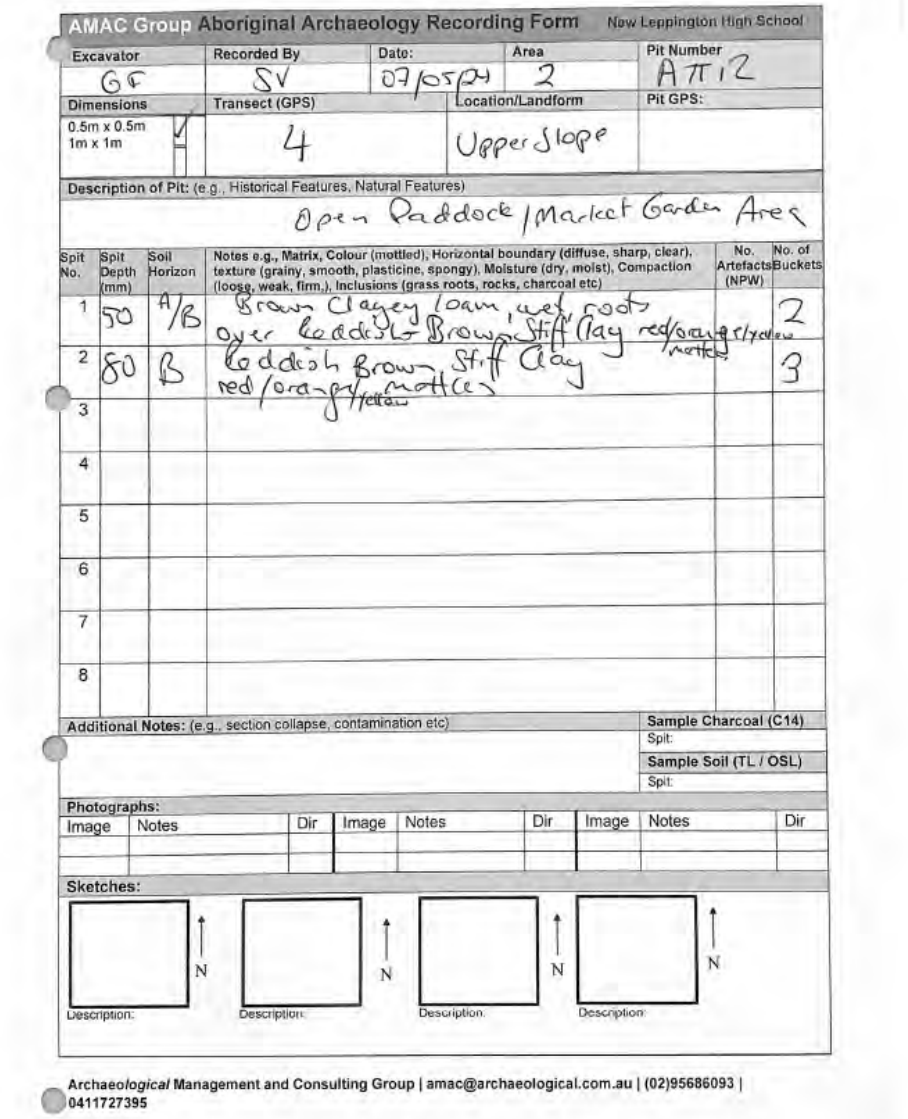

ATT 1
07/05/24
N
1:20
A Horizon
B Horizon



AMAC Group Aboriginal Archaeology Recording Form New Leppington High School

Excavator	Recorded By	Date:	Area	Pit Number
GF	SV	07/05/24	2	AT12

Dimensions	Transect (GPS)	Location/Landform	Pit GPS:
0.5m x 0.5m ✓ 1m x 1m	4	Upper Slope	

Description of Pit: (e.g., Historical Features, Natural Features)
Open Paddock / Market Garden Area

Spit No.	Spit Depth (mm)	Soil Horizon	Notes e.g., Matrix, Colour (mottled), Horizontal boundary (diffuse, sharp, clear), texture (grainy, smooth, plasticine, spongy), Moisture (dry, moist), Compaction (loose, weak, firm,), Inclusions (grass roots, rocks, charcoal etc)	No. Artefacts (NPW)	No. of Buckets
1	50	A/B	Brown Clayey loam, wet roots over Reddish Brown Stiff Clay red/orange/yellow mottles		2
2	80	B	Reddish Brown Stiff Clay red/orange/yellow mottles		3
3					
4					
5					
6					
7					
8					

Additional Notes: (e.g., section collapse, contamination etc)

Sample Charcoal (C14) Spit:

Sample Soil (TL / OSL) Spit:

Photographs:

Image	Notes	Dir	Image	Notes	Dir	Image	Notes	Dir

Sketches:

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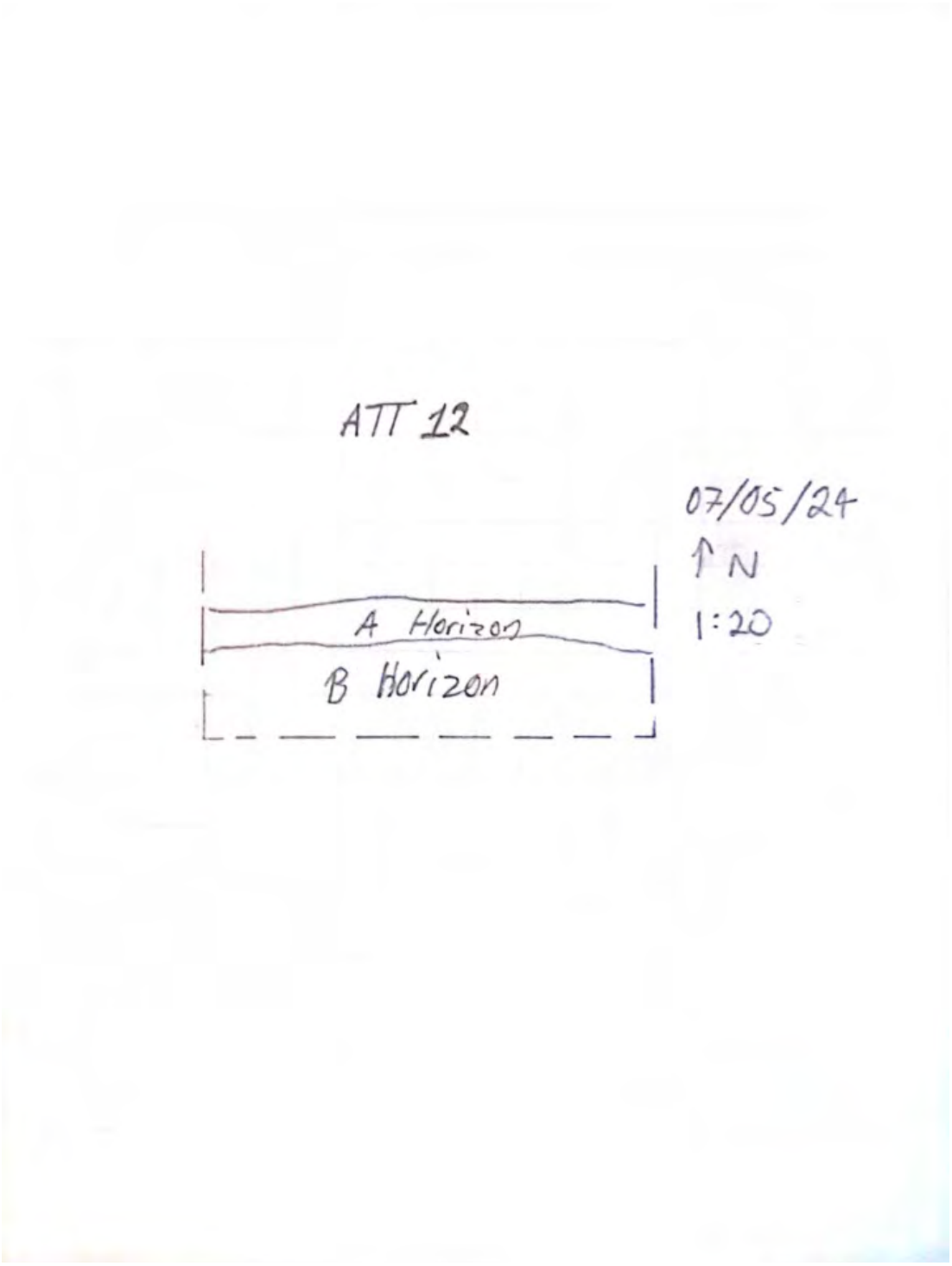
ATT 12
07/05/24
↑ N
1:20
A Horizon
B Horizon