57 Station Road, Seven Hills NSW

Archaeological Report

DRAFT REPORT

Prepared for Lehr Consultants International Pty Ltd

30 June 2022

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- FDC Construction & Fitout Pty Ltd: Matthew Hezlett.
- Lehr Consultants International Pty Ltd: Ben Avallone and David Caleo.

Biosis staff involved in this project were:

- Jenny Beckius (assistance with mapping).

Contents

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Photos

Glossary

ACHA	Aboriginal Cultural Heritage Assessment
AHIMS	Aboriginal Heritage Information Management System
AR	Archaeological Report
Biosis	Biosis Pty Ltd
Consultation requirements	*Aboriginal Cultural Heritage Consultation Requirements for Proponents 2010*
DA	Development Application
DECCW	Department of Environment, Climate Change and Water (now Heritage NSW)
DP	Deposited Plan
EIS	Environmental Impact Statement
EP&A Act	*Environmental Planning and Assessment Act 1979*
GPS	Global Positioning System
GSV	Ground Surface Visibility
Heritage NSW	Heritage NSW, Department of Planning and Environment (DPE)
ICOMOS	International Council on Monuments and Sites
LALC	Local Aboriginal Land Council
LCI	Lehr Consultants International Pty Ltd
LEP	Local Environmental Plan
LGA	Local Government Area
MGA	Map Grid of Australia
NHL	National Heritage List
NNTT	National Native Title Tribunal
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
REP	Regional Environmental Plan
SEARs	Secretary's Environmental Assessment Requirements

SEPP	State Environmental Planning Policy
SSD	State Significant Development
Study area	Northern portion of Lot B DP404669, 57 Station Road, Seven Hills NSW
the Code	*Code of Practice for Archaeological Investigation of Aboriginal Objects in NSW*

Summary

Biosis Pty Ltd (Biosis) was commissioned by Lehr Consultants International Pty Ltd (LCI) to undertake an Aboriginal Cultural Heritage Assessment (ACHA) to support an Environmental Impact Statement (EIS) for the proposed development of the SYD08 data centre facility at 57 Station Road, Seven Hills, New South Wales (NSW) (the project). The project is to be assessed as a State Significant Development (SSD 33781208) under Part 4.36 of the *Environmental Planning and Assessment Act 1979* (EP&A Act).

A Development Application (DA) for the entire lot was previously approved by Blacktown City Council on 10 January 2022 (DA-21-01058). The DA has allowed for the removal of trees, bulk earthworks, stormwater drainage works and the construction of a single storey data centre with ancillary offices, on-site parking and associated landscaping throughout SYD08 and the adjacent build SYD09. The DA did not require an Aboriginal heritage assessment prior to approval.

This Archaeological Report (AR) documents the findings of the archaeological investigations conducted as part of the ACHA. As required under Section 2.3 of *Code of Practice for Archaeological Investigation of Aboriginal Objects in NSW* (the Code) (DECCW 2010) , the AR provides evidence about the material traces of Aboriginal land use to support the conclusions and management recommendations in the ACHA. This assessment has been formulated to respond to the requirement for an ACHA under the Secretary's Environmental Assessment Requirements (SEARs) issued for the project.

The study area is located within Lot B DP404669, approximately 6 kilometres north-west of Parramatta Central Business District (CBD), and approximately 25 kilometres north-west of the Sydney CBD (Figure 1 and Figure 2). It encompasses 2.5 hectares of private and the adjacent road reserves.

An archaeological survey was conducted on 23 February 2022. The overall effectiveness of the survey for examining the ground for Aboriginal sites was deemed low. This was attributed to vegetation cover restricting ground surface visibility (GSV) along the northern boundary and extensive levels of demolition and disturbances throughout the remainder of the study area, which also provided a low amount of exposures.

No previously unrecorded Aboriginal cultural heritage sites were identified during the survey due to extensive bulk excavation, demolition and stockpiling throughout the extent of the study area, which affected the GSV and exposure. The study area has therefore been assessed as containing low archaeological potential.

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).

Heritage inductions for all site workers and contractors should be undertaken in order to prevent any unintentional harm to unexpected Aboriginal objects or sites, or Aboriginal sites or objects located within proximity to the study area (see Section 6.2.2).

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: Areas identified as having low archaeological potential

No further investigations are required for areas assessed as having low archaeological potential. This recommendation is conditional upon Recommendations 4 and 5.

Recommendation 2: Continued consultation with the registered Aboriginal parties

It is recommended that the proponent provides a copy of the draft ACHA report to the registered Aboriginal parties (RAPs) for the project and considers all comments received. The proponent should continue to inform these groups about the management of Aboriginal cultural heritage within the study area throughout the life of the project.

It is also recommended that RAPs be invited to monitor future works and be consulted on the development of interpretive signage describing the area's cultural significance to Aboriginal people.

Recommendation 3: Discovery of unanticipated Aboriginal objects

All Aboriginal objects and Places are protected under the NSW *National Parks and Wildlife Act 1974* (NPW Act). It is an offence to disturb an Aboriginal object or site without a consent permit issued by the Heritage NSW, Department of Planning Industry and Environment (Heritage NSW). Should any 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.

It is recommended that an ACHMP and heritage induction process for site staff be developed to ensure an unexpected finds procedure is present during the construction phase of this project, as outlined in Section 6.2.

Recommendation 4: Discovery of human remains

If any suspected human remains are discovered during any activity works, all activity in the vicinity must cease immediately. The remains must be left in place and protected from harm or damage. The following contingency plan describes the immediate actions that must be taken in instances where human remains or suspected human remains are discovered. Any such discovery within the study area must follow these steps:

1. Discovery: If suspected human remains are discovered all activity in the vicinity must stop to ensure minimal damage is caused to the remains; and the remains must be left in place, and protected from harm or damage.
2. Notification: Once suspected human skeletal remains have been found, the Coroner's Office and the NSW Police must be notified immediately. Following this, the find will be reported to the Aboriginal parties and DECCW NSW.

1 Introduction

1.1 Project background

Biosis was commissioned by LCI to undertake an ACHA to inform the submission of an EIS for the proposed development of the SYD08 Data Centre facility at 57 Station Road, Seven Hills, NSW (the study area).

A DA for the entire lot was previously approved by Blacktown City Council on 10 January 2022 (DA-21-01058). The DA has allowed for the removal of trees, bulk earthworks, stormwater drainage works and the construction of a single storey data centre with ancillary offices, on-site parking and associated landscaping throughout SYD08 and the adjacent build SYD09. The DA did not require an Aboriginal heritage assessment prior to approval.

This AR documents the findings of the archaeological investigations conducted as part of the ACHA for the SSD application. As required under Section 2.3 of the Code, the AR provides evidence about the material traces of Aboriginal land use to support the conclusions and management recommendations in the ACHA. This project is being assessed as a SSD under Part 4.36 of the EP&A Act, and as such this assessment has been formulated to respond to the requirement for an ACHA in accordance with the SEARs.

This investigation 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 purpose of the assessment is to assist the Secretary of the Department of Planning, Industry and Environment (DPIE) in their consideration and determination of the application.

1.2 Study area

The study area is located within Lot B DP404669, approximately 6 kilometres north-west of Parramatta CBD, and approximately 25 kilometres north-west of the Sydney CBD (Figure 1 and Figure 2). The impact area for SYD08 covers the northern portion of the site. It encompasses approximately 1.5 hectares of private and the adjacent road reserves.

The study area is within the:

- Blacktown Local Government Area (LGA).
- Parish of Prospect.
- County of Cumberland (Figure 2).

The study area is bounded by Blacktown Creek to the north, parklands and McCoy Street to the east, Station Road to the south, and private industrial buildings to the west.

1.3 Planning approvals

The proposed development will be assessed against Part 4.36 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).

- NSW NPW Act.
- NSW *National Parks and Wildlife Amendment Act 2010.*
- Infrastructure State Environmental Planning Policy (SEPP) 2007.
- Blacktown Local Environmental Plan 2015 (LEP).
- Blacktown Development Control Plan 2015.

1.4 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 Deerubbin Local Aboriginal Land Council (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 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.

1.5 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 1.

Table 1 Investigators and contributors

Name and qualifications	Experience summary	Project role
Ashley Bridge BA, MArchSci (Adv) (Hons)	Ashley is an archaeologist with three years' experience. She has experience in conducting Aboriginal and historical heritage assessments, surveys and archaeological test excavations for a variety of projects throughout NSW, particularly in the Sydney region. Ashley possesses specialist skills in the identification of human remains, while also having experience in zooarcheological analysis. She also has experience in project management for a number of Aboriginal heritage projects, including text excavations, throughout Sydney and Western Sydney.	• Project Management. • Test excavations. • Report writing.
Crystal Garabedian BSc/BA (Hons)	Crystal joined Biosis in the Sydney office in 2021 as a Heritage Research Assistant. She has experience in conducting archaeological surveys, test excavations, Aboriginal consultation and desktop assessments for a variety of projects throughout NSW. Crystal possesses specialist skills in the identification of marine zooarchaeological material, whilst also having experience in processing historical artefacts, including ceramics, building materials and glass.	• Background research.
Molly Crissell BA Archaeology	Molly completed her Bachelor of Archaeology, majoring in Geography in 2019, and joined Biosis in 2021. She has two years' experience working as an archaeologist and has undertaken fieldwork in NSW and WA. This has allowed her to develop her skills in Aboriginal and historical projects, and has developed skills in archaeological surveys, excavations, and report writing.	• Aboriginal community consultation.
Taryn Gooley BASc (Hons) Archaeology	Taryn has over 10 years' archaeological consultancy experience, as well as extensive volunteering experience on archaeological research projects overseas. Taryn has a strong background in project management, leading project teams and volunteer groups in heritage management projects throughout NSW and Western Australia. Her areas of expertise include archaeological and heritage management advice, archaeological excavation and survey, artefact analysis, Aboriginal community consultation, technical report writing, and preparing cultural heritage management plans. Taryn is also accomplished in obtaining approvals under the NSW NPW Act.	• Quality assurance.

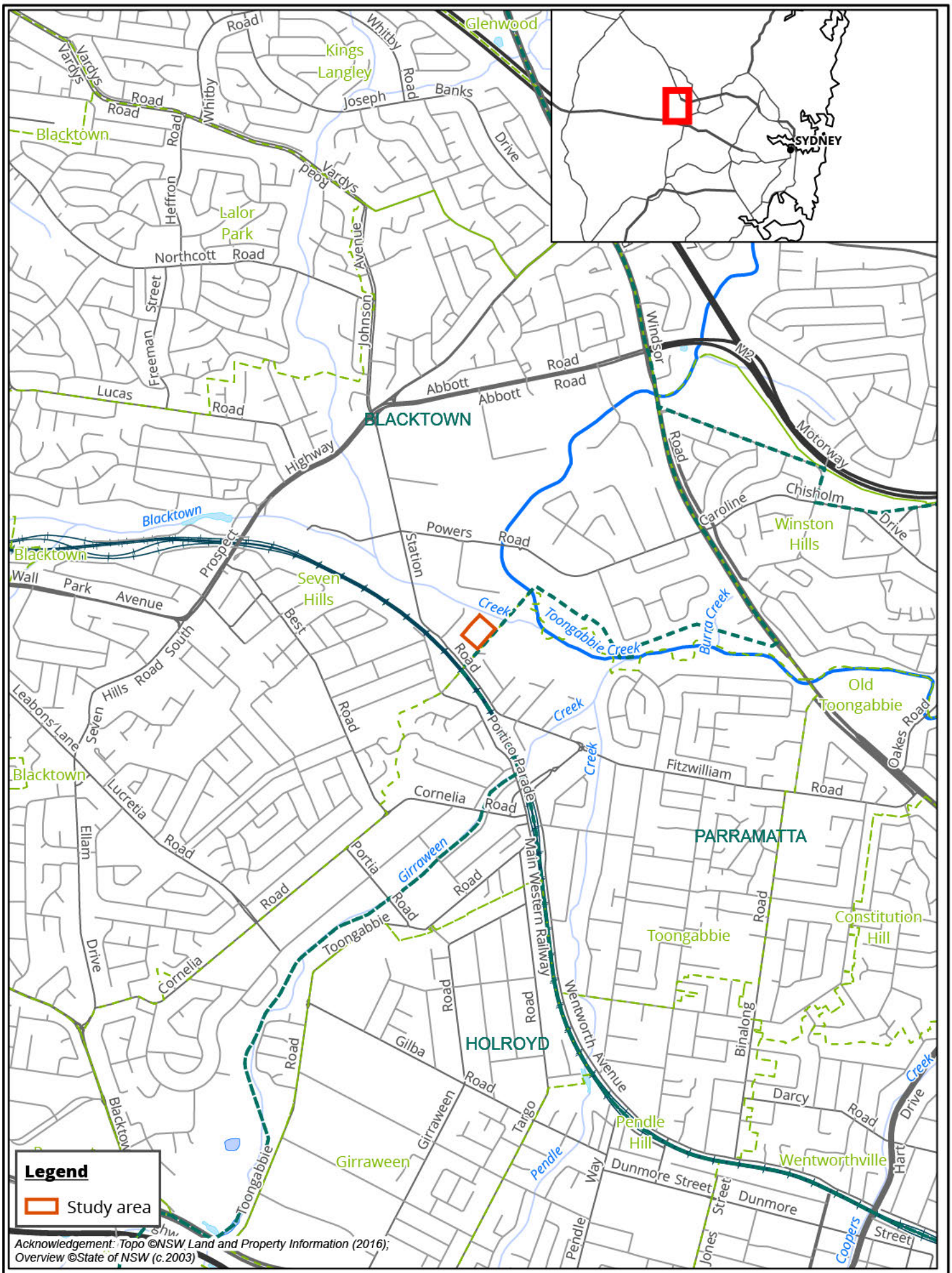

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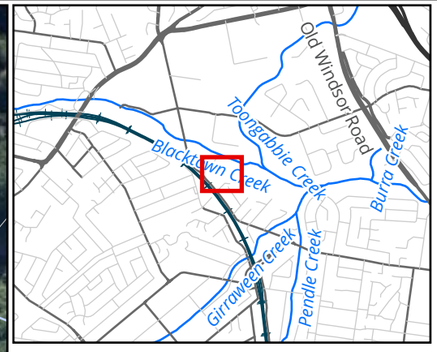
Figure 1 Location of the study area

Matter: 36773
Date: 07 June 2022,
Drawn by: JET, Checked by: CM, Last edited by: jbeckius
Location:P:\36700s\36773\Mapping\
36773_SYD08 Data Centre, Layout: 36773_ACHA_F1_Locality

Scale 1:25,000@ A4, GDA 1994 MGA Zone 56



Legend

- Study area
- Lot

Figure 2 Study area detail

0 10 20 30 40

Metres

Scale: 1:1,000@ A3

Coordinate System:
GDA 1994 MGA Zone 56

N

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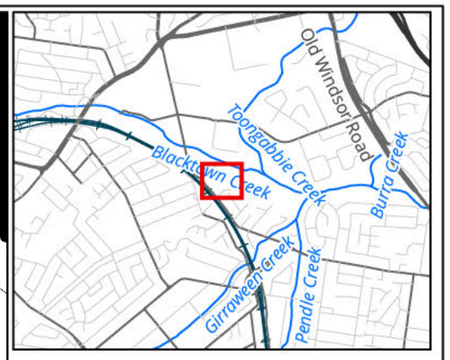
Matter: 36773, Date: 30 June 2022,
Drawn by: JET, Checked by: CM, Last edited by: jbeckius
Location: P:\36700s\36773\Mapping\
36773_SYD08 Data Centre, Layout: 36773_ACHA_F2_StudyArea

2 Proposed development

The proposed works involve the development of the SYD08 data centre facility at Lot B DP404669, 57 Station Road, Seven Hills NSW. The proposed development with be assessed as a SSD under Part 4.36 of the EP&A Act. The SSDA seeks approval for the construction and use of a new data storage premises at the rear of the site. The particulars of the proposal are as follows:

- Construction of a new two-storey 19.2MW data centre at the rear of the site including ancillary office space.
- A total floor area of 8,076 square metres.
- Provision of external plant in plant yards to the west, north and south of the proposed data hall, as well as rooftop plant, which will be screened.
- Provision of nine new generators, for a site total of twelve generators.
- Capacity for up to 289,000 litres of diesel fuel storage.
- New vehicular circulation to provide access to Station Road, connecting into new driveways already approved under DA-21-01058.
- Parking for 31 vehicles.
- Landscaping works (Figure 3).



Legend

Study area

Figure 3 Proposed development

0 8 16 24 32 40 N

Metres

Scale: 1:1,000@ A3

Coordinate System:
GDA 1994 MGA Zone 56

biosis

Matter: 36773, Date: 07 June 2022,
Drawn by: JET, Checked by: CM, Last edited by: jbeckius
Location: P:\36700s\36773\Mapping\
36773_SYD08 Data Centre, Layout: 36773_ACHA_F3_ProposedWorks

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 in any heritage assessment. The local environmental characteristics can influence human occupation and 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 Topography and hydrology

The study area is located within the Cumberland Lowlands physio-geographic region. The Cumberland Lowlands consist of low lying, gently undulating plains, rises and low hills atop Wianamatta Group shales and sandstone with a dense drainage net of predominantly northward flowing channels (Bannerman & Hazelton 1990a, pp. 2). The Wianamatta geological group is Middle Triassic in age (245–235 million years ago), overlaying the Mittagong Formation and Hawkesbury Sandstone. It is divided into two formations, the Ashfield Shale and the overlying Bringelly Shale. These are separated by Minchinbury Sandstone.

The study area is located across a gentle slope landform, which form flats over the study area. These landforms sit upon Ashfield Shales, which dominate the southern portion of the study area and occurs extensively throughout the Cumberland Lowlands (Figure 4). The Ashfield Shale formation is one of three geologic formations that make up the Wianamatta Group and consists of finely-layered laminite and grey siltstone (Bannerman & Hazelton 1990b, pp. 28). The northern portion of the study area comprises alluvial valley deposits. These consist of loosely consolidated sediment derived from Hawkesbury Sandstone and Wianamatta Group Shales, comprised of Ashfield Shale, Bringelly Shale and Minchinbury Sandstone (Bannerman & Hazelton 1990b, pp. 68). Bringelly Shale consists of shales with pockets of occasional calcareous claystone, laminate, grey siltstone and infrequent coal deposits, and Minchinbury Sandstone comprises 'fine- to medium-grained quartz lithic sandstone' (Bannerman & Hazelton 1990b, pp. 28).

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 the Sydney region, most notably by JMCHM (2000, 2005a, 2006a, 2008). Predictive models which have been developed for the region have a tendency to favour higher order streams as the locations of campsites as they 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.

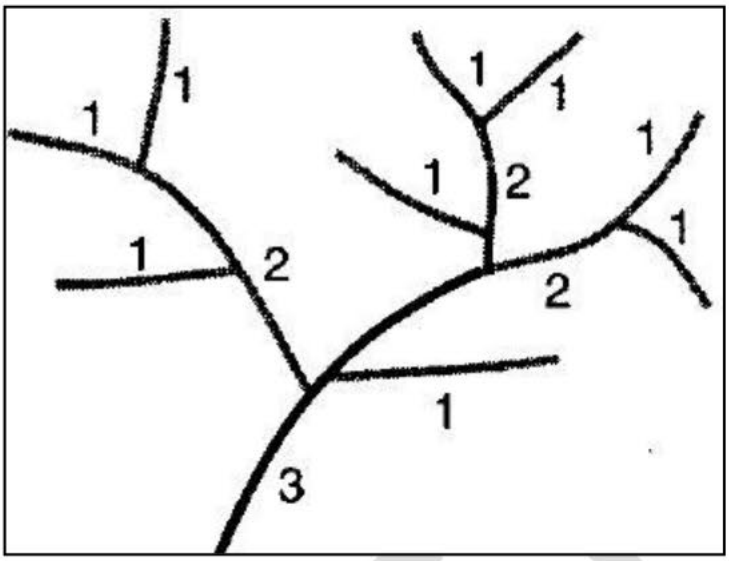


Photo 1 Diagram showing Strahler stream order (Ritter, Kochel, & Miller 1995, pp. 151)

Hydrology within the vicinity of the study area includes Blacktown Creek, a first order non-perennial watercourse, and located approximately 20 metres north of the study area. Blacktown creek is a tributary of Toongabbie Creek, a second order perennial watercourse, located approximately 225 metres north-east of the study area. Parramatta River, a third order perennial water source, is located approximately 4.8 kilometres east of the study area (Figure 5).

3.1.2 Soil landscapes

Soil landscapes possess distinct morphological and topological characteristics that also 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 study area is located within two soil landscapes: South Creek soil landscape and Blacktown soil landscape (Figure 6).

The South Creek soil landscape exists in a small portion of the north-western corner of the study area. It is characterised as a fluvial soil landscape situated on flat to gently sloping alluvial plains of less than 5%, with a local relief of 10 metres, with intermittent terraces or levees. Soils are generally very deep (135–190 centimetres) layered sediments over bedrock or relief soils, with red and yellow podzoilic soils being predominant upon terraces. Some structured grey clays, leached clay and yellow solodic soils also occur. In areas adjacent to drainage lines where soil evolution has occurred, structured plastic clays and structured loams can also be present. This soil landscape varies in many areas from erosion and deposition resulting in potential disturbances to soil sequencing and potential archaeological deposits (Bannerman & Hazelton 1990a, pp. 68–69). Typical South Creek soil characteristics are summarised in Table 2.

Table 2 South Creek (*sc*) soil landscape characteristics (Bannerman & Hazelton 1990a, pp. 69)

Soil Material	Description
South Creek 1 (*sc1*)	Brown sandy loam to sandy clay loam with a porous and earthy fabric, and a single-grained apedal structure, usually occurring as a topsoil (A horizon). Roots are abundant in surface layers, while small angular or rounded gravels of 2–6 mm may occur; other inclusions, such as charcoal, do not occur. Colours range from a dull reddish brown (5YR 4/3) to dull yellowish brown (10YR 4/3), and are generally moderately acidic but can vary between strongly to slightly acidic.
South Creek 2 (*sc2*)	A hard setting dull brown clay loam to sandy clay loam, usually featuring an apedal massive structure and porous, earthy fabric, occurring as a topsoil (A horizon). There may be occasional areas of weak structure which contain small (2–5 mm) rough-faced subangular blocky peds. Roots are rare and stone and other inclusions do not occur. Colour is generally a dull brown (7.5YR 5/4), but can vary from greyish brown (5YR 4/2) to yellowish brown (10YR 5/6). Ranges from moderately acidic to neutral acidity.
South Creek 3 (*sc3*)	A bright brown light to medium clay with a strong pedal structure and dense smooth-faced angular blocky or polyhedral ped fabric (20–50 mm in size), usually presenting as a subsoil (B horizon). Occasionally contains enough levels of sand to be classified as a sandy clay. Usually whole coloured, ranging from reddish brown (3YR 4/8) to bright yellowish brown (10YR 5/1), with highly variable pH levels from extremely acidic to neutral. Yellow or grey mottling can occur, and may occupy up to 15% of material volume. Where this madeira presents as a topsoil there may be roots. Small subrounded or subangular gravel (2–20 mm) can make up to 50% of the volume, and no charcoal is present.

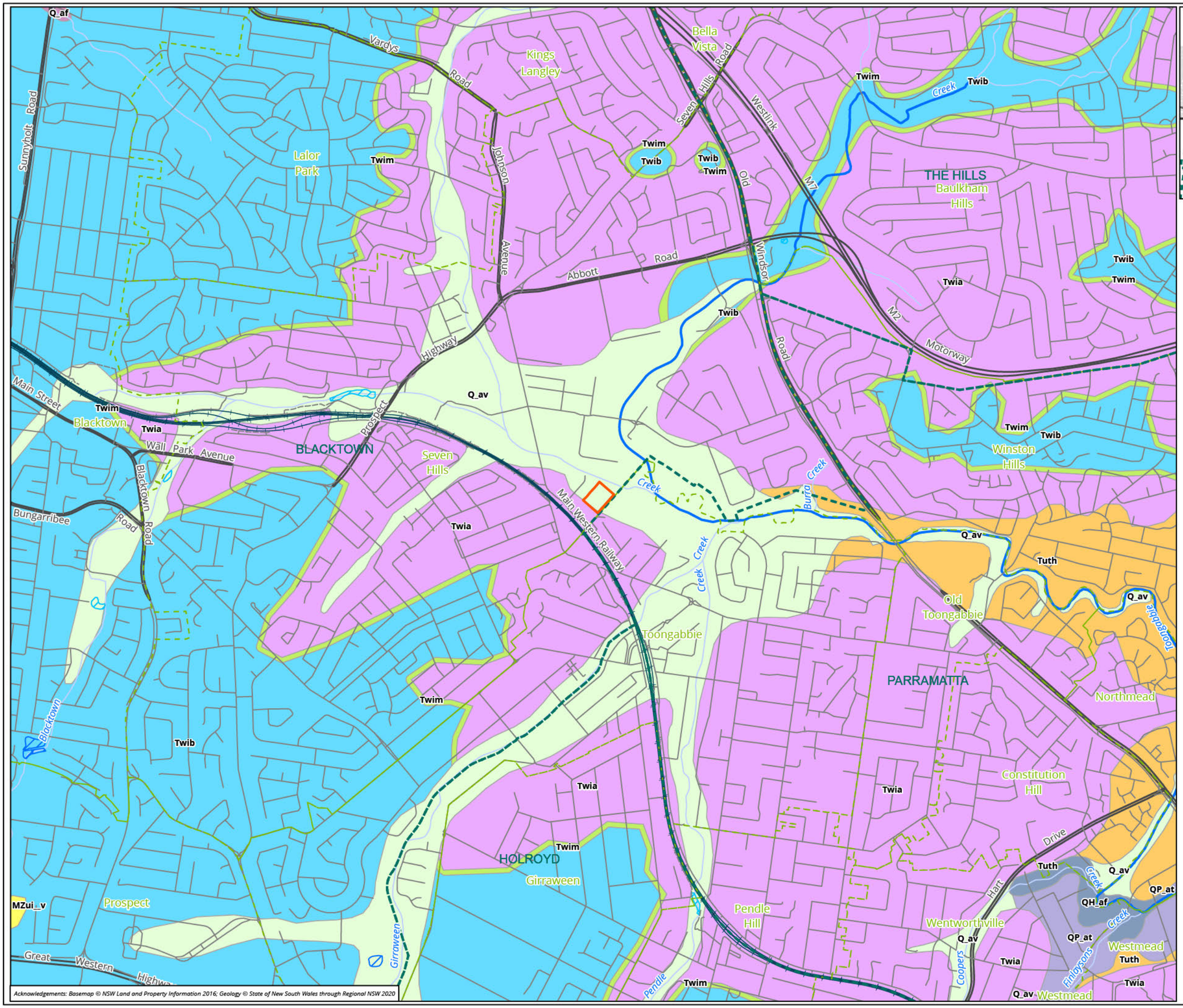
Alluvial deposits possess high archaeological potential, firstly, because they are located in the vicinity of water sources utilised by Aboriginal people; and secondly, because of the many active layers of deposition increasing the chance of the preservations of subsurface archaeological remains.

The Blacktown soil landscape is a residual soil landscape and 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. 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 lines (Bannerman & Hazelton 1990a, pp. 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 1990b, pp. 29)

Soil material	Description
Blacktown 1 (bt1) – Friable brownish black loam	A friable brownish black loam to clay loam with moderately pedal subangular blocky structure and rough-faced porous ped fabric. This material occurs as topsoil (A horizon). Peds are well defined subangular blocky and range in size from 2–20 mm. Surface condition is friable. Colour is brownish black (10YR 2/2) but can range from dark reddish brown (5YR 3/2) to dark yellowish brown (10YR 3/4). The pH varies from moderately acid (pH 5.5) to neutral (pH 7.0). Rounded iron indurated fine gravel-sized shale fragments and charcoal fragments are sometimes present. Roots are common.
Blacktown 2 (bt2) – Hardsetting brown clay loam	A brown clay loam to silty clay loam which is hard setting on exposure or when completely dried out. It has apedal massive to weakly pedal structure and slowly porous earth fabric. It occurs as an A2 horizon. Peds when present are weakly developed, sub angular blocky and we rough faced and porous. They range in size between 20–50 mm. This material is water repellent when extremely dry. Colour is dark brown (7.5YR 4/3) but can range from dark reddish brown (2.5YR 3/3) to dark brown (10YR 3/3). The pH varies from moderately acid (pH 5.0) to slightly acid (pH 6.5). Platy, iron indurated gravel-sized shale fragments are common. Charcoal fragments and roots are rarely present.
Blacktown 3 (bt3) – Strongly pedal, mottled brown light clay	A brown light to medium clay with strongly pedal polyhedral or sub-angular to blocky structure and smooth-faced dense ped fabric. This material usually occurs as subsoil (B horizon). Texture often increases with depth. Peds range in size from 5–20 mm. Colour is brown (7.5YR 4/6) but range from reddish brown (2.5YR 4/6) to brown (10YR 4/6). Frequent red, yellow or grey mottles occur often becoming more numerous with depth. The pH varies from strongly acid (pH 4.5) to slightly acid (pH 6.5). Fine to coarse gravel-sized shale fragments are common and often occur in stratified bands. Both roots and charcoal fragments are rare.
Blacktown 4 (bt4) – Light grey plastic mottled clay	A plastic light grey silty clay to heavy clay with moderately pedal polyhedral to sub angular blocky structure and smooth faced dense ped fabric. This material usually occurs as deep subsoil above shale bedrock (B3 or C horizon). Peds range in size from 2–20 mm. Colour is usually light grey (10YR 7/1) or, less commonly, greyish yellow (2.5YR 6/2). Red, yellow or grey mottles are common. The pH varies from strongly acid (pH 4.0) to moderately acid (pH 5.5). Strongly weathered ironstone concretions and rock fragments are common. Gravel-sized shale fragments and roots are occasionally present. Charcoal fragments are rare.

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 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 could result in poor preservation of archaeological material in these locations.



Legend

Study area

Geological units

- MZui_v,Ungrouped Mesozoic igneous units - breccia
- QH_af,Alluvial floodplain deposits
- QP_at,Alluvial terrace deposits
- Q_af,Alluvial floodplain deposits
- Q_av,Alluvial valley deposits
- Tuth,Hawkesbury Sandstone
- Twia,Ashfield Shale
- Twib,Bringelly Shale
- Twim,Minchinbury Sandstone

Figure 4 Geological units in the vicinity of the study area

0 200 400 600 800 N

Metres

Scale: 1:20,000@ A3

Coordinate System: GDA 1994 MGA Zone 56

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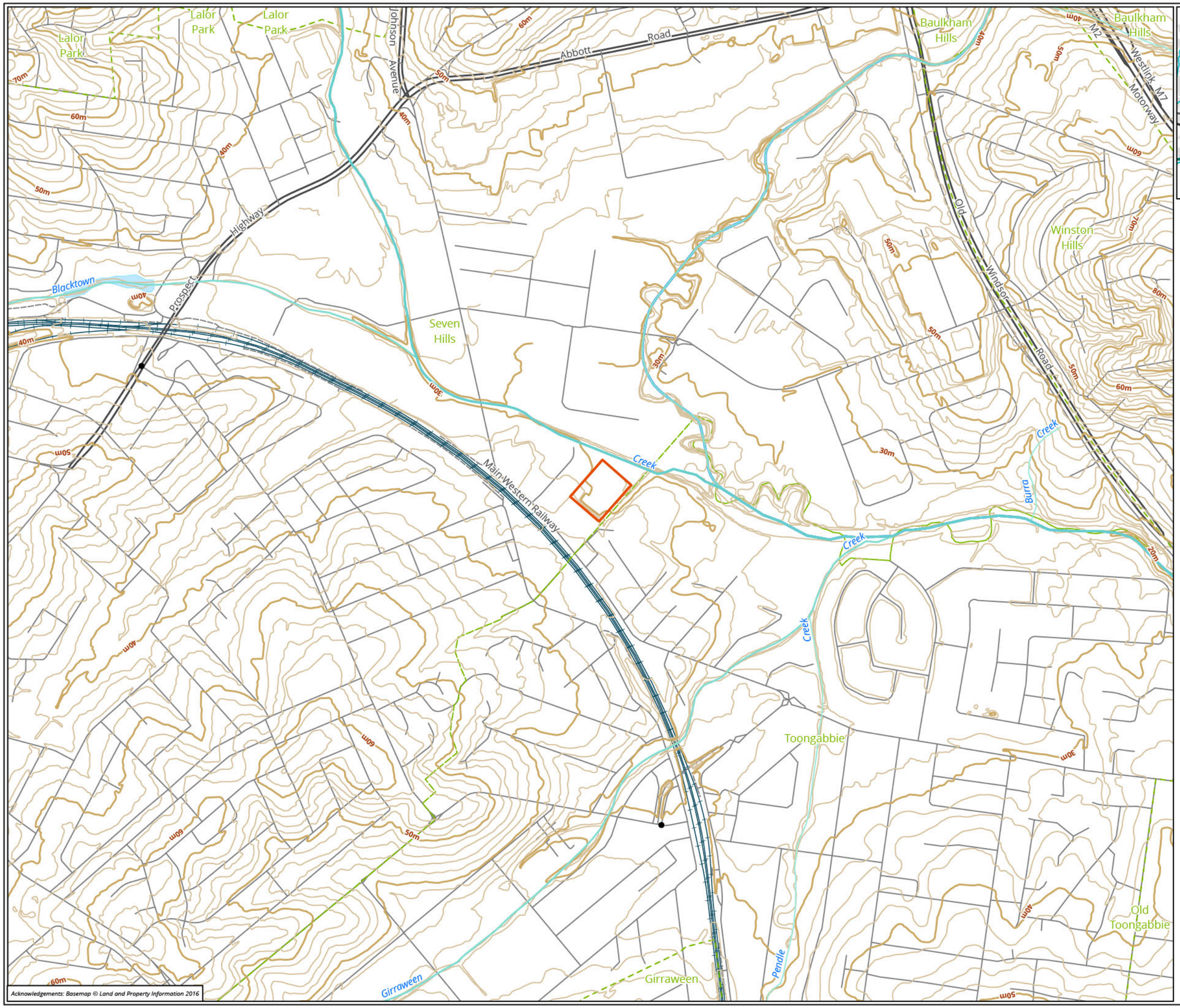
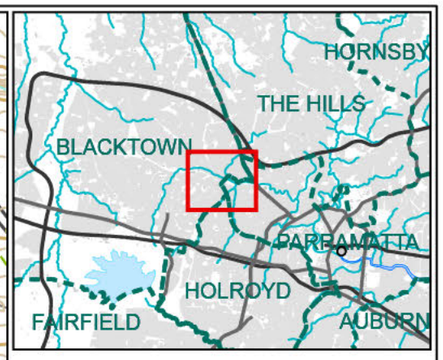
Matter: 36773, Date: 07 June 2022,
Drawn by: JET, Checked by: CM, Last edited by: jbeckius
Location: P:\36700s\36773\Mapping\
36773_SYD08 Data Centre, Layout: 36773_ACHA_F4_Geology

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
- 3

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

0 100 200 300 400

Metres

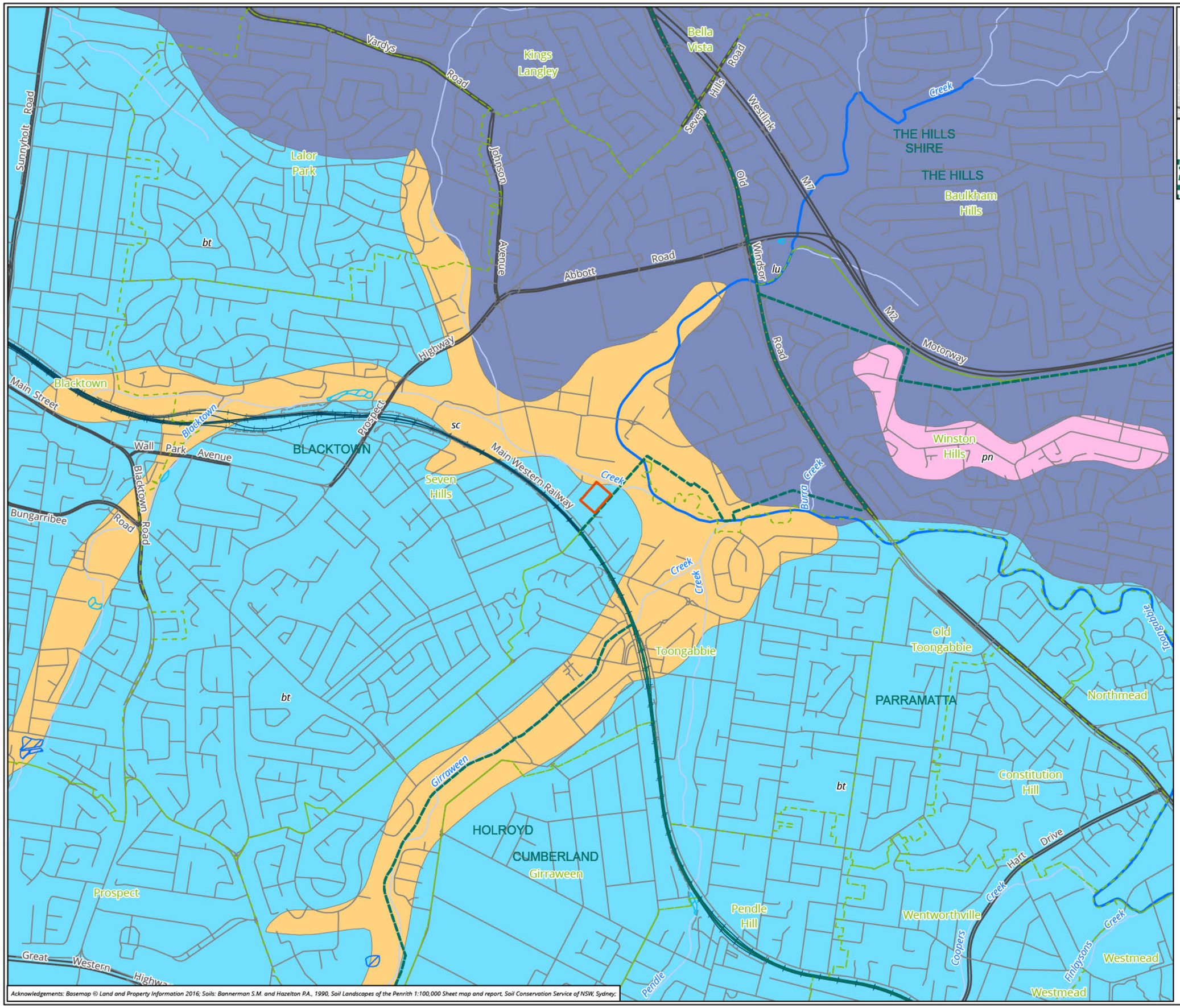
Scale: 1:10,000@ A3

Coordinate System:
GDA 1994 MGA Zone 56

N

biosis

Matter: 36773, Date: 07 June 2022,
Drawn by: JET, Checked by: CM, Last edited by: jbeckius
Location: P:\36700s\36773\Mapping\,
36773_SYD08 Data Centre, Layout:36773_ACHA_F5_Hydrology



Legend

Study area

Soil Landscape units

- bt - BLACKTOWN
- lu - LUDDENHAM
- pn - PICTON
- sc - SOUTH CREEK

Figure 6 Soil landscapes in the vicinity of the study area

0 200 400 600 800 N

Metres

Scale: 1:20,000@ A3

Coordinate System: GDA 1994 MGA Zone 56

biosis

Matter: 36773Date: 07 June 2022,
Drawn by: JET, Checked by: CM, Last edited by: jbeckius
Location: P:\36700s\36773\Mapping\
36773_SYD08 Data Centre, Layout: 36773_ACHA_F6_Soils

Acknowledgements: Basemap © Land and Property Information 2016; Soils: Bannerman S.M. and Hazelton P.A., 1990, Soil Landscapes of the Penrith 1:100,000 Sheet map and report, Soil Conservation Service of NSW, Sydney;

3.1.3 Landscape resources

The Cumberland Plains region would have provided an abundance of natural resources that would have been utilised in a variety of ways by Aboriginal people. Aboriginal people used plant resources in a variety of ways. Fibres were twisted into string, which was used for many purposes, including the weaving of nets, baskets, fishing lines and personal adornment. Tree bark was also utilized in the provision of shelter (a *gunyah*) (Attenbrow 2002) and would be cut to fashion coolamons, and other items used in everyday life. Traces of these activities can been identified within the landscape in the form of scarred trees.

Vegetation within the Cumberland Plains region would have consisted of Grey Box *Eucalyptus molucana*, Forest Red Gum *E. tereticornis*, Narrow-leaved Ironbark woodland, and Spotted Gum *Corymbia maculata,* on shale hills, while Hard-leaved Scribbly Gum *E. sclerophylla*, Rough-barked Apple *Angophora floribunda*, and Old Man Banksia *Banksia serrata* would have been identified on alluvial sands and gravels. Broad-leaved Apple *Angophora subvelutina*, Cabbage Gum *E. amplifolia*, Forest Red Gum, and Swamp Oak *Casuarina glauca* are also present on river flats. Tall spike rushes (such as *Eleocharis sphacelata, Juncus usilatus* and *Polygonum sp.)* with Parramatta Red Gum *Eucalyptus parramattensis* is noted around lagoons and swamps (NSW National Parks and Wildlife Service 2003, pp. 193). Fluvial soils within the study area would have likely supported common tree species that can withstand these conditions, such as the Broad-leaved Apple, Cabbage Gum, and Swamp Oak (Bannerman & Hazelton 1990a, pp. 68–69).

Archaeological assessments conducted within the Cumberland plain region suggest there is a strong correlation between the presence of Aboriginal archaeological sites and proximity to water sources (White, B & McDonald, J 2010, McDonald, J. & Rich, E. 1993, Brayshaw McDonald Pty Ltd 1994, AMBS 2012a). Rivers, creeks and waterholes provide sources of fresh drinking water, whilst also supplying a habitat for fish and shellfish resources. The presence of permanent water sources would have also attracted a number of animals to the area, that would have been hunted by Aboriginal people (Attenbrow 2002, pp. 62–76). 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, have been identified as part of the archaeological record.

Native fauna that could have been present in the study area includes, but is not limited to, the Australian Brush-tail Possum *Trichosurus vulpecula*, Short-beaked Echidna *Tachyglossus aculeatus*, Swamp Wallaby *Wallabia bicolor*, Rainbow Lorikeet *Trichoglossus moluccanus*, Kookaburra *Dacelo novaeguineae*, Australian Magpie *Cracticus tibicen*, Water Dragon *Intellagama lesueurii*, and Eastern Blue-Tongue *Tiliqua scincoides*. Terrestrial and avian resources were not only used for food, but also provided a significant contribution to the social and ceremonial aspects of Aboriginal life.

3.1.4 Land use history

Exploration west of Port Jackson almost immediately followed the arrival of the first fleet in 1788. Governor Arthur Phillip, Lieutenant John Cresswell and naval surgeon, John White made their initial foray west in 1788, until they reached Prospect Hill on 22 April (John White 2001, pp. 90, Elias 2021). Governor Phillip and his party viewed the landscape from Prospect Hill, and would have seen the area that would later be known as Seven Hills (City of Parramatta Research and Collections 2020). In 1791, land grants near Prospect Hill were given to settlers, including free settlers and emancipated convicts, to continue supporting the settlement in Sydney (Elias 2021).

John Redmond, a retired naval officer, was the first person to receive a land grant in the Seven Hills region (City of Parramatta Research and Collections 2020). The 60 acre (24.28 hectare) lot was granted to Redmond on 1 April 1793 by Lieutenant-Governor Francis Grose. The track adjacent to the north-eastern perimeter of John Redmond's 60 acre land grant later became known as Station Road,

which is currently the south-western boundary of the study area (City of Parramatta Research and Collections 2020). The area began to develop rapidly after this initial phase of settlement, and the new settlers continued clearing the land of native vegetation for agricultural and residential purposes (Elias 2021).

The name Seven Hills only became recognised as the official name for the district around 1800. It is suggested that the name of the suburb was unofficially determined by a free settler, Matthew Pearce, who was granted a property of 160 acres (64.75 hectares) in Prospect, from which he claimed he could count seven hills, though this is unverified by official resources (City of Parramatta Research and Collections 2020). One of the earliest found mentions of Seven Hills was in an article titled 'General Orders' from the *Sydney Gazette* on Saturday 5 March 1803:

> *"Wheat will be issued to the Civil, Military, &c. until further Orders; except to toe detachments and labouring people at Castle Hill, Seven-Hills, and other Out Posts, who will receive Flour, as they have not the convenience of Mills" ('General Orders', 1803).*

The horticultural and pastoral exploitation of Seven Hills continued well into the 1830s, having been established as a productive and valuable agricultural community (Brook 2008). Continuous farming activities and overworking of the soils within the region resulted in decreased levels of soil fertility, and as a result, it became increasingly difficult to yield crops to the same degree at which cultivation occurred in the past (Rosen 1995). It was common for the initial settlers throughout the greater Western Sydney area to grow small, private orchards and vineyards for their own use, and over time in Seven Hills, these proved to produce crops with a higher value and return than the grains that were initially planted throughout the landscape (City of Parramatta Research and Collections 2020, Elias 2021). Eventually many of these grain plantations evolved with the crops being replaced by various fruit trees, notably orange and various stone fruits (Brook 2008).

The majority of the study area exists within Portion 188, a 34 acre (13.76 hectare) lot granted to Thomas Needham on 12 March 1800 (NSW Land Registry Services, Vol. 7506 Fol. 74). A small area in the south-western portion of the study area lies within the south-east corner of a 61 acre (24.69 hectares) lot owned by James Bates. The map shows Station Road adjacent to the southern boundary for the study area (Photo 2).

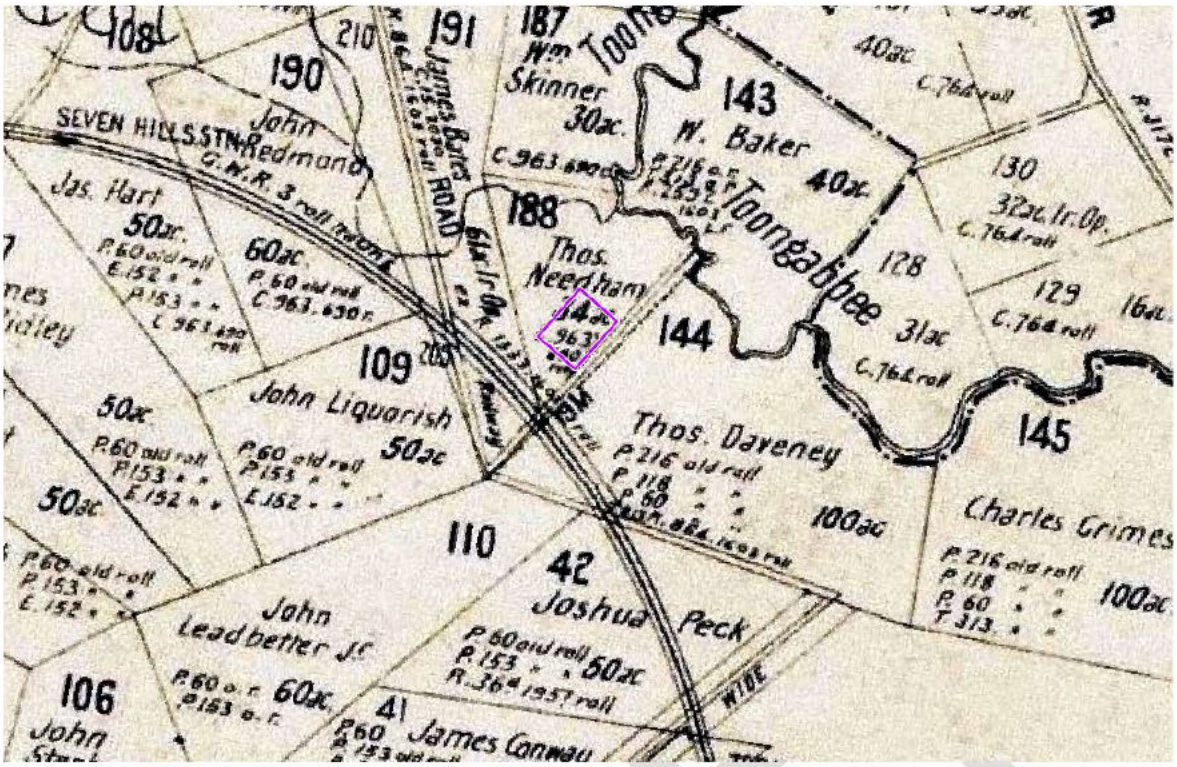


Photo 2 Parish map of Parish of Prospect from 1894, study area indicated by the purple boundary (Source: NSW Land Registry Services)

Historical aerial imagery allows for modern developments within the study area to be identified. An aerial photograph dated to 1943 shows the study area had been subjected to the extensive clearing of large vegetation and construction of boundary fencing along the southern perimeter. There is limited vegetation remaining in the centre of the eastern boundary of the study area and near the residential buidlings in the southern portion (Photo 3). The entire northern portion of the study area has been cleared, with a man-made dam existing on the eastern border. Small shed structures and market gardens can be seen in the southern portion of the study area, surrounding the residential buildings.

Photo 3 Aerial photograph dated to 1943, with study area indicated by the red boundary (Source: NSW Spatial Services)

A parish map dated to 1956 indicates that the land remained owned by Thomas Needham during this time. Thomas Needham owned Portion 188 until it was subdivided, establishing the present lot boundary, comprising Lot B DP404669. This land was then sold to Charles Carpendale Moore and his wife Neonie Mareeve Primrose Moore on 3 June 1958 (NSW Land Registry Services, Vol. 7506 Fol. 74).

An aerial photograph dated to 1965 shows that the study area has undergone extensive development (Photo 4). Additional large shed structures have been constructed in the south-eastern portion of the study area and boundary fencing now exists around the newly subdivided lot. The residential buildings in the southern portion of the study area remain, however some features and structures have been demolished or removed, including a residential building, a small shed structure and the market gardens. The vegetation in the central part of the eastern border has matured and the man-mad dam appears smaller in size. Shipping containers are placed in various areas within the central and southern portions of the study area.

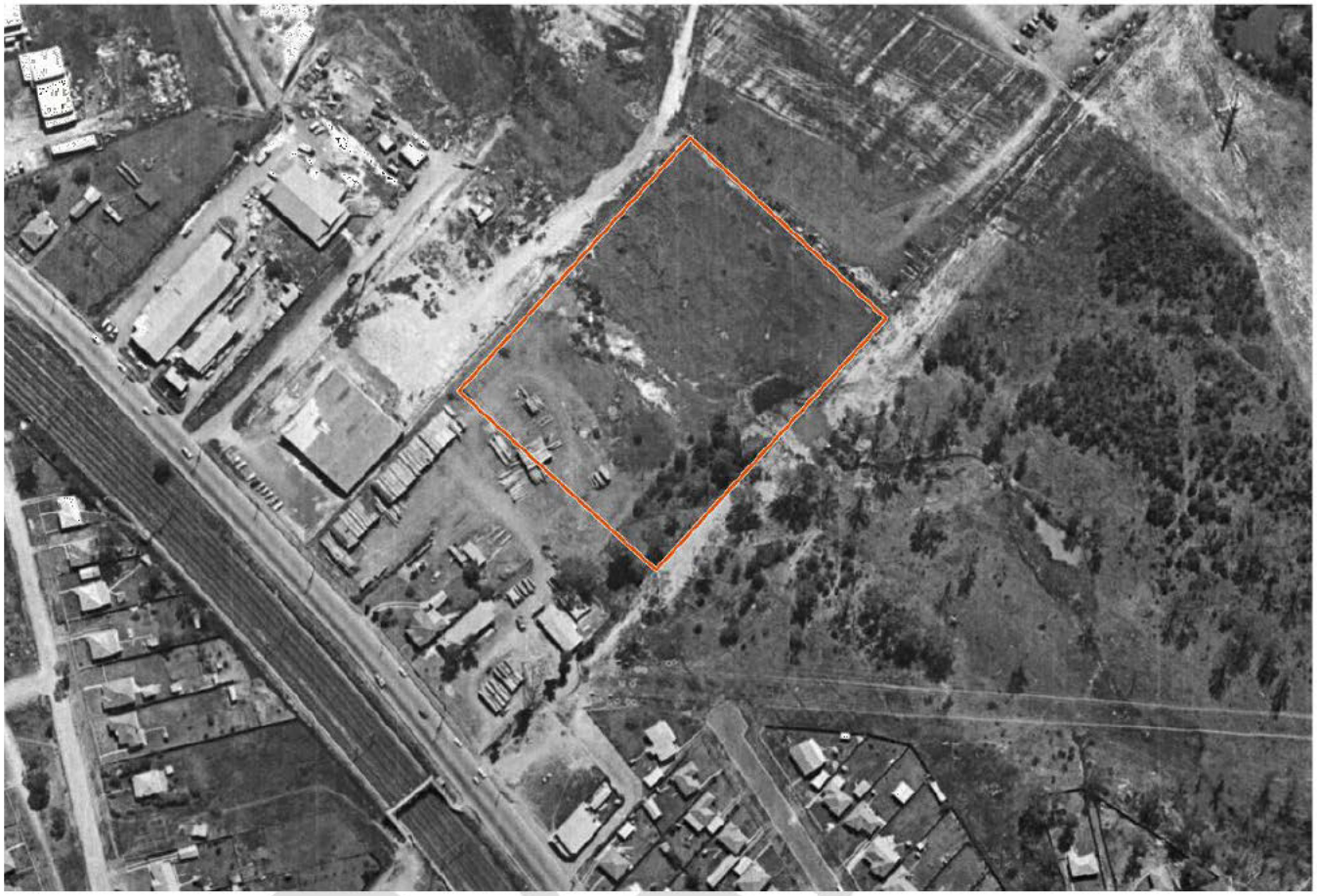


Photo 4 Aerial photograph dated to 1965, with the study area indicated by the red boundary (Source: NSW Spatial Services)

An aerial photograph dated to 1978 indicates that the study area has been subjected to additional developments (Photo 5). The vegetation within the study area has been completely cleared and two large structures have been built in the central portion of the study area. The man-made dam no longer exists and has been completely filled in. The shipping containers have been moved, and new containers appear in more areas of the study area. The entire study area appears to have undergone some form of earthworks, with the ground surface appearing homogenous.

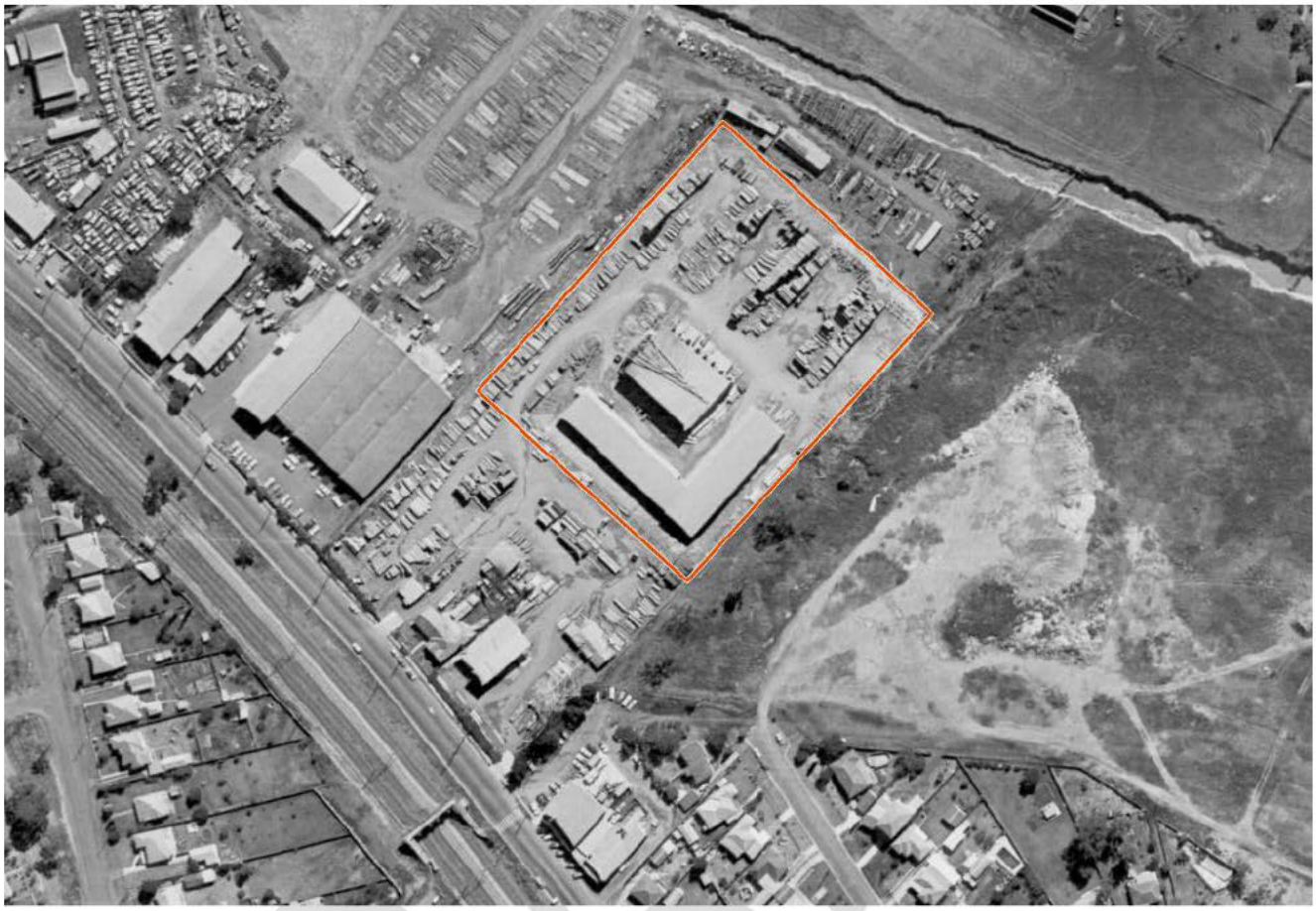


Photo 5 Aerial photograph dated to 1978, with the study area indicated by the red boundary (Source: NSW Spatial Services)

An aerial photograph dated to 2005 indicates that the study area has been subjected to limited development since 1978 (Photo 6). The shipping containers have been removed and the large shed structures have been demolished. All other structures appear to be unchanged.

Photo 6 Aerial photograph dated to 2005, with the study area indicated by the red boundary (Source: NSW Spatial Services)

An aerial photograph dated to 2021 indicates that the study area has been subjected to some developments (Photo 7). The residential building has been demolished and new shipping containers have been placed in the central and southern portions of the study area. A large shed structure has been constructed where its predecessor existed.

Photo 7 Aerial photograph dated to 2021, with the study area indicated by the red boundary (Source: NSW Spatial Services)

The archaeological survey of the study area shows that the buildings within the study area were demolished in February 2022, with no structures remaining within the study area to date.

3.2 Previous archaeological work

A large number of cultural heritage surface (surveys) and sub-surface (excavations) investigations have been conducted throughout 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.

3.2.1 Regional overview

A number of Aboriginal cultural heritage investigations have been conducted in the Western Sydney region. Models for predicting the location and type of Aboriginal sites with a general applicability to the Seven Hills and thus relevant to the study area have also been formulated, some as a part of these investigations and others from cultural heritage investigations for relatively large developments.

The archaeology of the Sydney Basin region has been well documented through a large number of academic and impact assessment investigations over the past 30 years (e.g. Kohen, J. 1986, Haglund, L. 1980, Smith 1989, McDonald & Rich 1993). This is particularly evident in the Cumberland Plain, largely as a result of archaeological studies related to rapid urban development across the area.

These studies have enabled a comprehensive model of archaeological site distribution to be developed for the Cumberland Plains.

In a detailed analysis of site types and distributions over the Cumberland Plain, McDonald (1997) identified open artefact scatters/open camp sites as the dominant site type (89% of all sites), followed by isolated finds (3.5%) and scarred trees (2.1%). It was determined that excavated sites on the Cumberland Plain could not be characterised on the basis of surface evidence alone. Further, open sites were noted in all landscape units. The high proportion of sites located on creek banks reflects factors such as surface visibility rather than indicating cultural artefact distribution (McDonald 1997, pp. 36).

Based on previous archaeological studies across the Cumberland Plain and on the archaeological survey and excavation results across the Australian Defence Industries (ADI) site, McDonald (1997) developed a predictive Aboriginal site location model. In summary, the size (density and complexity) of archaeological sites on the Cumberland Plain will vary according to permanence of water (stream order), landscape unit and proximity to stone resources in the following way:

- At the headwaters of upper tributaries (first order creeks) archaeological evidence will be sparse and will comprise little more than background scatters of stone artefacts.
- At the middle reaches of minor tributaries (second order creeks) archaeological evidence will be sparse but indicate focused activity (e.g. one-off camp locations).
- At the lower reaches of tributary creeks (third order creeks) archaeological evidence will indicate more frequent occupation and evidence of repeated, more concentrated activities.
- On major creek lines and rivers (fourth order creeks) archaeological evidence will indicate more permanent occupation, which is of greater complexity.
- Creek junctions and swamps may provide foci for site activity.
- Ridge top locations between drainage lines will usually contain limited archaeological evidence although isolated knapping floors or other forms of one-off occupation may be in evidence.
- Sites in close proximity to an identified stone source will include stone artefacts with a range of size and cortex characteristics. Artefact size and percentage of cortex will decrease with distance from source.

JMCHM (2006b) conducted a salvage excavation of the Colebee Release Area in Schofields, approximately 17 kilometres north-west of the current study area. The excavations recovered over 80,000 artefacts and concluded that Aboriginal people utilised this area for its close proximity to resources, including silcrete and stable water courses. These artefacts were suggested to have been sourced from the Plumpton Ridge silcrete quarry, which is located approximately 19 kilometres north-west of the current study area.

White and McDonald (2010) undertook a review of previous work in the Rouse Hill development area (approximately 11 kilometres north-west from the current study area), discussing lithic artefact distribution in previous investigations carried out by JMCHM. The study considered a number of factors including stream order, distance from water, landform, aspect, and distance to silcrete sources. As a result of the assessment, the following statements were made:

- Water supply was a significant factor influencing Aboriginal land use and habitation in the area. There was a correlation between increasing stream order and larger numbers and higher densities of artefacts (from a comparison of first, second, and fourth order streams).
- The proximity of water sources in correlation to site location determined that within first order stream landscapes, there was no significant correlation between artefact distribution

and distance to water. In second order landscapes artefact density was highest within 50 metres of water sources, and declined with increasing distance. In forth order landscapes, density was highest between 51–100 metres from water.

- Artefact density was considered to be lowest on upper slopes and ridgetops, with density increasing on mid and lower slopes. Density was highest in terrace landforms, and lower on creek flats, likely due to repeated flooding events and the subsequent erosion.
- The results of the study showed no significant difference between sites located closer to or further away from silcrete resources. However, 6 kilometres was the maximum distance tested from silcrete outcrops, so the sample is considered representative of a limited study.
- The aspect of sites only appeared to have an influence on sites in the lower parts of the valleys and these may have been located to take advantage of steady factors such the rising/setting sun and wind direction.

The study concluded that the nature of landforms and distance from water had an influence on site distribution, with artefacts becoming more numerous closer to creeks, and along higher order creek lines. The study also determined that although artefacts are found on or within all landforms, landform type influenced artefact distribution, with a preference being for slightly elevated, well-drained topographies in the lower parts of the valleys.

AMBS (2012) conducted a wide-ranging report, assessing the entirety of the Austral and Leppington North precincts for the Urban Form Analysis of the South West Growth Centres (approximately 23 kilometres south-west of the current study area). Although surveys were targeted at specific properties, which at the time represented accessible properties, the results of the survey were combined with the existing regional model and a review of studies within the local area in order to produce sensitivity mapping for the entirety of the Austral and Leppington North precincts.

Regionally, trends noted as influencing this sensitivity model include the following statements:

- Sites are most frequently located in close proximity to permanent water courses on creek banks, alluvial flats, or high ground.
- Large artefact scatters may be identified up to 200–250 metres away from water courses.
- More needs to be considered than just the presence or absence of surface artefacts when characterising an archaeological site.

The predictive model employed by AMBS stated that the most common site type occurring in the area would be stone artefact scatters, and that undisturbed alluvial soils have the potential to be associated with stratified archaeological deposits (AMBS 2012b, pp. 56). The results of the survey largely confirmed this predictive model, with AMBS identifying seven new sites including six isolated finds and one artefact scatter with PAD.

The report defines moderate sensitivity as 'artefacts in detectable densities known to occur in the area, or in similar environmental/landscape contexts within the region' and high sensitivity as 'artefacts known to occur in high densities in the area, or are consistently identified in similar environmental/landscape contexts, and are highly likely to be detected and disturbed during ground disturbance works and archaeological excavations' (AMBS 2012b, pp. 72).

The report also notes that previous land use within the Austral and Leppington North precincts has centred on pastoralism, horticulture, agriculture, and residential developments. More recently the development of infrastructure and the expansion of residential development is likely to have further

impacted on archaeological resources within the area, lessening the likelihood of there being intact subsurface deposits.

3.2.2 Local overview

A number of Aboriginal cultural heritage investigations have been conducted within the region (within approximately 5–10 kilometres of the study area). Most of these investigations were undertaken as part of development applications and included surface and sub-surface investigations. These investigations are summarised below.

JMCHM (2002) conducted an archaeological survey of the former CSIRO animal research laboratory in Prospect, approximately 4 kilometres south of the study area. This land had been mostly cleared and disturbed by previous pastoral use, quarrying, cultivation, building and use as a WWII US Army Camp. Predictive modelling was used to target areas including creek flats landforms and areas of close proximity to the second order tributary stream within the study area, indicating a sparse presence of archaeological evidence. No new sites were identified, but three new areas of PAD (PAD 2, PAD 3, PAD 4) were recorded, along with a potential scarred tree, previously recorded as [redacted]).

Dominic Steele Consulting Archaeology (2003) undertook test excavations at Wallgrove Road, Eastern Creek, approximately 9.2 kilometres south-west of the study area. The predictive modelling employed by Steele is of relevance to the Cumberland Plain generally, drawing on assessments made by JMCHM and AMBS in the Rouse Hill Area. The assessment built on a number of previous surveys conducted between 1980 and 2002 within the study area. Steele noted a JMCHM study from 1997, which had stated that surface artefacts were not an effective way to characterise archaeological sites, and that:

- Seventeen out of the 61 excavated sites on the Cumberland Plain had no artefacts present on the surface prior to excavation. However, most areas with sparse or no surface manifestations contained considerable archaeological deposits.
- The ratio of recorded surface to excavated artefacts is 1:25 across the Cumberland Plain.
- None of the excavated sites could be properly characterised on the basis of their surface artefacts alone.
- Open campsites are located in all landscapes on the Cumberland Plain. The predominance of sites recorded along creek banks is likely to be indicative of surface visibility conditions and taphonomic factors, rather than the human distribution of artefacts across the landscape (DSCA 2003, pp. 19–20).

This statement highlights a number of issues with predictive models that base their assessment of subsurface potential entirely on the presence or absence of surface artefacts.

A total of 20, one by one metre squares were excavated using a backhoe, and sieved through nested five and 2.5 millimetre sieves. The deposits encountered tended to be relatively shallow, with most test pits not exceeding 20 centimetres. The deposit consisted primarily of silcrete, with quartz, tuff, and volcanic rock present in much lesser quantity. The vast majority of the deposit was identified as manuport, with some flake and core fragments present, and one potential broken axe. A total of 38 artefacts were identified by surface survey and excavation, with a density characterised by Steele as extremely low. The area was interpreted as being visited sporadically, and not the site of any sort of knapping or camping, but rather a general background scatter.

JMCHM (2006b) undertook an archaeological assessment for the Phase 1 Bungarribee Precinct Western Sydney Parklands Development, located approximately 7 kilometres west of the study area. Over 52 AHIMS sites were identified within the Western Sydney Parklands area with a majority of

them consisting of artefact scatters or isolated artefacts sites. The field survey identified an additional 18 sites and five defined areas of PAD. WSP PAD04 was identified adjacent to Eastern Creek, and was associated with [redacted]. It was concluded that artefacts associated with [redacted] had been exposed due to disturbances from ploughing and tree removal activities within this portion of the study area, and intact archaeological deposits were likely to have been preserved. Further investigation was recommended. [redacted] was also relocated during the field survey. The site was noted to have undergone significant disturbance from the construction of a gas and sewer easement. The site was assessed to have low significance.

JMCHM (2011) undertook test excavations within the Bungarribee Park Precinct 2, located approximately 7 kilometres to the west of the study area. The methodology included both testing and open area excavations, with the open area excavations aimed to salvage any archaeological material. The testing was focused on the PAD located in Zone 1 with 40 one metre by one metre test pits excavated in accordance with the AHIP. Six open areas were excavated (labelled A to F), with a total of 82 square metres of excavation. Areas B and E were not continued due to relatively low artefact densities or high levels of disturbance. Areas A, C, D and F provided viable statistical samples. A total of 5535 artefacts were excavated from the test-pit and salvage excavations, in conjunction with 1083 cultural lithics that were predominantly heat shatter and indeterminate silicified tuff fragments. JMCHM (2011) concluded that the moderate to high archaeological significance of the site has not altered since the initial investigations, as the excavations confirmed both the cultural and scientific significance of the site.

Artefact (2015) completed an archaeological salvage report for Stages 1, 2, and 3 of Bungarribee Park, located approximately 7 kilometres west of the study area. The salvage works were a condition of AHIP C0000697. Two areas were salvaged; Bungarribee North and Bungarribee South. Bungarribee North was associated with floodplains, valley flats and drainage depressions. All of the units excavated within this area were located on undulating floodplain in close proximity to Eastern Creek. A total of 287 artefacts were recovered from Bungarribee North, with artefact densities being considered moderate at 16 artefacts per square metre excavated on average.

Bungarribee South was associated with gently undulating rises on Wianamatta Group Shales. All of the units excavated within this area were located on slightly raised terrain associated with a first order watercourse flowing onto the Bungarribee and Eastern Creek floodplains. A total of 346 artefacts were recovered from Bungarribee South. The artefact densities at Bungarribee South are considered to be low with nine artefacts per square metre excavated on average (Artefact 2015, pp. 56,57). Artefact concluded that the Eastern Creek floodplain comprises a moderate density sub-surface stone artefact scatter located across a disturbed floodplain.

From the results of the salvage excavations, Artefact developed the following statements:

- Excavation of the undulating floodplain landform revealed a moderate density, sub-surface stone artefact scatter with the presence of at least one to several knapping events. Although the area has suffered some disturbance, it still retains research potential and has been assessed as having moderate scientific significance. Therefore, this type of landform present within the Bungarribee Precinct has the potential to contain other similar sites, outside of the Stage 1, 2 and 3 boundaries and should be subject to further archaeological investigation prior to any proposed impacts.
- Excavation of the raised terrain associated with a first order creek revealed a low density sub-surface stone artefact scatter with evidence of opportunistic and generalised stone tool reduction. This type of site is common to the Bungarribee Precinct and wider Cumberland Plains and has also been investigated thoroughly. This type of landform present within the

Bungarribee Precinct should not require further intensive archaeological investigation prior to any proposed impacts occurring.

- Raised terrain landforms which overlook higher order creeks (3rd or 4th order creeks) may have high potential to contain archaeological deposits of significance as demonstrated by the excavations undertaken by JMCHM (2011) for [redacted]

Artefact recommended that portions of the floodplain are conserved as grassland areas to mitigate any impact to potentially significant archaeological deposits. Artefact also recommended that artefacts from Bungarribee North and Bungarribee South should be buried adjacent to the reburial location of [redacted] located approximately 50 metres south-east of [redacted].

Artefact Heritage (2016) undertook an archaeological heritage assessment including test excavations in the Sydney Zoo section of the Bungarribee Precinct, located approximately 7 kilometres west of the study area. The survey targeted areas of high surface visibility and inspected the recorded locations of all AHIMS sites within the study area. The visibility was generally low across the study area with limited exposures which were associated with access tracks. The site survey was unable to relocate sites within the study area registered on the AHIMS database and this was likely a result of limited visibility due to dense vegetation cover.

Two areas of archaeological potential were identified during the survey. These included SZ PAD01 and SZ PAD02 and were observed to have been subjected to minimal disturbances. SZ PAD01 was located on a raised terrace adjacent to Eastern Creek and SZ PAD01 was located on an intact crest landform overlooking Eastern Creek. The portions of the crest landform that exists within the Bungarribee Precinct had not been previously excavated and had undetermined significance. The test excavations identified two new Aboriginal sites, SZ AS01 which consisted of 26 stone artefacts and site SZ AS02 which consisted of three stone artefacts. Both sites were characterised as dispersed, low-density artefact scatters and are considered to have low research potential, having been assessed as possessing low archaeological significance.

3.2.3 AHIMS site analysis

[redacted]

Table 4 AHIMS site type frequency

3.3 Predictive statements

A series of predictive statements have 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.

These statements are 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 across a wide range of landforms including alluvial flats. They have the high potential to be present in undisturbed areas, however the study area has been significantly disturbed.
Potential archaeological deposits (PADs)	Potential sub surface deposits of cultural material.	Low: PADs have been previously recorded in the region across a wide range of landforms including alluvial flats, however the study area has been significantly disturbed.
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. There is some potential for shell middens to be located in vicinity of permanent water sources. There is a low potential of shell middens being present within the study area.
Quarries	Raw stone material procurement sites.	Low: There is no record of any quarries being within or surrounding the study area.

Site type	Site description	Potential
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.
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.
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 study area does not contain these soil types.
Modified trees	Trees with cultural modifications	Nill: A small number of young native trees are located along the northern boundary however are these are not mature. No mature trees have survived within the study area, due to extensive vegetation clearing from the 1800's onwards. Upon inspection trees did not contain any cultural modifications.
Axe grinding grooves	Grooves created in stone platforms through ground stone tool manufacture.	Nil: The geology of the study area lacks suitable horizontal sandstone rock outcrops for axe-grinding grooves. Therefore there is nil potential for axe grinding grooves to occur in the study area.

Site type	Site description	Potential
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 in the study area.

4 Archaeological survey

A field survey of the study area was undertaken on 23 February 2022 by Biosis Archaeologist Ashley Bridge. Due to time constraints, no RAPs were present for the field survey on the day. Tianji Dickens (LCI Consulting's Australian philanthropic lead) was invited to attend the survey, however could not attend on the day. The field survey sampling strategy, methodology and a discussion of results are provided below.

4.1 Archaeological survey aims

The principle aims of the survey were to:

- Undertake a systematic survey 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 Survey methods

The survey was conducted on foot and consisted of a meandering transect throughout the extent of the study area. Recording during the survey followed the archaeological survey 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 survey including representative photographs of survey units, landform, vegetation coverage, GSV and the recording of soil information for each survey unit were possible. Any potential Aboriginal objects observed during the survey 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 Archaeological survey results

Due to the current levels of disturbance present throughout the majority of the study area, a single meandering transect was walked across the extent of the study area. Details of the survey are provided in depth below.

4.3.1 Visibility

In most archaeological reports and guidelines visibility refers to GSV, and is usually a percentage estimate of the ground surface that is visible and allowing for the detection of (usually stone) artefacts that may be present on the ground surface (DECCW 2010).

Visibility throughout the study area was generally high (60-80%) as the previous buildings within the study area had been recently demolished (Photo 8). Areas of lower visibility were generally associated with the edges of the study area where demolition had not occurred (10-15%), with grass coverage and excess water from the recent rainfall in Sydney also obscuring majority of the GSV through these areas (Photo 9).

Photo 8 **General visibility in the study area, photo facing south-west**

Photo 9 **General visibility in areas with higher GSV within the study area, photo facing north-east**

4.3.2 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, pp. 79, DECCW 2010).

Overall, the study area displayed areas of exposure sporadically (10-20%), typically along the boundaries of the study area, or within areas that had eroded or been exposed through the demolition of the buildings (Photo 10 and Photo 11).

Photo 10 **Exposure along the boundaries of the study area**

Photo 11 **Eroded area of exposure, showing soils within the study area, facing north**

4.3.3 Disturbances

Disturbance in the study area is 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, erosion or scouring. Disturbances associated with recent human action are also visible throughout the study area and are associated with the demolition of the two buildings previously contained within the study area (Photo 12 and Photo 13), stock piling (Photo 14), installation of utility services throughout the site and a graded driveway on the western boundary of the site (Photo 15).

Due to high GSV across the study area, evidence of commercial use and vegetation clearance was still able be seen throughout the landscape. However, while this aided visibility, it limited the surveyors ability to identify any surface artefacts which may have been present within the area.

Photo 12 **Disturbance from the recent demolition on site throughout the study area, facing south**

Photo 13 **Disturbances throughout the study area, with large portion of site cordoned off due to asbestos, facing south-east**

Photo 14 **Example of stockpiling disturbance throughout the study area, facing north-west**

Photo 15 **Graded driveway on the western side of the study area, facing south-west**

4.4 Discussion of archaeological survey results

The archaeological survey consisted of a single meandering pedestrian transect throughout the extent of the study area, sampling the accessible areas of site (Figure 8). The archaeological survey did not identify any Aboriginal stone artefacts; however this is most likely due to the limited exposure and extensive levels of disturbance during the survey, rather than an absence of Aboriginal occupation of the area. Survey coverage and landform results can be found in Table 6 and Table 7, with results from the archaeological survey summarised below.

The study area is located within the Cumberland Lowlands physio-geographic region underlain by Ashfield Shales and the South Creek and Blacktown soil landscapes. These soil landscapes are characterised as fluvial and depositional landscapes, which mean they possess moderate to high archaeological potential, due to the many active layers of deposition increasing the chance of preservation of subsurface archaeological remains. The study area is also contained within a flat landform, which extends across the entirety of the study area, however this is likely attributed to the extensive development and disturbances throughout the study area, with the original landform most

likely a gentle sloping landscape, sloping towards Blacktown Creek. A first order non-perennial water course runs along the northern boundary of the site, with the study area within 200 metres of Toongabbie Creek.

Predictive modelling in the Cumberland Plain region (JMCHM 2006a, JMCHM 2008, JMCHM 2005b, JMCHM 2005c) suggests that Aboriginal people have a tendency to occupy areas in close proximity to higher order streams, as these types of streams 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. These areas of occupation tend to be found on elevated ridges or slopes within close proximity to the associated creek line, as raised landforms have a lower likelihood of being inundated during flooding events. Aboriginal artefact scatter sites are common across this formation, as are PADs, making an archaeologically rich formation. Based on the landform type, proximity to a first order, non-perennial source of water and proximity to a perennial water course (Toongabbie Creek), there is moderate potential for Aboriginal artefacts to exist within the study area.

Previous archaeological assessments throughout the wider Western Sydney region also illustrate that while Aboriginal artefacts are present throughout the landscape (particularly when in close proximity to perennial water courses) flat or gently sloped landforms are not as desirable as ridges or crests, due to the lack of elevation throughout the area (JMCHM 2002, DSCA 2003, JMCHM 2011). This demonstrates a lower likelihood for sites to exist within the study area.

The background research conducted for this project demonstrates that the study area has been subject to significant land clearance and industrial development since the 1800s. Minimal development occurred throughout the study area until the 1940s, with the construction of residential buildings in the south of the site. Further development associated with the study area occurred between 1965 and 1978, with the construction of two large industrial buildings in the central and eastern portions and extensive land clearance throughout the remainder of the site. In February 2022, the buildings within the study area were demolished under DA-21-01058.

The field survey was hindered by substantial demolition and stockpiling disturbances from this previous land use, which limited the potential to identify any surface artefacts present. Disturbance was prevalent throughout the majority of the study area, however was more extensive in the eastern and central portions where the previous buildings were located. These disturbances have likely limited the potential for archaeological deposits to be present, as the footings and foundations of the buildings would have extended through the culturally sensitive A-horizon soils and into the culturally sterile B-horizon soils, resulting in the removal of large portions of potential archaeological deposits. As the soils in this area extend to approximately 500 millimetres in depth, it is likely that much of the A-horizon soils within the previous development footprint would have been heavily impacted. The study area also contains large stockpiles of building materials from demolition activities recently conducted under DA-21-01058, in addition to bulk excavation activities, which would have further disturbed and/or removed intact archaeological deposits, heavily reducing the overall potential for archaeological deposits to remain.

While Station Road IF1/AHIMS# Pending (a ground edged axe) was recovered in the same lot, to the south of the study area, it was recovered in a redeposited fill layer throughout the rubble of the previous buildings foundations. It is likely that this is an isolated find due to the previous disturbances that have occurred historically throughout the site, in addition to the extensive bulk excavations and demolition works currently being undertaken throughout the entire lot under DA-21-01058, with further intact archaeological deposits or objects unlikely to be present throughout the current study area.

While the study area would have been likely to be a favourable location for Aboriginal occupation, due it its close proximity to water courses and access to resources, the existing disturbances

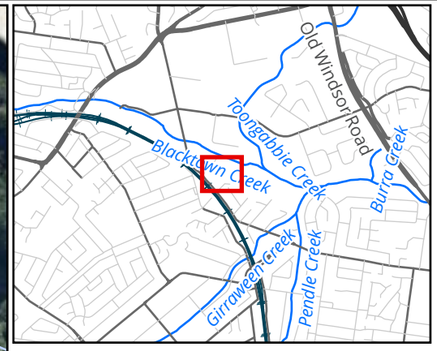
throughout the study area are very extensive, therefore it is unlikely that the study area will contain any intact Aboriginal sites. The study area has therefore been assessed as holding low archaeological potential (Figure 9).

Table 6 Survey coverage

Survey unit	Landform	Survey unit area (m²)	Visibility (%)	Exposure (%)	Effective coverage area (m²)	Effective coverage (%)
1	Flat	25671.99	80	20	4107.52	16

Table 7 Landform summary

Landform	Landform area (m²)	Area effectively surveyed (m²)	Landform effectively surveyed (%)	No. of Aboriginal sites	No. of artefacts or features
Flat	25671.99	4107.52	16	0	0



Legend

- Study area
- Survey tracks

Figure 8 Survey coverage

0 10 20 30 40

Metres

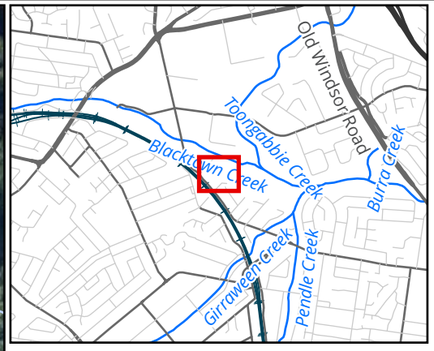
Scale: 1:1,000@ A3

Coordinate System:
GDA 1994 MGA Zone 56

N

biosis

Matter: 36773, Date: 30 June 2022,
Drawn by: JET, Checked by: AB, Last edited by: jbeckius
Location: P:\36700s\36773\Mapping\
36773_SYD08 Data Centre, Layout: 36773_ACHA_F8_SurveyResults



Legend

Study area

Archaeological potential

Low

Figure 9 Archaeological potential

0 10 20 30 40

Metres

Scale: 1:1,000@ A3

Coordinate System:
GDA 1994 MGA Zone 56

N

biosis

Matter: 36773, Date: 30 June 2022,
Drawn by: JET, Checked by: AB, Last edited by: jbeckius
Location: P:\36700s\36773\Mapping\
36773_SYD08 Data Centre, Layout: 36773_ACHA_F9_ArchPot

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, pp. 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, pp. 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. Site condition refers to the degree of disturbance to the contents of a site at the time it was recorded.

Pearson and Sullivan (1995, pp. 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.

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.

5.2.1 Statements of archaeological significance

An archaeological survey of the study area resulted in the identification of no Aboriginal objects, sites or areas of archaeological potential. Based on the extensive disturbances observed throughout subsoil deposits, proximity to creek lines, landform location and an absence of Aboriginal artefacts identified during the survey, the study area contains low archaeological potential. Due to the lack of any Aboriginal sites or objects within the study area, the study area has been assessed as having low scientific significance.

6 Impact assessment

As previously outlined, the proposed development involves the development of the SYD08 data centre facility at Lot B DP404669, 57 Station Road, Seven Hills (Figure 3). The proposed development with be assessed as a SSD under Part 4.36 of the EP&A Act. The works will involve:

- Construction of a new two-storey 19.2MW data centre at the rear of the site including ancillary office space.
- A total floor area of 8,076 square metres.
- Provision of external plant in plant yards to the west, north and south of the proposed data hall, as well as rooftop plant, which will be screened.
- Provision of nine new generators, for a site total of twelve generators.
- Capacity for up to 289,000 litres of diesel fuel storage.
- New vehicular circulation to provide access to Station Road, connecting into new driveways already approved under DA-21-01058.
- Parking for 31 vehicles.
- Landscaping works.

6.1 Potential risks to Aboriginal cultural heritage

The study area does not contain any recorded Aboriginal sites or objects 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 9).

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' (Marquis-Kyle & Walker 1994, p.13). 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. 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 any Aboriginal sites or objects, therefore the study area has been assessed as having low archaeological potential. However, this assessment has positively contributed to our knowledge of Aboriginal land use in the region and will be available for future generations to build on in line with inter-generational equity principles. The proposed works will avoid impacts to any known Aboriginal sites. 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 therefore no further investigations are required. This recommendation is conditional upon the recommendations outlined in this report.

6.2.2 Heritage induction

Heritage inductions for all site workers and contractors should be undertaken in order to prevent any unintentional harm to unexpected Aboriginal objects or sites, or Aboriginal sites or objects located within proximity to the study area. 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.

6.2.3 Development of an Aboriginal Cultural Heritage Management Plan

Based on the unexpected find recovered in the adjacent development (SYD09), it is recommended that an Aboriginal Cultural Heritage Management Plan (ACHMP) is developed as part of a Construction Management Plan (CMP) to ensure an unexpected finds procedure is present during the construction phase of this project.

As it is an offence to disturb an Aboriginal site without a consent permit issued by DPIE, should any Aboriginal objects be encountered during works associated with this project, 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.

6.2.4 Ongoing engagement with RAPs for site monitoring and interpretation

Representatives from [redacted] conveyed the need for future works on site to be monitored, given the unexpected find recovered from the SYD09 study area. Monitoring of future works by RAPs is recommended in order to prevent any unintentional harm to unexpected Aboriginal objects or sites, or Aboriginal sites or objects located within proximity to the study area.

Ongoing management of the site may also include interpretive signage describing the area's cultural significance to Aboriginal people, as recommended by representatives from [redacted] in Stage 3 of the consultation process (see ACHA document for details). These mitigation strategies would be included in a Cultural Heritage Management Plan for the study area, should the Conditions of Consent for the project require it.

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: Areas identified as having low archaeological potential

No further investigations are required for areas assessed as having low archaeological potential. This recommendation is conditional upon Recommendations 4 and 5.

Recommendation 2: Continued consultation with the registered Aboriginal parties

It is recommended that the proponent provides a copy of the draft ACHA report to the registered Aboriginal parties (RAPs) for the project and considers all comments received. The proponent should continue to inform these groups about the management of Aboriginal cultural heritage within the study area throughout the life of the project.

It is also recommended that RAPs be invited to monitor future works and be consulted on the development of interpretive signage describing the area's cultural significance to Aboriginal people.

Recommendation 3: Discovery of unanticipated Aboriginal objects

All Aboriginal objects and Places are protected under the NSW *National Parks and Wildlife Act 1974* (NPW Act). It is an offence to disturb an Aboriginal object or site without a consent permit issued by the Heritage NSW, Department of Planning Industry and Environment (Heritage NSW). Should any 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.

It is recommended that an ACHMP and heritage induction process for site staff be developed to ensure an unexpected finds procedure is present during the construction phase of this project, as outlined in Section 6.2.

Recommendation 4: Discovery of human remains

If any suspected human remains are discovered during any activity works, all activity in the vicinity must cease immediately. The remains must be left in place and protected from harm or damage. The following contingency plan describes the immediate actions that must be taken in instances where human remains or suspected human remains are discovered. Any such discovery within the study area must follow these steps:

1. Discovery: If suspected human remains are discovered all activity in the vicinity must stop to ensure minimal damage is caused to the remains; and the remains must be left in place, and protected from harm or damage.
2. Notification: Once suspected human skeletal remains have been found, the Coroner's Office and the NSW Police must be notified immediately. Following this, the find will be reported to the Aboriginal parties and DECCW NSW.

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Appendices

Appendix 1 AHIMS results

THE FOLLOWING APPENDIX IS NOT TO BE MADE PUBLIC