

Waterloo Estate (South)

Addendum Aboriginal Cultural
Heritage Study

Report to NSW Department of
Planning Industry and Environment

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EXECUTIVE SUMMARY

The NSW Land and Housing Corporation (LAHC) submitted a planning proposal request with the City of Sydney in May 2020 to change the planning controls for the southern part of the Waterloo Estate - referred to as Waterloo Estate (South). The request included a Planning Justification Report, an Urban Design and Public Domain study and technical studies. The proposed redevelopment of Waterloo Estate (South) has been included in the NSW Government's Communities Plus program, a large scale \$22 billion scheme to renew its social housing portfolio.

The City of Sydney assessed the LAHC planning proposal request and associated technical studies and prepared a new Planning Proposal to amend the Sydney Local Environmental Plan 2012. The statutory planning controls for the site are currently contained in the Sydney Local Environmental Plan (LEP) 2012 and the South Sydney LEP 1998. The planning proposal will be supported by more detailed controls in the draft Waterloo Estate (South) Design Guide (the draft Design Guide), that are to replace the planning controls currently detailed in Sydney Development Control Plan 2012 and the South Sydney Development Control Plan 1997. The draft Design Guide is to be publicly exhibited in conjunction with the Planning Proposal. The changes to the planning controls proposed are contingent on satisfactory arrangements being made and agreed for the provision of public infrastructure.

It is the City of Sydney's intention that a draft planning agreement between LAHC and the City of Sydney be prepared and publicly exhibited for community comment.

Waterloo Estate (South) is currently undergoing a Gateway determination through community consultation of the Planning Proposal and associated technical studies. The Gateway determination for Waterloo was made on 23 June 2021. As part of this Gateway determination, an addendum heritage report is required to address the amended proposal's (Planning Proposal) building envelopes and relationship to heritage. Artefact Heritage have been engaged by the NSW Department of Planning, Industry and Environment (DPIE) to provide an addendum Aboriginal Cultural Heritage Study (ACHS) to assess the potential impacts on Aboriginal cultural heritage as a result of the new Planning Proposal.

Following the recent Gateway determination, DPIE has made a number of changes to the planning scheme. The DPIE scheme (i.e. amendments to the CoS scheme) is the proposal that will be assessed in this addendum report.

Conclusions

The proposed changes to development footprint in the DPIE scheme as compared to the CoS proposal do contain some differences in the distribution of new impacts to ground surfaces. These new impacts however are all within areas that have been previously assessed in Urbis (2020). Overall, there would be no additional impacts to Aboriginal archaeological values as a result of the new Planning Proposal and therefore the findings of this report are consistent with the ACHS (Urbis 2020).

It was found that:

- No Aboriginal objects or new areas of archaeological potential were identified during the site survey

- One area of low to moderate archaeological potential is located within the study area as identified by Urbis 2020
- The remainder of the study area has nil to low potential for Aboriginal archaeological resources
- The Planning Proposal would have total impact to the study area. This impact assessment is consistent with the impacts as assessed for the planning proposal request (LAHC).
- The proposed works as part of the Planning Proposal would impact the area of low to moderate archaeological potential. This is consistent with the impact assessed for the planning proposal request (LAHC).
- The study area holds cultural values to Aboriginal people, although they have not been as yet specifically identified though comprehensive community consultation

Recommendations

The following recommendations are made:

- Recommendations in the ACHS (Urbis 2020) should be adhered to, including:
 - Further detailed investigation on the form of an Aboriginal Cultural Heritage Assessment Report
 - Archaeological assessment (i.e. archaeological test excavation) should be carried out to identify Aboriginal archaeological resources within the study area to provide strategies to conserve, mitigate and avoid impact where necessary
 - Comprehensive consultation with Aboriginal stakeholders should be undertaken
 - An Aboriginal Heritage Impact Permit (AHIP) may be required where it is identified the development would harm Aboriginal objects
- A test excavation methodology should be prepared prior to a testing program
- Where further investigations are identified not to be required in future heritage assessments, an unexpected heritage finds procedure should be implemented for any future ground disturbing works within the Waterloo Estate (South) as part of the Planning Proposal
- Aboriginal community engagement should be undertaken during future planning stages to identify cultural values and guide design within the Waterloo Estate (South).
- Future design should adhere to the Government Architects Office Connecting with Country and Designing with Country guidelines

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1.0 INTRODUCTION

1.1 Background

The NSW Land and Housing Corporation (LAHC) submitted a planning proposal request with the City of Sydney (Cos) in May 2020 to change the planning controls for the southern part of the Waterloo Estate - referred to as Waterloo Estate (South). The request included a Planning Justification Report, an Urban Design and Public Domain study and technical studies. The proposed redevelopment of Waterloo Estate (South) has been included in the NSW Government's Communities Plus program, a large scale \$22 billion scheme to renew its social housing portfolio.

The CoS assessed the LAHC planning proposal request and associated technical studies and prepared a new Planning Proposal to amend the Sydney Local Environmental Plan 2012. The statutory planning controls for the site are currently contained in the Sydney Local Environmental Plan (LEP) 2012 and the South Sydney LEP 1998. The planning proposal will be supported by more detailed controls in the draft Waterloo Estate (South) Design Guide (the draft Design Guide), that are to replace the planning controls currently detailed in Sydney Development Control Plan 2012 and the South Sydney Development Control Plan 1997. The draft Design Guide is to be publicly exhibited in conjunction with the Planning Proposal. The changes to the planning controls proposed are contingent on satisfactory arrangements being made and agreed for the provision of public infrastructure.

The objectives of and intended outcome of the new Planning Proposal are to:

- Enable orderly redevelopment of Waterloo Estate (South)
- Prioritise the delivery of social and affordable housing, balanced with the provision of market housing
- Establish a new local centre in the CoS's hierarchy of centres – supported by infrastructure, community facilities and services, open space and retail
- Ensure the built form provides high levels of amenity for residents and tenants, to the public domain and to open space, and
- Require high environmental performance standards for building to mitigate the effects of climate change.

It is the CoS's intention that a draft planning agreement between LAHC and CoS be prepared and publicly exhibited for community comment. The comparative planning proposals are shown in Figure 1.

Waterloo Estate (South) is currently undergoing a Gateway determination through community consultation of the Planning Proposal and associated technical studies. The Gateway determination for Waterloo was made on 23 June 2021. As part of this Gateway determination, an addendum heritage report is required to address the amended proposal's (Planning Proposal) building envelopes and relationship to heritage. Artefact have been engaged by the NSW Department of Planning, Industry and Environment (DPIE) to provide an addendum Aboriginal Cultural Heritage Study (ACHS) to assess the potential impacts on Aboriginal cultural heritage as a result of the new Planning Proposal.

Figure 1: Comparative planning proposals - LAHC (left) and DPIE (right) (DPIE 2 August 2021)



1.2 Study area

The Waterloo Estate (South) study area is located in the suburb of Waterloo, City of Sydney Local Government Area (LGA) and is within the boundaries of the Metropolitan Local Aboriginal Land Council (LALC). The study area is bounded by Raglan Street to the north, Cope Street to the west, McEvoy Street to the south, and Waterloo Park, Kellick Street, Gibson Street, Wellington Street and George Street to the east. The study area is adjacent to the future Waterloo Metro station and presently includes public housing lots owned by the NSW LAHC, as well as private residential and commercial lots and strata apartments buildings. The study area is comprised of numerous cadastral lots, most of which are owned by the LAHC. The cadastral lots within the study area are listed in Table 1 below.

The study area location is shown in Figure 2.

Table 1: Addresses, lot and DP numbers and the respective owners in Waterloo Estate (South)(Source: City of Sydney, 2021)

Address	Lot/DP	Owner
209-219 Cope Street, Waterloo	Lot 1 SP 217386	NSW LAHC
238-246 George Street, Waterloo	Lot 1 DP 225159	NSW LAHC
229-231 Cope Street, Waterloo	Lot 3 DP 10721	NSW LAHC
6 John Street, Waterloo	Lot 1 DP 533762	NSW LAHC

Address	Lot/DP	Owner
97-109 Cooper Street, Waterloo	Lot A DP 105916 Lot B DP 105916 Lot C DP 105916 Lot 14 DP 10721	NSW LAHC
224 – 154 George Street, Waterloo	Lot 2 DP 533678	NSW LAHC
232 Pitt Street, Waterloo	Lot 11 DP 635663 Lot 10 DP 635663	NSW LAHC
74-76 Wellington Street, Waterloo	Lot 1 DP 224728	NSW LAHC
331-337 George Street, Waterloo	Lot 3 DP 533680	NSW LAHC
247-251 Cope Street, Waterloo	Lot 1 DP 533679	NSW LAHC
339-341 George Street, Waterloo	Lot 1 DP 77168	NSW LAHC
250 Pitt Street, Waterloo	Lot 313 DP 606576	NSW LAHC
221-223 Cope Street, Waterloo	Lot 6 DP 10721 Lot 7 DP 10721 Lot 9 DP 10721 Lot 8 DP 1147179	Ethnic Communities Council NSW
225-227 Cope Street, Waterloo.	Lot 5 DP 10721 Lot 4 DP 10721	Ms Stephanie Mary Hurst
233 Cope Street, Waterloo	Lot 12 DP 1099410 Lots 1-41 SP 79210	The Owners – Strata Plan No 79210
116 Wellington Street, Waterloo	Lot 10 DP 10721	Tillow Enterprises Pty Ltd Lot 11 DP 10721
111 Cooper Street, Waterloo	Lot 15 DP 10721	Mrs Elaine Lau and Mr Zhida Zhan
291 George Street, Waterloo	Lot 10 DP 1238631 Lots 1-20 SP 96906	The Owners – Strata Plan No 96906
110 Wellington Street, Waterloo	Lot 101 DP 1044801 Lots 1-58 SP 69476	The Owners – Strata Plan No 69476
336 George Street, Waterloo	Lot 3 DP 10686	Alpha Distribution Ministerial Holding Corporation
213-215 Cope Street, Waterloo	Lot 2 DP 217386	Alpha Distribution Ministerial Holding Corporation

1.3 Approval framework

Waterloo Estate (South) is currently undergoing a Gateway determination through community consultation of the Planning Proposal and associated technical studies. The Gateway determination for Waterloo was made on 23 June 2021. As part of this Gateway determination, an addendum heritage report is required to address the amended proposal's (Planning Proposal) building envelopes and relationship to heritage.

Waterloo Estate (South) is part of the Waterloo precinct which is being investigated for rezoning through the State Significant Precinct (SSP) process. Study requirements to the LAHC were issued in March 2017 and revised in March 2018. The study requirements outline the requirements for Aboriginal Cultural Heritage in Section 12. These are outlined in Table 2 below.

Table 2: Study requirements for Nominated State Significant Precinct – Waterloo

Requirement	Response
<p>12.1 Prepare an Aboriginal cultural heritage study to identify and describe Aboriginal cultural heritage values that exist across the whole area that will be affected by the development and documents these in the study. This may include the need for surface survey or test excavation. The identification of cultural heritage values should be guided by the Guide to investigating, assessing and reporting on Aboriginal Cultural Heritage in NSW (DECCW 2011).</p>	<p>Urbis 2020 prepared an ACHS of the Waterloo Estate (South) which identified and described the cultural heritage values.</p> <p>This report is an addendum ACHS to address the changes in the Planning Proposal. A site survey was undertaken, and the report has been prepared in accordance with the Guide to investigating, assessing and reporting on Aboriginal Cultural Heritage in NSW (DECCW 2011).</p>
<p>12.2 Where Aboriginal cultural heritage values are identified, consultation with Aboriginal peoples must be undertaken and documented in accordance with the Aboriginal cultural heritage consultation requirements for proponents 2010. The significance of the cultural heritage values for Aboriginal people who have a cultural associated with the land must be documented in the study.</p>	<p>Consultation has been undertaken by Urbis (2020). Refer to the Aboriginal Cultural Heritage Study – Waterloo Estate (South) – Land and Housing Corporations (Urbis 2020).</p> <p>No specific cultural heritage values were identified as part of the ACHS (Urbis 2020).</p>
<p>12.3 Impacts on Aboriginal cultural heritage are to be assessed and documented in the study. The study must demonstrate attempts to avoid impact upon cultural heritage values and identify and conservation outcomes. Where impacts are unavoidable, the study must outline measures proposed to mitigate impacts. Any objects recorded as part of the assessments must be documented and notified to OEH.</p>	<p>No registered Aboriginal sites have been documented as within the study area. One area of low to moderate archaeological potential has been identified. Further investigations are required within this location to determine the nature of the site and provide mitigation measures.</p>
<p>12.4 Prepare the required DCP provisions.</p>	<p>As per Urbis (2020), these are included in the Heritage Impact Statement Urbis (2018)</p>

1.4 Report objectives

This Addendum ACHS provides an evaluation of the potential difference in impacts to Aboriginal archaeological values that may result from new Planning Proposal (DPIE) for the study area, as compared to the LAHC planning proposal request.

1.5 Aboriginal community consultation

Aboriginal community consultation was undertaken by Urbis (2020) (Section 3) in accordance with Aboriginal cultural heritage consultation requirements for proponents 2010 (Consultation Requirements) (DECCW 2010b). Reference should be made to the Aboriginal Cultural Heritage Study – Waterloo Estate (South) – Land and Housing Corporations (Urbis 2020) for a full account of the consultation process.

One Registered Aboriginal Party (RAP) is registered for the project:

- Metropolitan LALC

1.6 Limitations

This report is an addendum assessment to the previous assessment undertaken by Urbis (2020). This report has to a large extent relied on information contained in Urbis (2020).

1.7 Authorship and acknowledgements

This report was prepared by Michael Lever (Heritage Consultant, Artefact Heritage) and Julia McLachlan (Senior Associate, Artefact Heritage). Internal review and project direction was provided by Sandra Wallace (Managing Director, Artefact Heritage).

The site inspection was undertaken by Adele Zubrzycka (Senior Associate, Artefact Heritage) and Rowena Welsh (Cultural Heritage Officer, Metropolitan LALC).

Figure 2: Study area – Waterloo Estate (South)



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2.0 LEGISLATIVE CONTEXT

2.1 Introduction

There are several pieces of legislation that are relevant to the assessment of Aboriginal cultural heritage. This chapter provides a summary of this legislation and potential implications for the project.

2.2 NSW National Parks and Wildlife Act 1974

The *National Parks and Wildlife Act 1974* (NPW Act) provides statutory protection to all Aboriginal places and objects. An Aboriginal Place is declared by the Minister, under Section 84 of the NPW Act in recognition of its special significance with respect to Aboriginal culture. Under Section 86 of the NPW Act Aboriginal objects and Aboriginal Places are protected. An Aboriginal object is defined as:

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

The protection provided to Aboriginal objects applies irrespective of the level of their significance or issues of land tenure. However, areas are only gazetted as Aboriginal places if the Minister is satisfied that sufficient evidence exists to demonstrate that the location was and/or is of special significance to Aboriginal culture.

There are no gazetted Aboriginal Places in the study area. All Aboriginal objects, whether recorded or not are protected under the NPW Act.

2.2.1 National Parks and Wildlife Regulation 2019

Under the authority of the NPW Act, the National Parks and Wildlife Regulation 2019 (NPW Regulation 2019) provides regulations for Aboriginal heritage assessment and consultation with Registered Aboriginal parties (RAPs).

Part 5 (Division 2) of the NPW Regulation 2019 sets out the requirements of a due diligence assessment process and provides requirements for more detailed assessment and consultation with RAPs for activities that may result in harm to Aboriginal objects. This includes:

- Clause 60 – consultation process to be carried out before application for Aboriginal heritage impact permit
- Clause 61 – application for Aboriginal heritage impact permit to be accompanied by cultural heritage assessment report.

In order to comply with Clause 60 and 61 of the NPW Regulation 2019, assessment should be conducted in accordance with the following guidelines:

- Guide to investigating, assessing and reporting on Aboriginal cultural heritage in NSW (The Guide) (OEH 2011)
- Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales (Code of Practice) (DECCW 2010a)

- Aboriginal cultural heritage consultation requirements for proponents 2010 (Consultation Requirements) (DECCW 2010b)

2.3 NSW Environmental Planning and Assessment Act 1979

The *Environmental Planning & Assessment Act* (EP&A Act) provides planning controls and requirements for environmental assessment in the development approval process. The EP&A Act consists of three main parts of direct relevance to Aboriginal cultural heritage; Part 3 which governs the preparation of planning instruments, Part 4 which relates to development requiring consent, and Part 5 which relates to activity that does not require consent.

2.3.1 Local Environmental Plan

Local Environmental Plans (LEPs) are prepared by councils in accordance with the EP&A Act to guide planning divisions for LGAs. The aim of LEPs in relation to heritage is to conserve the heritage significance are also listed within this schedule.

The study area falls within the boundaries of The City of Sydney LEP 2012. There are no Aboriginal objects or places listed on the City of Sydney LEP 2012 within the study area.

2.4 NSW Aboriginal Land Rights Act 1983

The *Aboriginal Land Rights Act 1983* is administered by the NSW Department of Human Services - Aboriginal Affairs. This Act established Aboriginal Land Councils (at State and local levels). These bodies have a statutory obligation under the Act to:

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

The study area is located within the Metropolitan Local Aboriginal Land Council (LALC) boundaries.

2.5 NSW Native Title Act 1994

The Native Title Act 1994 was introduced to work in conjunction with the Commonwealth Native Title Act. Native Title claims, registers and Indigenous Land Use Agreements are administered under the Act.

No Native Title Claims or determinations within the study area have been identified during the preparation of this report.

2.6 Commonwealth Environment Protection and Biodiversity Conservation Act 1999

The *Environment and Heritage Legislation Amendment Act (No. 1) 2003* amends the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) to include 'national heritage' as a matter of national environmental significance and protects listed places to the fullest extent under the Constitution. It also establishes the National Heritage List and the Commonwealth Heritage List.

The *Australian Heritage Council Act 2003* establishes a new heritage advisory body – the Australian Heritage Council – to the Minister for the Environment and Energy and retains the Register of the National Estate.

The *Australian Heritage Council (Consequential and Transitional Provisions) Act 2003* repeals the *Australian Heritage Commission Act 1975*, amends various Acts as a consequence of this repeal and allows the transition to the current heritage system.

Together the above three Acts provide protect for Australia's natural, Indigenous and non-Indigenous heritage. The new framework includes:

- A new National Heritage List of places of national heritage significance
- A new Commonwealth Heritage List of heritage places owned or managed by the Commonwealth
- The creation of the Australian Heritage Council, an independent expert body to advise the Minister on the listing and protection of heritage places
- Continued management of the non-statutory Register of the National Estate.

2.6.1 National Heritage List

The National Heritage List (NHL) is a list of places with outstanding heritage value to our nation, including places overseas. So important are the heritage values of these places that they are protected under the EPBC Act. This means that a person cannot take an action that has will have, or is likely to have, a significant impact on the national heritage values of a national heritage place without the approval of the Australian Government Minister for the Environment.

There are no items listed on the NHL located within the study area for this assessment.

2.6.2 Commonwealth Heritage List

The Commonwealth Heritage List (CHL) is a list of places managed or owned by the Australian Government.

There are no items listed on the CHL located within the study area for this assessment.

3.0 BACKGROUND CONTEXT

3.1 Aboriginal historical context

3.1.1 Pre-contact

Aboriginal people of the Sydney region have never ceded their ownership of the land nor entered into a treaty with colonial government or contemporary government in regard to their lands. The prior and early occupation of the land by Aboriginal people is evident from the archaeological record which comprises artefact deposits, middens, rock shelter art and engravings.

The oldest dated archaeological material in the Sydney area includes flaked pebbles associated with gravels dated to c. 40,000 years BP (before present) at Cranebrook Terrace, Penrith, and 36,000 years BP at Windsor (Attenbrow, 2010; Williams, et al., 2017; Austral Archaeology, 2011).

Archaeologists have also dated archaeological material from a sandstone shelter at Shaws Creek, located on the Western Bank of the Nepean River, to 14,700 years (BP) (Stockton & Holland, 1974). Similar dates have been documented at an archaeological site at Pitt Town on the Hawkesbury River, where archaeological evidence of Aboriginal activities were identified in two phases – the first between 15,000 years BP and the early to mid-Holocene, and the second from the late Holocene onwards (Williams, Mitchell, Wright, & Toms, 2012).

The study area is located within Gadi Country, the lands of the Gadigal / Gadigalleon people, who occupied the southern shore of Port Jackson, from South Head west to approximately Petersham (Attenbrow, 2010). Gadigal is the term for a male of the Gadi Country, while Gadigalleon refers to a female of the Gadi Country (Attenbrow, 2010, p. 22). The term Eora is currently used by some Gadigal people to refer to the central Sydney area (Attenbrow, 2010, p. 35).

Many Aboriginal tribal boundaries in Australia have been determined from linguistic evidence. They are therefore only approximations. Social interaction, tribal boundaries and linguistic evidence may not always correlate. Further, a western understanding of the nature of borders and boundaries often appears incompatible with Aboriginal understandings as described by anthropological authors including William EH Stanner (1905-1981) (Stanner, 1965).

3.1.2 Early contact

British colonisation had a profound and devastating effect on the Aboriginal population of the Sydney region. In the early days of the colony, Aboriginal people were disenfranchised from their land as the British claimed areas for settlement and agriculture. The colonists, often at the expense of the local Aboriginal groups, also claimed resources such as pasture lands, timber, fishing grounds and water sources. The devastation of Aboriginal culture, came about through invasion and often massacres by both the British military as well as by armed civilians. The spread of European diseases accompanied these causes of violent death. It is thought that over half the Aboriginal people of the Sydney region died during the 1789 smallpox epidemic (Karskens, 2010), with one contemporary account reporting that only three of the original 60 to 70 Gadigal population survived beyond 1789 (Collins, 1798).

Aboriginal life practices were drastically altered as a result of dispossession and disease, such that “traditional” practices may not have been encountered often by early recorders. One of the several early documenters of Aboriginal life in Port Jackson was Lieutenant Watkin Tench. Tench is notable for relatively objective comments on Aboriginal life, including his admission that his ability to observe local Aboriginal people was both irregular and only fleeting (Tench, 1788 (1990), p. 55). One can add to this limitation that Tench could not have known whether he was observing traditional owners of

Gadi country, or other Aboriginal people visiting or travelling through Gadi Country. Some of the direct observations by Tench, rather than speculations, regarding Aboriginal life or culture include notes that men in the Port Jackson area often had a front tooth missing, that they were frequently highly scarred, had pierced nasal-septums, and used white ochre on their bodies (Tench, 1788 (1990), pp. 51-52). Tench noted that fishing was the main food gathering activity, with the important distinction that men generally fished by spear from rocks, while women fished from bark canoes. Tench expressed admiration at the skill of these women in controlling their canoes. Their canoes often held a small fire on a clay bed along with an infant child or children, allowing women to catch, cook and eat fish while navigating “several miles in the open sea” (Tench, 1788 (1990), p. 53). Tench also observed that women characteristically were missing the lower two joints of the left hand (Tench, 1788 (1990), p. 55). Tench’s statement that fishing was the main means of Aboriginal sustenance may be accurate, but it needs to be balanced against the consideration of comparative visibility. Aboriginal people fishing from the shore or from canoes would have been far more readily visible to Tench than would Aboriginal people harvesting grains, berries, fruits and hunting terrestrial species in locations away from the coast. Most of the Aboriginal people that Tench observed lived in the coastal area, in rock shelters rather than constructed shelters.

Tench’s descriptions are richly complimented by the Watling collection of First Fleet artwork held at the Natural History Museum, London. This collection dates to between 1788 to 1794 and comprises 512 drawings by various artists depicting life and botany in the early settlement of Sydney. The Aboriginal woman and her children who are visible in Figure 3, are fishing from a canoe using a line with a shell hook depicted below the image as spilling out of a basket. A small fire on a clay bed in the canoe allows for fish to be immediately cooked and eaten. Whether for aesthetic or other reasons, the artist has surrounded the image with artefacts characteristically associated with male roles – a Fizz-gig (a multi-pronged fishing spear), a cane spear and a “sword”. In Figure 4 an Aboriginal man is visible poised to spear a fish with a multi-pronged “Fizz-gig” spear.

Figure 3: Untitled, Watling collection Natural History Museum, London.

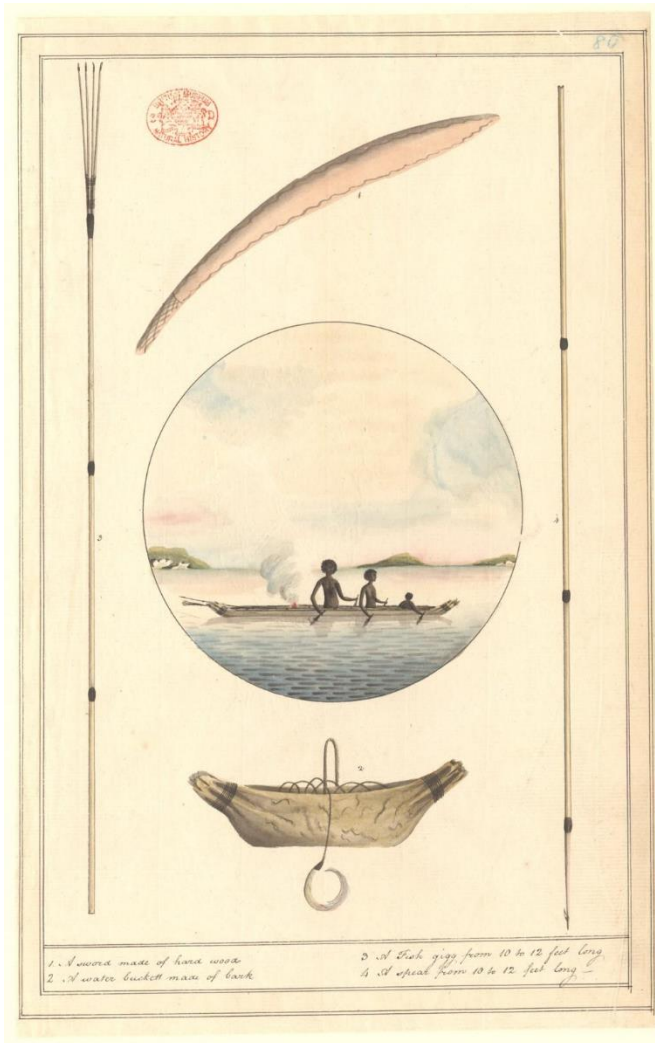


Figure 4: "A Native Striking Fish", Watling collection Natural History Museum, London.



As the colony grew Aboriginal people were increasingly displaced from Country. Despite this, or possibly because of this intrusion (Flannery, 1999), Aboriginal people practiced ceremony in the surrounds of the study area. The nearby locations now known as Belmore Park and Central Station were important cultural grounds for ceremonial practice during the 1790s: David Collins, a contemporary of the time, described a 'clear spot between the town and the brickfield' being utilised for one such ceremony in December 1793 (Collins, 1798). Collins noted the continuous use of this space as a ceremonial place and campsite, noting that the Aboriginal community 'derived so many comforts and so much shelter in bad weather' at the site (Collins 1798). Until the mid-1800s, the sand dunes of Prince Alfred Park, located one kilometer northeast of the study area, were used as a campsite.

3.2 Colonial historical context

The study area and surrounds has been subject to residential, commercial and industrial development for over 150 years. This has resulted in modification to the natural environment and the archaeological potential of soils. The most pronounced impacts to soil surfaces result from historical efforts to level the uneven nature of the sand dunes that once predominated in the area. The historical density of population and industry in the study area will have seen significant levels of subsurface utilities and services installed from an early date in the areas development.

A fuller outline of the historical development of the study area is provided in Section 3.3.2 of the Heritage Impact Statement provided by Urbis for project assessment in 2020.

3.3 Environmental context

3.3.1 Hydrology and topography

The surrounds of the study area were once a rolling plain of sand dunes (Quaternary sand sheet) interspersed with waterbodies, freshwater swamps and occasional streams (Figure 5). Covered by an open woodland and herbaceous shrubland, the study area would have constituted an attractive location for Aboriginal people in the past, particularly given the likely presence of waterfowl, fish and eels in local waterbodies. It would be expected that such utilisation of the landscape would result in preferential deposition of Aboriginal artefacts in swales (low points between dunes), and at the toe of slopes overlooking local waterbodies.

Figure 5: Ca. 1850 Plan of Public Works & Roads – approximate location of study area in red (State Library NSW)



3.3.2 Geomorphology and soils

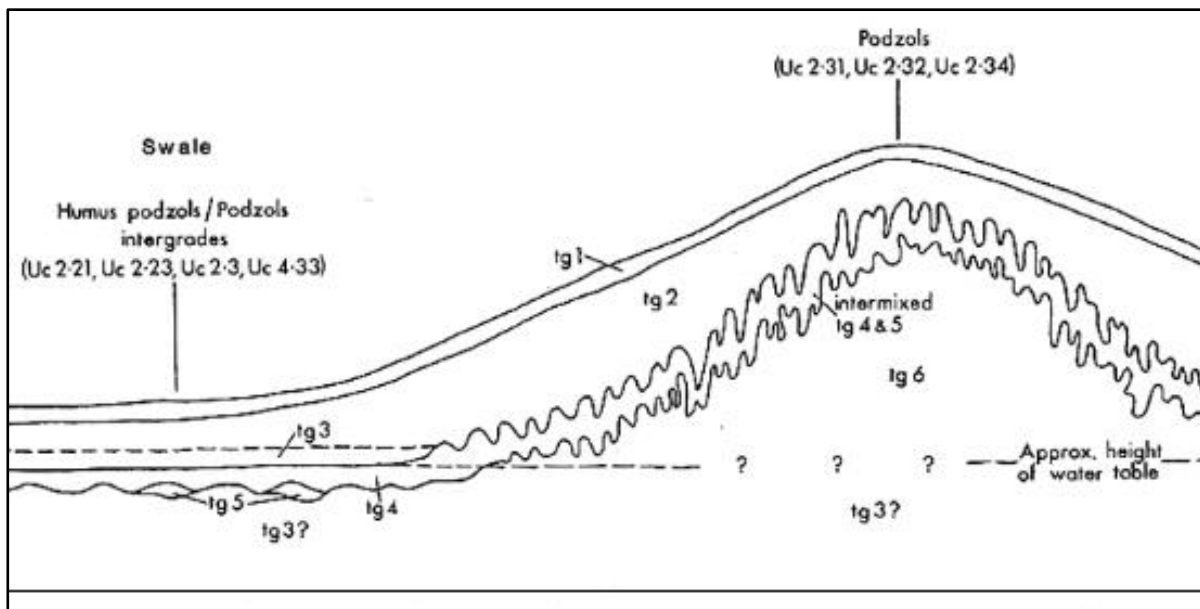
The study area is located within the Botany Basin, a geological feature that is largely filled by a Quaternary sand sheet, often of considerable depth. The sand sheet was deposited by prior watercourses during marine inundation, and most recently by wind. These sands constitute a geological unit referred to as Botany Sands (Australian Stratigraphic Unit 2352) (Australian Stratigraphic Units Database, 2021). The uppermost layers of the Botany Sands have been classified as Tuggerah Soils on the *Soil Landscapes of the Sydney 1:100,000 Sheet* (Chapman & Murphy, 1989). Within the Botany Basin, much of the Botany Sands and all of the Tuggerah Soils it contains only reached their current natural forms within the past 25,000 years. The dynamic nature of land formation in the Botany Basin has included several periods of significant inundation over this period. Carbon dates taken from swale fills of dunes, which post-date the formation of main dune bodies, range from 1700 years ago to the present, reflecting the recent and ongoing aeolian (wind) deposition of dune material (Gale, deRocheport, Moore, & Timms, 2018). Following the stabilisation of sea levels from approximately 4,500 years ago, local sand dunes in the Botany Basin formed and were stabilised by vegetation. A stained grey sand surface formed representing a habitation surface and this stained grey surface represents the archaeologically sensitive unit of the Botany Sands.

It is important to note that not all units of the Botany Sands or Tuggerah Soils are archaeologically sensitive. The archaeologically sensitive layer of the Botany Sands consists primarily of the sands deposited by the Holocene winds, stained grey from organic materials, which once comprised the ground surface during Aboriginal habitation of the area. As noted above, they are likely to date no earlier than from approximately 4,500 years ago. These stained grey sands are the top unit (tg1) of the Tuggerah Soil Landscape. This topsoil unit (tg1) is described as a surface of about 300mm deep of organically grey-stained unconsolidated sand, sitting above bleached sands (tg2) of one to two metres in depth. Traces of more recently deposited degrading vegetation may be preserved as an overlying thin darker grey layer above the archaeologically sensitive grey tg1 sands. The full description of tg1 in the *Sydney Soil Landscape 1:100,000 series* reads:

tg1: Loose speckled grey-brown loamy sand. This is grey-brown speckled sand to loamy sand with apedal single-grained structure and porous sandy fabric. It generally occurs as topsoil (A1 horizon). This material consists of a mixture of small dark organic fragments and clean, well sorted, quartz sand grains. Colour ranges from brownish-grey (10YR 4/1) to brownish-black (10YR 2/3) or black (10YR 2/1) with increasing organic matter. It is characteristically water repellent. The pH is slightly acid (pH 6.0) to neutral (pH 7.0). Roots are abundant and charcoal fragments are often present. Stones are absent.¹

The Tuggerah Soil units that underlie the bleached tg2 sands can continue to tens of metres in depth. They vary in colour and composition largely according to local hydrology and position on the landform. They frequently include combinations of stained brown sand (tg3), yellow massive sand often to considerable depths (tg6) and lenses of iron-indurated sand pan (coffee rock) (tg5). These sand units rest on earlier Pleistocene sands, which in turn rest on Hawkesbury Sandstone or at times Wianamatta shale. A characteristic cross section of Tuggerah Soils on dune and swale are shown in Figure 6 below.

Figure 6: Tuggerah Soil cross section. Source: Datasets NSW



3.3.3 Environmental context - Impact of European settlement on Tuggerah soils

The sand dunes of the Botany Basin, located south of the first non-Aboriginal settlement at Sydney Cove, were widely regarded by colonists as an unproductive hinterland (Karskens, 1999). The northernmost extent of these dunes was used as an early burial ground - the Devonshire Street Cemetery - which was considered at the time to be outside the bounds of the city proper. Moore Park was another large expanse of dune fields that was long utilised as a rubbish tip as well as a rifle range and cricket ground. The sand dunes were not infrequently referred to as visually undesirable 'barren sand hills' and praise was given for their removal and replacement with European style grassed parkland and level ground for roads (1867). Even before these intentional efforts to change the dune field landscape were initiated, considerable alteration had already taken place through de-vegetation and destabilisation of local sands. This had largely resulted from the clearance of trees and shrubs, through timber getting and through attempts to graze stock on the sand sheets and

¹ Chapman, G.A., & C.L. Murphy, 1989. Soil landscapes of the Sydney 1:100 000 sheet, Soil Conservation Service of NSW, Sydney.

dunes. The local dune grasses were not able to regenerate from the effects of grazing by hooved stock (Carter, 1969). By 1854, these local dunes and sand sheets had been mobilised, and parliamentary attention was turned to the massive scale of drifting sand and its impacts on residents in suburbs such as Surry Hills and Strawberry Hills on the edge of the Botany Basin. These suburbs suffered from sands blown from nearby land to the east and south towards them. A parliamentary visit to Strawberry Hills viewed houses that had been almost totally engulfed beneath sand drifts of up to 20 feet (6m) depth (Sydney Morning Herald, 1854, p. 4). This level of sand drift is evidence of very large scale and widespread airborne sand mobilisation. It would also provide indirect evidence for what would almost certainly have been high levels of sand mobilisation through the impacts of water erosion on newly exposed sand surfaces. These water-eroded and exposed sands were then further subject to movement by wind.

4.0 ARCHAEOLOGICAL CONTEXT

4.1 Archaeological reports

Only a limited number of archaeological reports have been carried out to date in similar soils that have been subject to likely comparable levels of disturbance. Reference should be made to the Aboriginal Cultural Heritage Study – Waterloo Estate (South) – Land and Housing Corporations (Urbis 2020) for previous investigations within the area. The majority of archaeological reports summarised by Urbis (2020) concerned excavations carried out on low lying Gynea soils, particularly those immediately associated with local waterbodies such as the Tank Stream in the Sydney CBD and reports concerning swampland and foreshore locations such as at Darling Harbour.

The below summary archaeological reports are from excavations carried out on Tuggerah Soils such as in the study area is presented below.

Artefact Heritage CBD and South East Light Rail (CSELR) (in preparation)

The findings of this report have not yet been released by the proponent for public view. Nevertheless, results can be inferred from the AHIMS site card for FZ (Fee Zone) 23 Artefact Scatter (AHIMS ID 45-6-3812) which was identified as a result of archaeological excavation at an embankment next to the Kensington Ponds, north of Alison Parade, Kensington. FZ23 artefact scatter (AHIMS ID 45-6-3812) is located 2.5km east of the study area and is comprised of 42 Aboriginal objects recovered from a deposit of historical fill and redeposited sand 0 – 1.8m deep. The site contains glass and flint artefacts, indicating a chronological connection to site RSY1 (Randwick Stabling Yard Site, described below).

Site FZ23 (AHIMS ID 45-6-3812) is located on an artificial levee that was constructed in 1860 to retain waters in the Lachlan Swamp. Based on this information and the nature of the deposit described in the site card it is possible to infer that the site is not where these Aboriginal objects were manufactured, utilised or discarded. Rather that the formation of the embankment in 1860 resulted in the aggregation of artefacts from the archaeologically sensitive t1 layer into one location.

Site Tay Reserve (AHIMS ID 45-6-3704) was also identified during testing for this program. It constitutes two small lithic artefacts retrieved from redeposited local soils in a parkland location that had apparently been historically long protected from impacts to its soils.

In addition to testing at FZ23 and Tay Reserve, Artefact Heritage carried out an extensive program of archaeological test excavation associated with the CSELR project. It is understood from preliminary results of this report that although a large number of archaeological test pits were excavated, these archaeological test pits overwhelmingly encountered disturbed or removed t1 soil units, and that artefact counts were nil to very low in all testing locations other than FZ23 artefact scatter (AHIMS ID 45-6-3812).

Urbis, 2020. Aboriginal Cultural Heritage Study – Waterloo Estate (South) – Land and Housing Corporation

Although no soil profile detail was available for Urbis' study area, attention was drawn to geotechnical borehole data derived from investigations at the former Rachel Forster Hospital at 134-144 Pitt Street, immediately north of the study area. Two geotechnical studies identified natural brown to light grey sand below modern fill, and overlying clays. AHMS (2014) were quoted and agreed with by Urbis, that preserved aeolian sands should be considered archaeologically sensitive to 2.5m in depth as they may represent previous habitation surfaces that had been buried beneath overlying historical fill.

One area of low to moderate archaeological potential was identified in the southern portion of the project area. This is summarised in Section 4.3. The remainder of the study area was identified to have nil to low archaeological potential.

GML Heritage, 2018. Investigations of Aboriginal Site RSY1, Randwick, Post Excavation Report. Report prepared for Acciona and Transport for NSW.

Large numbers of English flint fragments and nodules were identified by GML Heritage at the Randwick Stabling Yards site of the CSELR, located 2.5km southeast of the study area. Test and salvage archaeological excavation identified a preserved Tuggerah Soil tg1 and tg2 profile beneath the carpark hardstand located in what had once been a horse paddock behind ancillary buildings of the Randwick Racecourse. It is understood that English flint ballast dumped in this location was utilised by Aboriginal people in manufacturing stone tools some time between 1788 and about 1830. Following analysis, these fragments were found to include over 2400 Aboriginal stone artefacts formed from flint, and five Aboriginal glass artefacts.

The preservation and retention of artefacts in this site was due to specific historical processes that had resulted in the capping of natural ground surfaces beneath fill. The location had once comprised rolling dunes slightly south of a now removed branch of the Lachlan Swamp. With the increase of horse racing activities in the location during the 1830s, the site was used as a horse paddock. This resulted in some disturbance to the Tuggerah Soil tg1 unit, including trampling of artefacts resting on it into the underlying tg2 soil unit. Successive phases of introduced fill to level and elevate the site mitigated further damage to the Tuggerah Soil tg1 unit, as did the eventual introduction of a hardstand surface.

The Randwick Stabling Yard Site (RSY1) is not statistically representative of general archaeological sensitivities in the area. It comprises a discrete high-density deposit of imported high quality lithic material in a geographical area that contains no equivalent lithic resources. The location, quality, quantity and degree of utilisation of this European flint is not reflective of Aboriginal resource utilisation prior to colonisation (as the flint was an introduced material). Further, the artefactual material at this site was fortuitously protected through the combined effects of the introduced fill acting as a “lid” or a cap, together with the relatively low usage of the site.

Nonetheless, the Randwick Stabling Yards site can be interpreted as playing an important role serving as a snapshot in time of the soil conditions and artefact production methods during the first decades following British colonisation. It further demonstrates the close relationship between the habitation surface t1 soil unit, and the presence of lithic artefacts.

AMBS, 2018 – Sydney Metro City & Southwest, Archaeological Method Statement: Barangaroo, Martin Place, Pitt Street & Waterloo

An archaeological method statement was prepared by AMBS for the proposed Sydney Metro station at Waterloo to assess site specific impacts and provide a methodology for archaeological investigation. AMBS noted the existing building construction and development in the area is likely to have impacted the Quaternary sand sheet. However, based on the presence sand identified through geotechnical investigation, it was determined that there was potential for undisturbed soil layers which could retain Aboriginal archaeological deposits to be present beneath areas of limited ground disturbance.

Artefact Heritage, 2016 – Sydney Metro Chatswood to Sydenham, Aboriginal Heritage Archaeological Assessment

An Aboriginal heritage archaeological assessment was undertaken as part of the Sydney Metro Chatswood to Sydenham Project as a technical study for the Environmental Impact Assessment. This included the proposed Metro Station at Waterloo located between Botany Road, Raglan Street and Cope Street. The proposed Metro Waterloo Station is located directly west of the study area assessed in this report.

The assessment identified that the location of works is on a Quaternary sand sheet where discrete portions of intact stratified deposits containing Aboriginal objects may occur beneath extant buildings and deep layers of introduced fill. Overall, it was considered that there would be moderate-high potential for Aboriginal objects in sub-surface contexts where there had not been extensive subsurface impacts.

Artefact Heritage, 2015 – CSELR Early Works, Moore Park Tennis Centre

An archaeological test excavation took place in 2014 in the Moore Park Tennis Centre, located approximately 2km northeast of the study area. Excavation consisted of five test pits measuring 2 x 0.8m. This investigation identified that the area had 500mm of introduced fill overlying sands. A total of five artefacts were recovered from a vestigial lower layer of a tg1 unit of Tuggerah sands resulting in the identification of a low-density artefact scatter (Moore Park AS1). Artefacts were limited to the extent and depth of preserved tg1 soil unit.

Attenbrow, 2002 – Pre-colonial land and resource use in Centennial, Moore and Queens Parks, NSW

In an assessment for the preparation of a cultural heritage management plan for Centennial, Moore and Queens Parks, Attenbrow discussed archaeological evidence within the wider parklands, identifying art sites in Centennial Park (sites since destroyed) and Queens Park, along with rock shelters present within Queens Park. The soils in Attenbrow's study area were Tuggerah Soils. Attenbrow found in general that archaeological potential at Centennial Park and areas of similar sandy soil would be limited to locations where the uppermost soil units had remained intact, while archaeological potential would be limited or absent where the uppermost soil units had been removed.

4.2 Registered Aboriginal sites

A search of the Aboriginal Heritage Information Management System (AHIMS) was carried out on 4 August 2021 by Michael Lever, Artefact Heritage. This search attempted to use the same spatial parameters and buffer (1 kilometre (km)) as utilised by Urbis (Urbis, 22 October 2018). Due to changes implemented in AHIMS during 2021, it is not currently possible to stipulate a buffer area for AHIMS searches. The search was therefore carried out for an area that as near as possible constituted a 1km buffer around the study area. The search resulted in the same number of sites as Urbis (Urbis, 22 October 2018), but only two of these sites matched Urbis' search.

GDA 1994 MGA 56	Eastings: 332831 to 334698
	Northings: 6248844 to 6246739
Number of sites	4
AHIMS Search ID	6106613

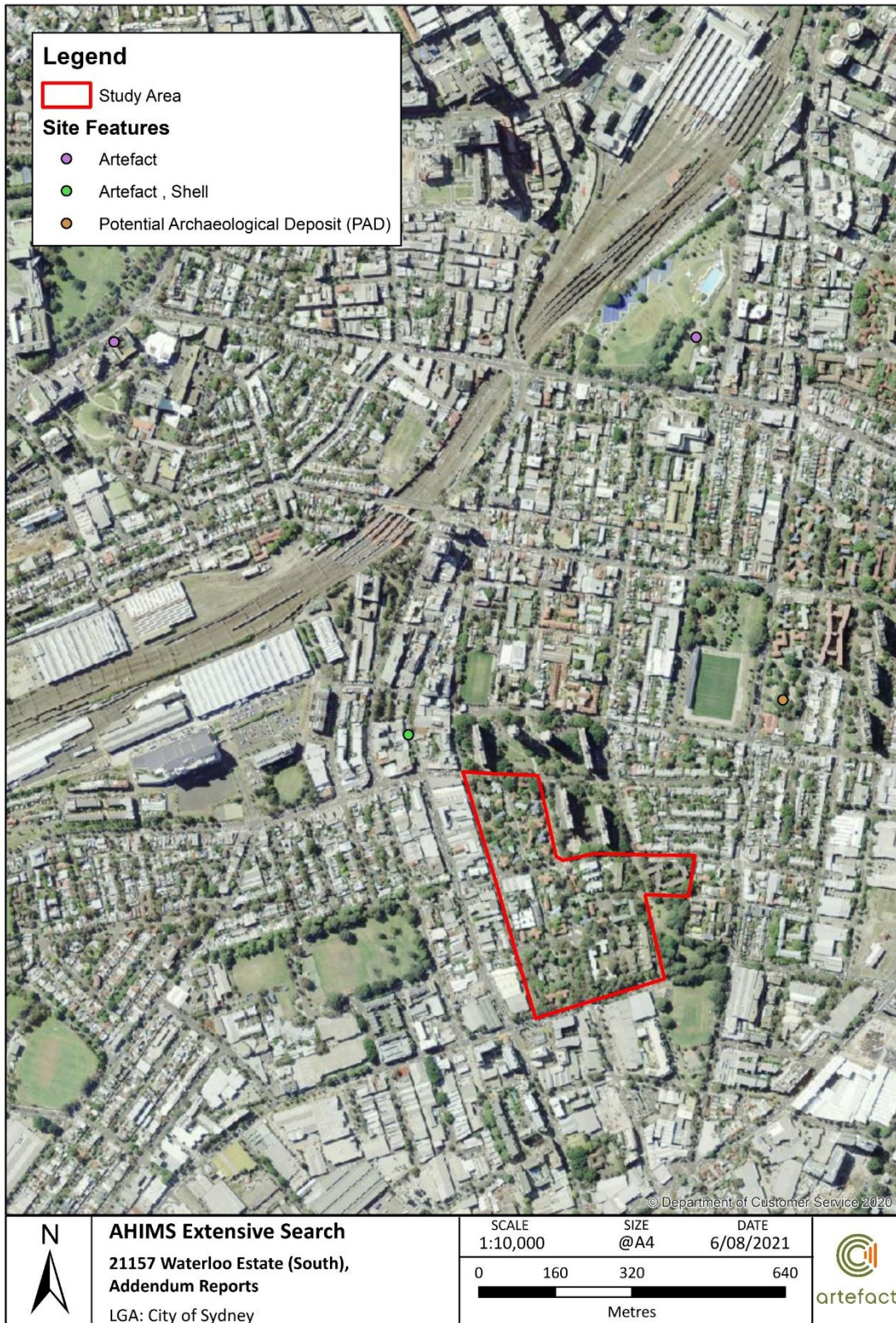
Of the four registered Aboriginal sites in the search area, one site (45-6-2597; Wynyard St Midden) is listed as 'Not a Site' - locational data for it is incorrect. The location at which it is recorded as occurring is visible on historical aerial photography as having been bulk excavated prior to registration of the site. Nevertheless, on the basis of this site listing, Urbis (22 October 2018) proposes that the study area should be considered sensitive for midden sites.

Site 45-6-3899 ES-PAD-2018-01 is a location of potential archaeological deposit that has not yet been tested to validate its archaeological potential.

Site 45-6-2822 USYD: Central is a single tuff flake recovered from a program of eleven (11) 1m x 1m test excavation pits excavated in residual soils at Sydney University (JMCHM, 2006).

Site 45-6-3848 244 Cleveland Street is situated in Prince Alfred Park - mentioned previously here as having been a camping area for Aboriginal people following colonisation. The site includes a variety of knapped lithic forms in several materials, in addition to knapped dark green and blue bottle glass.

Figure 7: AHIMS Extensive map



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Figure 8: AHIMS within proximity to the study area



Document Path: D:\GIS\GIS_Mapping\21157 Waterloo Estate (South) Addendum Reports\MXD\AHIMS Nearby Sites.mxd

4.3 Identified area of low to moderate archaeological potential

AHMS (2014) undertook a desktop study within the location of Waterloo which indicated that some portions of the area may contain archaeological potential. The study found that:

...bounded by Phillip Street to the north, Pitt Street to the east, McEvoy Street to the south, and Cope Street to the west. 'Waterloo' was described as located on the upper slopes of Mount Carmel, likely to represent the upper slope of a large sand dune of the Tuggerah soil landscape. The northern and western sections of the site had been subject to deep excavation, and the potential for the survival of cultural material in these locations was considered to be low to nil. However, the southern part of the site was considered to have potential for intact and complex cultural material related to the Aboriginal occupation of the area, considering the location within 200m of parts of Waterloo swamp, and the depth of the natural soil profile.

Urbis (2020) identified an area of low to moderate archaeological potential within the southern portion of the Waterloo Estate (South) study area. The area of potential is considered to have low degree of potential to contain shell middens and low to moderate degree to contain stone artefact deposits.

The area of low to moderate archaeological potential was based on predictive modelling of the study area which was informed by environmental, historical and archaeological information. It was estimated that archaeological material is most likely to occur within the less disturbed areas and in proximity to the known resource areas. Resource areas include areas such as Waterloo Swamp, which was located southeast of the study area and Shea's Creek located south of the study area.

The area of potential includes portions of the site that have been developed for residential purposes as well as associated infrastructure and landscaping. Depths of these impacts are not currently known however it is assumed that the construction of the residential dwellings are likely to have significantly impacted the subsurface contexts. Areas of potential are therefore more likely to be contained to locations that have not undergone extensive development such as the landscaped areas and beneath sealed road surfaces and footpaths where disturbances are more likely to be limited to the upper stratigraphic units.

Figure 9: Area of low to moderate archaeological potential (Urbis 2020)



URBIS STAGE 1 ABORIGINAL CULTURAL HERITAGE STUDY: WATERLOO STATE SIGNIFICANCE PRECINCT (SSP) STUDY AREA
AREA OF IDENTIFIED ARCHAEOLOGICAL POTENTIAL

4.4 Summary and predictive model

The evidence gathered from the geomorphological data and archaeological excavations carried out in Tuggerah Soils in the wider vicinity of the study area indicates that there exists only low archaeological potential where the archaeologically sensitive t1 upper soil unit has been removed or disturbed through development including road formation and housing. Where archaeological sites have been located in such disturbed t1 soils these are either low density deposits, or sites where specific historical mechanisms have acted to aggregate artefacts such as at sites FZ23 or RSY1.

Historically, the site is located on within proximity to Waterloo Swamp and associated watercourses including Shea's Creek (Figure 10). While the watercourses in Figure 10 show evidence of European modification, it is indicative of the original location of these freshwater resources. This landform context is considered to have potential for Aboriginal cultural material. The presence of cultural material is largely dependent upon the extent of historical impacts. The study area was situated on a sand dune complex which likely sloped south to southwest towards Waterloo Swamp. The southern portion of study area may have undergone less rigorous levelling and therefore may have some potential to retain subsurface stratified deposits. Within the southern portion, areas of archaeological potential are more likely to be contained to locations that have not undergone extensive development such as the landscaped areas and footpaths where disturbances would be limited to the upper stratigraphic units.

While the presence of sand dunes does not necessarily equate the presence of artefact bearing deposits, the proximity of the landform to swamp lands indicates that if the upper portion of intact Tuggerah Soil landscape survives, there is some potential for the presence of Aboriginal objects to be present. These are likely to be low density artefact deposits.

There are two sites in the AHIMS search area at which artefacts have been identified. The site with the highest density of artefacts (45-6-3848 244) is located in parkland that has likely been subject to

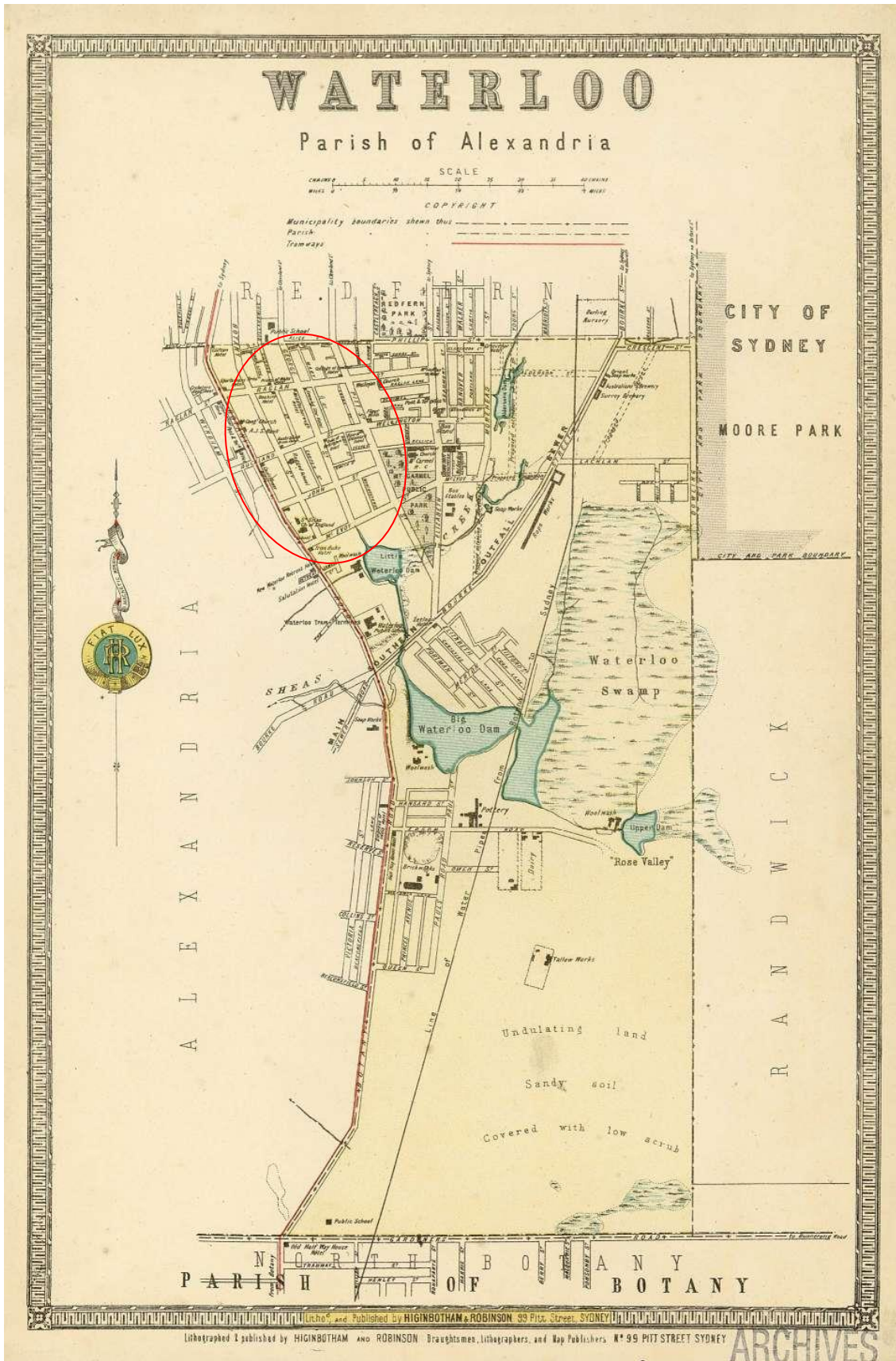
lower rates of soil disturbance than other nearby locations, while the second site 45-6-2822 USYD, comprised a single flake located in soils and landform distinctive to that at the search area.

Table 3 below summarises the predictive model for the occurrence of each site type listed by Urbis (22 October 2018), as compared to the predictive modelling in this report.

Table 3: Predictive modelling

Site Type	Urbis 2020	Artefact 2021
Subsurface stone artefacts	Low	Low
Surface stone artefacts	Nil	Nil
Shell midden (in situ)	Low	Nil-Low
Ceremonial sites	Nil	Indeterminate – not tangible
Burials	Nil-Very Low	Nil-Very Low
Carved Trees	Nil	Nil
Grinding Grooves	Nil	Nil
Lithic Quarries	Nil	Nil
Rock Shelters	Nil	Nil
Stone Arrangements	Nil	Nil

Figure 10: Parish of Alexandria map – study area shown in red (date unknown)



5.0 SITE SURVEY

5.1 Survey methodology

A site inspection was undertaken on 10 August 2021 by Adele Zubrzycka (Senior Associate, Artefact Heritage) and Rowena Welsh (Cultural Heritage Officer, Metropolitan LALC). The survey was undertaken on foot within the publicly accessible easements within the study area. A photographic record was kept detailing aspects of the study area including landform, disturbances, and vegetation. Ground exposures were examined for Aboriginal objects. The aim of the inspection was to identify the level of preservation or disturbance of the landscape and the potential for preserved artefact deposits within it.

5.2 Survey results

The study area consists of a rolling hill landform context with a gradual slope from northeast to southwest (Figure 11). No visible watercourses or waterbodies were visible during the site inspection. It is evident that the study area has been largely modified by artificial means including construction of housing apartment buildings and associated underground services, as well as landscaping with the open area spaces (Figure 12 - Figure 13).

It is evident that the while development has been undertaken across the site, the landform retains its natural slope which indicates that the construction has been localised to the building footprint and superficially across portions of the open spaces. There were few areas of exposure to ascertain whether artefacts were present within the soil profile. It is likely that these portions of exposure are largely introduced fills as a result of the landscaping.

No Aboriginal objects or additional areas of Aboriginal archaeological potential were identified during the site inspection.

5.2.1 Previously identified area of low to moderate archaeological potential

The area identified as a low to moderate archaeological potential (Urbis 2020) appears to be superficially disturbed. Portions within the area have been modified by the construction of the apartment buildings and associated infrastructure.

The area has been largely developed to accommodate appartement blocks and the open spaces appear to have been landscaped (Figure 14 - Figure 17). Grading is likely to have occurred across the site however the depth of this impact is difficult to ascertain through visual observations. There is also evidence of underground services within this location indicating that there has been some level of subsurface disturbance within the study area (Figure 18).

Figure 11: Study area north showing sloping landform



Figure 12: Study area north showing levelling for building



Figure 13: Study area showing levelling for building cutting to accommodate building



Figure 14: Area of low to moderate archaeological potential showing landscaped areas and buildings



Figure 15: Area of low to moderate archaeological potential showing building cutting



Figure 16: Area of low to moderate archaeological potential showing road verge cutting



Figure 17: Area of low to moderate archaeological potential showing landscaped areas



Figure 18: Area of low to moderate archaeological potential showing utilities



6.0 SIGNIFICANCE ASSESSMENT

An assessment of the cultural heritage significance of an item or place is required in order to form the basis of its management. The Guide (OEH 2011) provides guidelines for heritage assessment with reference to the *Burra Charter* (Australia ICOMOS 2013). The assessment is made in relation to four values or criteria (Table 4). In relation to each of the criteria, the significance of the subject area should be ranked as high, moderate, or low.

Cultural heritage consists of places or objects, that are of significance to Aboriginal people. Cultural heritage values are the attributes of these places or objects that allow the assessment of levels of cultural significance.

Assessing the cultural significance of a place or object means defining why a place or object is culturally important. It is only when these reasons are defined that measures can be taken to appropriately manage possible impacts on this significance. Assessing cultural significance involves two main steps, identifying the range of values present across the study area and assessing why they are important.

Social/cultural heritage significance should be addressed by the Aboriginal people who have a connection to, or interest in, the site. Information on consultation with Aboriginal stakeholders for the project is provided in the Aboriginal Cultural Heritage Study – Waterloo Estate (South) – Land and Housing Corporations (Urbis 2020)

Table 4: Burra Charter Heritage significance criteria

Criterion	Description
Social	The spiritual, traditional, historical or contemporary associations and attachments the place or area has for Aboriginal people. Social or cultural value is how people express their connection with a place and the meaning that place has for them. Does the subject area have strong or special association with the Aboriginal community for social, cultural or spiritual reasons?
Historic	Historic value refers to the associations of a place with a historically important person, event, phase or activity in an Aboriginal community. Is the subject area important to the cultural or natural history of the local area and/or region and/or state?
Scientific	This refers to the importance of a landscape, area, place or object because of its rarity, representativeness and the extent to which it may contribute to further understanding and information. Information about scientific values will be gathered through any archaeological investigation carried out. Does the subject area have potential to yield information that will contribute to an understanding of the cultural or natural history of the local area and/or region and/or state?
Aesthetic	This refers to the sensory, scenic, architectural and creative aspects of the place. It is often linked with the social values. It may consider form, scale, colour, texture and material of the fabric or landscape, and the smell and sounds associated with the place and its use. Is the subject area important in demonstrating aesthetic characteristics in the local area and/or region and/or state?

6.1 Previously assessed significance

The ACHS undertaken by Urbis (2020) did not identify Aboriginal sites within the study area. In addition, no information was received from Aboriginal parties identified during formal Aboriginal community consultation carried out by Urbis (2020) to determine the cultural heritage and social values of the study area. Further investigation of the areas of archaeological potential should be undertaken in order to adequately assess this significance.

In summary, no cultural heritage values were identified within the study area however further investigation is recommended to determine whether Aboriginal objects are located within areas of archaeological potential.

Urbis (2020, p46) did not provide an assessment of scientific (archaeological) significance, as no Aboriginal artefactual sites were identified within the study area.

One area of low to moderate archaeological potential was identified by Urbis (2020) in the study area. Potential significance of this area is discussed briefly in tabular form below

6.2 Updated significance assessment

The area would hold cultural heritage values to Aboriginal people, although this has not been as yet identified through community consultation. Cultural heritage may be an intangible value, not necessarily through a tangible object, that exists as a connection and meaning of a particular place.

The assessment of archaeological potential indicates the possible survival of Aboriginal objects within subsurface contexts within locations that have not been heavily impacted by development activity, including deep building footings and basement levels.

Intact archaeological deposits within the region are considered to be rare and would be of high research significance. It is also possible that Aboriginal objects may be located within secondary deposits (out of context) such as redeposited fills or disturbed subsurface contexts. Any such artefacts are unlikely to demonstrate high archaeological significance as they would not provide information on their primary deposition relating to Aboriginal land use.

7.0 IMPACT ASSESSMENT

7.1 Planning Proposal

The DPIE has amended the CoS's planning proposal to amend the Sydney Local environmental Plan 2012 for the following areas: zoning, building height (HOB), floor space ratio (FSR) and gross floor area (GFA).

The proposed planning controls will facilitate with the following development outcomes within Waterloo Estate (South):

- approximately 3,012 dwellings on LAHC-owned land, including 847 social housing dwellings, 227 affordable housing dwellings and 1,938 market dwellings, plus about 127 additional market dwellings on privately owned sites.
- a large park adjoining Waterloo Metro station of more than two hectares and a small park in the South of the site;
- 255,000 sqm of GFA, including less than 12,000 sqm for commercial premises and 5,000 sqm for community facilities, childcare and health facilities;
- Four towers of about 30 storeys and most other building generally around 8 storeys (with some 4 storeys and others up to 13 in some locations
- Optimal tree retention, particularly through the north-east street block and along McEvoy Street;
- formalised perimeter block typology with enhanced pedestrian and cycle connectivity between McEvoy Street and Mead Street.²³

The Waterloo Estate (South) will undergo full site redevelopment. At this stage of the development process, depth of impact is not known. However it is assumed that, while the depth of impact may vary across the site, the entirety of the site would be impacted by the proposed development.

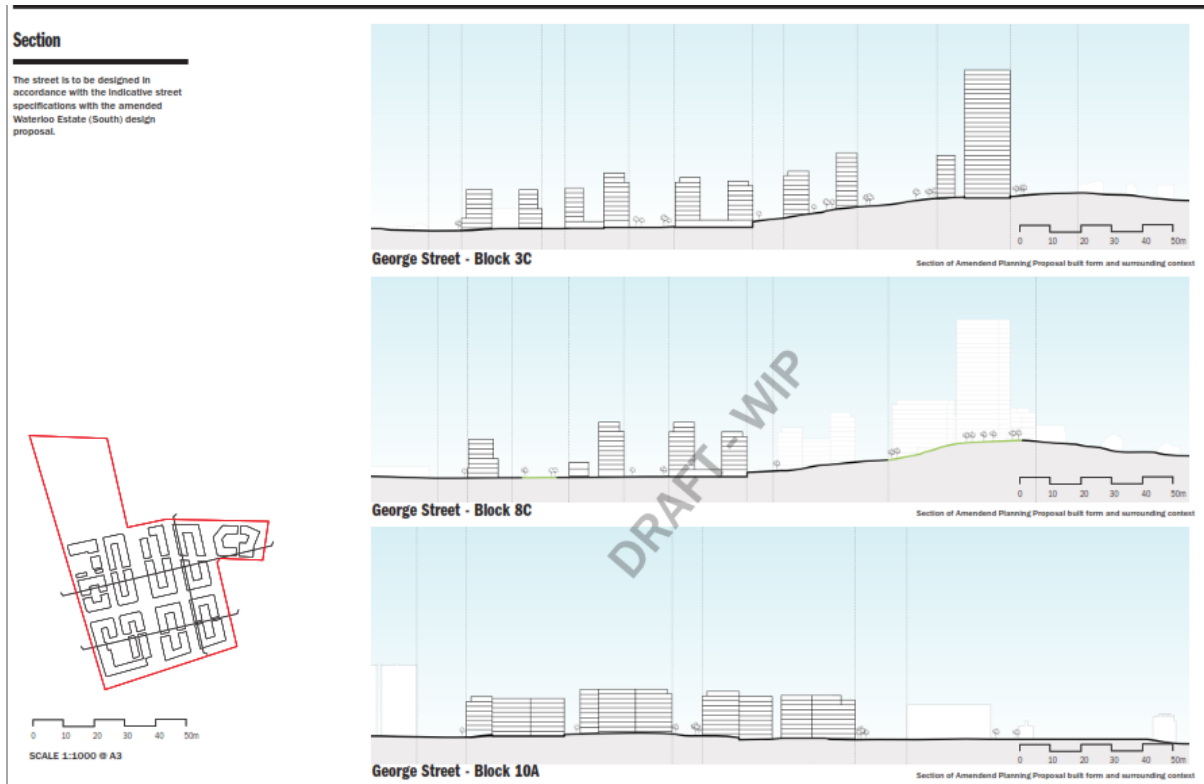
² City of Sydney, "Waterloo Estate (South)."

³ Hassell, "Waterloo South Planning Proposal Urban Design Review"

Figure 19: Planning Proposal showing building height (Source: Hassell, 2021)



Figure 20: George Street cross section (Hassell, 2021)



7.2 Comparative assessment

The comparative planning proposals (LAHC and DPIE) are shown in Figure 21. There is a notable difference between the two planning proposals, namely, building footprint and building heights. However, it is noted that there would be a total impact of the study area extent in order to facilitate the redevelopment of Waterloo Estate (South). This is consistent with the impacts identified in the ACHS (Urbis 2020).

Figure 21: Comparative planning proposals - LAHC (left) and DPIE (right) (DPIE, 2021 and Hassell, 2021)

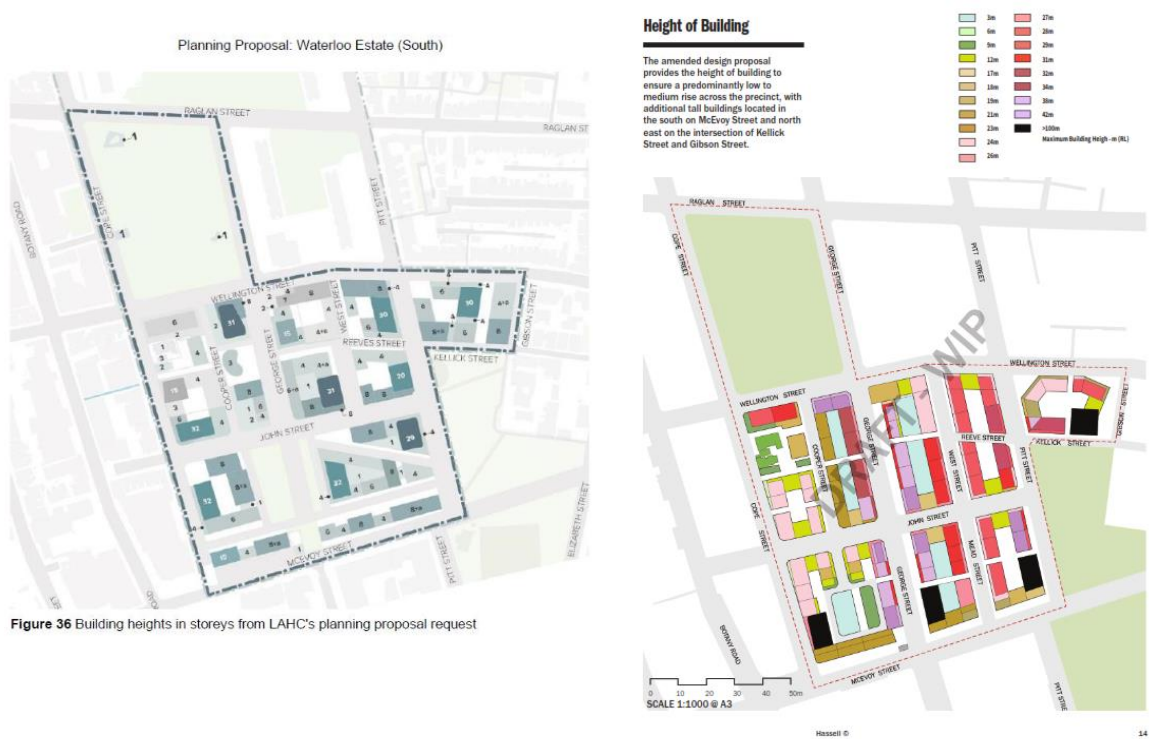


Figure 36 Building heights in storeys from LAHC's planning proposal request

7.2.1 Impact to identified area of low to moderate archaeological potential

The Planning Proposal as outlined in this report would have total impact on the area identified as low to moderate archaeological potential (Figure 22). Mitigation measures should be undertaken to further investigate the area of potential prior to implementing the planning proposal.

Figure 22: Impact assessment to identified area of low to moderate archaeological potential



8.0 RECOMMENDATIONS

8.1 Conclusions

The proposed changes to development footprint in the DPIE planning proposal as compared to the CoS proposal do contain some differences in the distribution of new impacts to ground surfaces. These new impacts however are all within areas that have been previously assessed in Urbis (2020). Overall, there would be no additional impacts to Aboriginal archaeological values as a result of the new Planning Proposal and therefore the findings of this report are consistent with the ACHS (Urbis 2020).

It was found that:

- No Aboriginal objects or new areas of archaeological potential were identified during the site survey
- One area of low to moderate archaeological potential is located within the study area as identified by Urbis 2020
- The remainder of the study area has nil to low potential for Aboriginal archaeological resources
- The Planning Proposal would have total impact to the study area. This impact assessment is consistent with the impacts as assessed for the planning proposal request (LAHC).
- The proposed works as part of the Planning Proposal would impact the area of low to moderate archaeological potential. This is consistent with the impact assessed for the planning proposal request (LAHC).
- The study area holds cultural values to Aboriginal people, although they have not been as yet specifically identified though comprehensive community consultation

8.2 Recommendations

The following recommendations are made:

- Recommendations in the ACHS (Urbis 2020) should be adhered to, including:
 - Further detailed investigation on the form of an Aboriginal Cultural Heritage Assessment Report
 - Archaeological Assessment should be carried out to identify Aboriginal archaeological resources within the study area to provide strategies to conserve, mitigate and avoid impact where necessary
 - Comprehensive consultation with Aboriginal stakeholders should be undertaken
 - An Aboriginal Heritage Impact Permit (AHIP) may be required where it is identified the development would harm Aboriginal objects
- A test excavation methodology should be prepared prior to the testing program.
- test excavation methodology should be prepared prior to a testing program

- Where further investigations are identified not to be required in future heritage assessments, an unexpected heritage finds procedure should be implemented for any future ground disturbing works within the Waterloo Estate (South) as part of the Planning Proposal
- Aboriginal community engagement should be undertaken during future planning stages to identify cultural values and guide design within the Waterloo Estate (South).
- Future design should adhere to the Government Architects Office Connecting with Country and Designing with Country guidelines

9.0 REFERENCES

- (1854, November 4). *Sydney Morning Herald*, p. 4.
- Artefact Heritage. (2015). *CSELR: Early Works, Moore Park Tennis Centre*.
- Artefact Heritage. (In Preparation). *Aboriginal Archaeological Excavation Report. Report prepared for Acciona and Transport for NSW*.
- Attenbrow, V. (2002). *Pre-Colonial Land and Resource Use in Centennial, Moore and Queens Parks – Assessment of Historical and Archaeological Evidence for Centennial Parklands Conservation Management Plan*. . Report to Richardson.
- Attenbrow, V. (2010). *Sydney's Aboriginal Past: Investigating the Archaeological and Historical Records*. UNSW Press. UNSW: Sydney.
- Austral Archaeology. (2011). *Windsor Museum, NSW - Aboriginal Archaeological and Salvage Excavation. AHIP #2119. Report to Hawkesbury City Council*.
- Australian Stratigraphic Units Database. (2021). *Botany Sands*. Retrieved from <https://asud.ga.gov.au/>
- Bell's Life in Sydney and Sporting Chronicle. (1867, July 20). *Bells Life In Sydney*.
- Carter, N. (1969). A "Paradise Lost" – the Kurnell Peninsula Since 1770. *Australian Natural History*, V. 16 276-280.
- Chapman, G., & Murphy, C. (1989). *Soil landscapes of the Sydney 1:100 000 sheet*. Sydney: Soil Conservation Service NSW.
- Collins, D. (1798). *An account of the English colony in New South Wales : with remarks on the dispositions, customs, manners, &c. of the native inhabitants of that country*. London: T. Cadell Jun & W. Davies.
- Flannery, T. (1999). *The Birth of Sydney*. Melbourne: Text Publishing.
- Gale, S., deRocheffort, C., Moore, S., & Timms, A. (2018). The origin and stratigraphic significance of the Quaternary Waterloo Rock of the Botany Basin of south-east Australia. *Australian Geographer*, V.49. no2. 291-316.
- GML Heritage. (2018). *Investigations of Aboriginal Site RSY1, Randwick, Post Excavation Report. Report prepared for Acciona and Transport for NSW*.
- Godden Mackay. (1998). *Angel Place Project Final Excavation Report—Volume Three—Prehistory Report, prepared for AMP Asset*.
- JMCHM. (2006). *Sydney University Campus 2010: Test Excavations at the University of Sydney, Central Site, Darlington Campus', for Capital Insight*.
- Karskens, G. (1999). *Inside the Rocks: the archaeology of a neighbourhood* . Inside the Rocks: Hale & Ironmonger.
- Karskens, G. (2010). *The Colony. A History of Early Sydney*. Allen & Unwin: Sydney.
- MacPhail, M., & Owen, T. (2018). What was growing along the Tank Stream Valley, Sydney Cove in 1788? *Australasian Historical Archaeology*, No. 36 pp 16-28.

Stanner, W. (1965). Aboriginal Territorial Organization: Estate, Range, Domain and Regime. *Oceania* Vol. 36 No.1, 1-26.

Steele, D. (2006). *Aboriginal Archaeological Excavation Report. The KENS Site.*

Stockton, E., & Holland, W. (1974). Cultural sites and their environment in the Blue Mountains. *Archaeology and physical anthropology in Oceania*, Vol.9, No.1, p36-65.

Tench, W. (1788 (1990)). *Watkin Tench 1788*. Melbourne: Text Publishing.

Urbis. (2020). *Heritage Impact Statement Waterloo Metro Quarter Waterloo State Significant Precinct*. Report to Urban Growth NSW Development Corporation.

Williams, A., Burrow, A., Toms, P., Brown, O., Richards, M., & Bryant, T. (2017). The Cranebrook Terrace revisited: recent excavations of an early Holocene alluvial deposit on the banks of the Nepean River, NSW, and their implications for future work in the region. *Australian Archaeology*, Vol. 83, No. 3 p100-109.

Williams, A., Mitchell, P., Wright, R., & Toms, P. (2012). A Terminal Pleistocene Open Site on the Hawkesbury River, Pitt Town, New South Wales'. *Australian Archaeology*, 85-97.



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