



Berrima Gaol

2-4 Argyle Street Berrima

ABORIGINAL CULTURAL HERITAGE ASSESSMENT

Prepared for Blue Sox Investments Pty Ltd

17 February 2025

Final

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We respect and acknowledge the First Nations Peoples of the lands and waterways on which we live and work, their rich cultural heritage, and their deep connection to Country, and we acknowledge their Elders past and present.

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EXECUTIVE SUMMARY

This report has been prepared for Blue Sox Investments Pty Ltd and details the Aboriginal Cultural Heritage Assessment (ACHA) of land situated at 2-4 Argyle Street, Berrima New South Wales (NSW) [the study area], within the Illawarra Local Government Areas (LGAs), and the parish of Berrima in the county of Camden.

The study area is defined by the boundary of Lot 102 DP 1283819. The study area is in the suburb of Berrima, located approximately 130 kilometres south of Sydney Central Business District.

This ACHA was undertaken to assess the archaeological potential for Aboriginal material to support an Environmental Impact Statement being prepared as a State Significant Development (SSD), under Part 5 of the *Environmental Planning and Assessment Act 1979*, before the proposal to undertake adaptive reuse of the historic Berrima Gaol.

The proposal includes a new boutique hotel within the grounds of the gaol, a multi-level carpark, a function centre, a restaurant bar, and other tourism facilities and amenities. The proposal is a State Significant Development (SSD) with SEARs issued of the study area.

The ACHA has been undertaken in accordance with the Code of Practice for Archaeological Investigation of Aboriginal Objects in NSW (Department of Environment Climate Change and Water NSW 2010), the Guide to investigating, assessing and reporting on Aboriginal Cultural Heritage in NSW (Office of Environment and Heritage 2011) and the Aboriginal Cultural Heritage Consultation Requirements for Proponents (Department of Environment Climate Change and Water NSW 2010) [Consultation Requirements].

The results from the AHIMS search of the study area identified 57 previously recorded sites within a 5-kilometre radius of the study area. The search indicates that artefacts are the predominant site type with over 73.68% of known sites belonging to this category. A visual inspection of the study area was conducted by Austral staff on 11 July 2024 with assistance from Duncan Falk (Duncan Falk Consultancy). The archaeological survey observed that the study area was disturbed by the previous construction of the Berrima Gaol, indicating significant disturbances to both the surface and subsurface contexts within the study area.

No surface Aboriginal cultural material was identified during the survey. The entirety of the study area is considered low potential, and no further archaeological works are required.

ABORIGINAL COMMUNITY CONSULTATION

Consultation with Aboriginal stakeholders has been completed in accordance with the Consultation Requirements (DECCW 2010a). A summary of this process is included in the table below:

Stage	Component	Commenced	Completed
Stage 1	Letters to agencies	11/06/2024	N/A
	Registration of stakeholders	03/07/2024	17/07/2024
Stage 2	Project information	29/07/2024	16/09/2024
Stage 3	Review of project methodology	29/07/2024	16/09/2024
Stage 4	Review of ACHA by Aboriginal stakeholders	08/01/2025	05/02/2025

Further information on the consultation completed for the project can be found in Section 2 and Appendix A of this report.

RECOMMENDATIONS

The following recommendations are derived from the findings described in this ACHA. The recommendations have been developed after considering the archaeological context, environmental information, consultation with the local Aboriginal community, the findings of the pedestrian survey, and the predicted impact of the planning proposal on archaeological resources.

It is recommended that:

1. No further assessment or works are required to be undertaken for the study area. If unexpected finds or human remains are identified during works, please follow Recommendation 1 (a), 1 (b) and 2.
 - a) In the event that unexpected finds occur during any activity within the study area, all works in the vicinity must cease immediately. The find must be left in place and protected from any further harm. Depending on the nature of the find, the following processes must be followed:
 - b) If, while undertaking the activity, an Aboriginal object is identified, it is a legal requirement under Section 89A of the NPW Act to notify Heritage NSW, as soon as possible. Further investigations and an AHIP may be required prior to certain activities recommencing.
2. If human skeletal remains are encountered, all work must cease immediately and NSW Police must be contacted, they will then notify the Coroner's Office. Following this, if the remains are believed to be of Aboriginal origin, then the Aboriginal stakeholders and Heritage NSW must be notified.
3. It is recommended that Blue Sox Investments continues to inform the Aboriginal stakeholders about the management of Aboriginal cultural heritage within the study area throughout the completion of the project. The consultation outlined as part of this ACHA is valid for six months and must be maintained by the proponent for it to remain continuous. If a gap of more than six months occurs, then the consultation will not be suitable to support an AHIP for the project.
4. A copy of this report should be forwarded to all Aboriginal stakeholder groups who have registered an interest in the project.

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1. INTRODUCTION

Austral Archaeology Pty Ltd (Austral) has been commissioned by Blue Sox Investments Pty Ltd (the proponent) to undertake an Aboriginal Cultural Heritage Assessment (ACHA) for the property at 2-4 Argyle Street Berrima 2577, New South Wales (NSW) [the study area].

1.1. THE STUDY AREA

The study area consists of the entirety of 2-4 Argyle Street Berrima, NSW (Lot 102 DP 1283819), located approximately 1.5 kilometres from the township of Berrima village, within the Wingecarribee Local Government Areas (LGA), and the parish of Berrima in the county of Camden. It is also within the boundaries of the Illawarra Local Aboriginal Council (ILALC). It is bounded to the north by Wilshire Street and Berrima Courthouse, to the east by Argyle Street and Old Hume Highway, to the south by Wingecarribee Street and the Surveyor General Inn, and the west by Wingecarribee River and Hume Motorway.

The location of the study area is shown in Figure 1.1 and Figure 1.2.

1.2. PURPOSE OF THE ACHA

The ACHA was undertaken to assess the potential harm that may occur to Aboriginal cultural heritage values as part of a State Significant Development (SSD) under Part 5 of the Environmental Planning and Assessment Act 1979 (EP&A Act), for the adaptive reuse of the historic Berrima Gaol.

The proposal includes a new boutique hotel within the grounds of the gaol, a multi-level carpark, a function centre, a restaurant bar, and other tourism facilities and amenities. The proposal is a State Significant Development (SSD) with SEARs issued.

1.3. ASSESSMENT OBJECTIVES

The scope of this ACHA report is based on the legal requirements, guidelines and policies of Heritage NSW, formerly the Office of Environment and Heritage (OEH), and prior to that, the Department of Environment, Climate Change and Water (DECCW), Department of Environment and Climate Change (DECC) and Department of Environment and Climate (DEC). Note that applicable documents have been published under the name of all these Government departments.

The ACHA has been undertaken in accordance with the *Code of Practice for Archaeological Investigation of Aboriginal Objects in NSW* (DECCW 2010b), the *Guide to Investigating, assessing and Reporting on Aboriginal Cultural Heritage in NSW* (Office of Environment and Heritage 2011) and the *Aboriginal Cultural Heritage Consultation Requirements for Proponents* (DECCW 2010a) [Consultation Requirements].

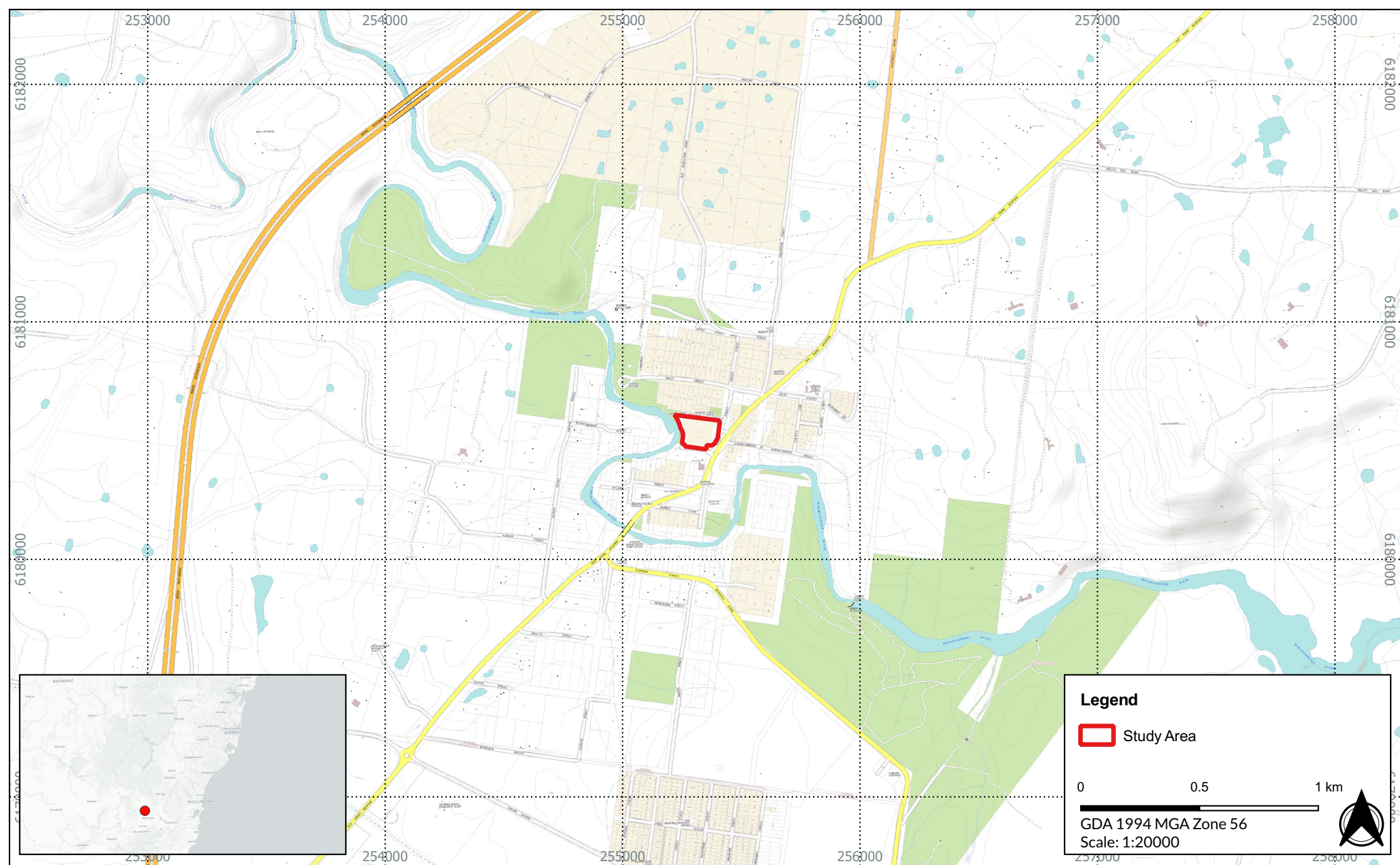


Figure 1.1 - Location of the study area
 24039 - 2-4 Argyle Street, Berrima NSW - ACHA

Source: NSW LPI Basemap, CartoDB Positron

Drawn by: FOT Date: 2024-06-20



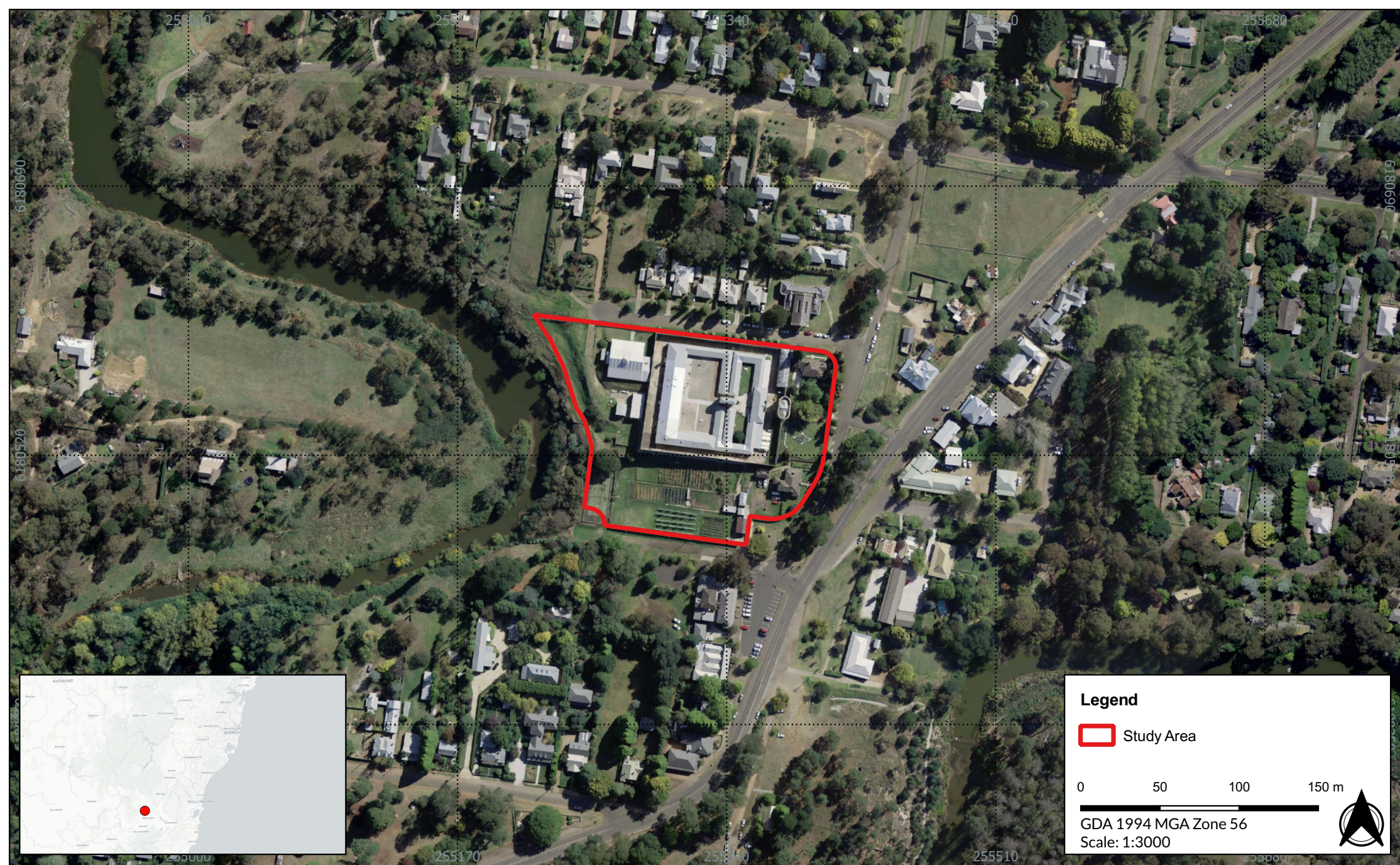


Figure 1.2 - Detailed aerial imagery of the study area

24039 - 2-4 Argyle Street, Berrima NSW - ACHA

Source: NSW LPI Aerial, CartoDB Positron

Drawn by: FOT Date: 2024-06-20

Information provided in this assessment includes, but is not limited to:

- A literary review of available data, including previous studies/investigations from within and adjacent to the study area.
- The results of archaeological fieldwork including a pedestrian survey of the study area.
- A description of the Aboriginal cultural heritage values identified as being within the study area and its significance.
- An assessment of harm posed to Aboriginal objects, places or values as part of the project.
- A description of practical measures that have been used to protect, conserve, avoid or mitigate harm to Aboriginal objects, places and values.
- Documentation of how the Consultation Requirements have been met (specifically Section 80C of the *National Parks and Wildlife Regulation 2009* [NPW Regulations]).
- The views of Aboriginal people regarding the likely impact of the proposed activity on their cultural heritage, including evidence of their submissions and how these have been addressed.

1.4. SUMMARY OF LEGISLATIVE PROCESS

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

- This section outlines the acts and guidelines that are applicable or have the potential to be triggered with regard to the proposed development and are detailed in Table 1.1 to Table 1.4.

Table 1.1 Federal acts.

Federal Acts	Applicability and Implications
<i>Environment Protection & Biodiversity Conservation Act 1999</i>	This Act has been triggered and so applies, on the basis that: • No sites listed on the National Heritage List are present or in close proximity to the study area. • One site listed on the Commonwealth Heritage List is present in the study area (Gatehouse and Walls of Gaol [former]).
<i>Aboriginal & Torres Strait Islander Heritage Protection Amendment Act 1987</i>	Applies. This Act provides blanket protection for Aboriginal heritage in circumstances where such protection is not available at the State level. This Act may also override State legislation.

Table 1.2 State acts.

State Acts	Applicability and Implications
<i>National Parks and Wildlife Act 1974</i> (NPW Act)	The Act is not triggered.
<i>National Parks and Wildlife Regulation 2009</i> (NPW Regulations)	The Regulation serves to support the implementation of the NPW Act in the following ways: • Section 80A – States minimum standards for due diligence to have been carried out.

State Acts	Applicability and Implications
<i>Environmental Planning and Assessment Act 1979</i> (EPA Act)	Applies to the wider project and governs the approval pathway required: - The project is being assessed under Part 5 of the EPA Act. - This ACHA is required to support an Environmental Impact Statement (EIS) - As such, sections 86, 87, 89A and 90 of the NPW Act do not apply to this project.
<i>NSW Heritage Act 1977</i>	The Berrima Gaol is listed as “Berrima Correctional Centre” on the State Heritage Register, and therefore this Act does not apply.

Table 1.3 State and local planning instruments.

State Acts	Applicability and Implications
<i>Local Environmental Plan (LEP)</i>	The following LEP applies to the study area: Wingecarribee Local Environmental Plan 2010 Aboriginal cultural material is discussed in Part 5.10, Section 8 of the LEP, which requires consent be granted for any works which may impact on Aboriginal cultural material. Areas of Aboriginal cultural material are listed on Schedule 5, Part 8 of the LEP: (8) Aboriginal places of heritage significance Aboriginal place of heritage significance means an area of land, the general location of which is identified in an Aboriginal heritage study adopted by the Council after the public exhibition and that may be shown on the Heritage Map, that is— - the site of one or more Aboriginal objects or a place that has the physical remains of pre-European occupation by, or is of contemporary significance to, the Aboriginal people. It may (but need not) include items and remnants of the occupation of the land by Aboriginal people, such as burial places, engraving sites, rock art, midden deposits, scarred and sacred trees and sharpening grooves, or - a natural Aboriginal sacred site or other sacred feature. It includes natural features such as creeks or mountains of long-standing cultural significance, as well as initiation, ceremonial or story places or areas of more contemporary cultural significance. Four historical sites are listed on the Wingecarribee LEP within the study area: Berrima Correctional Centre (formerly Gaol), Bull's Head Drinking Fountain, Superintendents House and Stone Cottage.

State Acts	Applicability and Implications
Development Control Plan (DCP)	The following DCP applies to the study area: Berrima Development Control Plan 2010 Aboriginal cultural material is discussed in Part A1, Section 6.8 of the DCP, which requires an Indigenous heritage and archaeological report prepared by a suitably qualified archaeologist shall be required for development meeting the following criteria: - any Development Application (DA) on land which contains a known Aboriginal site. - all rezoning applications. - if a proposal (including subdivision and rezoning) affects land greater than 1 hectare (10,000m²). - impact or disturbance to the content, or within the immediate vicinity (100 metres) of a previously recorded indigenous heritage item. - impact or disturbance to, or within the immediate vicinity (100 metres) of a previously recorded or known place of Indigenous heritage significance (such as a cultural landscape, an existing or former ceremonial ground, a burial ground or cemetery, a story place or mythological site, a former Aboriginal reserve or historic encampment, or an archaeological site of high significance); - if a proposal (including subdivision or rezoning) affects primarily undeveloped land (irrespective of land size) and has any of the following site features: river frontage; creek line; stone exposures at ground level larger than 5m²; stone cliff line or isolated boulder higher than 2 metres; disturbance to the roots, trunk, branches, of old growth trees, which are native to the Shire and greater than 150 years of age.

Table 1.4 Aboriginal community consultation requirements.

State Acts	Applicability and Implications
Consultation Requirements	The development is to proceed in accordance with Part 5 of the EPA Act. This means that the requirements of Part 6 of the NPW Act will apply, including the need to obtain approval prior to impacting Aboriginal objects in accordance with Section 90 of the NPW Act, and that it will be necessary to prepare an ACHA in accordance with Section 61 of the NPW Regulations. As such, consultation with Aboriginal stakeholders on this project will follow the Consultation Requirements.

1.5. PROJECT TEAM AND QUALIFICATIONS

The following personnel have been involved in the preparation of this ACHA.

LINDSAY COSTIGAN (BASc IN ANTHRO AND SOC, FOCUS IN ARCH)

Lindsay is a Senior Archaeologist and team leader at Austral, with more than 8 years of experience in archaeology. She began her career in the USA, graduating top of her class from Eastern Oregon University, and has carried out numerous projects in Washington, Oregon, and Idaho as a heritage consultant for a civil engineering company. Lindsay has completed projects in coordination with Native American tribes, Aboriginal communities, local councils, and a wide variety of government entities. As such, Lindsay has experience working with both Aboriginal and historic-era cultural resources, and assessing archaeological significance under federal and state legislation while assisting clients navigate cultural resource legislation and processes.

She has reviewed this report for quality assurance and technical adequacy, and had input into the management recommendations.

ZOE BOSEVSKI (B. ARCH)

Zoe is a graduate archaeologist at Austral and has experience in consultation, report writing and Aboriginal cultural heritage fieldwork. She has completed consultation and report writing for Aboriginal Cultural Heritage Assessments and authored Due Diligence Assessments, as well as surveys and test excavations. She also has experience with Aboriginal artefact analysis and data entry for reports.

FELICITY ELLIS (MASTER OF ARTS IN ANCIENT HISTORY; GRAD. DIP ARCHAEOLOGY & HERITAGE MANAGEMENT, IN PROGRESS).

Felicity has experience in assisting with Aboriginal Cultural Heritage Assessments, Due Diligence Assessments and Aboriginal consultation as well as historical archaeology reports. Felicity has skills and experience in fieldwork, background research, reporting, artefact analysis, surveys, and test excavations for projects throughout Illawarra and Greater Sydney.

CARMEN BAULCH (BA (ARCH)/BSc (ZOO), GRAD. CERT. ARCH)

Carmen is an Archaeologist at Austral and has 2 and a half years of experience in the completion of both Aboriginal and Historical projects.

Carmen has experience in project management for CHMPs and ACHAs. Carmen also has experience in completing background research for ACHAs, ACHDDAs, CHMPs, HHAs, HCHAs, PHHAs, and SoHIs, and has experience consulting with Aboriginal communities for many ACHA and CHMP projects. Carmen also has assisted in the preparation of cultural heritage induction training.

Carmen also has experience in Aboriginal and historical excavation, Aboriginal and historical surveys, cataloguing and sorting historical artefacts, and Aboriginal lithic analysis.

1.6. ABBREVIATIONS

The following are common abbreviations that are used within this report:

ACHA	Aboriginal Cultural Heritage Assessment
ACHDDA	Aboriginal Cultural Heritage Due Diligence Assessment
AHIMS	Aboriginal Heritage Information Management System
AHIP	Aboriginal Heritage Impact Permit
Austral	Austral Archaeology Pty Ltd
Burra Charter	<i>Burra Charter: Australia ICOMOS Charter for Places of Cultural Significance 2013</i>
DCP	Development Control Plan
EPA Act	<i>Environmental Planning and Assessment Act 1979</i>
ICOMOS	International Council on Monuments and Sites
LEP	Local Environmental Plan
LGA	Local Government Area
NPW Act	<i>National Parks and Wildlife Act 1974</i>
NPW Regulation	<i>National Parks and Wildlife Regulation 2009</i>
The Proponent	Blue Sox Investments Pty Ltd

ACHA	Aboriginal Cultural Heritage Assessment
Study Area	Lot 102 DP1283819 2-4 Argyle Street Berrima NSW
ILALC	Illawarra Local Aboriginal Land Council

2. CONSULTATION PROCESS

This section outlines the consultation process that has been followed as part of the preparation of this ACHA.

2.1. INTRODUCTION

Stakeholder consultation for this project commenced in line with the Consultation Requirements (DECCW 2010a). Heritage NSW recognises that (DECCW 2010a, p.iii):

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

The Consultation Requirements outline a four-stage consultation process which includes:

- Stage 1 – Notification of the project proposal and registration of interest.
- Stage 2 – Presentation of information about the proposed project.
- Stage 3 – Gathering information about cultural significance.
- Stage 4 – Review of the draft cultural heritage assessment report.

A copy of the consultation log and evidence of all correspondences that were sent and received as part of the consultation process is included in Volume 2, Appendix A of this ACHA.

2.2. STAGE 1: NOTIFICATION AND REGISTRATION OF INTEREST

The following section outlines the tasks that were undertaken as part of Stage 1 of the Consultation Requirements.

2.2.1. IDENTIFICATION OF RELEVANT ABORIGINAL STAKEHOLDERS

In accordance with the Consultation Requirements, Austral notified the bodies and organisations listed in Section 4.1.2 (DECCW 2010a, p.10) with the following responses:

- A response was received from Heritage NSW with a list of stakeholders who may have an interest in the proposed development.
- The ILALC responded and could not supply a list of cultural knowledge holders. They also registered interest in the project.
- Local Land Services replied that they had no list of stakeholders who may have an interest in the proposed development.
- The Wingecarribee Shire Council did not reply.
- The National Native Title Tribunal replied that the relevant Native Title is the Gundungurra Area Agreement.

A search conducted by the Office of the Registrar; Aboriginal Land Rights Act 1983 (NSW) listed no Aboriginal stakeholders for the land within the study area but suggested the Illawarra Local Aboriginal Land Council as the relevant authority. A copy of these letters and searches are included in Appendix A.

A copy of these letters, searches and responses are included in Volume 2, Appendix A of this ACHA.

2.2.2. INVITATION TO REGISTER

Letters were written to the Aboriginal stakeholders identified through notifying the various agencies suggested in Section 4.1.2 of the Consultation Requirements (DECCW 2010a, p.10). Aboriginal stakeholders were provided with 14 days to register an interest in the project.

A copy of outgoing letters and responses is included in Volume 2, Appendix A of this ACHA.

As a result of the consultation procedure, the groups shown in Table 2.1 registered as Aboriginal stakeholders with an interest in this project.

Table 2.1 List of Registered Aboriginal stakeholders.

Organisation	Contact Person
Cubbitch Barta Native Title Claimants Aboriginal Corp	Glenda Chalker; Rebecca Chalker
Duncan Falk Consultancy	Duncan Falk
Illawarra LALC	Aara Welz
Murra Bidgee Mullangari Aboriginal Corporation	Darleen Johnson; Ryan Johnson
Thomas Dahlstrom Offers ACH value by using 3D Laser and Drone Technology	Thomas Dahlstrom
Woronora Plateau Gundungara Elders Council	Paul Cummins

2.2.3. PUBLIC NOTICE

An advert was placed in the Southern Highlands News, to run on 3 July 2024, requesting the registration of cultural knowledge holders relevant to the project area. A copy of this advert is included in Appendix A of this report.

2.2.4. SUBMISSION OF RECORDED STAKEHOLDERS

In accordance with Section 4.1.6 of the Consultation Requirements (DECCW 2010a, p.11), Austral provided details of all registered Aboriginal stakeholders to Heritage NSW and ILALC on 29 July 2024. An updated list was sent on 20 August 2024.

Copies of these letters are included in Volume 2, Appendix A of this ACHA.

2.3. STAGE 2: PRESENTATION OF INFORMATION

All registered Aboriginal stakeholders were provided with information outlining the proposed works, including information relating to proposed impacts as well as the project's methodology, on 29 July 2024. Due to email delivery issues, the Stage 2 document was reissued to ILALC on 30 July 2024. Due to a late registration, the Stage 2 document was sent to Cubbitch Barta on 19 August 2024.

Copies of all correspondence relating to the provision of project information are included in Volume 2, Appendix A of this report.

2.4. STAGE 3: GATHERING INFORMATION ABOUT CULTURAL SIGNIFICANCE

This section details information relating to cultural significance provided by Aboriginal stakeholders through the formalised process of Stage 3 of the Consultation Requirements and any additional information which may have been provided during fieldwork.

2.4.1. REVIEW OF PROJECT METHODOLOGY

Austral provided each Aboriginal stakeholder with a copy of the project methodology on 29 July 2024. Due to email delivery issues, the Stage 3 document was reissued to ILALC on 30 July 2024. Due to a late registration, the Stage 3 document was sent to Cubbitch Barta on 19 August 2024.

The methodology outlined the proposed assessment process that would be used in the completion of the ACHA. Aboriginal stakeholders were provided with 28 days to review and provide feedback on the methodology.

No comments from Aboriginal stakeholders were received at this stage of consultation.

Copies of all correspondence relating to the draft methodology are included in Appendix A, Volume 2 of this ACHA.

2.5. STAGE 4: REVIEW OF DRAFT ACHA

A draft ACHA report was emailed to the RAPs on 8 January 2025. The following responses were received and actions taken, if necessary:

- Cubbitch Barta requested the report be posted to her
 - Austral posted the report to Glenda.
- Murra Bidgee Mullangari endorsed the ACHA recommendations.
- Duncan Falk enquired about potential archaeological deposits identified during the survey and whether testing had taken place.
 - Austral responded that results from environmental and soil testing had been provided by the client after the survey, and that data was used to identify that testing was not necessary; in particular, deposition of fill materials and those containing asbestos, petroleum byproducts, and other contaminants were now known to be present within the previously areas identified as having potential for Aboriginal cultural material.

2.6. PROVISION OF FINAL ACHA

To comply with Section 4.4.5 of the Consultation Requirements (DECCW 2010a, p.14), a copy of the final ACHA is to be provided to all registered Aboriginal stakeholders and DLALC following its completion.

2.7. EVIDENCE OF CONTINUAL CONSULTATION

Consultation is anticipated to remain valid with the use of 6-month RAP updates until the works commence.

3. LANDSCAPE CONTEXT

The following section defines the study area, and its environmental and cultural context.

3.1. ENVIRONMENTAL CONTEXT

The following section discusses the study area in relation to its landscape, environmental and Aboriginal landscape resources. This environmental context has been prepared in accordance with Requirement 2 of The Code (DECCW 2011, pp.8–9).

The study area is located within the Sydney Basin Bioregion.

3.1.1. TOPOGRAPHY AND HYDROLOGY

The Australian Government Bioregional Assessment (2018), has been assessed for the Sydney Basin Bioregion, of which Berrima resides, and the following landscape characteristics have been analysed (Herron et al. 2018).

The Sydney Basin Bioregion is typically characterised by rugged terrain with rock outcrops of Hawkesbury sandstone. In the Southern tablelands, in towns like Berrima, there resides a flatter, gently undulating landform. The study area contains Hawkesbury sandstone. The Sydney Basin Bioregion is comprised of 4 physiographic regions. Each region is characterised by landforms, geological units and soil. All of which can also inform landform evolutionary history.

The 4 physiographic regions are The Hawkesbury-Shoalhaven Plateaus, Bathurst Tablelands, Cumberland Lowland and Monaro Fall. Berrima is located within the Hawkesbury-Shoalhaven Plateaus. The Shale and Basalt plateau within this contains rolling hills and shallow valleys with a very large peat swamp at Wingecarribee ('The Sydney Basin Bioregion' n.d.). The land is slightly undulating within the surrounding study areas. In areas of sloping landforms, surface archaeological material can be dislodged and slowly move down the slope, potentially gathering in these lower landforms (Herz, Norman, and Ervan G Garriso 2020). Also, elevated landforms have been identified in some circumstances as being condensed areas of Aboriginal archaeological material dependent on other variables such as the level of slope and other contributing factors such as proximity to water sources and availability of shelter from trees. The study area resides in a foot slope and valley landform towards the Wingecarribee River.

The landform units identified within and in the locality of the study area are identified in Figure 3.1.

The study area boundary is located approximately 30 metres from the Wingecarribee River. Two major river basins drain the Sydney Basin Bioregion. These are the Hawkesbury and Nepean River basins. These both support 65% of the region that surrounds the study area including the Southern tablelands, three small coastal river basins, Sydney, Georges River, Wollongong and part of the Clyde River, Jervis Bay. The major rivers that flow into the larger Hawkesbury-Nepean River basins include the Macdonald, Colo and Wollondilly rivers.

Berrima lies south of the Hawkesbury -Nepean Rivers and the Wollondilly Rivers, with the confluence of the Wollondilly River occurring at Tugalong, Northwest of Berrima. The river system catchment to the Wingecarribee is that of the Hawkesbury-Nepean River basins. The Wingecarribee River runs parallel along the western boundary of the study area. Locations in close proximity to water sources have been indicative of containing Aboriginal Archaeological materials in studies carried out within the surrounding region. Although, most lithic finds occurred on undisturbed land. The study area however has been entirely modified, including alongside where the Wingecarribee River runs adjacent to the study area.

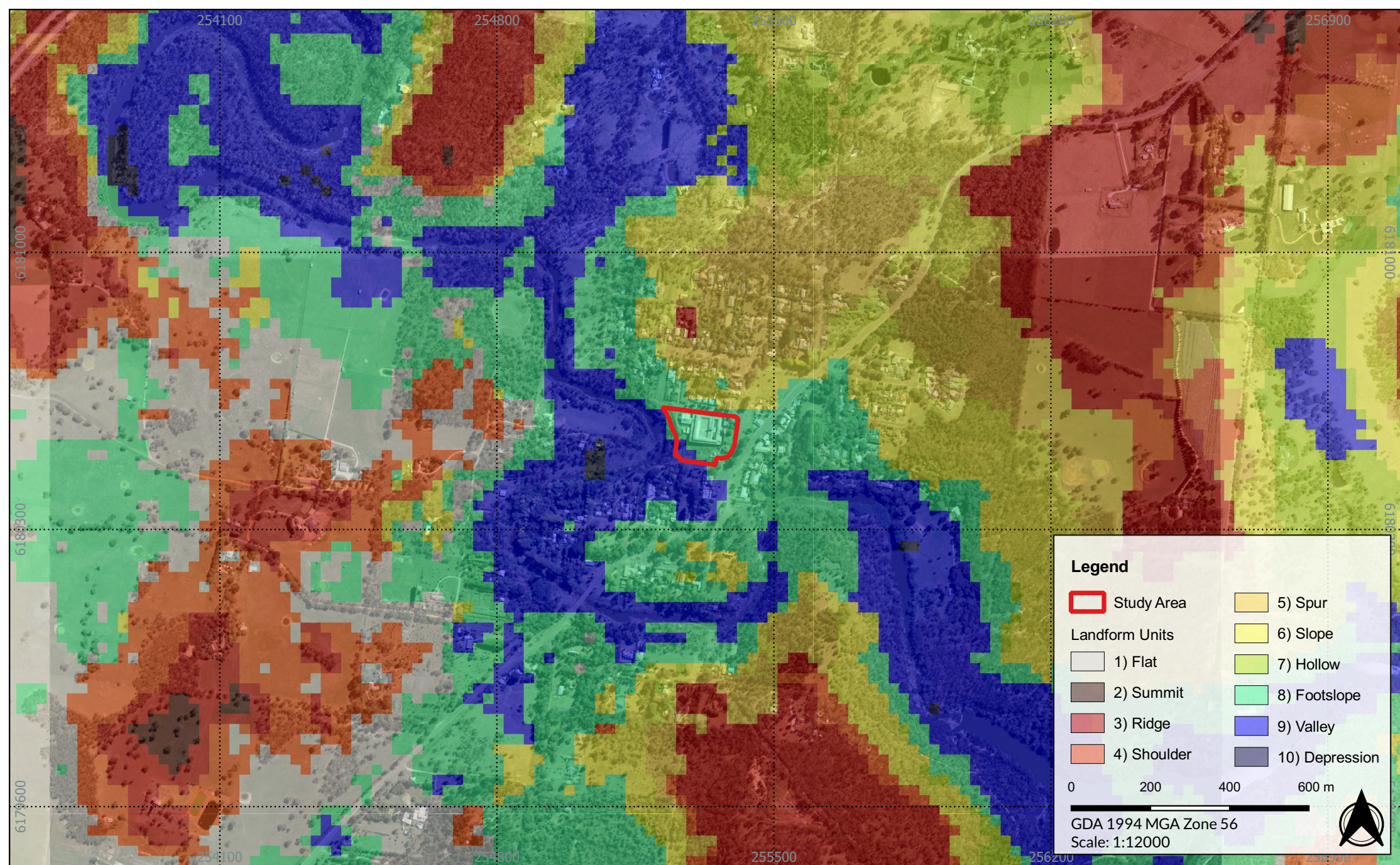


Figure 3.1 - Landform units identified within the study area

24039 - 2-4 Argyle Street, Berrima NSW - ACHA

Source: NSW LPI Aerial, Geoscience Australia DEM

Drawn by: FOT Date: 2024-06-20

Largely there are 2 groundwater systems, one resides within the Hawkesbury sandstone. The Hawkesbury sandstone is characterised by porous fractured rock containing Aquifers, which have fast water permeability rates. The Hawkesbury sandstone Aquifer system contains Newport and Garre formations. The Quartz component of this system contains the Aquifers. Hawkesbury sandstone is classified into 3 beds or layers with differing hydrological characteristics:

1. Massive – reduced permeability
2. Stratified / sheet – most permeable
3. Mudstone – Low permeability

The hydrological systems identified within and in the locality of the study area are identified in Figure 3.2.

3.1.2. GEOLOGY AND SOILS

Surface geology distributions over the entire Sydney Basin is described as predominantly Triassic and Permian with deposits of Quaternary alluvium (clay, silt, sand) left over by floodwater from rivers. Historically, the deposition of the Basins lowermost stratigraphic units began in the Late Carboniferous (approximately 359 million years ago) during the late Palaeozoic era. The Carboniferous period is characterised by vast swamp forest and the many Amphibious groups of which many modern mammals are derived from. Generally, the deposition of the Sydney Basin region was largely affected by changing sea levels (NSW Department of Environment and Climate Change. 2008)

Berrima resides within the Hawkesbury sandstone geological unit. There are large amounts of Hawkesbury sandstone cliffs where these outcrops meet the lower coastal lands south of Sydney such as that of Wollongong, Nowra and along the south coast of New South Wales. Hawkesbury sandstone is of the Triassic-aged quartz-rich sandstone with a maximum of between 250-270m thickness. Some mudstone is also present in this rock formation with a ratio of 20:1 (Hawkesbury sandstone 20, Mudstone 1).

The study area is situated inland from the Illawarra escarpment on an undulating landform of Hawkesbury sandstone beneath. The description of the Hawkesbury sandstone reflective of the study area's geological unit is as below:

Hawkesbury Sandstone Profile: (Geoscience NSW 2023):

Parent unit: Triassic

Constituents: Sandstone and Mudstone

Description: Medium to coarse grained quartz sandstone with large scale cross bedding, minor shale.

Age range: Middle Triassic (247.2-242.0 Ma)

Distribution relative to study area: East of the Wollondilly River

Stratigraphy: 3 layers/beds, overlain by Basalt sediments, overlies disconformable to the Permian Illawarra Coal, the Permian Berry Siltstone, and the Narrabeen Group, finally it conforms with the overlying Mittagong Formation / Ashfield shale.

Distinguishing features: Dominated by Quartzose, granulated and pebbly, clearly defined crossbedding, silica growth on the quartz sandstone gives the sandstone the 'glistening' effect.

Lithology: Medium coarse-grained quartz sandstone with minor shale laminate lenses.

Fossils: Rare, but those found occur in the Shale.

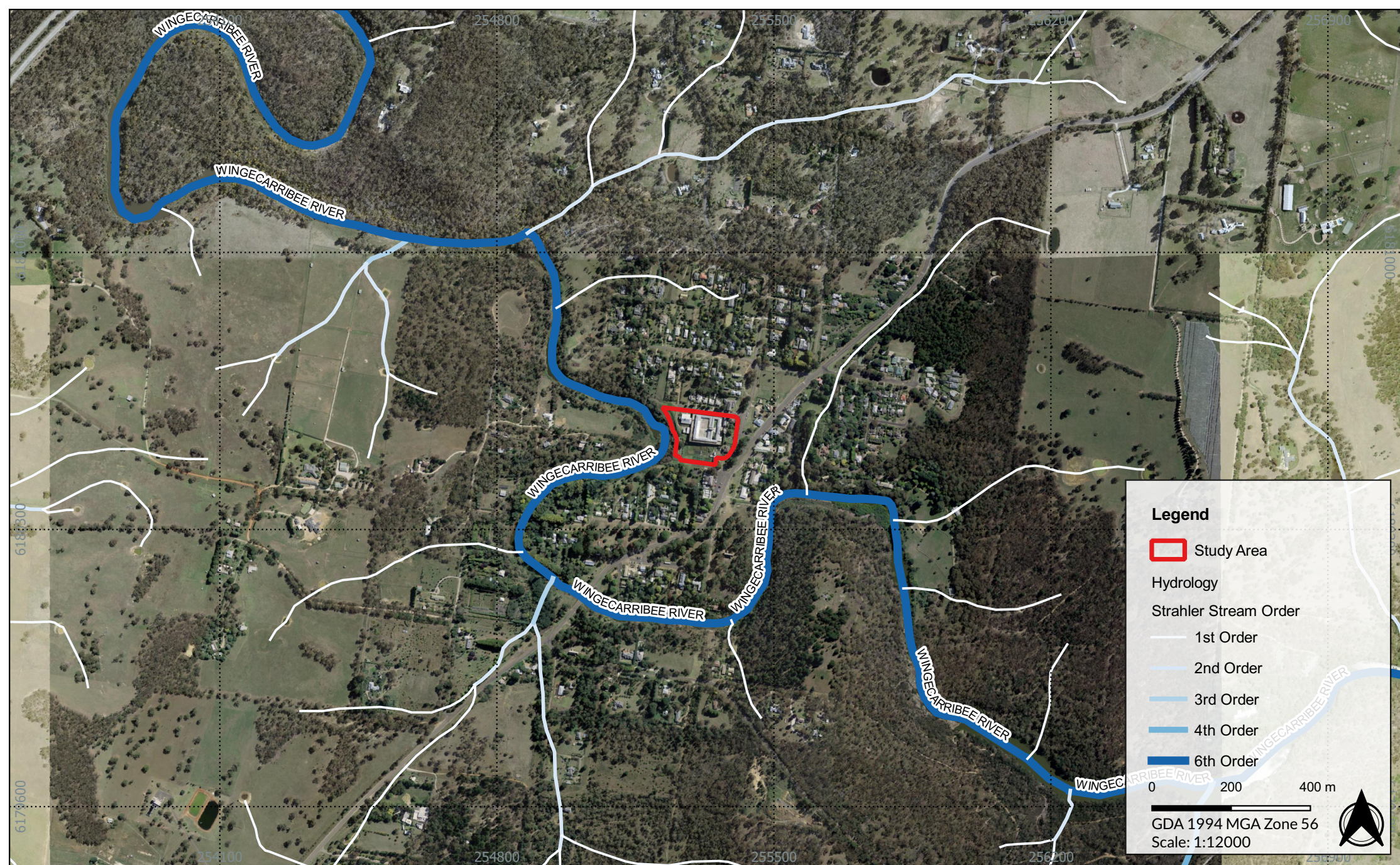


Figure 3.2 - Hydrology identified within the study area and surrounding landscape 24039 - 2-4 Argyle Street, Berrima NSW - ACHA

Source: NSW LPI Aerial, NSW LGA Hydroline

Drawn by: FOT Date: 2024-06-20

The high levels of Hawkesbury sandstone within the region indicate higher percentages of rock shelters and grinding grooves, however the study area resides in a gently undulating terrain. Quartz may have been a component of making spearheads during Aboriginal occupation of these areas and given the high levels of Quartz material within the surrounding geological units, this may indicate that remnants of these Aboriginal artefacts may still be present in the Wingecarribee region, and within the study area.

However given the vast disturbance and hence movement of the soils within the study area, the potential for these Aboriginal sites to be found decreases dramatically due to the development infrastructure within the study area.

The geological units identified within the study area are identified in Figure 3.3.

The study area resides within the Nattai Plateau soil landscape. Mitchell (2002, pp.117, 118) describes the soils of the Moss Vale Highlands (Moss Vale is also located in the Hawkesbury-Shoalhaven Plateaus and found only 9.5kms away from the Study area at Berrima), as being yellow and grey texture-contrast soils with deep yellow earth overlying friable sandstone, and often including accumulations of clastic quartz sand in valleys, as well as concretionary ironstone. These characteristics are like the Nattai Plateau soil profile as outlined in the table below.

The Wingecarribee Swamp soils are described as Holocene peat overlying Triassic quartz sandstone. Wingecarribee River lies only 30 metres from the study area boundary, this boundary borders the valley landform adjacent to the remaining foot slope of the entire study area. The Soil landscape within the study area can be seen in Table 3.1. and in Figure 3.4.

Table 3.1 Soil landscape identified as being within the study area.

Soil landscape	Description
Nattai Plateau (Nat) (Mitchell 2002, p.106).	Shallow, sandy, coarse, grainy and occasional yellow texture-contrast soils.

3.1.3. CLIMATE AND VEGETATION

The Sydney Basin region is generally a temperate climate without extremes. However, higher elevations as in the Southern Tablelands towns like Berrima, do vary from the coastal regions along the escarpment. Particularly hot summer temperatures on the coast can grade to lower warmer temperatures at some higher elevations in some regions of the Southern highlands, however, these areas being away from the cooler coastal winds can also experience high temperatures during the summer months. In turn, during the Winter season, the temperatures atop the escarpment can be much cooler than the lower counterpart region. There is typically not a dry season, but summer can be dominated by rainfall from December-March averaging 70-120mm per month and lessening to 60mm per month between July-October. Generally, rainfall within the region decreases as distance increases further inland from the coast, but rainfall increases with elevations nearer the escarpment and decreases further inland including towns like Berrima. Rainfall in Berrima averages 6-10 mm per year.

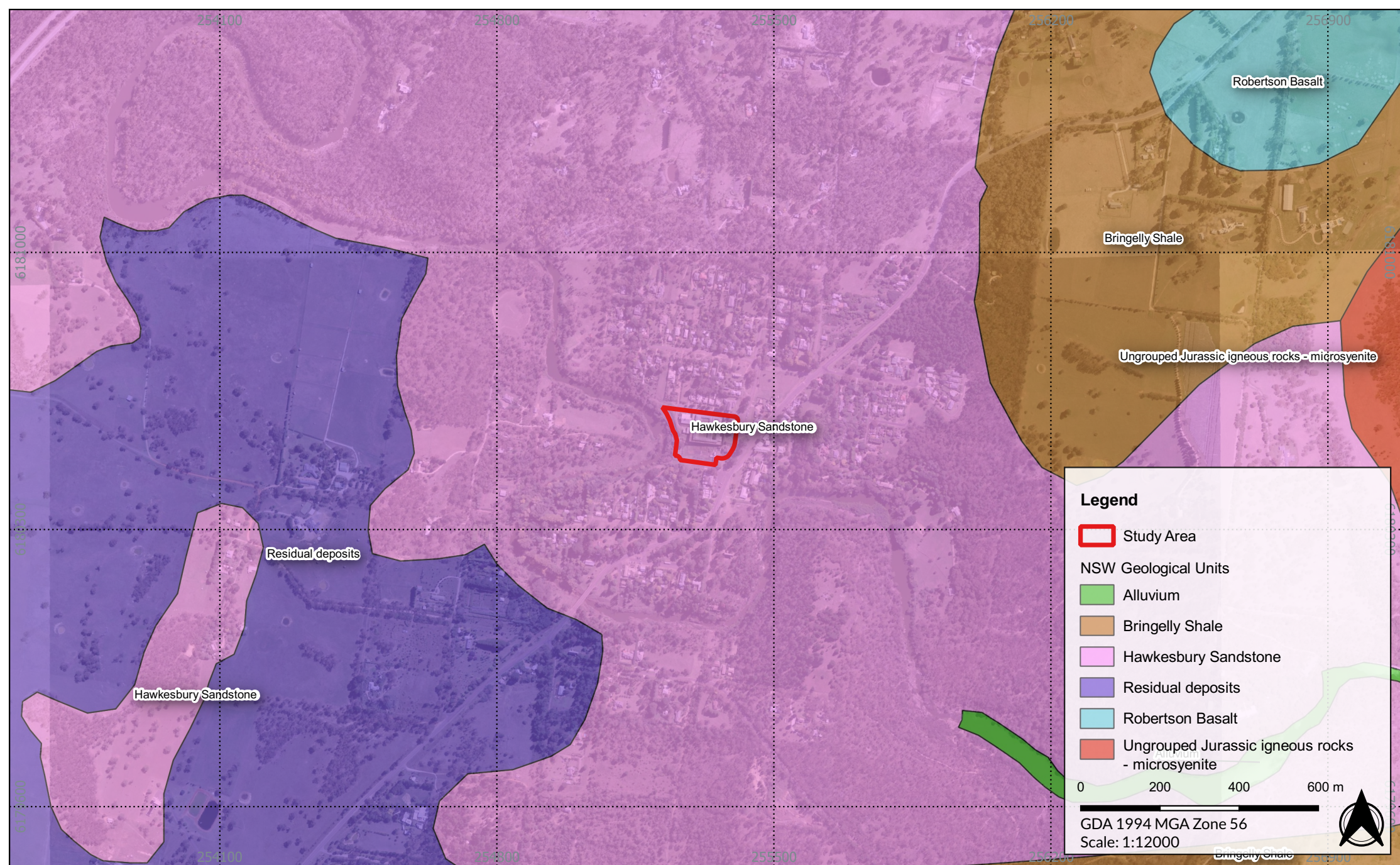


Figure 3.3 - Geological units within and surrounding the study area

24039 - 2-4 Argyle Street, Berrima NSW - ACHA

Source: NSW LPI Aerial, NSW Seamless Geology

Drawn by: FOT Date: 2024-06-20

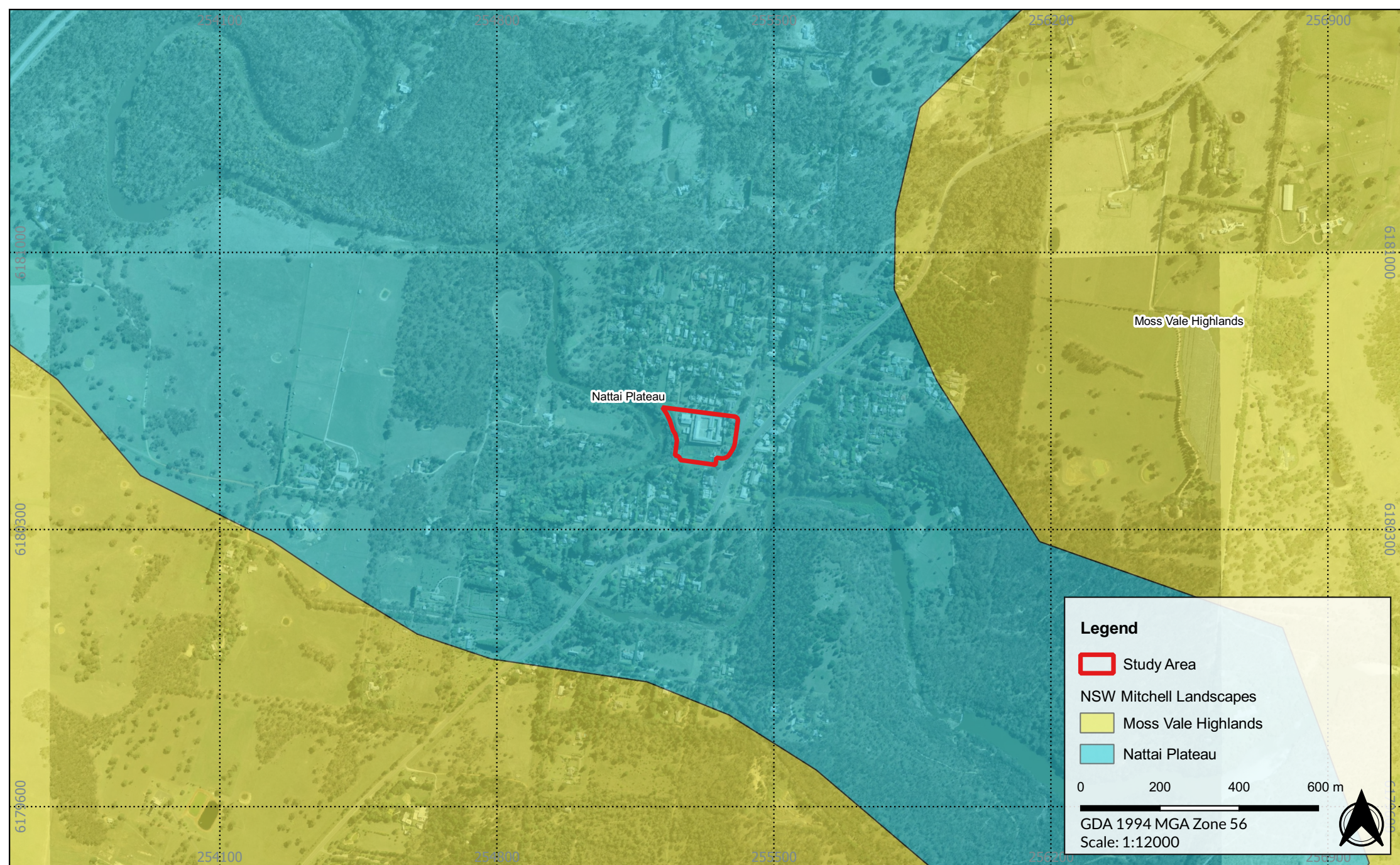


Figure 3.4 - Soil landscapes within and surrounding the study area

24039 - 2-4 Argyle Street, Berrima NSW - ACHA

Source: NSW LPI Aerial, Mitchell Landscapes v3.1

Drawn by: FOT Date: 2024-06-20

The water catchment to the Wingecarribee River is from the Hawkesbury-Nepean River, one of the tributaries such as the Wollondilly River (northwest of Berrima) that feeds into the Wingecarribee River (located west of the study area). The slight changes to the climate in this region, have not necessarily made any notable changes to compare to the time of past Aboriginal occupation in terms of what resources these rivers would have provided for both food, clothing and shelter for Aboriginal settlements within the region. The past Aboriginal settlements in the region would have utilised the diverse species of flora and fauna that reside in and near the rivers of this region. In turn, the landforms here are still much the same as they were during the Aboriginal occupation of these undisturbed locations near these rivers. Therefore, much of the Aboriginal Cultural material, as has been seen in both local and regional studies, is consistently located near water and old-growth vegetation sources. (Jess Melbourne-Thomas et al. 2024)

The Sydney Basin is largely dominated by trees, which is because of good rainfall, and rugged topography of large amounts of sandstone in areas of the Blue Mountains, Illawarra and Southern highlands escarpment. However, Berrima resides further inland, whereby there are lower densities of differing Eucalypt and Woodland trees due to clearing for grazing and buildings in many of the Southern Highland's towns like Berrima where non-native vegetation now exists.

The Sydney Basin has one of the most species diverse flora in Australia due to the variety of rock formations, topography and climate variations in the region. The Sydney Basin region also contains World Heritage and Wilderness-listed National Parks. Table 3.2 shows the vegetation that naturally occurs within the Southern Highlands.

Table 3.2 Native vegetation within the Southern Highlands

Common Name	Scientific Name
Narrow-leaf Peppermint	<i>Eucalyptus radiata</i>
Sydney Peppermint	<i>Eucalyptus piperita</i>
Monkey Gum	<i>Eucalyptus cypellocarpa</i> L.A.S.Johnson
Black Ash	<i>Fraxinus nigra</i>
Messmate Eucalyptus	<i>Eucalyptus obliqua</i>
Coastal White-Box	<i>Eucalyptus quadrangulata</i>
Brown-Barrel (found on Shale and Basalts)	<i>Eucalyptus fastigata</i>
River Oak	<i>Casuarina cunninghamiana</i>
Water Gum	<i>Tristanopsis laurina</i>
Common Reed	<i>Phragmites australis</i>
Complex Prickly-leaf tea tree	<i>Leptospermum continentale</i>
Paperbark	<i>Melaleuca quinquenervia</i>
Swamp Mahogany	<i>Eucalyptus robusta</i>
Swamp Oak	<i>Quercus palustris</i>
Sword Grass	<i>Gahnia aspera</i>
Swamp Banksia	<i>Banksia Robur</i>
Sphagnum Bog	<i>Sphagnum</i>

3.1.4. LANDSCAPE RESOURCES

The sedimentary geology and fertile soils of the region, along with the presence of readily available water and the wetlands provide a diverse range of landscape resources to be utilised. The unique ecological community of the southern highlands, while today quite fragmented, supports a diverse range of flora and fauna as it would have done in the past. Archaeological studies within the Southern Highlands region such as Koettig (1981) have identified trees bearing cultural scars showing that tree bark was utilised as a resource by Aboriginal people. One of the earliest accounts of contact between European and Aboriginal people from 1798 is referred to by Jervis (1973, p.1,2) in which the Southern Highlands are described as having hundreds of kangaroos, as well as pheasants and perhaps lyrebirds. Early records also describe how Aboriginal people would utilise resources for multiple purposes, including for coverings, such as ankle-length animal skins, and food.

3.2. PAST LAND USE PRACTICES

The term 'Southern Highlands' was once also known in the 19th century as the 'Berrima District' and in the 20th century as the 'Southern Tablelands' including the Wingecarribee Shire (Bowie, Ian 2006, p.2). The combined land zones within the Wingecarribee and Nattai were formed in 1906 with the central towns of Bowral being formed in 1886, Moss Vale formed in 1888 (located northwest of Berrima), and finally Mittagong in 1889.

Berrima was founded in 1831 by Major Thomas Mitchell, when he created a new road link to Sydney with Port Phillip, Melbourne. Land use for the first 10 years of European settlement in the area now known as Berrima was dominated by European military members who were stationed there to oversee convicts and tradesmen who would build the Berrima Gaol and Courthouse. Other European residents of the area included law administrators and store/innkeepers. The Berrima Gaol was finished in 1844.

Berrima land use comprised of grazed modified or natural pastures and urban residential use. Production forestry occurs within the Southern Tablelands and is located close to Berrima. Particularly to the West, North and South of the Study area. Also West of the study area, land use for mining at the Berrima Coal mine (The Hume Coal Project), is located on the Old Hume Highway, approximately 37kms from the study area.

Wollongong is the second largest populated area within the Sydney Basin, followed by the Southern Highlands towns of Bowral, Moss Vale and Berrima. All of which are now well-developed zones within the region. Berrima on average is, however, not too densely populated in comparison to the other built areas in the region. Berrima on average contains from 1-10 people per square kilometre, and in some areas of the town up to 100 people per square kilometre. For perspective on these numbers, Sydney contains anywhere from 100-10,000 people per square kilometre. According to the Australian Bureau of Statistics at the 2021 census, 813 people lived in Berrima. The estimated number is now 1423, as of June 2023.

Berrima Gaol is one of the few remaining structures dating from the pre-1840s. It was built between 1835 and 1839 using sandstone. (*State Heritage Inventory: Berrima Correctional Centre* n.d.).

Berrima Gaol was first opened in 1839 after 5 years of construction. The initial phase of use was from 1839 – 1847. Due to other prisons being opened across NSW, the Gaol was closed for a time until it was required again in the 1860s for the rising prison population. Following this, the separate system for prisoner management was introduced in the prison, and it went through modifications during the 1860s. The prison remained in use until 1909 when it was shut for a second time.

During World War One, German prisoners of war were moved into the buildings from 1914. After the war, the prison was once again unused. During World War Two, the buildings were used for military storage until a fire in 1942 ripped through the building and destroyed much of the internal buildings. The prison went through a significant rebuilding by convicts during the later part of the 1940s and was reopened in 1942. The prison went through several periods of use before finally being closed in 2019.

As a result of the land within the study area being disturbed and continually modified since the construction of the Gaol in 1839, there is very low potential for Aboriginal cultural material to have remained on site.

The township of Berrima is the second oldest European settlement in the Wingecarribee shire and is also one of the less populated and built towns within the Wingecarribee shire ('Berrima History: Berrima's First Residents' n.d.).

The historical aerials show that between 1963 to 1990 no major changes occurred to the study area's original buildings and outbuildings, however, the additional structures built that are within the study area surrounding the gaol have been partially modified and modernised, and include two historic cottages, guard offices, a commercial space, a tennis court, an industrial shed and commercial kitchen (*State Heritage Inventory: Berrima Correctional Centre* n.d.) (Figure 3.5, Figure 3.6 and Figure 3.7). The surrounding grounds of these buildings have been disturbed mostly by more modern landscaping and plantations alongside the northern end of Argyle Street adjacent to the study area.

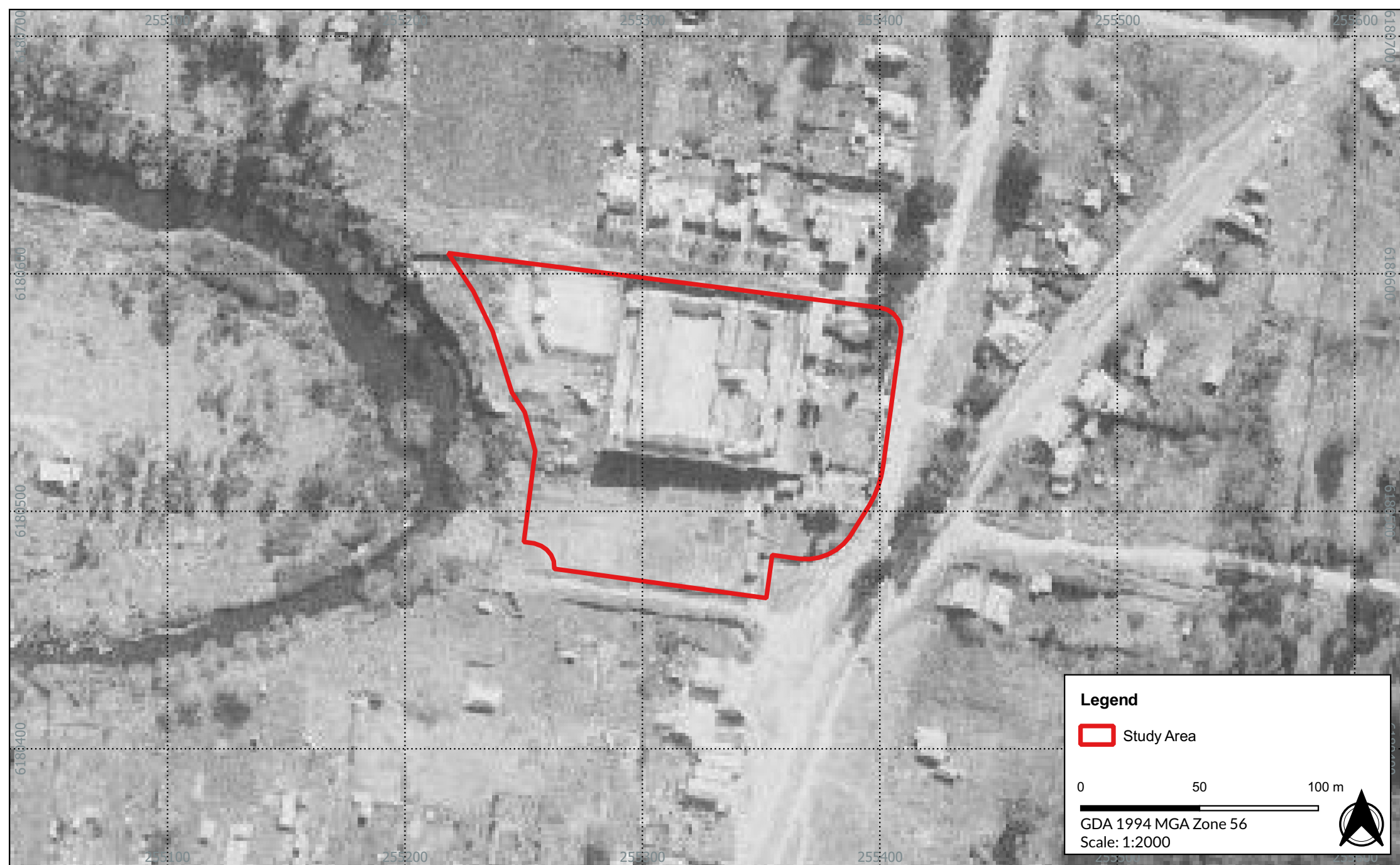


Figure 3.5 - 1963 historical aerial of the study area

24039 - 2-4 Argyle Street, Berrima NSW - ACHA

Source: NSW Spatial Services

Drawn by: FOT Date: 2024-07-10

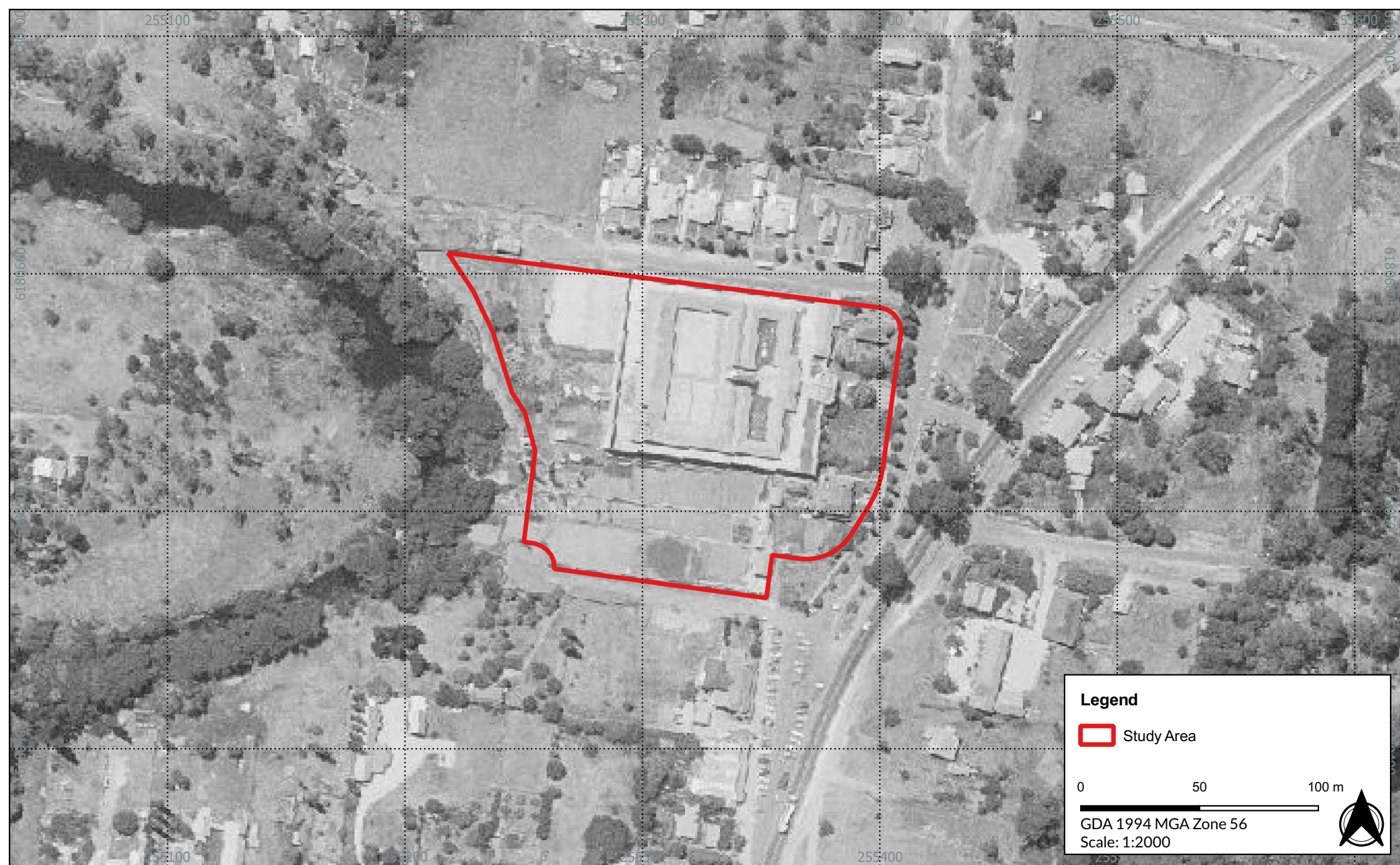


Figure 3.6- 1983 historical aerial of the study area

24039 - 2-4 Argyle Street, Berrima NSW - ACHA

Source: NSW Spatial Services

Drawn by: FOT Date: 2024-07-10



Figure 3.7 - 1990 historical aerial of the study area

24039 - 2-4 Argyle Street, Berrima NSW - ACHA

Source: NSW Spatial Services

Drawn by: FOT Date: 2024-07-10

4. ARCHAEOLOGICAL CONTEXT

The range of environments and landscapes within the Sydney Basin Bioregion had a profound influence on the lives of the Aboriginal people who lived there. As hunters and gatherers, Aboriginal people were reliant on their surroundings to provide food. Their transitory lifestyle affected population size, social interactions and degree of mobility, which can be confirmed in the archaeological record.

4.1. POPULATION AND CONTACT HISTORY

The Southern Highlands / Wingecarribee region is part of the land traditionally occupied by both the Dharawal and Gundungurra people, the latter whose land encompasses most of the land surrounding the Cox, Nattai, Nepean, Wingecarribee and Wollondilly rivers (Organ 1990, p.x1). The Nattai Reserves System was the traditional home of the Dharawal and Gundungurra people. (Nattai Reserves Plan of Management, NSW National Parks and Wildlife Service, 2001, p.27). The name Wingecarribee itself is derived from the name Wundjigaribay, meaning “white waratah” (Northern Illawarra Aboriginal Collective Inc. 2008, p.2). The people occupying the Wingecarribee region were a sub-tribe of the Gundungurra, speaking Mithun and creating distinctive tree carvings to commemorate the deceased (Northern Illawarra Aboriginal Collective Inc. 2008, p.2). Before the arrival of European explorers, the Gundungurra also inhabited the Blue Mountains region with the Burra and Darug tribes (Gundungurra Tribal Council n.d.). Despite the region having rich volcanic soils supporting a large variety of plants and animal species, such as kangaroos, wild ducks and lyre-birds (Jervis 1973, p.1), the Gundungurra people moved around the area including the Burratorang Valley and Mount Gibraltar, following the seasonal availability of different food resources (Flood 1973, p.11, Mount Gibraltar Landcare and Bushcare 2007, p.30). They would undertake their gathering moving in small groups, and meet with members of other groups through social arrangements (Mount Gibraltar Landcare and Bushcare 2007, p.30).

Rich (1988) collected ethnographic accounts which suggest that Bowral, within the lands of the Gundungurra people, was also used by the Wodi Wodi people as a route across the Illawarra escarpment. The Gundungurra people are said to have fought with the Hartley, Illawarra and Shoalhaven tribes, although they also had friendly relationships with these groups (Bowern 2018, p.61). Given the complexity of Aboriginal tribal relationships and the season-based mobility of the Gundungurra, it is likely that this land was used by other groups such as the Wodi Wodi and Dharawal people from the east coast as well as the other previously mentioned tribes (Gundungurra Tribal Council n.d.).

The earliest known account of contact between the Aboriginal people of the Southern Highlands is recorded in the journal of Wilson (1798) and relayed by Jervis (1973). It refers to the Aboriginal people wearing ankle-length animal skins and Wilson capturing an Aboriginal girl with the intent to “learn something” from her (Jervis 1973, p.1,2). While the arrival of European explorers in the Southern Highlands devastated the Aboriginal population of the region due to starvation, conflict and disease, many artefacts and sites have been located which reflect the activities of the Dharawal and Gundungurra. Paintings, drawings, stencils, axe-grinding grooves, rock shelters, open campsites, scar trees, flakes and tooled items have been identified in the Southern Highlands, which depict how Aboriginal people were using the land before settlement. Some of the stone artefacts found in the region have been determined to consist of raw materials not found in the local area, suggesting migration and possible trade relationships (Mount Gibraltar Landcare and Bushcare 2007, pp.30, 31).

4.2. PREVIOUS ARCHAEOLOGICAL WORK

The material evidence of Aboriginal land use has been compiled based on a review of previous archaeological studies at a regional and local level, heritage database searches and field investigations.

4.2.1. REGIONAL ARCHAEOLOGICAL CONTEXT

HODDLES CROSSING TO ALPINE

Koettig (1981) was commissioned to complete an archaeological survey to assess the route of the proposed F5 extension, a 34-kilometre-long study area 100 to 200 metres wide that covered the landscapes from Alpine in the north to Exeter in the south with Mittagong and Berrima to the east.

The study identified 24 previously unrecorded sites along the 34-kilometre survey group. These sites comprised 3 grinding grooves, 2 scarred trees, 10 open sites, 1 open site with quarry, 2 open sites with scarred trees, 4 shelters with deposit and 2 shelters with deposit and art. Twenty of these sites are noted as being within the northern 20 kilometres of the survey route. Sites located at the southern end of the survey are described as scattered, while sites 9 to 24 are described as clustering into 4 distinct groups. The sites identified by this study are summarized in Table 4.1 below.

Table 4.1 Sites identified by Koettig's (1981) survey.

Name	AHIMS No.	Type	Location Landform	Features
HCA 1(a) & (b)	52-4-0030	Grinding Grooves	Creek with sandstone boulders	One defined groove and two weathered grooves.
HCA 2	52-4-0033	Scarred Tree	Paddock	Rectangular scar of 1.2 by 0.6 metres.
HCA 3 (a) & (b)	52-4-0031	Grinding Grooves	Shallow depression in head of creek tributary	24 grooves in part (a), 9 grooves in part (b).
HCA 4	52-4-0032	Open Site	Small knoll near riverbank	30 by 20-millimetre red silcrete flake, small grey silcrete flake, several small quartz flakes.
HCA 5	52-1-0048	Grinding Grooves	Slope above drain which feeds into creek	Two grooves on 700 by 500-millimetre isolated block of sandstone.
HCA 6	52-1-0049	Open Site	Creek bank	Two white chert cores and raw materials of smoky quartz, quartzite, grey chert, red chert, and red silcrete in Area A. Large silcrete core in Area B.
HCA 7	52-1-0050	Open Site	Slope of small ridge above creek	Several artefact scatters. One backed blade, multiple flakes and multiple cores. Raw materials present were quartz, white chert, grey and white silcrete. Protected sandy area created by rock overhang noted as potential sleeping place.
HCA 8	52-1-0051	Scarred Tree	Saddle leading below rocks	Ovate scar of 1.14 by 0.42 metres, with axe marks at upper end.

Name	AHIMS No.	Type	Location Landform	Features
HCA 9	52-1-0052	Open Site	Flat area between two watercourses	100 by 50-metre scatter of varying density. Isolated artefacts up to 20 metres from main scatter. One chert backed blade (25 millimetres) and one river pebble (140 by 90 by 40 millimetres) with 10-millimetre-wide grinding. Artefacts made of quartz, red and white silcrete, grey and white chert, possible red chalcedony.
HCA 10	52-1-0053	Open Site	Cleared ridge parallel to creek	Artefact scatter, one quartz backed blade (20 by 10 millimetres), other artefacts consisted of flakes and cores made of quartz, grey chert, grey and white silcrete.
HCA 11	52-1-0054	Open Site	Wide flat beside creek	One black chert flake and one grinding groove within cave shelter (9 by 3 by 1.6 metres).
HCA 12	52-1-0055	Open Site	-	-
HCA 13	52-1-0056	Shelter with Art	Outcrop above slope to creek.	Sandstone shelter of 9 by 3 by 1.6 metres. Compact deposit of 40 to 200 millimetres depth, level with dripline. One black chert artefact. European graffiti in shelter.
HCA 14 and HCA 14A	52-1-0057	Open Site and Quarry	Slope on creek tributary within gully End of low ridge in gully	Silcrete eroding out of gully identified as quarry. 7 flakes of red, white and grey silcrete, two more flakes and one core nearby. 10 flakes, 11 flake fragments, two chips and one core were found adjacent to 14A. Nearby was a grey silcrete core and 4 small quartz flakes.
HCA 15	52-1-0058	Open Site	Wide flat	4 silcrete flakes, one with a modified margin.
HCA 16	52-1-0058	Open Site and Scarred Trees	End of low ridge leading to creek junction	Site covers area of 130 by 100 metres. Areas of dense chips and flakes, up to 20 artefacts per square metre with some pieces as small as 1 millimetre. Quartz, grey chert, grey and white silcrete noted as materials. Small block of sandstone with elongate grooves approximately 100-millimetres long. 7 scarred trees present. Axe marks on all trees, unclear if Aboriginal or European in origin.
HCA 17	52-1-0060	Open Site	Sandy ridge leading to creek	Flakes of quartz, chert and silcrete noted within an 80-metre area.
HCA 18	52-1-0061	Shelter	Large round sandstone exposure	Cavity of 9 by 2 metres with height varying between 1.5 metres at the front and 500 millimetres at the back. No surface artefacts were located, deposit within shelter was excavated.

Name	AHIMS No.	Type	Location Landform	Features
HCA 19	52-1-0062	Shelter and Open Site	Flat abutting sandstone cliff	Deposit estimated to be 3.5 metres in width and between 500 to 600 millimetres deep. 5 flakes were identified, comprised of dark grey chert, banded chert, quartz and basalt.
HCA 20	52-1-0063	Shelter with Art	Sandstone outcrop with dripline, flat and slope to creek.	Shallow cavern in sandstone outcrop of 5 by 3.5 by 2 metres. Remnants of charcoal drawings on 3.5 metres of the wall. Deposit is estimated to be 200 millimetres deep in the shelter and deeper across the flat for 7.3 metres. One grey silcrete flake was located in the dripline.
HCA 21	52-1-0064	Shelter with Art	Sandstone wall outcrop of 18 to 20 metres.	Sheltered area of 4 by 1.5 metres. Aboriginal drawings extend over 1.4 by 0.34 metres. One image depicts an eel and another figure. Another eel of 13 by 250 millimetres is 0.35 metres away, along with smudged charcoal lines. European graffiti is located above the second eel. Shelter deposit extends 5 metres beyond wall base, is compact, and more than 200 millimetres deep. Five flakes and one core of grey silcrete, banded chert, and dark grey chert were recorded.
HCA 22	52-1-0065	Open Site	Elevated flat between two watercourses.	50 by 20 metre artefact scatter of flakes up to 30 millimetres in length. Artefacts comprised of quartz, grey silcrete, and grey and black chert.
HCA 23	52-1-0066	Open Site and Scarred Trees	Southern bank of Sheep wash Creek, nose of wide ridge, top of ridge.	Artefacts dispersed over 440 metres concentrated in two areas. Wide range of artefact types and materials, including flakes (between <1 and 30 millimetres) scrapers, backed blades and an axe fragment, made of various coloured silcretes, grey, black, and white chert, fine grained siliceous material, basalt, and blue fine-grained material. Five scarred trees, one eucalypt, one peppermint, and 3 stringy barks, were also located, with scars up to 380 millimetres wide.
HCA 24	52-1-0067	Open site	Elevated flat at junction of two water courses.	Artefacts in density of 5 per square metre found within scour. Chert, silcrete and quartz flakes were located, as well as a 10-millimetre quartz crescentic microlith.
HCA 25	52-1-0068	-	-	-

As a result of the survey, sites HCA 14 and HCA 14A were recommended for test excavation so that more thorough site assessments could be undertaken to better inform recommendations. Three pits of 500 by 300 millimetres were opened 20 metres apart, named A, B and C. Square A was excavated to a depth of 300 millimetres and contained no artefacts. Square B was excavated to 200 millimetres and contained 5 flakes between 10 and 46 millimetres in size, with one of grey chert. Square C was excavated to 300 millimetres and contained 12 flakes, 15 'chips' and 1 core, all made of silcrete and between 2 and 17 millimetres in size. This material is in addition to the material observed in the survey (Koettig 1981, pp.30–32).

Site HCA 18 was also excavated to determine the presence or absence of sub-surface cultural material. A pit of 500 by 500 millimetres was excavated to a depth of 540 millimetres where excavation ceased due to the 500 by 500-millimetre pit being too small to continue further. A total of 117 artefacts were removed from the pit, meaning the average density for the site is 468 artefacts per square metre. The deposit was noted to continue for an additional 220 millimetres down to bedrock. The majority of artefacts were retrieved from between 330 and 460 millimetres deep. Of the artefacts recovered there were 13 worked pieces, including 7 scrapers and 6 backed blades (3 incomplete), as well as 3 bipolar cores. The remaining artefacts are considered waste materials of between 8 and 37 millimetres in length. Materials used include grey, yellow and red silcrete, yellow, grey and dark grey chert, quartz, and possibly some chalcedony (Koettig 1981, pp.34–36).

The survey was able to provide a broader insight into Aboriginal site distribution within the districts of Mittagong and Moss Vale. Based on the observations of sites during the survey the following general statements were made regarding Aboriginal sites in the Southern Highlands (Koettig 1981, p.45,46):

- Several sites contained evidence of backed blade and microlith technology
- Open Sites are the most common site type
- Nearly all open sites occur on Wianamatta Shales or the intersection of Wianamatta Shales and Hawkesbury Sandstone
- Open Sites typically occur in these settings:
 - Along banks of watercourses
 - On small, elevated areas near the junction of watercourses
 - On level parts of low spurs and ridges above watercourses
 - On flats adjacent to watercourses
- One site was located on a level area atop a medium slope on an expanse of sandstone.
- It is concluded that almost any level area near a watercourse will contain evidence of Aboriginal occupation.
- Shelter Sites were confined to exposures of Hawkesbury Sandstone within the shale area.
- There are likely to be more shelter sites beyond the area of the survey
- It can be expected that most shelter sites near watercourses will contain evidence of Aboriginal occupation
- All grinding grooves identified were on sandstone within shale lithology
- The presence of scarred trees can be linked to a lack of European vegetation clearing

WINGECARRIBEE RIVER PROPOSED MANAGEMENT PROJECT

Rich (1988) was commissioned to conduct an archaeological survey of Aboriginal and historical archaeological sites with regard to the Wingecarribee River and proposed modifications to the Shoalhaven Water Supply Scheme. The survey was performed on foot along the Wingecarribee River from Wingecarribee Swamp (Reservoir) to Black Springs Creek, passing along the south-eastern border of Sutherland Park and covering an area of 25 kilometres by 200 metres (Rich 1988, pp.1–3).

The survey identified 6 historic sites, 12 Aboriginal sites, 6 isolated finds, one shelter with PAD and one potential open site. The details of the Aboriginal archaeology identified by the survey are presented in Table 4.2.

Table 4.2 Aboriginal archaeology identified by Rich (1988).

Site Name	Site Type	Landform	Size	Features
WR 1	Open Site	Dry flat adjacent to a small billabong	5 metres ²	Four artefacts and one fragment of emu shell. Materials were milky quartz, brown silcrete, grey chert, and pink silcrete. One artefact had cortex on a single surface, two had wear/retouch. One core, one scraper, two flakes.
WR 2	Open Site	Dry spur atop sandstone outcrop above the river	200 metres ²	Maximum artefact density of one per metre ² , 5 artefacts identified, one of red silcrete and 4 of milky quartz. One artefact had cortex on a single surface, two had wear or retouch. All flakes or flaked pieces.
WR 3	Open Site	Wide flat above river	380 metres ²	Fifteen artefacts in one area, 22 in the other. Materials in the first area include light brown indurated mudstone, milky quartz, glassy quartz, grey silcrete and cream silcrete. 3 artefacts had cortex, 5 had wear or retouch. The second area featured milky quartz, grey silcrete, sugar quartz, yellow indurated mudstone, crystalline quartz and rose quartz. Two artefacts had cortex, two had wear or retouch. Types were flakes, cores and chips.
WR 4	Shelter Site	Under upslope of upturned sandstone block	2 metres ²	The shelter is only 970 millimetres in height. Contained one red silcrete flake and one milky quartz flake.
WR 5	Shelter Site	Under sandstone ledge on slope	6 metres ²	The shelter is 1 metre in height. Contained two milky quartz flakes.
WR 6	Open Site	Narrow saddle above river loop	One kilometre ²	One black chert flake, one white silcrete flake, and two amorphous white silcrete flaked pieces. A low density of one artefact per 250 metres ² .
WR 7	Open Site	Wide flat spur above river	600 metres ²	One amorphous milky quartz flaked piece, one milky quartz flake, one grey silcrete flake one light brown indurated mudstone flake. A low density of one artefact per 150 metres ² .
WR 8	Scarred Tree	Atop a long ridge above the river	2.33 metres tree circumference	Two scars on a tall forest scribbly gum tree. Scars lack indications of surveyors' markings, deemed to be from Aboriginal presence.
WR 9	Open Site	Knoll/spur	100 metres ²	Five flakes of milky quartz, white chert, rose sugar quarts and grey silcrete. The low density of one artefact in 20 metres ² .
WR 10	Open Site	Spur	500 metres ²	One white silcrete scraper with wear/retouch. One white silcrete amorphous flaked piece. The site was recently destroyed by a subdivision.
WR 11	Open Site	Rise on riverbank	500 metres ²	Thirty-two artefacts were identified, consisting of various colours of silcrete, quartz and mudstone

Site Name	Site Type	Landform	Size	Features
				with the majority being either flakes or flaked pieces, many with wear/retouch.
WR 12	Natural Mythological Site	Waterhole at junction of Wingecarribee and Wollondilly Rivers	N/A	Site associated with a myth reported by Mathews (1908) describing how Gurangatch, a part reptile part fish being, would at times camp in the waterhole. When Mirragan the tiger cat tried to catch Gurangatch, he escaped by forming the Wollondilly River.
WR PAD	Shelter with PAD	Under sandstone outcrop below the ridge	3 metres ²	Shelter 2.2 metres in height, friable rock not suitable for art. Dry compact orange-brown sandy-clay deposit more than 150 millimetres deep.
WR POS	Potential Open Site	Levee bank	N/A	Levee banks are noted to potentially contain archaeology. Specific levy bank was noted as higher and drier than others and such would have been a suitable camping spot.
IF 1	Isolated Find	Low rise above the river	N/A	One grey silcrete flake.
IF 2	Isolated Find	Exposure on wide flat	N/A	One amorphous milky quartz flaked piece.
IF 3	Isolated Find	Exposure to fill material above the river	N/A	One milky quartz bipolar flake.
IF 4	Isolated Find	Exposure below the confluence of gullies	N/A	One yellow silcrete flake.
IF 5	Isolated Find	Exposure above river	N/A	One milky quartz bipolar flake.
IF 6	Isolated Find	Slope above river	N/A	Grey silcrete flake.

The visibility and exposure of potential sites were overall quite low due to grassed vegetation. The soils encountered at sites of Aboriginal archaeology include grey-brown soils, orange clay, various colours of sand clay and loamy sandy clay, various colours of sand, alluvial deposits and similar (Rich 1988, p.9,47-57).

Rich (1988) makes several general statements on Aboriginal archaeological sites based on the survey results. These can be summarised as follows:

- The most common site type encountered was open-site
- The majority of sites were located on sandstone geology
- Most sites were located more than 20 metres from the river and more than 5 metres above the river
- The isolated finds closer to the river suggest the utilisation of the land without intense occupation
- The open sites highlight areas selectively occupied further from the river
- The presence of trees appears to correlate to occupations as trees were an important resource
- The occupation pattern of sites away from the river contrasts the findings of Koettig (1981) which suggests occupation most commonly occurred in close proximity to water courses.
- The site occupation pattern in the region is similar to the site occupation pattern observed in Canberra.

HIGHLANDS SOURCE PROJECT

Navin Officer (2012) was commissioned by GHD on behalf of the Goulburn Mulwaree Council to conduct subsurface testing and subsequently an archaeological salvage on a series of previously identified archaeological sites. The Highlands Source Project on which the study was based covered a length of 81 kilometres, extending from Wingecarribee Shire to Goulburn Shire, passing through an area roughly 4 kilometres south of the study area.

The artefact collection, subsurface testing, salvage excavation and soil stripping identified over 2,000 artefacts which are documented according to which activity they were recovered. The results of the surface artefact collection completed for artefact scatters and isolated finds are outlined in Table 4.3.

Table 4.3 Summary of surface artefact collection by Navin Officer (2012).

Landform	Collection Sites	Number of Salvage Units	Total Salvage Area (Kilometres ²)	Number of Artefacts
Spur crest bordering tributary of Jaorimin Creek	HSP17	17	2.2	70
Spur crest and basal slopes	HSP5	35	20	174
Spur crest	HSP20	2	0.2	3
Spur	HSP31	1	IF	1
Ridge crest	HSP23, HSP24	15	3.7	34
Saddle	HSP8	8	6.7	8
Mid slope	HSP12, HSP18, HSP29	25	1.2	69
Creek margin / basal slopes	HSP25, HSP26	43	37.5	117
Basal slopes	HSP30	3	1.2	4
Creek margin	HSP15	7	0.2	34
Alluvial terrace/basal slopes	HSP PAD8	1	0.4	2
Total		157	73.3	516

The test excavations were performed using a 450-millimetre auger at 20 metre intervals along a transect dictated by a pipeline easement. The results of the text excavation procedure are outlined below in Table 4.4.

Table 4.4 Summary of subsurface testing results by Navin Officer (2012).

Test Site	Landform	No. of Auger Test Pits	Depth (mm)	No. of Pits with Artefacts	No. of Artefacts
HSP5	Spur crest and basal slopes	26	380-450	12	17
HSP7	Spur crest	23	350-500	2	2
HSP8	Saddle	9	280-550	1	1
HSP15	Creek margin	3	190-500	1	7
HSP16	Alluvial terrace	3	650-850	2	5

Test Site	Landform	No. of Auger Test Pits	Depth (mm)	No. of Pits with Artefacts	No. of Artefacts
HSP17	Spur crest / creek tributary	5	300-450	2	8
HSP20	Spur crest	5	700-110	6	33
HSP23	Ridge crest	18	200-450	4	10
HSP25	Creek margin / basal slopes	14	220-500	9	33
HSP26	Creek margin / basal slopes	7	400-860	1	1
HSP PAD1	Spur crest	6	600-850	3	10
HSP PAD2	Terminal spur crest	11	350-850	0	0
HSP PAD3	Creek margin	3	550-720	0	0
HSP PAD5	Spur crest	6	280-560	4	79
HSP PAD6	Basal slopes	7	300-720	2	3
HSP PAD7	Spur crest	10	280-420	4	31
HSP PAD8	Alluvial terrace / basal slopes	7	250-500	2	2
Total		163			

The auger testing recovered 225 artefacts, with most artefacts being retrieved from spits 1 and 2. The highest density of artefacts occurred at HSP PAD5 with 79 artefacts being recovered. The soils encountered by the test pitting ranged in colour and were generally sandy, silty or loamy towards the top of the profile, grading downwards into sands, clays and gravels. The results of the test augers were used to inform which areas should be salvaged. Areas that contained an artefact density above 25-30 metres² were discussed in the field to determine if salvage would be appropriate. The salvage was conducted in 500-millimetre² pits with 100-millimetre spits, except for areas that were found to be too rocky to excavate by hand, in which case the 450-millimetre auger was used (Navin Officer 2012, p.15). The results of the subsequent salvage are outlined in Table 4.5 below.

Table 4.5 Summary of sub-surface salvage results by Navin Officer (2012).

Site Name	No. of Salvage Pits	No. of Artefact Bearing Pits	No. of Artefacts	Spit Containing Most Artefacts
HSP20	43	43	376	1
HSP25	24	24	907	1
HSP PAD5	9	9	205	2
HSP PAD7	11 (7 Auger)	5	30	1
Total	87	81	1518	

Archaeological sites noted in previous investigations to have a high density of artefacts present were subject to soil stripping procedures. Six of the 7 sites that were soil-stripped produced a total of 328 artefacts. HSP12 produced one artefact, HSP17 produced two artefacts, HSP20 produced 173 artefacts, HSP23 produced 0 artefacts, HSP25 produced 145 artefacts, HSP26 produced 3 artefacts and HSP PAD5 produced 4 artefacts.

Lithics analysis of the 2,601 artefacts retrieved from the different procedures categorised them into 63 distinct types made of 16 different raw materials. 49.25% of the artefacts were classified as flakes, and 34.14% as flaked pieces. The artefact assemblage has been analysed to be 52% quartz, 34% silcrete, 7% weathered fine-grained stone and 4% chert. This assemblage is noted to have a high density of richness, although 75% of the assemblage has been determined to be fragmented or broken. The combined results of the procedures undertaken allowed Navin Officer (2012) to make the following predictive statements in regard to the Aboriginal archaeology of the Southern Highlands region (Navin Officer 2012, p.vi):

- Artefacts located at sites within the Southern Highlands are dominated by chert and fine-grained sedimentary raw materials
- Artefacts are most commonly located on margins of creeks and spur crests directly overlooking reliable sources of water.
- Landforms in a valley floor context, such as alluvial terraces and basal slopes, tend to contain lower numbers of artefacts.
- Sites of higher artefact numbers and larger areal extent are mostly located on spur crests.
- Artefact density and assemblage size have a strong positive correlation ($r^2 = 0.901$), meaning sites with large assemblages also generally have the densest assemblages.
- Most subsurface artefacts occur at a depth of 20 cm or shallower and most sites do not appear to have undergone substantial bioturbation.
- Artefacts on a surface, even in relatively high numbers, are not a reliable indication of the presence of archaeological deposits in the subsurface.

HUME COAL PROJECT

EMM was commissioned by Hume Coal Pty Ltd to conduct an Aboriginal Cultural Heritage Assessment as part of a development approval for an underground coal mine in the Southern Coalfield of NSW (EMM Consulting 2017,).

The methodology for the survey involved an area of 124 square kilometres within the proposed impact area for the Hume Coal Project and the Berrima Rail Project. The pedestrian survey involved between 7 and 10 people surveying a corridor of 20 to 50 metres working to identify exposures within the thickly grassed area and inspecting any mature trees and outcropping sandstone in the path or impact zone. Areas of exposure created by ploughing, vehicle tracks, cattle tracks, eroded scalds and stream banks were targeted as they provided good visibility (EMM Consulting 2017, p.65).

The survey resulted in the recording of 177 sites across the two project areas, two sites outside of both project areas and the relocation of two previously recorded sites, AHIMS # 52-4-0098 and # 52-4-0097. The findings of this survey were then used to inform the test excavation methodology.

A survey of the underground mine area was also conducted to identify any Aboriginal sites which may be vulnerable to subsidence impacts. The survey inspected scarps, cliffs and outcropping sandstone associated with stream channels to identify any potential shelters, carvings, rock pools and grinding grooves. The survey found rock shelters with PADs to be the most commonly occurring site type at 30.4% of the sites encountered, followed by isolated finds at 21.5%. Sites were found to occur most commonly in scarps, followed by hill spurs and crests. Of the sites containing stone artefacts, silcrete and quartz were observed to be the dominant raw material types (EMM Consulting 2017, p.ES.3, ES.4,90-94).

The test excavation program comprised 160 pits of 500 millimetres x 500 millimetres, in linear transects, with 10 transects within the Coal Project Area and 6 in the Rail Project Area. The excavations retrieved a total of 281 artefacts, giving the project's areas an average density of 7 artefacts per metre², with most artefacts being found in foot slope landforms. Most artefacts were found in Spit 1 and 2 within the upper soil layer, which was described as mixed from ploughing and bioturbation, and as such lacked stratigraphically intact deposits. 45% of the artefacts were retrieved from the transect adjacent to Oldbury Creek. The artefacts retrieved by the test excavation were dominated by silcrete, and flaked pieces / broken flakes as the artefact type (EMM Consulting 2017, p.ES4,135-137).

The results of the survey and test excavations led to the formulation of predictive statements regarding Aboriginal archaeology in the area and the concentrations of artefacts around perennial streams compared to ephemeral streams. It was suggested that (EMM Consulting 2017, p.ES.4,93):

- It is statistically more likely for sites to occur near ephemeral streams due to their higher presence in the landscape compared to perennial streams
- Perennial streams were less prevalent within the survey area and also had lower surface visibility, meaning it was less likely for sites to be found here.
- Level to gently inclined land which is suitably elevated within 150 metres of ephemeral streams is likely to contain low-density subsurface deposits with an average density of 2.7 artefacts per metre² at maximum.
- Level to gently inclined land which is suitably elevated within 200 metres of perennial streams and prominent hill crests likely to contain medium-density subsurface deposits with an average density of 14 artefacts per metre² at maximum.

4.2.2. HERITAGE DATABASE SEARCH

A search of the Heritage NSW AHIMS database was undertaken on 20 June 2024 (Client Service ID 902654). The results from the AHIMS search identified 57 previously recorded sites within a 5-kilometre radius of the study area. The search indicates that artefacts are the predominant site type with over 73.68% of known sites belonging to this category (Table 5.1). A review of the AHIMS listings indicates that other, less common, site types include PAD (n = 6, 10.53%), grinding groove (n = 4, 7.02%), modified tree (n = 3, 5.26%), artefact/grinding groove (n = 1, 1.75%) and artefact/PAD (n = 1, 1.75%).

It should be noted that any analysis using AHIMS data will be prone to biases as it relates to sites that have been recorded over the past 40 years. During this time, varying methodologies have been used to identify sites and a large portion of the surrounding landscape may have been subject to limited or no assessment. Therefore, site distribution is likely to be reflective of survey methods and patterns and should not be considered a comprehensive list of all Aboriginal sites within a given region.

For Figure 4.1 and Table 4.6, it is assumed that the correct coordinate system has been registered.

Table 4.6 Summary of sites recorded within the study area and adjacent.

Name	AHIMS No.	Type	Location Landform	Cadastral Boundary
Wingecarribee ISO Glass	52-1-0389	Artefact	Foot slope	191m from the study area
B1	52-2-1216	Artefact	Foot slope	150m from the study area
WR PAD	52-2-1309	Artefact	Foot slope	210m from the study area

The study area is also listed on the NSW State Heritage Register as, "Berrima Correctional Centre".



Figure 4.1 - AHIMS sites in close proximity to the study area

24039 - 2-4 Argyle Street, Berrima NSW - ACHA

Source: NSW LPI Aerial

Drawn by: FOT Date: 2024-06-20

4.2.3. LOCAL ARCHAEOLOGICAL CONTEXT

Archaeological investigations of the Sydney Basin Bioregion, particularly the suburb of Berrima, have been conducted in response to the spread of urban development as well as within the framework of academic enquiries. The limited ethnographic accounts of early settlers and explorers were once considered the primary source for archaeological enquiry. However, with the recent spread of urban development within the Berrima environs, archaeological investigations have increased accordingly.

Studies have been completed in the region, as such, this section presents a synopsis of selected archaeological investigations of direct relevance to the Study Area. These reports have been selected based on their landform context, proximity and in particular, relationship to the locality. The reports that have been reviewed are detailed in Table 4.7 and their location in the vicinity of the Study Area is provided in Figure 4.2.

Table 4.7 Reports selected for review as part of the local archaeological context.

Author	Date	Relevance to Study Area	Type of assessment
McDonald and Brayshaw	1983	McDonald and Brayshaw prepared a report on the archaeological survey carried out at a hard rock quarry near Bowral, located approximately 10 kilometres north-east of the study area.	Survey
Byrne	1987	Byrne prepared a report on an archaeological survey conducted at a proposed blue metal quarry site at Mt Misery, located approximately 6.2 km north of the study area.	Survey
Koettig	1987	Koettig conducted archaeological test excavations for a proposed sewerage pipeline site in Berrima, located approximately 1.85 km south-west of the study area.	Test Excavation
Koettig	1989	Report on the review of previously recorded sites in the path of the 33kV transmission line and recommendations for further assessments located approximately 9 kilometres south-east of the study area.	Review
Williams	1992	Report on an archaeological survey completed between Campbelltown and Goulburn located approximately 9 kilometres south-east of the study area.	Survey
Paton	1994	Report on the archaeological survey of proposed route deviations for the 33kV transmission line, building on the recommendations of Koettig (1989) located approximately 9 kilometres south-east of the study area.	Survey
Dibden	2001a	Aboriginal Archaeological Assessment of the proposed subdivision at Lot 1, DP 539841 Colo Street Mittagong located approximately 10 kilometres north-east of the study area.	Test excavation
McDonald	2005	Report consisting of a plain English summary of archaeological test excavations conducted within Wingecaribee Swamp located approximately 10 kilometres southeast of the study area.	Test excavation
Northern Illawarra Aboriginal Collective Inc.	2007	Comments on the draft report by AMBS on Aboriginal Cultural Heritage values associated with Renwick Sustainable Village located approximately 13 kilometres north-east of the study area.	Stakeholder response to the draft report

Author	Date	Relevance to Study Area	Type of assessment
Northern Illawarra Aboriginal Collective Inc.	2008	Aboriginal Cultural Heritage Assessment of Bong Bong Common located approximately 7 kilometres south-east of the study area.	Survey and ethnohistory review
AMBS	2013	Conservation Management Plan and Aboriginal Heritage Assessment for Throsby Park located approximately 9 kilometres south-east of the study area.	Survey
NGH Environmental	2016	Report on test excavations carried out at Broughton Street Moss Vale located approximately 8 kilometres south-east of the study area	Test excavation
Kelleher Nightingale Consulting Pty Ltd	2018	Report on test excavations carried out on site of Renwick residential development located approximately 13 kilometres north-east of the study area.	Test excavation
Biosis Pty Ltd	2019	Report on archaeological test excavations for the Chesley Park Masonry Plant (Stage 1), at 416 Berrima Road, New Berrima approximately 4.1 km north-west of the study area.	Test excavation
OzArk Environment & Heritage Management Pty Ltd	2021	Report on test excavation of proposed Plastics Recycling facility located approximately 5 kilometres south-east of the study area.	Test excavation
Austral Archaeology Pty Ltd	2023	Report on the salvage at 2-18 Centennial Road, Bowral for proposed development by Waterbrook Retirement Lifestyle Resorts located approximately 7 kilometres north-east of the study area.	Salvage

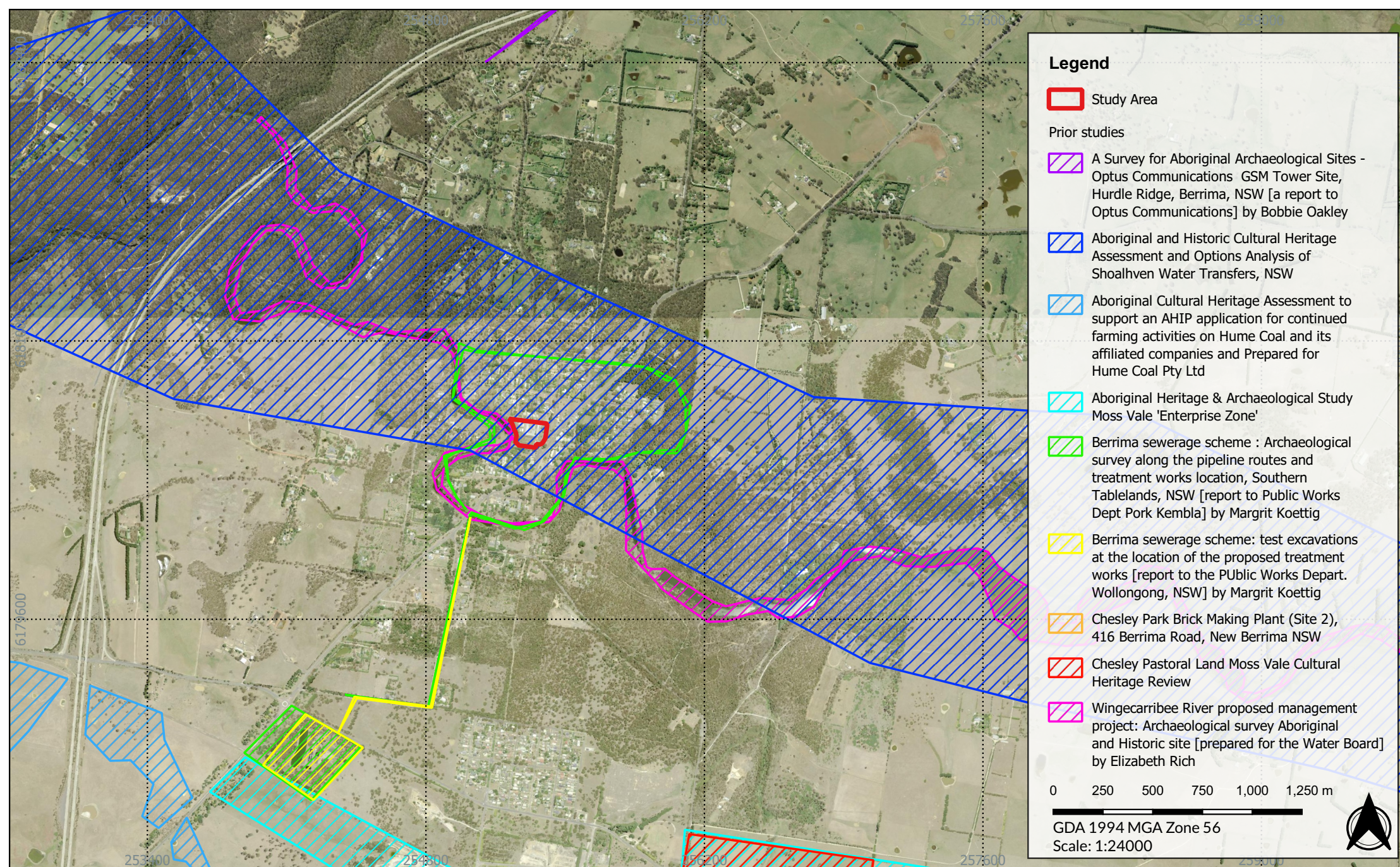


Figure 4.2 - Location of studies undertaken in the vicinity of the study area

24039 - 2-4 Argyle Street, Berrima NSW - ACHA

Source: NSW LPI Aerial, AHIMS

Drawn by: FOT Date: 2024-09-02

HARD ROCK QUARRY BOWRAL

Brayshaw and Associates (1983) undertook an archaeological survey of the site proposed for the hard rock quarry extension west of Bowral New South Wales, 10 kilometres north-east of the study area.

The survey area encompassed a cleared area of ten hectares over a slope running north to south. At the time of the survey, the area had already been impacted by two dams connected to two run-off channels with a north-west to south-east alignment (McDonald & Brayshaw 1983, p.1). The survey was conducted in north-south transects across the study area. The majority of the ground had less than 5% visibility due to thick grass, only erosion-induced exposures around the dams and water channels provided visibility, and as such they were examined in close detail. The survey encountered numerous pieces of basalt and sandstone, which were carefully examined to determine if they were evidence of quarrying activity. The rocks were found to contain fractures, but it was surmised that this was the result of European plough damage. The survey also inspected the few trees within the study area and noted that none of the trees had scars. No archaeological relics were identified within the area, or within the area to its south (McDonald & Brayshaw 1983, pp.5–6).

BLUE METAL QUARRY MT MISERY

Byrne (1987) conducted an Aboriginal Archaeological survey of the microsite deposit site proposed for a blue metal quarry at Mt Misery in Berrima, approximately 6.2 km north of the study area.

The survey inspected selective areas, targeting flat ridge tops, spurs, and creek margins. These selections were made based on the locations of sites previously recorded within the region and the details of the 5 sites considered to be in the vicinity of the survey area.

The ground visibility of the surveyed areas was overall poor due to thick grass coverage, although there were a few exposures created by animal or vehicle tracks where visibility was improved to roughly 5%. Additional exposures were present along creek banks, while the margins themselves were mostly covered by grass. The erosion of the survey area is noted as low, and the ground visibility is surmised to be 0-5%, apart from an uncleared area in which it was 0-20% (Byrne 1987, pp.3-4,6).

One open site and 8 isolated artefacts were identified during the survey. The open site (Mandemar 1) was located on a flat to gentle slope to the east of a sand extraction pit. It is described as a scatter of flaked stone artefacts within an area of 100 metres² with an artefact density of 3 per metre². The artefacts within the scatter were quartz and silcrete flakes and flaked pieces (Byrne 1987, pp.4-5,14).

Two artefacts were located on exposure beneath a tree, being a light brown chert flaked piece and a brown silcrete flake. Another two artefacts were observed under another tree to the northeast, a grey silcrete flaked piece and a grey silcrete flake. An additional artefact (quartz core) was located on a creek margin. The remaining isolated artefacts finds occurred within the uncleared land parcel with improved visibility. These consisted of two quartz flaked pieces and one quartz flake (Byrne 1987, pp.4–5).

The poor ground visibility is acknowledged to have compromised the detection of archaeological sites and it is noted that it is likely more sites are present that were not detected. The Mandemar 1 open site is described as a typical example of the open sites which occur in the region that are generally clustered near watercourses. During the survey it was not possible to determine the extent of this site due to poor visibility, or if this site may have contained an archaeological deposit (Byrne 1987, p.5).

BERRIMA SEWERAGE SCHEME: TEST EXCAVATIONS AT THE LOCATION OF THE PROPOSED TREATMENT WORKS, HUME HIGHWAY BERRIMA

Koettig (1987) reported on archaeological test excavations carried out at a proposed sewerage pipeline plant located in an open area in close proximity to the Hume Highway and Wingecarribee River. The proposed sewerage plant of this report is located approximately 1.85 km from the study area. The proposed pipeline route connecting the town to the sewerage treatment plant was made up of poor ground visibility, so only two sites were located during the survey in this area. However, at the sewerage treatment site (named B3), some archaeological material was found and hence where the test excavations were carried out.

Sixty-seven artefacts were found across the entire site, predominantly flakes from knapping materials such as quartz, silcrete, mudstone, chert and an unidentified fine-grain material. The knapping flakes were largely made up of quartz and silcrete.

Thirteen boreholes were made (2m long, 50cm wide), of which 8 artefacts were found throughout. 19 test trenches were placed along two transects (A and B), 1m long, and 20cm wide. The highest concentration of artefacts was found along Transect B. Both transects were placed on the Southern portion of the test area, close to the break of the slope.

Spoil from testing was sieved using a 5mm mesh.

It was concluded in this report that due to the large number of disturbances to the pipeline route, the integrity of the artefacts that may have been located there would be lessened due to the increased amount of early European activities on the land which impacts the integrity of any potential artefact scatters. The test area (B3) was however of the lowest disturbance within the proposed area, hence the 67 artefacts found there may have been in situ, but this of course could not be confirmed in this report.

MOSS VALE TO MITTAGONG 33KV TRANSMISSION LINE

Koettig (1989) was commissioned to conduct a review of the previously recorded Aboriginal archaeological sites along the northern section of the proposed route of a 33kV transmission line between Moss Vale and the Tycan Industrial Area in Mittagong, approximately 9 kilometres south-east of the study area. The aim of this review was to identify areas that would require archaeological investigations prior to the route of the transmission line being finalised (Koettig 1989, p.1).

Based on the findings of the literature review, Koettig makes the following predictions:

- Sites may occur in any topographic unit within the landscape
- Sites may be more likely to be located within 100 metres of permanent water bodies, but may also be found along ephemeral water sources and creek lines
- Bodies of sand have high potential for archaeological sites
- Grinding grooves may be located in areas of sandstone outcrops, within both Hawkesbury Sandstone and Wianamatta Shale Formations
- Shelter sites are likely to be associated with art and deposits
- Other site types such as burials, quarries and scarred trees can be found anywhere within the landscape
- Carved trees, stone arrangements, ceremonial grounds and middens are rare

A review of the previously recorded sites in the National Parks and Wildlife database found that there were no sites within the northern section of the proposed transmission line route, but there were sites recorded in proximity to it. It is noted that sub-surface sites may still be preserved within areas that have been ploughed and farmed and that it is not possible to predict how farming may have affected Aboriginal sites (Koettig 1989, pp.5–8).

The entire northern section of the proposed route is considered to have archaeological potential and it was advised that this area is subject to an archaeological survey to identify any sites or areas of potential prior to any construction. The area where the proposed route crosses the Wingecarribee River is considered to possibly contain stratified buried archaeological material within the flats on either side of the river.

CAMPBELLTOWN TO GOULBURN FIBRE OPTIC CABLE

Williams (1992) completed a cultural resource field survey to examine Aboriginal and Historical archaeological sites along the proposed route of the Optus fibre optic cable installation, approximately 9 kilometres southeast of the study area. The aims of the survey were to determine the significance of archaeological sites and assess the potential impact the cable installation may have on sites (Williams 1992, p.1).

The survey methodology involved field examinations of areas of potential identified during a desktop assessment of the 155-kilometre corridor of the proposed cable installation. Some areas of the survey had approval for sub-surface probing, which involved the use of 500-millimetre by 250-millimetre subsurface probes. The field study was broken into 3 areas, with Area 2 being in the Mittagong/Moss Vale area, which is the section involving the study area. Within Area 2 there were 3 study sites examined in the field (Williams 1992, p.7,8).

Dirt tracks and their surrounds were examined at the Chain of Ponds Creek for the presence of artefacts, and two areas had sub-surface probing conducted. This resulted in one site consisting of 5 artefacts being located on a forest track (Williams 1992, p.7,8).

At Sutherland Park, a floodplain of the Wingecarribee River, erosion scars and tracks were examined for the presence of artefacts. Subsurface probing was also conducted on both sides of the Wingecarribee River, and both the survey and probing revealed the presence of artefacts. One site was identified, which consisted of 17 flaked artefacts located on a sandy rise above the river. Artefacts were retrieved by the survey of a cattle track and the opening of 10 test pits. The raw materials comprising this assemblage were predominately silcrete and quartz (Williams 1992, pp.7–10).

Examination of Rosedale identified two sites. The first site had a surface visibility of 10 metres² and was located on a sandy terrace within 200 metres of a creek. It consisted of two scarred trees, two cores, 3 flakes and 12 flaked pieces. The second site was an artefact scatter of two artefacts on the crest of a ridge at the foot of a tree (Williams 1992, p.9).

The artefactual material recovered from the above sites was not substantial enough for statistical analysis, however, the small size of the artefacts at the Sutherland Park site led to them being attributed to the Bondaian period.

SURVEY OF 33KV TRANSMISSION LINE ROUTE FROM MOSS VALE TO BOWRAL

Paton (1994) conducted an archaeological survey of the areas of potential identified by Koettig (1989) along the proposed route of the 33kV transmission line, approximately 9 kilometres southeast of the study area.

The survey was performed by two people on foot, spaced 30 metres apart, following the marked route deviations of the proposed line. Between Bowral and Kangaloon Road, the survey was focused on flat areas near ridge tops and creek lines. The soils exposed by farming were examined for artefacts while the native trees were inspected for Aboriginal carving or scarring. From Kangaloon Road to the Wingecarribee River, the same survey methodology was used, with the addition of visibility beneath trees, along ground disturbed by cable installation, and by tracks created by animals and vehicles. The crossing of Wingecarribee River saw the survey focus on floodplains with high exposure and valley walls of low visibility, and it was noted that rock outcrops and trees were absent in the area (Paton 1994, p.5,6).

One site was located by the archaeological survey, consisting of a scatter of 28 artefacts. Nine of these were chert flakes, 6 were silcrete flakes and flaked pieces, one was a quartzite core, and 12 were quartz flakes and flaked pieces. The site was located within an eroding floodplain of the Wingecarribee River, within a strip of 10 metres by 60 metres, running parallel to the river. The high ground visibility of more than 50% allowed it to be determined that the site is not any more extensive than what was observed during the survey.

LOT 1 DP 539841, COLO STREET, MITTAGONG

Dibden (2001a) completed an Aboriginal archaeological assessment of a residential subdivision of Lot 1, DP 539 841, approximately 10 kilometres north-east of the study area. The assessment aimed to determine if an artefact scatter site, Colo 1, extended east and west into the PAD areas also identified within a survey conducted by Dibden 2000. The scatter and PADs were located in proximity to a drainage line running north-south through the property.

Dibden had previously surveyed the area and identified 5 artefacts over an area of 50 metres by 65 metres, calculated to have an artefact density of one artefact per 16.25 square metres (0.062 artefacts/m²). This site was identified as Colo Street 1, and two areas east and west of this site were recorded as PADs due to their proximity to Colo Street 1 and Nattai Creek. Based on these findings it was recommended that an archaeological test excavation program be undertaken to determine the full extent of the sites within the area (Dibden 2001a, p.4).

The test excavation consisted of 49 test pits of 250 by 250 millimetres which were excavated to between 300 and 400 millimetres in depth. The pits were arranged with 19 pits on the eastern side, and 30 on the western side, and labelled alphabetically along 12 numbered linear transects, across an area of 1.8 hectares (Dibden 2001a, p.5). A total of 34 artefacts were retrieved from 15 of the test pits across the eastern and western slopes. The average artefact density of the area was calculated as 11.1/m² when accounting for all the test pits, and 36.2/m² when only considering the pits containing artefacts. The highest artefact density was extrapolated to be 224/m² and this pit was located on the eastern side of the drainage line (Dibden 2001a, pp.7-9). Many of the pits also contained European archaeology throughout the soil profile.

The excavation area encountered a soil profile of a loose brown humic layer of varying thickness, overlying a compacted yellow clay loam, with charcoal particles <10 millimetres dispersed throughout the profile (Dibden 2001a, p.9). Artefacts were mostly encountered in Spit 2 of the excavated pits within a silty loam layer varying slightly in colour and compaction across the site.

The Aboriginal artefact assemblage consisted of 2 cores, a core fragment, 8 flakes, 11 flake fragments, 11 flake chips and one tool. The single tool identified showed 'possible backed flaking', while the cortex was notably absent on all the artefacts. The raw materials comprising the artefacts were 55.9% chert, 41.2% silcrete and 2.9% quartz. The artefact collection was noted as being too small of a sample to interpret lithic activities, although the presence of two silcrete micro-blade cores is indicative of the presence of that technology in the area (Dibden 2001a, p.7).

The excavation confirmed that the PADs on either side of Colo 1 were the eastern and western extents of the Colo Street 1 site. The site is noted to be concentrated around the north-south drainage line running through the property. Based on the absence of cortex on the artefacts and the lack of occurrence of the raw materials in the local area, it was determined that the artefact materials would have been prepared off-site. It was noted that the site may extend beyond the boundaries of the study due to the presence of artefacts adjacent to Nattai Creek. The low density and uneven distribution of artefacts were attributed to geomorphic processes and European ground disturbance, indicated by the presence of European artefacts throughout the area (Dibden 2001a, p.8).

WINGECARRIBEE SWAMP

Jo McDonald Cultural Heritage Management Pty Ltd (2005) undertook an archaeological study of Wingecarribee Swamp, part of the Wingecarribee River, approximately 10 kilometres southeast of the study area.

Several areas were excavated to identify preserved Aboriginal archaeological sites. Trenches were opened in two areas along the Wingecarribee Swamp. In one area, 14 1 by 1-metre squares were used, in another area 13 1 by 1-metre squares were used. The digging terminated when artefacts ceased to be found, typically between 600 and 700 millimetres in depth. The first area was found to contain 521 artefacts, and the second area was found to contain 437 stone artefacts. The majority of artefacts retrieved were classified as debitage, indicative of artefact manufacture and repair (McDonald 2005, pp.6–8).

From the results of the archaeological investigations, the following general statements were made regarding Aboriginal land use in the area (McDonald 2005, p.9):

- The Wingecarribee Swamp margin was utilised for activities by Aboriginal people since its formation 2000-3000 years ago
- Overlapping and continuous spreads of sites are likely to occur within 5 to 20 metres from the present swamp edge
- The oldest sites in the area would have been buried by the expanding swamp
- Both study sites can be observed to have two distinct layers. The lower (older) layer contained a larger number of silcrete artefacts, while the upper (newer) layer contained more quartz artefacts. Backed artefacts were contained in all layers.
- Stone artefact presence was denser in levels where the peat margin had progressed closer to the study sites.
- Stone artefacts were located below and within the peat. This suggests there is potential for radiocarbon dating to indicate a chronology for artefact manufacture in south-eastern Australia.
- Evidence for fires was found during excavations. Such layers are unstable and must be examined urgently before understanding the information they provide on Aboriginal plant management.
- Areas of undisturbed peat contain significant sub-surface deposits of artefacts and are likely to be of regional, national and scientific importance

RENWICK SUSTAINABLE VILLAGE

NIAC (2007) provided feedback on the test excavation results and a report produced by AMBS (2007). The comments recount that the test excavation recovered hundreds of artefacts, as well as culturally significant turtles which should have their habitat protected (Northern Illawarra Aboriginal Collective Inc. 2007, p.6).

The comments express that NIAC did not agree with AMBS planning to perform a salvage to retrieve artefacts from the area. It was determined that the area is so culturally significant that it should be conserved by creating a protective buffer around the area using native plants so that the area can be experienced by future generations (Northern Illawarra Aboriginal Collective Inc. 2007, p.7).

It is explained that if the 250-metre protective green corridor on either side of Simms Creek cannot be implemented and salvage goes ahead, it must be performed under the supervision of NIAC elders. It is also stated that the artefacts recovered by the previous excavations should not be reburied, as they are culturally valuable, and a large amount of time was invested in retrieving them. Additionally, the artefacts should be retained by the Australian Museum as part of the regional database rather than being given to any particular Aboriginal stakeholder groups (Northern Illawarra Aboriginal Collective Inc. 2007, p.7).

BONG BONG COMMON ABORIGINAL CULTURAL HERITAGE ASSESSMENT

The Northern Illawarra Aboriginal Collective Inc. (2008) completed an Aboriginal Cultural Heritage assessment involving a survey within Bong Bong Common in Burradoo, New South Wales. This assessment was conducted to demonstrate the archaeological value of the grounds and is within the current study area. The report focuses on recounts of oral history which discusses traditional place names and the contact history between Aboriginal people and European people entering the area.

The report notes the presence of 28 AHIMS sites being located within a 5-kilometre radius of Bong Bong Common, with 6 of these being campsites (Northern Illawarra Aboriginal Collective Inc. 2008, p.7). The survey noted the study area to be a flat grassed area, predominately cleared of trees and the presence of the Southern Highlands Model Aero Club. The survey methodology was mostly restricted to walking along existing dirt tracks due to tall grass covering the study area. The two-day survey resulted in the identification of 3 surface artefacts. These included a quartz flake located in a shallow drainage channel, while the other two artefacts were knapped glass artefacts located near the historic huts historical site. The two knapped artefacts were thick, brown glass, with each piece showing it has been distinctly knapped. It is noted that the two glass artefacts do not fit together, and indicate post-contact Aboriginal occupation of the study area (Northern Illawarra Aboriginal Collective Inc. 2008, p.6).

Based on the presence of artefacts observed within Bong Bong Common, despite extensive vegetative ground cover, it is suggested that Bong Bong Common may contain tool-making sites and that excavation would likely uncover additional archaeological information. It is also suggested that there is potential for more extensive sites within the banks of the nearby section of the Wingecarribee River (Northern Illawarra Aboriginal Collective Inc. 2008, p.7).

THROSBY PARK ABORIGINAL HERITAGE ASSESSMENT

AMBS (2013) conducted an Aboriginal Heritage Assessment of Throsby Park to be used as part of the Conservation Management Plan for the site. Sutherland Park is located approximately a kilometre south of Bong Bong Common and may represent a contact site due to Aboriginal occupation at the time of European arrival (AMBS 2013, p.13).

The pedestrian survey was separated into 12 transects with each covering a different landform, including slopes, a crest, flats, open depressions, and a ridge. The survey focused on exposed areas of ground along unsurfaced vehicle tracks and effectively covered a total of 113.1 metres², including both areas where sites were previously located (AMBS 2013, p.26). The area within the study site identified to have potential as a suitable campsite, an elevated area on a crest, is where the stables are situated and as such it has been partially disturbed. Small areas of sandstone exposure were encountered during the survey. However, they were highly weathered which would have removed any evidence of grinding grooves (AMBS 2013, p.27).

The study did not locate any Aboriginal sites or Aboriginal objects. It was determined that due to extensive ground disturbance, the area has low archaeological potential and is unlikely to contain any stratified or substantial deposits relating to Aboriginal heritage. Conversely, it was noted that there may be potential for Aboriginal objects to be present in the subsurface of the Throsby Park House, Stables, Cottage and Laundry that have not been extensively disturbed (AMBS 2013, p.1). The report acknowledges that the area has cultural significance to Aboriginal people despite the lack of artefacts identified by the survey, and notes that while the surveyed area is known to have been used by Aboriginal people in the past, there is an absence of physical evidence on the property associated with this.

BROUGHTON STREET MOSS VALE

NGH Environmental (2016) conducted test excavation as part of an ACHA, at Lot 36/DP 1202638. Five previously recorded sites were noted to be within the area studied prior to any excavations taking place. An attempt was made to relocate an artefact scatter on a ridge crest prior to undertaking excavations but was unsuccessful due to thick grass reducing the visibility to approximately 15%. Thirty-five 500-millimetre by 500-millimetre test pits with a total area of 8.75 metres² were excavated to investigate a PAD, which was located on a major ridgeline in the property.

Fourteen of the pits were found to contain artefacts, with a total of 16 artefacts retrieved, one pit containing burned clay, 2 pits containing animal bone and 2 pits containing modern glass. The test pits ranged in depth from 350 to 550 millimetres and most artefacts being flakes, broken flakes or flaked pieces and recovered from spit 2, which encountered darker brown humic loam soil. Evidence of bioturbation and farming activity was observed in the pits and suggested that artefacts may have been displaced through the soil profile. The average artefact density of the pits studied was 1.83/m², with flakes, broken flakes and flaked pieces making up the assemblage. The raw materials comprising the artefact collection were 50% quartz and 50% silcrete. The greatest density of artefacts was observed in pits 7 and 15 which were located on a ridge crest, with 8/m² (NGH Environmental 2016, p.vi,16,21,Appendix B).

The distribution of artefacts across the area was surmised to be indicative of intermittent occupation and occasional camping in the area. The limited raw material types and low artefact numbers across the ridgeline may suggest infrequent and opportune camping occurring as people moved through the area, using the ridgeline as a pathway between different areas. The test excavations substantiated the predictions that artefact scatters were the most likely site to occur within the area. The results of the test excavation also demonstrated that artefacts can occur in disturbed landscapes impacted by farming (NGH Environmental 2016, p.25,29).

RENWICK RESIDENTIAL DEVELOPMENT

KNC (2018) conducted test excavation under the advice of the Office of Environment and Heritage to assess potential harm to Aboriginal objects that may be caused by activities relating to construction.

Three disturbance areas were found to be within the boundaries of previously recorded AHIMS sites, while a fourth was found to be within a riparian corridor. Twenty-five test excavation pits of 500-millimetre by 500-millimetre were used across all 4 Disturbance Areas. Disturbance Area 1 was located on a low-lying area deemed to have low potential. Disturbance Area 2 was located within a drainage and earthmoving area. Disturbance Area 3 was located within areas of elevated semi-terrace, and a lower-lying area around the creek. Disturbance Area 4 was located within a low-lying landform affected by fluvial episodes and waterlogging (Kelleher Nightingale Consulting Pty Ltd 2018, pp.iii-1,6).

Pits in disturbance Areas 1 and 4 did not produce any artefacts. These areas contained some fill material and had been affected by alluvial processes and as such had low preservation potential. Natural soil profiles were present within Disturbance Areas 2 and 3. Disturbance Area 2 produced 3 artefacts. Disturbance Area 3 produced 19 artefacts with the majority located in spit 2 across the 10 pits. The soils within this area were various compositions of sandy loam, clay, gravel and similar. Most artefacts consisted of quartzite and quartz unmodified debitage. The artefact density of the site was determined to be low across undulating flats and high along raised benches unless there was disturbance (Kelleher Nightingale Consulting Pty Ltd 2018, pp.iii-2,6,11,21-23).

It was determined that impacts to Aboriginal objects were unlikely to have occurred at Disturbance Areas 1 or 4, but Areas 2 and 3 were found to have been affected by drainage cutting activity, resulting in the removal, movement and exposure of archaeological material (Kelleher Nightingale Consulting Pty Ltd 2018, pp.26-29).

CHESLEY PARK MASONRY PLANT (STAGE 1), 416 BERRIMA ROAD, NEW BERRIMA NSW: ARCHAEOLOGICAL REPORT

Chesley Park Masonry Plant (Stage 1), at 416 Berrima Road, New Berrima is located 4.1 km from the study area of the Berrima Gaol. This report was prepared by Biosis Pty Ltd (2019) Brickworks Ltd on 20 March 2019. A total of 427 artefacts were found across 156 test pits recorded from sub-surface excavations. There was a total of 27 transects, of which the highest density of artefacts was located within transect 27, transect 4 and 3 respectively.

Artefact type included the following: Debitage, 181 (42.39%), Complete flakes 68 (15.93%), Proximal Flake fragments 59 (13.83%), Medial Flakes 25 (5.85%), Longitudinal Flake 7 (1.63%), and a single Rejuvenation flake (0.23%). The concentration of artefacts per spit was distributed as; Spit 2 (41.22%), Spit 1 (34.43%), Spit 3 (15.45%), Spit 4 (7.49%), and Spit 5 (1.4%).

The raw material was made up of Quartz varieties (Crystal Quartz, Quartz and Quartzite), which made up approximately 60% of the counts, followed by Silcrete at approximately 30%, and the remaining material was made up of Chert and Tuff. It was concluded that only 7 of the 156 test pits displayed characteristics of prior disturbances to the ground surface and subsurface.

Both studies analysed above carried out test excavations in areas of lesser disturbance within the proposed area of works and found artefacts within these areas that contained less prior disturbance. The study area located at Berrima Gaol consists of a largely disturbed ground surface, and although this may have been noted in numerous prior reports to reduce the likelihood of locating artefacts within a site, it does not mean that zero archaeological material/s would remain within the study area. The issues against finding such however would depend upon the accessibility of subsurface artefacts due to the current infrastructure within the study area and the associated landscaping excavations that occurred alongside such buildings which may have resulted in the removal/damage/loss of previously existing artefacts within the study area. It will be the level of impact of these influencing factors impeding the ability to locate and excavate such potential archaeological material that will need to be analysed further.

BEACONSFIELD ROAD PLASTICS RECYCLING CENTRE

OzArk Environment and Heritage (2021) conducted test excavations as part of an Aboriginal Cultural Heritage Assessment, building upon the earlier survey work of Biosis Pty Ltd.

The test excavation methodology involved the opening of 48 pits of 500-millimetre x 500-millimetre within the three identified PAD areas. The soils encountered were a layer of humic material at the top, followed by loam and culturally sterile clay. The excavation resulted in the retrieval of 9 artefacts with an average artefact density of 0.75/m², and it was determined that these sites were reflective of a background artefact scatter that would likely be found in similar landscapes across the Southern Highlands region. Two Aboriginal sites (isolated finds) were previously recorded within the area examined, and the combined results of the earlier survey and the test excavations identified 6 sites within the area studied; bringing the total to 8 sites. The sites identified by the survey and test excavation include two isolated finds, and 4 sites accounting for the artefacts retrieved through test excavation (OzArk Environment & Heritage Management Pty Ltd 2021, p.v).

Ozark concluded that the results of the survey and excavations demonstrated that the area examined had low archaeological potential for significant Aboriginal deposits or objects. The artefacts identified were deemed to demonstrate low density deposits of artefacts likely displaced due to landform disturbance by ploughing and similar (OzArk Environment & Heritage Management Pty Ltd 2021, p.v).

WATERBROOK BOWRAL

Austral Archaeology Pty Ltd [Austral] (2023) was engaged by Waterbrook Retirement Lifestyle Resorts to conduct a salvage program at 2-18 Centennial Road, Bowral, NSW. The Stage 1 and Stage 2 salvage excavations were undertaken by Austral between October 2020 and March 2021 under the conditions set out in AHIP C005678.

A total of 12959 artefacts were recovered with a variety of raw materials identified. The most common raw material identified include silcrete (n=6,826), quartz (4,281), mudstone/siltstone (n=1,340), quartzite (n=181) and chert. The artefact assemblage consisted primarily of flakes (n=8724, 61.78%) and flaked pieces (n=3190, 22.59%). Retouched flakes (n=518, 3.67%) 300 of which were backed artefacts, cores (n=288, 2.04%) and non-flaked pieces (n=54, 0.38%) were also recovered.

Artefacts were recovered from depths between 0 and 600 millimetres across four trenches in both Stage 1 and Stage 2. The average lithic density across all four trenches within the study area was 54.9/m² from a total excavated area of 236 m². Within each of the trenches, average artefact densities were 52.3/m² within Trench 1, 44.7/m² in Trench 2, 56.2/m² in Trench 3 and 277.6/m² in Trench 4.

The study concluded that the lithic material obtained from the Stage 1 and Stage 2 salvage excavations suggests a landscape repeatedly and sometimes intensively occupied during the Holocene period. In particular, the presence of over 300 backed artefacts strongly supports occupation in the last 4000 years; however, high levels of bioturbation at the site have resulted in low stratigraphic integrity, so precise dating via optically stimulated luminescence is not feasible. The study area's proximity to fresh water in Mittagong Creek and the presence of elevated areas suitable for camping have a high probability of contributing to the site's desirability as a campsite.

5. PREDICTIVE MODEL

Austral has used the information produced as part of the archaeological and environmental context sections to formulate a broad predictive model that identifies the type and character of Aboriginal cultural heritage sites that may be present within the study area.

The predictive model is based on the analysis of the following key variables:

- Relationship between site types and their spatial distribution within the landscape.
- Raw site types, raw material types and site densities and their relationship to salient environmental features.
- Information in ethnohistorical sources may indicate important natural resources or landscape features that may have been exploited.
- Potential chronological and spatial relationships between sites

A predictive model has been developed based on the consideration of the variables outlined above that indicate the likely site types that will be encountered during the archaeological survey and archaeological testing.

5.1. ANALYSIS OF KEY VARIABLES

The AHIMS search that has been completed for this project has identified similar trends in Aboriginal site types within the region. The most common recorded site type in the wider region is artefact sites (n = 42, 73.68%). Other, less common, site types include PAD (n = 6, 10.53%), grinding groove (n = 4, 7.02%), modified tree (n = 3, 5.26%), artefact/grinding groove (n = 1, 1.75%) and artefact/PAD (n = 1, 1.75%).

It should be noted that any analysis using AHIMS data will be prone to biases as it relates to sites that have been recorded over the past 40 years. During this time, varying methodologies have been used to identify sites and a large portion of the surrounding landscape may have been subject to limited or no assessment. Therefore, site distribution is likely to be reflective of survey methods and patterns and should not be considered a comprehensive list of all Aboriginal sites within a given region.

A summary of Aboriginal heritage sites within 5 kilometres of the study area is included in Table 5.1.

Table 5.1 Summary of sites recorded within a 5-kilometre radius of the study area.

Feature Type	Total	Percentage (%)
Artefact	42	73.68%
Potential Archaeological Deposit (PAD)	6	10.53%
Grinding Groove	4	7.02%
Modified Tree	3	5.26%
Artefact, Grinding Groove	1	1.75%
Artefact, Potential Archaeological Deposit (PAD)	1	1.75%
TOTAL	57	100%

A total of 59 site features have been recorded within a 5-kilometre radius of the study area.

5.1.1. SOIL LANDSCAPE

The study area is located within the Nattai Plateau soil landscape, which contains coarse and grainy shallow yellow-texture contrasted sand (Mitchell 2002). A total of 30 (50.85%) of the previously recorded site features are located within this soil landscape (2), consisting of artefacts (n = 24, 80.00%), grinding grooves (n = 3, 10.00%), modified trees (carved or scarred) (n = 2, 6.67%) and PADs (n = 1, 3.33%). The remaining site features within 5 kilometres of the study area are within the Moss Vale Highlands soil landscape (2) (Figure 5.1).

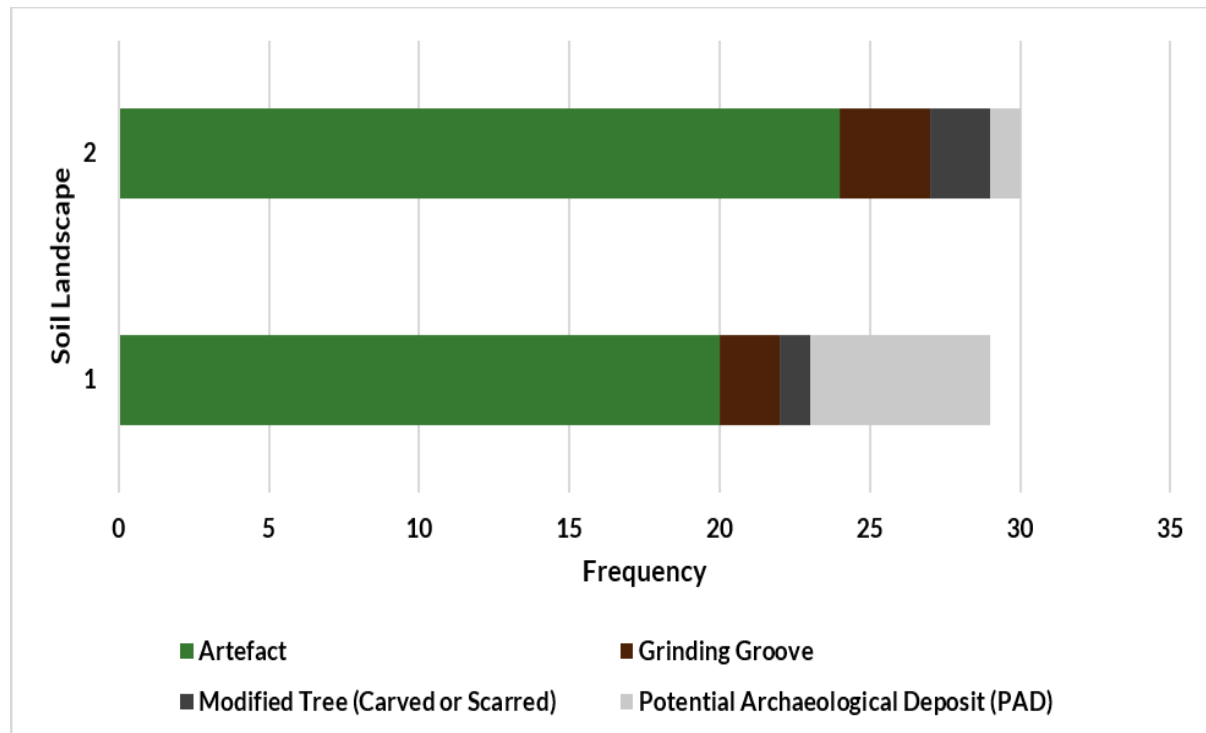


Figure 5.1 The frequency of AHIMS site features in relation to soil landscapes.

5.1.2. GEOLOGY

Geological units determine the availability of raw lithic materials for artefact manufacture. As such, these contexts dictate the type, composition and distribution of sites within a given landscape. The study area is located within the Hawkesbury Sandstone geological unit, which consists of “medium to coarse-grained quartz sandstone with large scale cross bedding, minor shale” (Colquhoun et al. 2020). A total of 21 (35.59%) of the previously recorded site features are located within this geological unit, consisting of artefacts (n = 18, 85.71%), modified trees (carved or scarred) (n = 2, 9.52%) and grinding grooves (n = 1, 4.76%). The most prominent geological unit within the region is the Alluvial Floodplain Deposits (n = 31, 52.54%), which contain artefacts (n = 21, 67.74%), PADs (n = 6, 19.35%), grinding grooves (n = 3, 9.68%) and modified trees (carved or scarred) (n = 1, 3.23%). The remaining geological units within 5 kilometres of the study area are Residual Deposits (n = 3, 5.08%), Ashfield Shale (n = 2, 3.39%), Bringelly Shale (n = 1, 1.69%) and the Mittagong Formation (n = 1, 1.69%) (Figure 5.2).

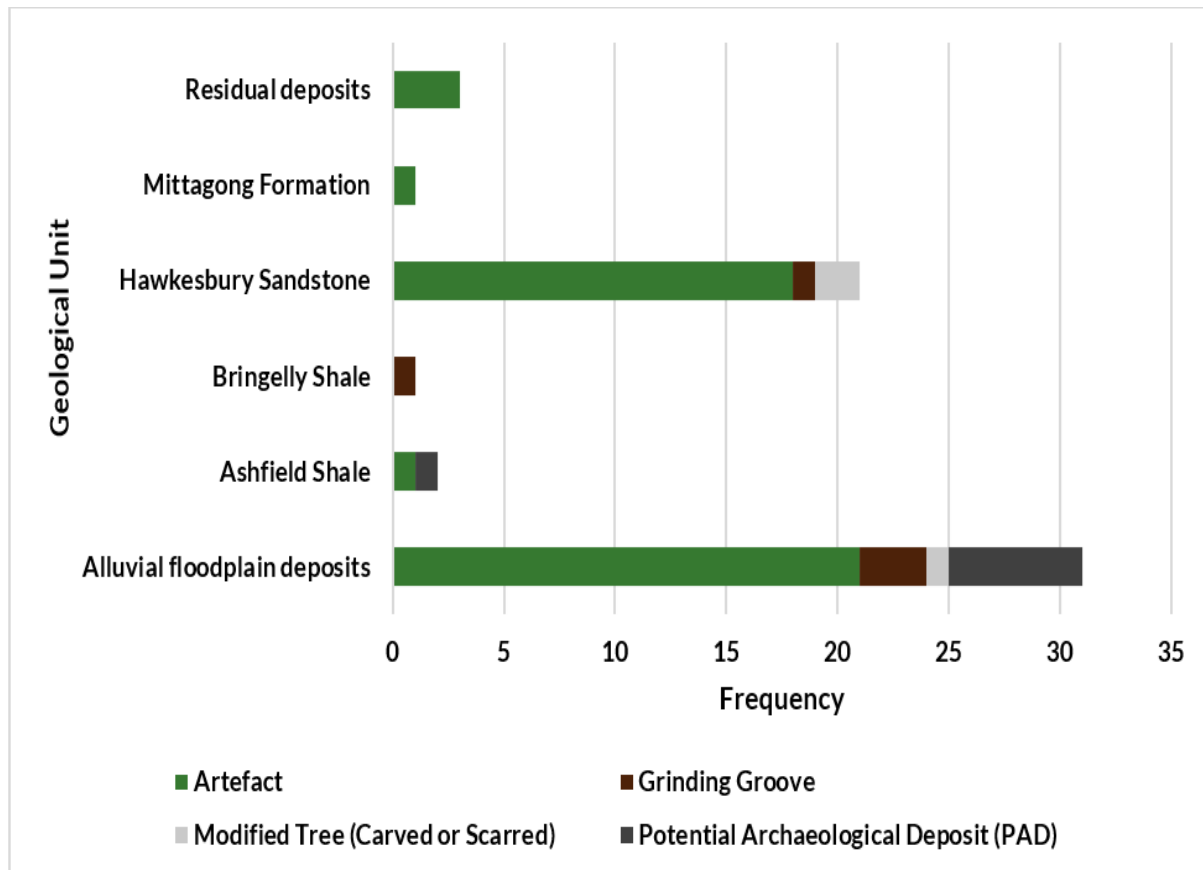


Figure 5.2 The frequency of AHIMS site features in relation to geological units.

5.1.3. HYDROLOGY

Proximity to water is a significant determinant of site location. This is due to the abundance of natural resources that watercourses present for both areas of occupation and travel routes. *The Due Diligence Code of Practice for the Protection of Aboriginal Objects in New South Wales* (DECCW 2010b) states that the archaeological sensitivity of an area increases within 200 metres of a watercourse. Most of the AHIMS site features are associated with 2nd order streams (n = 22, 37.29%), with artefact sites being most commonly associated with this stream order (n = 68.18%). Sites features associated with 1st-order streams were the next most frequent, totalling 16 site features (27.12%), followed by site features that are associated with 6th order streams (n = 11, 18.64%) and 4th order streams (n = 7, 11.86%). Site features associated with 3rd order streams were the least frequent (n = 3, 5.08%) (Figure 5.3).

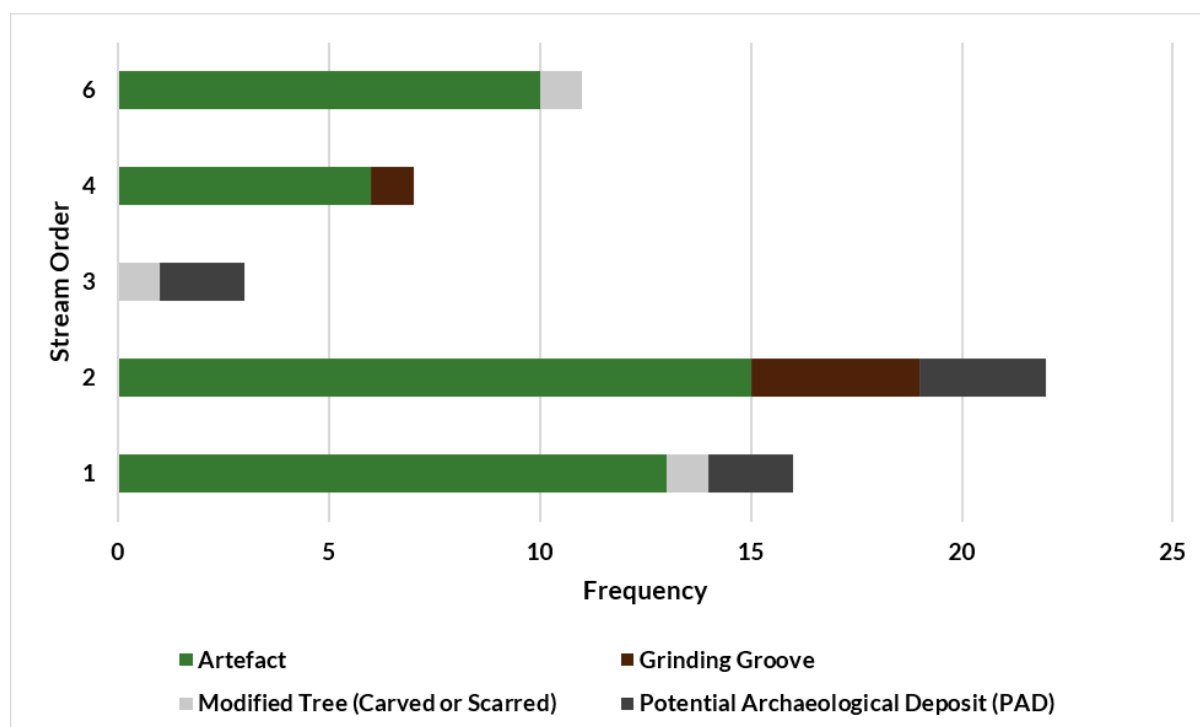


Figure 5.3 Frequency of AHIMS site features in relation to Stream Order.

Sites ranged from 0.08 metres to 265 metres from a water source. Most sites ($n = 22$, 37.29%) were within 50 metres of a water source, followed by 27.12% ($n = 16$) of sites located between 50 and 100 metres of a water source. Most of the sites within 100 metres of a water source are artefact sites ($n = 24$) and PADs ($n = 6$) (Figure 5.4).

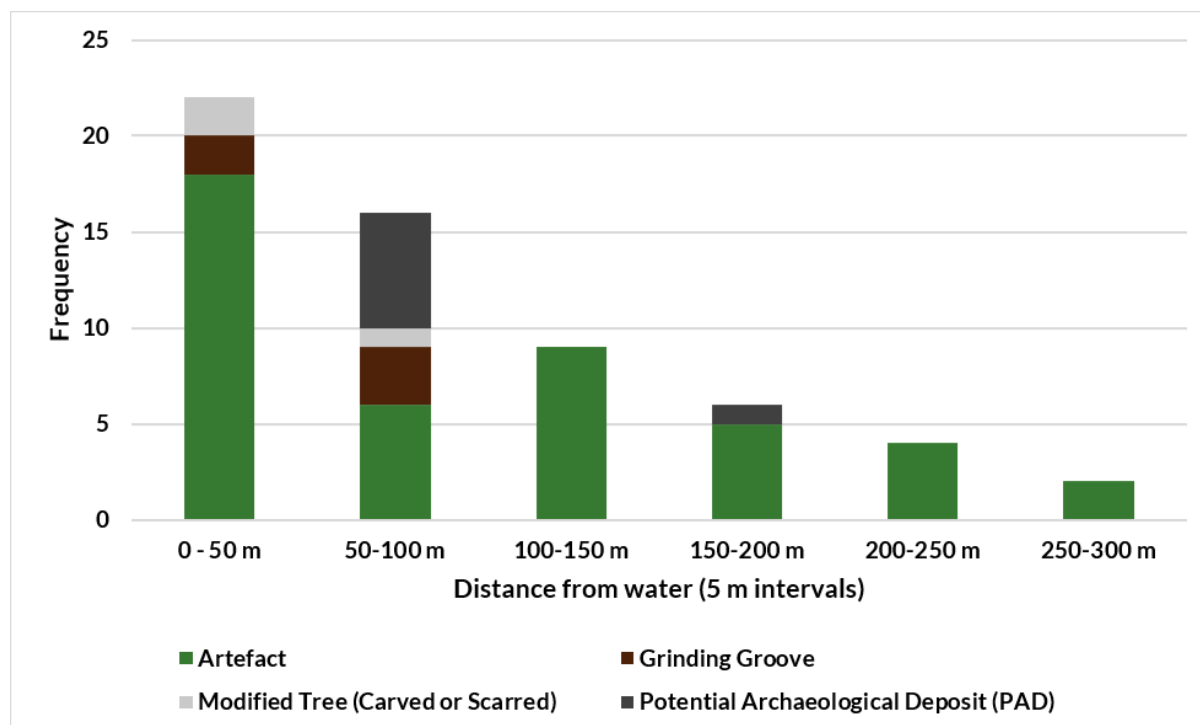


Figure 5.4 Frequency of AHIMS site features in relation to their distance from water.

5.1.4. TOPOGRAPHY

An analysis of the distribution of local sites in comparison to terrain has been undertaken using a spatial tool that classifies landforms using a range of parameters including slope, elevation and form (Stepinski & Jasiewicz 2011, Jasiewicz & Stepinski 2013). An overview of the landform classifications used by the algorithm is detailed in Figure 5.5.

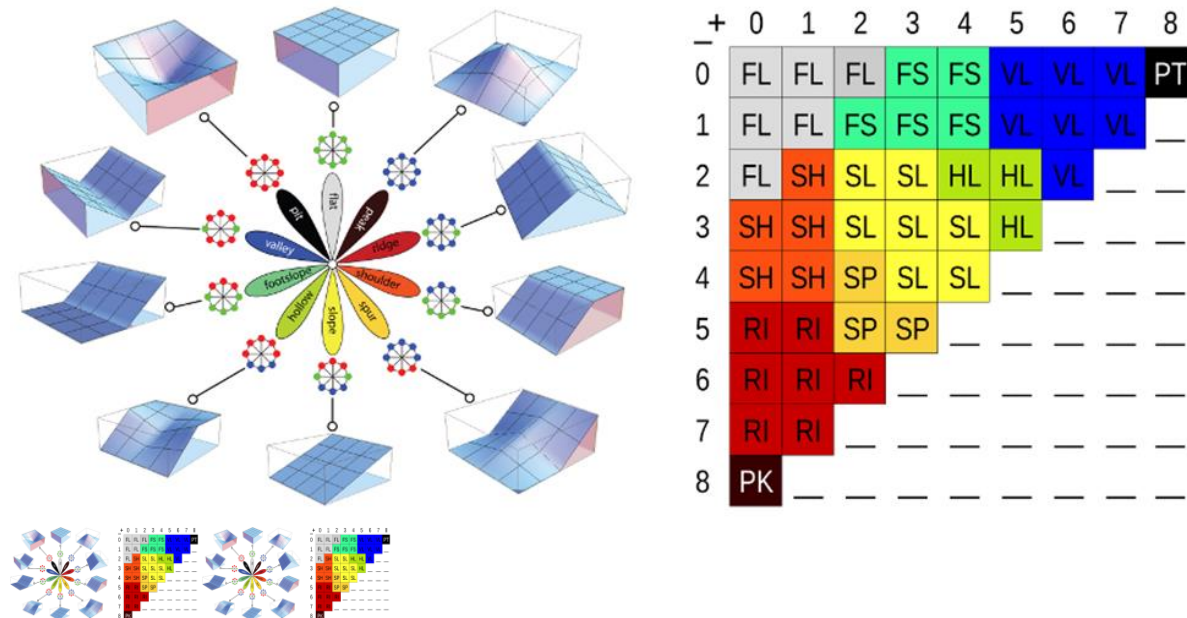


Figure 5.5 Examples of landform definitions by geomorphons.

Based on these landform definitions, the majority of recorded AHIMS site features are located within flat landforms ($n = 33$, 55.93%). This is followed by foot slopes ($n = 13$, 22.03%), slopes ($n = 4$, 6.78%) and valleys ($n = 4$, 6.78%). Other less common landforms include ridges, shoulders and depressions (Figure 5.6).

Artefact site features are in flat ($n = 24$), foot slope ($n = 11$), valley ($n = 4$), slope ($n = 3$), shoulder ($n = 1$) and depression ($n = 1$) landforms, however, none were identified in ridge landforms. All PAD sites were located in flat ($n = 4$), foot slope ($n = 2$) and ridge ($n = 1$) landforms.

The study area is located within foot slope and valley landforms. Common site features within footsteps include artefacts ($n = 11$, 84.62%) and PADs ($n = 2$, 15.38%). The only site features identified within valleys within 5 kilometres of the study area are artefact sites ($n = 4$, 100%) (Figure 5.6).

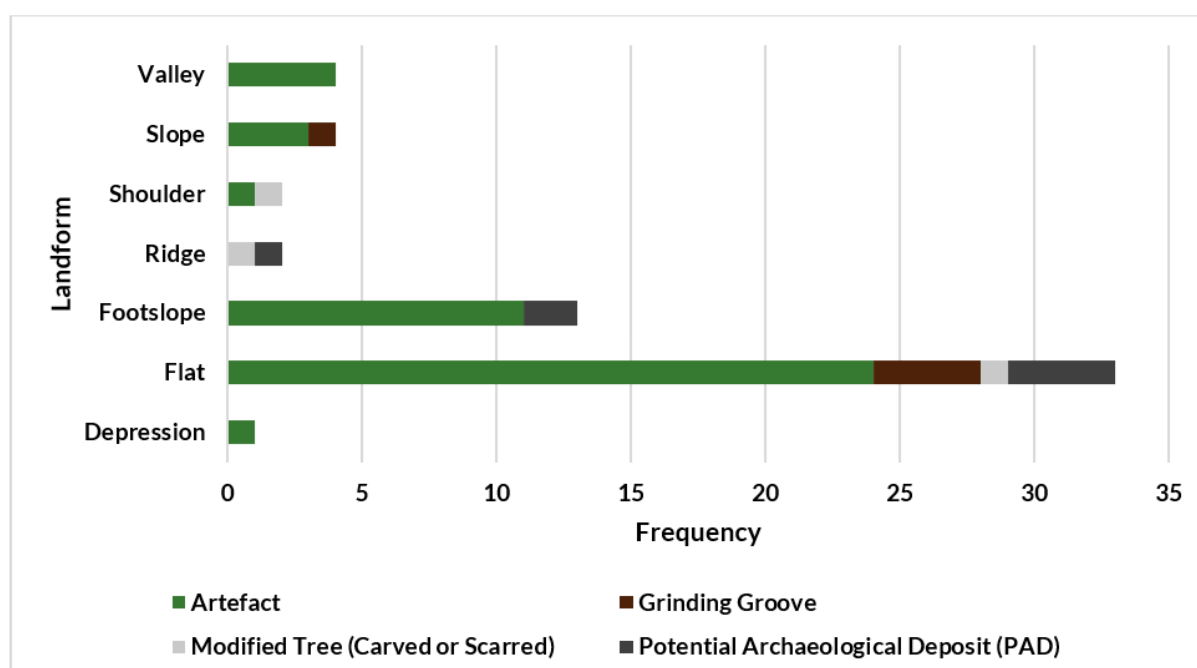


Figure 5.6 Frequency of AHIMS site features in relation to landforms.

5.1.5. ANALYSIS OF THE KNOWN SITES IN THE LOCALITY

As most known sites within the locality are artefact sites, Austral has undertaken an analysis of excavated sites associated with artefact sites to provide a detailed breakdown of the anticipated density and composition of lithic assemblages in the locality. Given the density of excavations within the vicinity of the study area, sites from within approximately 15 kilometres of the study area have been subject to this analysis. This identified 6 sites that had been subject to archaeological excavation. Details from these excavations are summarised in Table 5.2.

Table 5.2 Composition and density of local lithic assemblages.

Site name	No. test pits	Test pits w/ artefacts	Total ex. (m ²)	Total artefacts	Max artefact density	Average artefact density
Colo Street 1	49	15	3.06	34	224/m ²	11.1/m ²
WEP1	13	N/A	13	521	N/A	40.08/m ²
WEP2	14	N/A	14	437	N/A	31.21/m ²
BSMV PAD 1	35	14	8.75	16	8/m ²	1.83/m ²
TA (3) Mittagong	25	4	6.25	22	4.5/m ²	3.52/m ²
Beaconsfield Rd OS1 and OS2	48	7	12	9	8/m ²	0.75/m ²

The sites excavated are of mixed artefact densities, with average densities ranging from 0.75-40.08/m². Subsurface sites can be found in relation to most landforms, but higher artefact concentrations occur in proximity to watercourses, particularly in relation to swamps.

Artefact deposits were generally found within the first 300mm of test pits. Debitage is the most prominent artefact type in the area however a high number of flakes have been identified through testing programs, and other artefact types such as cores and tools. A representation of artefact types from locally excavated assemblages is contained within Figure 5.7. Common artefact materials in the area are chert, quartz, quartzite and silcrete, with quartzite being the most frequent of these. A representation of raw material types is contained within Figure 5.8.

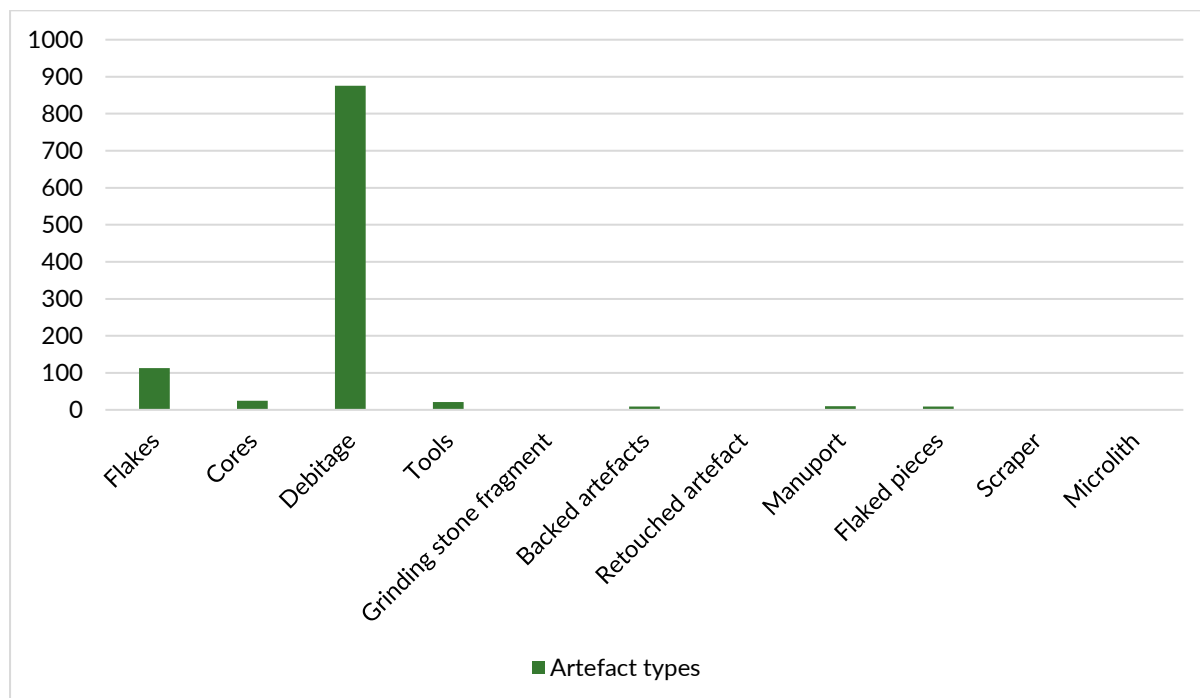


Figure 5.7 Artefact types from locally excavated assemblages.

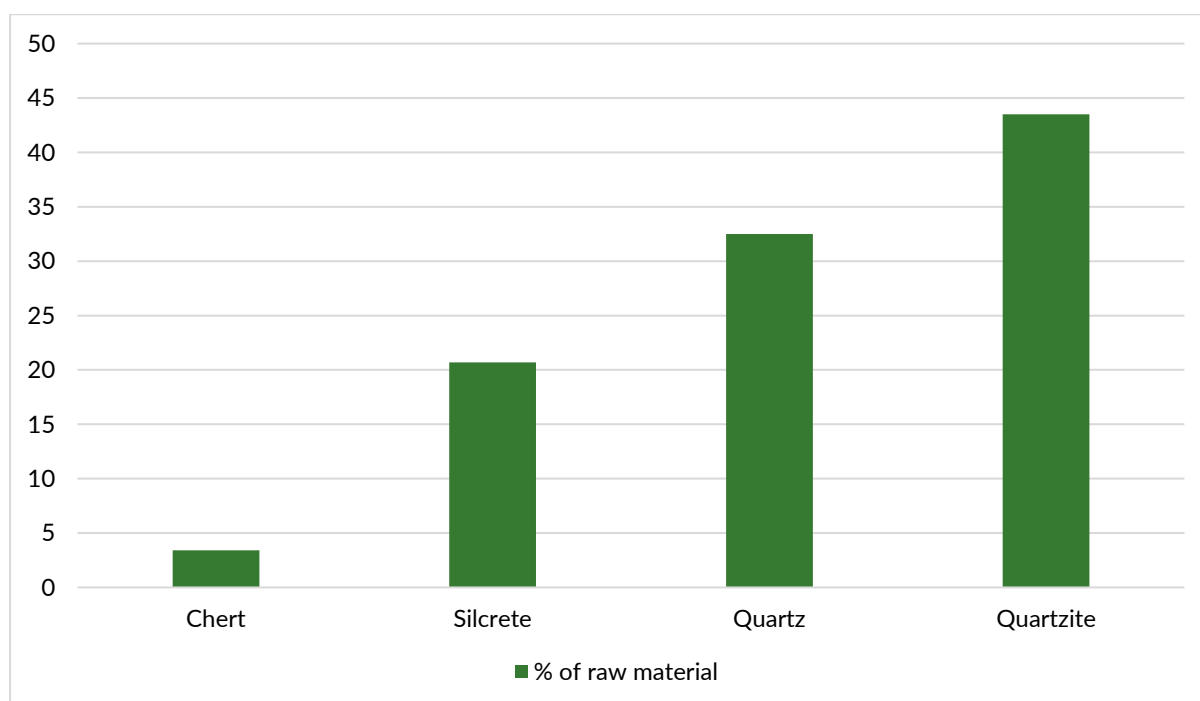


Figure 5.8 Raw material types from locally excavated assemblages.

5.2. PREDICTIVE STATEMENTS

Based on the analysis presented in Section 5.1, the following predictive statements can be made:

- The vast majority of known sites within the region are artefact sites.
- There are low frequencies of PADs, modified trees (carved or scarred) and grinding grooves.
- Most sites are located on 2nd order streams (n = 22, 37.29%), such as artefact sites, PADs and grinding grooves.
- Whilst sites may be located in a variety of soil contexts, most sites (50.85%) are located within the Nattai Plateau soil landscape.
- Whilst sites may be located in a variety of geological contexts, most sites (52.54%), are located within the Alluvial Floodplain Deposits formation.
- Whilst sites may be located in a variety of landform contexts, most sites, (59.32%), specifically artefact sites are located within "flat" (55.93%) or "foot slope" (22.03%) landform units,
- Maximum artefact densities of up to 40 artefacts per metre² have been encountered within approximately 15 kilometres of the study area. In general, average densities have been between 0 and 40 artefacts per metre². The average artefact density across these sites is 14.75 artefacts per metre².
- Most artefact assemblages are likely to be dominated by debitage (82.8%) and flakes (10.7%). Quartzite is the most common material (43.5%) however there are a high number of silcrete (20.7%) and quartz (32.5%) artefacts in the area, as well as some chert (3.4%).

6. FIELD METHODS

A site specific investigation methodology has been developed for the project that complies with the Requirements of the Code of Practice (DECCW 2011).

6.1. SURVEY METHODOLOGY

The survey was conducted on 11 July 2024 by Lindsay Costigan (Senior Archaeologist, Austral) with assistance from Zoe Bosevski (Graduate Archaeologist, Austral) and Duncan Falk of Duncan Falk Consultancy.

6.1.1. SURVEY OBJECTIVES

The objectives of the survey were to:

- Complete a systematic survey that targets areas that have been identified as having the potential to contain Aboriginal heritage values.
- Identify and record Aboriginal archaeological sites visible on the ground surface and areas of PAD.

6.1.2. SAMPLING STRATEGY

The survey methodology was designed to optimise the investigation of areas where archaeological materials may be present and visible, as well as the investigation of the broader archaeological potential of all landform elements present within the study area, which included:

- Slopes
- Flats
- Terraces

The specific survey methodology developed for this assessment was guided by the survey requirements as set out in Requirements 5 to 10 of the Code of Practice (DECCW 2011) and based upon consideration of the overall landform pattern within the study area, known landform elements (after Speight 2009) and the location of the previously identified sites. The survey targeted portions of the study area...

6.1.3. SURVEY METHODS

The archaeological survey consisted of pedestrian traverses completed by 2 team members and 1 RAP. A key survey variable is ground visibility, which considers the amount of ground surface which is not covered by any vegetation; and exposure, which defines areas where dispersed surface soils and vegetative matter afford a clear assessment of the ground, were assessed across the study area and within each landform element. Overall survey coverage and calculated survey effectiveness were recorded. Note that the effectiveness of the field survey was largely dependent on the degree of ground surface visibility. Where surface visibility was restricted by dense vegetation cover, the potential for PADs was assessed, particularly in association with those landforms identified within the predictive model as more likely to contain Aboriginal archaeological sites. The potential of these areas and all landform elements within the study area was considered against available evidence of land disturbance.

Photographs were taken of all survey units and landforms as well as representative surface visibility, and where present, surface exposures, soil profiles and disturbances relevant to the interpretation of the stratigraphic conditions and archaeological potential within each survey unit.

7. ARCHAEOLOGICAL RESULTS

The following section outlines the results of the archaeological investigations conducted within the study area.

7.1. ARCHAEOLOGICAL SURVEY RESULTS

7.1.1. VISIBILITY

In most archaeological reports and guidelines, visibility refers to GSV and is usually a percentage estimate of the ground surface that is visible and allows for the detection of (usually stone) artefacts that may be present on the ground surface (DECCW 2011). GSV within the study area was low, ranging from 0-5% visibility. This was limited to small, isolated patches of exposed ground on slopes and edges of manicured gardens.

7.1.2. EXPOSURE

Exposure refers to those parts of the surveyed landforms whose topsoil has visibly been removed due to naturally occurring erosion or man-made disturbances. Usually expressed as a percentage of the total land surface, it is a theory predicting the nature of geomorphological change (DECCW 2011). The exposure of the study area ranged from 30-50%, where the natural soil layer was visible in isolated areas.

7.1.3. DISCUSSION OF RESULTS

The most significant disturbance in the study area is the area and surrounding gardens of Berrima Gaol, where areas of potential were limited to small vegetated areas in the entrance and adjacent courtyard (Figure 7.1, Figure 7.2, and Figure 7.3). GSV in this area was low due to the concrete floor of the Gaol that extended throughout its interior (Figure 7.5). The small areas of greenery were at different elevations to the concrete base, suggesting landform modification of the interior of the Gaol (Figure 7.4). Exposure reached 50% at the base of a tree in the southern courtyard garden, however, no artefacts were identified (Figure 7.6 and Figure 7.7). Further disturbance observed in the courtyard included underground amenities as a result of the Gaol's construction and renovations (Figure 7.8, Figure 7.9, and Figure 7.10). Similarly, the entrance of the Gaol includes landscaped gardens at varying ground levels suggesting ground disturbance (Figure 7.11, Figure 7.12, and Figure 7.13). The interior and adjacent gardens are considered low potential for areas of the flat landform within the study area.

The survey continued along the northern boundary of the Gaol, which consists of a large drainage channel adjacent to Wilshire Street (Figure 7.14 and Figure 7.15). The proximity to the road, presence of underground amenities and exposed slope suggest ground disturbance and modification (Figure 7.16 and Figure 7.17). It is for these reasons that the archaeological potential of this area is low.

The western boundary of the study area borders Wingecarribee River and consists of a small, exposed slope and adjacent elevated terrace (Figure 7.19 and Figure 7.20). Landscape modification was observed here due to the differences in ground level where buildings have been constructed, including a gravel driveway and associated warehouse buildings (Figure 7.21). There was 30% GVS on the small slope adjacent to the driveway, and due to its proximity to a concreted, this area is considered within the low potential area of the Gaol (Figure 7.23 and Figure 7.24). An elevated terrace was also identified adjacent to the Wingecarribee River (Figure 7.25). With reference to the background research conducted as part of this report, it is noted that this area has been subjected to significant disturbance during the construction and continued use of Berrima Gaol. For this reason, this area is considered low potential.

The survey continued to the southern border of the Gaol and adjoining garden area slope (Figure 7.26, Figure 7.27, Figure 7.28 and Figure 7.29.). At the western base of the slope, a tennis court was observed, adjacent to the Wingecarribee River (Figure 7.30). This sloped area had low GSV (1%) due to the overgrown grass impeding visibility (Figure 7.31, Figure 7.32) The eastern upper slope consisted of levelled ground and underground amenities for the small buildings associated with Berrima Gaol, and a gravel area adjacent to the slope (Figure 7.33, Figure 7.34 and Figure 7.35). This area is also considered a low archaeological potential area.

Three landforms are present within the study area, these consist of a flat on which Berrima Gaol is built, an adjacent terrace and a southern slope. The landforms above are all considered low potential for archaeological potential due to the history of significant disturbance during the Gaol's construction and use. Testing is not recommended in any areas.



Figure 7.1 South-facing view of inner Gaol courtyard (2 m scale).



Figure 7.2 A west-facing view of the inner Gaol courtyard (2 m scale).



Figure 7.3 A west-facing view of the inner Gaol courtyard exposure (2 m scale).



Figure 7.4 Northwest-facing view of courtyard altered ground level (2 m scale).



Figure 7.5 West-facing view of courtyard concrete floor (2 m scale).



Figure 7.6 South-facing view of southern courtyard and planted tree (2 m scale).



Figure 7.7 South-facing view of exposure at base of tree.



Figure 7.8 Northwest-facing view of courtyard (2 m scale).



Figure 7.9 South-facing view of green area adjacent Gaol entrance (2 m scale).



Figure 7.10 East-facing view of ground level change at Gaol entrance (2 m scale).



Figure 7.11 Southeast-facing view of landscaped garden at Gaol entrance (2 m scale).



Figure 7.12 West-facing view of landscaped garden at entrance of Gaol (2 m scale).



Figure 7.13 East-facing view of landscaped garden at entrance of Gaol (2 m scale).



Figure 7.14 East-facing view of northern border adjacent to Wilshire Street (2 m scale).



Figure 7.15 West facing view of northern border adjacent to Wilshire Street (2 m scale).



Figure 7.16 South-facing view of underground amenities along drainage channel (2 m scale).



Figure 7.17 East-facing view of drainage channel and slope (2 m scale).



Figure 7.18 West-facing view of slope at western boundary (2 m scale).



Figure 7.19 East-facing view of altered ground level at western boundary (2 m scale).



Figure 7.20 West-facing view of western boundary towards Wingecarribee River (2 m scale).



Figure 7.21 Northeast-facing view of modified ground level at western boundary (2 m scale).



Figure 7.22 West facing view of terrace (2 m scale).



Figure 7.23 East-facing view of slope adjacent to terrace (2 m scale).



Figure 7.24 North-facing view of exposed slope near warehouses (2 m scale).



Figure 7.25 West-facing view of lower section of terrace (2 m scale).



Figure 7.26 Southeast-facing view of slope (2 m scale).



Figure 7.27 West-facing view of western edge of Gaol and slope towards River (2 m scale).



Figure 7.28 West-facing view of slope (2 m scale).



Figure 7.29 Southwest-facing view of slope (2 m scale).



Figure 7.30 Southwest-facing view of tennis court located at bottom of slope (2 m scale).



Figure 7.31 East-facing view of slope (2 m scale).



Figure 7.32 North facing view of low GSV.



Figure 7.33 Southeast-facing view of gravel area east of slope (2 m scale).



Figure 7.34 West-facing view of slope from the gravel area (2 m scale).



Figure 7.35 North-facing view of underground amenities adjacent to Gaol south wall (2 m scale).

A description of these results, as they relate to the survey units and observed landforms within the study area can be seen in Table 7.1 and Table 7.2.

Table 7.1 Survey coverage

Survey unit	Landform	Survey unit area (m ²)	Visibility (%)	Exposure (%)	Effective coverage area (m ²)	Effective coverage (%)
1	Flat	12,873.53 m ²	5	30	193.11 m ²	1.5%
2	Terrace	5,128.11 m ²	5	30	76.92 m ²	1.5%
2	Slope	976.01 m ²	1	1	0.097 m ²	0.01%

Table 7.2 Landform summary

Landform	Landform area (m ²)	Area effectively surveyed (m ²)	% of landform effectively surveyed	No. sites	No. artefacts / features
Flat	12,873.53 m ²	193.11 m ²	1.5%	0	0
Terrace	5,128.11 m ²	76.92 m ²	1.5%	0	0
Slope	976.01 m ²	0.097 m ²	0.01%	0	0

The results of the archaeological survey can be seen in Figure 7.36 and Figure 7.37.

7.1.4. LIMITATIONS

The study area was heavily vegetated in areas, and overgrowth prevented access to some parts of the garden area.



Figure 7.37 - Results from the archaeological survey

24039 - 2-4 Argyle Street, Berrima NSW - ACHA

Source: NSW LPI Aerial

Drawn by: FOT Date: 2024-10-08

8. CULTURAL HERITAGE VALUES

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

8.1. BASIS FOR THE ASSESSMENT

The significance values provided in the Australia ICOMOS *Charter for the Conservation of Places of Cultural Significance* (the Burra Charter) are considered to be the best practice heritage management guidelines in Australia (Australia ICOMOS 2013a). The Burra Charter defines cultural significance as:

“...aesthetic, historic, scientific, social or spiritual value for past, present or future generations. Cultural significance is embodied in the place itself, its fabric, setting, use, associations, meanings, records, related places and related objects. Places may have a range of values for different individuals or groups.” (Australia ICOMOS 2013a, p.2)

The Burra Charter significance values are outlined in Table 8.1; these are frequently adopted by cultural heritage managers and government agencies as a framework for a more holistic assessment of significance.

Table 8.1 Definitions of Burra Charter significance values (Australia ICOMOS 2013b)

Value	Definition
Aesthetic	Refers to the sensory and perceptual experience of a place. That is how a person responds to visual and non-visual aspects such as sounds, smells and other factors having a strong impact on human thoughts, feelings and attitudes. Aesthetic qualities may include the concept of beauty and formal aesthetic ideals. Expressions of aesthetics are culturally influenced.
Historic	Refers to all aspects of history. For example, the history of aesthetics, art and architecture, science, spirituality and society. It therefore often underlies other values. A place may have historic value because it has influenced, or has been influenced by, an historic event, phase, movement or activity, person or group of people. It may be the site of an important event. For any place the significance will be greater where the evidence of the association or event survives at the place, or where the setting is 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 such change or absence of evidence.
Scientific	Refers to the information content of a place and its ability to reveal more about an aspect of the past through examination or investigation of the place, including the use of archaeological techniques. The relative scientific value of a place is likely to depend on the importance of the information or data involved, on its rarity, quality or representativeness, and its potential to contribute further important information about the place itself or a type or class of place or to address important research questions.
Social	Refers to the associations that a place has for a particular community or cultural group and the social or cultural meanings that it holds for them.

Value	Definition
Spiritual	Refers to the intangible values and meanings embodied in or evoked by a place which give it importance in the spiritual identity, or the traditional knowledge, art and practices of a cultural group. Spiritual value may also be reflected in the intensity of aesthetic and emotional responses or community associations and be expressed through cultural practices and related places. The qualities of the place may inspire a strong and/or spontaneous emotional or metaphysical response in people, expanding their understanding of their place, purpose and obligations in the world, particularly in relation to the spiritual realm. The term spiritual value was recognised as a separate value in the Burra Charter, 1999. It is still included in the definition of social value in the Commonwealth and most state jurisdictions. Spiritual values may be interdependent on the social values and physical properties of a place.

In addition to the Burra Charter significance values, other criteria and guidelines have been formulated by other government agencies and bodies in NSW to assess the significance of heritage places in NSW. Of particular relevance to this assessment are the guidelines prepared by the Australian Heritage Council the Department of the Environment, Water, Heritage and the Arts (DEWHA), and Heritage NSW (Australian Heritage Council & DEWHA 2009, DECCW 2011, OEH 2011, NSW Heritage Office 2001).

The Guide (OEH 2011, p.10) states that the following criteria from the NSW Heritage Office (2001, p.9) should be considered:

- **Social value:** Does the subject area have a strong or special association with a particular community or cultural group for social, cultural or spiritual reasons?
- **Historic value:** Is the subject area important to the cultural or natural history of the local area and/or region and/or state?
- **Scientific value:** Does the subject area have the potential to yield information that will contribute to an understanding of the cultural or natural history of the local area and/or region and/or state?
- **Aesthetic value:** Is the subject area important in demonstrating aesthetic characteristics in the local area and/or region and/or state?

OEH (2011, p.10) states that when considering the Burra Charter criteria, a grading system must be employed. Austral will use the following grading system to assess the cultural values of the study area and its constituent features. These are outlined in Table 8.2.

Table 8.2 Gratings used to assess the cultural values of the study area

Grading	Definition
Exceptional	The study area is considered to have rare or outstanding significance values against this criterion. The significance values are likely to be relevant at a state or national level.
High	The study area is considered to possess considerable significant values against this criterion. The significance values are likely to be very important at a local or state level.
Moderate	The study area is considered to have significance values against this criterion; these are likely to have limited heritage value but may contribute to broader significance values at a local or State level.
Little	The study area is considered to have little or no significance values against this criterion.

8.2. ASSESSMENT OF SIGNIFICANCE

The following section addresses the Burra Charter significance values with reference to the overall study area.

8.2.1. AESTHETIC SIGNIFICANCE VALUES

Aesthetic values refer to the sensory, scenic, architectural and creative aspects of the place. These values may be related to the landscape and are often closely associated with social and cultural values.

In the past, the study area would have had a high aesthetic value due to its association with the Wingecarribee River. The disturbance that has occurred to the study area since European occupation has greatly reduced the aesthetic value of the study.

Based on this assessment, the study area is considered to have **little** aesthetic significance values.

8.2.2. HISTORIC SIGNIFICANCE VALUES

The assessment of historic values refers to associations with particular places associated with Aboriginal history. Historic values may not be limited to physical values but may relate to intangible elements that relate to memories, stories or experiences.

The study area is located in an area that contains both Aboriginal and historical heritage which increases the potential for there being historical Aboriginal cultural heritage within the study area. There is, however, no record of any historic values for Aboriginal people associated with the study area.

Based on this assessment, the study area is considered to have **little** historic significance values.

8.2.3. SCIENTIFIC SIGNIFICANCE VALUES

Scientific significance generally relates to the ability of archaeological objects or sites to answer research questions that are important to the understanding of the past life-ways of Aboriginal people. Australia ICOMOS (2013b, p.5) suggests that to appreciate scientific value, the following question is asked: *"Would further investigation of the place have the potential to reveal substantial new information and new understandings about people, places, processes or practices which are not available from other sources?"*

In addition to the above criteria, The Guide (OEH 2011, p.10) also suggests that consideration is given to the Australian Heritage Council and DEWHA (2009) criteria, which are particularly useful when considering scientific potential:

- **Research potential:** does the evidence suggest any potential to contribute to an understanding of the area and/or region and/or state's natural and cultural history?
- **Representativeness:** how much variability (outside and/or inside the subject area) exists, what is already conserved, and how much connectivity is there?
- **Rarity:** is the subject area important in demonstrating a distinctive way of life, custom, process, land use, function or design no longer practised? Is it in danger of being lost or of exceptional interest?
- **Education potential:** does the subject area contain teaching sites or sites that might have teaching potential?

As the majority of the study area contains no Aboriginal archaeological sites, it is considered to have **little** scientific significance values.

8.2.4. SOCIAL AND SPIRITUAL SIGNIFICANCE VALUES

As social and spiritual significance are interdependent, Austral has undertaken a combined assessment of these values. The Consultation Requirements specify that the social or cultural values of a place can only be identified through consultation with Aboriginal people.

No additional social and/or spiritual significance values were identified by RAPs during the Stage 4 draft ACHA review period.

8.3. STATEMENT OF SIGNIFICANCE

Heritage NSW specifies the importance of considering cultural landscapes when determining and assessing Aboriginal cultural values. The principle behind this is that:

‘For Aboriginal people, the significance of individual features is derived from their inter-relatedness within the cultural landscape. This means features cannot be assessed in isolation and any assessment must consider the feature and its associations in a holistic manner’ (DECCW 2010c).

The study area is located within temperate Australia and consists of a landscape of foot slopes and valleys. Although the majority of the study area has been cleared for agricultural purposes and urban development, the study area would have originally been vegetated by native species. The background research identified 57 previously registered Aboriginal archaeological sites within a 5-kilometre radius of the study area. Most of these sites are artefact sites (see Section 5.1). No Aboriginal sites were located within the study area, therefore it has low significance.

9. IMPACT ASSESSMENT

This section outlines, according to Heritage NSW guidelines, the potential harm that the proposed activity may have on identified Aboriginal objects and places within the study area (DECCW 2011, OEH 2011).

9.1. LAND USE HISTORY

The study area is found within an area under constant artificial change. Deforestation and vegetation clearance have occurred throughout most of the study area, which has resulted in erosion along the slopes within the study area. Historically, the study area was used for grazing, and other relatively low-impact agricultural activity, and the construction of the Berrima Gaol in 1835. Many events followed the construction of the gaol. See a summary below in Table 9.1.

This summary is provided here to support the prediction of low potential for Aboriginal cultural material remaining at the site. Sub-surface Aboriginal archaeology may remain across some areas of the site that have no building or infrastructure on the land, however, due to the entire study area being modified, the remaining land not used for buildings was heavily disturbed for landscaping and gardens, which would have caused a loss or removal of Aboriginal material leaving little to remain in situ.

Table 9.1 Summary of Berrima Gaol use.

Summary	Date Range
Construction of the Gaol building	1834–1839
First Phase of Operation	1839–1847
Post-Gaol Closure and abandonment	1847–1860
Reopening of the Gaol	1860
Berrima as a model prison of the separate system	1847–1867
Subsequent alterations and additions	1867–1909
Berrima Gaol during the 20th century and beyond	1909 – Present Day
Early 20th century and WWI	1914 – 1915
WWII and Fire	1939 – 1942
Rebuilding and subsequent use	1942 – Present Day

The use of the land before 1834 is unknown; it would have been a continuation of the wider landscape that consisted of interspersed farmland among gently rolling hills. The study area was in use as a construction site from 1834 – 1839 when the Gaol was being built. From 1839 onwards, it was in use intermittently as a prison until 1909 when it was again closed until 1915 when it was opened as a German internment camp for the duration of WWI. The prison was then used as a factory site until WWII when it became an ammunition storage facility. The interior section of the study area was heavily damaged by a fire in 1942 that destroyed many of the internal buildings. Since then, the internal space within the study area has been concreted over and the internal buildings have been rebuilt based on a modern prison configuration. During the Gaol's time in use, several phases of modification are likely to be evident in the archaeological record present in the study area.

Livestock grazing activities have resulted in broadscale soil disturbance and topsoil movement across the study area. The impact of this upon Aboriginal cultural heritage material includes stone artefact

displacement and dispersion of other cultural materials, rather than the destruction of Aboriginal sites. The limited archaeological potential across the majority of the study area is more likely to reflect the inherent unsuitability of the terrain for permanent Aboriginal occupation than the prior loss of the Aboriginal sites due to European land use practices. This is readily evidenced by both the number of recorded AHIMS sites close to freshwater sources in the region (refer to Figure 4.1), and the density of artefacts and PADs in those locations in comparison with those identified during the current investigation. A summary of the past land use practices within the study area is shown in Table 9.2.

Table 9.2 Summary of past land use within the study area.

Past land uses	Potential impacts on archaeological resources
Animal grazing	Animal grazing, particularly by horses, could have resulted in the displacement of archaeological artefacts and/or damage to subsurface archaeological artefacts (if present). It could also result in unnatural movements of artefacts through the stratigraphic record.
Construction of the Berrima Gaol, and associated modifications to the building	The construction and modification of the Berrima Gaol within the study area would have involved significant groundworks which may have resulted in significant artefact displacement.

9.2. PROPOSED ACTIVITY

The proposed activity at this stage consists of the Berrima Gaol Adaptive Reuse Development project. This project will involve the construction of a new boutique hotel within the grounds of the gaol, a multi-level carpark, a function centre, a restaurant bar, and other tourism facilities and amenities.

9.3. ASSESSING HARM

This section outlines the assessment process for addressing potential harm to Aboriginal objects and/or places within the study area, as outlined by Heritage NSW (OEH 2011, p.12).

9.3.1. ECOLOGICALLY SUSTAINABLE DEVELOPMENT

An objective of the NPW Act, under Section 2A(1)(b)(i) is to conserve “*places, objects and features of significance to Aboriginal people*” through applying the principles of ecologically sustainable development (ESD) (Section 2A(2)). ESD is defined in Section 6(2) of the *Protection of the Environment Administration Act 1991* (NSW) as “*...the effective integration of social, economic and environmental considerations in decision-making processes*”. ESD can be achieved with regard to Aboriginal cultural heritage, by applying the principle of inter-generational equity, and the precautionary principle to the nature of the proposed activity, with the aim of achieving beneficial outcomes for both the development and Aboriginal cultural heritage.

INTERGENERATIONAL EQUITY

The principle of intergenerational equity is that the present generation has a responsibility to ensure the health, diversity and productivity of the environment for the benefit of future generations. The Department of Environment and Climate Change (DECC), now Heritage NSW, states that in terms of Aboriginal cultural heritage “*intergenerational equity can be considered in terms of the cumulative impacts to Aboriginal objects and places in a region. If few Aboriginal objects and places remain in a region (for example, because of impacts under previous AHIPs), fewer opportunities remain for future generations of Aboriginal people to enjoy the cultural benefits of those Aboriginal objects and places.*” (DECC 2009, p.26).

The assessment of intergenerational equity and understanding of cumulative impacts should consider information about the integrity, rarity or representativeness of the Aboriginal objects and/or places that may be harmed and how they illustrate the occupation and use of the land by Aboriginal people across the locality (DECC 2009, p.26).

Where there is uncertainty over whether the principle of intergenerational equity can be followed, the precautionary principle should be applied.

PRECAUTIONARY PRINCIPLE

Heritage NSW defines the Precautionary Principle as *“if there are threats of serious or irreversible environmental damage, lack of full scientific certainty should not be used as a reason for postponing cost-effective measures to prevent environmental degradation”* (DECC 2009, p.26).

The application of the precautionary principle should be guided through:

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

DECCW (2009, p.26) states that the precautionary principle is relevant to the consideration of potential impacts on Aboriginal cultural heritage, where:

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

Where either of the above is likely, a precautionary approach should be taken, and all effective measures implemented to prevent or reduce harm to Aboriginal cultural heritage values.

9.3.2. TYPES OF HARM

When considering the nature of harm to Aboriginal objects and/or places, it is necessary to quantify direct and indirect harm. The types of harm, as defined in the Guide (OEH 2011, p.12), and are summarised in Table 9.3. These definitions will be used to quantify the nature of harm to identified Aboriginal objects and/or places that have been identified as part of this assessment. The Code states that the degree of harm can be either total or partial (DECCW 2010d, p.21).

Table 9.3 Definition of types of harm

Type of harm	Definition
Direct harm	May occur as the result of any activity that disturbs the ground including, but not limited to, site preparation activities, installation of services and infrastructure, roadworks, excavating detention ponds and other drainage or flood mitigation measures, and changes in water flows affecting the value of a cultural site.
Indirect harm	May affect sites or features located immediately beyond, or within, the area of the proposed activity. Examples of indirect impacts include but are not limited to, increased impact on art in a shelter site from increased visitation, destruction from increased erosion and changes in access to wild food resources.

9.4. IMPACT ASSESSMENT

This ACHA has included a programme of investigations that have characterised the nature, extent and significance of Aboriginal sites within the study area.

The proposed works have no foreseeable impact on known archaeological values as no Aboriginal cultural materials or sites have been recorded, and the entire study area is considered low potential.

10. AVOIDING AND MINIMISING HARM

The Burra Charter advocates a cautious approach to change: “Do as much as necessary to care for the place and to make it useable, but otherwise change it as little as possible so that its cultural significance is retained” (Australia ICOMOS 2013a, p.1). Based on this principle, this section identifies the measures that have been taken to avoid harm and what conservation outcomes have been achieved through the preparation of this ACHA.

10.1. DEVELOPMENT OF PRACTICAL MEASURES TO AVOID HARM

The visual inspection revealed a largely disturbed study area with no discernible tangible heritage values. The impacts of the proposed development on these heritage values are minimal.

10.2. PRINCIPLES OF ESD AND CUMULATIVE IMPACTS

The Guide to Reporting requires the ACHA to consider the effects of cumulative impacts under the principles of ESD. In essence, this requires the acknowledgement that while a single development may have a minimal impact, it forms part of the creeping urbanisation process. In turn, this leads to the widespread loss of environmental and cultural resources. The Southern Highlands is a region that is subject to progressive and continuous urbanisation and expansion. This places pressure on the archaeological resources within the region. To quantify whether the proposed impacts of this project will have a broader impact on the cultural resources of the region, Austral has undertaken an analysis of AHIMS sites in relation to their current or future zoned use. The purpose of this analysis is to determine the volume of AHIMS sites that are zoned within areas that are likely to be or are likely to have been, subject to the impacts associated with the progressive development of the region. This assumes that sites located within land zoned as residential (R1 – R5), business (B1 – B5), or industrial (IN1 – IN4 and E4-E5) are more likely to have been harmed or be under threat of harm. Conversely, sites zoned for environmental (ENP – ENZ and C1-C4), recreational (RE1 – RE2), or rural (RU2, RU3 and RUR) use are more likely to be subject to conservation.

An analysis of the broader Southern Highlands region indicates that the majority of AHIMS sites (n = 32, 56.14%) are located within zonings likely to facilitate conservation outcomes and exhibit minimal threat to the conservation of sites, while 43.86% (n = 25) are within zonings likely to be subject to harm through progressive urbanisation and development (Table 10.1).

Table 10.1 Analysis of AHIMS sites in relation to land zoning

Land Zone	Number of sites	Percentage of sites
General Industrial	22	38.60%
Environmental Management	12	21.05%
Environmental Conservation	8	14.04%
Rural Landscape	7	12.28%
Infrastructure	3	5.26%
Complex Area	2	3.51%
Primary Production Small Lots	2	3.51%
Private Recreation	1	1.75%
Total	57	100%

A review of the frequency of one or more AHIPs listed against AHIMS site features indicates some slightly differing trends. This indicates that 11.86% of site features have not had one or more AHIPs listed against them (Table 10.2).

Table 10.2 Analysis of AHIMS site features with AHIP's issued

Site features	No. Site features	No. site features with AHIPs	% Site features with AHIPS
Artefact	44	2	4.55%
PAD	7	5	71.43%
Grinding Groove	5	0	0%
Modified Tree	3	0	0%
Total	59	7	11.86%

This analysis does indicate that 71.43% of PAD sites and 4.55% of artefact sites have had AHIPs issued against them, indicating that these sites have been subject to cumulative impacts from successive approvals. However, this analysis does appear to indicate that locally, a higher proportion of AHIMS sites, specifically grinding grooves (0%) and modified trees (0%) are being conserved rather than destroyed.

10.3. STRATEGIES TO MINIMISE HARM

Following the archaeological survey of the study area, it was determined that there was negligible potential for the study area to contain Aboriginal cultural heritage due to the significance history of ground disturbance during the construction and modification of Berrima Gaol and it's surrounds.

11. RECOMMENDATIONS

The following recommendations are derived from the findings described in this ACHA. The recommendations have been developed after considering the archaeological context, environmental information, consultation with the local Aboriginal community, the findings of the pedestrian survey, and the predicted impact of the planning proposal on archaeological resources.

It is recommended that:

1. No further assessment or works are required to be undertaken for the study area. If unexpected finds or human remains are identified during works, please follow Recommendation 1 (a), 1 (b) and 2.
 - a) In the event that unexpected finds occur during any activity within the study area, all works in the vicinity must cease immediately. The find must be left in place and protected from any further harm. Depending on the nature of the find, the following processes must be followed:
 - b) If, while undertaking the activity, an Aboriginal object is identified, it is a legal requirement under Section 89A of the NPW Act to notify Heritage NSW, as soon as possible. Further investigations and an AHIP may be required prior to certain activities recommencing.
2. If human skeletal remains are encountered, all work must cease immediately and NSW Police must be contacted, they will then notify the Coroner's Office. Following this, if the remains are believed to be of Aboriginal origin, then the Aboriginal stakeholders and Heritage NSW must be notified.
3. It is recommended that Blue Sox Investments continues to inform the Aboriginal stakeholders about the management of Aboriginal cultural heritage within the study area throughout the completion of the project. The consultation outlined as part of this ACHA is valid for six months and must be maintained by the proponent for it to remain continuous. If a gap of more than six months occurs, then the consultation will not be suitable to support an AHIP for the project.
4. A copy of this report should be forwarded to all Aboriginal stakeholder groups who have registered an interest in the project.

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