

EXTENT

HERITAGE ADVISORS
TO AUSTRALIA AND
THE ASIA PACIFIC



Macquarie University Campus Aboriginal Cultural Heritage Assessment Site 1 Addendum

Prepared for Macquarie University

March 2020 – Final

Sydney
Melbourne
Brisbane
Perth

extent.com.au

EXTENT HERITAGE PTY LTD

ABN 24 608 666 306
ACN 608 666 306
info@extent.com.au
extent.com.au

SYDNEY

Level 3/73 Union St
Pyrmont NSW 2009
P 02 9555 4000
F 02 9555 7005

MELBOURNE

13/240 Sydney Rd
Coburg Vic 3058
P 08 9388 0622

BRISBANE

Level 12, 344 Queen St
Brisbane Qld 4000
P 07 3051 0171

PERTH

1/191 St Georges Tce
Perth WA 6000
P 08 9381 5206

Document information

Extent Heritage project no.:	20190172
Client:	Macquarie University
Project:	Macquarie University Campus
Site location:	Macquarie University
Heritage advisor(s):	Megan Sheppard Brennand
Author(s):	Coral Hardwick, Megan Sheppard Brennand

Document control

Version	Internal reviewer	Date	Review type
1	Matthew Whincop	09.03.20	Technical

Copyright and moral rights

Historical sources and reference materials used in the preparation of this report are acknowledged and referenced in figure captions or in text citations. Reasonable effort has been made to identify, contact, acknowledge and obtain permission to use material from the relevant copyright owners.

Unless otherwise specified in the contract terms for this project Extent Heritage Pty Ltd

- vests copyright of all material produced by Extent Heritage Pty Ltd (but excluding pre-existing material and material in which copyright is held by a third party) in the client for this project (and the client's successors in title);
- retains the use of all material produced by Extent Heritage Pty Ltd for this project, for its ongoing business, and for professional presentations, academic papers or publications.

Executive summary

Macquarie University has prepared the *Macquarie University Campus Master Plan* to set out a physical framework for the future redevelopment of its campus. This report addresses the Site 1 development area (hereafter the 'study area'), within the university campus.

As part of the *Macquarie University Campus Master Plan* the university is being developed in stages. Extent Heritage Pty Ltd (Extent Heritage) was commissioned by Macquarie University to prepare an Aboriginal Cultural Heritage Management Plan (ACHMP) for the Central Courtyard Precinct (CCP), which is being assessed as a State Significant Development (SSD 8755) in accordance with Part 4 Division 4.7 of the *Environmental Planning and Assessment Act 1979*, and for which Development Consent was granted by the Minister for Planning in April 2019. As part of the Minister's Conditions of Approval (MCoA), the Department of Planning and Environment (DPE) identified the need to undertake additional Aboriginal cultural heritage assessment of the Campus. Specifically, Condition D5 of the MCoA outlined the need to identify Aboriginal cultural heritage values within the broader Campus and liaise with the Aboriginal community.

The ACHMP recommended a campus-wide Aboriginal Cultural Heritage Assessment (ACHAR) be undertaken to assess the archaeological potential of the entirety of the university campus in advance of the proposed development. Extent Heritage was commissioned by Macquarie University to undertake this campus wide assessment. While the ACHAR provides an overarching assessment of the entire campus, this current report acts as an addendum to the original assessment and compiles additional information with the original results for the study area only, and is to be distributed in conjunction with the original ACHAR. This report has been prepared to both satisfy existing SSD requirements and to guide future development of the campus with regards to Aboriginal cultural heritage within the study area.

Key Findings

Archaeological studies pertaining to the region reflect the complexity of this locale, being at the interface of the Cumberland Plain and Pittwater sandstone plateau. As such, proximity to water, elevation and the presence of sandstone geology with suitable overhangs and/or flat exposures are considered important factors in Aboriginal site patterning of the region. Evidence for Aboriginal occupation in the region reflects these varied landscapes, with pigmented and engraved art sites, grinding grooves, rock shelters with occupation deposit and art, as well as artefact scatters and isolated finds.

With specific reference to the Macquarie University campus, no Aboriginal objects or sites were identified during the archaeological survey undertaken as part of this assessment, and it was demonstrated that historical development from the 1960s has fundamentally changed the local topography, vegetation communities and hydrology of large parts of the University Campus. Significant disturbance has occurred within the current study area and therefore it has been assessed as having low-nil archaeological potential.

Documentary research and Aboriginal community consultation identified no specific ethnographic information pertaining to the site, and similarly no specific areas of Aboriginal

cultural value have been identified within the study area by RAPs to date. However, the cultural significance of the Lane Cove River, and the importance of early Aboriginal and settler interaction following settlement of the Field of Mars Creek Common (in which the study area broadly sits) was noted by the local Aboriginal community.

Management and Recommendations

The Site 1 development area is of very low to nil archaeological potential. Such areas require no design and planning recommendations. These areas are least likely to contain Aboriginal cultural heritage and provide few constraints for future development. Works in areas of very low to nil archaeological potential may proceed with caution, following the Unexpected Aboriginal Finds Procedure outlined below.

The following recommendations are made with regards to the future management of Aboriginal cultural heritage in the Site 1 development area:

- The present Addendum should be submitted to the Registered Aboriginal Parties for their input and feedback, prior to finalisation, along with the initial ACHAR.
- Consultation with the Registered Aboriginal Parties should continue throughout the Campus master planning and redevelopment. Should consultation lapse for six months or longer, then the consultation process as outlined by DPIE would need to be re-started.
- Works may proceed with caution following the Unexpected Aboriginal Finds Procedure outlined in Section 7.2 of this Addendum.
- All relevant personnel and contractors involved in the design, construction and operation of the proposed development should be advised by Macquarie University of the relevant heritage issues, legislative requirements and recommendations identified in the ACHAR. This may take the form of a heritage induction.
- Traditional Aboriginal burials (older than one hundred years) are protected under the *National Parks and Wildlife Act 1974* (NSW). If such material is found, all works should cease and an appropriate specialist should be contacted. Should the skeletal material prove to be archaeological Aboriginal remains, notification of the DPIE and the RAPs will be required. The Commonwealth Minister for the Environment should also be notified under the provisions of the *Aboriginal and Torres Strait Islander Heritage Protection Act 1984* (Cwlth).

Contents

1.	Introduction.....	1
1.1	Background and purpose	1
1.2	Study area	1
2.	Aboriginal consultation.....	4
2.1	The process	4
2.2	This project	5
2.3	Aboriginal stakeholder feedback	6
3.	Existing environment	7
3.1	Key findings	7
3.2	Bioregions.....	7
3.3	Geology, geomorphology and soils	8
3.4	Past Vegetation.....	8
3.5	Hydrology.....	9
3.6	Previous disturbance	10
4.	Archaeological record	26
4.1	Regional Aboriginal archaeological context.....	26
4.2	Local Aboriginal archaeological context	29
4.3	Aboriginal Heritage Information Management System data.....	34
4.4	Predictive model	36
5.	Field investigation	40
6.	The archaeological and cultural resource	46
7.	Conclusions and recommendations	48
7.1	Potential Aboriginal heritage impact.....	48
7.2	Management strategy	50
7.3	Recommendations	51
8.	References	52
9.	Abbreviations.....	57
10.	Glossary	58

List of figures

Figure 1. The Site 1 development area within the campus wide study area.....	3
Figure 2. Topography within the study area.....	12
Figure 3. Soil landscapes in the vicinity of the study area.....	13
Figure 4. Native vegetation communities identified within the study area.	14
Figure 5. Potential pre-1930 remnant vegetation identified within the study area.	15
Figure 6. Hydrology and topography of the study area.	16
Figure 7. Parish Map of Hunters Hill, dated to 1895.	17
Figure 8. Parish Map of Hunters Hill, dated to 1907.	18
Figure 9. Aerial photograph of the study area, taken in 1930.....	19
Figure 10. Aerial photograph of the study area, taken in 1943.....	20
Figure 11. Aerial photograph of the study area, taken in 1965.....	21
Figure 12. Partial aerial photograph of the study area, taken in 1970.	22
Figure 13. Aerial photograph of the study area, taken in 1975.....	23
Figure 14. Partial aerial photograph of the study area, taken in 1994.	24
Figure 15. Previous site disturbance.....	25
Figure 16. Areas of archaeological sensitivity as defined by MDCA (2012).	31
Figure 17. Areas of archaeological sensitivity in vicinity of Macquarie University station, as defined by Artefact Heritage (2011:26).	32
Figure 18. Previous Aboriginal archaeological studies in the vicinity of the study area.	37
Figure 19. Registered AHIMS sites within a 6km ² area, centred on the study area.....	38
Figure 20. Predictive model of archaeological potential based on desktop assessment.	39
Figure 21. Macquarie University campus Survey Units.....	43
Figure 22. Survey coverage.	44
Figure 23. Pre-1930 remnant vegetation identified during the field survey.....	45
Figure 24. Revised areas of archaeological potential within the study area.	47
Figure 25. Proposed design plans.	49

List of tables

Table 1. Summary of Aboriginal consultation for the project.....	5
Table 2. Site features recorded in the AHIMS search area.....	35

1. Introduction

1.1 Background and purpose

Macquarie University has prepared the *Macquarie University Campus Master Plan* to set out a physical framework for the future redevelopment of its campus. This report addresses the Site 1 development area (hereafter the 'study area'), within the university campus.

As part of the *Macquarie University Campus Master Plan* the university is being developed in stages. Extent Heritage Pty Ltd (Extent Heritage) was commissioned by Macquarie University to prepare an Aboriginal Cultural Heritage Management Plan (ACHMP) for the Central Courtyard Precinct (CCP), which is being assessed as a State Significant Development (SSD 8755) in accordance with Part 4 Division 4.7 of the *Environmental Planning and Assessment Act 1979*, and for which Development Consent was granted by the Minister for Planning in April 2019. As part of the Minister's Conditions of Approval (MCoA), the Department of Planning and Environment (DPE) identified the need to undertake additional Aboriginal cultural heritage assessment of the Campus. Specifically, Condition D5 of the MCoA outlined the need to identify Aboriginal cultural heritage values within the broader Campus and liaise with the Aboriginal community.

Following this, Extent Heritage undertook an Aboriginal Cultural Heritage Assessment Report (ACHAR) of the entire Macquarie University Campus to both satisfy existing SSD requirements and guide future development with regards to Aboriginal cultural heritage. The ACHAR was developed with consideration of six stages for upcoming development, while addressing the archaeological potential for the entire university campus (Figure 1). While the ACHAR provides an overarching assessment of the entire campus, this Addendum was developed to outline the specific potential and management considerations for the current study area.

This report has been prepared in accordance with relevant Department of Planning, Industry and Environment (DPIE) (formerly the Office of Environment and Heritage [OEH]) guidelines, including:

- Guide to Investigating, Assessing and Reporting on Aboriginal Cultural Heritage in NSW (OEH 2011).
- *Aboriginal Cultural Heritage Consultation Requirements for Proponents* 2010 (Department of Environment, Climate Change and Water [DECCW] 2010a).
- Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales (DECCW 2010b).

1.2 Study area

The study area is located within the Macquarie University campus and is bound by Macquarie Drive in the north, University Avenue in the south and two areas of green space in the east and west. It comprises the following cadastres: Lot 191 DP 1157041 (Figure 1), and measures ~175m x 90m, with a total area of 18667.4m². The study area is owned and managed by Macquarie University and is located within the City of Ryde Local Government Area (LGA). It is

located with the County of Cumberland, Parish of Hunters Hill, and falls within the administrative boundaries of the Metropolitan Local Aboriginal Land Council, and is located 15km north-west of the Sydney CBD.

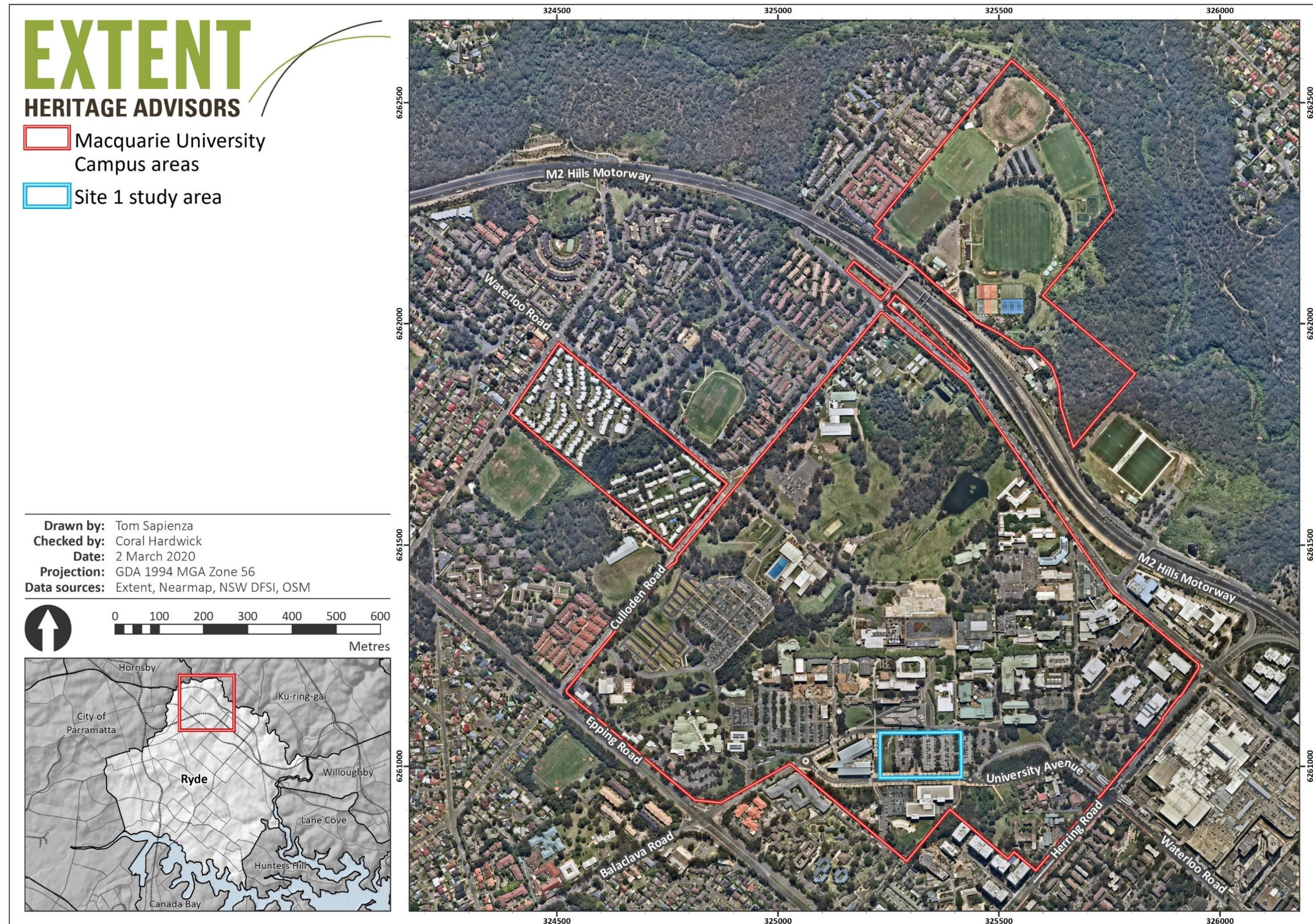


Figure 1. The Site 1 development area within the campus wide study area.

2. Aboriginal consultation

2.1 The process

Aboriginal consultation for this assessment has been undertaken in accordance with procedures set out in the *Aboriginal Cultural Heritage Consultation Requirements for Proponents 2010* (DECCW 2010a). These guidelines identify a four-stage process of consultation:

Site 1: Notification of project proposal and registration of interest

- Prenotification—Identification of the Aboriginal parties through contacting various government agencies.
- Notification—Contacting any Aboriginal community organisations identified to determine their interest (if any) in the project. This includes the placement of an advertisement in local print media seeking expressions of interest from Aboriginal community members.

Stage 2: Presentation of information about the proposed project

- Presentation of project information—Briefing of RAPs on the project proposal and scope of the ACHAR. This is usually undertaken through written correspondence and/or an on-site visit, and may undergo several iterations through the project lifetime as the nature of the assessment changes (e.g. field survey may lead to a requirement for test excavations).

Stage 3: Gathering information about cultural significance

- Seeking cultural information—Collection of information identifying any known Aboriginal objects of cultural value or places of cultural significance in the study area.
- Consultation protocols—Identification of any protocols that the RAPs would like adopted during the information gathering process, including how sensitive information will be managed.
- Potential impacts and mitigation measures—Discussion of potential impacts to heritage and appropriate mitigation options prior to developing the ACHAR. This is often undertaken on site at the end of any field program and/or as part of the overall report review phase.

Stage 4: Review of draft Aboriginal cultural heritage assessment report

- Review of draft report—RAPs review the draft ACHAR and provide comments on the overall findings, the assessment of cultural significance and the recommendations for management of Aboriginal heritage within the study area.

The consultation process for this project has two aims. Firstly, it is designed to comply with the DPIE consultation procedures to obtain and take into consideration comments and feedback from RAPs regarding our proposed assessment methodology, our assessment report and its

management recommendations. Secondly, through consultation with knowledge holders, the process seeks to accurately identify any Aboriginal cultural places and values that may be affected by proposed development of the study area.

2.2 This project

A complete log of actions and correspondence regarding Aboriginal community consultation is included in Appendix 2 and summarised in Table 1.

Overall, the consultation process for the initial campus wide ACHAR identified 45 Aboriginal stakeholders in the region (ACHAR Appendix 2.2). Of these, nine registered an interest in the project (ACHAR Appendix 2.3), and three participated in the survey. This addendum was distributed to the nine registered stakeholders for review, along with the initial campus wide ACHAR.

Table 1. Summary of Aboriginal consultation for the project

Consultation stage	Description	Date initiated	Date completed	Details
1	Pre-notification	21.12.18	14.01.19	Further correspondence and information in ACHAR Appendix 2.
	Notification	14.01.19	04.03.19	Further correspondence and information in ACHAR Appendix 2.
	Advertisement in Northern District Times	15.01.19	15.01.19	Newspaper advert presented in ACHAR Appendix 2.
2	Presentation of information/assessment methodology	24.06.19	03.07.19	Further correspondence and information in ACHAR Appendix 2. Four responses received from RAPs.
3	Gathering information about cultural significance			
	Field investigation	21.08.19	22.08.19	Three Aboriginal stakeholder groups (represented by four individuals) participated in the survey. Further details are provided in ACHAR Section 6 Appendix 2 below.
4	Review of draft report, including impacts and mitigation options	04.12.19	01.01.20	Further details are presented in ACHAR Section 2.3 and Appendix 2.
5	Review of Addendum for Site 1	31.03.20	28.04.20	Further details are presented in Section 2.3 and Appendix 2.2

2.3 Aboriginal stakeholder feedback

Information provided by the RAPs during the field survey indicated that areas of remnant vegetation contained viable archaeological potential, and recommendations for the campus to exhibit more interpretation across the site. Examples of interpretation mentioned by RAPs included the inclusion of more native plants, engravings and placards on the campus to highlight the Aboriginal history of the area. Additionally, Danny Franks suggested the expansion of the Indigenous Learning Circle to the northwest of the lake to accommodate larger Aboriginal events and more cultural interpretation. Evidence of such activity has since been observed with the opening of the Walanga Muru pavilion as a functional gathering place for Aboriginal and Torres Strait Islander people.

One response was received from the RAPs regarding this report. This response came from Carolyn Hickey of A1 Indigenous Services, who indicated her support for the findings and recommendations of the Site 1 Addendum.

3. Existing environment

3.1 Key findings

- The study area is located within the Sydney Basin bioregion, north west of the Sydney CBD, NSW. It is situated on the interface between the Cumberland Plain and Pittwater subregions, though the ecology and geomorphology of the study area is more reflective of the Cumberland Plain environment.
- The study area is within the Glenorie soil landscape which contains shallow loam and sandy loam topsoils, overlying clay and/or sandstone bedrock. Such soil profiles lend themselves primarily to surface and shallow subsurface artefact deposits.
- Kikkiya Creek is located ~30m to the east of the study area, which drains into the Lane Cove River located less than 800m to the north. As well as providing water, the water bodies would have supported diverse marine, plant and animal resources. The presence of fresh water and diverse flora and fauna would have enabled both seasonal and more permanent use of the area over time.
- Based on a review of vegetation maps and historical aerials, few small stands of vegetation appear to have remained relatively unchanged over the last 80 years. This vegetation has been subject to limited disturbance and may contain natural bushland vegetation elements with potential for the presence of Aboriginal scarred trees, as well as surface and sub-surface artefacts. A stand of remnant vegetation is located 20m east of the study area, though not within the area itself.
- An analysis of past land use indicates that the study area has been subjected to varying degrees of historical disturbance including the clearing of land for market gardening, as well as the construction of multi-story university carparks. This disturbance has significantly impacted the upper soil profile, including any Aboriginal cultural material, if present.

3.2 Bioregions

The study area is situated on the interface between the Cumberland and Pittwater bio-subregions, though is ecologically and geologically more characteristic of the Cumberland Plain subregion. Bioregions are large, geographically distinct areas that are distinguished from one another based on differences in geology, landform patterns, climate, ecological features and plant and animal communities. Bioregions are often further classified into smaller scale subregions, with localised differences in geomorphology and vegetation (Thackway and Cresswell 1995).

The Cumberland Plain environment which is characterised by low rolling hills and wide valleys on Triassic Wianamatta group shales and sandstones. This subregion is partly covered by Tertiary river gravels and sands, and Quaternary alluvium occurs along the main streams (NSW National Parks and Wildlife Service 2003). The gently undulating shale-based landscape of north Sydney naturally support grey box, forest red gum and narrow-leaved ironbark woodland with some spotted gum on the shale hills, and swamp box in low lying flood prone areas.

3.3 Geology, geomorphology and soils

The study area is underlain by the Ashfield Shale unit of the Wianamatta Group shales. The lithology of the Wianamatta Group shales is predominantly shale with sporadic thin lithic sandstones. The group was formed during the Late Triassic period (~237 Ma - ~201.3 Ma) as part of the coastal alluvial plain sequence (Jones and Clark 1991). Ashfield Shale is the basal layer of the Wianamatta Group, formed during the Late Triassic period as the seas lowered due to increased aridity, probably during a single sea-level regression episode. The lower portion of the Ashfield Shale unit was likely formed by lacustrine (possibly freshwater) sediment deposition, while the upper portion was formed by brackish or shallow marine sediment deposition. The Ashfield Shale unit reaches maximum thicknesses of ~60m, and is typically only exposed as erosional remnant on plateaus (Jones and Clark 1991; Geoscience Australia 2018). The lithology can be ordered or randomly distributed and commonly includes claystone and siltstone, laminate, sandstone and highly carbonaceous claystone and tuff (Jones and Clark 1991). The unit is often carbonaceous and frequently contains fossilised roots and plant debris.

The study area is within the Glenorie soil landscape (Figure 3). This residual soil profile is shallow in nature (<150cm) with local topography characterised by low rolling to steep hills, with narrow ridges, hillcrests and valleys (DPIE 2018). Slopes are often 5-20%, though typically moderately inclined (10-15%), and the local relief is between 50-80m. Dominant soil materials in the Glenorie soil landscape includes friable dark brown pedal loam and hard setting brown clay apedal loam (A horizons), overlaying a medium reddish-brown strongly pedal clay (B horizon). Ironstone nodules can often be found deep in the subsoil. The study area is located on mid slopes, which is characterised by friable loam (<15cm) overlying hard setting clay loam (5-30cm) and strongly pedal plastic clay (>100cm).

This soil profile was confirmed by numerous geotechnical studies across the campus, with few investigations occurring within the study area (JK Geotechnics 2018), and up to 50m from the study area (Douglas Partners 2007: Project No. 45298; Douglas Partners 1997: Project No. 24747). These investigations revealed a general soil profile of topsoil (0-20cm) that is likely redeposited in some areas, onto fine to coarse-grained sandy gravel fill (20-60cm) onto a residual silty clay (B2 horizon), underlain by bedrock and sandstone ((JK Geotechnics 2018).

This soil landscape forms the moderately steep and undulating topographic landscape typical of the North Sydney region. While moderately steep in some areas, the landscape is highly urbanised and modified, and sharp exposed sandstone reliefs are present in this area but often not without modification; this restricts a few archaeological site types, such as rock shelters and rock engravings which require these landscape features and are sensitive to modification. Archaeologically, the landscape is more likely to exhibit surface artefact scatters and buried cultural material.

3.4 Past Vegetation

From an Aboriginal heritage perspective, understanding areas of native vegetation is important for four reasons:

- Culturally modified (scarred) trees may be found in these areas.

- These areas may have been subject to fewer disturbances in the post-contact period than other parts of the study areas.
- Aboriginal representatives often feel that areas of native vegetation are important cultural values areas.
- These areas are indicative of what natural resources were available to past Aboriginal occupations.

Native vegetation communities in the vicinity of the study area have been mapped by DPIE (DPIE 2016b; Figure 4). This mapping program identified five vegetation communities within the campus wide area. One vegetation community was identified on shallow slopes within the study area, which is the same landform the study area occupies. This vegetation community is the Sydney turpentine-ironbark forest.

The Sydney turpentine-ironbark forest community is a transitional vegetation community that occurs between the dry Cumberland Plain woodland and wet Blue Gum High Forest, and has a conservation status of critically endangered in NSW. It commonly occurs on Wianamatta shale soil. The Sydney turpentine-ironbark forest community is described as tall open-forest and is characterised by turpentine trees (*Syncarpia glomulifera*), grey gums (*Eucalyptus punctata*), grey ironbark (*Eucalyptus paniculata*), thin-leaved stringybark (*Eucalyptus eugenoides*), and red bloodwoods (*Eucalyptus gummifera*) (DPIE 2016b; Macquarie University 2018a). This forest community originally extended over 26,000ha westward towards Guildford and north of the Parramatta River from Ryde to Castle Hill. However, less than 5% of the pre-1788 forest has been retained. These tree species are commonly associated with culturally modified trees, and therefore there is potential for Aboriginal sites in these areas.

Additional mapping has been undertaken to identify areas where pre-1930 remnant vegetation is likely to remain, due to the relatively large amount of native vegetation identified in the area (Figure 5). Remnant vegetation is defined here as all intact and predominantly intact vegetation communities, excluding young regrowth. There is high potential for culturally modified trees to be present in these areas. The methodology of this exercise is outlined as follows. A grid of hexagons with a 10m diameter was applied across the entire campus study area. All hex grids in which vegetation was visible in the earliest aerial imagery were assigned a value of 1. If no vegetation was visible in the same grid in the next available historical aerial year, the grid was assigned a value of 0. This process was repeated for all available historical aerial years (1930, 1943, 1965, 1970, 1975, 1994, 2009, 2018 and 2019), resulting in a hexagonal sampling grid in which there appears to be constant vegetation from 1930 to 2019. These grid areas were then investigated on foot (see Section 6); resulting in a hexagonal grid of areas highlighting the probability of remnant native vegetation with an age greater than 80 years. There is a small area to the south of the study area identified as remnant vegetation.

3.5 Hydrology

The study area lies within the Lane Cove sub-catchment of the Parramatta Catchment area, which drains into Sydney Harbour. The Lane Cove River is a fourth order waterway and is located 800m north of the study area, however, there is a steep slope down to the river from the campus, so the ground distance is closer to ~850m. Kikkiya Creek (formerly University Creek), a first-order creek, passes the study area <40m to the east (Figure 6). As well as providing fresh

water, these watercourses would have supported diverse marine, plant and animal resources. The presence of fresh water and diverse flora and fauna would have allowed for both seasonal and more permanent use of the area over time.

Ryde Council has undertaken hydrological analysis across the LGA, indicating that none of the study area is within the local flood zone, which extends to ~25m east of the study area towards Kikkiya Creek.

3.6 Previous disturbance

The campus wide study area has been the subject of various post-contact European land disturbances since the 19th century (Figure 7 - Figure 15). The first land grants of the area were made in the 1790's, accompanied by the renaming of the area as the Field of Mars. In 1804, the Field of Mars was gazetted into six large tracts of land used as commons. The study area lies within the Field of Mars Common, which extends along the southern bank of the Lane Cove River from Hunters Hill to Pennant Hills. This area preserved much of the bushland along the Lane Cove River, some of which remains in the north of the campus wide study area.

Subdivision of the Field of Mars Common began in 1885, bringing about important change for the district. Formalised streets were laid out, and the land divided into allotments of between one to four acres. Parish maps of the area from 1907 suggest that lots within the study area were purchased by David Wilson and H.H. Rogers (Figure 8). The level of disturbance in the early 1900s is difficult to discern due to a lack of information on activities however vegetation clearance and road construction did occur..

After the 1930's, the NSW government encouraged returning soldiers to take up farms and orchards on small blocks of land within the study area. Aerial imagery from 1930 indicates extensive clearing of the wider area for such orchards, market gardening and poultry farms, with numerous small structures present in the west of the study area (Figure 9). This is supported by historical titles, which indicate that by the 1930's the land was held by agricultural/market gardens and few residential buildings often associated with the adjacent farm land. Such a landscape continued into 1965, characterised by cleared land with sparse residences (Figure 10 - Figure 11).

The Macquarie University campus had been acquired in 1964, and in the late 1960's the construction of the first multi-storey and single-storey university buildings began impacting the study area. This can be observed in the 1970's aerial, with the erection of many buildings, carparks, and areas cleared for further development in the study area (Figure 12). The road present to the immediate south of the study area (now, University Avenue) had been established by this time.

By 1975, much of the study area had been covered by university carparks (Figure 13). More buildings were converted to multi-storey structures and the first University colleges were erected to the north and west of the study area.

By 1994, two multi-storey carparks were constructed across the study area, with associated grassed areas and tree growth occupying the remainder of the area (Figure 14). The trees are

not deemed to be remnant vegetation as they are not present in the previous historical aerials. These carparking structures remained within the Site 1 area today.

Summary of historical ground impacts

The following list summarises the historical impacts that may have caused some disturbance to potential artefact-bearing deposits and surface finds (Figure 15). The history of the area can be summarised by two major periods of land use:

- 1790s-1960s: agricultural and pastoral activities, vegetation clearance particularly in the centre of study area, numerous market gardens and farming fields, small residential structures.
- 1964 to present: construction of the university campus infrastructure, extensive vegetation clearance, major removal of upper soil deposits in the northern section of the study area.

The study area has been subject to significant ('high') disturbance due to the combination of agricultural, residential use and construction of university infrastructure . This ground disturbance does not preclude the presence of Aboriginal objects, but suggests they may be found in disturbed contexts.

EXTENT

HERITAGE ADVISORS

- Macquarie University Campus areas
- Site 1 study area
- Waterbodies and waterway areas
- Waterways

Slope (degrees)

- 0 - 2
- 3 - 5
- 6 - 10
- 11 - 15
- 16 - 25
- 26 - 45
- 46 - 84

Drawn by: Tom Sapienza
Checked by: Coral Hardwick
Date: 2 March 2020
Projection: GDA 1994 MGA Zone 56
Data sources: Extent, Nearmap, NSW DFSI, OSM



0 100 200 300 400 500 600

Metres

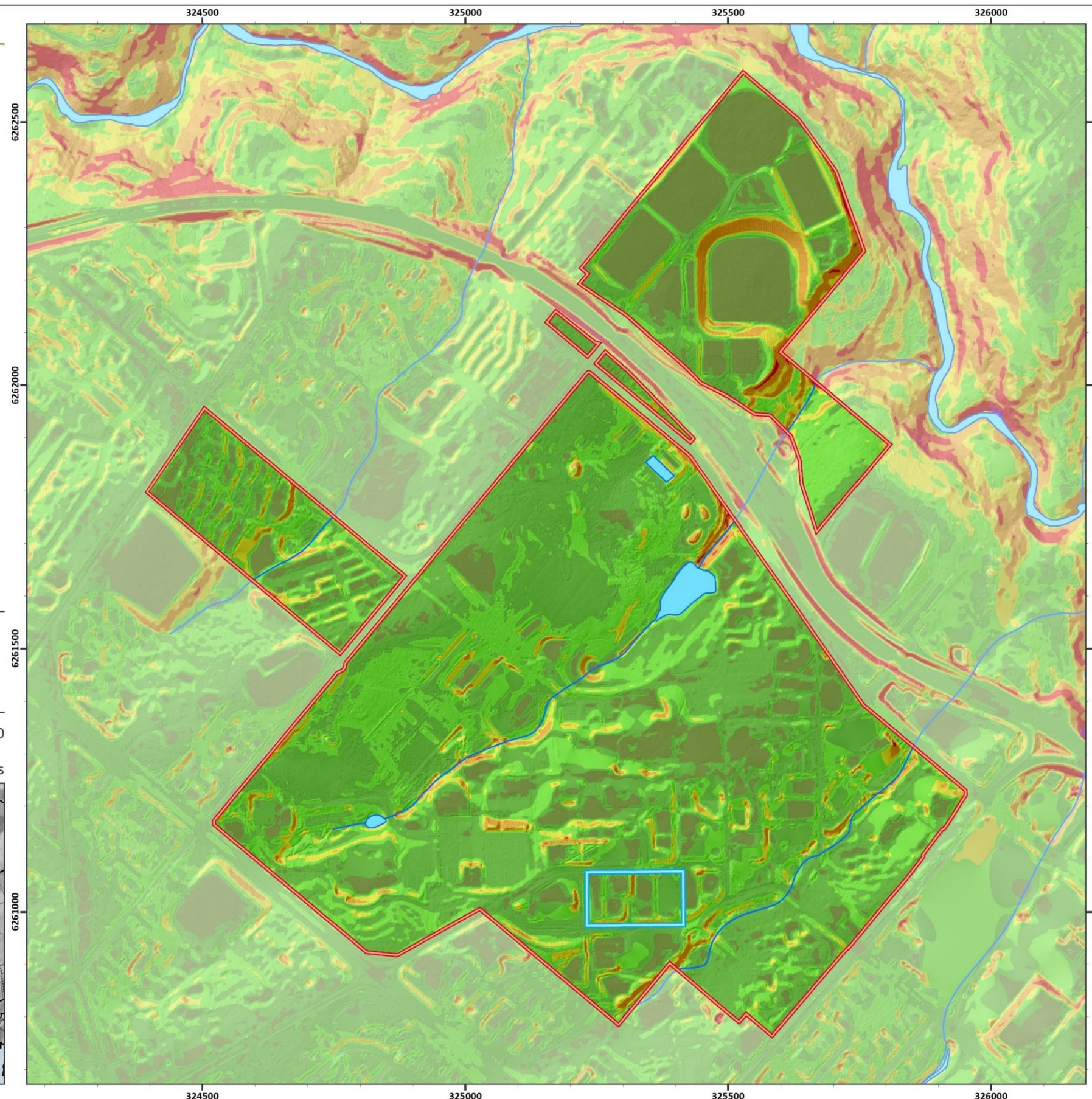
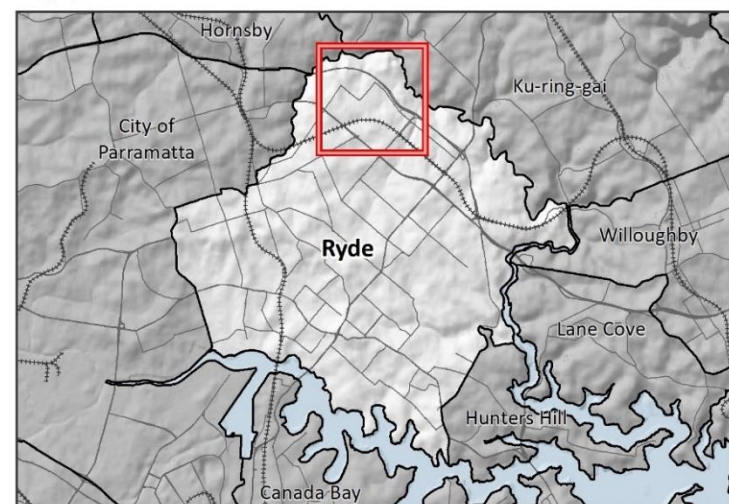


Figure 2. Topography within the study area.

EXTENT

HERITAGE ADVISORS

 Macquarie University
Campus areas

 Site 1 study area

Soil landscapes

 Glenorie

 Lucas Heights

Drawn by: Tom Sapienza
Checked by: Coral Hardwick
Date: 2 March 2020
Projection: GDA 1994 MGA Zone 56
Data sources: Extent, Nearmap, NSW DFSI, OEH, OSM



0 100 200
Metres

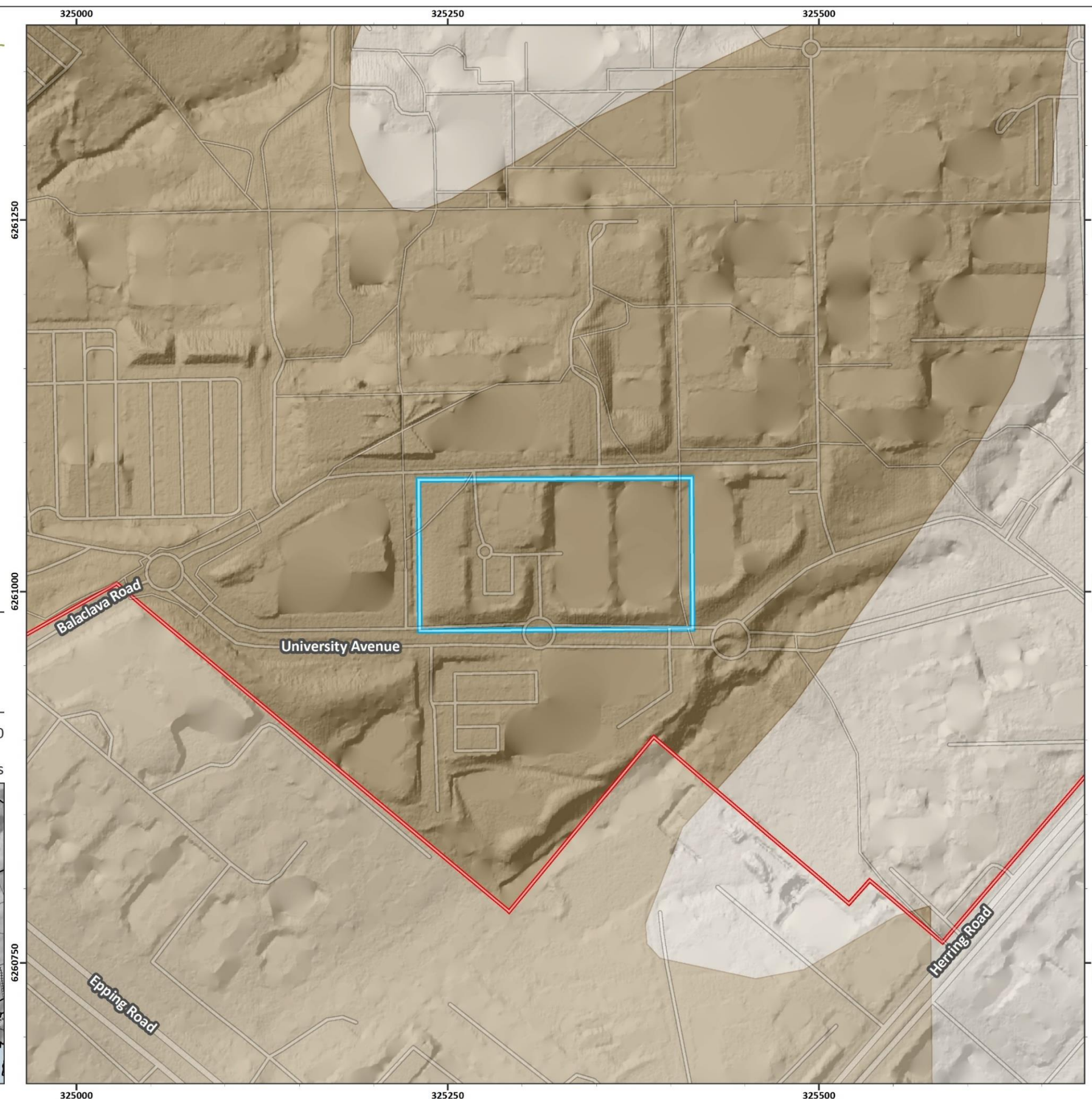
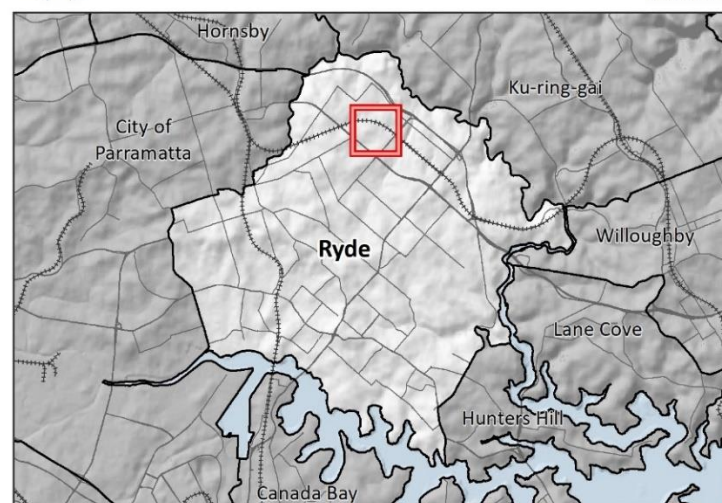


Figure 3. Soil landscapes in the vicinity of the study area

EXTENT

HERITAGE ADVISORS

 Macquarie University
Campus areas

Native vegetation of the Sydney Metropolitan Area v3.0 Plant Community Types

-  1237: Blue gum high forest
-  1250: Coastal sandstone gully forest
-  1281: Sydney turpentine-ironbark forest
-  1776: Coastal enriched sandstone dry forest
-  1782: Hornsby enriched sandstone exposed woodland
-  1828: Coastal sandstone gallery rainforest
-  1841: Coastal enriched sandstone moist forest
-  1845: Coastal shale-sandstone forest

Drawn by: Tom Sapienza
Checked by: Georgia Burnett
Date: 1 October 2019
Projection: GDA 1994 MGA Zone 56
Data sources: Extent, NSW DFSI, OEH, OSM

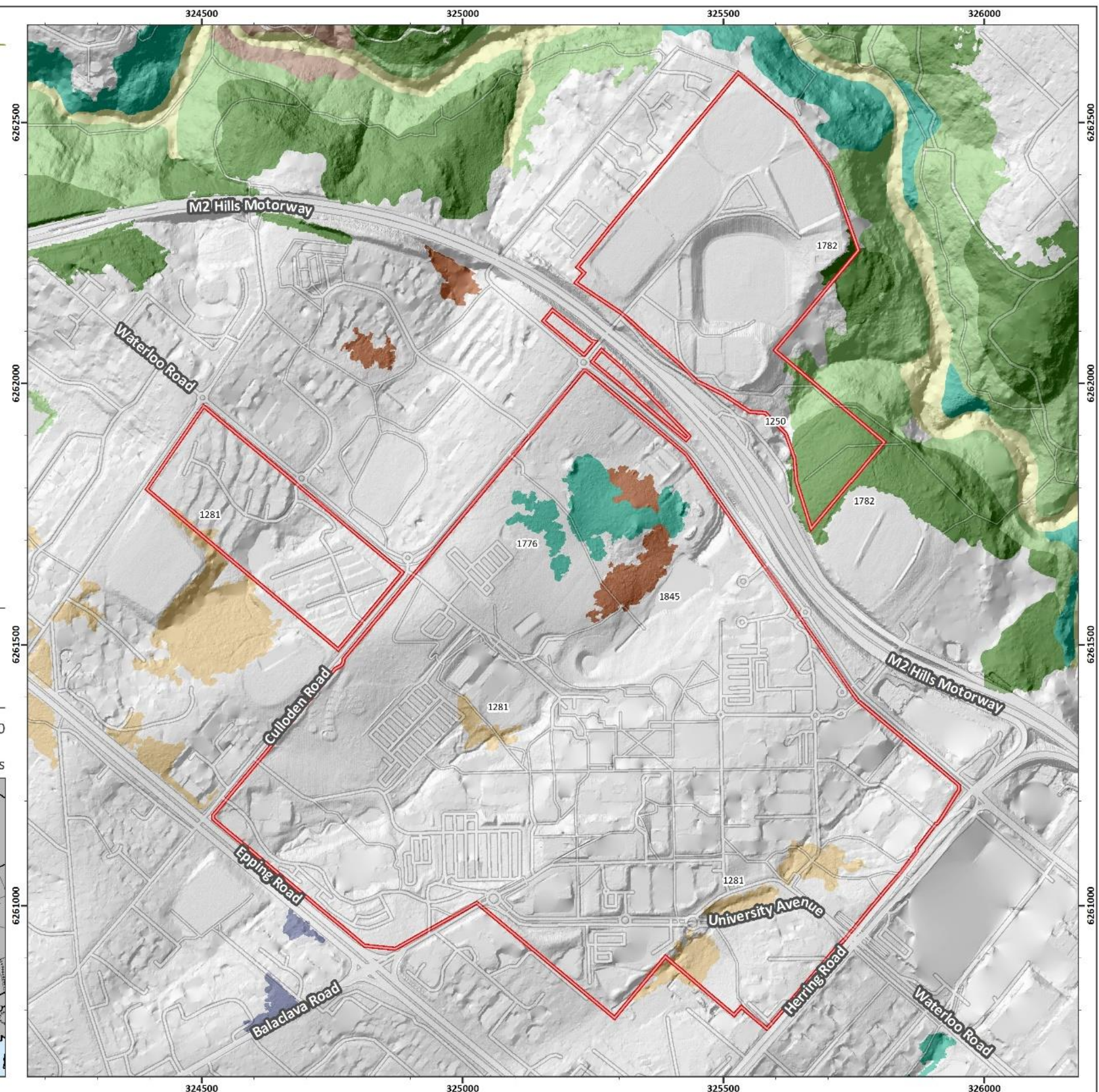
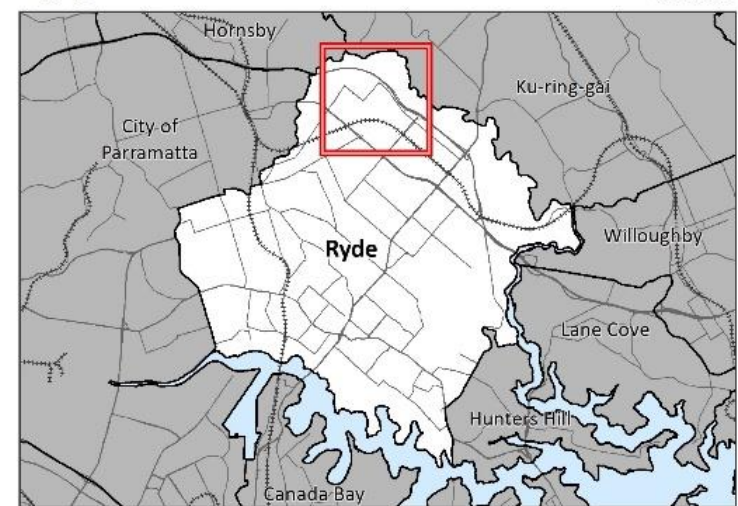
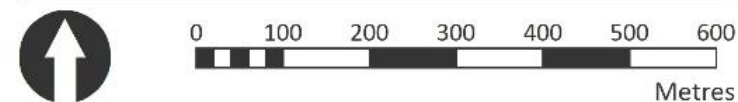


Figure 4. Native vegetation communities identified within the study area.

EXTENT

HERITAGE ADVISORS

- Macquarie University Campus areas
- Site 1 study area
- Remnant vegetation areas mapped from historical aerals (1930 to present)

Drawn by: Tom Sapienza
Checked by: Coral Hardwick
Date: 2 March 2020
Projection: GDA 1994 MGA Zone 56
Data sources: Extent, Nearmap, NSW DFSI, OSM

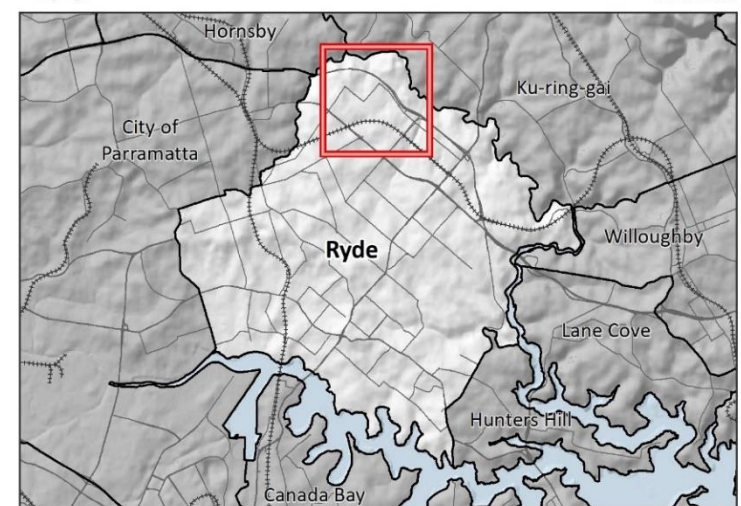
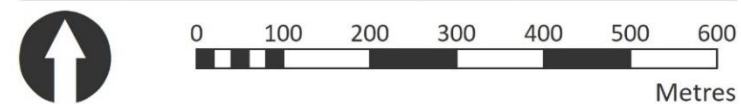


Figure 5. Potential pre-1930 remnant vegetation identified within the study area.

EXTENT

HERITAGE ADVISORS

- Macquarie University
Campus areas
- Site 1 study area
- c1886 Waterways

Contours

- Index (5m interval)
- Intermediate (1m interval)

Elevation (m AHD)

	50-55		66 - 70
	56 - 60		71 - 75
	61 - 65		76 - 80

Drawn by: Tom Sapienza
Checked by: Coral Hardwick
Date: 2 March 2020
Projection: GDA 1994 MGA Zone 56
Data sources: Extent, Nearmap, NSW DFSI, OEH, OSM

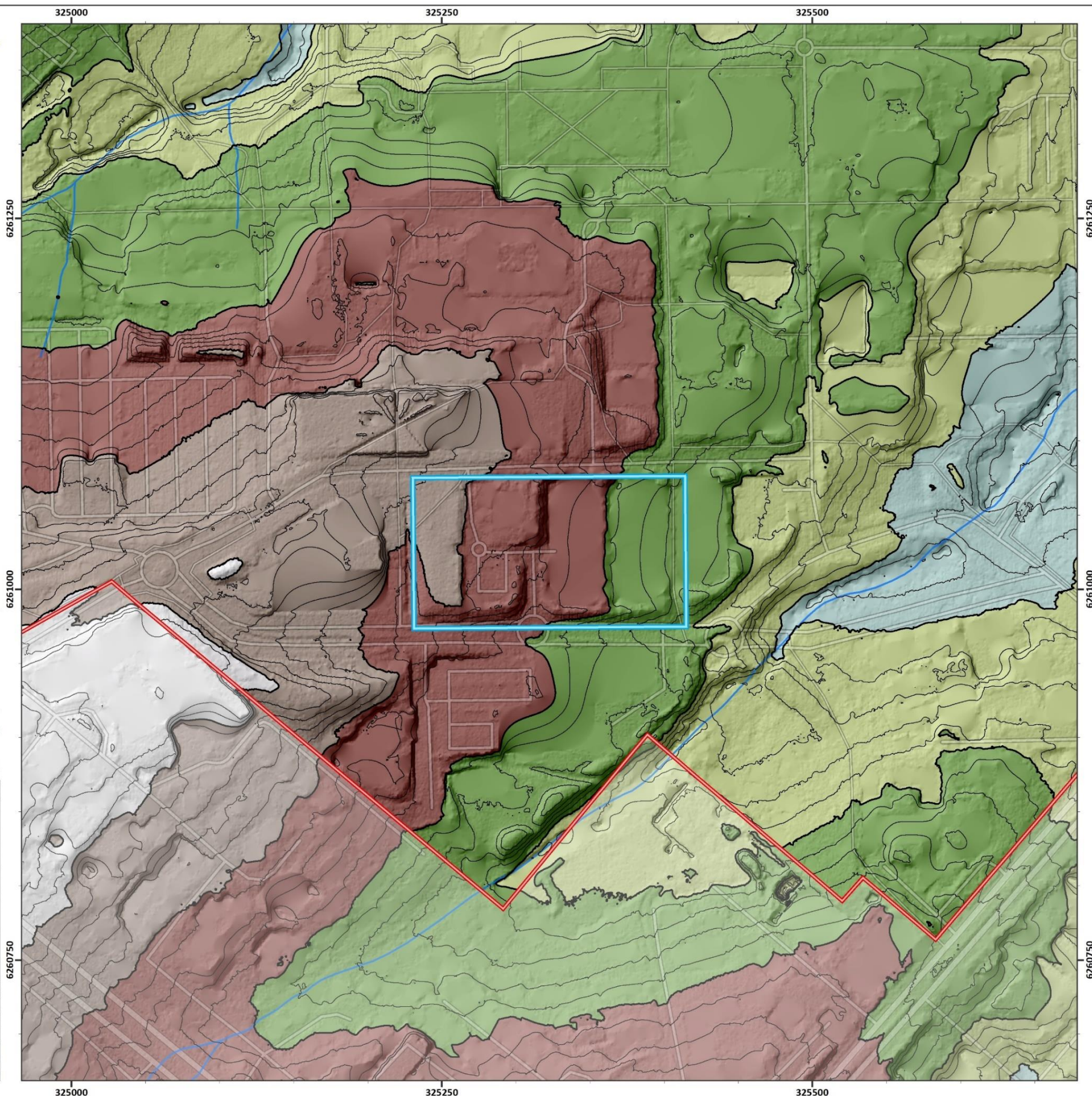
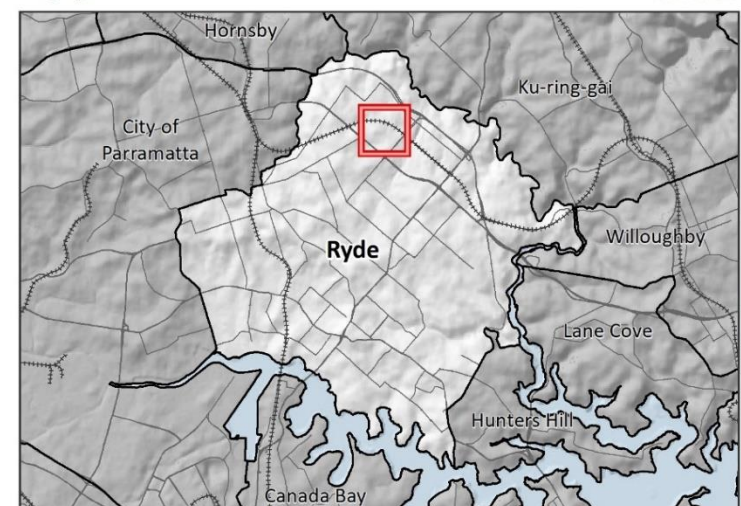
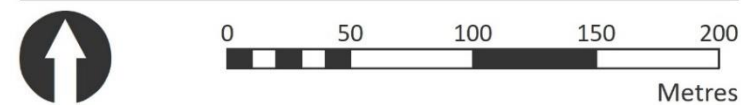


Figure 6. Hydrology and topography of the study area.

EXTENT

HERITAGE ADVISORS

 Macquarie University
Campus areas

 Site 1 study area

1895 *Field of Mars* auction plan

Drawn by: Tom Sapienza
Checked by: Coral Hardwick
Date: 2 March 2020
Projection: GDA 1994 MGA Zone 56
Data sources: Extent, HLRV, NSW DFSI, OSM



0 50 100 150 200
Metres

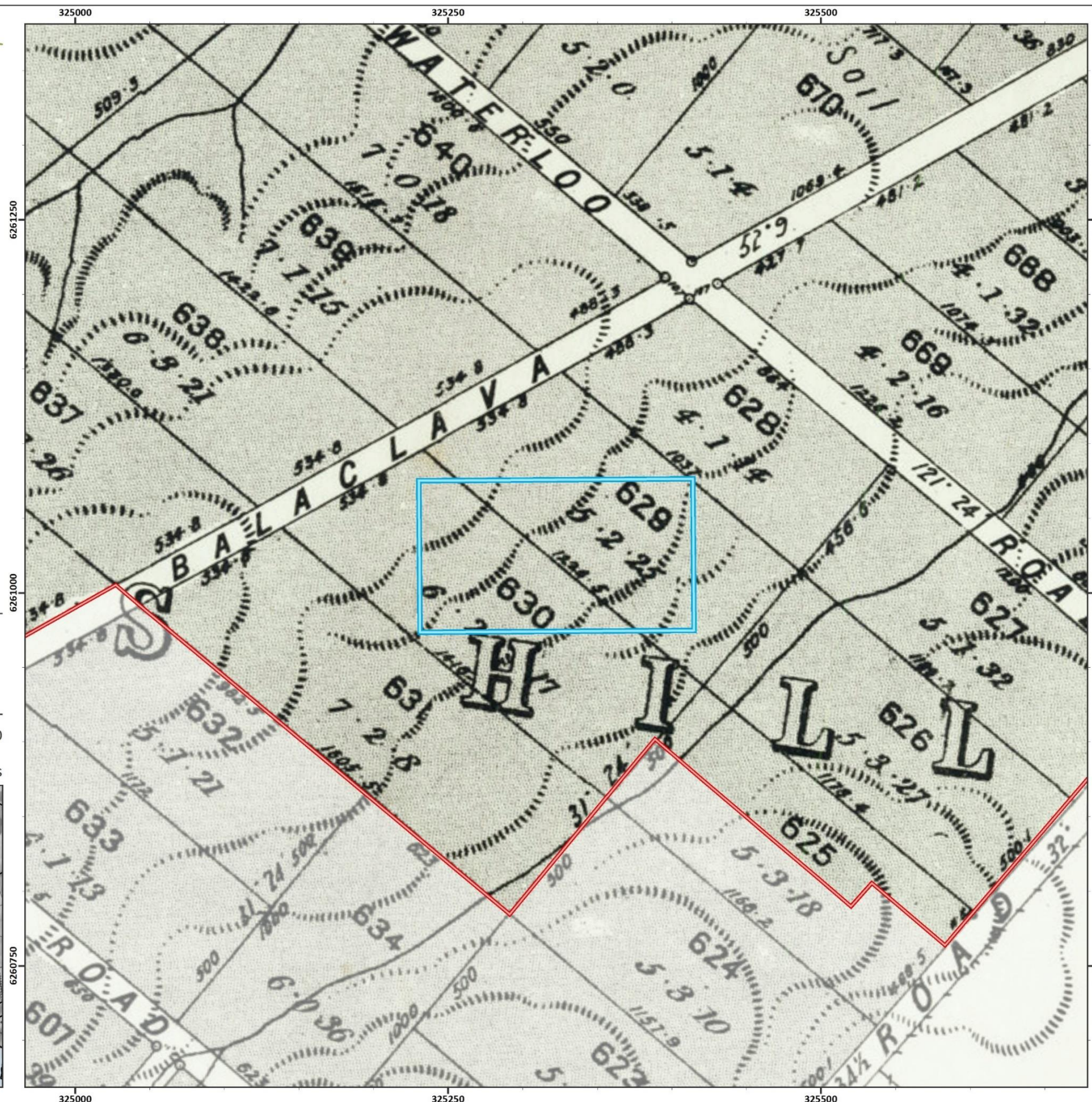
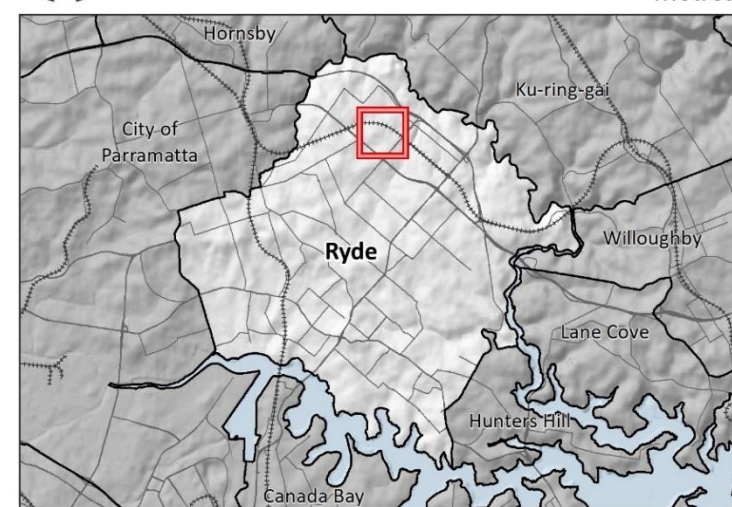


Figure 7. Parish Map of Hunters Hill, dated to 1895.

EXTENT

HERITAGE ADVISORS

 Macquarie University
Campus areas

 Site 1 study area

1907 Parish of Hunters Hill

Drawn by: Tom Sapienza
Checked by: Coral Hardwick
Date: 2 March 2020
Projection: GDA 1994 MGA Zone 56
Data sources: Extent, HLRV, NSW DFSI, OSM

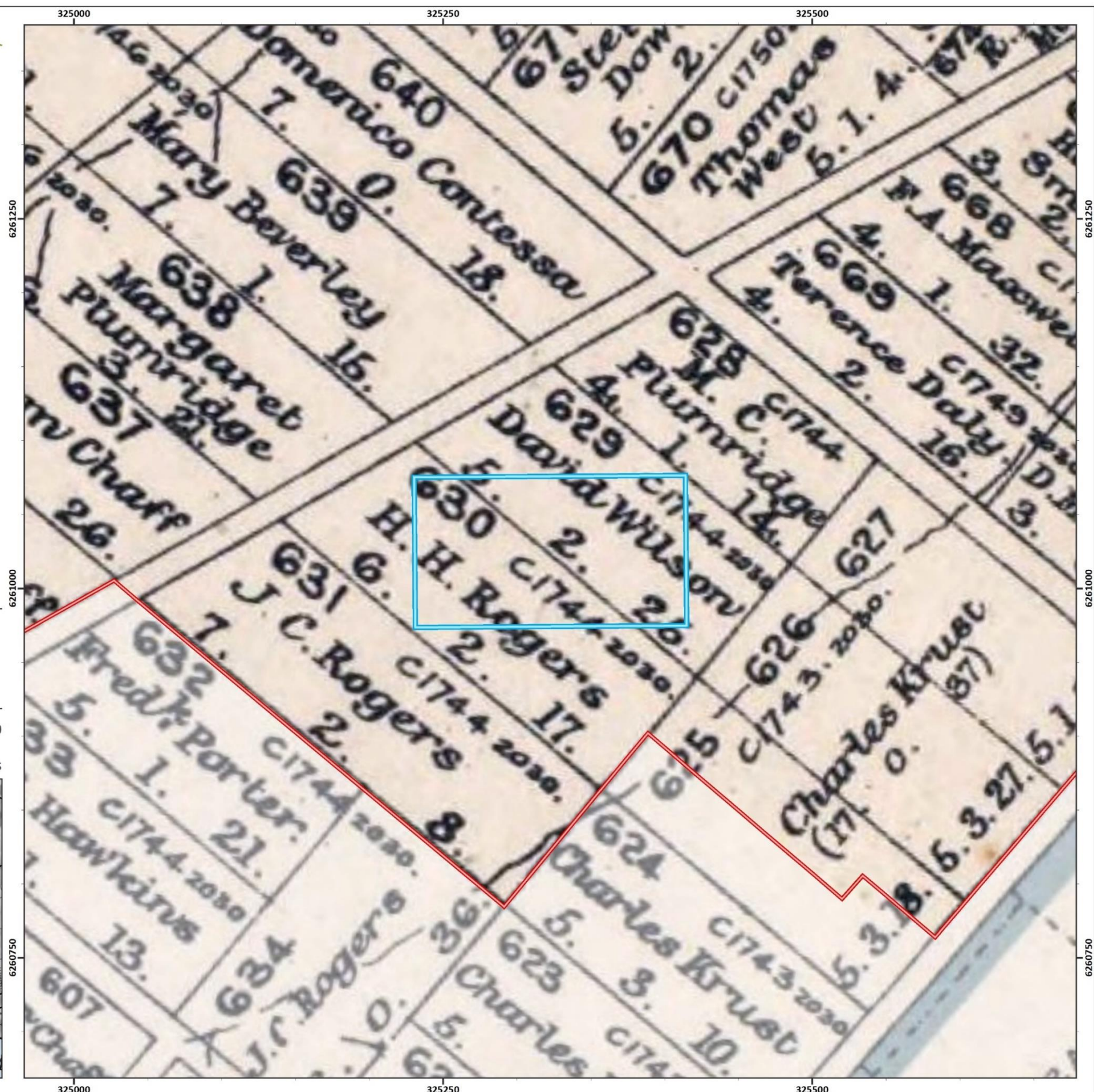
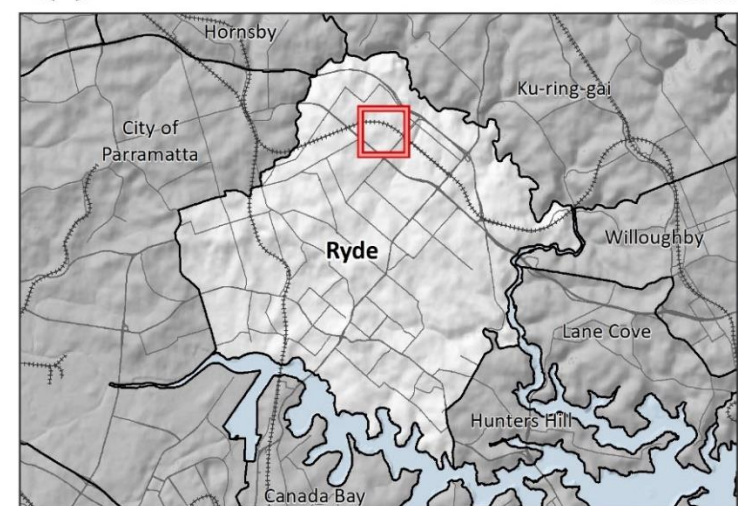


Figure 8. Parish Map of Hunters Hill, dated to 1907.

EXTENT

HERITAGE ADVISORS

 Macquarie University
Campus areas

 Site 1 study area

Historical aerial year: 1930

Drawn by: Tom Sapienza
Checked by: Coral Hardwick
Date: 2 March 2020
Projection: GDA 1994 MGA Zone 56
Data sources: Extent, Nearmap, NSW DFSI, OSM

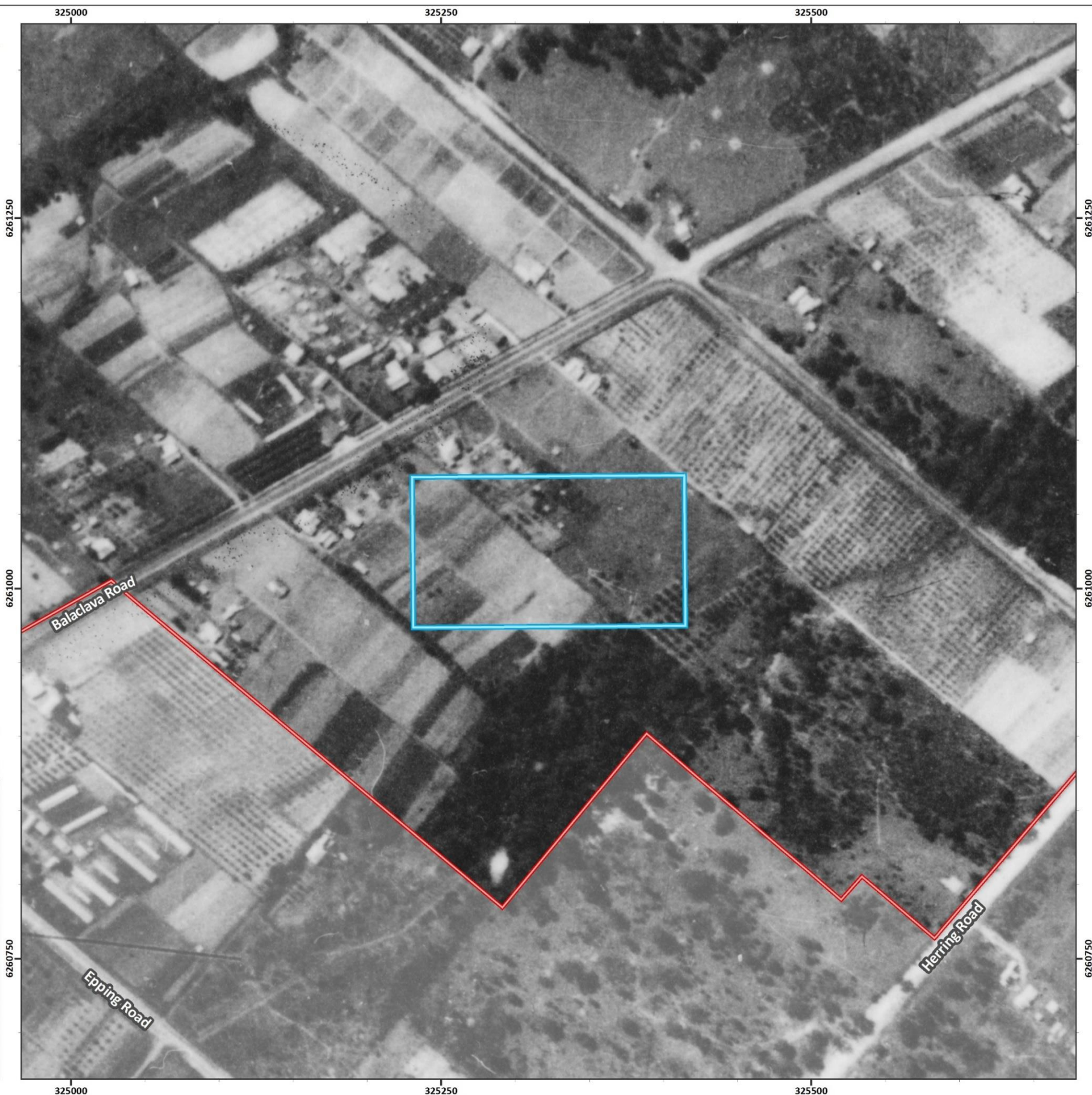
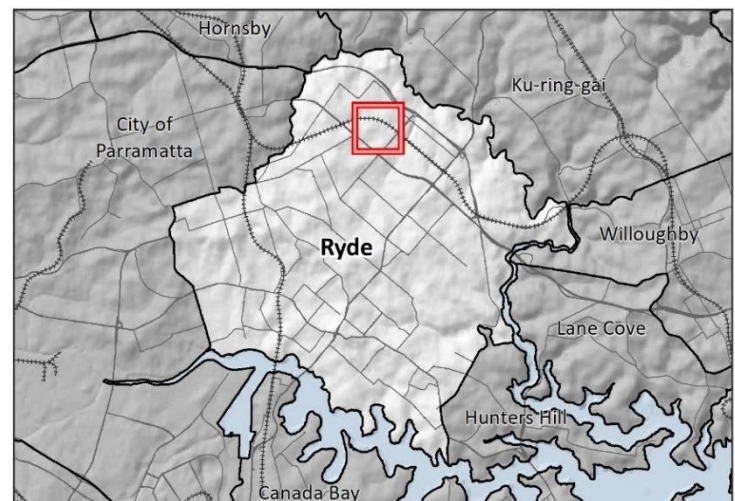
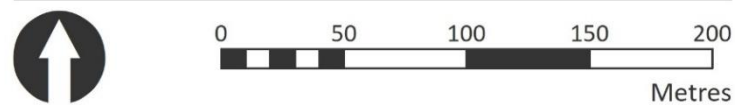


Figure 9. Aerial photograph of the study area, taken in 1930.

EXTENT

HERITAGE ADVISORS

 Macquarie University
Campus areas

 Site 1 study area

Historical aerial year: 1943

Drawn by: Tom Sapienza
Checked by: Coral Hardwick
Date: 2 March 2020
Projection: GDA 1994 MGA Zone 56
Data sources: Extent, Nearmap, NSW DFSI, OSM

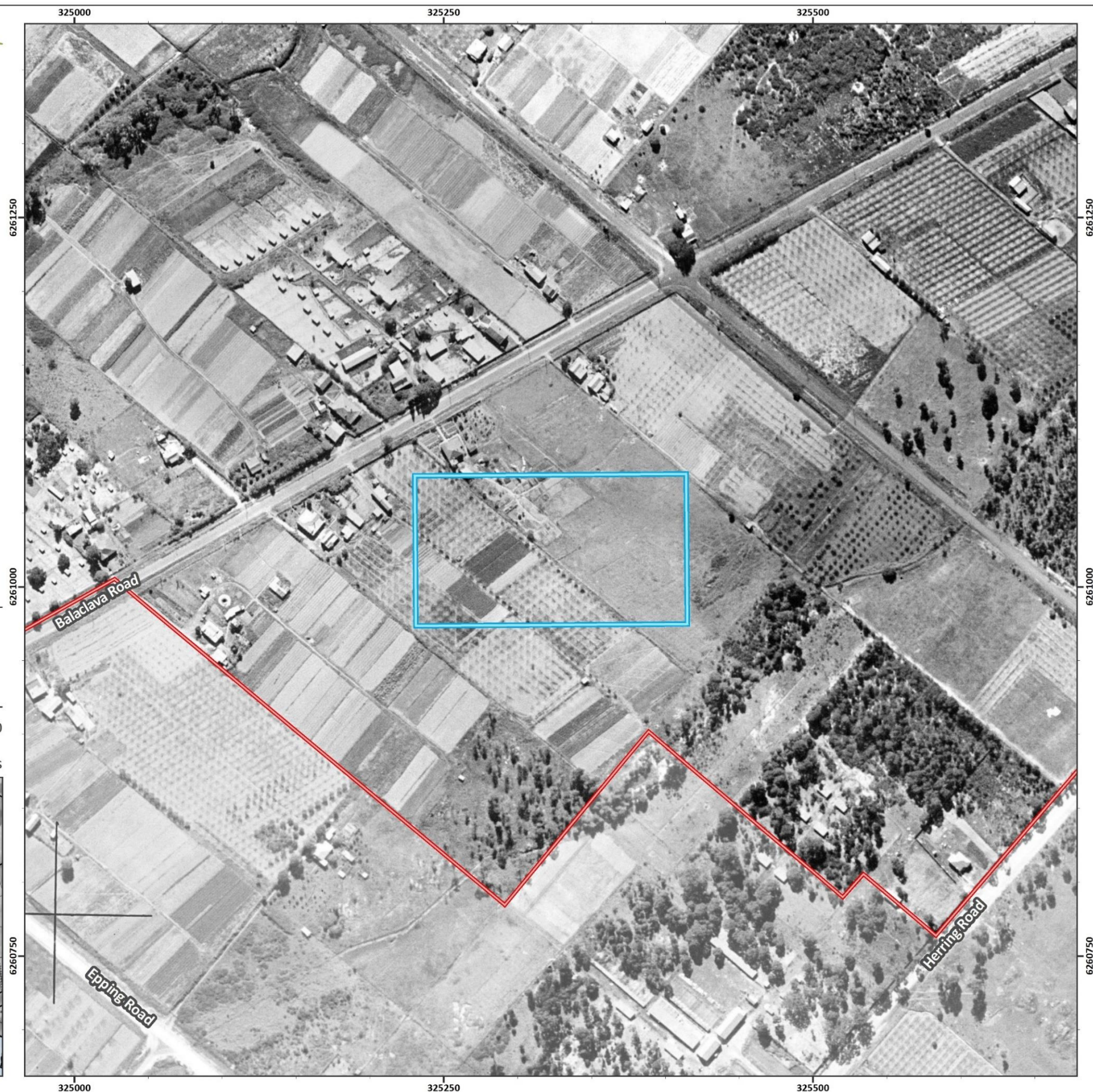
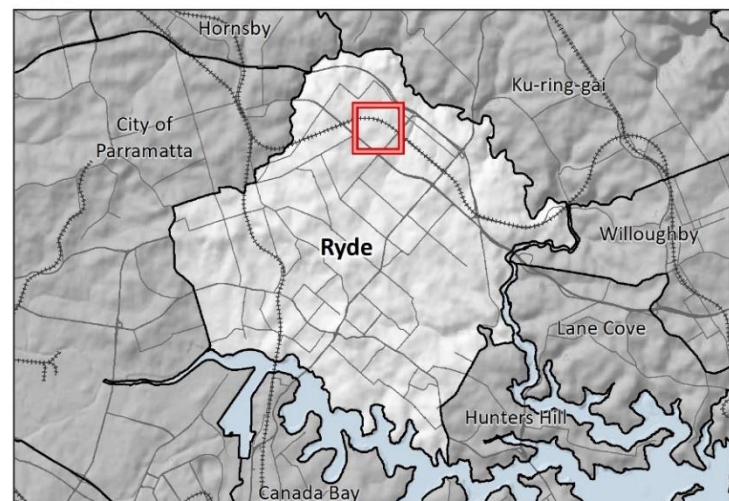
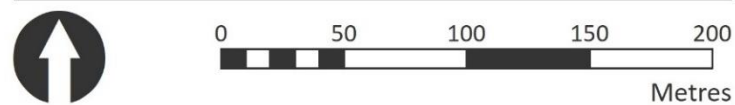


Figure 10. Aerial photograph of the study area, taken in 1943.

EXTENT

HERITAGE ADVISORS

Macquarie University
Campus areas

Site 1 study area

Historical aerial year: 1965

Drawn by: Tom Sapienza
Checked by: Coral Hardwick
Date: 2 March 2020
Projection: GDA 1994 MGA Zone 56
Data sources: Extent, Nearmap, NSW DFSI, OSM



0 50 100 150 200
Metres

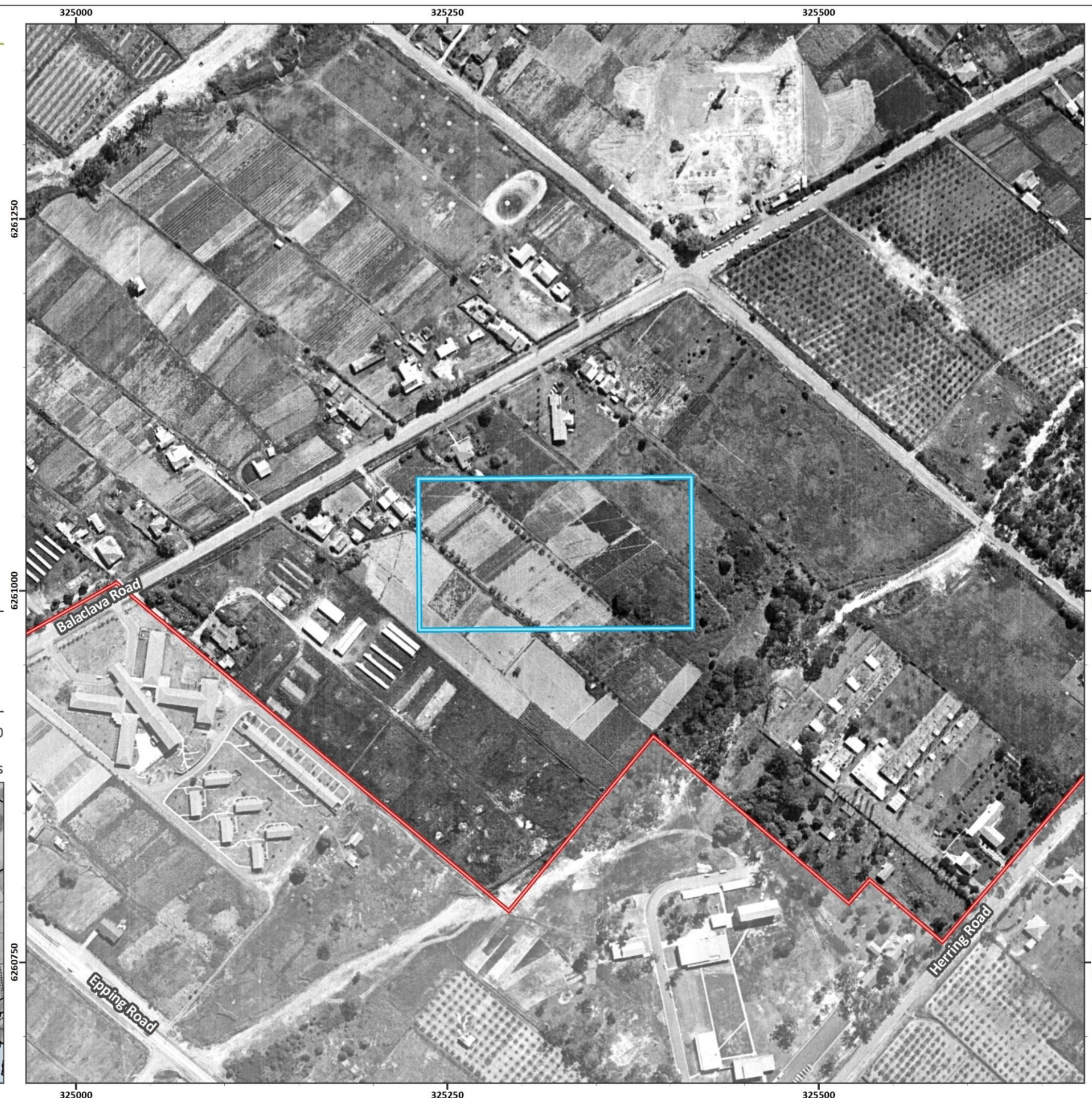
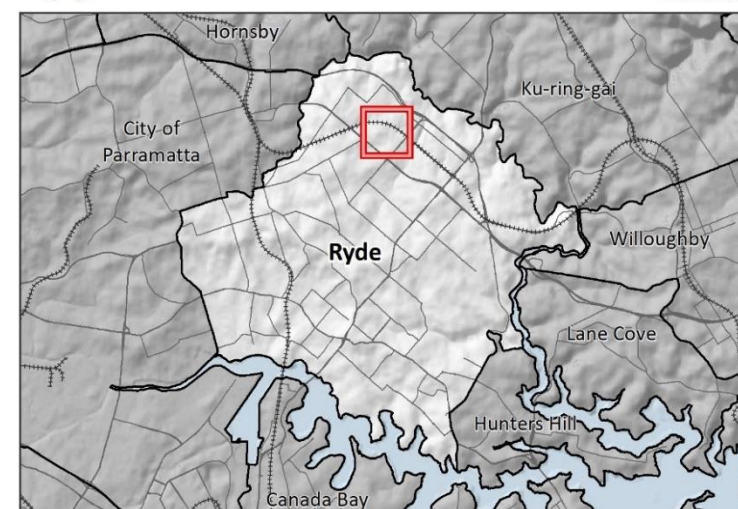


Figure 11. Aerial photograph of the study area, taken in 1965.

EXTENT

HERITAGE ADVISORS

 Macquarie University
Campus areas

 Site 1 study area

Historical aerial year: 1970

Drawn by: Tom Sapienza
Checked by: Coral Hardwick
Date: 2 March 2020
Projection: GDA 1994 MGA Zone 56
Data sources: Extent, Nearmap, NSW DFSI, OSM

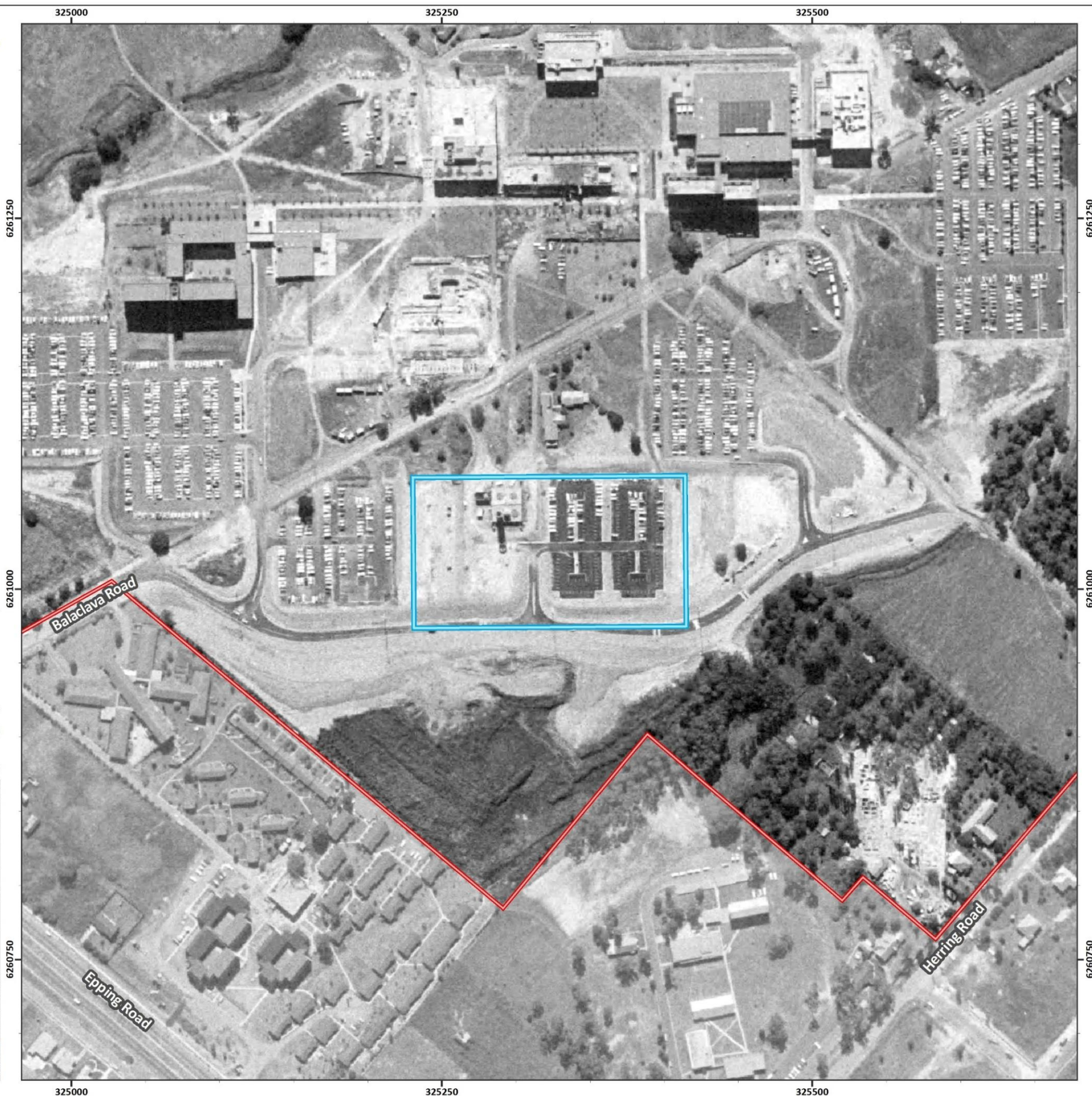
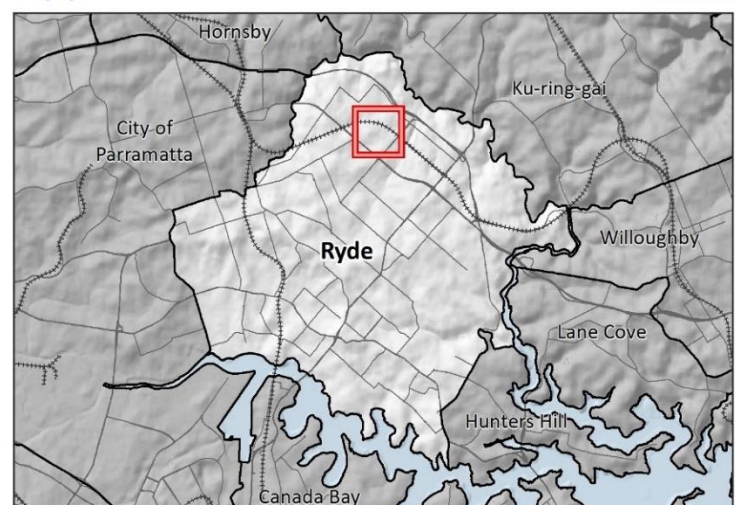
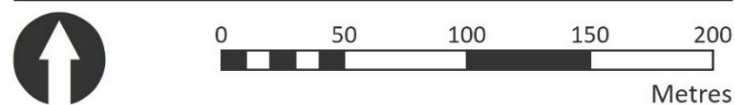


Figure 12. Partial aerial photograph of the study area, taken in 1970.

EXTENT

HERITAGE ADVISORS

 Macquarie University
Campus areas

 Site 1 study area

Historical aerial year: 1975

Drawn by: Tom Sapienza
Checked by: Coral Hardwick
Date: 2 March 2020
Projection: GDA 1994 MGA Zone 56
Data sources: Extent, Nearmap, NSW DFSI, OSM



0 50 100 150 200

Metres

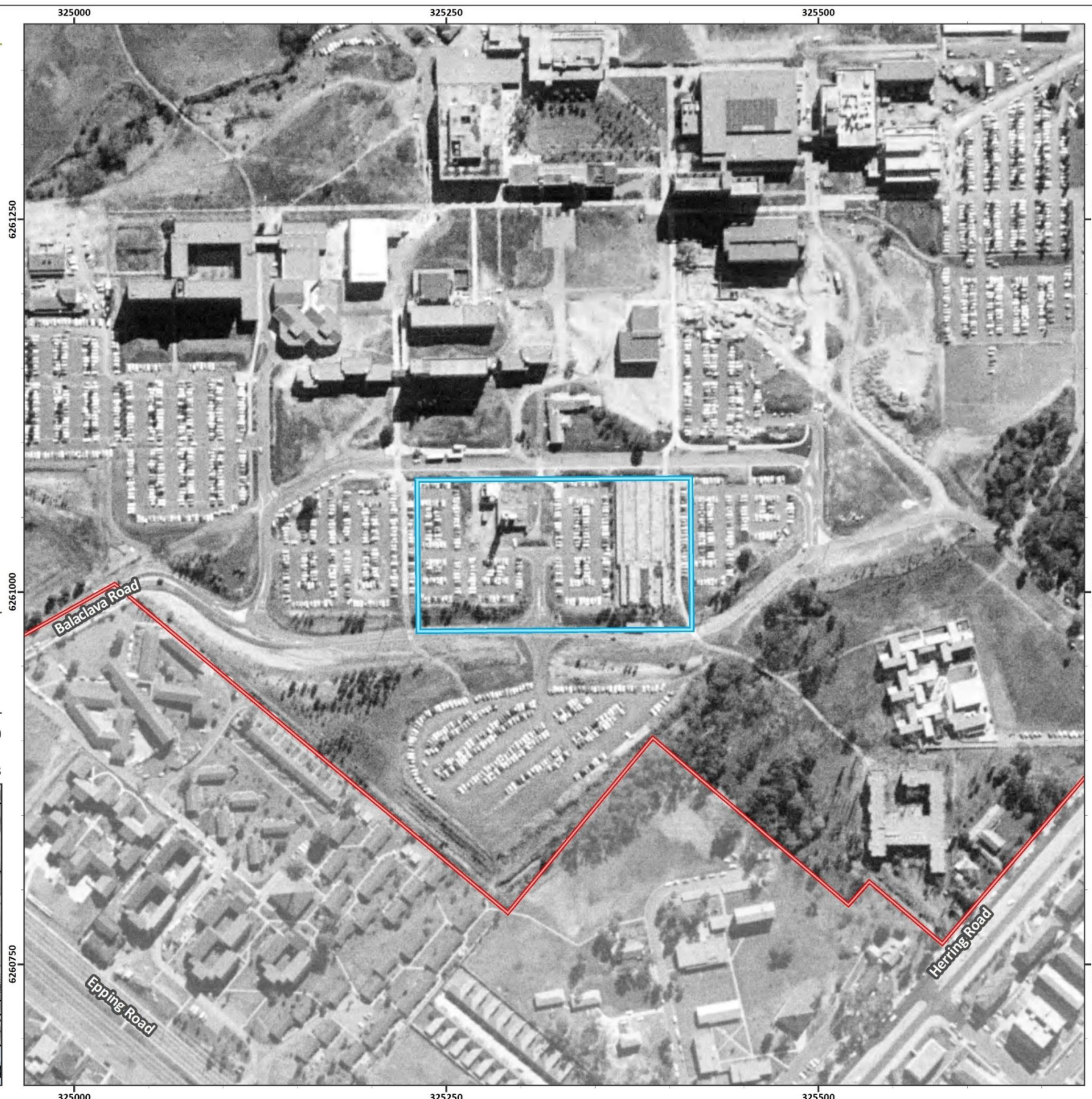
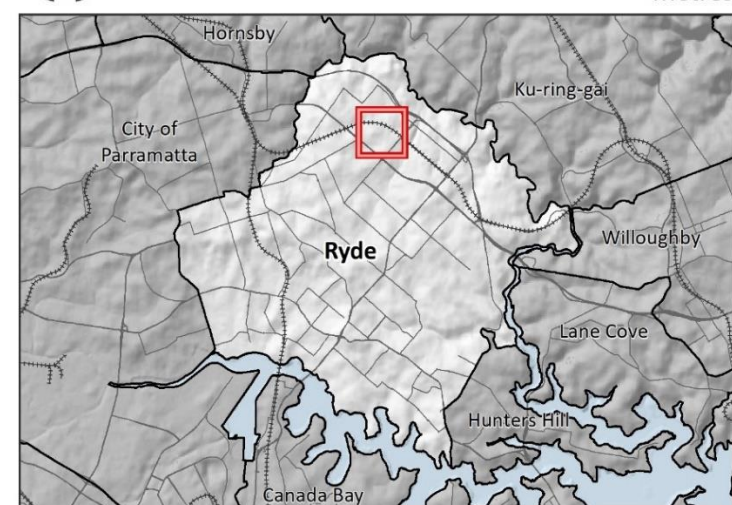


Figure 13. Aerial photograph of the study area, taken in 1975.

EXTENT

HERITAGE ADVISORS

Macquarie University
Campus areas

Site 1 study area

Historical aerial year: 1994

Drawn by: Tom Sapienza
Checked by: Coral Hardwick
Date: 2 March 2020
Projection: GDA 1994 MGA Zone 56
Data sources: Extent, Nearmap, NSW DFSI, OSM

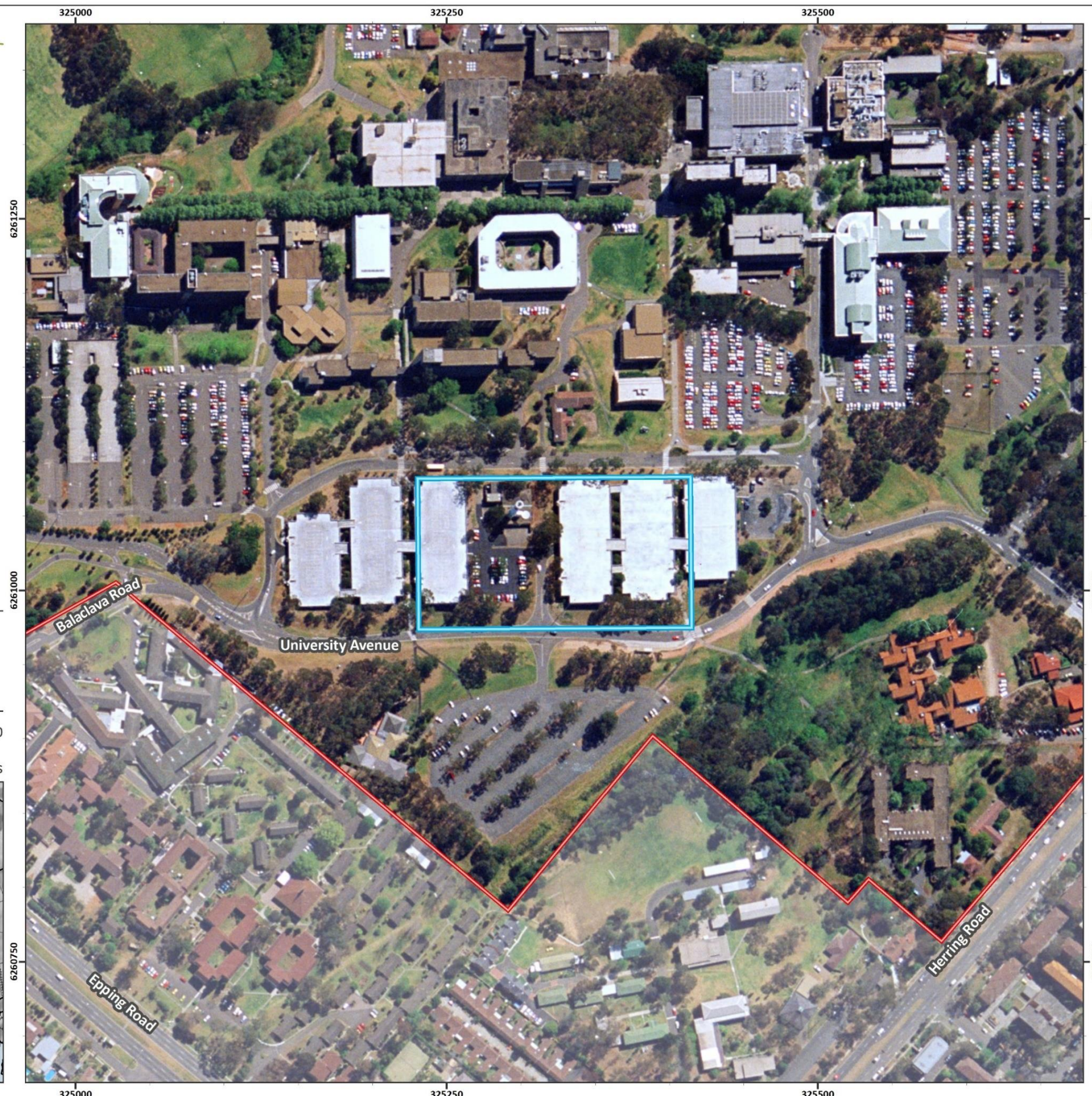
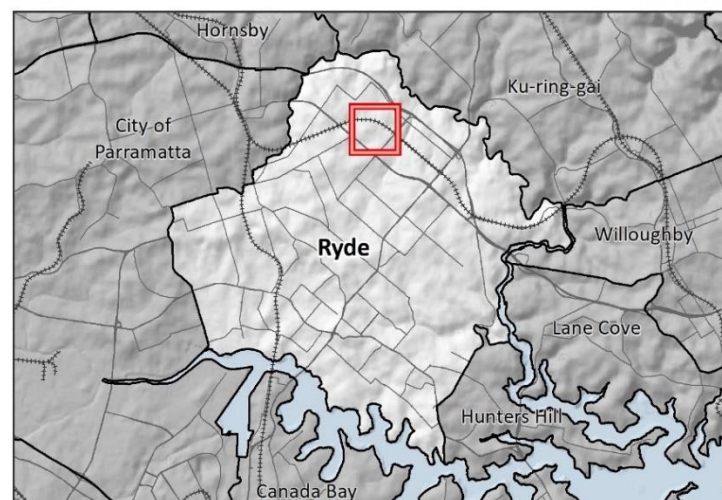
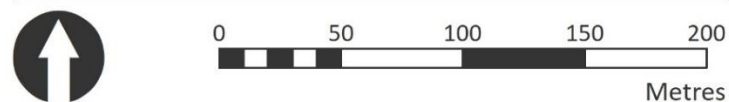


Figure 14. Partial aerial photograph of the study area, taken in 1994.

EXTENT

HERITAGE ADVISORS

 Macquarie University
Campus areas

 Site 1 study area

Level of disturbance

 High

 High-moderate

 Moderate-low

 Low

Drawn by: Tom Sapienza
Checked by: Coral Hardwick
Date: 2 March 2020
Projection: GDA 1994 MGA Zone 56
Data sources: Extent, Nearmap, NSW DFSI, OSM

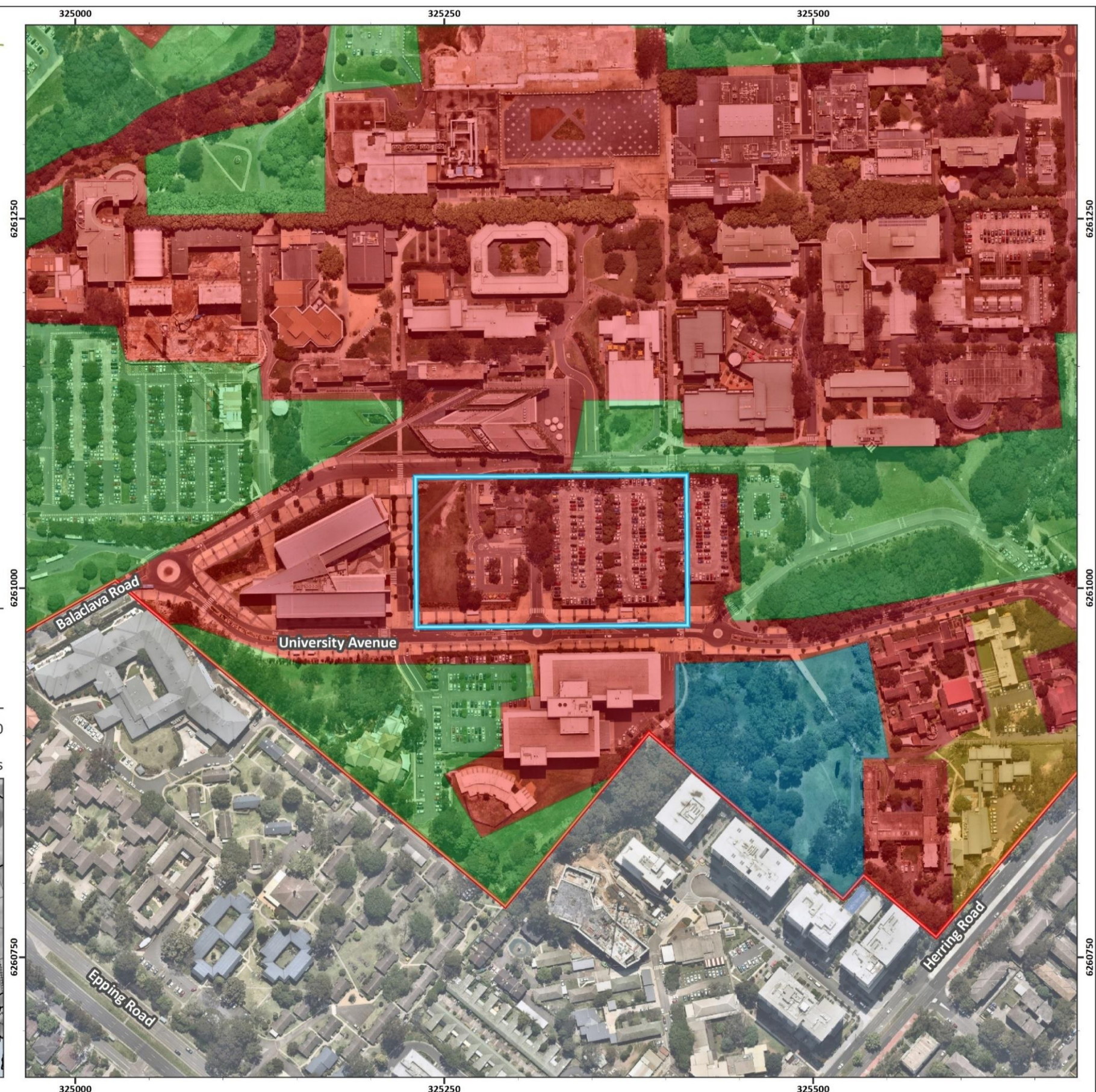
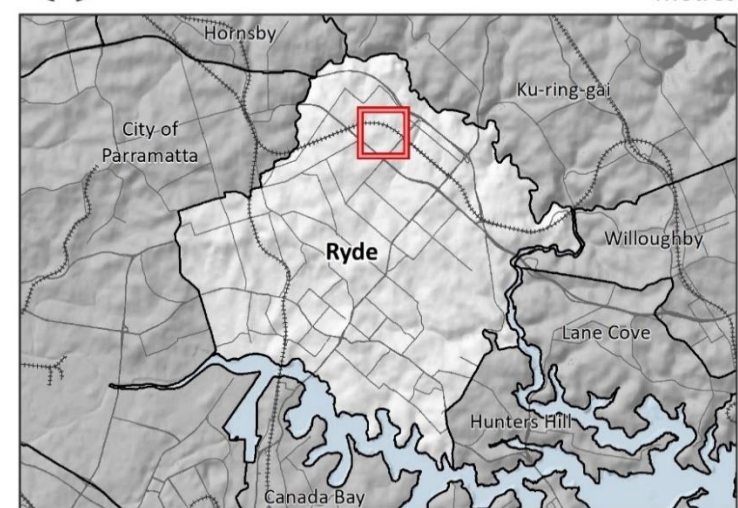
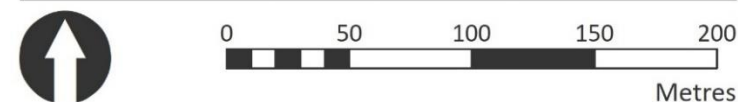


Figure 15. Previous site disturbance.

4. Archaeological record

4.1 Regional Aboriginal archaeological context

4.1.1 A History of Research in the Sydney Basin

One of the first investigations in the region was at Lapstone Creek, southwest of Emu Plains, in the foothills of the Blue Mountains (McCarthy 1948). Initially undated, this site was one of several used by McCarthy and others to differentiate the Bondaian and Eloueran artefact assemblages (e.g. Lampert 1966, 1971; McBryde 1966, 1974; Megaw 1965, 1968; Moore 1970, 1981). Radiocarbon ages suggesting a basal age of c.4 ka for the site were published in the late 1960s from archived samples of charcoal (McCarthy 1978; Polach et al. 1967). McCarthy (1978) also identified several 'surface workshops' along the banks of the river between Castlereagh and Emu Plains. These were large surface artefact scatters that were dominated by early reduction of pebbles derived from the Hawkesbury River. The sites were dominated by uniface pebble blanks, edge-ground implements, and percussions stones, with minor representations of microliths, and were considered to be of late Holocene age.

In the 1970s Stockton and Holland (1974) undertook excavations at several rockshelters in the Blue Mountains (including Kings Tableland, Walls Cave, Lyrebird Dell and Springwood Creek), which demonstrated occupation of the region through the Last Glacial Maximum and terminal Pleistocene (25-10ka). Excavations revealed initial occupation of the Blue Mountain/Hawkesbury region by c.22 ka, with a Capertian assemblage dominating between c.12 to 6 ka and a Bondaian assemblage from c.3 ka and European arrival (and peaking after 600 years). In brief the 'Capertian' and 'Bondaian' were terms, coined in the 1940s, to characterise two different types of artefact assemblage. The Capertian is composed of amorphous pebble-tools dominated by silicified tuff and constrained to the Terminal Pleistocene, and the Bondaian generally composed of microliths and dominated by silcrete, and constrained to the late Holocene. A sterile phase was identified between the two assemblages at many of the Blue Mountain sites. As part of this work a disturbed rockshelter at Shaws Creek, K1, was excavated with preliminary findings indicating a potential for deep-time deposits in close proximity to the Hawkesbury River (Stockton 1973).

Subsequently, as part of his doctoral research, Kohen (1986; Kohen et al. 1984) undertook excavations of K11 rockshelter, a more undisturbed site immediately east of K1. This excavation identified two main assemblages: a lower assemblage (within units 1-4/phases VI-IV) composed of amorphous core/flake tools and thick flakes, and an upper assemblage (within units 5-6/phases I-III) that included backed blades, geometric microliths, edge-ground hatchets and bipolar/scalar pieces (Kohen et al. 1984). The lower assemblage was dominated by chert (also referred to as silicified tuff), while the upper assemblage was dominated by igneous and metamorphic materials, as well as an increasing abundance of silcrete. Radiocarbon ages for the two assemblages indicated that the lower had a minimum age of 13 ka, while the upper was present in various guises from 4-1.2 ka. In contrast to Stockton (1973), Kohen saw no evidence of a hiatus between the two assemblages. With the exception of Cranebrook Terrace, the K11 site currently provides the earliest evidence of occupation along the Hawkesbury River.

In the same study, Kohen (et al..1984) also referred to an open stratified site at Jamisons Creek, Emu Plains, where two ages suggested an initial occupation from c.7 ka, with a proliferation of backed blades associated with a hearth date to c.3 ka. Thermo-luminescence (TL) dating of an open site at Regentville (RS 1), similarly found a focus of occupation between 5.2 ± 0.5 ka (W 1892) and a basal age 7.6 ± 0.8 ka (W 1893) (McDonald 1995).

The earliest date for alleged Aboriginal occupation in the region comes from Cranebrook Terrace, where five reportedly flaked pebbles identified as stone tools by Stockton were found within a gravel pit (Stockton and Holland 1974). Subsequent work by Nanson et al. (1987) demonstrated these gravels to be c.40 ka. If correct, these finds would be the oldest site on the Australian eastern coast. However, the artefactual status of the pebbles, their provenance (several were in an eroded context rather than in situ) and the association between the dates (which ranged from 10 to 42 ka) and the artefacts have been sources of controversy ever since. Mulvaney and Kamminga (1999) rejected these findings and, despite extensive monitoring of the Penrith gravel pits over the past 30 years, no other comparable artefacts or evidence of early human occupation has come to light at those levels (see Mitchell 2010a for further discussion).

Excavations by Austral Archaeology Pty Ltd at the Windsor Museum site recovered an extensive artefact assemblage within a sand dune deposit dated to between 149 ka and 8.5 ka (Mitchell pers. comm.). Correlating these TL ages with the archaeology has proven to be difficult as the sediments are known to be bioturbated but it is very likely that the oldest artefacts are of late Pleistocene age.

As part of a salvage excavation for the Rouse Hill Infrastructure project, a basal layer of silicified tuff artefacts was recovered at RH/CC2, a stratified open site, and while undated, based on artefact typology, it was considered to be of a terminal Pleistocene age (JMCHM 2005a, 2005b). Consulting work on the western Cumberland Plain by Smith (1986) at Quakers Hill and McDonald et al. (1994) at Second Ponds Creek have recovered hearths and other features in association with extensive artefact scatters dated to the late Holocene. Further afield in tributaries of the Hawkesbury River, studies at Upper Mangrove Creek (Attenbrow 2004), Darling Mills SF 2 rockshelter (Attenbrow 1993) and MR/1 (Moore 1981) have all demonstrated terminal Pleistocene and early Holocene occupation.

Between 2008 and 2013, Archaeological and Heritage Management Solutions Pty Ltd undertook archaeological investigations of a large sand body, PT 12 (#45-5-3198), in Pitt Town, northwest Sydney, in advance of development. PT 12 sand body is situated on the edge of a ridge line that follows the Hawkesbury River and associated tributaries. The most significant works consisted of a large salvage excavation totalling 100m² in two locations on the sand body. These works recovered ~10,000 artefacts along with a large number of OSL ages. The findings of the study indicate that the sand body had formed >100ka, with occupation by Aboriginal people at ~36ka, and continuing through until 8ka (Williams et al., 2012, 2014). Currently, this represents the earliest evidence of permanent occupation of the Sydney region.

More recent work by Extent Heritage on a large archaeological mitigation in advance of ~40km of pipeline along several creeklines in northwest Sydney. This project involved 500m² of open area excavation and recovered ~10,000 artefacts, along with an intense dating program. The findings all indicated that much of the Sydney Basin had only been colonised in the last few

thousand years. It was hypothesised that earlier in the past, populations focussed on the main river systems and coast, only in-filling the intermediate region when demographic pressure reached a threshold in the last few thousand years. This is further supported by Attenbrow (2010) who considered that the vast majority of dated sites in the Sydney region are less than 5,000 years old (35 out of a total of 48 dated sites).

4.1.2 Spatial Patterns of Archaeology

A total of ~7,000 sites have been recorded on the DPIE AHIMS database for the Cumberland Plain sub-region. The majority of these sites are artefacts (open camp sites or isolated finds) (n=3,756 or 54%) followed by Potential Archaeological Deposits (PADs) (n=1,212 or 17%), grinding grooves (n=936 or 13%) and other undefined site types (n=1,056 or 15%). These findings are similar to the frequency of site types recorded for the overall Sydney region. The absence of rockshelters with art or deposit for the western Sydney area may be accounted for by the geology of the area which lacks sandstone escarpments and shelters. Other site types in western Sydney include stone quarries, non-human bone or organic material, shell, and water holes.

A study of the regional archaeology of the Cumberland Plain by Kohen (1986) made a number of findings about site location patterns in the Sydney area. The study demonstrated that proximity to water was an important factor in site patterning. Kohen (1986) found that 65% of open artefact scatter sites were located within 100 metres of permanent fresh water. Only 8 per cent of sites were found more than 500 metres away from permanent fresh water (Kohen 1986). In short, Kohen (1986) argued that open artefact scatters are larger, more complex and more densely clustered along permanent creek and river lines. Kohen's (1986) study also found that silcrete (51%) and chert (34%) are the most common raw materials used to manufacture stone artefacts. Other raw materials include quartz, basalt and quartzite.

Although the patterns described above have been generally supported by subsequent investigations, Kohen's study was limited by a reliance on surface evidence. Extensive excavation across the Cumberland Plain has since shown that areas with no surface evidence often contain sub-surface deposits buried beneath current ground surfaces. This is a critical consideration in aggrading soil landscapes, such as those commonly found across the Cumberland Plain. In a 1997 study of the Cumberland Plain, McDonald (JMCHM, 1997) found that:

- 17 out of 61 excavated sites had no surface artefacts before excavation.
- The ratio of recorded surface to excavated material was 1:25.

The character and composition of the excavated sites in McDonald's study could not be properly predicted on the basis of the surface evidence. In short, surface evidence (or the absence of surface evidence) does not necessarily indicate the potential, nature or density of sub-surface material.

The results of McDonald's study clearly highlight the limitations of surface survey in identifying archaeological deposits in this landscape. The study also shows the importance of test

excavation in establishing the nature and density of archaeological material on the Cumberland Plain.

McDonald has undertaken over 20 years of consulting archaeology in the Cumberland Plain, and, like Kohen, has developed a predictive model for the distribution of Aboriginal objects. In a recent publication, White and McDonald summarised this model as follows:

Topographic and stream order variables correlate with artefact density and distribution. High artefact density concentrations may have resulted from large number of artefact discard activities and/or from intensive stone flaking. Highest artefact densities occur on terraces and lower slopes associated with 4th and 2nd order streams, especially 50–100 metres from 4th order streams. Upper slopes have sparse discontinuous artefact distributions but artefacts are still found in these landscape settings (White and McDonald, 2010 p. 29).

It must be noted, however, significantly less on-site investigation has occurred in the southwest of the subregion compared to the northwest. The limited studies that have been undertaken suggest that the models outlined above are generally robust, but there are differences. This is primarily for two main reasons: 1) there appear to be few raw material sources in the southwest. The sites containing tens of thousands of stone tools a few hundred metres from the Plumpton Ridge (a large silcrete outcrop) in the northwest for example, have no counterpart to the south, and based on existing evidence are unlikely to be present; and 2) the southwest is higher in the creek catchment, making the geomorphology slightly more rugged and the creeks often stronger and more erosive, than the northwest. This results in archaeological sites being commonly lost in close association with the creekline, and more often found on mid, upper slopes and hill crests between 120-180m from the creek's edge.

More recently, a large-scale excavation of a series of pipelines along major creeklines by Extent Heritage (2015) further contributed to McDonald's work. The key findings included:

- The archaeology of the Cumberland Plain is characterised by a cultural landscape consisting of foci of activity against background low density spread of Aboriginal objects found in all undisturbed locations, generally in the order of $<6/m^2$; and therefore, it has been suggested that a 'site', or a place of specific Aboriginal cultural activity, is identified only when this threshold is exceeded. Areas of extensive occupation or repeated use contained densities $>45/m^2$ and frequently higher, with densities of $>150/m^2$ being not uncommon for the largest sites.
- While the works were constrained to the linear corridor of the pipeline, the testing program (frequently with resolution of 5 or 10m spacing of test pits) generally showed the length of high artefact densities (*a priori* sites). All of these results suggest that the linear length of high-density sites is in the order of 10-20m, and assuming a similar width, can be extrapolated to a 100-400m² occupation area.

4.2 Local Aboriginal archaeological context

This section provides a summary of previous studies undertaken in the proximity of and within the study area (Figure 18). While the soil landscape present in the Site 1 development area is known to have steep relief that is conducive to the formation of rockshelters (and associated

sites and material culture), these are primarily constrained to the Lane Cove River corridor, with the University campus largely situated on flat undulating rolling hills. As such, cultural material is more likely to comprise surface and/or sub-surface stone, shell and/or faunal artefacts, although rock engravings and/or grinding grooves on exposed sandstone outcrops are also possible.

The University campus has not been subject to extensive archaeological investigation, although regionally it is situated on the interface between the Cumberland Plain and Pittwater sub bioregions – two areas that have been subject to over 50 years of academic and cultural resource management (CRM) studies (e.g. Attenbrow, 1993, 2004, 2010; McCarthy, 1948; McDonald, 1985, 1992, 2008; Kohen, 1986; Jo McDonald Cultural Heritage Management, 1999, 2001, 2005a, 2005b; Smith, 1989; White and McDonald, 2010; Williams et al., 2014, 2018). These studies show that cultural material in the Cumberland Plain is dominated by surface and sub-surface stone artefact assemblages on lower slopes and minor elevations in close proximity (<100m) to water courses.

The complexity and richness of these artefact assemblages show close correlation with the size of the water course, with larger water courses generally found to be associated with the more significant sites. In contrast, the archaeological record of the Pittwater and coastal region more generally is dominated by rockshelters, painted and engraved rock art sites and grinding grooves, found almost exclusively on areas of Hawkesbury sandstone outcrop and frequently in close proximity to watercourses. Previous assessments of relevance to the Site 1 development area are outlined below, and illustrated in Figure 18:

Central Courtyard Precinct Aboriginal Cultural Heritage Management Plan (Extent Heritage 2019)

Extent Heritage prepared an ACHMP of the Macquarie University Central Courtyard Precinct in 2019, located ~50m northwest of the Site 1 area within the campus wide investigation. Due to historical development including substantial excavation, building construction and filling activities, the CCP was considered to have low archaeological potential. This finding was supported by geotechnical investigation and by monitoring of deposits during early construction works, where fills were identified over truncated, culturally sterile clays and sandstone bedrock.

Central Courtyard Precinct Advice Letter (Extent Heritage 2019)

In 2019 Extent Heritage provided Aboriginal heritage advice on the Central Courtyard Precinct (CCP) and confirmed that few archaeological assessments have been undertaken within Macquarie University and the surrounding area. It also concluded that regional archaeological information suggests that cultural material if present would likely consist of various densities of Aboriginal objects either on the surface or sub-surface to depths of ~50cm. Concerning the spatial distribution of sites, it was considered that sites were linked to the presence of water courses, most notable of which were large river corridors. In addition to the results of this survey, no places of Aboriginal cultural or historical significance were described by the Aboriginal people consulted through the study (MLALC). This investigation covered an area with evidence of similar disturbance to the Site 1 development area. The report suggested that no further archaeological investigation of the CCP was required, but supported further investigation of the broader University campus to guide future development.

Macquarie University Due Diligence (Mary Dallas Consulting Archaeologists, 2012)

Mary Dallas Consulting Archaeologists undertook a preliminary due diligence assessment of the Macquarie University campus in 2012. This included a desktop assessment and brief site visit, with representatives of the Metropolitan Local Aboriginal Land Council (MLALC). This report synthesised data from a number of previous reports and stated that the land currently occupied by Macquarie University would not have been extensively used by Aboriginal people in the past. An AHIMS search conducted by MDCA found no registered AHIMS sites within the University campus, with a small number of existing sites located largely within the relatively undisturbed Lane Cove River corridor. The report concluded that with few exceptions historical disturbance, notably market gardens and vegetation clearance, had resulted in the loss of any cultural material if present. The areas considered to contain sensitivity were situated in the northern portions of the campus in the vicinity of Mars Creek and Lane Cove River and none within the Site 1 area (MDCA, 2012: Figure 16).



Figure 16. Areas of archaeological sensitivity as defined by MDCA (2012).

Epping-Chatswood Rail Link (Artefact Heritage, 2014)

Archaeological assessment of the Epping-Chatswood rail link was undertaken by Artefact Heritage in 2013/2014. The station at Macquarie University is of particular note to this assessment, which was deemed highly disturbed based on a review of historical aerial photography (McDonald, 2001:36). Of the assessed area which included a ~250m buffer zone, a small portion overlaps with the west of the campus wide study area, ending at the edge of the Site 1 development area. The area assessed adjacent to the Site 1 area was characterised as a built environment and is located approximately 25m west of the area noted to contain moderate archaeological potential (Artefact Heritage, 2014: 23; Figure 17). No artefacts were discovered by this investigation, and the Site 1 development area is thought to occupy a similar built environment to the blue area shown in Figure 17.



Figure 17. Areas of archaeological sensitivity in vicinity of Macquarie University station, as defined by Artefact Heritage (2011:26).

Mars Creek Environmental Rehabilitation Works (MDCA 2011)

Macquarie University undertook environmental rehabilitation works of Mars Creek in order to reduce flooding and to increase the quality of the water. MDCA was engaged to assess the potential for archaeology and recommended that any archaeological evidence would have been disturbed and no *in situ* remains were expected. This study does not address the wider Macquarie University campus or the Site 1 area.

128 Herring Road, Macquarie Park (MDCA 2010)

MDCA assessed the archaeological potential of 128 Herring Road Macquarie Park, ~300m south of the study area. No Aboriginal objects were discovered, and it was concluded that as a result of extensive disturbance due to historical land use the study area was deemed to have low archaeological potential. This study area occupied a similarly disturbed built environment to the Site 1 area.

Eden Gardens Test Excavation (HLA-Envirosciences, 2003)

Archaeological investigation and test excavation of the Eden Gardens Precinct, 1km southeast of the study area, was undertaken by HLA-Envirosciences in 2003. The topography of this location is similar to the study area, characterised by residual soil profile and heavily disturbed terrain. Although extensive, this testing program resulted in the discovery of a single stone artefact from a disturbed context. No engravings were identified on the sandstone outcrop within the study area, and the report suggested that no further archaeological investigation was required.

36-44 Fontenoy Road, Macquarie Park (HBHC 2001)

An Aboriginal Heritage Assessment was conducted by Helen Brayshaw Heritage Consultants (HBHC) in 2001 within the curtilage of 36-44 Fontenoy Road, Macquarie Park, located 1.5km east of the study area. HBHC conducted a field survey and identified no archaeological sites and no areas of potential archaeological deposit. Additionally, although small exposures of bedrock were present, they did not appear suitable for engravings or grinding grooves. The area subject to the survey is similarly equidistant from the Lane Cove River to the campus wide study area, on a similarly built up area of Macquarie Park. The lack of Aboriginal sites identified in the survey could perhaps be a result of the small size of the study area, only encompassing one lot equalling 0.0065km² (Lot 875 DP 43303).

4.3 Aboriginal Heritage Information Management System data

DPIE maintains the Aboriginal Heritage Information Management System (AHIMS), which is a database of registered Aboriginal sites in New South Wales. A search of the AHIMS database was undertaken on 7 March 2019 (AHIMS Search ID #404596) within a 6 km² square centred on the study area.

A total of 32 registered Aboriginal sites were identified within the search area (Figure 19; Table 2). None of these sites are listed as destroyed, though one site is listed as “not a site” (#45-5-1005). The recorded sites within the search area are dominated by art (Pigment or Engraved) (n=7, 22.6%), followed by artefact and potential archaeological deposits (PAD) (n=6, 19.5%), art (pigment or engraved) with rockshelters (n=5, 16.1%), and grinding grooves (n=5, 16.1%). In addition to this, a large number of the registered sites are closed sites (n=12, 38.7%). No registered AHIMS sites are located within the study area.

The closest registered AHIMS site, a large rock shelter overlooking a waterhole on Shrimptons Creek (#45-6-2585) is 1km east of the study area. Two small, red silcrete stone artefacts were found embedded in the soil within the shelter, and it is noted that axe grinding grooves were also present nearby. This site also has paintings on the cave walls though they are indicated on the site card to be not of an Aboriginal cultural origin. It is noted that this site was deemed unsuitable for prolonged occupation.

AHIMS site #45-6-2584 lies 1.06km to the east of the study area, and is 60m from #45-6-2585. The site is registered as a small rock shelter with a single piece of Hercules Club Whelk, (*Pyrazus ebeninus*) shell, as well as axe grinding grooves. This site is notably undisturbed in comparison to site #45-6-2565. It is recorded that this shell has been carried several kilometres from the tidal limit of the Lane Cove River to the southeast.

As described above, Aboriginal site patterning in the area is strongly influenced by sandstone geology, proximity to water and areas elevated above the local landscape. Proximity to water is suggested to reflect past Aboriginal preference for locations with reliable fresh water and also good surface visibility along watercourses. The few PADs registered in this area seem to follow this trend, as do the closed sites, all situated within 150m of waterways. Kohen (1986a) also suggested that proximity to elevated areas was a particularly important factor for intensively occupied locations. Rock art is primarily preserved in well sheltered/obscured areas of bushland containing sandstone outcrop, and often in close proximity to water.

No AHIPs have previously been issued within the study area since 2010.

Table 2. Site features recorded in the AHIMS search area

Site feature	No.	%
Art (Pigment or Engraved)	7	22.6
Artefact, Potential Archaeological Deposit (PAD)	6	19.5
Art (Pigment or Engraved), Rockshelter	5	16.1
Grinding Groove	5	16.1
Artefact	3	9.7
Art (Pigment or Engraved), Artefact, Potential Archaeological Deposit (PAD), Rockshelter	1	3.2
Artefact, Potential Archaeological Deposit (PAD)	1	3.2
Artefact, Shell	1	3.2
Grinding Groove, Water Hole	1	3.2
Potential Archaeological Deposit (PAD)	1	3.2
Total	31	100

4.4 Predictive model

Archaeological predictive models identify, locate and map where archaeological resources are likely to survive. They can apply to small single sites or large areas, and can be simple exercises or enhanced by the use of specially designed GIS based spatial models. The model for the study area is shown in Figure 20 and is based on a series of environmental and archaeological variables:

- **Areas of high potential:** These areas are characterised by areas of elevated/ridgeline topography or sandstone geology associated with the Lane Cove River Corridor and Mars Creek. These areas have been subjected to little historical development and disturbance, and are likely to contain pre-1930s remnant vegetation. No areas satisfying these criteria are present within the study area.
- **Areas of moderate potential:** These areas are similarly associated with elevated/ridgeline landforms or sandstone geology associated with Kikkiya Creek and Mars Creek. However, these areas have been subjected to some vegetation clearance and some historical development. These also mark areas of generally flat, slightly elevated land suitable for past Aboriginal occupation in the form of artefact scatters and/or isolated objects. No areas satisfying these criteria are present within the study area.
- **Areas of low potential:** These areas are generally associated with land that is not within 200m of any watercourse, and which have been subject to relatively shallow ground surface disturbance from minor development. These areas may also contain archaeological evidence within disturbed contexts. No areas satisfying these criteria are present within the study area.
- **Areas of very low to nil potential:** These areas are similarly generally associated with land that is not within 200m of any watercourse, and which have been subjected to substantial ground disturbance, including extensive cutting and levelling works, causing severe truncation to underlying soils and any associated cultural material, if present. Although the study area is within 200m of Kikkiya Creek it has been subjected to substantial ground disturbance and therefore satisfies these criteria.

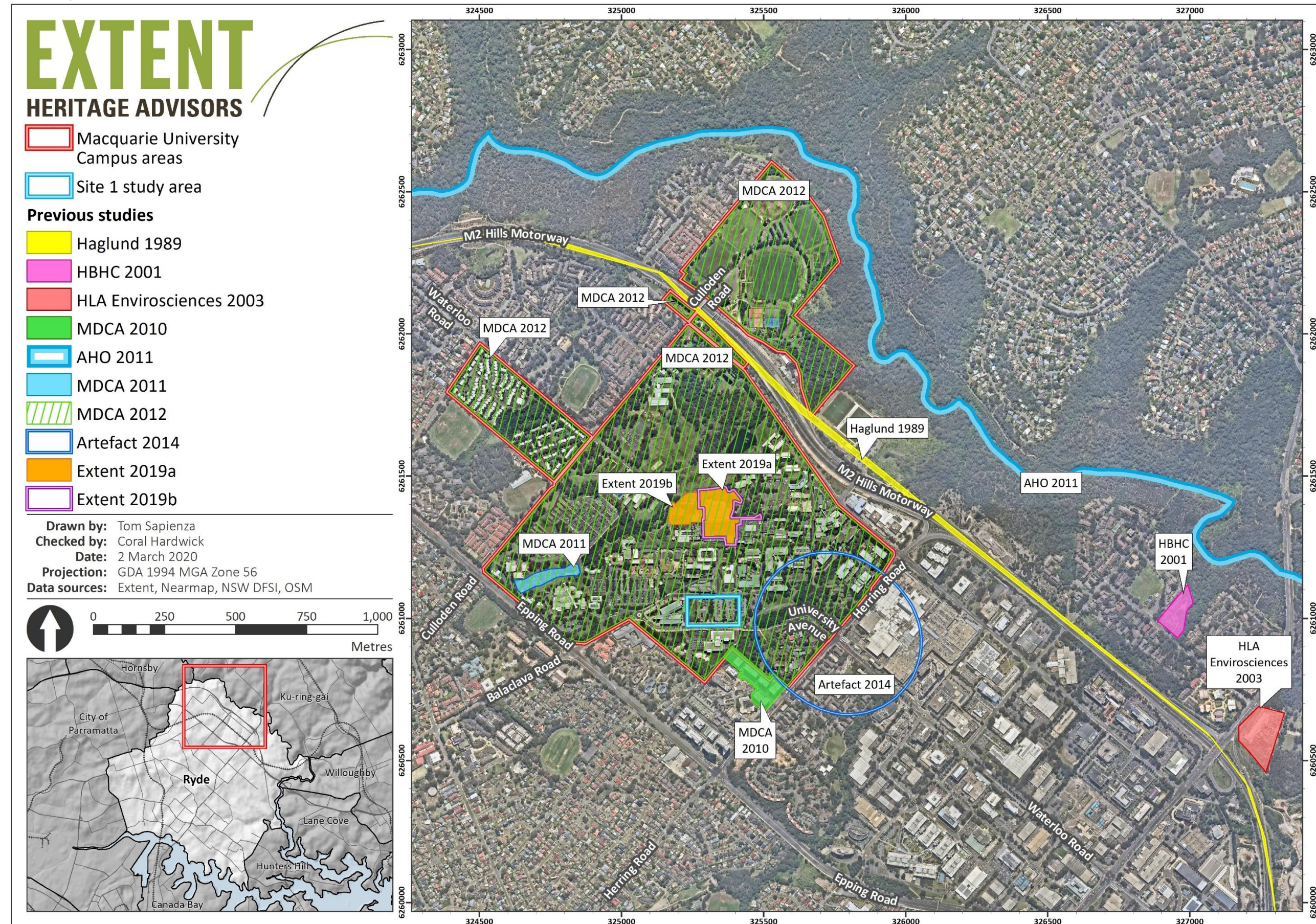


Figure 18. Previous Aboriginal archaeological studies in the vicinity of the study area.

EXTENT

HERITAGE ADVISORS

- Macquarie University Campus areas
- Site 1 study area
- AHIMS search area

AHIMS site type

- Art (pigment or engraved)
- Art (pigment or engraved), Artefact, Potential archaeological deposit (PAD), Rockshelter
- Art (pigment or engraved), Rockshelter
- Artefact
- Artefact, Potential archaeological deposit (PAD)
- Artefact, Potential archaeological deposit (PAD), Rockshelter
- Artefact, Shell
- Grinding groove
- Grinding groove, Water hole
- Potential archaeological deposit (PAD)

Drawn by: Tom Sapienza
Checked by: Coral Hardwick
Date: 2 March 2020
Projection: GDA 1994 MGA Zone 56
Data sources: Extent, Nearmap, NSW DFSI, OEH, OSM

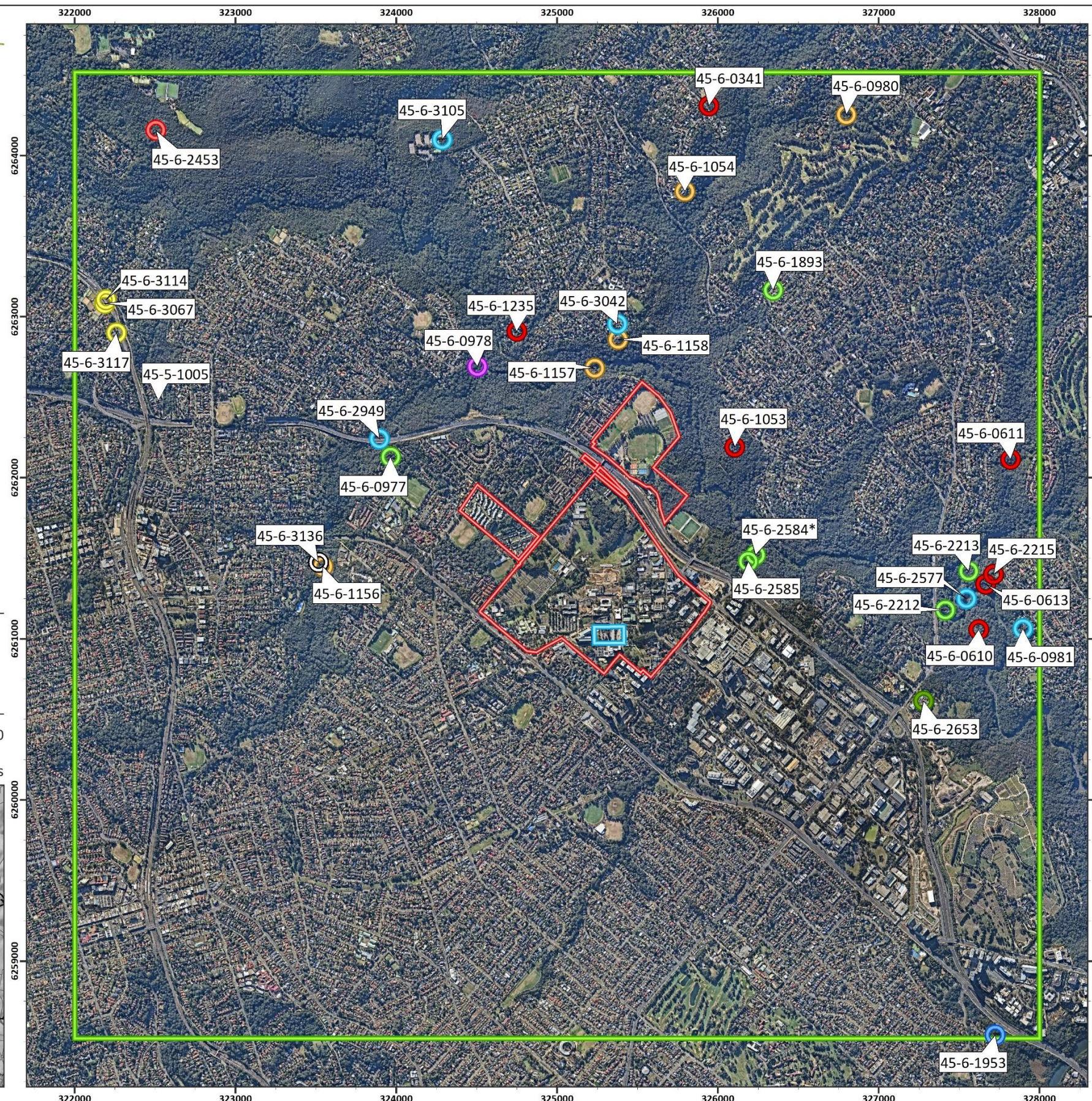
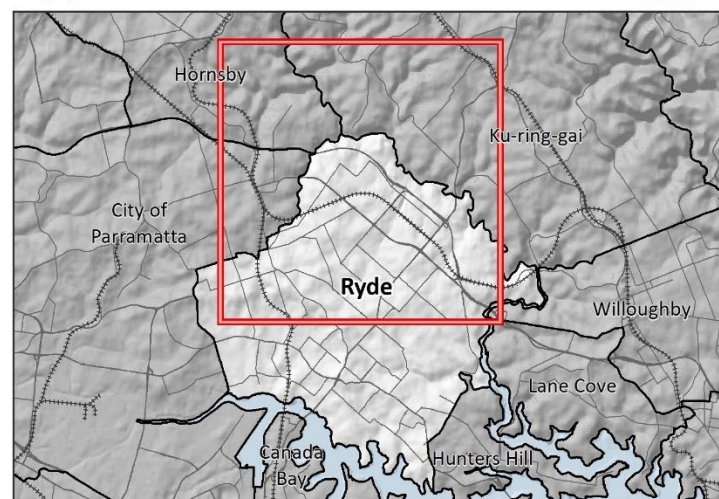
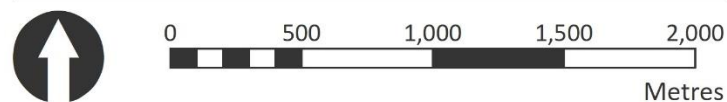


Figure 19. Registered AHIMS sites within a 6km² area, centred on the study area.

EXTENT

HERITAGE ADVISORS

Macquarie University
Campus areas

Site 1 study area

Archaeological sensitivity

High

Moderate

Low

Very low to nil

Drawn by: Tom Sapienza
Checked by: Coral Hardwick
Date: 2 March 2020
Projection: GDA 1994 MGA Zone 56
Data sources: Extent, Nearmap, NSW DFSI, OSM

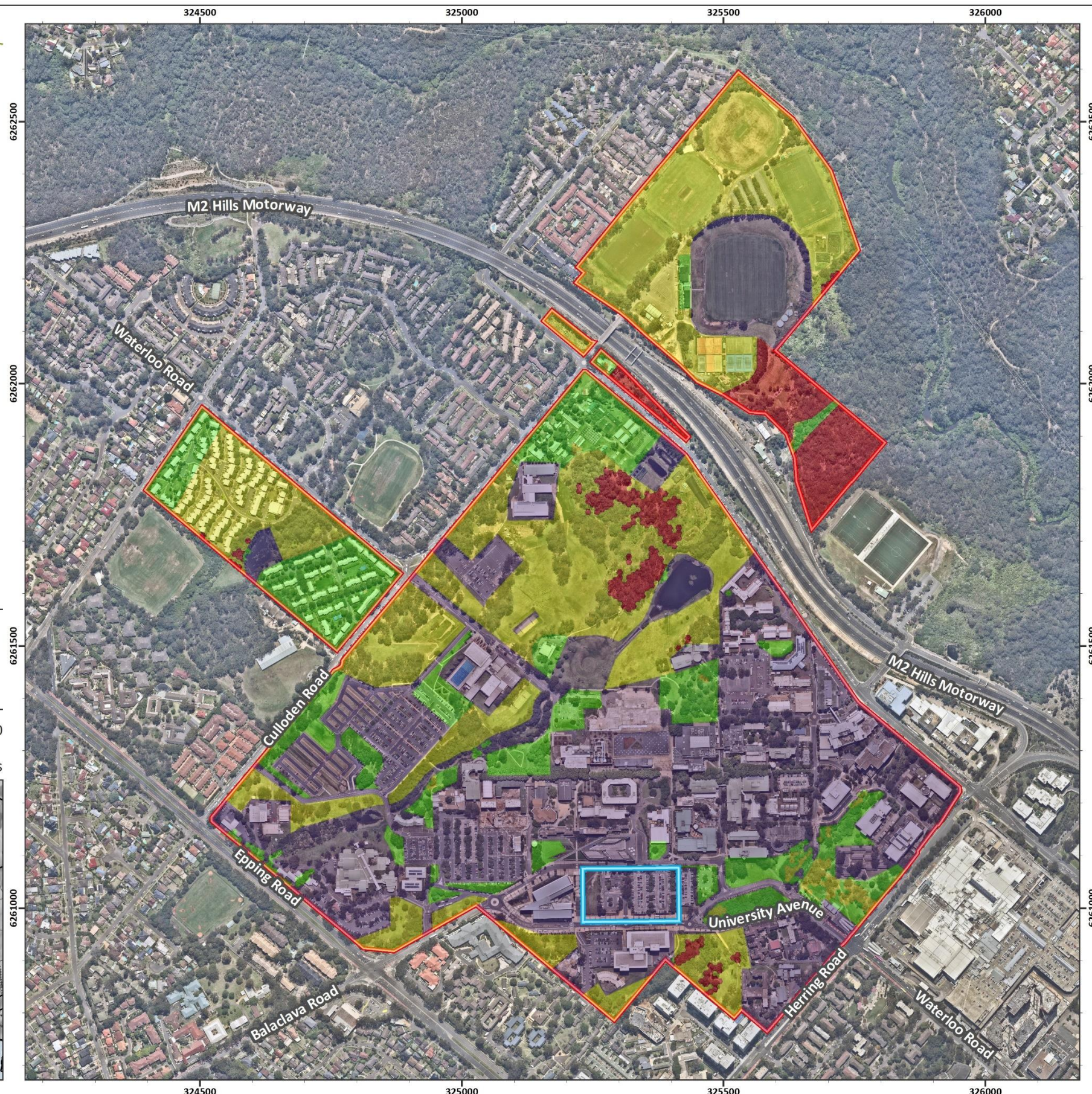
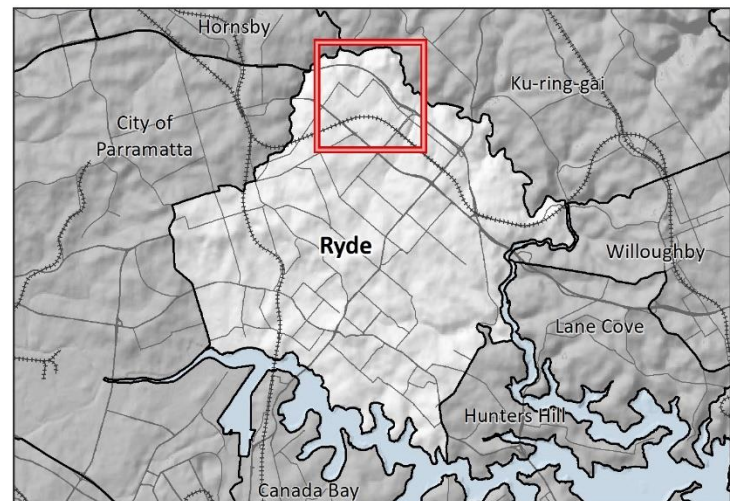
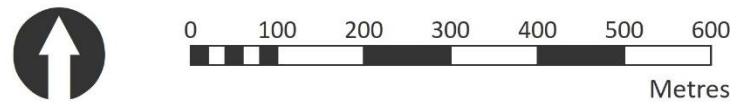


Figure 20. Predictive model of archaeological potential based on desktop assessment.

5. Field investigation

Archaeological survey of the Site 1 development area was undertaken as part of the campus wide survey on 21-22 August 2019 by Extent Heritage Advisors Megan Sheppard Brennand and Coral Hardwick, together with Danny Franks (Tocomwall), Steven Hickey (Widescope Indigenous Group) and Nick De Zwart (Amanda Hickey Cultural Services) and Jayke Ewart (Didge Ngunawal Clan). Investigation was undertaken in accordance with the *Code of Practice for Archaeological Investigation of Aboriginal Objects in NSW* (DECCW 2010).

The Campus wide ACHAR study area was divided into five survey units (A, B, C, D and E) based broadly on landform context, for the purpose of reporting. The study area is located within survey unit E, and is located on the mid slopes of a ridgeline sloping down to the south east, towards Kikkiya Creek. The area is almost entirely covered by two three-storey carparking structures in the east, one single-storey carpark in the centre, and a rectangular grassed area in the west (Plate 1 and Plate 2). The carparks are elevated above the adjacent roads located to the north and south, most likely on construction fill deposited prior to their construction around 1975 (Plate 3 and Plate 4).

Sparse vegetation is present between the multi-storey carparks, and around all road frontages of the carparks, as well as between the single-storey carpark and the grassed area with no exposures. The area has been cleared since the construction of the campus in the late 1960's, and all vegetation present was young, native vegetation. There is no remnant vegetation present within the Site 1 development area. Kikkiya Creek is located ~30m to the east of the Site 1 area and there are significant portions of remnant vegetation surrounding these areas, including large gum trees (Plate 5 and Plate 6). This provides potential for Aboriginal objects and sites surrounding the study area. however this is not reflected within the Site 1 area.

Ground coverage across the western area consists of short grass with few ground exposures, making it difficult to discern the integrity of the soil profile (Plate 7). This area is characterised by a concreted area with small garden beds housing young vegetation in the centre of the area. One exposure is present in the centre of the grass and the other is located to NE of the concrete footpath (Plate 8 and Plate 9). This area has been recently landscaped, and the underlying soil profile seen in these exposures reflect a medium brown silty-clay construction fill with small-moderate pebble inclusions. Subsurface services are also present in the grassed area (Plate 10). There is evidently a high level of ground disturbance in this area.

The site inspection did not identify any Aboriginal sites, objects or places. Disturbance has occurred during the use of the land for market gardens, and significant disturbance during the construction of the university, and therefore the study area has low-nil archaeological potential.



Plate 1. Easternmost carpark within Site 1 development area, facing west.



Plate 2. Grassed area in west of study area.



Plate 3. Easternmost carpark within Site 1 development area, facing west.



Plate 4. Easternmost carpark within Site 1 development area, facing north.



Plate 5. Remnant vegetation adjacent to Kikkiya Creek, view east.



Plate 6. Remnant vegetation adjacent to Kikkiya Creek, view east.



Plate 7. Grassed area in west of study area.



Plate 8. Ground exposure to the NE of the concrete path



Plate 9. Ground exposure in centre of grassed area



Plate 10. Ground exposure to the NE of the concrete path showing subsurface services.

EXTENT

HERITAGE ADVISORS

 Site 1 study area

Survey units

 Unit A

 Unit B

 Unit C

 Unit D

 Unit E

Drawn by: Tom Sapienza
Checked by: Coral Hardwick
Date: 2 March 2020
Projection: GDA 1994 MGA Zone 56
Data sources: Extent, Nearmap, NSW DFSI, OSM

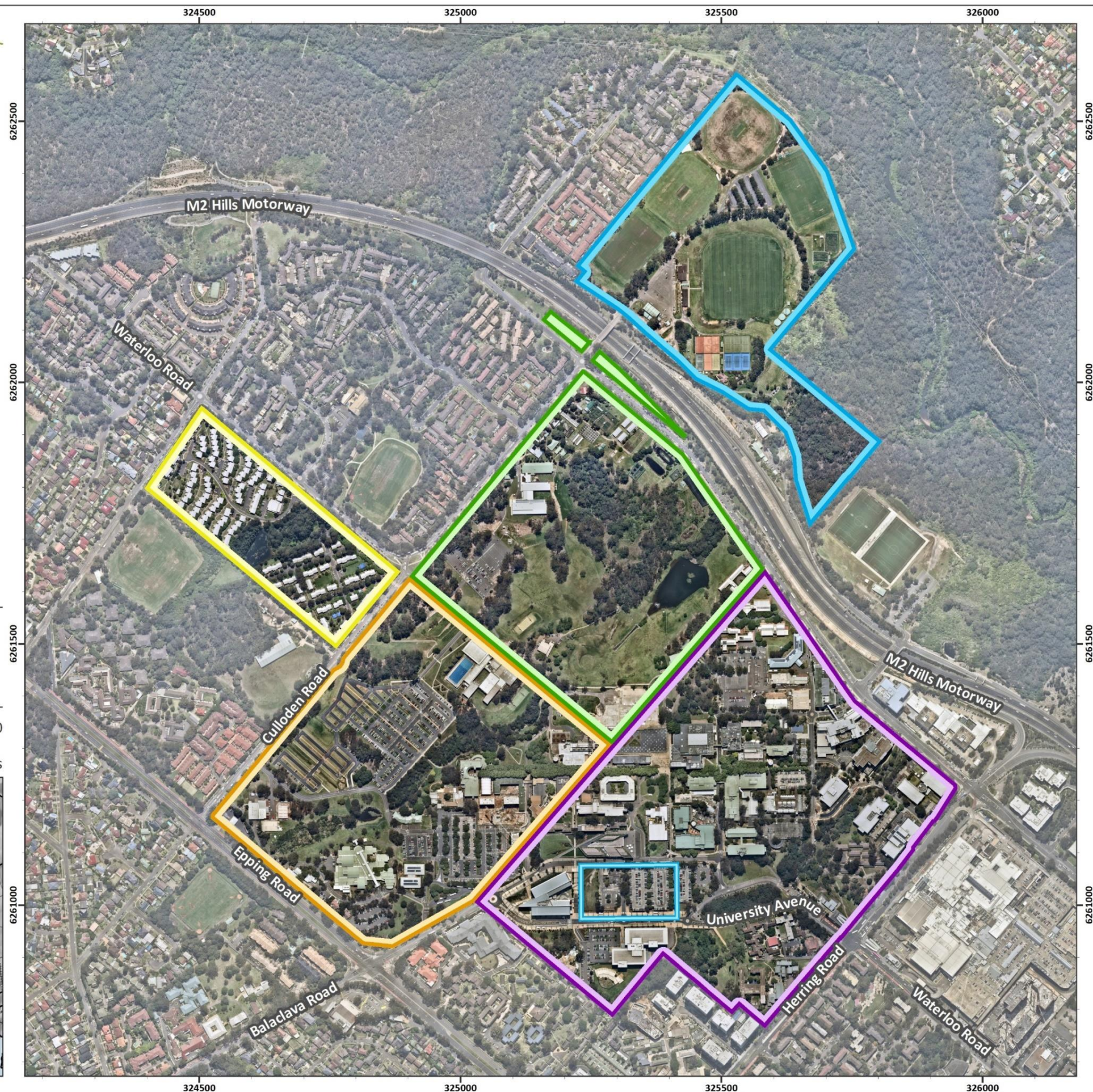
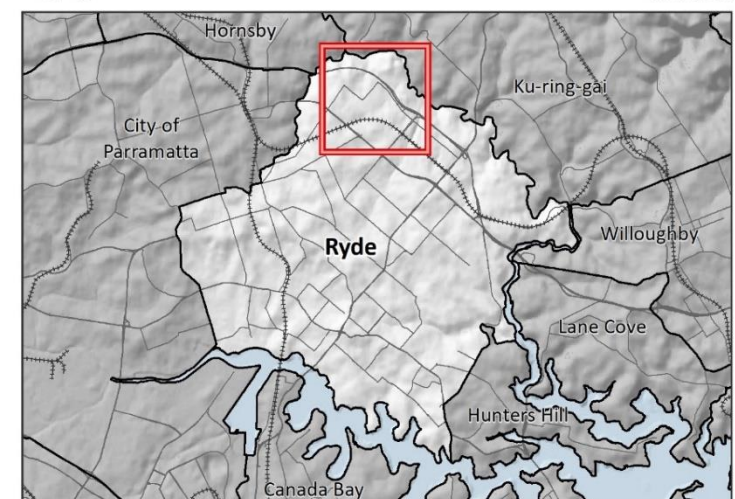
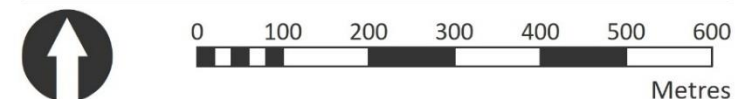


Figure 21. Macquarie University campus Survey Units.

EXTENT

HERITAGE ADVISORS

 Site 1 study area

 Survey tracks

Survey units

 Unit A

 Unit B

 Unit C

 Unit D

 Unit E

Drawn by: Tom Sapienza
Checked by: Coral Hardwick
Date: 2 March 2020
Projection: GDA 1994 MGA Zone 56
Data sources: Extent, Nearmap, NSW DFSI, OSM

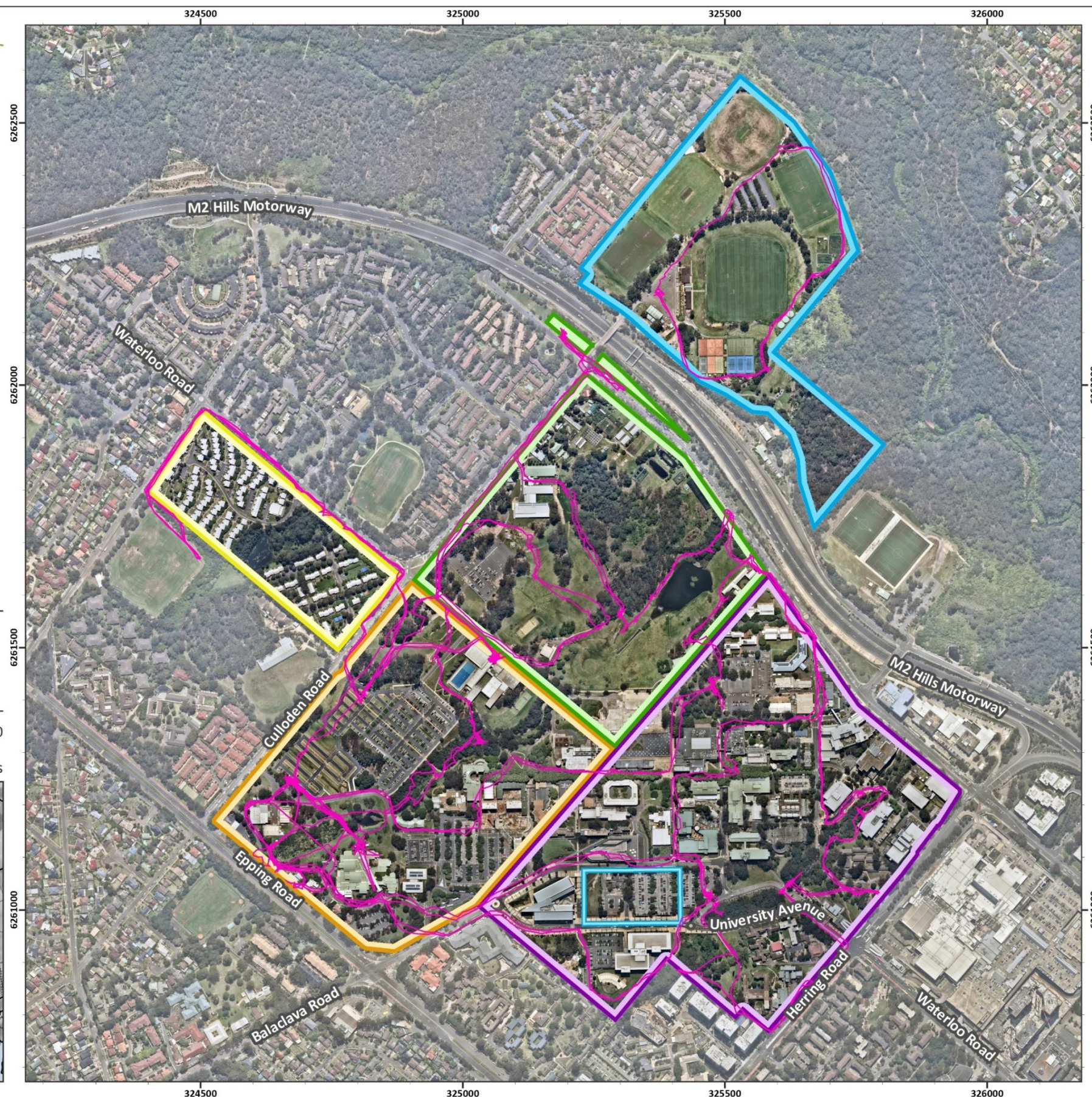
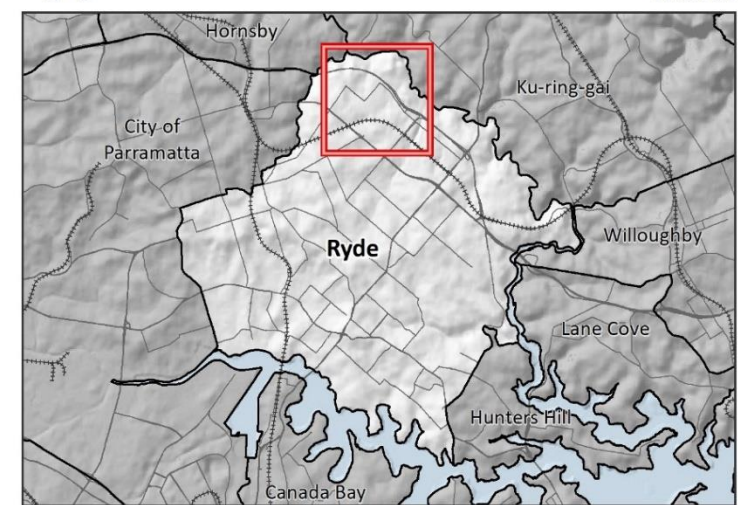


Figure 22. Survey coverage.

EXTENT

HERITAGE ADVISORS

- Macquarie University Campus areas
- Site 1 study area
- Remnant vegetation areas mapped from historical aerals (1930 to present) and checked during foot survey

Drawn by: Tom Sapienza
Checked by: Coral Hardwick
Date: 2 March 2020
Projection: GDA 1994 MGA Zone 56
Data sources: Extent, Nearmap, NSW DFSI, OSM

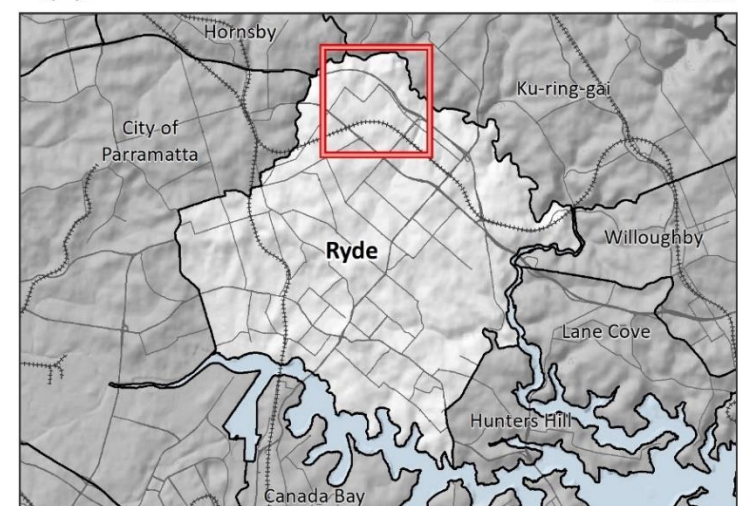


Figure 23. Pre-1930 remnant vegetation identified during the field survey

6. The archaeological and cultural resource

From a regional perspective, Aboriginal people have occupied and utilised the Sydney Basin for a considerable length of time, certainly throughout the Holocene (10,000 years ago to the present) and likely also in the late Pleistocene (+10,000 years ago). Archaeological studies pertaining to the region reflect the complexity of this locale, being at the interface of the Cumberland Plain and Pittwater sandstone plateau. As such, proximity to water, elevation and the presence of sandstone geology with suitable overhangs and/or flat exposures are considered important factors in Aboriginal site patterning of the region. Evidence for Aboriginal occupation in the region reflects these varied landscapes, with pigmented and engraved art sites, grinding grooves and rock shelters with occupation deposit and art, as well as artefact scatters and isolated finds.

With specific reference to the Macquarie University campus, no Aboriginal objects or sites were identified during archaeological survey, and it was demonstrated that historical development from the 1960s has fundamentally changed the local topography, vegetation communities and hydrology of large parts of the University Campus. This was particularly evident through the southern third of the Campus, particularly the study area, where extensive development and cutting/levelling works had occurred, and where there is low to nil potential for cultural materials to be present.

Few areas close to the study area are characterised by open areas of green space that have undergone minimal impact and ground disturbance. These few surrounding areas are identified to contain low archaeological potential. A revised model of archaeological potential for the University is shown in Figure 24.

Documentary research and Aboriginal community consultation identified no specific ethnographic information pertaining to the site, and similarly no specific areas of Aboriginal cultural value have been identified within the study area by RAPs to date. However, the cultural significance of the Lane Cove River, and the importance of early Aboriginal and settler interaction following settlement of the Field of Mars Creek Common (in which the study area broadly sits) was noted by the local Aboriginal community.

EXTENT

HERITAGE ADVISORS

Macquarie University
Campus areas

Site 1 study area

Archaeological potential

High

Moderate

Low

Very low to nil

Drawn by: Tom Sapienza
Checked by: Coral Hardwick
Date: 2 March 2020
Projection: GDA 1994 MGA Zone 56
Data sources: Extent, Nearmap, NSW DFSI, OSM

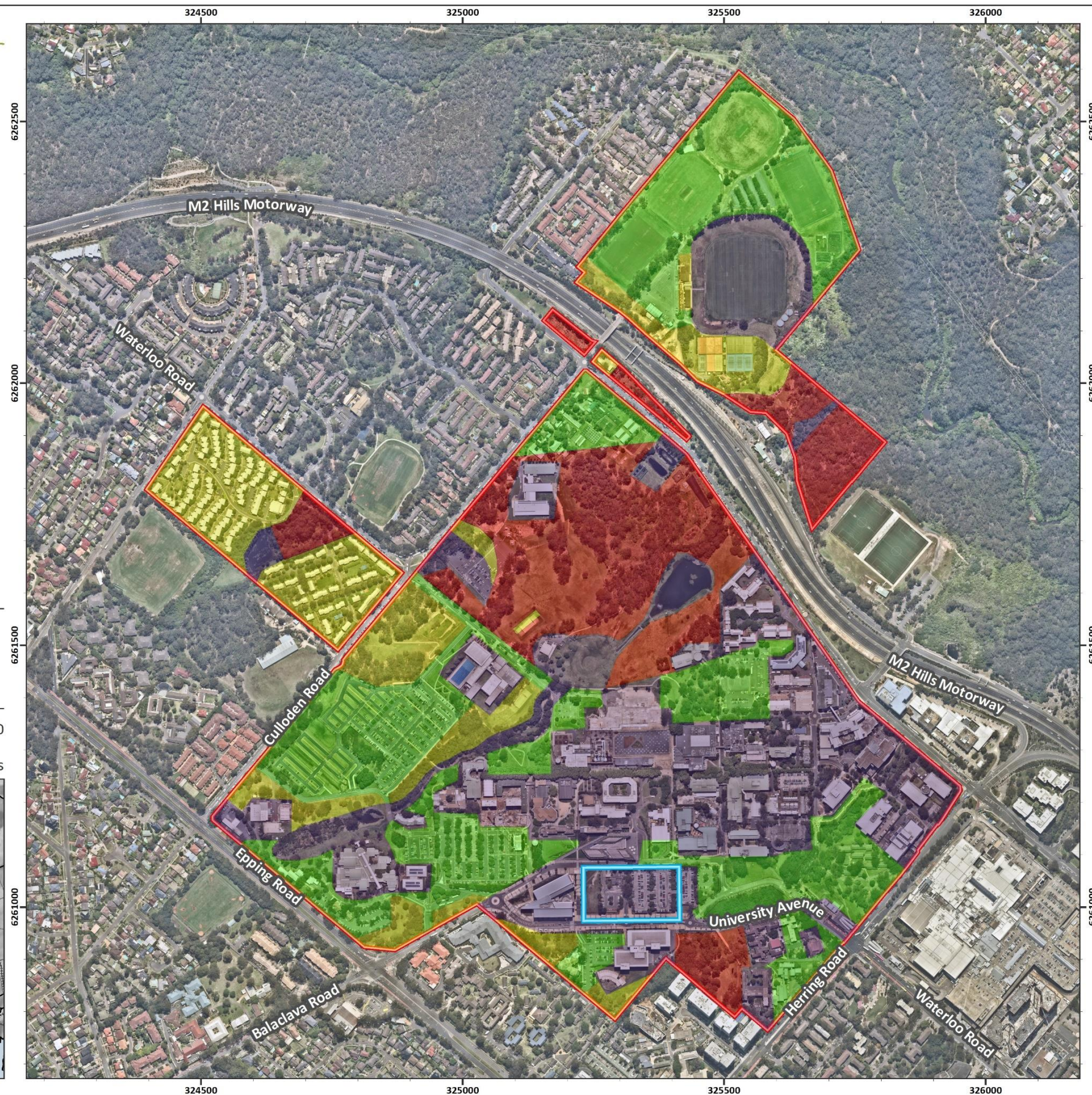
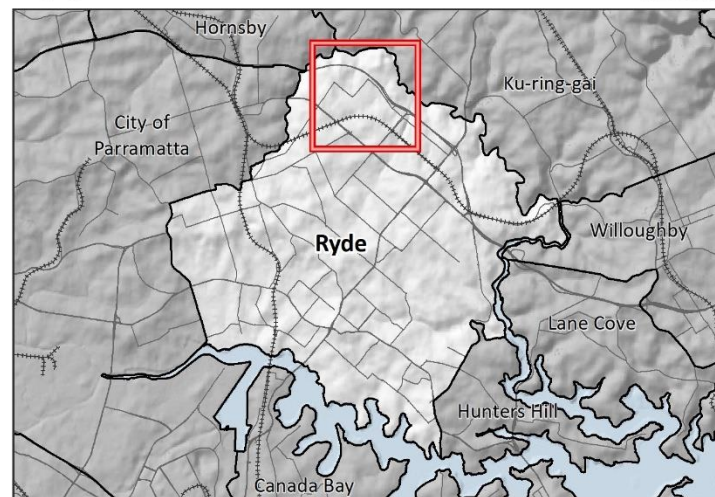


Figure 24. Revised areas of archaeological potential within the study area.

7. Conclusions and recommendations

Based on regional archaeological models, and a review of previous disturbance, the archaeological resource of the study area is unlikely to yield Aboriginal objects or sites and therefore no further works are needed.

Consultation with RAPs identified no site-specific cultural values within the study area. However, the cultural significance of the Lane Cove River, and the importance of early interactions between Aboriginal people and European settlers in the Field of Mars Common, was noted. The RAPs also described general issues relating to better opportunities for Aboriginal students, the desire for better education, and interpretive opportunities relating to past and contemporary Aboriginal history in the University grounds.

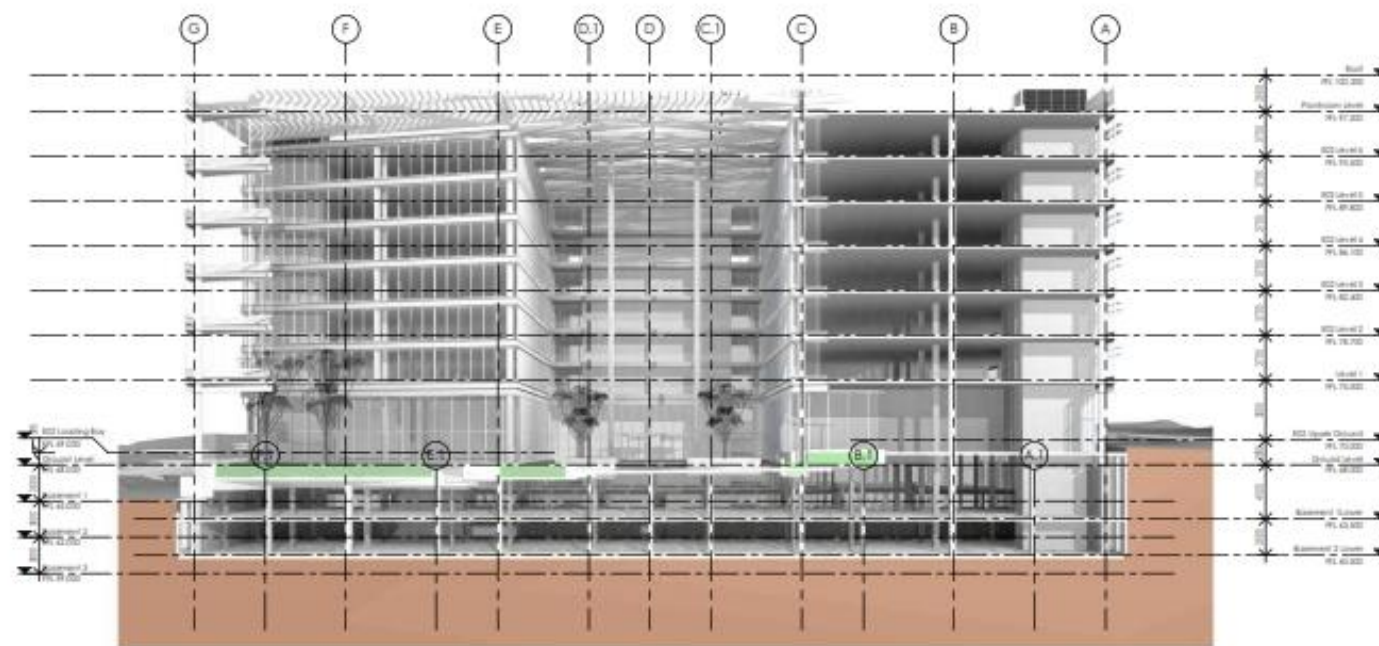
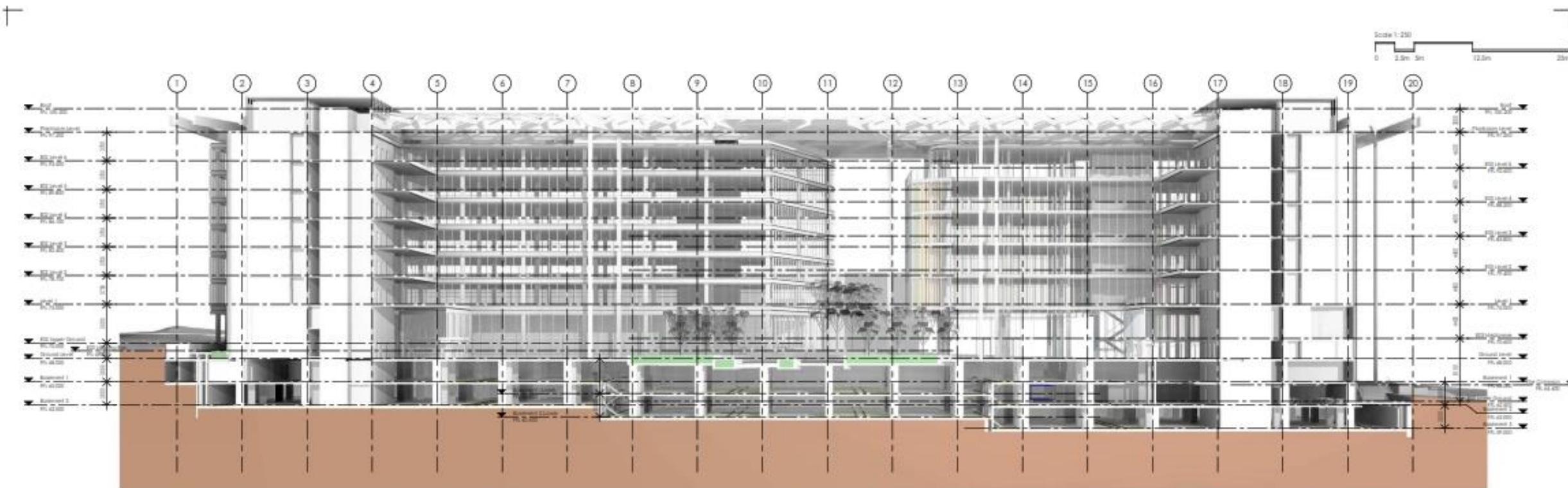
Disturbance from historical development plays a key role in the survival of Aboriginal archaeological sites, and in the case of the study area, past impacts have been extensive. An unexpected finds protocol will be implemented for the study area.

7.1 Potential Aboriginal heritage impact

Macquarie University propose to develop a new campus-style university office and laboratory building, comprising two buildings of up to seven stories accommodating new office and laboratory use, A-grade commercial/office, laboratory and collaborative spaces and retail uses (Figure 25). The proposed development also includes three levels of underground/basement carparking. Such development would likely involve the following activities prior to the construction:

- **Demolition of existing structures:** Removal of existing structures would be required to enable re-development. Typically, these demolition activities would be constrained to the upper parts of the ground surface (<0.5m).
- **Bulk earthworks:** cut and fill works within indicative building envelopes including the excavation of three levels of basement carparks to a depth of ~7m below ground in the west and ~4m below ground in the east.
- **Remediation works:** if required.

Based on the model of archaeological potential, the study area has been assessed as having very low to nil archaeological potential. Currently, the nature, extent and significance of archaeological or cultural deposits within the Campus is not known, although few areas are likely to consist of in situ material of high research value. Appropriate measures to manage such areas, and to manage the potential archaeological resource of the study area, have been provided in Section 7.2 of the campus wide ACHAR.



<table><tr><td>Issue for Approval</td><td>02</td><td>01/11/2018</td></tr><tr><td>Issue for Approval</td><td>01</td><td>01/01/2018</td></tr><tr><td>Issue for Approval</td><td>02</td><td>01/11/2017</td></tr><tr><td>Issue for Approval</td><td>01</td><td>01/11/2017</td></tr><tr><td>Revision Description</td><td>CHG</td><td>Date</td></tr></table> DO NOT SCALE from this drawing. Use given dimensions only. Check all dimensions on the job prior to commencement of shop drawings or fabrication. Any discrepancies are to be referred to the Architect/Engineer/Designer prior to commencement of work.			Issue for Approval	02	01/11/2018	Issue for Approval	01	01/01/2018	Issue for Approval	02	01/11/2017	Issue for Approval	01	01/11/2017	Revision Description	CHG	Date	 MACQUARIE University Client CADENCE ARCHITECTS Project Manager KANNFINCH SISSONS Kann Finch Design Pty Ltd, 80 Castlereagh St Sydney NSW 2000 ACN 138 812 198 Tel +61 2 9399 1111 www.kannfinch.com Registered Architect: Stephen Jambon 1209 ARB Reg No. 91708 Architects Consultant		Project 8 - 12 UNIVERSITY AVENUE MACQUARIE UNIVERSITY Drawing PERSPECTIVE SECTIONS Drawing No. KFS-812UA-AR-DWG-DA03.02 Revision J Scale 1:250 @ A1 Sheet 6.508	
Issue for Approval	02	01/11/2018																			
Issue for Approval	01	01/01/2018																			
Issue for Approval	02	01/11/2017																			
Issue for Approval	01	01/11/2017																			
Revision Description	CHG	Date																			

Figure 25. Proposed design plans.

7.2 Management strategy

As a general principle, harm to Aboriginal sites and/or cultural values areas should be avoided, where possible. Where impacts to known Aboriginal sites or places cannot be avoided, or impacts to potential Aboriginal sites or places is proposed, additional archaeological investigations should be undertaken to determine the extent, nature and significance of the Aboriginal cultural heritage.

For master planning purposes, the ACHAR identifies Aboriginal cultural values areas and likely areas of archaeological resource within the study area. In general terms, the risk of impact on significant archaeological and Aboriginal cultural heritage values is likely to increase in accordance with the level of potential. Therefore, areas, of low potential or which are disturbed have a lower risk level. The study area has been identified as containing very low to nil archaeological potential. Such areas require no design and planning recommendations. These areas are least likely to contain Aboriginal cultural heritage and provide few constraint for future development. As the study area is within an area of very low to nil archaeological potential works may proceed with caution, following the Unexpected Aboriginal Finds Procedure outlined below.

Unexpected Aboriginal Finds Procedure

This procedure details the actions to be taken when an unexpected Aboriginal cultural heritage item (site or object) is found during pre-construction, construction or post-construction activities. This information should be included in any heritage induction for Project personnel.

This procedure is applicable to all activities conducted by Project personnel that have the potential to uncover surface or sub-surface Aboriginal cultural heritage items. Unexpected finds do not include heritage items that have been previously identified during an archaeological assessment and are covered by a relevant approval. The following Aboriginal archaeological site features have previously been identified in the vicinity of the project area: artefacts and a modified (scarred) tree.

This section outlines the procedure for managing unexpected finds in accordance with the Due Diligence Code of Practice for the Protection of Aboriginal Objects in New South Wales (DECCW 2010) and the Guide to investigating, assessing and reporting on Aboriginal cultural heritage in NSW (OEH 2011); and the relevant NSW legislation.

Procedure

In the event that a potential heritage artefact/item/object/site is encountered during construction the following steps shall be taken:

- **STOP ALL WORK** in the vicinity of the find and immediately notify the relevant Site Supervisor. The Supervisor will then notify the Environment Manager and the Project Manager, and demark the area to protect the find.
- The Environment Manager is to record the details, take photos of the find and ensure that the area is adequately protected from additional disturbance.

- The Environment Manager contacts the Project Archaeologist to notify them of the location of the find.
- All instructions provided by the Project Archaeologist are to be followed. This may include:
 - The find is not a potential Aboriginal object: work can recommence.
 - The find is a potential Aboriginal object: appropriate approvals and/or mitigation measures require implementation.
 - The find is a potential historical relic: appropriate approvals and/or mitigation measures require implementation.
 - Further action such as heritage assessment, historical research, archaeological excavation and/or archival recording may be required before continuing work in the area, in accordance with any advice received from the Heritage Branch.

7.3 Recommendations

The following recommendations are made with regard to the future management of Aboriginal cultural heritage in the study area:

- The present Addendum should be submitted to the Registered Aboriginal Parties for their input and feedback, prior to finalisation, along with the initial ACHAR.
- Consultation with the Registered Aboriginal Parties should continue throughout the Campus master planning and redevelopment. Should consultation lapse for six months or longer, then the consultation process as outlined by DPIE would need to be re-started.
- Works may proceed with caution following the Unexpected Aboriginal Finds Procedure outlined in Section 7.2.
- All relevant personnel and contractors involved in the design, construction and operation of the proposed development should be advised by Macquarie University of the relevant heritage issues, legislative requirements and recommendations identified in the ACHAR. This may take the form of a heritage induction.
- Traditional Aboriginal burials (older than one hundred years) are protected under the *National Parks and Wildlife Act 1974* (NSW). If such material is found, all works should cease and an appropriate specialist should be contacted. Should the skeletal material prove to be archaeological Aboriginal remains, notification of the DPIE and the RAPs will be required. The Commonwealth Minister for the Environment should also be notified under the provisions of the *Aboriginal and Torres Strait Islander Heritage Protection Act 1984* (Cwlth).

8. References

Aboriginal Heritage Office (2011) City of Ryde Aboriginal Site Management Report. Ryde: Aboriginal Heritage Office.

Artefact Heritage (2014) Epping to Chatswood Railway- Conversion to Rapid Transit. Aboriginal Heritage Due Diligence Assessment. Unpublished report to Transport for NSW.

ARUP (2017) Geotechnical Report for Macquarie University Central Courtyard Precinct (MUCCP) Redevelopment- State Significant Development Application. Report prepared for Macquarie University.

Attenbrow, V. (1993) Darling Mills State Forest 2 Radiocarbon Dates. Unpublished report for the Australian Institute of Aboriginal and Torres Strait Islander Studies, Canberra.

Attenbrow, V. (2004) What's Changing: Population Size or Land Use. The Archaeology of Upper Mangrove Creek, Sydney Basin. Terra Australis (Vol. 21). Canberra: Pandanus Books.

Attenbrow, V. (2010). *Sydney's Aboriginal Past: investigating the archaeological and historical records* (2nd ed.). Sydney: University of New South Wales Press Ltd.

Australia ICOMOS (2013) The Burra Charter: The Australia ICOMOS Charter for Places of Cultural Significance, 2013. Burwood: Australia ICOMOS.

Bamberry, W. J. (1991) Stratigraphy and sedimentology of the late Permian Illawarra Coal Measures, southern Sydney basin. New South Wales. PhD. Thesis (unpublished), University of Wollongong.

Bewsher Consulting Pty Ltd (2010) Macquarie Park Floodplain Risk Management Study & Plan – Flood Study Report. Report prepared for City of Ryde.

Biosis (2019) 1 Sirius Road, Lane Cove: Archaeological Report. Report prepared for Greenbox Architecture.

Cardno (2018) Environmental Site Assessment- Royal Institute for Deaf and Blind Children Project. Report prepared for Macquarie University.

Conybeare Morrison & Partners (1997) Macquarie University Development Plan 1997. Prepared for Macquarie University.

Department of Planning, Industry and Environment (2016) The Native Vegetation of the Sydney Metropolitan Area. Accessed 6 July 2019.

<https://datasets.seed.nsw.gov.au/dataset/the-native-vegetation-of-the-sydney-metropolitan-area-oeh-2016-vis-id-4489>

Department of Planning, Industry and Environment (2019) Sydney Turpentine-Ironbark Forest – profile. Accessed 6 July 2019.

<https://www.environment.nsw.gov.au/threatenedspeciesapp/profile.aspx?id=10789>

Douglas Partners (2009) Geotechnical Investigation- Proposed Temporary Carpark, Culloden Road, Macquarie University. Report prepared for Macquarie University.

Douglas Partners (2010) Report on Phase 1 Contamination Assessment, Macquarie University, North Ryde. Report prepared for the Office of Major Projects, Macquarie University.

Downing, A. (2009) Macquarie University- a Brief History of Landscaping. Biological Sciences.

Extent Heritage (2019) Central Courtyard Precinct (SSD_8755), Macquarie University: Aboriginal heritage advice. Report prepared for Macquarie University.

Extent Heritage (2019) Central Courtyard Precinct (SSD_8755), Macquarie University Aboriginal Cultural Heritage Management Plan. Report prepared for Macquarie University.

Extent Heritage (2016). Aboriginal History for the Macquarie University Central Courtyard Precinct Plan Project – Indigenous Consultation. Report prepared for Macquarie University.

Fidlon, P. G. and R. J. Ryan (eds.) (1981) *The Journal and Letters of Lt. Ralph Clark 1787-1792*. Sydney: The Library of Australian History.

Fidlon, P. G. and R. J. Ryan (eds.) (1980) *The Journal of Philip Gidley King, Lieutenant, R.N.* Sydney: Australian Documents Library.

Geo-Logix (2016) Geotechnical Report - Macquarie University Biological Sciences Building. 205a Culloden Road, Macquarie Park, NSW, 2109. Report prepared for Macquarie University.

Geo-Logix (2018) Geotechnical Report – Proposed Faculty of Medicine and Health Sciences Building. 75 Talavera Road, Macquarie Park, NSW, 2113. Report prepared for Macquarie University.

Haglund, L. (1989) Preliminary Survey for Aboriginal Sites along F2-Castlereagh Freeway, Pennant Hills Road to Lane Cove River. Report to the Department of Main Roads.

Haglund & Associates (1992) North West Transport Links East. Environmental Impact Statement. Working Paper. Aboriginal Heritage Archaeology. Report to Maunsell Pty Ltd in behalf of NSW RTA.

Helen Brayshaw Heritage Consultants (2001) 36-44 Fontenoy Road, Macquarie Park. Aboriginal Heritage Assessment. Report to A & N Design Pty Ltd.

HLA-Envirosciences (2003) Archaeological Subsurface Testing Program: Eden Gardens, Macquarie Park, NSW.

Herbert, C. (ed.). (1983) *Geology of the Sydney 1:100,000 Sheet 9130*. Sydney: NSW Department of Mineral Resources.

JK Geotechnics (2015) Geotechnical Investigation for Proposed Expansion Fitout at Building E7A, Macquarie University, NSW. Report prepared for TLB Engineers.

JK Geotechnics (2017) Geotechnical Investigation for Proposed New Building and Refurbishment of Buildings W6A and W6B at Macquarie University, North Ryde, NSW. Report prepared for Capital Insight Pty Ltd.

JK Geotechnics (2018a) Geotechnical Investigation for Proposed Development at 8 to 12 University Avenue, Macquarie Park, NSW. Report prepared for Macquarie University.

JK Geotechnics (2018b) Geotechnical Investigation for Proposed Pavilion Adjacent to Building W3A, Macquarie University, North Ryde, NSW. Report prepared for Macquarie University.

Jo McDonald Cultural Heritage Management Pty Ltd (2005a) Archaeological Salvage Excavation of Eight Archaeological Landscapes in the Seconds Ponds Creek Valley, Rouse Hill Development Area. NSW. Unpublished Report to Rouse Hill Infrastructure Pty Ltd and Landcom.

Jo McDonald Cultural Heritage Management Pty Ltd (2005b) Salvage Excavation of Six Sites along Caddies, Second Ponds, Smalls and Cattai Creeks in the Rouse Hill Development Area, NSW. Australian Archaeological Consultancy Monograph Series 1. Sydney: Australian Association of Consulting Archaeologists Inc.

Jones, D.C. and Clark, N. R. (eds.) (1991) *Geology of the Penrith 1:100,000 Sheet 9030*. Sydney: New South Wales Geological Survey.

Keith, D. (2004) Ocean shores to desert dunes: the native vegetation of New South Wales and the ACT. Hurstville: Department of Environment and Conservation.

Kohen, J. L. (1986) Prehistoric Settlement in the Western Cumberland Plain: Resources, Environment, Technology. Sydney: PhD Thesis, School of Earth Sciences, Macquarie University.

Kohen, J.L., E.D. Stockton and M.A.J. Williams (1984) Shaws Creek KII Rockshelter: A prehistoric occupation site in the Blue Mountains piedmont, eastern New South Wales. *Archaeology in Oceania* 19(2):57-73.

Lampert, R. (1966). An excavation at Durras North, New South Wales. *Archaeology and Physical Anthropology in Oceania*, 1(2), 83–118.

Lampert, R. (1971). *Burrill Lake and Currarong: coastal sites in southern New South Wales* (Vol. 1). Canberra: Dept. of Prehistory, Research School of Pacific Studies, Australian National University.

Lesryk Environmental Pty Ltd. (2015) Macquarie University Vegetation Management Plan. Unpublished report to Macquarie University on behalf of Context.

Levy, M. C. I. (2018) Wallumetta: a history of Ryde and its district, 1792 to 1945. Ryde: Ryde Municipal Council.

Macquarie University (2018a) Website: Native Plants and Animals. Accessed 12 July 2019.
<https://www.mq.edu.au/about/about-the-university/strategy-and-initiatives/strategic-initiatives/sustainability/staff-and-students/facilities-and-operations2/facilities-and-operations/living-laboratory/arboretum/native-plants-and-animals>

Macquarie University (2018b) Website: Mars Creek Rehabilitation. Accessed 12 July 2019.
<https://www.mq.edu.au/about/about-the-university/strategy-and-initiatives/strategic-initiatives/sustainability/staff-and-students/facilities-and-operations2/facilities-and-operations/living-laboratory/mars-creek>

Mansfield, B. and Hutchinson, M. (1992) *Liberality of Opportunity - A History of Macquarie University 1964-1989*. Sydney: Hale & Iremonger.

Mary Dallas Consulting Archaeologists (2012) *Due Diligence Heritage Assessment for Macquarie University, North Ryde*. Report for Macquarie University.

McBryde, I. (1966). Radiocarbon dates for northern New South Wales. *Antiquity*, 40(160), 285–292.

McBryde, I. (1974). *Aboriginal prehistory in New England: an archaeological survey of northeastern New South Wales*. Sydney: Sydney University Press.

McCarthy, F. (1948). The Lapstone Creek excavation: two culture periods revealed in eastern New South Wales. *Records of the Australian Museum*, 22(1), 1–34.

McCarthy, F. D. (1978). New light on the Lapstone Creek excavation. *Australian Archaeology*, 49–62.

McDonald, J., E. Rich and H. Barton (1994) The Rouse Hill Infrastructure Project (Site 1) on the Cumberland Plain, western Sydney. In M. Sullivan, S. Brockwell and A. Webb (eds), *Archaeology in the North: Proceedings of the 1993 Australian Association Conference*, pp.259–293. Darwin: Northern Australia Research Unit, The Australian National University. .

McDonald, J. (1995) Thermo-luminescence dates from Site RS 1 (45-5-982) at Regentville, Mulgoa Creek, western Sydney. Unpublished report for Pacific Power.

Megaw, J. V. S. (1965). Excavations in the Royal National Park, New South Wales: a first series of radiocarbon dates from the Sydney District. *Oceania*, 35(3), 202–207.

Megaw, J. V. S. (1968). A dated culture sequence for the south Sydney region of New South Wales. *Current Anthropology*, 9(4), 325–330.

Moore, D. R. (1970). Results of an Archaeological Survey of the Hunter River Valley, New South Wales, Australia. Part I. The Bondaian Industry of the upper Hunter and Goulburn river valleys. *Records of the Australian Museum*, 28(2), 25–64.

Moore, D. R. (1981). Results of an archaeological survey of the Hunter River Valley, New South Wales, Australia. Part II. Problems of the lower Hunter and contacts with the Hawkesbury Valley. *Records of the Australian Museum*, 33(9), 388–442.

Mulvaney, J. and J. Kamminga (1999) Prehistory of Australia. St Leonards: Allen and Unwin.

Nanson, G.C., R.W. Young and E.D. Stockton (1987) Chronology and palaeoenvironment of the Cranebrook Terrace, near Sydney, containing artefacts more than 40,000 years old. *Archaeology in Oceania* 22:72-78.

Office of Environment and Heritage (2016a) Lane Cove National Park Plan of Management. Sydney: Office of Environment and Heritage.

Office of Environment and Heritage (2016b) The Native Vegetation of the Sydney Metropolitan Area. Volume 2: Vegetation Community Profiles. Sydney: NSW Office of Environment and Heritage.

Polach, H., Stipp, J., Golson, J., & Lovering, J. (1967). ANU radiocarbon date list I. *Radiocarbon*, 9, 5–27.

Smith, K. V. (2005) Wallumedegal: An Aboriginal history of Ryde. North Ryde: City of Ryde.

Stockton, E.D. (1973) Shaw's Creek Rockshelter human displacement of artefacts and its significance. *Mankind* 9:112-117.

Stockton, E., & Holland, W. (1974). Cultural sites and their environment in the Blue Mountains. *Archaeology and Physical Anthropology in Oceania*, 9(1), 36–65.

Thackway, R. and Cresswell, I. D. (1995) An Interim Biogeographic Regionalisation for Australia: a framework for establishing the national system of reserves. Canberra: Australian Nature Conservation Agency.

White, E., & McDonald, J. (2010) Lithic artefact distribution in the Rouse Hill Development Area, Cumberland Plain, New South Wales. *Australian Archaeology*, 70, 29-38.

Williams, A. N., Mitchell, P., Wright, R. V., & Toms, P. (2012) A Terminal Pleistocene Open Site on the Hawkesbury River, Pitt Town, NSW. *Australian Archaeology*, 74, 85-97.

Williams, A.N., Atkinson, F., Lau, M., Toms, P. (2014) A Glacial cryptic refuge in southeast Australia: Human occupation and mobility from 36,000 years ago in the Sydney Basin, New South Wales. *Journal of Quaternary Science*, 29(8): 735-748.

9. Abbreviations

ACHAR	Aboriginal cultural heritage assessment report
AHIMS	Aboriginal Heritage Information Management System
AHIP	Aboriginal Heritage Impact Permit
AHMS	Archaeological and Heritage Management Solutions
BP	Before present (AD 1950)
CHL	Commonwealth Heritage List
CRM	Cultural resource management
DCP	Development control plan
DECCW	Department of Environment, Climate Change and Water (now DPIE)
DP	Deposited plan
DPIE	Department of Planning, Industry and Environment (formerly OEH)
ERS	Eastern Regional Sequence
ka	Abbreviation for thousands of years ago (e.g. 1 ka equals 1,000 years ago)
LALC	Local Aboriginal Land Council
LEP	Local environmental plan
LGA	Local government area
NHL	National Heritage List
NPW Act	<i>National Parks and Wildlife Act 1974 (NSW)</i>
OEH	Office of Environment and Heritage (formerly DECCW, now DPIE)
PAD	Potential archaeological deposit
RAP	Registered Aboriginal party
REP	Regional environmental plan
SEPP	State environment planning policy
WHL	World Heritage List

10. Glossary

Aboriginal cultural heritage assessment report (ACHAR)	A document developed to assess the archaeological and cultural values of an area, generally required as part of an environmental assessment (EA).
Aboriginal Cultural Heritage Consultation Requirements for Proponents 2010	Guidelines developed by DECCW to guide formal Aboriginal community consultation undertaken as part of an Aboriginal cultural heritage assessment report (ACHAR).
Aboriginal Heritage Impact Permit (AHIP)	The statutory instrument that the Director General of the Department of Planning, Industry and Environment (DPIE) issues under section 90 of the <i>National Parks and Wildlife Act 1974</i> (NSW) to allow the investigation (when not in accordance with certain guidelines), impact and/or destruction of Aboriginal objects. AHIPs are not required where project approval under the state-significant provisions of Part 4 (Division 4.1) of the <i>Environmental Planning and Assessment Act 1979</i> (NSW).
Aboriginal object	A statutory term defined under the <i>National Parks and Wildlife Act 1974</i> (NSW) as 'any deposit, object or material evidence (not being a handicraft made for sale) relating to the Aboriginal habitation of the area that comprises New South Wales, being habitation before or concurrent with (or both) the occupation of that area by persons of non-Aboriginal extraction, and includes Aboriginal remains'.
Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales	Guidelines developed by DECCW (2010) to inform the structure, practice and content of any archaeological investigations undertaken as part of an Aboriginal cultural heritage assessment report (ACHAR).
Department of Environment, Climate Change and Water (DECCW)	Now known as the Department of Planning, Industry and Environment (DPIE), Department of Premier and Cabinet.
Due Diligence Code of Practice for the Protection of Aboriginal Objects in New South Wales	Guidelines developed by DECCW, outlining the first stage of a two-stage process in determining whether Aboriginal objects and/or areas of archaeological interest are present within a study area. The findings of a due diligence assessment may lead to the development of an Aboriginal cultural heritage assessment report.
Environmental Planning and Assessment Act 1979 (NSW)	Statutory instrument that provides planning controls and requirements for environmental assessment in the development approval process. The Act is administered by the Department of Planning and Environment.
Guide to Investigating, Assessing and Reporting on Aboriginal Cultural Heritage in NSW	Guidelines developed by OEH to inform the structure and content of an Aboriginal cultural heritage assessment report (ACHAR).
Isolated find	An isolated find is usually considered a single artefact or stone tool, but can relate to any product of prehistoric Aboriginal societies. The term 'object' is used in the Aboriginal cultural heritage assessment

	report (ACHAR), to reflect the definitions of Aboriginal stone tools or other products in the <i>National Parks and Wildlife Act 1974</i> (NSW).
National Parks and Wildlife Act 1974 (NSW)	The primary piece of legislation for the protection of Aboriginal cultural heritage in New South Wales. Part 6 of this Act outlines the protection afforded to and offences relating to disturbance of Aboriginal objects. The Act is administered by DPIE
Department of Planning, Industry and Environment (DPIE)	The DPIE is responsible for managing the Aboriginal Heritage (and other) provisions of the <i>National Parks and Wildlife Act 1974</i> .
Potential archaeological deposit (PAD)	An area assessed as having the potential to contain Aboriginal objects. PADs are commonly identified on the basis of landform types, surface expressions of Aboriginal objects, surrounding archaeological material, disturbance, and a range of other factors. While not defined in the <i>National Parks and Wildlife Act 1974</i> (NSW), PADs are generally considered to retain Aboriginal objects and are therefore protected and managed in accordance with that Act.
Proponent	A corporate entity, government agency or an individual in the private sector which proposes to undertake a development project.

Appendix 1. Legislation

A1.1. Commonwealth legislation

Aboriginal and Torres Strait Islander Heritage Protection Act 1984

The *Aboriginal and Torres Strait Islander Heritage Protection Act 1984* was enacted at a federal level to preserve and protect areas (particularly sacred sites) and objects of particular significance to Aboriginal Australians from damage or desecration. Steps necessary for the protection of a threatened place are outlined in a gazetted Ministerial Declaration (Sections 9 and 10). This can include the preclusion of development.

As well as providing protection to areas, it can also protect objects by Declaration, in particular Aboriginal skeletal remains (Section 12). Although this is a federal Act, it can be invoked on a state level if the state is unwilling or unable to provide protection for such sites or objects.

Environment Protection and Biodiversity Conservation Act 1999

The *Environment Protection and Biodiversity Conservation Act 1999* provides for the protection of natural and cultural heritage places. The Act establishes (amongst other things) a National Heritage List (NHL) and a Commonwealth Heritage List (CHL). Places on the NHL are of natural or cultural significance at a national level and can be in public or private ownership. The CHL is limited to places owned or occupied by the Commonwealth which are of heritage significance for certain specified reasons.

Places listed on the NHL are considered to be of state and local heritage value, even if state or local various heritage lists do not specifically include them.

The heritage values of places on the NHL or the CHL are protected under the terms of the EPBC Act. The Act requires that the minister administering the Act assess any action which has, will have, or is likely to have, a significant impact on the heritage values of a listed place. The approval (or rejection) follows the referral of the matter by the relevant agency's minister.

Native Title Act 1993

The *Native Title Act 1993* provides recognition and protection for native title. The Act established the National Native Title Tribunal to administer native title claims to rights and interests over lands and waters by Aboriginal people. The Tribunal also administers the future act processes that attract the right to negotiate under the *Native Title Act 1993*.

The Act also provides for Indigenous land use agreements (ILUA). An ILUA is an agreement between a native title group and others about the use and management of land and waters. ILUAs were introduced as a result of amendments to the *Native Title Act in 1998*. They allow people to negotiate flexible, pragmatic agreements to suit their particular circumstances.

An ILUA can be negotiated over areas where native title has, or has not yet, been determined. They can be part of a native title determination, or settled separately from a native title claim. An ILUA can be negotiated and registered whether there is a native title claim over the area or not.

A1.2. New South Wales state legislation

Environmental Planning and Assessment Act 1979

The *Environmental Planning and Assessment Act 1979* (EP&A Act) requires that environmental and heritage impacts are considered by consent authorities prior to granting development approvals. The relevant sections of the EP&A Act are:

Part 3A: A single assessment and approval system for major development and infrastructure projects [note that Part 3A has now been repealed and replaced with Part 4 (Division 4.1)].

Part 4: Development that requires consent under consideration of environmental planning instruments.

Part 5: An assessment process for activities undertaken by Public Authorities and for developments that do not require development consent but an approval under another mechanism.

Where Project Approval is to be determined under Part 4 (Division 4.1) of the Act, further approvals under the *National Parks and Wildlife Act 1974*, are not required. In those instances, management of Aboriginal heritage follows the applicable Aboriginal assessment guidelines (the Guidelines for Aboriginal Cultural Heritage Impact Assessment and Community Consultation, July 2005) and any relevant statement of commitments included in the Development Approval.

National Parks and Wildlife Act 1974

The *National Parks and Wildlife Act 1974* (NPW Act) provides blanket protection for Aboriginal objects (material evidence of Indigenous occupation) and Aboriginal places (areas of cultural significance to the Aboriginal community) across NSW. An Aboriginal object is defined as:

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

An Aboriginal place is any place declared to be an Aboriginal place by the Minister for the Environment, under section 84 of the Act.

It is an offence to disturb Aboriginal objects or places without a permit authorised by the Director-General of the Department of Planning, Industry and Environment. In addition, anyone who discovers an Aboriginal object is obliged to report the discovery to DPIE.

The operation of the NPW Act is administered by DPIE. With regard to the assessment of Aboriginal cultural heritage, DPIE has endorsed the following guidelines:

Due Diligence Code of Practice for the Protection of Aboriginal Objects in New South Wales (DECCW 2010c).

Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales (DEECW 2010b).

Aboriginal Cultural Heritage Consultation Requirements for Proponents (DECCW 2010a).

Guide to Investigating, Assessing and Reporting on Aboriginal Cultural Heritage in NSW (OEH 2011).

Aboriginal Land Rights Act 1983

The *Aboriginal Land Rights Act 1983* allows for the transfer of ownership to a Local Aboriginal Land Council of vacant Crown land not required for an essential purpose or for residential land. These lands are then managed and maintained by the Local Aboriginal Land Council.

Appendix 2. Aboriginal consultation (2019)

A2.1 Consultation Log

Pre-Notification

Agency	Contact	Date	Description	Extent contact
Pre-Notifications Sent Out				
City of Ryde Council	-	21.12.18	Requested details of any Aboriginal organisations or individuals who may be interested in the project.	Alan Williams
Metropolitan Local Aboriginal Land Council	Selina Timothy			
Greater Sydney Local Land Services	-			
NTSCorp	George Tonna			
Office of Environment and Heritage	Susan Harrison			
National Native Title Tribunal	-	21.12.18	Submitted register search request.	Alan Williams
Office of the Registrar, Aboriginal Land Rights Act 1983	-	21.12.18	Submitted register search request.	
Pre-Notification Responses				
National Native Title Tribunal		24.12.18	Advised the land was freehold, and Native Title did not apply	Alan Williams
Office of Environment and Heritage	Barry Gunther	21.12.18	Provide an overarching list of stakeholders for the Sydney Basin	Alan Williams
NTSCorp	Elizabeth Loane	14.1.19	Indicated that the Metropolitan LALC should be contacted	Alan Williams
City of Ryde	Michael Edwards	11.1.19	Provided two additional individuals who have undertaken works in the discipline, and may have pertinent information.	Alan Williams

Agency	Contact	Date	Description	Extent contact
Greater Sydney Local Land Services	Margaret Botterell	6.2.19	Advised that contact with OEH should be made in relation to this issue.	Alan Williams

Notification

Agency	Contact	Date	Description	Extent contact
Notifications Sent Out				
Northern District Times	-	15.1.19	Advertisement in the Northern District Times for expressions of interest.	Alan Williams
A1 Indigenous Services	Carolyn Hickey	14.1.19	E-mailed and/or posted project notification to this organisation.	Alan Williams
Amanda Hickey Cultural Services	Amanda Hickey	14.1.19	E-mailed and/or posted project notification to this organisation.	Alan Williams
B.W Consultants	Ralph Hampton; Nola Hampton	14.1.19	E-mailed and/or posted project notification to this organisation.	Alan Williams
Badu	Karia Lea Bona	14.1.19	E-mailed and/or posted project notification to this organisation.	Alan Williams
Barking Owl Aboriginal Corporation	Jody Kulakowski	14.1.19	E-mailed and/or posted project notification to this organisation.	Alan Williams
Biamanga	Seli Storer	14.1.19	E-mailed and/or posted project notification to this organisation.	Alan Williams

Agency	Contact	Date	Description	Extent contact
Bilinga	Simalene Carriage	14.1.19	E-mailed and/or posted project notification to this organisation.	Alan Williams
Bilinga Cultural Heritage Technical Services	Robert Brown	14.1.19	E-mailed and/or posted project notification to this organisation.	Alan Williams
Butucarbin Aboriginal Corporation	Jennifer Beale	14.1.19	E-mailed and/or posted project notification to this organisation.	Alan Williams
Callendulla	Corey Smith	14.1.19	E-mailed and/or posted project notification to this organisation.	Alan Williams
Darug Aboriginal Cultural Heritage Assessments	Gordon Morton	14.1.19	E-mailed and/or posted project notification to this organisation.	Alan Williams
Darug Boorooberongal Elders Aboriginal Corporation	Gordon Workman	14.1.19	E-mailed and/or posted project notification to this organisation.	Alan Williams
Darug Land Observations	Anna Workman	14.1.19	E-mailed and/or posted project notification to this organisation.	Alan Williams
Dharug	Andrew Bond	14.1.19	E-mailed and/or posted project notification to this organisation.	Alan Williams
Didge Ngunawal Clan	Lillie Carroll; Paul Boyd	14.1.19	E-mailed and/or posted project notification to this organisation.	Alan Williams
DJMD Consultancy	Darren Duncan	14.1.19	E-mailed and/or posted project notification to this organisation.	Alan Williams
Eric Keidge	Eric Keidge	14.1.19	E-mailed and/or posted project notification to this organisation.	Alan Williams
Ginninderra Aboriginal Corporation	Steven Johnson; Krystle Carroll	14.1.19	E-mailed and/or posted project notification to this organisation.	Alan Williams

Agency	Contact	Date	Description	Extent contact
Goobah Developments	Basil Smith	14.1.19	E-mailed and/or posted project notification to this organisation.	Alan Williams
Gulaga	Wendy Smith	14.1.19	E-mailed and/or posted project notification to this organisation.	Alan Williams
Gunyuu	Kylie Ann Bell	14.1.19	E-mailed and/or posted project notification to this organisation.	Alan Williams
Gunyuu Cultural Heritage Technical Services	Darlene Hoskins-McKenzie	14.1.19	E-mailed and/or posted project notification to this organisation.	Alan Williams
Jerringong	Joanne Anne Stewart	14.1.19	E-mailed and/or posted project notification to this organisation.	Alan Williams
Metropolitan Local Aboriginal Land Council	Nathan Moran	14.1.19	E-mailed and/or posted project notification to this organisation.	Alan Williams
Minnamunnung	Aaron Broad	14.1.19	E-mailed and/or posted project notification to this organisation.	Alan Williams
Munyunga	Kaya Dawn Bell	14.1.19	E-mailed and/or posted project notification to this organisation.	Alan Williams
Munyunga Cultural Heritage Technical Services	Suzannah McKenzie	14.1.19	E-mailed and/or posted project notification to this organisation.	Alan Williams
Murramarang	Roxanne Smith	14.1.19	E-mailed and/or posted project notification to this organisation.	Alan Williams
Murrumbul	Mark Henry	14.1.19	E-mailed and/or posted project notification to this organisation.	Alan Williams
Murrumbul Cultural Heritage Technical Services	Levi McKenzie-Kirkbright	14.1.19	E-mailed and/or posted project notification to this organisation.	Alan Williams

Agency	Contact	Date	Description	Extent contact
Nerrigundah	Newton Carriage	14.1.19	E-mailed and/or posted project notification to this organisation.	Alan Williams
Nundagurri	Newton Carriage	14.1.19	E-mailed and/or posted project notification to this organisation.	Alan Williams
Pemulwuy CHTS	Pemulwuy Johnson	14.1.19	E-mailed and/or posted project notification to this organisation.	Alan Williams
Thauaira	Shane Carriage	14.1.19	E-mailed and/or posted project notification to this organisation.	Alan Williams
Thoorga Nura	John Carriage	14.1.19	E-mailed and/or posted project notification to this organisation.	Alan Williams
Tocomwall	Scott Franks	14.1.19	E-mailed and/or posted project notification to this organisation.	Alan Williams
Wailwan Aboriginal Group	Philip Boney	14.1.19	E-mailed and/or posted project notification to this organisation.	Alan Williams
Walbunja	Hika Te Kowhal	14.1.19	E-mailed and/or posted project notification to this organisation.	Alan Williams
Walgalu	Ronald Stewart	14.1.19	E-mailed and/or posted project notification to this organisation.	Alan Williams
Wallung	Lee-Roy James Boota	14.1.19	E-mailed and/or posted project notification to this organisation.	Alan Williams
Wingikara	Hayley Bell	14.1.19	E-mailed and/or posted project notification to this organisation.	Alan Williams
Wingikara Cultural Heritage Technical Services	Wandai Kirkbright	14.1.19	E-mailed and/or posted project notification to this organisation.	Alan Williams

Agency	Contact	Date	Description	Extent contact
Yerramurra	Robert Parson	14.1.19	E-mailed and/or posted project notification to this organisation.	Alan Williams
Bennelong Putney Project	Adam Joseph	14.1.19	E-mailed and/or posted project notification to this organisation.	Alan Williams
Metropolitan LALC	Selina Timothy	14.1.19	E-mailed and/or posted project notification to this organisation.	Alan Williams
Registrations of Interest Received				
Didge Ngunawal Clan	Lilly Carroll; Paul Boyd	14.1.19	Registered an interest in the project	Alan Williams
A1 Indigenous Services	Carolyn Hickey	14.1.19	Registered an interest in the project	Alan Williams
Tocomwall	Scott Franks	14.1.19	Registered an interest in the project	Alan Williams
Amanda Hickey Cultural Services	Amanda Hickey	14.1.19	Registered an interest in the project	Alan Williams
Darug Boorooberongal Elders Aboriginal Corporation	Gordon Workman	14.1.19	Registered an interest in the project	Alan Williams
Wailwan Aboriginal Group	Phillip Boney	15.1.19	Registered an interest in the project	Alan Williams
Barking Owl Aboriginal Corporation	Jody Kulakowski	25.1.19	Registered an interest in the project	Alan Williams
Metropolitan LALC	Selina Timothy	22.1.19	Registered an interest in the project during a site inspection	Megan Brennand Sheppard
Darug Aboriginal Cultural Heritage Assessments	Celestine Everingham	08.02.19	Registered an interest in the project over the phone.	Alan Williams
OEH	Susan Harrison	4.3.19	Provided a list of registered stakeholders for the project	Alan Williams

Agency	Contact	Date	Description	Extent contact
Metropolitan LALC	Selina Timothy	4.3.19	Provided a list of registered stakeholders for the project	Alan Williams
Preliminary Activities				
Metropolitan LALC	Selina Timothy	22.1.19	Undertook a site inspection of the CCP to provide preliminary views on the site	Alan Williams
Metropolitan LALC	Selina Timothy	22.1.19	Selina emailed through a site visit report.	Megan Sheppard Brennand
Review of ACHMP				
All RAPs	-	8.4.19	Emailed registered parties to advise that we are writing the ACHMP and invite them to a meeting on Thursday 18 April or to provide comment on the report	Megan Sheppard Brennand
Didge Ngunawal Clan	Lilly Carroll; Paul Boyd	8.4.19	Lilly emailed to confirm their attendance at the meeting	Megan Sheppard Brennand
All RAPs	-	14.4.19	Distributed ACHMP for comment; and followed up on earlier comments in relation to the meeting	Alan Williams
Tocomwall, Barking Owl, Didge Ngunawal	-	18.4.19	Participated in a meeting to discuss ACHMP. Minutes were subsequently provided for review. Minutes included in the report provide details of the discussion.	Alan Williams
A1 Indigenous Services; Amanda Hickey Cultural Services; Darug Boorooberongal Elders Aboriginal Corporation; Wailwan Aboriginal Group;	-	18.4.19	Provided a summary of the meeting outcomes (for RAPs that were not present) and sought review of the report to be provided as written comment.	Alan Williams

Agency	Contact	Date	Description	Extent contact
Metropolitan LALC; Darug Aboriginal Cultural Heritage Assessments				
Didge Ngunawal Clan	Paul Boyd	18.4.19	Reviewed the minutes of the meeting and confirmed their accuracy	Alan Williams
Amanda Hickey Cultural Services	Amanda Hickey	22.4.19	Provided response indicating acceptance of the ACHMP when including the changes proposed in the meeting	Alan Williams
A1 Indigenous Services	Carolyn Hickey	22.4.19	Provided response indicating acceptance of the ACHMP when including the changes proposed in the meeting	Alan Williams
Barking Owl	Jody Kulakowski	22.4.19	Provided response indicating acceptance of the ACHMP when including the changes proposed in the meeting	Alan Williams
Darug Aboriginal Cultural Heritage Assessments	Celestine Everingham	24.4.19	Telephoned and indicated her support for the proposed approach, but that she disagreed with the 'tender selection process' being proposed; and would prefer the work to be assigned to only Darug Traditional Owners. AW advised that this would be incorporated as part of the selection process.	Alan Williams
All RAPs	-	29.4.19	Distributed tender process for the upcoming field investigations. Various responses received from the RAPs; and considered.	Alan Williams
All RAPS	-	3.5.19	Distributed the final ACHMP	Alan Williams
Wailwan Aboriginal Group	Phil Boney	3.5.19	Outlined the history of the ACHMP and the tender process to Phil	Alan Williams
Tocomwall, Didge Ngunawal, Amanda Hickey Cultural Services	-	16 and 22 May 19	Archaeological monitoring of exploratory pits by construction team.	Alistair Hobbs, Cameron Neal

Agency	Contact	Date	Description	Extent contact
All RAPS	-	30.5.19	Offered a site visit to all RAPS in accordance with the ACHMP. Also provided the most up to date ACHMP for their review and records.	Alan Williams
Tocomwall, Didge Ngunawal, Amanda Hickey Cultural Services	-	13.6. 19	Archaeological monitoring of exploratory pits by construction team.	Megan Sheppard Brennand, Alan Williams
All RAPS	-	8.7.19	Distributed the revised ACHMP for review and comment	Alan Williams
Campus wide ACHAR				
All RAPS	-	24.6.19	Emailed registered parties with the methodology for the Campus wide ACHAR and invited them to provide comment	Megan Sheppard Brennand
Wailwan Aboriginal Group	Phil Boney	25.6.19	Provided response indicating acceptance of the ACHAR methodology	Megan Sheppard Brennand
Didge Ngunawal	Lilly Carroll; Paul Boyd	25.6.19	Provided response indicating acceptance of the ACHAR methodology	Megan Sheppard Brennand
Amanda Hickey Cultural Services	Amanda Hickey	25.6.19	Provided response indicating acceptance of the ACHAR methodology	Megan Sheppard Brennand
Barking Owl	Jody Kulakowski	3.7.19	Provided response indicating acceptance of the ACHAR methodology	Alan Williams
Tocomwall, Didge Ngunawal, Amanda Hickey Cultural Services	Various	21.8.19- 22.8.19	Conducted campus-wide survey	Megan Sheppard Brennand

Agency	Contact	Date	Description	Extent contact
All RAPs	Various	4.12.19	Sent all RAPs draft ACHAR for review and comment by 1 January 2020	Megan Sheppard Brennan
All RAPs	Various	20.12.19	Sent all RAPs reminder email that ACHAR review and comment period ends on 1 January 2020	Megan Sheppard Brennan
All RAPs	Various	07.01.20	No comments were received from RAPs and ACHAR was finalised	Megan Sheppard Brennan
All RAPs	Various	07.01.20	Sent all RAPs a copy of the final ACHAR	Megan Sheppard Brennan

Site 1 Addendum

Agency	Contact	Date	Description	Extent Contact
All RAPs	Various	31.03.20	Sent all RAPs draft Site 1 Addendum for review and comment by 28 April 2020	Cameron Neal
All RAPs	Various	24.04.20	Sent all RAPs a reminder that Site 1 Addendum review period closes on April 28	Megan Sheppard Brennan
A1 Indigenous Services	Carolyn Hickey	03.05.20	Carolyn indicated her support for the findings and recommendations of the Site 1 Addendum	Megan Sheppard Brennan

Agency	Contact	Date	Description	Extent Contact
All RAPs	Various	04.05.20	Distributed final report to RAPs.	Cameron Neal

A2.2 Addendum review- feedback received

From: Cameron Neal
Sent: Monday, 4 May 2020 9:42 AM
To: Cameron Neal
Subject: FW: Macquarie University campus wide ACHAR Site 1 Addendum – draft report for review

Cameron Neal
Research Assistant
T 02 9555 4000
cneal@extent.com.au
extent.com.au

From: Carolyn .H <cazadirect@live.com>
Sent: Sunday, 3 May 2020 1:58 PM
To: Megan Sheppard Brennand <msbrennand@extent.com.au>
Subject: Re: Macquarie University campus wide ACHAR Site 1 Addendum – draft report for review



Contact: Carolyn Hickey

M: 0411 650057

E: Cazadirect@live.com

A: 10 Marie Pitt Place, Glenmore Park, NSW 2745

ACN: 639 868 876

Hi,

I have reviewed the document and support the Aboriginal Cultural Heritage Assessment Report for the Macquarie University campus.

Kind Regards
Carolyn Hickey

From: Megan Sheppard Brennand <msbrennand@extent.com.au>
Sent: Friday, 24 April 2020 2:46 PM
To: Cameron Neal <cneal@extent.com.au>; Caza X <cazadirect@live.com>; barkingowlcorp@gmail.com <barkingowlcorp@gmail.com>; Amanda Hickey <Amandahickey@live.com.au>; boorooberongal@outlook.com <boorooberongal@outlook.com>; lilly carroll <didgengunawalclan@yahoo.com.au>; Danny Franks <danny@toconwall.com.au>; Phillip Boney <Waarlan12@outlook.com>; metrolalc@metrolalc.org.au <metrolalc@metrolalc.org.au>
Subject: RE: Macquarie University campus wide ACHAR Site 1 Addendum – draft report for review

Hi All,

This is a reminder email that the review period for the Macquarie University campus wide ACHAR Site 1 Addendum draft report ends on **Tuesday 28th April**. Please send through any comments by then.

If you have any questions please feel free to get in touch. I hope you are all keeping safe and well.

Cheers,
Megan

Megan Sheppard Brennand
Heritage Advisor
T 02 9555 4000
msbrennand@extent.com.au
extent.com.au
Connect with us on:



EXTENT

HERITAGE ADVISORS
TO AUSTRALIA AND
THE ASIA PACIFIC

OPAL SPONSORS OF...



ICOMOS GA 2020

1-10 OCTOBER 2020 • SYDNEY, AUSTRALIA • #ICOMOSGA2020

SHARED CULTURES, SHARED HERITAGE, SHARED RESPONSIBILITY

(The image of the Sydney Opera House is used under licence from the Sydney Opera House Trust)

From: Cameron Neal <cneal@extent.com.au>

Sent: Tuesday, 31 March 2020 1:46 PM

To: Caza X <cazadirect@live.com>; barkingowlcorp@gmail.com; Amanda Hickey <Amandahickey@live.com.au>; boorooberongal@outlook.com; lilly carroll <didgengunawalclan@yahoo.com.au>; Danny Franks <danny@toocomwall.com.au>; Phillip Boney <Waarlan12@outlook.com>; metrolalc@metrolalc.org.au

Cc: Megan Sheppard Brennand <msbrennand@extent.com.au>

Subject: RE: Macquarie University campus wide ACHAR Site 1 Addendum – draft report for review

Hi All,

Apologies – the review period ends on **April 28**.

Cheers,
Cameron

Cameron Neal
Research Assistant
T 02 9555 4000
cneal@extent.com.au
extent.com.au

From: Cameron Neal <cneal@extent.com.au>

Sent: Tuesday, 31 March 2020 1:36 PM

To: Caza X <cazadirect@live.com>; barkingowlcorp@gmail.com; Amanda Hickey <Amandahickey@live.com.au>; boorooberongal@outlook.com; lilly carroll <didgengunawalclan@yahoo.com.au>; Danny Franks <danny@toocomwall.com.au>; Phillip Boney <Waarlan12@outlook.com>; metrolalc@metrolalc.org.au

Cc: Megan Sheppard Brennand <msbrennand@extent.com.au>

Subject: Macquarie University campus wide ACHAR Site 1 Addendum – draft report for review

Dear All,

Thank you for your ongoing involvement in the Aboriginal heritage assessment for the proposed redevelopment of Macquarie University. This email is to provide you with a copy of the Macquarie University Campus Wide ACHAR Addendum Report for Site 1 (8-12 University Ave), for comment and review. As you will be aware, an ACHMP was developed to address works in the Central Courtyard Precinct (SSD_8755) in June 2019. This ACHMP recommended a campus-wide ACHAR be undertaken to assess the archaeological potential of the entirety of the university campus in advance of the proposed development. This ACHAR, in turn, recommended further assessment when specific development designs were finalised.

Six separate development sites were highlighted in the campus wide ACHAR, and development designs have been finalised for Site 1 (8-12 University Ave). This addendum report addresses how this development will impact the archaeological potential of the study area. A download link to the Site 1 Addendum is also provided at the bottom of this email, so that you may read and review the document. This download link also contains the original ACHAR for your reference.

The Macquarie University Campus ACHAR involved desktop assessment, site survey and Aboriginal community consultation. The ACHAR was developed to address the campus as a whole, and recommended further assessment be undertaken when specific development designs are finalised. Based on regional archaeological models, the presence of Aboriginal archaeological remains within the university campus are dependent on proximity to water, elevation and the presence of sandstone overhangs and flat sandstone outcrops. The main evidence for Aboriginal occupation within the campus is therefore expected to be in the form of painted and engraved art sites, grinding grooves, rock shelters with occupation deposit and art, artefact scatters and isolated finds. No specific ethnographic information relating to the university campus was identified during the course of community consultation. Likewise, no specific areas of cultural value have been identified within the study area. Following comments made by RAPs, however, the importance of the Lane Cove River and the Field of Mars Common have been taken into account.

The Site 1 (8-12 University Avenue - comprised of Lot 191 DP 1157041) addendum report identified a high level of historical disturbance within the study area from the 1960s until the present day, which is considered to have greatly impacted the archaeological potential within the study area. No Aboriginal objects or sites were identified during survey, and no specific ethnographic information pertaining to Site 1 was identified during consultation.

The Site 1 Addendum, therefore, concludes that the study area contains very low to nil archaeological potential. As such, we have provided recommendations stating that proposed development may proceed within Site 1 according to an Unexpected Finds Procedure outlined within the document.

Please find the link below to the draft Addendum report for your review and input. The finalised ACHAR is included in this download link for your reference. If you wish to provide input and/or comment, please can you do so by **21 April 2020**. Once comments have been received, the document will be modified and finalised.

Download link:

<https://extenheritage.wetransfer.com/downloads/0474a4bafd458822c630f510ec81855220200331015501/7ef42e51d1d6a1e07390105ea954626820200331015501/600706>

Cheers,

Cameron

Cameron Neal
Research Assistant
T 02 9555 4000
cneal@extent.com.au
extent.com.au
Connect with us on:
  

EXTENT

HERITAGE ADVISORS
TO AUSTRALIA AND
THE ASIA PACIFIC

OPAL SPONSORS OF...



ICOMOS
GA 2020

1-10 OCTOBER 2020 • SYDNEY, AUSTRALIA • #ICOMOSGA2020

SHARED CULTURES, SHARED HERITAGE, SHARED RESPONSIBILITY

(The image of the Sydney Opera House is used under licence from the Sydney Opera House Trust)