Royal Prince Alfred Hospital, Camperdown: Archaeological Report

FINAL REPORT

Prepared for TSA Management on behalf of Health Infrastructure

1 November 2022

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Document information

Report to:	TSA Management on behalf of Health Infrastructure
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Biosis project no.:	35565
File name:	35565.RPA.Hospital.AR.FIN01.20221101
Citation:	Biosis 2022. Royal Prince Alfred Hospital, Camperdown: Archaeological Report. Report for TSA Management on behalf of Health Infrastructure. Lucas. M, Vella. A. Biosis Pty Ltd. Sydney, NSW. Project no 35565
LGA:	Sydney

Document control

Version	Internal reviewer	Date issued
Draft 01	Maggie Butcher	02/03/2022
Draft 02	Claire Nunez	18/08/2022
Final 01	Claire Nunez	04/10/2022

Acknowledgements

Biosis gratefully acknowledges the contributions of the following people and organisations in preparing this report:

- Sydney Local Health District: George Long, Karinya Bellear, Kristina Zarkos, Katherine Bennett and Samar Zakaria
- Health Infrastructure: Michael Smytheman and Nicole Glenane.
- TSA Management: Alison Suwal, Taya Kirris, Tim McNair, Ashleigh Hoffman, Danielle Gardner.
- Registered Aboriginal Parties.

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Glossary

ACHA	Aboriginal Cultural Heritage Assessment
AHIMS	Aboriginal Heritage Information Management System
AHO	Aboriginal Heritage Office
AR	Archaeological Report
Biosis	Biosis Pty Ltd
CBD	Central Business District
Consultation requirements	*Aboriginal Cultural Heritage Consultation Requirements for Proponents 2010*
DECCW	Department of Environment, Climate Change and Water (now Heritage NSW)
DP	Deposited Plan
EP&A Act	*Environmental Planning and Assessment Act 1979*
GPS	Global Positioning System
GSV	Ground Surface Visibility
Heritage Act	*Heritage Act 1977*
Heritage NSW	Heritage NSW, Department of Premier and Cabinet
HLS	Helicopter Landing Site
ICOMOS	International Council on Monuments and Sites
LALC	Local Aboriginal Land Council
LEP	Local Environmental Plan
LGA	Local Government Area
MGA	Map Grid of Australia
NPW Act	*National Parks and Wildlife Act 1974*
NPWS	National Parks and Wildlife Service
NSW	New South Wales
NTSCORP	Native Title Services Corporation
PAD	Potential Archaeological Deposit
RAP	Registered Aboriginal Party
RPA	Royal Prince Alfred
SEARs	Secretary Environmental Assessment Requirements
SEPP	State Environmental Planning Policy
SLHD	Sydney Local Health District
SSD	State Significant Development

Study area	Royal Prince Alfred Hospital, Camperdown East Campus: • Lot 1000 DP 1159799 (12 Missenden Road, Camperdown, NSW 2050) West Campus: • Lot 11 DP 809663 (114 Church Street, Camperdown, NSW 2050) • Lot 101 DP 1179349 (68-81 Missenden Road, Camperdown, NSW 2050) Off-site works: • University of Sydney land, known as Lot 1 DP 1171804 (3 Parramatta Road, Camperdown, 2050) Lot 1001 DP 1159799 (12A Missenden Road, Camperdown, 2050).
the Code	*Code of Practice for Archaeological Investigation of Aboriginal Objects in NSW*

Summary

Biosis Pty Ltd (Biosis) was commissioned by TSA Management on behalf of Health Infrastructure to undertake an Aboriginal Cultural Heritage Assessment (ACHA) for the proposed redevelopment of the Royal Prince Alfred (RPA) Hospital, Camperdown, New South Wales (NSW) (the study area). This Archaeological Report (AR) documents the findings of the archaeological investigations conducted as part of the ACHA. As required under Section 2.3 of The *Code of Practice for Archaeological Investigation of Aboriginal Objects in NSW* (DECCW 2010a) (the Code), the AR provides evidence about the material traces of Aboriginal land use to support the conclusions and management recommendations in the ACHA.

The study area is private property located within the suburb of Camperdown approximately 2.8 kilometres south-west of the Sydney central business district (CBD). There are 77 Aboriginal cultural heritage sites registered with the Aboriginal Heritage Information Management System (AHIMS) register in the vicinity of the study area. None of these sites are located within the study area.

The project will be assessed as a State Significant Development (SSD) under Part 4 of the *Environmental Planning and Assessment Act 1979* (EP&A Act) to determine if the proposed development is likely to have a significant effect on the environment, including Aboriginal cultural heritage. Secretary Environmental Assessment Requirements (SEARs) have requested that an ACHA is prepared for the project.

The Aboriginal community was consulted regarding the heritage management of the project throughout its lifespan. Consultation has been undertaken as per the process outlined in the Department of Environment Climate Change and Water document (DECCW) document, *Aboriginal Cultural Heritage Consultation Requirements for Proponents 2010* (DECCW 2010b) (consultation requirements).

An archaeological field investigation of the study area was undertaken on 20 September 2021 by Anthea Vella (Biosis, Consultant Archaeologist); Rowena Welsh-Jarrett, Cultural Sites Officer from Metropolitan Local Aboriginal Land Council (LALC); and Kristina Zarkos, George Long, and Karinya Bellear from Sydney Local Health District (SLHD). An additional archaeological field investigation was undertaken on 12 August 2022 by Anthea Vella, Katherine Bennett and Samar Zakaria (SLHD) for the additional western campus and extension of the eastern campus.

No previously unrecorded Aboriginal cultural heritage sites were identified during either field investigation, and no areas of (archaeological) sensitivity were identified. Due to the high levels of disturbance identified there is low potential for Aboriginal sites to be present within the study area.

Strategies have been developed based on the archaeological significance of cultural heritage relevant to the study area. The strategies also take into consideration:

- Predicted impacts to Aboriginal cultural heritage.
- The planning approvals framework.
- Current best conservation practice, widely considered to include:
  - The ethos of the Australia International Council on Monuments and Sites (ICOMOS) Burra Charter.
  - the Code.

The recommendations that resulted from the consultation process are provided below.

Management recommendations

Prior to any development impacts occurring within the study area, the following is recommended:

Recommendation 1: No further archaeological assessment is required

No further archaeological work is required in the study area due to the entire study area assessed as having low archaeological potential. This recommendation is conditional upon Recommendation 2 to 8.

Recommendation 2: Continued consultation with Metropolitan LALC

Consultation with Metropolitan LALC should be continued by the RPA Project Team. Metropolitan LALC have requested that a smoking ceremony is completed prior to ground disturbing works and that a cultural sites officer is present during ground disturbing works. The RPA Project Team are to consult with Metropolitan LALC to arrange this.

Recommendation 3: Continued consultation with the registered Aboriginal stakeholders

As per the *Aboriginal Cultural Heritage Consultation Requirements for Proponents 2010* (DECCW 2010b), it is recommended that the proponent provides a copy of this report to the Aboriginal stakeholders and considers all comments received. The proponent should continue to inform these groups about the management of Aboriginal cultural heritage sites within the study area throughout the life of the project.

Recommendation 4: Interpretation plan

Consultation with Kamilaroi Yankuntjatjara Working Group has also recommended that a cultural interpretation plan be implemented for the project. Interpretation can be achieved through native landscaping, Aboriginal art, digital displays, signage, edible and medicinal gardens, and apps educating about the history and use of the land by Aboriginal people. This may be incorporated into the Public Art Strategy and the Connecting with Country Strategy. The RPA Project Team are to consult with the registered Aboriginal parties (RAPs) for this.

Recommendation 5: Heritage induction

Heritage inductions for all site workers and contractors should be undertaken in order to prevent any unintentional harm to Aboriginal sites located within the study area and its surrounds. The heritage induction should include the following items:

- Relevant legislation.
- Location of identified Aboriginal heritage sites, areas of archaeological potential, and areas of archaeological sensitivity.
- Basic identification skills for Aboriginal and non-Aboriginal artefacts and human remains.
- Procedure to follow in the event of an unexpected heritage item find during construction works.
- Procedure to follow in the event of discovery of human remains during construction works.
- Penalties and non-compliance.

Recommendation 6: Discovery of unanticipated Aboriginal objects

All Aboriginal objects and Places are protected under the *National Parks and Wildlife Act 1974* (NPW Act). It is an offence to disturb an Aboriginal site without a consent permit issued by Heritage NSW, Department of Premier and Cabinet (Heritage NSW). Should any unanticipated Aboriginal objects be encountered during

works associated with this proposal, works must cease in the vicinity and the find should not be moved until assessed by a qualified archaeologist. If the find is determined to be an Aboriginal object the archaeologist will provide further recommendations. These may include notifying Heritage NSW and Aboriginal stakeholders.

Recommendation 7: Discovery of unanticipated historical relics

Relics are historical archaeological resources of local or State significance and are protected in NSW under the *Heritage Act 1977* (Heritage Act). Relics cannot be disturbed except with a permit or exception notification. Should unanticipated relics be discovered during the course of the project, work in the vicinity must cease and an archaeologist contacted to make a preliminary assessment of the find. The Heritage Council will require notification if the find is assessed as a relic.

Recommendation 8: Discovery of human remains

If any suspected human remains are discovered during any activity you must:

1. Immediately cease all work at that location and not further move or disturb the remains.
2. Notify the NSW Police and Heritage NSW Environmental Line on 131 555 as soon as practicable and provide details of the remains and their location.
3. Not recommence work at that location unless authorised in writing by Heritage NSW.

1 Introduction

1.1 Project background

Biosis was commissioned by Health Infrastructure to undertake an ACHA for the proposed redevelopment of the RPA Hospital (Lot 1000 DP 1159799; Lot 11 DP 809663; Lot 101 DP 1179349); with off-site works located on University of Sydney land (Lot 1 DP 1171804 and Lot 1001 DP 1159799), Camperdown, NSW (Figure 1). This AR documents the findings of the archaeological investigations conducted as part of the ACHA. The AR provides evidence about the material traces of Aboriginal land use to support the conclusions and management recommendations in the ACHA.

The project will be assessed as a SSD under Part 4 of the EP&A Act to help them determine if the proposed development is likely to have a significant effect on the environment, including Aboriginal cultural heritage. As required under the SEARs, this report details the investigation, consultation and assessment of Aboriginal cultural heritage undertaken for the study area.

This investigation has been carried out under Part 6 of the NPW Act. It has been undertaken in accordance with the Code. The Code has been developed to support the process of investigating and assessing Aboriginal cultural heritage by specifying the minimum standards for archaeological investigation undertaken in NSW under the NPW Act. The archaeological investigation must be undertaken in accordance with the requirements of the Code.

The EP&A Act includes provisions for local government authorities to consider environmental impacts in land-use planning and decision making. Each Local Government Area (LGA) is required to create and maintain a Local Environmental Plan (LEP) that includes Aboriginal and historical heritage items. Local Councils identify items that are of significance within their LGA, and these items are listed on heritage schedules in the local LEP and are protected under the EP&A Act and the Heritage Act.

In March 2019, the NSW Government announced a significant $750 million investment for the redevelopment and refurbishment of the RPA Hospital campus. The Project will include the development of clinical and non-clinical services infrastructure to expand, integrate, transform and optimise current capacity within the hospital to provide contemporary patient centred care, including expanded and enhanced facilities.

The last major redevelopment of RPA Hospital was undertaken from 1998 to 2004 projected to 2006 service needs. Since then, significant growth has been experienced in the volume and complexity of patients, requiring significant investment to address projected shortfalls in capacity and to update existing services to align with leading models of care.

The redevelopment of RPA Hospital has been the top priority for the SLHD since 2017 through the Asset Strategic Planning process, to achieve NSW Health strategic direction to develop a future focused, adaptive, resilient and sustainable health system.

1.2 Response to project SEARs requirements

This ACHA has been prepared in response to the SEARs requirements (Table 1). This ACHA identifies, describes and documents Aboriginal cultural heritage values that exist within the study area in accordance with the Code, consultation requirements and the *Guide to Investigating, Assessing and Reporting on Aboriginal Cultural Heritage in NSW* (OEH 2011). This ACHA details the investigation, consultation and assessment of Aboriginal cultural heritage undertaken for the study area.

Table 1 Response to project SEARs requirements

SEAR No.	Heading	Issue and Assessment requirements	Documentation	Section of report responding to SEARs
19	Aboriginal Cultural Heritage	Provide an Aboriginal Cultural Heritage Assessment Report prepared in accordance with relevant guidelines, identifying, describing and assessing any impacts for any Aboriginal cultural heritage values on the site.	Aboriginal Cultural Heritage Assessment Report	Refer to Sections 3, 4, 5, 6 of this report and refer to the ACHA.

1.3 Study area

The RPA Hospital campus is located in Sydney's inner west suburb of Camperdown, within the City of Sydney Local Government Area (Figure 1 and Figure 2). The campus is situated between the University of Sydney to the east and the residential area of Camperdown to the west. A north-south arterial road (Missenden Road) divides the campus into two distinct portions, known as the East and West Campuses. The northern boundary of the campus is defined by the Queen Elizabeth II Rehabilitation Centre and the southern extent of the campus is defined by Carillon Avenue.

The works are proposed to both the East and West Campuses, as well as some off-site works occurring within the University of Sydney.

The site comprises the following land titles:

- East campus:
  - Lot 1000 DP 1159799 (12 Missenden Road, Camperdown, NSW 2050).
- West campus:
  - Lot 11 DP 809663 (114 Church Street, Camperdown, NSW 2050).
  - Lot 101 DP 1179349 (68-81 Missenden Road, Camperdown, NSW 2050).

Off-site works are proposed on University of Sydney land, known as Lot 1 DP 1171804 (3 Parramatta Road, Camperdown, 2050) and Lot 1001 DP 1159799 (12A Missenden Road, Camperdown, 2050).

1.4 Planning approvals

The proposed development will be assessed against Part 4 of the EP&A Act. Other relevant legislation and planning instruments that will inform this assessment include:

- Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act).
- NPW Act.
- NSW *National Parks and Wildlife Amendment Act 2010.*
- *Infrastructure State Environmental Planning Policy 2007* (SEPP).
- *Sydney Local Environmental Plan 2012* (LEP).

1.5 Objectives of the investigation

The objectives of the investigation can be summarised as follows:

- To identify and consult with any registered Aboriginal stakeholders and the Metropolitan LALC.
- To conduct additional background research in order to recognise any identifiable trends in site distribution and location.
- To search statutory and non-statutory registers and planning instruments to identify listed Aboriginal cultural heritage sites within the study area.
- To highlight environmental information considered relevant to past Aboriginal occupation of the locality and associated land use and the identification and integrity/preservation of Aboriginal sites.
- To summarise past Aboriginal occupation in the locality of the study area using ethnohistory and the archaeological record.
- To formulate a model to broadly predict the type and character of Aboriginal sites likely to exist throughout the study area, their location, frequency and integrity.
- To conduct a field survey of the study area to locate unrecorded or previously recorded Aboriginal sites and to further assess the archaeological potential of the study area.
- To assess the significance of any known Aboriginal sites in consultation with the Aboriginal community.
- To identify the impacts of the proposed development on any known or potential Aboriginal sites within the study area.
- To recommend strategies for the management of Aboriginal cultural heritage within the context of the proposed development.

1.6 Investigators and contributors

The roles, previous experience and qualifications of the Biosis project team involved in the preparation of this archaeological report are described below in Table 2.

Table 2 Investigators and contributors

Name and qualifications	Experience summary	Project role
Taryn Gooley BASc (Hons)	Taryn has over 10 years' experience in archaeological consulting and has successfully completed numerous projects throughout NSW. Taryn has extensive experience in undertaking Aboriginal archaeological assessments, archaeological surveys, and large scale archaeological testing and salvage excavation programs across NSW. Taryn has participated in and managed a number of long term archaeological programs under Part 4 and Part 5 of the EP&A Act.	• Quality assurance. • Technical advice.
Anthea Vella B.Arch M.AHM	Anthea is a Project Archaeologist with over four years' experience. Anthea has experience in conducting Aboriginal and historical heritage assessments, surveys and archaeological test excavations for a variety of projects throughout NSW. Anthea possesses specialist skills in	• Project management • Field investigation. • Reporting.

Name and qualifications	Experience summary	Project role
	analysing Ground Penetrating Radar data. Anthea also possesses skills in desktop research, project administration, and reporting.	
Madeleine Lucas BSc/BA (Hons)	Madeleine is and Archaeologist with two years' experience. Madeleine possesses skills in zooarchaeological analysis and is experienced in the identification of faunal remains and taphonomic analysis. Since joining Biosis, Madeleine has further developed her skills in historical and Aboriginal background research, data entry, and report production. Madeleine is also experienced in undertaking Aboriginal community consultation.	• Background research.
Caitlin McManus BA Grad Cert MA Grad Cert Project Management	Caitlin completed her Bachelor of Arts, majoring in Archaeology and Anthropology, her Graduate Certificate in Maritime Archaeology in 2018, and joined Biosis in 2019. Since employment at Biosis, Catlin has participated in a variety of Aboriginal and historic projects, developing her skills in archaeological surveys, test excavations, salvage excavations, archival recording, historical excavations, and background research.	• Aboriginal community consultation.

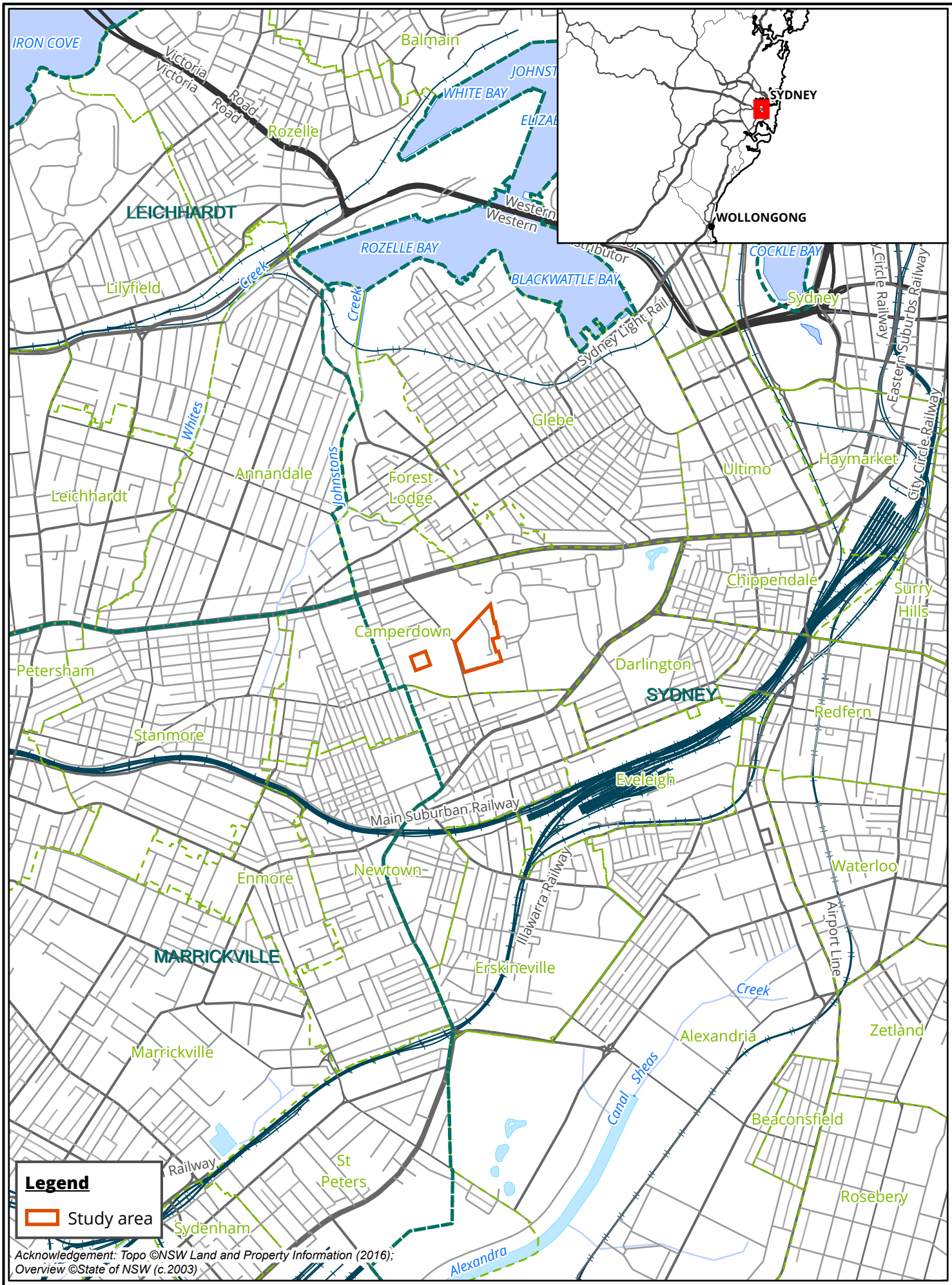

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Figure 1 Location of the study area

Matter: 35565
Date: 26 August 2022,
Drawn by: AM, Checked by: AV, Last edited by: amackegard
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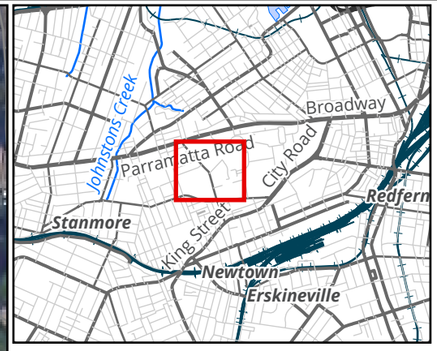
35565_RPAH_ACHA_ADDA, Layout: 35565_ADDA_F1_Locality

0 200 400 600 800 1,000
Metres
Scale 1:25,000@ A4, GDA 1994 MGA Zone 56

N



Legend

- Study area
- Lot

Figure 2 Study area detail

0 10 20 30 40 50

Metres

Scale: 1:2,000@ A3

Coordinate System:
GDA 1994 MGA Zone 56

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Matter: 35565, Date: 26 August 2022,
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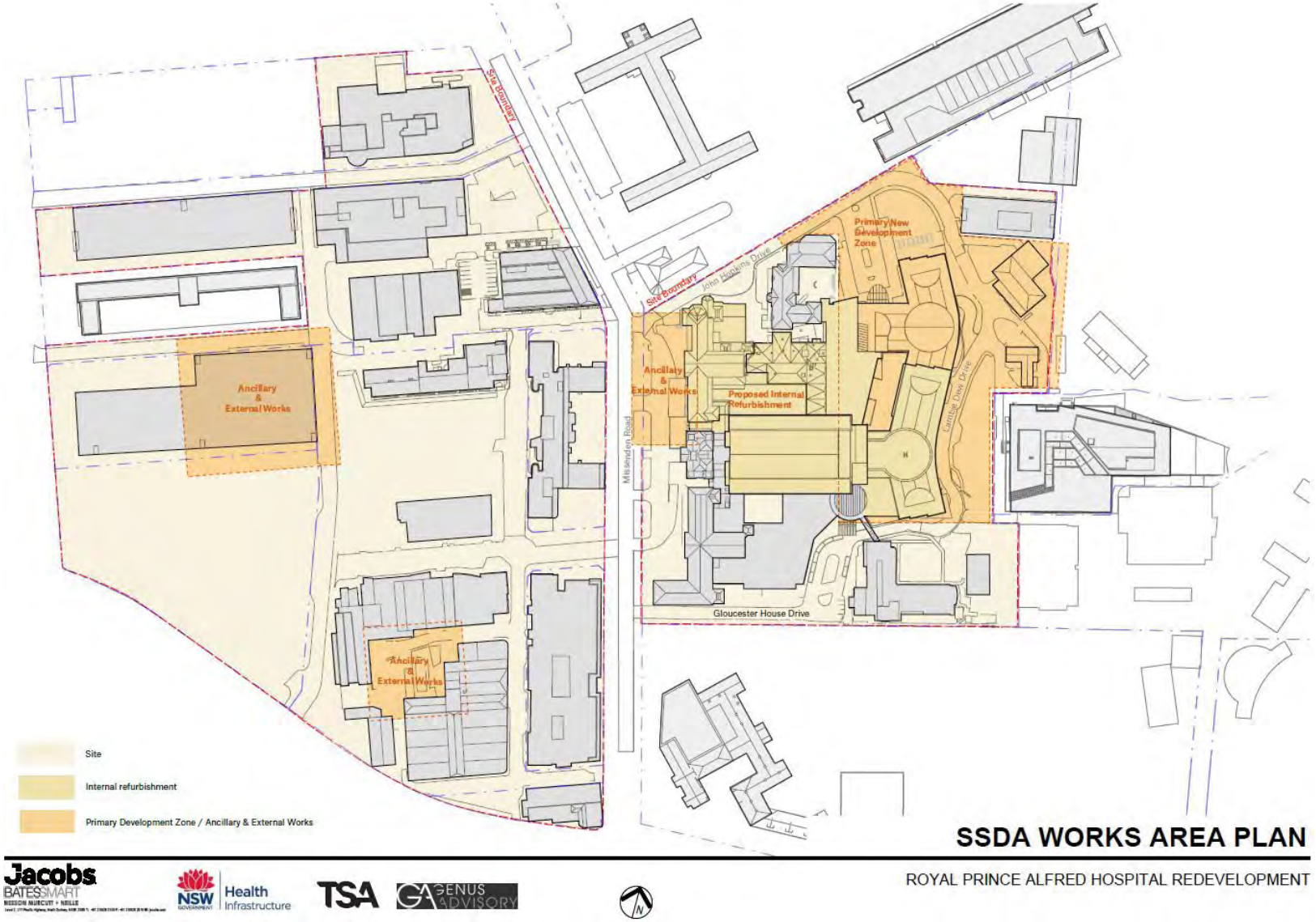
Location: P:\35500s\35565\Mapping\
35565_RPAH_ACHA_ADDA, Layout: 35565_ADDA_F2_StudyArea

2 Proposed development

Health Infrastructure have developed a Master Plan and Concept Design for the proposed redevelopment (Figure 3). Development consent is sought for:

- Alterations and additions to the RPA Hospital East Campus, comprising:
  - Eastern wing: A new fifteen (15) storey building with clinical space for Inpatient Units (IPU's), Medical Imaging, Delivery, Neonatal and Women's Health Services, connecting to the existing hospital building and a rooftop helicopter landing site (HLS);
  - Eastern extension: A three (3) storey extension to the east the existing clinical services building to accommodate new operating theatres and associated plant areas;
  - Northern expansion: A two (2) storey vertical expansion over RPA Building 89 accommodating a new Intensive Care Unit and connected with the Eastern Wing;
  - Internal refurbishment: Major internal refurbishment to existing services including Emergency Department and Imaging, circulation and support spaces;
  - Enhanced Northern Entry/ Arrival including improved pedestrian access and public amenity;
  - Demolition of affected buildings, structures and trees;
  - Changes to internal road alignments and paving treatments; and
  - Landscaping works, including tree removal, tree pruning, and compensatory tree planting including off-site on University of Sydney land.
- Ancillary works to the RPA Hospital West Campus, comprising:
  - Temporary HLS above existing multi storey carpark.
  - Re-routing of existing services.
  - Associated tree removal along Grose Street.

Figure 3 Proposed development



3 Desktop assessment

The desktop assessment involves researching and reviewing existing archaeological studies and reports relevant to the study area and surrounding region. This information is combined to develop an Aboriginal site prediction model for the study area, and to identify known Aboriginal sites and/or places recorded in the study area. This desktop assessment has been prepared in accordance with requirements 1 to 4 of the Code.

3.1 Landscape context

It is important to consider the local environment of the study area any heritage assessment. The local environmental characteristics can influence human occupation, associated land use and consequently the distribution and character of cultural material. Environmental characteristics and geomorphological processes can affect the preservation of cultural heritage materials to varying degrees or even destroy them completely. Lastly landscape features can contribute to the cultural significance that places can have for people.

3.1.1 Geology, topography and hydrology

The study area is located on the southern side of Sydney Harbour. It is underlain by the Ashfield Shale formation which is part of the Wianamatta group geological unit (Figure 4). Ashfield Shale contains dark-grey to black claystone-siltstone and fine sandstone-siltstone laminate. Artefact sites are common across the Ashfield Shale formation (Bannerman & Hazelton 1990, p.3). The presence of underlying shale deposits suggests that sites commonly found within sandstone formations, such as grinding grooves and rock shelters/rock art, are less likely to be present.

The surrounding landform consists of gently undulating rises, broad rounded crests and gently inclined slopes with a gradient of less than 5%. Local relief within the Blacktown soil landscape is up to 30 metres and rocky outcropping is absent (Bannerman & Hazelton 1990, p.28). Topography within the study area includes a gradual slope towards the east of the study area, and within the western portion a slope to the west (Figure 5).

Stream order is recognised as a factor which assists the development of predictive modelling in Sydney Basin Aboriginal archaeology, and has seen extensive use in predictive modelling for the Sydney region, most notably by Jo McDonald Cultural Heritage management (JMCHM 2000, JMCHM 2005a, JMCHM 2005b, JMCHM 2008). These predictive models have a tendency to favour higher order streams as the locations of campsites and therefore archaeological remains. Larger water sources would have been more likely to provide a stable source of water and by extension other resources which would have been used by Aboriginal groups.

The stream order system used for this assessment was originally developed by Strahler (1952). It functions by adding two streams of equal order at their confluence to form a higher order stream, as shown in Photo 1. As stream order increases, so does the likelihood that the stream would be a perennial source of water.

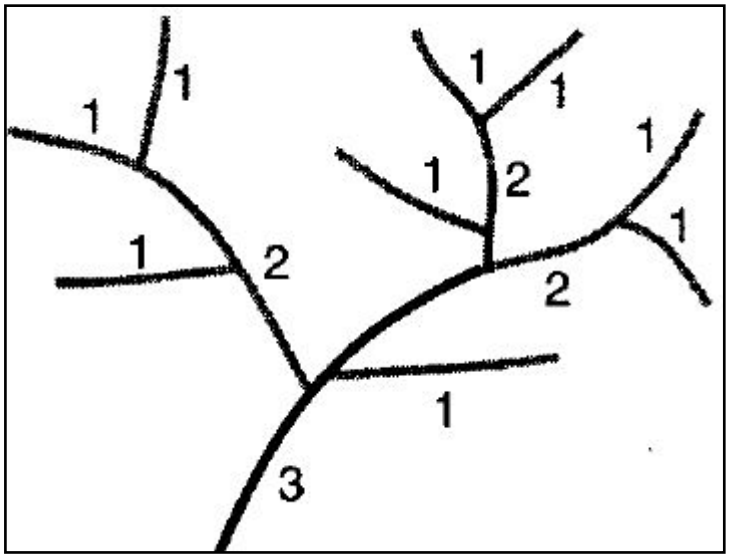


Photo 1 Diagram showing Strahler stream order (Ritter et al. 1995, pp. 151).

No watercourses are present within the study area (Figure 5). The closest water course is Orphan School Creek, which is a first order non perennial water course and tributary of Johnstons Creek, a second order non perennial water course. Both watercourses feed Roselle Bay, a permanent waterbody of Sydney Harbour located approximately 1.7 kilometres north of the study area. Due to the presence of significant modern development within Camperdown and surrounding areas there is potential that further watercourses existed in the area that no longer remain. For example, the Blackwattle Creek swamplands was previously located within the surrounding area prior to historical land reclamation (JMCHM 2007, Biosis 2012).

3.1.2 Soil landscapes

Soil landscapes have distinct morphological and topological characteristics that result in specific archaeological potential. They are defined by a combination of soils, topography, vegetation and weathering conditions. Soil landscapes are essentially terrain units that provide a useful way to summarise archaeological potential and exposure.

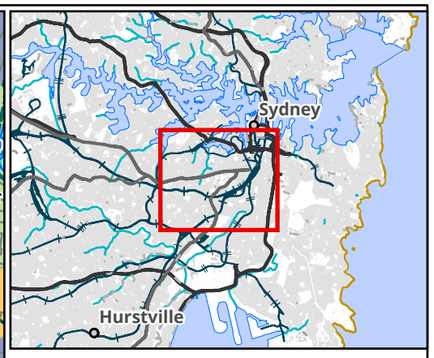
The Blacktown soil landscape is present within the study area and characterised as a residual soil landscape (Figure 6). Dominant soils consist of shallow to moderately deep (<100 centimetres) red and brown podzols on crests and in well drained topographies, and deep (150-300 centimetres) yellow podzolic soils and soloths on lower slopes and drainage channels. The soils can be hard setting with moderate erodability (Bannerman & Hazelton 1990, p.28). A description of the soil types within the Blacktown soil landscape are provided in Table 3.

Table 3 Blacktown soil landscape characteristics (Bannerman & Hazelton 1990, p.29)

Soil material	Description
Blacktown 1 (*bt1*) - Friable brownish-black loam	Friable brown loam to clay loam with a moderately pedal subangular block structure and rough-faced porous fabric ped fabric. This soil material generally occurs as a topsoil (A horizon) up to 30 cm in thickness. Peds are well defined and range from 2-20 mm. Rounded iron indurated fine gravel-sized shale fragments and charcoal fragments sometimes occur as inclusions. Soil colour is brownish black (10YR 2/2), and can also range from dark reddish brown (5YR 3/2) to dark yellowish brown (10yr 3/4). Soil varies from moderately acidic to neutral.
Blacktown 2 (*bt2*) - Hardsetting	Hardsetting brown clay loam to silty clay loam, with an apedal massive to weakly

Soil material	Description
brown clay loam	pedal structure and porous earthy fabric. Occurs as an A2 Horizon deposit and occasionally a nA1 horizon topsoil. Typically between 10 to 30 cm in thickness. Peds range from 20-50 mm. Platy, iron indurated gravel sized shale fragments are common, with rare inclusions of charcoal and roots. Soil colour is predominately dark brown (7.5YR 4/3), but can range from dark reddish brown (2.5YR 3/3) to dark brown (10YR 3/3). Soil acidity varies from moderately acidic to slightly acidic.
Blacktown 3 (*bt3*) - Strongly pedal, mottled brown light clay	Brown light to medium clay with strong pedal polyhedral or subangular-blocky structure and smooth faced dense ped fabric that occurs as a subsoil (B horizon). The soil texture increases with depth and peds range from 5-20 mm. Fine to coarse gravel sized shale fragments are a common inclusion and often occur within stratified bands, with roots and charcoal rarely being present. Soil colour is brown (7.5YR 4/6), and can range from reddish brown (2.5YR 2/6) to brown (10YR 4/6). The pH of this soil material varies from strongly acidic to slightly acidic.
Blacktown 4 (*bt4*) - Light grey plastic mottled clay	Plastic light grey silty clay to heavy clay with moderately pedal polyhedral to subangular blocky structure, and smooth-faced dense ped fabric, that occurs as a deep subsoil deposit overlying shale bedrock (B^3 or C Horizon). Peds range between 2-20 mm. Inclusion consists of weathered ironstone concretions and rock fragments. Gravel sized shale fragments and roots occur occasionally, but charcoal is rare within this soil deposit. Red, yellow and brown mottles are present and soil colour is usually light grey (10YR 7/1) or sometimes greyish yellow (2.5YR 6/2). Soil acidity ranges from strongly acidic to moderately acidic.

Residual soils form from the in-situ weathering of bedrock material, resulting in slow accumulation of soils over long periods of time. Due to their age and slow accumulation, residual soil landscapes have reasonable potential to preserve archaeological deposits in an open context, such as stone artefacts derived from occupation sites. However, this slow accumulation when combined with extensive land clearing and land use (usually associated with pastoral and civic development) will result in an increased likelihood that soils will have been disturbed. This results in poor preservation of archaeological material in these locations.



Legend

Study area

Geological Units

- QH_bd,Coastal deposits - dune facies
- QH_ebw,Estuarine basin and bay (subaqueous)
- QH_ei,Estuarine interbarrier creek deposits
- QH_hr,Anthropogenic deposits - reclaimed estuarine areas
- Q_av,Alluvial valley deposits
- Q_avf,Alluvial fan deposits
- Q_h,Anthropogenic deposits
- Q_hw,Anthropogenic stored water, pondage, reservoirs, canals
- Tuth,Hawkesbury Sandstone
- Twia,Ashfield Shale

Figure 4 Geological units in the vicinity of the study area

0 160 320 480 640 800

Metres

Scale: 1:20,000@ A3

Coordinate System:
GDA 1994 MGA Zone 56

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Matter: 35565, Date: 26 August 2022,
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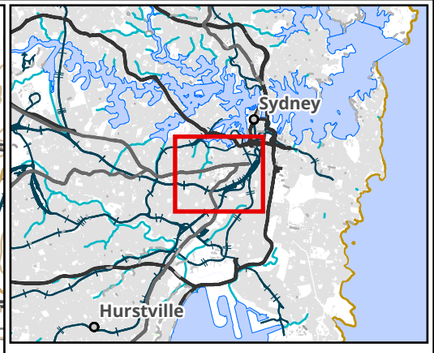
Acknowledgements: Basemap © NSW Land and Property Information 2016; Geology © State of New South Wales through Regional NSW 2020



Legend

- Study area
- Contour (2m)

Strahler Order

- 1
- 2

Figure 5 Hydrology and topography in the vicinity of the study area

0 110 220 330 440 550

Metres

Scale: 1:15,000@ A3

Coordinate System: GDA 1994 MGA Zone 56

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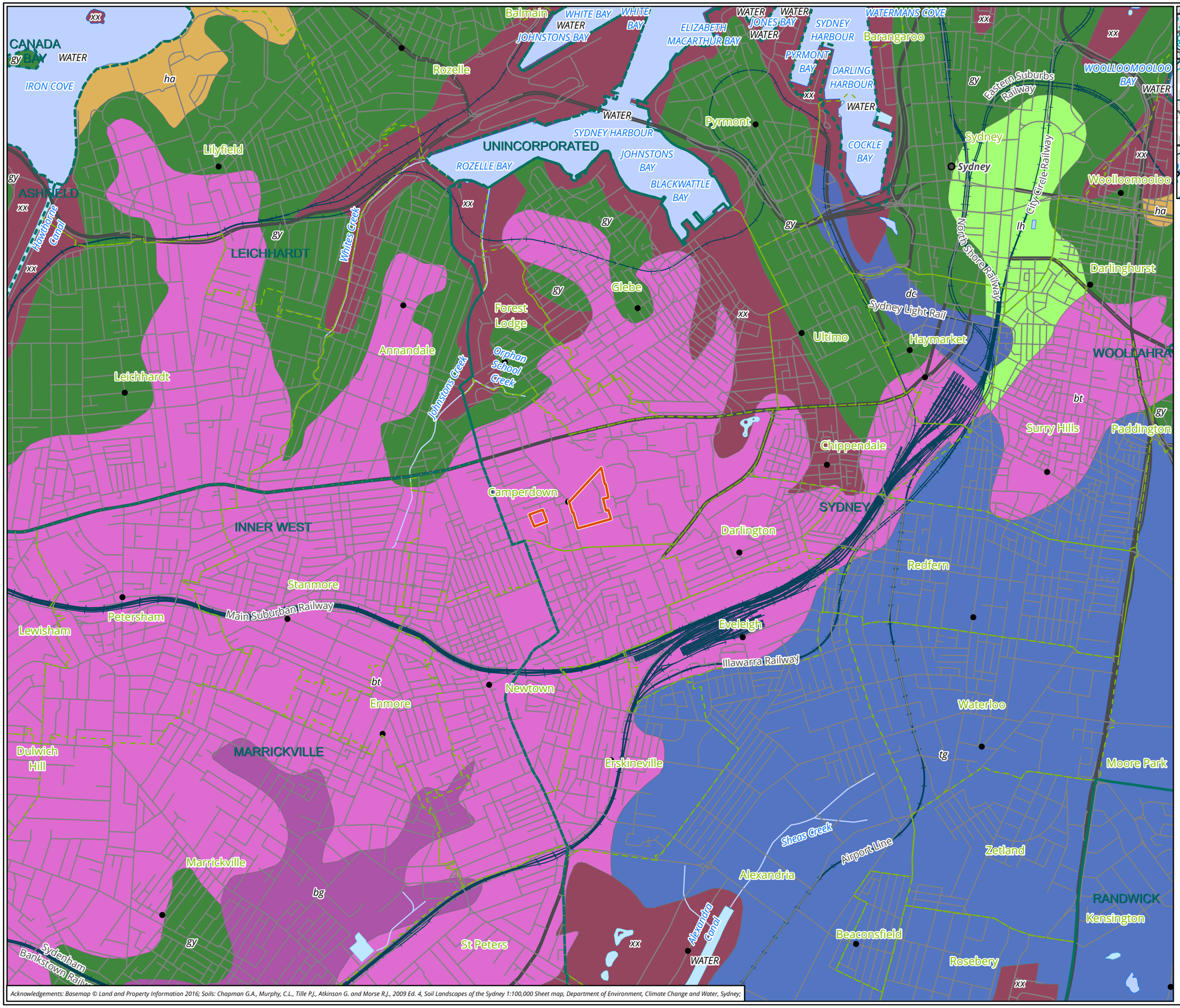
35565_RPAH_ACHA_ADDA, Layout:35565_ACHA_F5_Hydrology



Legend

- Study area

Soil Landscape units

- bg - BIRRONG
- bt - BLACKTOWN
- dc - DEEP CREEK
- gy - GYMEA
- ha - HAWKESBURY
- lh - LUCAS HEIGHTS
- tg - TUGGERAH
- WATER - WATER
- xx - DISTURBED TERRAIN

Figure 6 Soil landscapes in the vicinity of the study area

0 160 320 480 640 800

Metres

Scale: 1:20,000@ A3

Coordinate System: GDA 1994 MGA Zone 56

N

biosis

Matter: 35565Date: 26 August 2022,
Drawn by: AM, Checked by: AV, Last edited by: amackegard
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35565_RPAH_ACHA_ADDA, Layout: 35565_ACHA_F6_Soils

Acknowledgements: Basemap © Land and Property Information 2016; Soils: Chapman G.A., Murphy, C.L., Tille P.J., Atkinson G. and Morse R.J., 2009 Ed. 4, Soil Landscapes of the Sydney 1:100,000 Sheet map, Department of Environment, Climate Change and Water, Sydney;

3.1.3 Landscape resources

The Sydney Basin Bioregion includes distinct ecological zones, including open forest and open woodland, with riparian vegetation extending along many of the watercourses. Each ecological zone hosts a different array of floral and faunal species, many of which would have been utilised according to seasonal availability. Aboriginal inhabitants of the region would have had access to a wide range of avian, terrestrial and aquatic fauna and repeated firing of the vegetation would have opened up the foliage allowing ease of access through and between different resource zones.

Within the Cumberland subregion of the Sydney Basin Bioregion a variety of vegetation types are present, with Grey Box *Eucalyptus microcarpa*, Forest Red Gum *Eucalyptus tereticornis*, Narrow-leaved Ironbark *Eucalyptus crebra* woodland, and Spotted Gum *Corymbia maculata* present on shale hills. Hard-Leaved Scribbly Gum *Eucalyptus sclerophylla*, Rough-Barked Apple *Angophora floribunda*, and Old Man Banksia *Banksia serrata* are identified on alluvial sands and gravels. Broad-Leaved Apple *Angophora subvelutina*, Cabbage Gum *Eucalyptus amplifolia*, Forest Red Gum, and Swamp Oak *Casuarina glauca* are present on river flats. Tall Spike Rush *Eleocharis sphacelata*, and Juncus *Juncus effusus* with Parramatta Red Gum *Eucalyptus parramattensis* are noted around lagoons and swamps (NPWS 2003, p.193).

The Blacktown soil landscape typically supports dry sclerophyll forest; predominantly species of eucalypt, including Forest Red Gum, Narrow Leaved Ironbark and Grey Box *Eucalyptus moluccana* (Bannerman & Hazelton 1990, p.29). Broad Leaved Ironbark *Eucalyptus fibrosa* and White Stringy Bark *Eucalyptus globoidea* are also occasionally present.

Plant resources were used in a variety of ways. Fibres were twisted into string, which was used for many purposes, including the weaving of nets, baskets and fishing lines. String was also used for personal adornment. Bark was used in the provision of shelter; a large sheet of bark being propped against a stick to form a gunyah (Attenbrow 2002).

Native fauna that would have been present in the vicinity of the study area include: Australian Wood Duck *Chenonetta jubata*, White-Faced Heron *Egretta novaehollandiae*, Eastern Long-Necked Tortoise *Chelodina longicollis*, Eastern Water Skink *Eulamprus quoyii*, Garden Skink *Lampropholis guichenoti*, Welcome Swallow *Hirundo neoxena*, Western Swamphen *Porphyrio porphyrio*, as well as arboreal fauna including owls *Strigiformes*, Ringtailed Possum *Pseudocheirus peregrinus* and Brushtailed Possums *Trichosrus vulpecula*, and gliders *Petauridae*.

As well as being important food sources, animal products were also used for tool making and fashioning a myriad of utilitarian and ceremonial items. For example, tail sinews are known to have been used to make fastening cord, while 'bone points', which would have functioned as awls or piercers, are often an abundant part of the archaeological record. Animals such as Brush-tailed Possums were highly prized for their fur, with possum skin cloaks worn fastened over one shoulder and under the other. Kangaroo teeth were incorporated into decorative items, such as head bands (Attenbrow 2002).

3.1.4 Land use history

The RPA Hospital opened in 1883 providing 146 beds. It was named after Queen Victoria's son, Prince Alfred, who was subject to an assassination attempt while in Sydney. His coat of arms is used as the hospital's crest. The RPA Hospital has been integral in a number of key medical achievements within NSW and Australia, such as the first liver transplant; first aortic valve replacement; the first nuclear medicine department; the first use of triage nurses; the first Perinatal Medicine Unit and first foetal heart monitor; and the first open heart surgery in NSW (NSW Government 2013, NSW Government 2018). The following section provides an analysis of historical aerials to demonstrate development within the study area from the late 19th century to the early 21st century.

Photographs of the hospital dated to c.1900 show the original hospital building, nurses' quarters and surrounds (Photo 2 and Photo 3).

Photo 2 Photograph of the RPA Hospital along Missenden Road dated to 1900 (Source: State Library of South Australia, PRG 5/37/224)

Photo 3 Photograph of the Nurse's quarters at RPA Hospital dated to 1900 (Source: National Library of Australia, PIC/11189 LOC Cold Store PIC NEG)

An aerial photograph dated to 1943 shows that the majority of the study area had undergone significant disturbance due to the construction of hospital buildings and landscaping (Photo 4). Limited areas of

undeveloped land remain within the study area. Grassed areas and trees are visible within the eastern portion and the south, providing potentially undisturbed areas. The western portion of the study area includes some residential buildings and structures. An aerial photograph dated to 1971 shows limited further change (Photo 5).

Photo 4 An aerial photograph dated to 1943, with the study area outlined in red (Source: NSW Spatial Services)

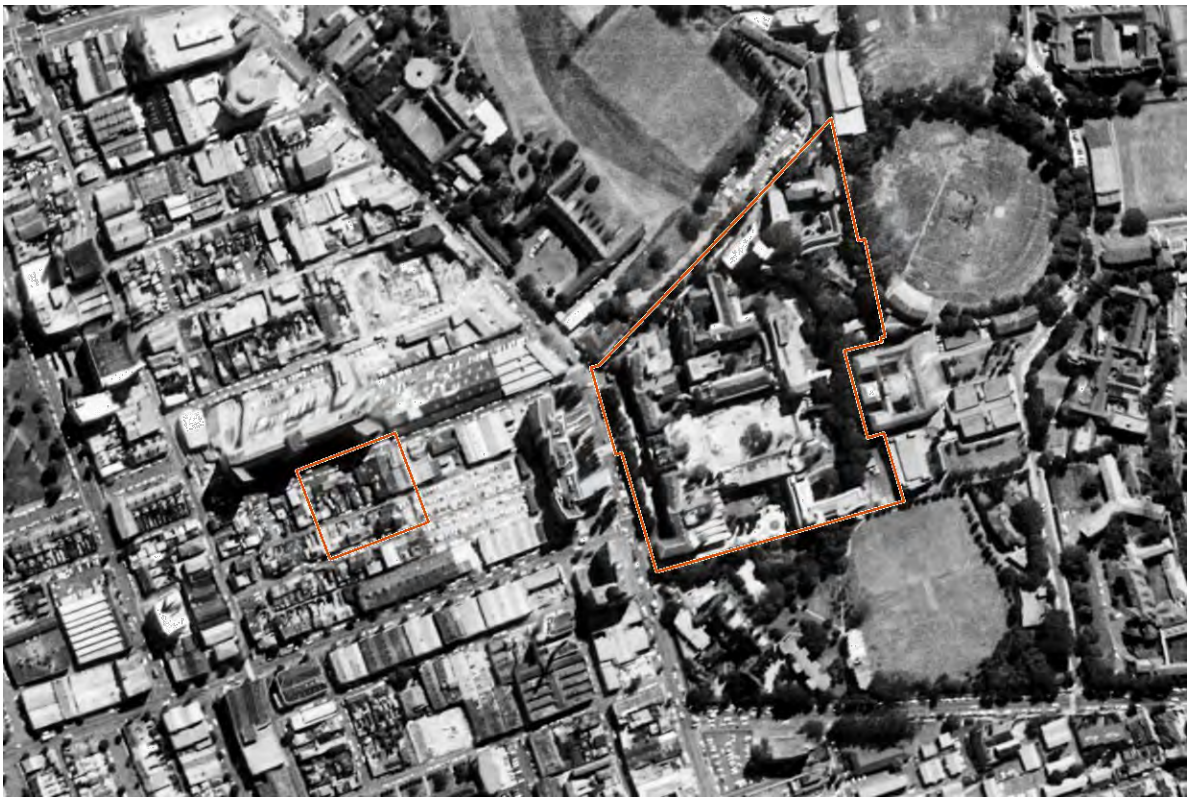

Photo 5 An aerial photograph dated to 1971, with the study area outlined in red (Source: NSW Spatial Services)

An aerial photograph dated to 1982 shows alterations have occurred within the central portion of the study area with the construction of a large multistorey building (Photo 6). Limited changes are visible in the surrounding areas. Within the western portion of the study area several buildings have been demolished, and a parking lot has been constructed. It should be noted that the alignment of this aerial is further south of the study area.

Within the 1994 aerial, the demolition of structures to the north and south of the multistorey building within the centre of the study area can be seen (Photo 7). A parking lot has been extended in the western portion of the study area, and building demolished. Demolition and construction of these structures would have caused significant disturbances within these areas.

Photo 6 An aerial photograph dated to 1982, with the study area outlined in red (Source: NSW Spatial Services)

Photo 7 An aerial photograph dated to 1994, with the study area outlined in red (Source: NSW Spatial Services)

An aerial photograph dated to 2005 show a number of further developments have occurred (Photo 8). New structures has been constructed in the central north and east of the study area. Structures have also been removed in the northernmost portion and a garden area replaces it. A multistorey parking lot has been constructed in the western portion of the study area. Some buildings have been demolished.

Photo 8 An aerial photograph dated to 2005, with the study area outlined in red (Source: NSW Spatial Services)

3.2 Previous archaeological work

A large number of cultural heritage surface (surveys) and sub-surface (excavations) investigations have been conducted throughout the region of NSW in the past 30 years. There has been an increasing focus on cultural heritage assessments in NSW due to ever increasing development, along with the legislative requirements for this work and greater cultural awareness of Aboriginal cultural heritage.

It is generally accepted that people have inhabited the Australian landmass for the last 50,000 years (Clarkson et al. 2015). Dates of the earliest occupation of the continent by Aboriginal people are subject to continued revision as more research is undertaken. The timing for the human occupation of the Sydney Basin is still uncertain. While there is some possible evidence for occupation of the region around 40,000 years ago, the earliest known radiocarbon date for the Aboriginal occupation of the Sydney Basin is associated with a cultural / archaeological deposit at Parramatta, which was dated to 30,735 ± 407 before present (BP) (JMCHM 2005c).

Archaeological evidence of Aboriginal occupation of the Cumberland Plain indicates that the area was intensively occupied from approximately 4,000 years BP (Dallas 1982, Kohen, J. 1986, McDonald 1994, McDonald, J. & Rich, E. 1993). Such 'young' dates are probably more a reflection of the conditions associated with the preservation of this evidence and the areas that have been subject to surface and sub-surface archaeological investigations, rather than actual evidence of the Aboriginal prior to this time.

3.2.1 Regional overview

A number of archaeological assessments have been conducted in the wider Sydney region.

Attenbrow (1990) undertook an investigation titled 'The Port Jackson Archaeological Project' for the Australian Museum, which includes the study area (Photo 9). The purpose of this report was to improve upon the existing literature about Aboriginal life utilising the archaeological record. Fieldwork focused largely on existing recorded Aboriginal sites, and also supplementary surveys in areas which had the potential to hold

further Aboriginal sites. The project investigated the roles played by marine and land animals in the diet of Aboriginal people within the Port Jackson area, as well as their use of stone, bone and shell in implements and weapons. The survey relocated and recorded 112 sites with middens and deposits. Attenbrow (1990) concluded that the distance from the harbour mouth influenced the range and predominance of particular shellfish species in middens. It appears that Aboriginal people were occupying areas of the foreshore and exploiting shellfish for at least 4,500 years, and that over time there was a change in the predominance of particular shellfish species.

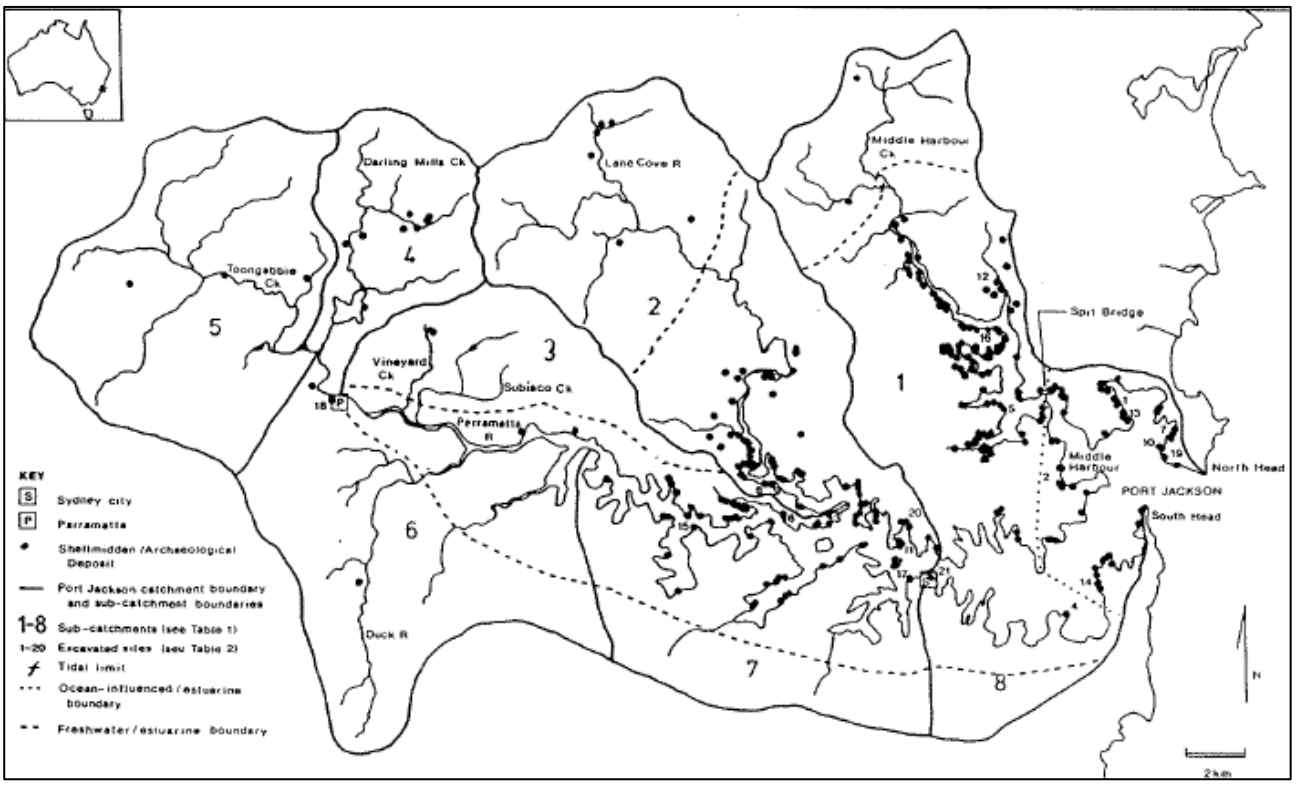

Photo 9 Port Jackson catchment area, subcatchment and aquatic zones, with registered shell midden and archaeological deposit sites as at 28 February 1990 and known excavated sites (Source: Attenbrow 1990)

Attenbrow (1990) reported on three weeks of excavations at two rock shelters with shell middens (AHIMS 45-6-560 and 45-6-1045) located in Neilson Park, Vaucluse, approximately 8.5 kilometres north-east of the study area, as part of Stage 2 of the Port Jackson Archaeological Project. At AHIMS site 45-6-560, an area measuring 2 by 1 metres was established within and outside of the rock shelter. Two instances of human bone were identified in two units within the shelter, and following consultation with the La Perouse LALC, the bones were left in-situ, and these areas were backfilled and no further work undertaken. Excavations continued in the units established outside of the shelter; the deposit was excavated to a maximum depth of 70 centimetres, but this varied due to the presence of sloping bedrock and rock slab. Soils in this location consisted of dark humic-rich soils, and were less stratified than the deposit within the shelter; a hearth was recovered and excavated at a depth of 2-5 centimetres. In addition to Aboriginal objects and cultural material, European artefacts were also recovered, with the shelter having been used during the Great Depression in the 1930s. At AHIMS 45-6-1045, an area measuring 1 by 1 metres was excavated, with an overall depth of 80 centimetres, where it reached rock. A hearth was identified, and the soils consisted of a black to very dark brown sandy sediment. The presence of rusted metal pieces throughout the soil profile suggests that the deposit was significantly disturbed; no further excavations took place at AHIMS 45-6-1045.

Conyers (1990) completed an assessment which consisted of background research and a survey carried out to record the 'Aboriginal carvings and areas' in the Lane Cove River State Recreation Area, located approximately 12 kilometres north of the study area (Conyers 1990, p.1). The predictive modelling undertaken for this study identified the coastal margins of the area as the likely location of shell midden deposits, occurring in both open contexts and rock shelters. Areas where the underlying geology consists of shales were considered the locations where campsites, PADs, quarries and scarred trees would occur, with it being noted that due to extensive vegetation clearance scarred trees are unlikely to be identified. Areas overlying the Hawkesbury Sandstone were the likely locations of rock shelters, art sites, rock engravings, and grinding grooves (Conyers 1990, pp.30–34). The survey relocated three previously recorded sites, identified seven new sites, and noted five potential habitation sites. The three relocated sites were all rock engravings. Two newly recorded sites were rock engravings, and five were middens. The five potential habitation sites were all rock shelters with PADs. It was recommended that all sites be managed appropriately, and in some cases be subject to further investigation.

Aboriginal Heritage Office (AHO) (2011) undertook a broad assessment of Aboriginal cultural heritage for the City of Ryde Council. The area included the foreshores of the Parramatta River, approximately 10 kilometres north-west of the current study area. The report contains a detailed discussion of Aboriginal socio-cultural history for the Ryde area, as well as information on landscape resources and current Aboriginal perspectives on cultural heritage. In regards to the Parramatta River foreshore area, AHO determined that middens were the most common site type, followed by rock shelters with middens. As AHO's report is a broad survey of a municipal area, its recommendations focus on high level legislative policy and guideline formulation, rather than recommendations for specific Aboriginal heritage sites.

Coffey (2018) undertook a geotechnical survey at Concord Hospital approximately 10 kilometres north-west of the study area. A total of 17 core samples were taken over then entire study area. The survey identified that the broader study area sat on geological deposits of Ashfield Shale, Hawksbury Sandstone and Quarternary Alluvium, with a layer of Mittagong Formation between the former layers. The underlying soil profiles were largely disturbed fill, overlaying a clay base at approximately 0.5 to 1.4 metres. The results of this study strongly suggest that the chance of subsurface cultural deposits being located within the assessment area was low.

Biosis (2018) undertook an ADDA and ACHA (2019a) for the same area assessed by Coffey as part of the Stage 1 Concord Hospital redevelopment works to support a Review of Environmental Factors. The investigation comprised a foot survey of the Stage 1 area of the project. The area was assessed as being highly modified by previous construction and hospital use. No Aboriginal cultural heritage objects were located and the area was assessed as having low archaeological potential.

3.2.2 Local context

A number of archaeological assessments have been conducted within 10 kilometres of the study area.

Attenbrow (1988) provided a summary of the registered Aboriginal sites present within the Hunters Hill municipality, located approximately 7 kilometre north-west of the study area. These include shell middens, archaeological deposits, artwork (drawings, stencils, paintings, engravings and outline figures), grinding grooves and human burials. Three grinding groove sites were also discussed, with only one relocated during the survey. At each grinding groove site there are only two grooves, and all are located beside rock pools on rock platforms. Each of the sites were noted for their location on slopes more than 10 metres away from the shoreline, but on a relatively low slope gradient, and also found on both the eastern and western sides of the peninsula (with the study area marking the divide between eastern and western zones). However, the numbers of engravings and grinding grooves within the Hunters Hill area were very low, and Attenbrow (1988) proposed that maintenance or manufacture of ground-edged tools was not an important activity in this location. Equally, the low number of engravings and art make it difficult to determine whether these were

part of ceremonial activities taking place in the area. Attenbrow (1988) also suggested that much of the Hunters Hill peninsula was accessed by canoe, considering the presence of most sites adjacent to the shoreline, with only short-term occupation, i.e. stopping for a meal or a maximum of a few days.

Ross and Attenbrow (1990) completed an Aboriginal site survey of Bradley's Head in Mosman, approximately 7 kilometres north-east of the study area, in advance of proposed works to redevelop the memorial to HMAS Sydney in this location. The southern part of the peninsula of Bradley's Point has been extensively disturbed since 1839. These disturbances include construction of several fortifications over time, quarrying, construction of wharf facilities, landscaping, roadworks and infrastructure associated with the reserve. While no new sites were identified in the area of proposed works, one of several registered AHIMS sites, a shell midden, was relocated at Bradley's Beach (AHIMS 45-6-2062). One part of the area of proposed works, a flat above the car park, was noted for potential to contain sub-surface evidence of Aboriginal occupation, and it was recommended that sub-surface testing must take place in consultation with the Aboriginal community should works be proposed for this area.

JMCHM (2006) conducted test excavations at the University of Sydney Central Site, Darlington Campus located approximately 146 metres east of the study area. Background research noted a number of swamps and fresh water creeks would have been present in the surrounding area. An AHIMS search did not identify any sites within the study area or University grounds. However, nearby artefact scatter sites and middens were noted. A survey of the site identified low to moderate archaeological potential. A backhoe trench was initially used to removed fill covering a buried A horizon. Nine 1 by 1 metre test pits were then excavated. One tuff flake was identified in the A horizon. Soil profiles displayed evidence of extensive disturbance, with no intact archaeological deposits remaining. This was attributed to significant developments since 1798 associated with pastoral, government, residential and commercial uses followed by University purposes. No further assessment was recommended.

JMCHM (2007) undertook an Aboriginal archaeological assessment for the University of Sydney ARC Medical Research building, located approximately 50 metres north of the study area. Background research identified that the land likely previously consisted of low ridgelines with sandstone valleys draining to upper parts of Port Jackson. Much of this land has been modified so that watercourses and surrounding swamplands are unrecognisable. These swamplands surrounded the study area and were reclaimed by the government during the 1800s. Extensive clearance of vegetation, construction, landscaping, terracing and planting have occurred. One AHIMS site was recorded to be located within the university land, associated within the Blackwattle Swamplands, which was a stone axe head. A number of artefact scatters and midden sites were also recorded in the vicinity.

A survey of the study area did not identify any sites. Two areas of PAD had previously been predicted within the site based on landforms, however significant disturbance within this area was used to determine low archaeological potential. This was also based on previous testing within the university lands identifying high disturbance and low potential to contain intact deposits. No further assessment was recommended.

Comber (2009) undertook an ADDA including a survey for the construction of the Sydney Metro Light Rail project, running from Sydney University (Broadway) to Parramatta. The proposed rail line's route ran approximately 7 kilometres south-east of the current study area, and concluded that this area was highly disturbed. Following the survey, Comber recommended that no subsurface excavations were needed.

Comber (2009) conducted an ACHA for the Sydney Metro Network Stage 2 Central to Westmead, which incorporates the northern portion of the study area. The proposed Metro Stage 2 included a 24.1 kilometre underground metro rail line that would be tunnelled approximately 25 metres below the surface. A search of the AHIMS register identified no sites recorded within the study area. Background research was used to determine that sites were likely to be located within close proximity to water sources and within Hawkesbury Sandstone rather than Wianamatta shales. Parramatta Station was the only proposed station to be located

nearby a watercourse, the Parramatta River and a tributary of Clay Cliff Creek. Artefacts were determined to have potential to occur in areas of minimal disturbance and grinding grooves if sandstone outcropping occurred.

A survey of the study area did not identify any sites. This was attributed to the highly developed nature of the study area, with minimal ground exposure. Sydney University land was determined to be highly disturbed based on excavations undertaken by JMCHM (2006). Camperdown, which includes the study area, was determined to be highly disturbed by residential construction and associated infrastructure, and the construction of Parramatta Road. It was determined that subsurface archaeological material would be unlikely to exist. Parramatta and Rosehill were determined to contain archaeological potential due to the presence of previously known sites within the area and proximity to water courses. It was recommended that test excavations and salvage should be undertaken prior to development.

Comber (2010) conducted an Aboriginal heritage impact consideration report for the Chris O'Brien Life House, at the RPA Hospital, located adjacent to the study area. Research identified that colonial residential and industrial development had occurred on the land prior to becoming part of the RPA Hospital in the 1930s. The general outpatients building and Page Chest Clinic was constructed on the site and later demolished. This extensive land use was determined to have caused significant disturbance likely to have destroyed any evidence of Aboriginal occupation. Consequently, it was determined that a detailed survey and assessment was not required. Consultation with the Metro LALC was recommended prior to development.

Biosis (2012) was engaged to undertake an ACHA for 445-473 Wattle Street, Ultimo, a site for proposed student accommodation, approximately 1.8 kilometres east of the study area. Background research indicated that the Cadigal and possibly Wangal clans were associated with the Ultimo area at the time of European settlement. The presence of Blackwattle Creek nearby would have provided multiple resources for local Aboriginal people, and shell middens and stone artefact sites are located across the City of Sydney area and in the vicinity of the study area. The predictive statements developed for the site noted that areas of PAD were likely to be present within the study area, with potential cultural material including stone artefacts, midden deposits, burials and post-contact sites. A full coverage survey was not possible due to the presence of built items and the ground surface being obscured by concrete and asphalt surfaces. As such a discussion of the proposed development and general landform attributes took place with the developer and registered Aboriginal party representatives. The site was assessed as holding archaeological potential in the natural alluvial soils beneath historical fill layers and was registered as AHIMS 45-6-3064. Avoidance of the alluvial soils was recommended, as were test excavations prior to any construction impacts taking place.

Biosis (2012) undertook an Aboriginal archaeological assessment for The Quay Project at the corner of Quay Street and Ultimo Road, Haymarket, located approximately 1.6 kilometres north-east of the current study area. An ADDA had been previously undertaken by Biosis in 2011 of the site, which assessed that, while the site location would have been of considerable value to Aboriginal people due to nearby resources and topographical suitability for camping, impacts to the natural soils through European development since the 18th century would have removed evidence of Aboriginal occupation from the soil. However, remnant natural topsoils were encountered during historical archaeological excavations, which prompted further investigation of any potential cultural deposits through a program of test excavations, focusing on areas of potentially intact topsoils. The test excavations confirmed the findings of the ADDA, and found that the remnant soil deposits were very shallow and contained only European artefacts, with no Aboriginal objects identified. It should be noted though that a stone artefact (AHIMS 45-6-2987) was recovered from the fill deposit of a post hole near Test Pit 5. As this artefact was recovered from a disturbed context, the significance of the artefact was considered to be low, and did not alter the assessment of the significance of the site as low.

Dominic Steele Consulting Archaeology (2015) undertook test excavations at AHIMS 45-6-1925 as part of mitigation measures for impacts to Aboriginal heritage for the construction of a new section of boardwalk in Glades Bay Park, Gladesville, approximately 8 kilometres north-west of the current study area. These test

excavations were carried out under an Aboriginal Heritage Impact Permit. Three test pits measuring 50 by 50 centimetres were excavated, and no Aboriginal objects or archaeological deposits were identified. The soil profile presented redeveloped alluvial and colluvial soil that were waterlogged and affected by tide movements, overlying sandstone bedrock. Shell material was present on a partly grassed flat sandstone platform approximately 0.5 metres east of the boardwalk, and it was suggested that it was also likely that archaeological deposits may be present in this area due to its location above the high water mark and higher likelihood of survival. This assessment indicated that AHIMS 45-6-1925 was restricted to the surface of the rock platform with a low likelihood that archaeological shell midden material would occur in sub-surface deposits in the immediate vicinity.

Biosis (2019b) completed an ACHA at St Joseph's College Hunters Hill, approximately 7.7 kilometres north of the study area. The assessment included background research, Aboriginal community consultation, field investigation, and test excavations. The field investigation identified low potential due to the high levels of previous disturbance, and a lack of landscape features which would indicate Aboriginal people utilised the area for occupational purposes. Archaeological test excavations were undertaken within the north-western and the north-eastern portions of the site within areas of low potential to confirm whether any subsurface archaeological deposits were present. No subsurface archaeological deposits were identified within the study area. The study area was assessed to contain low archaeological potential. No further archaeological investigations were recommended.

3.2.3 AHIMS site analysis

An extensive search of the AHIMS database was conducted on 11 August 2021, 23 May 2022, and 11 August 2022 (Client service ID: 612989, 684562, and 707553). The initial search identified 74 Aboriginal archaeological sites, the secondary search identified 75 sites, and the most recent search identified 77 sites within a 3 by 3 kilometre search area, centred on the proposed study area (Table 4). None of these registered sites are located *within* the study area (Table 4). The mapping coordinates recorded for these sites were checked for consistency with their descriptions and location on maps from Aboriginal heritage reports where available. These descriptions and maps were relied where notable discrepancies occurred.

It should be noted that the AHIMS database reflects Aboriginal sites that have been officially recorded and included on the list. Large areas of NSW have not been subject to systematic, archaeological survey; hence AHIMS listings may reflect previous survey patterns and should not be considered a complete list of Aboriginal sites within a given area. Some recorded sites consist of more than one element, for example artefacts and a modified tree, however for the purposes of this breakdown and the predictive modelling, all individual site types will be studied and compared. This explains why there are 126 results presented here, compared to the 77 sites identified by the AHIMS database.

Table 4 AHIMS search results

Site type	Occurrences	Frequency (%)
Artefact	35	27.78
PAD	31	24.60
Shell	19	15.08
Shelter with Midden	9	7.15
Midden	7	5.56
Not a site	7	5.56
Art (Pigment or Engraved)	4	3.17

Site type	Occurrences	Frequency (%)
Aboriginal Resource and Gathering	3	2.38
Rock Engraving	2	1.59
Aboriginal Ceremony and Dreaming	2	1.59
Non-human bone and organic material	2	1.59
Shelter with Art	1	0.79
Modified tree	1	0.79
Waterhole	1	0.79
Grinding groove	1	0.79
Burial	1	0.79
Total	**126**	**100**

A simple analysis of the Aboriginal cultural heritage sites registered within a 3 by 3 kilometre search of the study area indicates that the dominant site type is artefact, representing 27.78% (n=35), followed by PAD with 24.60% (n=31) and shell with 15.086% (n=19). Shelter with midden represented 7.15% (n=9), and midden and sites listed as not a site were represented by 5.56% each (n=7 each). Art (pigment or engraved) was represented by 3.17% (n=4), and Aboriginal resource and gathering represented 2.38% (n=3). Rock engraving, Aboriginal ceremony and dreaming, and non-human bone and organic material were represented by 1.59% each (n=2 each). Shelter with art, modified tree, water hole, grinding groove, and burial had the lowest site type frequency representing 0.79% each (n=1 each).

Figure 7 AHIMS within the vicinity of the study area

****FIGURE 7 HAS BEEN REMOVED FROM THIS DOCUMENT FOR PUBLIC EXHIBITION**

3.3 Discussion

Background research confirms that the study area is underlain by the Ashfield Shale formation with a gradual westward sloping topography. Although there are currently limited natural water sources remaining in the vicinity of the study area, Blackwattle Creek previously made up the surrounding area prior to being reclaimed in the 1800s. This swampland would have provided significant plant and animal resources for Aboriginal people occupying the land.

The Blacktown soil landscape is found across the entire study area. The Blacktown soil landscape is a residual and moderately deep landscape, and there is potential for intact archaeological deposits to remain within areas of minimal disturbance. Basic historical background research identified that the land had been cleared and developed as a hospital by the late 1800s. Historical aerial imagery shows that this has continued to be the primary use of the land and continues to be today. The continued redevelopment of study area has likely disturbed archaeological deposits. The majority of the study area is covered by development, including hospital buildings, footpaths, roads, and landscaped gardens.

A review of the AHIMS register identified no sites either in the study area or within a 200 metre vicinity. Despite this, artefact and PAD sites were noted to be the most common site types within the surrounding area. Previous assessments within close proximity to the study area, including the study area itself, have identified low archaeological potential due to extensive disturbance caused by development (JMCHM 2006, JMCHM 2007, Comber Consultants Pty Ltd 2010, Comber 2009, Biosis Pty Ltd 2012).

The combined presence of the Blacktown soil landscape and the former Blackwattle Creek could indicate subsurface archaeological potential. However, it is likely that the study area has been too disturbed by previous development to contain intact archaeological deposits

3.3.1 Predictive model

A model has been formulated to broadly predict the type and character of Aboriginal cultural heritage sites likely to exist throughout the study area and where they are more likely to be located.

This model is based on:

- Site distribution in relation to landscape descriptions within the study area.
- Consideration of site type, raw material types and site densities likely to be present within the study area.
- Findings of the ethnohistorical research on the potential for material traces to present within the study area.
- Potential Aboriginal use of natural resources present or once present within the study area.
- Consideration of the temporal and spatial relationships of sites within the study area and surrounding region.

Table 5 indicates the site types most likely to be encountered across the present study area. The definition of each site type is described firstly, followed by the predicted likelihood of this site type occurring within the study area.

Table 5 Aboriginal site prediction statements

Site type	Site description	Potential
Flaked stone artefact scatters and isolated artefacts	Artefact scatter sites can range from high-density concentrations of flaked stone and ground stone artefacts to sparse, low-density 'background' scatters and isolated finds.	Moderate: Stone artefact sites have been previously recorded in the region on level, well-drained topographies in close proximity to reliable sources of fresh water. There is moderate potential for artefacts to be present within the study area.
PADs	Potential sub surface deposits of cultural material.	Moderate: PADs have been previously recorded in the region across a wide range of landforms. PADs are likely to be present within areas adjacent to water courses or on high points in undisturbed landforms.
Shell middens	Deposits of shells accumulated over either singular large resource gathering events or over longer periods of time.	Low: Shell midden sites have not been recorded within the vicinity of the study area, however there are nearby permanent water sources that support shellfish communities. There is a low potential for shell middens to be located in the study area.
Quarries	Raw stone material procurement sites.	Low: There is no record of any quarries being within or surrounding the study area.
Modified trees	Trees with cultural modifications	Low: Scarred trees have been recorded within the vicinity of the study area. Due to extensive vegetation clearance no remnant trees remain within the study area.
Grinding grooves	Grooves created in stone platforms through ground stone tool manufacture.	Low: Suitable horizontal sandstone rock outcrops and drainage lines are not present within the study area.
Burials	Aboriginal burial sites.	Low: Aboriginal burial sites are generally situated within deep, soft sediments, caves or hollow trees. Areas of deep sandy deposits will have the potential for Aboriginal burials. The soil profiles associated with the study area are not commonly associated with burials.
Aboriginal Ceremony and Dreaming sites	Such sites are often intangible places and features and are identified through oral histories, ethnohistoric data, or Aboriginal informants.	Low: There are currently no recorded mythological stories for the study area.

Site type	Site description	Potential
Post-contact sites	These are sites relating to the shared history of Aboriginal and non-Aboriginal people of an area and may include places such as missions, massacre sites, post-contact camp sites and buildings associated with post-contact Aboriginal use.	Low: There are no post-contact sites previously recorded in the study area and historical sources do not identify one.
Aboriginal places	Aboriginal places may not contain any 'archaeological' indicators of a site, but are nonetheless important to Aboriginal people. They may be places of cultural, spiritual or historic significance. Often they are places tied to community history and may include natural features (such as swimming and fishing holes), places where Aboriginal political events commenced or particular buildings.	Low: There are currently no recorded Aboriginal historical associations for the study area.
Non-human bone and organic material	Objects which can be found within cultural deposits as components of an Aboriginal site such as fish or mammal bones, ochres, cached objects which may otherwise have broken down such as resin, twine, dilly bags, nets etc	Low: Non-human bone and organic material have previously been recorded in the vicinity of the study area. They have low potential to occur due to the significant disturbance present within the study area.
Rock shelters with art and / or deposit	Rock shelter sites include rock overhangs, shelters or caves, and generally occur on, or next to, moderate to steeply sloping ground characterised by cliff lines and escarpments. These naturally formed features may contain rock art, stone artefacts or midden deposits and may also be associated with grinding grooves.	Nil: The sites will only occur where suitable sandstone exposures or overhangs possessing sufficient sheltered space exist, which are not present within the study area.
Waterhole	A source of fresh water for Aboriginal groups which may have traditional ceremonial or dreaming significance and/or may also be used to the present day as a rich resource gathering area (e.g. waterbirds, eels, clays, reeds etc)	Low: Waterholes have been recorded in the vicinity of the study area. There is low potential for this site to be present within the study area.

4 Archaeological survey

An archaeological field investigation of the study area was undertaken on 20 September 2021 by Anthea Vella (Biosis, Project Archaeologist); Rowena Welsh-Jarrett (Metropolitan LALC, Cultural Sites Officer); and Kristina Zarkos, George Long, and Karinya Bellear (SLHD). An additional archaeological field investigation was undertaken on 12 August 2022 by Anthea Vella, Katherine Bennett and Samar Zakaria (SLHD) for the additional western campus and extension of the eastern campus. The field investigation sampling strategy, methodology and a discussion of results are provided below.

4.1 Archaeological field investigation aims

The principle aims of the field investigation were to:

- Undertake a systematic field investigation of the study area targeting areas with the potential for Aboriginal heritage.
- Identify and record Aboriginal archaeological sites visible on the ground surface.
- Identify and record areas of Aboriginal archaeological and cultural sensitivity.

4.2 Field investigation methods

The field investigation was conducted on foot. Recording during the field investigation followed the archaeological field investigation requirements of the Code and industry best practice methodology. Information that recorded during the survey included:

- Aboriginal objects or sites present in the study area during the survey.
- Survey coverage.
- Any resources that may have potentially have been exploited by Aboriginal people.
- Landform elements, distinguishable areas of land approximately 40m across or with a 20m radius (CSIRO 2009).
- Photographs of the site indicating landform.
- Ground surface visibility (GSV) and areas of exposure.
- Observable past or present disturbances to the landscape from human or animal activities.
- Aboriginal artefacts, culturally modified trees or any other Aboriginal sites.

Where possible, the identification of natural soil deposits within the study area was undertaken. Photographs and recording techniques were incorporated into the field investigation including representative photographs of survey units, landform, vegetation coverage, GSV and the recording of soil information for each survey unit where possible. Any potential Aboriginal objects observed during the field investigation were documented and photographed. The location of Aboriginal cultural heritage and points marking the boundary of the landform elements were recorded using a hand-held Global Positioning System and the Map Grid of Australia (94) coordinate system.

4.3 Constraints to the field investigation

With any archaeological field investigation there are several factors that influence the effectiveness (the likelihood of finding sites) of the field investigation. The factors that contributed most to the effectiveness of the field investigation within the study area were GSV and disturbances, due to the extensive development throughout the entirety of the study area.

4.4 Visibility

In most archaeological reports and guidelines visibility refers to GSV, and is usually a percentage estimate of the ground surface that is visible and allowing for the detection of (usually stone) artefacts that may be present on the ground surface (DECCW 2010a). GSV across the study area was low (5%) to non-existent (0%), with the majority of the study area previously developed upon, subsequently obscuring the natural ground surface (Photo 10). Few areas of the study area were covered by previously modified grassed areas (Photo 11). No visibility was present in the western portion of the study area (Photo 12).

Photo 10 General visibility along Johns Hopkins Drive, photo facing south-west

Photo 11 General visibility within the northern portion, with photo showing the cultural garden, photo facing south-west

Photo 12 General visibility within the western portion, photo facing west

4.5 Exposure

Exposure refers to the geomorphic conditions of the local landform being surveyed, and attempts to describe the relationship between those conditions and the likelihood the prevailing conditions provide for the exposure of (buried) archaeological materials. Whilst also usually expressed as a percentage estimate,

exposure is different to visibility in that it is in part a summation of geomorphic processes, rather than a simple observation of the ground surface (Burke & Smith 2004, p.79, DECCW 2010a).

Much like visibility, exposure across the study area was low (5%) to non-existent (0%), due to previous development within the study area (see Section 4.4). Low areas of exposure were observed within landscaped gardens along the north-eastern and eastern portion of the study area (Photo 13 and Photo 14).

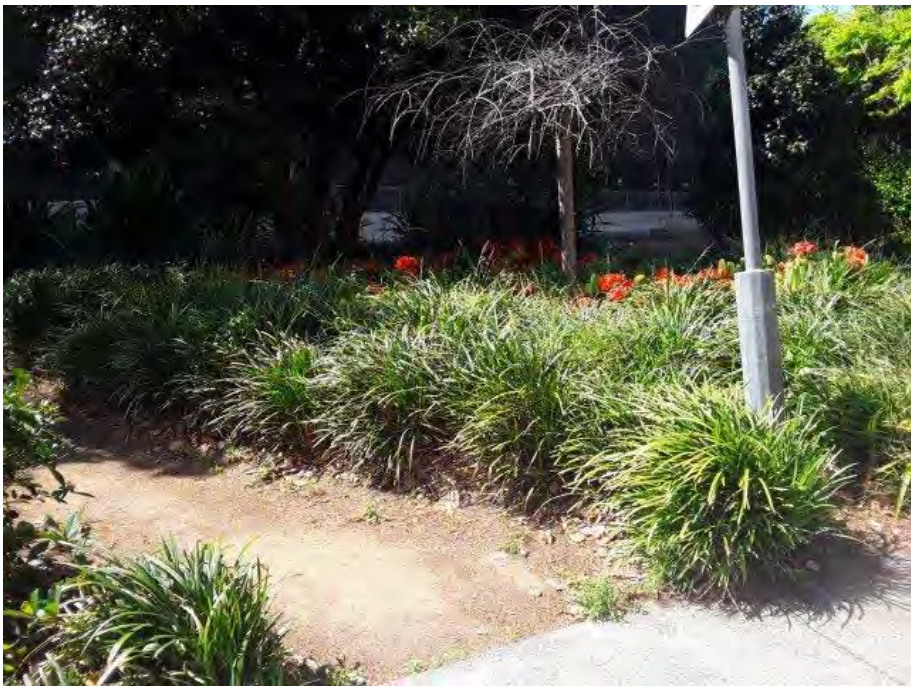

Photo 13 Area of exposure located within landscaped gardens, photo facing north-east

Photo 14 Area of exposure located within the eastern most portion of the study area, photo facing west

4.6 Disturbances

Disturbances are associated with natural and human agents. Natural agents generally affect small areas and include the burrowing and scratching in soil by animals, such as wombats, foxes, rabbits and wallabies, and sometimes exposure from slumping or scouring. Disturbances associated with recent human action include development such as landscaping and construction of buildings related to the hospital; and initial vegetation clearance.

The study area as a whole has been subject to disturbance by human activity. Historic and recent aerials (Photo 4 to Photo 8 and Figure 2) show that the study area has been subject to historical vegetation clearance, ground disturbing works, construction of hospital buildings and associated subsurface infrastructure, roads, footpaths, and landscaping. These disturbances were noted during the archaeological field investigation and are shown in Photo 15 to Photo 21. No areas of natural soils were observed within the study area.

Photo 15 RPA Hospital Women and Babies building, carpark and landscaping, photo facing south-east

Photo 16 RPA Hospital Clinical Services building, photo facing south

Photo 17 Communication cables in the northern portion of the study area

Photo 18 **Water hydrant and landscaped gardens in the eastern portion of the study area, photo facing north-east**

Photo 19 **Multistorey carpark located in the western portion, photo facing south-west**

Photo 20 Stock piled soils in the eastern portion of the study area, photo facing south-east

Photo 21 Services in the eastern portion of the study area, photo facing north

4.7 Investigation results and discussion

The archaeological investigation consisted of a meandering pedestrian transect across the study area, primarily focused on the proposed area of development. The results of the field investigation have been summarised below, in Figure 8, Table 6 and Table 7.

Background research indicates that the study area is located in the Ashfield Shale geological unit commonly associated with Aboriginal artefact scatter sites and PADs. The study area is also underlain by the residual

Blacktown soil landscape, which is a slowly accumulated deep sediment with the potential to preserve archaeological sites if undisturbed. However, this slow accumulation when combined with extensive land clearing and land use (usually associated with pastoral and civic development) will result in an increased likelihood that soils will have been disturbed. The field investigation demonstrated that the study area has been previously disturbed. Upper soil profiles, where surface scatters and PADs are likely to occur, are unlikely to be intact within the study area.

Topographically, the study area is located within a westward and eastward sloping landform with Orphan School Creek, approximately 660 metres north-west, which is a first order non perennial water course and tributary of Johnstons Creek, a second order non perennial water course, approximately 927 metres north-west. Both watercourses feed Rozelle Bay, a permanent waterbody of Sydney Harbour located approximately 1.7 kilometres north of the study area. Although there are currently limited natural water sources remaining in the vicinity of the study area, Blackwattle Creek previously made up the surrounding area prior to being reclaimed in the 1800s. These swamplands would have provided significant plant and animal resources for Aboriginal people occupying the land. However, the study area has been significantly disturbed and it is also likely that landforms within the study area have also been modified.

Historical aerial imagery has indicated that the study area has been disturbed from development related to the hospital. These disturbances include historical vegetation clearance, ground disturbing works, construction of hospital buildings and associated subsurface infrastructure, roads, footpaths, and landscaping. Previous assessments within close proximity to the study area, including the study area itself, have identified low archaeological potential due to extensive disturbance caused by development (JMCHM 2006, JMCHM 2007, Comber Consultants Pty Ltd 2010, Comber 2009, Biosis Pty Ltd 2012).

During the field investigations no new Aboriginal sites or objects were identified. The field investigations suggest that the study area as a whole has been subject to significant disturbance and has low potential to contain intact or substantial archaeological deposits. As the SSD works are confined to areas of existing disturbance, it is assessed that there is low potential for Aboriginal archaeological sites to occur within these areas (Figure 8).

4.8 Aboriginal consultation

Rowena Welsh-Jarrett (Cultural Sites Officer) from Metropolitan LALC); and George Long, Karinya Bellear, and Kristina Zarkos from SLHD attended the archaeological field investigation on 20 September 2021. The areas containing the proposed works were noted to have been disturbed by the construction of several buildings, roads and footpaths, carparks, landscaping, and associated subsurface infrastructure. During the archaeological field investigation several comments were made and are noted below:

- That the cultural gardens (adjacent to the Women and Babies hospital building) as well as existing landscaped areas are to be replaced by the Project in the future if impacted by the proposed development. Designated land should be put aside for the cultural gardens as well as more green space. This should be either the same amount of land as the existing cultural gardens or more if possible.
- A smoking ceremony to be provided by Metropolitan LALC prior to ground disturbing works.
- Metropolitan LALC to be present during ground disturbing works for monitoring.

Table 6 Survey coverage

Survey unit	Landform	Survey unit area (m²)	Visibility (%)	Exposure (%)	Effective coverage area (m²)	Effective coverage (%)
1	Gentle slope	53,000	0-5%	0-5%	4,786	9.03

Table 7 Landform summary

Landform	Landform area (m²)	Area effectively surveyed (m²)	Landform effectively surveyed (%)	No. of Aboriginal sites	No. of artefacts or features
Gentle slope	53,000	4,786	9.03	0	0

Figure 8 Survey effort and results

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Figure 9 Landforms

biosis

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5 Scientific values and significance assessment

The two main values addressed when assessing the significance of Aboriginal sites are cultural values to the Aboriginal community and archaeological (scientific) values. This report will assess scientific values while the ACHA report will detail the cultural values of Aboriginal sites in the study area.

5.1 Introduction to the assessment process

Heritage assessment criteria in NSW fall broadly within the significance values outlined in the Australia International Council on Monuments and Sites (ICOMOS) Burra Charter (Australia ICOMOS 2013). This approach to heritage has been adopted by cultural heritage managers and government agencies as the set of guidelines for best practice heritage management in Australia. These values are provided as background and include:

- **Historical significance** (evolution and association) refers to historic values and encompasses the history of aesthetics, science and society, and therefore to a large extent underlies all of the terms set out in this section. A place may have historic value because it has influenced, or has been influenced by, an historic figure, event, phase or activity. It may also have historic value as the site of an important event. For any given place the significance will be greater where evidence of the association or event survives in situ, or where the settings are substantially intact, than where it has been changed or evidence does not survive. However, some events or associations may be so important that the place retains significance regardless of subsequent treatment.
- **Aesthetic significance** (Scenic/architectural qualities, creative accomplishment) refers to the sensory, scenic, architectural and creative aspects of the place. It is often closely linked with social values and may include consideration of form, scale, colour, texture, and material of the fabric or landscape, and the smell and sounds associated with the place and its use.
- **Social significance** (contemporary community esteem) refers to the spiritual, traditional, historical or contemporary associations and attachment that the place or area has for the present-day community. Places of social significance have associations with contemporary community identity. These places can have associations with tragic or warmly remembered experiences, periods or events. Communities can experience a sense of loss should a place of social significance be damaged or destroyed. These aspects of heritage significance can only be determined through consultative processes with local communities.
- **Scientific significance** (Archaeological, industrial, educational, research potential and scientific significance values) refers to the importance of a landscape, area, place or object because of its archaeological and/or other technical aspects. Assessment of scientific value is often based on the likely research potential of the area, place or object and will consider the importance of the data involved, its rarity, quality or representativeness, and the degree to which it may contribute further substantial information.

The cultural and archaeological significance of Aboriginal and historic sites and places is assessed on the basis of the significance values outlined above. As well as the ICOMOS Burra Charter significance values guidelines, various government agencies have developed formal criteria and guidelines that have application when assessing the significance of heritage places within NSW. Of primary interest are guidelines prepared by the Commonwealth Department of the Environment and Energy, Heritage NSW, NSW Department of Planning, Industry and Environment. The relevant sections of these guidelines are presented below.

These guidelines state that an area may contain evidence and associations which demonstrate one or any combination of the ICOMOS Burra Charter significance values outlined above in reference to Aboriginal heritage. Reference to each of the values should be made when evaluating archaeological and cultural significance for Aboriginal sites and places.

In addition to the previously outlined heritage values, the Heritage NSW Guidelines (OEH 2011) also specify the importance of considering cultural landscapes when determining and assessing Aboriginal heritage values. The principle behind a cultural landscape is that 'the significance of individual features is derived from their inter-relatedness within the cultural landscape'. This means that sites or places cannot be 'assessed in isolation' but must be considered as parts of the wider cultural landscape. Hence the site or place will possibly have values derived from its association with other sites and places. By investigating the associations between sites, places, and (for example) natural resources in the cultural landscape the stories behind the features can be told. The context of the cultural landscape can unlock 'better understanding of the cultural meaning and importance' of sites and places.

Although other values may be considered – such as educational or tourism values – the two principal values that are likely to be addressed in a consideration of Aboriginal sites and places are the cultural/social significance to Aboriginal people and their archaeological or scientific significance to archaeologists. The determinations of archaeological and cultural significance for sites and places should then be expressed as statements of significance that preface a concise discussion of the contributing factors to Aboriginal cultural heritage significance.

5.2 Archaeological (scientific significance) values

Archaeological significance (also called scientific significance, as per the ICOMOS Burra Charter) refers to the value of archaeological objects or sites as they relate to research questions that are of importance to the archaeological community, including indigenous communities, heritage managers and academic archaeologists. Generally the value of this type of significance is determined on the basis of the potential for sites and objects to provide information regarding the past life-ways of people (Burke & Smith 2004, p.249, NPWS 1997), For this reason, the NPWS summarises the situation as 'while various criteria for archaeological significance assessment have been advanced over the years, most of them fall under the heading of archaeological research potential' (NPWS 1997, p.26). The NPWS criteria for archaeological significance assessment are based largely on the ICOMOS Burra Charter.

Research potential

Research potential is assessed by examining site content and site condition. Site content refers to all cultural materials and organic remains associated with human activity at a site. Site content also refers to the site structure – the size of the site, the patterning of cultural materials within the site, the presence of any stratified deposits and the rarity of particular artefact types. As the site contents criterion is not applicable to scarred trees, the assessment of scarred trees is outlined separately below. Site condition refers to the degree of disturbance to the contents of a site at the time it was recorded.

Table 8 and Table 9 outline the site content and site condition rating used for archaeological sites.

Table 8 Site contents ratings used for archaeological sites

Rating	Description
0	No cultural material remaining.
1	Site contains a small number (e.g. 0–10 artefacts) or limited range of cultural materials with no evident

Rating	Description
	stratification.
2	Site contains a larger number, but limited range of cultural materials; and/or some intact stratified deposit remains; and/or are or unusual example(s) of a particular artefact type.
3	Site contains a large number and diverse range of cultural materials; and/or largely intact stratified deposit; and/or surface spatial patterning of cultural materials that still reflect the way in which the cultural materials were deposited.

Table 9 Site condition ratings used for archaeological sites

Rating	Description
0	Site destroyed.
1	Site in a deteriorated condition with a high degree of disturbance; lack of stratified deposits; some cultural materials remaining.
2	Site in a fair to good condition, but with some disturbance.
3	Site in an excellent condition with little or no disturbance. For surface artefact scatters this may mean that the spatial patterning of cultural materials still reflects the way in which the cultural materials were laid down.

Pearson and Sullivan (1995, p.149) note that Aboriginal archaeological sites are generally of high research potential because 'they are the major source of information about Aboriginal prehistory'. Indeed, the often great time depth of Aboriginal archaeological sites gives them research value from a global perspective, as they are an important record of humanity's history. Research potential can also refer to specific local circumstances in space and time – a site may have particular characteristics (well preserved samples for absolute dating, or a series of refitting artefacts, for example) that mean it can provide information about certain aspects of Aboriginal life in the past that other less or alternatively valuable sites may not (Burke & Smith 2004, pp.247–8). When determining research potential value particular emphasis has been placed on the potential for absolute dating of sites.

The significance of each site follows the assessment process outlined above. This includes a statement of significance based on the categories defined in the Burra Charter. These categories include social, historic, scientific, aesthetic and cultural (in this case archaeological) landscape values. Nomination of the level of value—high, moderate, low or not applicable—for each relevant category is also proposed. Where suitable the determination of cultural (archaeological) landscape value is applied to both individual sites and places (to explore their associations) and also, to the Study Area as a whole. The nomination levels for the archaeological significance of each site are summarised below.

Representativeness

Representativeness refers to the regional distribution of a particular site type. Representativeness is assessed by whether the site is common, occasional, or rare in a given region. Assessments of representativeness are subjectively biased by current knowledge of the distribution and number of archaeological sites in a region. This varies from place to place depending on the extent of archaeological research. Consequently, a site that is assigned low significance values for contents and condition, but a high significance value for representativeness, can only be regarded as significant in terms of knowledge of the regional archaeology. Any such site should be subject to re-assessment as more archaeological research is undertaken.

Assessment of representativeness also takes into account the contents and condition of a site. For example, in any region there may only be a limited number of sites of any type that have suffered minimal disturbance. Such sites would therefore be given a high significance rating for representativeness, although they may occur commonly within the region.

Table 10 outlines the site representativeness ratings used for archaeological sites.

Table 10 Site representativeness ratings used for archaeological sites

Rating	Description
1	Common occurrence.
2	Occasional occurrence.
3	Rare occurrence.

Overall scientific significance ratings for sites, based on a cumulative score for site contents, site integrity and representativeness are provided in Table 11.

Table 11 Scientific significance ratings used for archaeological sites

Rating	Description
1-3	Low scientific significance.
4-6	Moderate scientific significance.
7-9	High scientific significance.

Each site is given a score on the basis of these criteria – the overall scientific significance is determined by the cumulative score.

5.2.1 Statement of archaeological significance

No Aboriginal sites or objects were identified during the field investigation. Consultation with the Aboriginal community has indicated that the study area has high cultural significance due to the waterways that were present and the proximity to the Blackwattle Creek swamplands. The background research and field investigation confirmed that the study area has been heavily disturbed by previous and current land uses. This assessment has therefore determined that there is no archaeological significance within the study area.

6 Impact assessment

As previously outlined, Health Infrastructure have developed a Master Plan and Concept Design for the proposed redevelopment. Development consent is sought for:

- Alterations and additions to the RPA Hospital East Campus, comprising:
  - Eastern wing: A new fifteen (15) storey building with clinical space for IPUs, Medical Imaging, Delivery, Neonatal and Women's Health Services, connecting to the existing hospital building and a rooftop HLS;
  - Eastern extension: A three (3) storey extension to the east the existing clinical services building to accommodate new operating theatres and associated plant areas;
  - Northern expansion: A two (2) storey vertical expansion over RPA Building 89 accommodating a new Intensive Care Unit and connected with the Eastern Wing;
  - Internal refurbishment: Major internal refurbishment to existing services including Emergency Department and Imaging, circulation and support spaces;
  - Enhanced Northern Entry/ Arrival including improved pedestrian access and public amenity;
  - Demolition of affected buildings, structures and trees;
  - Changes to internal road alignments and paving treatments; and
  - Landscaping works, including tree removal, tree pruning, and compensatory tree planting including off-site on University of Sydney land.
- Ancillary works to the RPA Hospital West Campus, comprising:
  - Temporary HLS above existing multi storey carpark.
  - Re-routing of existing services.
  - Associated tree removal along Grose Street.

6.1 Predicted physical impacts

The study area does not contain any recorded Aboriginal sites and has been assessed as having low archaeological potential due to disturbances observed in the study area. The proposed works will therefore not impact on any Aboriginal heritage values (Figure 10).

6.2 Management and mitigation measures

Ideally, heritage management involves conservation of sites through the preservation and conservation of fabric and context within a framework of 'doing as much as necessary, as little as possible' (Australia ICOMOS 2013). In cases where conservation is not practical, several options for management are available. For sites, management often involves the salvage of features or artefacts, retrieval of information through excavation or collection (especially where impact cannot be avoided) and interpretation.

Consideration has been given to the principles of Ecologically Sustainable Development (ESD) in order to minimise impacts. Avoidance of impact to archaeological and cultural heritage sites through design of the

development is the primary mitigation and management strategy, and should be implemented where practicable. The proposed works have been confined to areas that have been heavily disturbed from the use of the study area as a hospital since the 1880s and will avoid impacts to any known Aboriginal sites. As part of the management and mitigation measures for the proposed works, an ACHA including archaeological survey and consultation with the Aboriginal community was undertaken. This was done to determine the presence and nature of any potential Aboriginal sites so that appropriate management could be undertaken. The survey did not identify the presence of any Aboriginal sites and the study area was assessed with low potential due to high levels of disturbances present. Consultation undertaken has resulted in the following management strategies:

6.2.1 No further archaeological work required

No further archaeological work is recommended for the study area. The study area has been assessed as having low archaeological potential and no further investigations are required in this area. This recommendation is conditional upon the recommendations outlined in this report.

6.2.2 Continued consultation with Metropolitan LALC

Consultation with Metropolitan LALC should be continued by the RPA Project Team. Metropolitan LALC have requested that a smoking ceremony is completed prior to ground disturbing works and that a cultural sites officer is present during ground disturbing works. The RPA Project Team are to consult with Metropolitan LALC to arrange this.

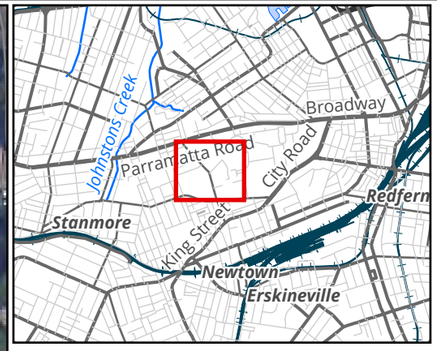
6.2.3 Interpretation plan

Consultation with Kamilaroi Yankuntjatjara Working Group has also recommended that a cultural interpretation plan be implemented for the project. Interpretation can be achieved through native landscaping, Aboriginal art, digital displays, signage, edible and medicinal gardens, and apps educating about the history and use of the land by Aboriginal people. This may be incorporated into the Public Art Strategy and the Connecting with Country Strategy. The RPA Project Team are to consult with the RAPs for this.

6.2.4 Heritage induction

Heritage inductions for all site workers and contractors should be undertaken in order to prevent any unintentional harm to Aboriginal sites located within the study area and its surrounds. This includes the following items:

- Relevant legislation.
- Location of identified Aboriginal heritage sites, areas of archaeological potential, and areas of archaeological sensitivity.
- Basic identification skills for Aboriginal and non-Aboriginal artefacts and human remains.
- Procedure to follow in the event of an unexpected heritage item find during construction works.
- Procedure to follow in the event of discovery of human remains during construction works.
- Penalties and non-compliance.



Legend

Study area

Figure 10 Impact assessment

0 10 20 30 40 50

Metres

Scale: 1:2,000@ A3

Coordinate System:
GDA 1994 MGA Zone 56

N

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7 Recommendations

Strategies have been developed based on the archaeological (significance) of cultural heritage relevant to the study area and influenced by:

- Predicted impacts to Aboriginal cultural heritage.
- The planning approvals framework.
- Current best conservation practise, widely considered to include:
  - Ethos of the Australia ICOMOS Burra Charter.
  - The Code.

Prior to any impacts occurring within the study area, the following is recommended:

Recommendation 1: No further archaeological assessment is required

No further archaeological work is required in the study area due to the entire study area assessed as having low archaeological potential. This recommendation is conditional upon Recommendation 2 to 8.

Recommendation 2: Continued consultation with Metropolitan LALC

Consultation with Metropolitan LALC should be continued by the RPA Project Team. Metropolitan LALC have requested that a smoking ceremony is completed prior to ground disturbing works and that a cultural sites officer is present during ground disturbing works. The RPA Project Team are to consult with Metropolitan LALC to arrange this.

Recommendation 3: Continued consultation with the registered Aboriginal stakeholders

As per the *Aboriginal Cultural Heritage Consultation Requirements for Proponents 2010* (DECCW 2010b), it is recommended that the proponent provides a copy of this report to the Aboriginal stakeholders and considers all comments received. The proponent should continue to inform these groups about the management of Aboriginal cultural heritage sites within the study area throughout the life of the project.

Recommendation 4: Interpretation plan

Consultation with Kamilaroi Yankuntjatjara Working Group has also recommended that a cultural interpretation plan be implemented for the project. Interpretation can be achieved through native landscaping, Aboriginal art, digital displays, signage, edible and medicinal gardens, and apps educating about the history and use of the land by Aboriginal people. This may be incorporated into the Public Art Strategy and the Connecting with Country Strategy. The RPA Project Team are to consult with the registered Aboriginal parties (RAPs) for this.

Recommendation 5: Heritage induction

Heritage inductions for all site workers and contractors should be undertaken in order to prevent any unintentional harm to Aboriginal sites located within the study area and its surrounds. The heritage induction should include the following items:

- Relevant legislation.

- Location of identified Aboriginal heritage sites, areas of archaeological potential, and areas of archaeological sensitivity.
- Basic identification skills for Aboriginal and non-Aboriginal artefacts and human remains.
- Procedure to follow in the event of an unexpected heritage item find during construction works.
- Procedure to follow in the event of discovery of human remains during construction works.
- Penalties and non-compliance.

Recommendation 6: Discovery of unanticipated Aboriginal objects

All Aboriginal objects and Places are protected under the NPW Act. It is an offence to disturb an Aboriginal site without a consent permit issued by Heritage NSW. Should any unanticipated Aboriginal objects be encountered during works associated with this proposal, works must cease in the vicinity and the find should not be moved until assessed by a qualified archaeologist. If the find is determined to be an Aboriginal object the archaeologist will provide further recommendations. These may include notifying Heritage NSW and Aboriginal stakeholders.

Recommendation 7: Discovery of unanticipated historical relics

Relics are historical archaeological resources of local or State significance and are protected in NSW under the Heritage Act. Relics cannot be disturbed except with a permit or exception notification. Should unanticipated relics be discovered during the course of the project, work in the vicinity must cease and an archaeologist contacted to make a preliminary assessment of the find. The Heritage Council will require notification if the find is assessed as a relic.

Recommendation 8: Discovery of human remains

If any suspected human remains are discovered during any activity you must:

1. Immediately cease all work at that location and not further move or disturb the remains.
2. Notify the NSW Police and Heritage NSW Environmental Line on 131 555 as soon as practicable and provide details of the remains and their location.
3. Not recommence work at that location unless authorised in writing by Heritage NSW.

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Appendices

Appendix 1 AHIMS results

THE FOLLOWING APPENDIX HAS BEEN REMOVED FOR PUBLIC EXHIBITION