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311 SOUTH STREET, MARSDEN PARK NEW SOUTH WALES

ABORIGINAL CULTURAL HERITAGE ASSESSMENT

FINAL REPORT

DEXUS WHOLESALE MANAGEMENT LTD

22 March 2022

DOCUMENT INFORMATION

Project:	311 South Street,
Services required:	ACHA
Client:	Dexus Wholesale Management Limited
Prepared by:	Dominique Bezzina, Stephanie Moore, William Andrews
Project number:	21134

DOCUMENT HISTORY AND APPROVAL STATUS

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EXECUTIVE SUMMARY

This report has been prepared for Dexus Wholesale Management Limited and is an Aboriginal archaeological and cultural heritage assessment of land situated at 311 South Street, Marsden Park, New South Wales (NSW) [the study area], within the Blacktown Local Government Areas (LGAs), and the parish of Rooty Hill in the county of Cumberland.

The study area is defined by the boundary of South Street to the northwest, cleared farmland to the northeast, sparsely vegetated undeveloped land to the southwest, and an industrial development zone to the southeast. The study area is in the suburb of Marsden Park, located 10 kilometres from Blacktown Central Business District.

This Aboriginal Cultural Heritage Assessment (ACHA) was undertaken to assess the archaeological potential for Aboriginal material as part of a State Significant Development (SSD) being prepared under Part 5 of the *Environmental Planning and Assessment Act 1979*, before the proposed industrial development of the study area. The ACHA has been undertaken in accordance with the *Code of Practice for Archaeological Investigation of Aboriginal Objects in NSW* (Department of Environment Climate Change and Water NSW 2010), the *Guide to investigating, assessing and reporting on Aboriginal Cultural Heritage in NSW* (Office of Environment and Heritage 2011) and the *Aboriginal Cultural Heritage Consultation Requirements for Proponents* (Department of Environment Climate Change and Water NSW 2010) [Consultation Requirements].

Background research indicates the site was potentially used for hunting and stone tool manufacturing. It was determined unlikely to be a long-term camp location due to its distance from permanent water sources. Three Potential Archaeological Deposit (PAD) sites were located within 100 metres of the boundaries of the study area, though none were recorded as extending into the boundaries of 311 South Street.

When surveying the study area it was noted that the landform that one of the PADs, MPIP PAD 4, was situated on the boundaries of the study area and consequently it was investigated by test excavation. Low levels of ground disturbance were observed throughout the study area. No surface artefacts were located either within the landform or anywhere in the study area.

Test excavations occurred from 1-3 February 2022. A total of 27 pits were excavated across three locations. The first (4 test pits) was located at the north-western corner of the study area on a flat landform unit. The second (12 test pits) was at the southwest boundary, focused on the lower slope identified to be related to MPIP PAD 4.. The third area (10 test pits) was positioned in the south-eastern portion of the study area, also recognised as a PAD.

No Aboriginal artefacts were found during survey or test excavation.

ABORIGINAL COMMUNITY CONSULTATION

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

Stage	Component	Commenced	Completed
Stage 1	Letters to agencies	1/10/2021	N/A
	Registration of stakeholders	13/10/2021	27/10/2021
Stage 2	Project information	9/11/2021	N/A
Stage 3	Review of project methodology	11/11/2021	8/12/2021
Stage 4	Review of ACHA by Aboriginal stakeholders	22/03/2022	19/03/2022

Further information on the consultation completed for the project can be found in Section 3 and Appendix A of this report.

RECOMMENDATIONS

It is recommended that:

1. No further assessment or works are required to be undertaken for the study area.
2. In the event that unexpected finds occur during any activity within the study area, all works must in the vicinity must cease immediately. The find must be left in place and protected from any further harm. Depending on the nature of the find, the following processes must be followed:
    1. If, while undertaking the activity, an Aboriginal object is identified, it is a legal requirement under Section 89A of the NPW Act to notify Heritage NSW, as soon as possible. Further investigations may be required prior to certain activities recommencing.
    2. If, human skeletal remains are encountered, all work must cease immediately and NSW Police must be contacted, they will then notify the Coroner's Office. Following this, Heritage NSW should be contacted to liaise with NSW Police, in the instance that the remains are determined to be of historical Aboriginal origin. Upon this determination, Aboriginal stakeholders should be notified.
3. It is recommended that Dexus Wholesale Management Limited continues to inform the Aboriginal stakeholders about the management of Aboriginal cultural heritage within the study area throughout the completion of the project. The consultation outlined as part of this ACHA is valid for six months and must be maintained by the proponent for it to remain continuous.
4. A copy of this report should be forwarded to all Aboriginal stakeholder groups who have registered an interest in the project.

CONTENTS

FIGURES

TABLES

1 INTRODUCTION

Austral Archaeology Pty Ltd (Austral) has been commissioned by Archile Projects, on behalf of Dexus Wholesale Management Limited (the Proponent) to undertake an Aboriginal Cultural Heritage Assessment (ACHA) for the property at 311 South Street, Marsden Park, New South Wales (NSW) [the study area].

1.1 PURPOSE OF THE ACHA

The ACHA was undertaken to assess the potential harm that may occur to Aboriginal cultural heritage values as part of a State Significant Development (SSD) under Part 5 of the *Environmental Planning and Assessment Act 1979* (EP&A Act), for the proposed industrial construction activities within the study area.

The project involves the construction of a single level industrial warehouse distribution facility on 10.25 hectares of land. According to Archile, the works will consist of bulk earthworks, provision of services, building construction, stormwater management, road construction and existing road upgrades.

1.2 ASSESSMENT OBJECTIVES

The scope of this ACHA report is based on the legal requirements, guidelines and policies of the Heritage NSW, formerly the Office of Environment and Heritage (OEH), formerly, the Department of Environment, Climate Change and Water (DECCW), Department of Environment and Climate Change (DECC) and Department of Environment and Climate (DEC).

The guiding document for this assessment is the *Guide to Investigating, Assessing and Reporting on Aboriginal Cultural Heritage in NSW* (OEH 2011) [Guide], the *Code of Practice for the Investigation of Aboriginal objects in NSW* (DECCW 2010b) [Code of Practice] and the *Aboriginal Cultural Heritage Consultation Requirements for Proponents 2010* (DECCW 2010a) [Consultation Requirements].

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

- A description of the Aboriginal objects and/or places within the study area.
- A description of the Aboriginal cultural heritage values, including the significance of Aboriginal objects, places and values identified by the ACHA.
- Documentation of how the Consultation Requirements have been met (specifically 80C of the *National Parks and Wildlife Regulation 2009*) [NPW Regulation].
- The views of Aboriginal people regarding the likely impact of the proposed activity on their cultural heritage, including evidence of their submissions and how these have been addressed.
- An assessment of harm posed to Aboriginal objects, places or values as part of the project.
- A description of practical measures that have been used to protect, conserve, avoid or mitigate harm to Aboriginal objects, places and values.

This report is supplemented by an Archaeological Technical Report (ATR), provided as Appendix B, which documents the archaeological survey and test excavation undertaken as part of this ACHA. This report should be read in conjunction with the ATR.

1.3 SUMMARY OF LEGISLATIVE PROCESS

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

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

Table 1.1 Federal acts

Federal Acts:	Applicability and implications
Environment Protection and Biodiversity Conservation Act 1999	This act has not been triggered and so does not apply, as: • No sites listed on the National Heritage List (NHL) are present or in close proximity to the study area. • No sites listed on the Commonwealth Heritage List (CHL) are present or in close proximity to the study area.
Aboriginal and Torres Strait Islander Heritage Protection Amendment Act 1987	Applies, due to: This Act provides blanket protection for Aboriginal heritage in circumstances where such protection is not available at the state level. This Act may also override state and territory provisions.

Table 1.2 State acts

State Acts:	Applicability and implications
National Parks and Wildlife Act 1974 (NPW Act 1974)	Applies, due to: • Section 86 – Prohibits both knowingly and unknowingly, causing harm or desecration to any Aboriginal object or place without either an AHIP or other suitable defence from the Act. • Section 89A – Requires that the Heritage NSW must be notified of any Aboriginal objects discovered, within a reasonable time.
NPW Regulation 2009	Applies, due to: • Section 80A – States minimum standards of due diligence to have been carried out • Section 80C – Requires Aboriginal community consultation process to be undertaken.
The Environmental Planning and Assessment Act 1979 (EP&A Act 1979)	Applies, due to: • This project is being assessed under Part 5 of the EP&A Act 1979. • The Part 5 Guidelines will apply.
NSW Heritage Act 1977	There are no sites listed on the State Heritage Register associated with the study area, and therefore Section 57 of this act does not apply.

Table 1.3 State and local planning instruments

Planning Instruments	Applicability and implications
Local Environmental Plans (LEP)	The following LEP is applicable: • Blacktown LEP 2021
Development Control Plans (DCP)	The following DCP is applicable: • Blacktown DCP 2010

Table 1.4 Aboriginal community consultation guidelines

Guidelines	Applicability and implications
Consultation Requirements	• The development is to be conducted in accordance with Part 5 of the EP&A Act. • Aboriginal community consultation is required under the SEARs

1.4 PROJECT TEAM AND QUALIFICATIONS

The following personnel have been involved in the preparation of this report are detailed in Table 1.5.

Table 1.5 Personnel involved in the preparation of this ACHA

Name	Title	Experience	Qualifications	Role
Alexander Beben	Director	14 years'	B. Arts (Hons) Archaeology Univ. of Manchester M. Arts Archaeology & Ancient History Univ. of Leicester	Director, quality assurance
Doug Williams	Principal Archaeologist	30 years	BA (Hons) ANU, Grad Dip App Sci (CHM) University of Canberra. PhD Candidate (Griffith University)	Technical Review
Stephanie Moore	Senior Archaeologist	6 years'	B. Arts (Hons) Arch/Palaeo, University of New England M. Herit. Cons., University of Sydney	Technical lead
William Andrews	Archaeologist	3 years'	B. Arts Arch/Ancient History Univ. of Sydney B. Eng (Hons) Surveying UNSW	Project manager, field team lead, reporting, mapping
Dominique Bezzina	Archaeologist	1 years'	B. Arts Archaeology Macquarie Univ.	Reporting, fieldwork

1.5 ABBREVIATIONS

ACHA	Aboriginal Cultural Heritage Assessment
AHIP	Aboriginal Heritage Impact Permit
ATR	Archaeological Technical Report
Austral	Austral Archaeology Pty Ltd
BOM	Bureau of Meteorology
BP	Berkshire Park Soil Landscape
Burra Charter	Burra Charter: Australia ICOMOS Charter for Places of Cultural Significance 2013
CBD	Central Business District
CHL	Commonwealth Heritage List
DEC	NSW Department of Environment and Climate (former)
DECC	NSW Department of Environment and Climate Change (former)
DECCW	NSW Department of Environment, Climate Change and Water (former)
DCP	Development Control Plan
DLALC	Deerubbin Local Aboriginal Land Council
EP&A Act	Environmental Planning and Assessment Act 1979
EPBC Act	Environmental Protection and Biodiversity Act 1999
EPI	Environmental Planning Instrument
GSV	Ground Surface Visibility
Heritage Act	NSW Heritage Act 1977
ICOMOS	International Council on Monuments and Sites
IHO	Interim Heritage Order
LALC	Local Aboriginal Land Council
LEP	Local Environmental Plan
LGA	Local Government Area
NHL	National Heritage List
NPW Act	National Parks and Wildlife Act 1974
NPWS	National Parks and Wildlife Service
NSW	New South Wales
OEH	NSW Office of Environment and Heritage (former)
PAD	Potential Archaeological Deposit
The Proponent	Dexus Wholesale Management Limited
RNE	Register of the National Estate
SEARs	Secretary's Environmental Assessment Requirements
study area	311 South Street, Marsden Park (Lot 31, DP262886)
SSD	State Significant Development
Blacktown DCP	Blacktown Development Control Plan 2015
Blacktown LEP	Blacktown Local Environmental Plan 2015

2 DESCRIPTION OF THE AREA

2.1 THE STUDY AREA

The study area consists of the entirety of 311 South Street, Marsden Park, NSW (Lot 31 DP262886), located approximately 10 kilometres from the township of Blacktown, within the Blacktown Local Government Areas (LGA), and the parish of Rooty Hill in the county of Cumberland. It is also within the boundaries of the Deerubbin Local Aboriginal Council (DLALC). It is bounded to the north by various farming structures, to the east by a dam and cleared farmland, to the south by remnant vegetation and industrial development, and to the west open farmland.

The location of the study area is shown in Figure 2.1, Figure 2.2, and Figure 2.3, and the proposed development is shown in Figure 2.4

2.2 DESCRIPTION OF ABORIGINAL CULTURAL HERITAGE VALUES

It is generally accepted that Aboriginal people have inhabited the Australian continent for at least 50,000 years, and NSW for over 42,000 years (Allen & O'Connell 2003, Bowler et al. 2003). Aboriginal culture is rich and involves custom, lore and a values system based upon the sustainability of their spiritual connection, belonging, obligation and responsibility to care for their land, people and environment (DECCW 2010c). Aboriginal cultural knowledge can be defined as:

> *"… accumulated knowledge which encompasses spiritual relationships, relationships with the natural environment and the sustainable use of natural resources, and relationships between people, which are reflected in language, narratives, social organisation, values, beliefs, and cultural laws and customs…"* (Andrews et al. 2006)

Aboriginal cultural heritage encompasses both tangible and intangible elements(DECCW 2010a, p.3). Tangible heritage may include:

- Items and places made and used by Aboriginal people such as stone tools, art sites and ceremonial or burial grounds.
- Contemporary and/or historical sites such as old mission buildings, massacre sites and cemeteries.
- Cultural landscapes which are "*a place or area valued by an Aboriginal group (or groups) because of their long and complex relationship with that land*" (Buggey 1999).

Aboriginal cultural heritage is not just confined to tangible sites and landscapes, but also includes intangible aspects such as peoples' memories, story-lines, dreaming stories, ceremonies, language and other cultural knowledge passed from generation to generation (DECCW 2010a, p.3).

A description of the Aboriginal values identified within or adjacent to the study area is contained in Table 2.1 and within Figure 2.4.

Table 2.1 Details of Aboriginal cultural heritage values adjacent to the study area

Name	AHIMS No.	Type	Location Landform	Cadastral Boundary
South Street	45-5-4961	Artefact, PAD	Upper Slope	[redacted]
MPIP PAD 4	45-5-4621	PAD	Upper Slope	[redacted]
30 South Street, Marsden Park	45-5-4929	PAD	Ridgeline	[redacted]

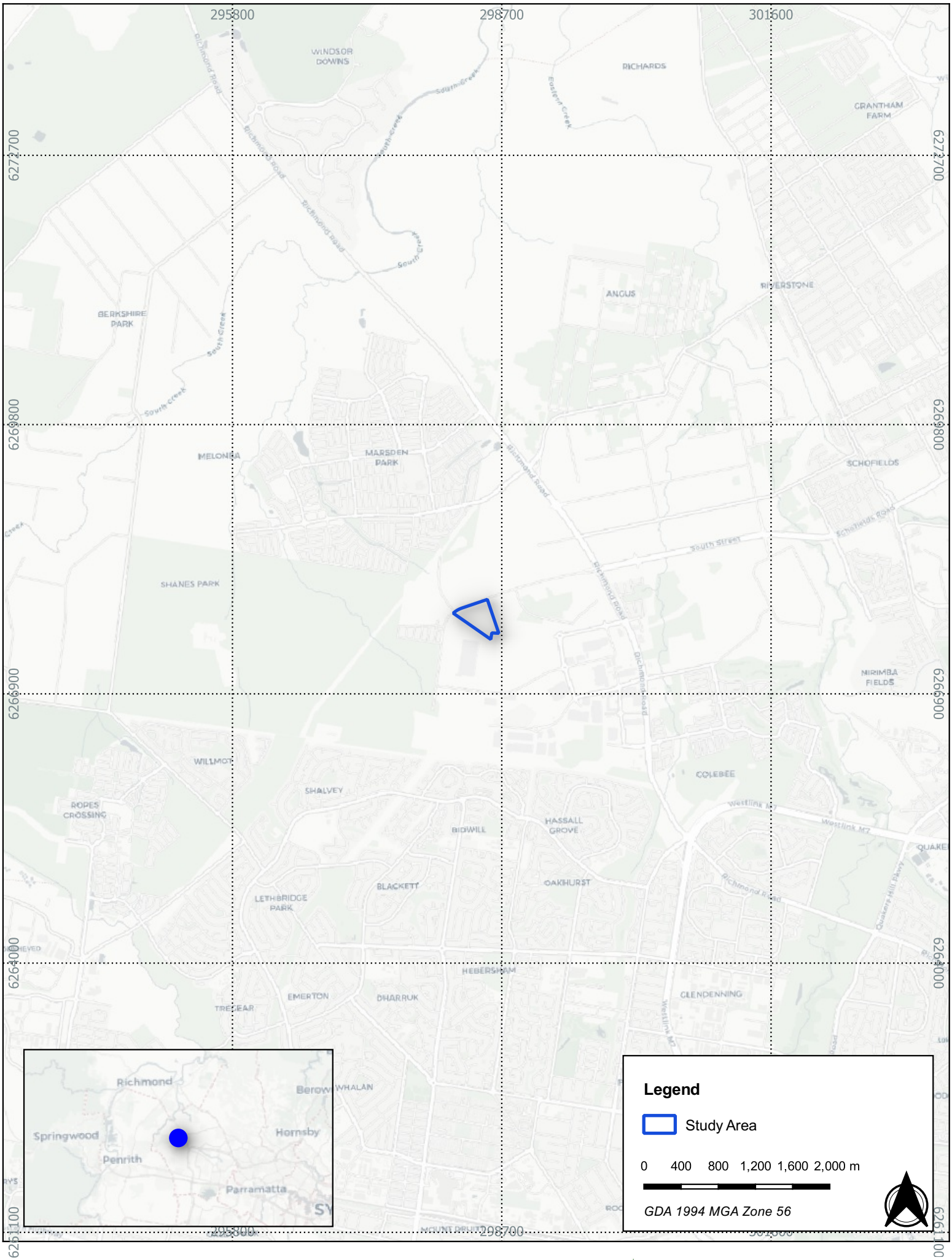

Figure 2.1 - Location of the study area

21134 - 311 South Street, Marsden Park

Source: CartoDB

Drawn by: WA Date: 2022-01-25

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Figure 2.2 - Detailed aerial of the study area

21134 - 311 South Street, Marsden Park

Source: Nearmap

Drawn by: WA Date: 2022-01-25

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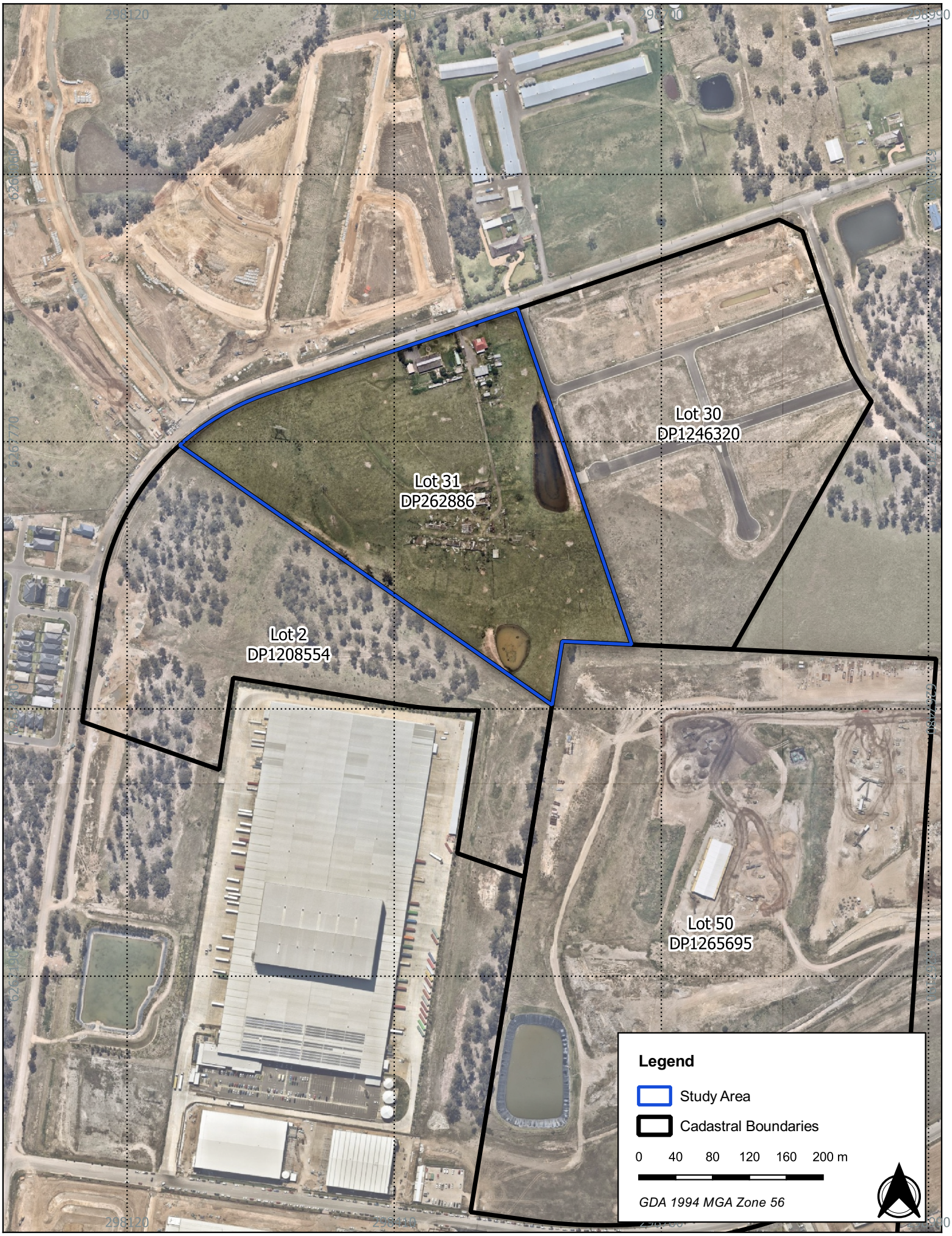

Figure 2.3 - Cadastral boundaries related to the study area

21134 - 311 South Street, Marsden Park

Source: Nearmap

Drawn by: WA Date: 2022-01-25

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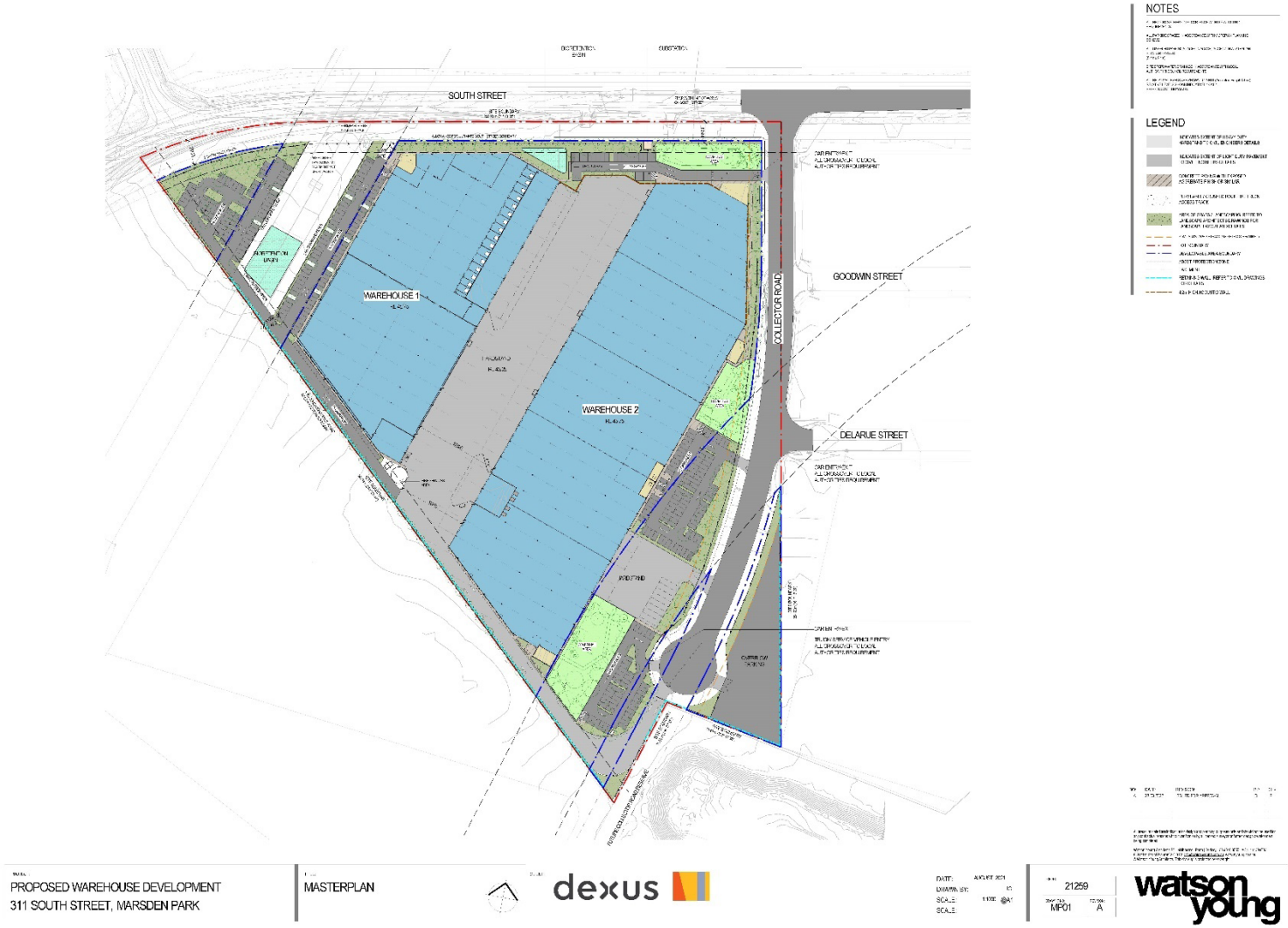
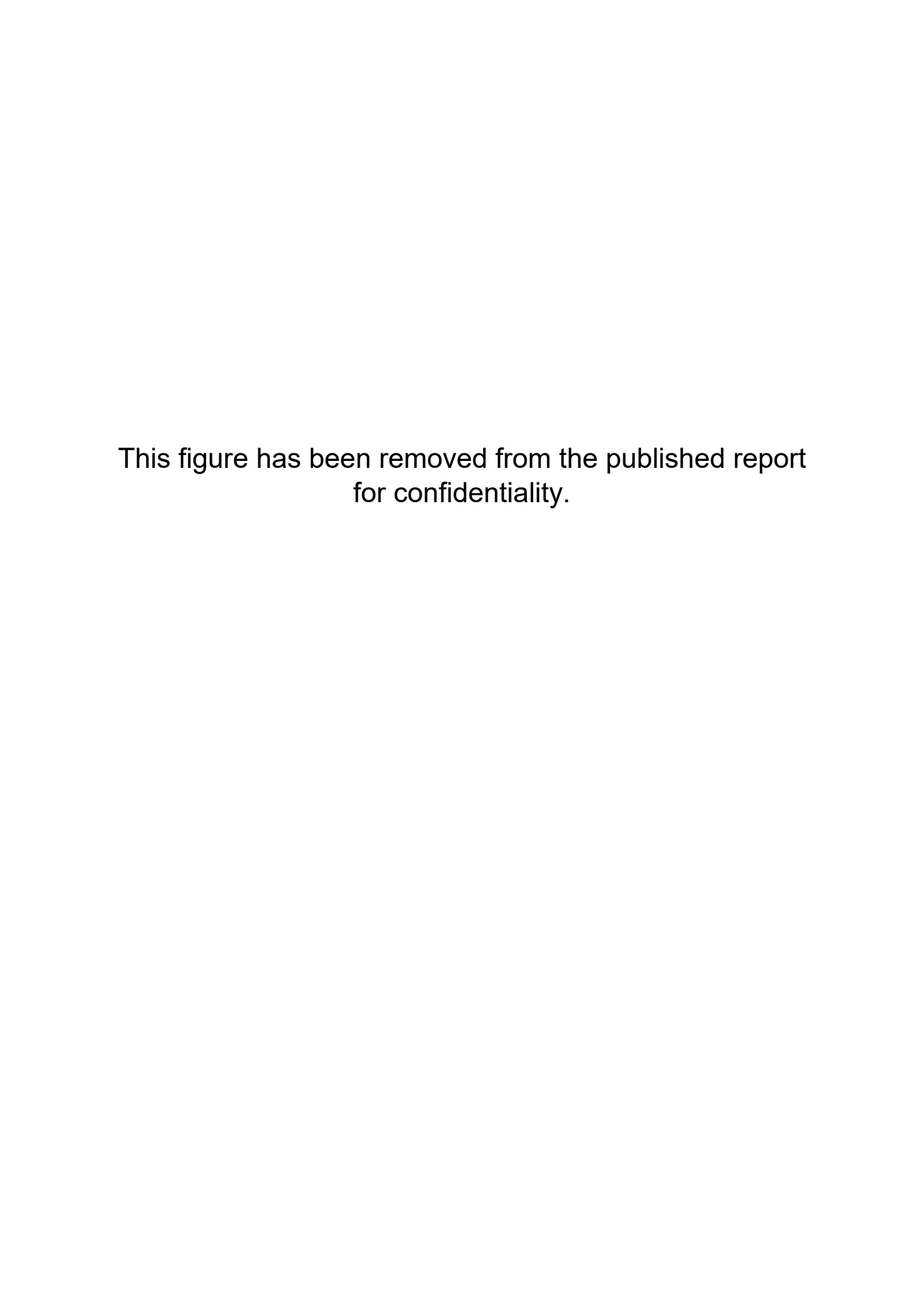


Figure 2.4 Proposed warehouse development provided by Dexus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for confidentiality.

2.3 ENVIRONMENTAL CONTEXT

The following section discusses the study area in relation to its landscape, environmental and Aboriginal landscape resources. This environmental context has been prepared in accordance with Requirement 2 of The Code (DECCW 2010d, pp.8–9), and should be read in conjunction with the corresponding sections of the technical report included in Appendix B.

The study area is broadly located within the Sydney Basin bioregion. This large bioregion is temperate with warm summers and no dry season. The topography is made up of mostly flat areas, with deep gorges created by coastal streams, with plateaus in between. Areas by the coast contain cliffs, beaches and estuaries (NSW Department of Planning, Industry and Environment 2021).

More specifically the study area falls within the Cumberland sub-bioregion, which takes up most of the western regions of Sydney at the bottom of the Blue Mountains. The bioregion sits on shales and sandstones from the Wianamatta group, with areas around rivers containing quaternary alluvium. The topography of the Cumberland area is made up of low hills and wide valleys, with red and yellow soils on slopes, which degrade in quality as one moves down slopes into valleys, red and brown clays on volcanic bases, poor stony soils on gravels and good loam in floodplains. (NSW Department of Planning, Industry and Environment 2021).

2.3.1 TOPOGRAPHY AND HYDROLOGY

The landscape surrounding the study area is one of low hills and ridges peppered with drainage channels that drain into an unnamed tributary of South Creek. The study area itself is located on one of the fingers of a ridgeline which makes up the majority of the southern portion of Marsden Park. On a more macro scale, the study area is relatively free of large elevation changes, with only 3 metres of elevation difference across the area. As such, the topography is very basic, with some flat areas and the majority being slope. There is one area of clear evidence of earthworks around the old shed in the centre of the property, along with the three dams that have been constructed within the boundaries of the study area.

The study area is relatively far from any documented water sources, with the minimum distance from the study area being 750 metres. These water sources are 1st order drainage channels and thus were unlikely to provide a range of resources to the people in the area. However, the presence of dams suggests that there are smaller drainage channels within the study area, but nothing substantial.

The largest nearby water source is the second-order Bells Creek, 1.7 kilometres to the east of the study area. This would likely have been the major water source in the surrounding area with the wide range of AHIMS sites to the east of the study area associated with this watercourse. The study area appears to be in the watershed of the unnamed 2nd order tributary of South Creek, 2.3 kilometres to the west of the study area

A large number of AHIMS sites in proximity to the study area mostly appear to be associated with 1st order streams. However, the sites to the east of the study area do not appear to be associated with a water system, which is in opposition to the commonly held assumption that sites tend to occur within 250 metres of a watercourse in the Cumberland Plain. As such, it is possible that some other factor was influencing Aboriginal people's choice of settlement location in this area, or the ground has been significantly altered by man-made processes. The latter appears to be the case as evidence of quarrying is present directly to the southeast of the study area. This is likely to have removed any previous drainage channels, to which the AHIMS sites were previously associated.

The hydrological systems identified within and in the locality of the study area are identified in Figure 2.5.

2.3.2 GEOLOGY AND SOILS

The study area falls completely within the Bringelly Shale geological unit, this is the major source of fill and brick clay throughout the Sydney region, hence the quarrying neighbouring the study area. The geological unit is described as:

> *"a coastal alluvial plain sequence which grades up from a lagoonal-coastal marsh sequence at the base to increasingly more terrestrial, alluvial plain sediments towards the top of the formation. It is also classified as a formation of a Mid-Triassic age with lithologies that comprise claystone, siltstone, laminite, sandstone, and tuff" (Willliam 2005).*

Nearly all of the AHIMS sites analysed fell within the Bringelly Shale unit, this is mostly due to it being a very prolific geological type in the area. As such, most sites are statistically likely to fall within this unit.

The landscape is one of rolling hills without outcrops, and as such does not contain the necessary geologic requirements for rock shelters, grinding grooves or material collection sites. As tuff is located within the unit, it is possible that the majority of the material has been collected from nearby and are artefacts are likely to be tuff. However, silcrete artefacts are commonly found in the Cumberland Plain. Silcrete is also likely to be found based on the high numbers of the material found in nearby excavations also located on Bringelly Shale (Austral Archaeology 2021).

The geological units identified within the study area are identified in Figure 2.6.

The study area falls entirely within the Berkshire Park soil landscape, which is mostly made up of orange heavy clays and clayey sands. Ironstone is often present with large silcrete boulders (up to 20cm) often found in areas of mixed sand and clay. As silcrete is common in nearby sites, a large proportion of the artefacts found will be made of silcrete.

Berkshire Park soils tend to be around 50 cm deep before reaching clay, and contain many stones. They are not easily eroded or waterlogged and have low fertility (Bannerman & Hazelton 2011). As such, any artefacts are likely to be accompanied by other stones and excavations may be fast through the sandy portion and slow through the clay. Due to the lack of erosion, many artefacts are likely to be present roughly in situ.

The soil landscapes identified within the study area are identified in Table 2.2 and Figure 2.6.

Table 2.2 Soil landscapes identified as being within the study area

Soil landscape	Description
BP1	Brown to brownish-black fine sandy loam to silt loam topsoil. Roots are rare and stones, charcoal and other inclusions do not occur.
BP2	Reddish-brown to yellowish-brown sandy to fine sandy loam occurs as topsoil. There are minimal roots and no significant charcoal, stones or other inclusions.
BP3	Brown sandy clay with up to 20% ironstone nodules (2 – 6mm) are common, with few roots and no charcoal.
BP4	High chroma (bright coloured) clay subsoil with up to 90% stones, colour varies from reddish-brown to bight yellowish-brown. Can contain up to 90% of stones ranging from small gravel to boulders. Roots and charcoal fragments do not occur.

In most areas, 50cm of BP3 overlies greater than 50cm of BP4.

On flats and small drainage lines up to 50 cm of BP2 overlies less than 50cm of BP3 and up to 90cm of BP4 (Bannerman & Hazelton 2011).

As such, the presence of charcoal is likely to indicate the presence of a bushfire or possibly a past Aboriginal campsite, especially when found with artefacts. Soils are likely to be relatively deep and contain a wide variety of stones.

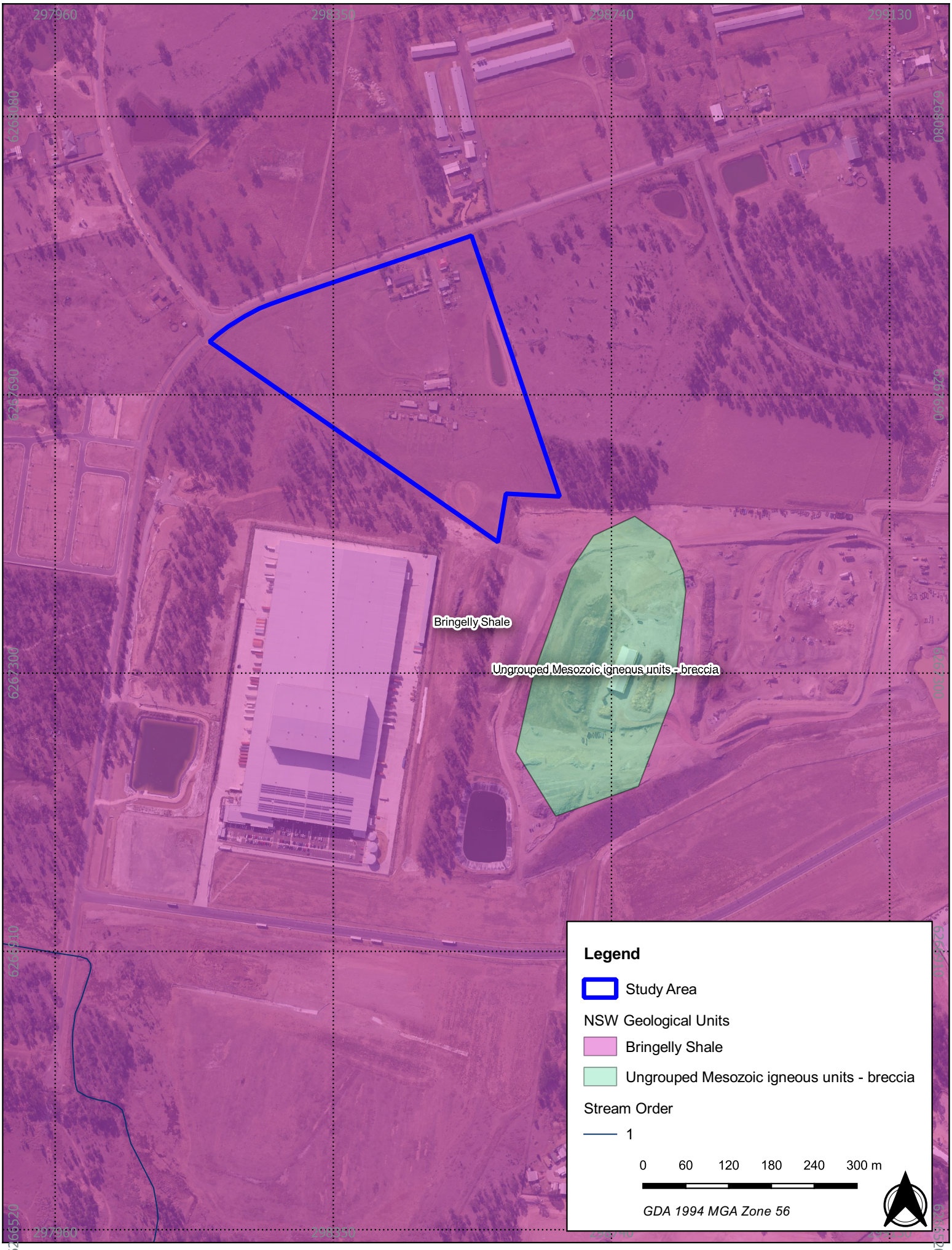

Figure 2.6 Geology and Hydrology of the study area

21134 - 311 South street Marsden Park - ACHA

Source: NSW LPI Aerial, NSW Geological Units *Drawn by: ARH Date: 2021-10-21*

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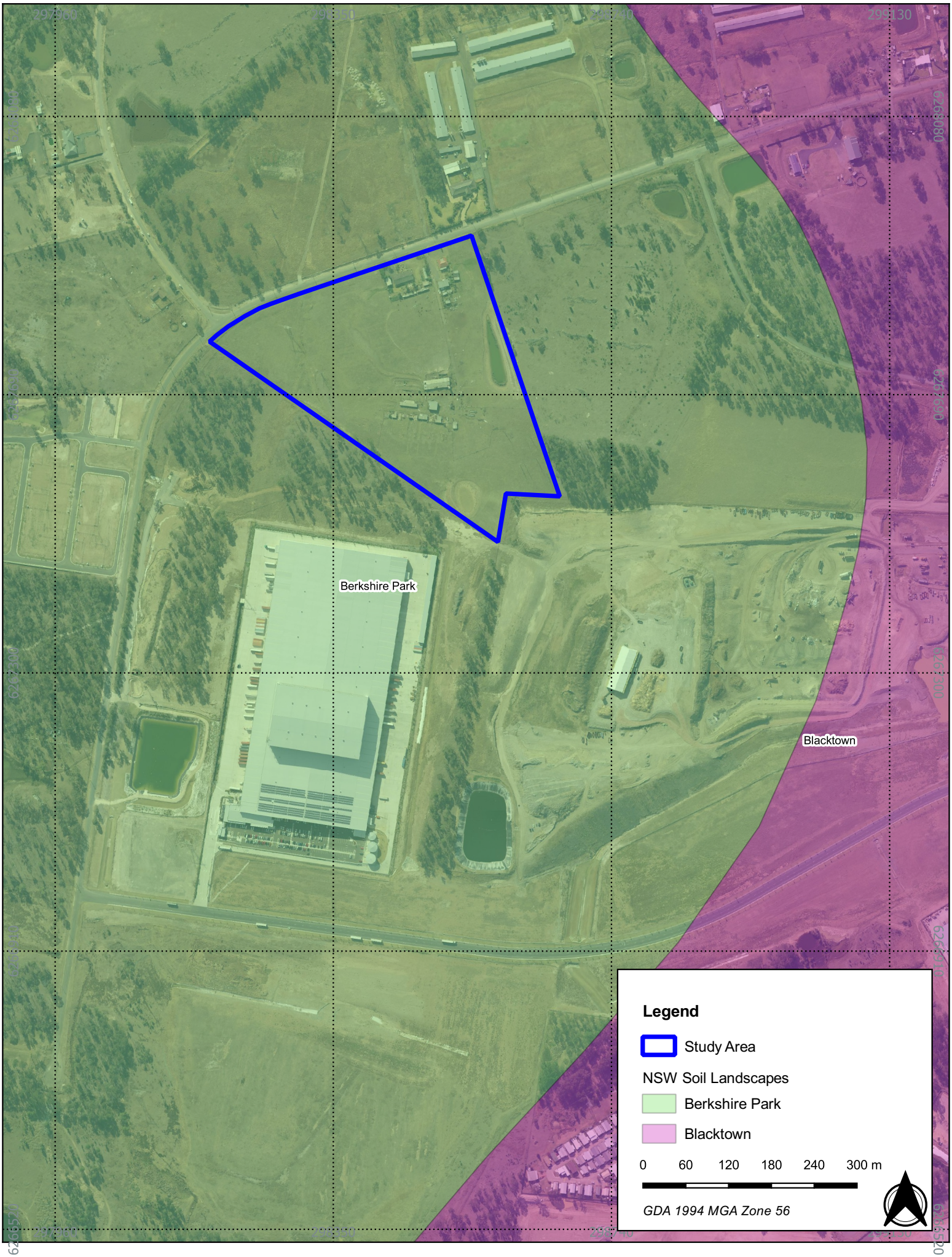

Figure 2.7 Soil landscapes of the study area

21134 - 311 South street Marsden Park - ACHA

Source: NSW LPI Aerial, NSW Soil landscapes *Drawn by: ARH Date: 2021-10-21*

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2.3.3 CLIMATE AND VEGETATION

The Sydney Basin Bioregion is dominated by a temperate climate characterised by warm summers with no dry season. Temperatures in the Marsden Park area vary from lows of 6.1°C on average in winter to average highs of 28.6°C in summer (BOM Weather, Richmond RAAF Base). As such the area would have provided a reasonable location to live in the autumn and spring, but would likely be too hot in summer and too cold in winter for prolonged occupation without sufficient clothing and resources to cool down.

Rainfall in the area occurs on average 71.5 days a year, with roughly 834.6mm of rain throughout the year. Rainfall is the heaviest in January, February and March, slowing down to a low point in August, then building back up to high levels at the end of the year (Bureau of Meteorology 1989). As such, the area receives sufficient rain to ensure that all water sources are flowing, and even in drought, there is likely to be water around.

Most of the vegetation in the surrounding area has been cleared, however, small sections of remnant forest are likely to contain *Eucalyptus fibrosa* (broad-leaved ironbark), *Angophora bakeri* (narrow-leaved apple) and *E. sclerophylla* (scribbly gum). A shrub understory is dominated by members of the families *Fabaceae*, *Papilionaceae, Sapindaceae, Proteaceae* and *Myrtaceae* (Bannerman & Hazelton 2011).

2.3.4 LANDSCAPE RESOURCES

Seeds and plant material provided varied food sources, including Acacia seeds and Eucalypt flowers (Comber 2008). Additionally, native fauna would have been supported by these species. Animals such as kangaroos, wallabies, possums, gliders, bandicoots, wombats, quolls, fruit bats, echidnas, native rats and mice, emus, ducks, tortoises, snakes and goannas (Attenbrow 2003), played a major role in the subsistence of hinterland groups.

The historical and archaeological record provides evidence of species of freshwater fish and shellfish consumed by the Darug of the study area. In 1791, ethnographic accounts reported people of the Hawkesbury-Nepean River catching large mullet in the river (Hunter 1793). David Collins recorded that fish, eels, shellfish and platypus were caught in freshwater waterways and lagoons. Eels were an important food source and relied on, especially during the autumn and winter seasons. Consumption of the cobra, a large worm-like shellfish that lives in water-saturated wood, was also noted by early explorers (Attenbrow 2003, Collins 1798, Hunter 1793).

Two main types of spears were used by the Darug for fishing: large, four-pronged spears, and smaller *mooting* spears. The prongs were made of shell, fish tooth, or animal/fish bone, and were adhered to the wood via plant gum (Attenbrow 2003). Canoes were integral to fishing techniques, the construction of which consisted of a large piece of bark tied at each end by plant material (Collins 1798). Fire was often carried in canoes via a pad of clay, transported to use for cooking and warmth elsewhere (Attenbrow 2003). Fire was an integral part of life and was used as a hunting strategy to burn large portions of bushland and draw out animals (Collins 1798).

Ethnographic sources report that hunting was primarily carried out by males of a clan, while women and children collected plants and vegetables, usually amounting to over 70% of the Aboriginal diet. Hunting equipment included spears, spearthrowers, axes or hatchets (Attenbrow 2003). Variations in these tools existed, with ethnographic evidence suggesting that the spear of the wood tribes (the Darug) were differently constructed than the spear of the Aboriginal people who lived along the coast (Collins 1798).

Further accounts record the use of ground-edge axes throughout the Sydney region, from the coast well into the hinterland. These ground-edge axes had varying uses, from notching trees to assist in climbing, widening holes in trees to catch possums, and procuring bark from trees to manufacture other equipment. Around the time of contact, axes and hatchets were being made of hard stone, which would be sharpened at one edge and hafted to a handle of about 60cm long through the use of plant gum (Attenbrow 2003).

Traps were also used for hunting among the hinterland groups to catch both mammals and birds. They were constructed of plant material and would measure forty to fifty feet in length. It was hypothesized that animals were driven into the trap, and then speared when pushed toward the narrow end. Collins recorded quail feathers in an observed trap in Richmond Hill, to the north of

the study area (Collins 1798). Additional traps were used for catching possums and birds by setting fire to surrounding brush (Attenbrow 2003).

Animals were also used for adornment and clothing purposes, with ethnographic accounts recalling the use of opossum skin and ‘flying squirrel’ hide (Bradley 1969). Cloaks were also recorded as made from the bark of brown gum trees (Hunter 1793).

This original flora would have provided ample resources for food, raw materials, and medicine, and though ethnographic accounts are somewhat limited purely to the time of contact, it is evident that flora and fauna throughout the Cumberland Plain allowed for various resource-abundant lifestyles among the local Aboriginal population.

3 CONSULTATION PROCESS

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

3.1 INTRODUCTION

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

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

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

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

Appendix A.1 contains a consultation log and evidence of all correspondences that were sent and received as part of the consultation process.

3.2 STAGE 1: NOTIFICATION AND REGISTRATION OF INTEREST

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

3.2.1 IDENTIFICATION OF RELEVANT ABORIGINAL STAKEHOLDERS

In accordance with the Consultation Requirements the following bodies were notified as part of the project proposal:

- A response was received from Heritage NSW with a list of stakeholders who may have an interest in the proposed development.
- The DLALC did not respond
- The Local Land Service replied that they had no list of stakeholders who may have an interest in the proposed development.
- The Blacktown City Council replied that they had no list of stakeholders who may have an interest in the proposed development
- The National Native Tittle Tribunal replied that they had no list of stakeholders who may have an interest in the proposed development

A search conducted by the Office of the Registrar, *Aboriginal Land Rights Act 1983* (NSW) listed 11 Aboriginal stakeholders for the land within the study area. A copy of these letters and searches are included in Appendix A.2.

3.2.2 PUBLIC NOTICE

An advert was placed in the Blacktown Advocate, to run on 12 October 2021, requesting the registration of cultural knowledge holders relevant to the project area. A copy of this advert is included in Appendix A.2 of this report.

3.2.3 INVITATION TO REGISTER

Letters were also written to the relevant agencies suggested in Section 4.1.2 of the Consultation Requirements (DECCW 2010a) on 1 April 2020 and a search was made of the Native Title Tribunal on the same day.

Invitations to register were conducted via email and phone, and all registrations were received via email.

As a result of the consultation procedure, the following groups shown in Table 3.1 registered as Aboriginal stakeholders with an interest in this project:

Table 3.1 Registered Aboriginal stakeholders

Organisation	Contact person
[redacted]	[redacted]
[redacted]	[redacted]
[redacted]	[redacted]
[redacted]	[redacted]
[redacted]	[redacted]
[redacted]	[redacted]
[redacted]	[redacted]
[redacted]	[redacted]
[redacted]	[redacted]
[redacted]	[redacted]
[redacted]	[redacted]

3.3 STAGE 2: PRESENTATION OF INFORMATION

All registered Aboriginal stakeholders were provided with information outlining the proposed works, including information relating to proposed impacts as well as the project's methodology on 7 November 2021.

All RAP groups approved of the information provided within this stage of consultation

Copies of all correspondence relating to the provision of project information to registered Aboriginal stakeholders are included in Appendix A.3 of this report.

3.4 STAGE 3: GATHERING INFORMATION ABOUT CULTURAL SIGNIFICANCE

3.4.1 REVIEW OF DRAFT METHODOLOGY

On 11 November 2021, Austral provided each Aboriginal stakeholder with a copy of the project methodology. The methodology outlined the proposed assessment process that would be used in the completion of the project. Aboriginal stakeholders were provided with 28 days to review and provide feedback on the methodology. No comments from Aboriginal stakeholders were received regarding methodology at this stage of consultation.

Copies of all correspondence relating to the draft methodology from Aboriginal stakeholders are included in Appendix A.4 of this report.

3.4.2 INFORMATION GATHERED DURING FIELDWORK

No further information was provided by RAPs during fieldwork that resulted in the amendment of methodology nor that contributed to an enhanced understanding of the study area's values.

3.5 STAGE 4: REVIEW OF DRAFT ACHA REPORT

The draft ACHA was provided to Aboriginal stakeholders on 22 March 2022 for their review and comment. Aboriginal stakeholders were given 28 days to review the ACHA.

There were five responses received from stakeholders for Stage 4 all of which were in support of the recommendations made. The responses were as follows:

- "*We agree with the draft*" – [redacted] 29 March 2022
- "*We agree with the draft*" – [redacted] 25 March 2022
- "*All good from our end…*" – [redacted] 30 March 2022
- "*Received, thank you. I have no questions at this stage.*" – [redacted] 30 March 2022
- *"I have read the project information and ACHA, ATR for the above project, I endorse the recommendations made.*" - [redacted] 4 April 2022

No other responses were received. Copies of all correspondence relating to the review of the draft ACHA are included in the Appendix A of this report.

To comply with Section 4.4.5 of the Consultation Requirements, a copy of the final ACHA was lodged with Aboriginal stakeholders and DLALC on 26 April 2022.

4 BACKGROUND INFORMATION

The following section discusses the study area in relation to its Aboriginal cultural values and should be read in conjunction with the corresponding sections of the technical report included in Appendix B.

4.1 ETHNOHISTORY

It is generally accepted that Aboriginal people have inhabited Australia for at least 65,000 years (Allen & O'Connell 2003, Clarkson et al. 2017). There is an ongoing debate about the nature, territory, and range of pre-contact Aboriginal language groups within the Blacktown region, arising largely from the lack of ethnographic and linguistic information recorded at the time of European contact. The information presented here is based on documentary evidence from diarists, missionaries and proto anthropologists of the late 19th century

It is well understood that the boundaries placed upon the tribal groups are often inaccurate due to the difference in the culture of early European ethnographers compared to the traditional Aboriginal owners of Australia. Early accounts do not consider the movement of people through the landscape which was not constrained to distinct borders.

The earliest record of a name being given to the local Aboriginal people of the Blacktown area was recorded in the late 19th century. They were referred to as the Dharug people and were noted as being divided into two language groups; the coastal group occupying the Sydney Peninsula, north of Port Jackson, and potentially as far as Broken Bay, and the hinterland dialect which is believed to have existed withing the boundaries of Appin, Hawkesbury River, and just beyond the George's River in Parramatta (Attenbrow 2010a)

Within the hinterland groups, small animals and plant food comprised a major component of diets with freshwater mullet and eel being included on a seasonal basis. Observations were made of local hunters cutting climbing notches into trees to make resources that occupied treetops, such as opossums and flying squirrel, and native bee honey, more accessible (J. L. Kohen 1986). Floral resources included wild yams which were grown along the banks of the Nepean and Hawkesbury Rivers, Burrawong nuts which were processed and made in small cakes, banksia flower nectar, fern roots, and berries (Kelleher Nightingale Consulting Pty Ltd 2009, J. L. Kohen 1986). Although Kohen (1986) states the responsibility for collecting floral resources feel to women and children of the group, Attenbrow (2010a) notes that various accounts state that men were also observed undertaking these types of tasks. Traps and snares would be created for the capture of quail and possums, and pitfalls were created for small ground-dwelling fauna. While kangaroo and wallabies were available to the local people in abundance, the difficulty in hunting them in comparison to other protein sources meant they were consumed in a lower frequency than other sources such as possum (J. L. Kohen 1986).

Stone materials were a highly important resource to the local populations due to their extensive use for the manufacture of stone tools. Kohen (1986) states that the ethnographic record indicates the use of five stone tool 'types.' These were hatchets, wedges, adzes, knives and planes, and barbs. Archaeological evidence shows these tools would generally only be discarded at major and long term campsites, and according to Kelleher Nightingale Consulting (2012), the predominant stone type found in the Marsden Park locality is mudstone, followed by minor amounts of chert, quartz and basalt.

4.1.1 INTERACTIONS BETWEEN LOCAL ABORIGINAL POPULATIONS AND EUROPEAN SETTLERS

The response of the local Aboriginal populations to the arrival of Europeans within the study area was largely defensive due to the disregard of resource consumption expressed by settlers of farmland. The response of Governor Macquarie was extreme and lead to the death of Aboriginal people who were involved in the conflicts despite many of the feuds being instigated by settlers. Some members of the Darug group acted as guides for the expedition groups sent to hunt these individuals, though it was noted that the groups with local guides did not encounter any of the target Aboriginal groups (Kelleher Nightingale Consulting Pty Ltd 2009).

Colebee and Nurragingy, two Darug men, were rewarded for the aid they gave in the expeditions with a joint land grant of 30 acres in April 1816. They were the first Aboriginal people to receive a land grant since the arrival of European settlers. The land approximately 4 kilometres south of the study area was supposedly selected by the two men due to the proximity to Plumpton Ridge, an area of land that was of importance to the South Creek tribe. Nurrangingy spend more time on the land than Colebee and spent time cultivating crops and practising animal husbandry. This land has been granted a listing on the State Heritage Register due to its combined historical, social and cultural values. (Kelleher Nightingale Consulting Pty Ltd 2009).

Governor Macquarie established a Native Institution which acted as a school and reserve for Aboriginal children. The institution was in use from 1823 or 1829, though it was found to contain evidence of traditional usage in the discovery of stone flakes on the eastern side of Bell's Creek during a 1981 field inspection. Additional archaeological evidence from the post-contact era included stone flakes and cores, earthenware pottery shards, convict brick and a scarred tree that may have been used by either Aboriginal people during the time of the Institution's usage or European surveyors. The site of the Blacktown Native Institution has now been listed as an AHIMS contact/mission site of historical, social and archaeological significance to Aboriginal communities (Kelleher Nightingale Consulting Pty Ltd 2009).

4.2 PHYSICAL SETTING

The study area is located within the Cumberland Plain lowlands which is described as containing low lying, undulating plains and is dominated by a network of north-flowing channels (Ecological Australia Pty Ltd 2016).

According to (Kelleher Nightingale Consulting Pty Ltd 2012), Riverstone and Plumpton both contain outcrops of silcrete which were significant sources for the manufacture of stones tools and technology. Stone tools artefacts are therefore likely to be predominantly comprised of local silcrete while quartz, chert, tuff and basalt collected from alluvial deposits make up the remaining raw material sources.

The Marsden Park study area is located upon flat terrain and is approximately 1.75 kilometres west of Bells Creek and approximately 1.5 kilometres east of an unnamed first-order tributary. As such the study area was likely used as a passage route or temporary camping location. Past excavations within a kilometre of the study area suggest that knapping floors may be present, however, due to the distance from waterways the likelihood is low.

Due to the disturbance that the study area has been subject to such as land clearing, grazing activities, and detritus accumulation much of the archaeological context has likely been disturbed (Figure 4.1).

Figure 4.1 Photograph of landscapes within the study area

4.3 MATERIAL EVIDENCE OF ABORIGINAL LAND-USE

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

4.3.1 PREVIOUS ARCHAEOLOGICAL WORK

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

REGIONAL ARCHAEOLOGICAL CONTEXT

Archaeological investigations of the Cumberland Plains have been conducted in direct response to the spread of urban development. The limited ethnographic accounts of early settlers and explorers were once considered the primary source for archaeological enquiry. However, with the recent spread of urban development within the Campbelltown environs, archaeological investigations have undergone a corresponding increase.

The major studies which have contributed to our understanding of the Cumberland Plains, and those with direct relevance to the study area through their proximity, are outlined below. Reference is made to the main trends garnered from these investigations which serve to provide a broad framework on which to base the current study.

The material culture of the Aboriginal people of the Sydney region at the time of European contact was diverse, and utilized materials from a large variety of plants, birds, mammals, shells, and stones. Spears were often crafted of a grass tree spike with a hardwood point. Stone, bone, shell, and wood were all commonly used barbs (Turbet 2001). Fishing spears were tipped with bone points and caught using shell or bird talon hooks (Attenbrow 2010b). Stone is the most common material found in the Sydney region and was used for axe heads, spear barbs, woodworking tools, and various other tool types.

Stone artefacts are typically the only physical indication left of Aboriginal use of an area. Knapping of stone artefacts is attributed to either the knapping of stone to create tools or the discard of these

tools once they have been used. Large knapping events tend to occur close to permanent water, as the availability of resources made areas with proximity to water ideal camping locales (Jo McDonald Cultural Heritage Management Pty Ltd 2000).

Changes in the types of stone tool used in the Sydney region allows for a sequence that chronologically arranges tool manufacture and style. FD McCarthy developed a guide for the sequence in changes in stone tool type in eastern NSW, which include the three main phases for the last 15,000 years in Sydney: '*Capertian'*, '*Bondaian'*, and '*Eloueran'* (McCarthy 1976). This sequence was debated, with an alternative theory proposing four phases – '*Capertian*', '*Early Bondaian'*, '*Middle Bondaian'*, and '*Late Bondaian'*, the latter being the equivalent of McCarthy's *Elouer*an phase (Stockton & Holland 1974). The secondary sequence is used in Sydney today, where the commonly referred to 'Bondi points' occur in the *Early Bondaian* phase. *Capertian a*ssemblages generally contain larger tools, and small tool use, such as that of thumbnail scrapers and small blades, is attributed to the later phases.

From around 1,600BP, Bondi points were used less in the coastal Sydney region, and quartz use, as well as bipolar flaking technique, was common. In the Cumberland Plain, dated archaeological sites suggest that backed artefact types and Bondi points were used until 600BP (Corkill 1999, Attenbrow 2010b).

Forager, or hunter-gatherer, settlement patterns have been subject to some modelling and debate. Foley (1981) developed a site distribution model for forager settlement. His model splits hunter-gatherer sites into two categories; residential base camps and activities areas. Populations would reside in the former, near water and shelter, and travel to the latter to gather resources. The majority of artefacts would be deposited in the base camp, and some artefacts would be clustered throughout. This model is more stationary than the actuality, as it does not account for changes in base camp or changing resource availability.

A recent model expanded on Foley's hypothesis. Neville Baker (2000) has developed another predictive model, based on the distance from environmental focal points. This model focuses on three zones of archaeological complexity and can be described as the "complex zone" which includes overlapping knapping floors with a high density of artefact concentrations, which are due to the repeated occupation and use of areas with the easiest and closest access to resources; The "dispersed zone" which includes spatially discrete knapping floors and/or activity areas, due to less intense or frequent occupation of these areas which have more restricted access to resources, or require separation from the main camp; and The "sparse zone" which comprises low-density artefact scatters which are likely to relate to discard due to loss or use rather than manufacture. Further to the sparse zone, there is potential for archaeological evidence to be present, "but in such low density that the sampling intensity used in this project would fail to pick it up reliably" (Baker 2000:54).

The earliest Cumberland-Plain site-specific model was created by Kohen in 1986, where he proposed a model wherein Aboriginal occupation of the Cumberland Plain occurred mainly during the mid to late Holocene, or 4,500BP. This occupation was defined materially by a stone tool technology he referred to as the 'small tool tradition'. He also argued that before this period, Aboriginal occupation was concentrated on large sources of water, namely the coast and the Nepean River (J. Kohen 1986).

McDonald (2005) agrees with Kohen's 1984 model and predicts that Aboriginal occupation was initially focused along the Nepean River and other larger creek lines including Shaws Creek, Jamison Creek and Springwood Creek. Over time, the populations began to move away from the major river systems and to occupy areas further away. Rising sea levels around 6,000BP led to a move of the coastal peoples further inland, which increased the Aboriginal population of the inland areas and increased the pressure on resources. At this time, new areas were occupied for the first time and heat treatment of stone began to be more common. Often materials for stone tools were partially worked at the source and then transported to areas of habitation for further modification. More complex artefact types such as backed artefacts became more common in the recent period, which McDonald suggests is due to "more restricted social movement and contact via exchange networks" (McDonald 2005).

An amalgamation of research undertaken to date in the Cumberland Plains was commissioned by the National Park and Wildlife Service (NPWS) in 1989 (Smith 1989). The study found that site densities and location were influenced by the availability of water and raw materials.

Other site predictability models relied on the distance to resources. Dallas & Witter (OzArk Environment & Heritage 2004) proposed the 'distance decay model', which theorizes that artefacts have less cortex and are smaller with increasing distance from quarries and sources of raw material. Smith (1989) suggested artefacts with more cortex are more likely to be found near raw material sources, while those with less cortex were found further from sources of raw material. This study also found that the size of a site did not correlate with distance from the raw material source, suggesting that large sites on the Cumberland Plain are not necessarily associated with raw material extraction (Smith 1989). However, it has been suggested that due to the abundance of sources of Silcrete throughout the Cumberland Plain, these models are difficult to test, and do not explain raw material preference (OzArk Environment & Heritage 2004).

Since this research, more development in the last three decades has occurred supporting the connectedness of high site density to the availability of water. Stream order can be used to predict Aboriginal land use patterns. A 'first order' stream is the smallest, which flows into and feeds larger streams, but does not normally have any water flowing into it. The joining of two first-order streams creates a second-order stream. The joining of two second-order streams creates a third-order stream. Studies have confirmed the likelihood of archaeological sites close to high order creeks and rivers, as well as at the confluences of streams (J. Kohen 1986, Comber 2006).

McDonald has developed a predictive model for the Cumberland Plain area. A series of excavations in Rouse Hill provided the basis for a predictive model of archaeology in the area (McDonald 1997). These studies found that despite agricultural development, high archaeological potential still exists for sub-surface deposits and that these deposits tend to be more complex and dense as distance to permanent water decreases (McDonald 1997).

An additional later analysis of all sites in the Cumberland Plain in 1997 found 666 sites, with the most common type being open artefact scatter (89%), then scarred trees (2.1%), and the remainder of the sites were isolated finds and combination/other site types (3.5%) (McDonald 1997).

Major conclusions of McDonald's model of site predictability in the region were as follows:

- Fourth and fifth-order creeks (or rivers) will have archaeological evidence that is more complex and possibly stratified, reflecting more permanent and repeated occupation on major creeks; Third-order creeks will have evidence of more frequent occupation such as knapping floors or higher artefact densities in the lower reaches of tributary creeks; Second-order creeks will have sparse archaeological evidence which indicates occasional use and/or occupation; First order creeks will have only very sparse evidence in the headwaters of upper tributaries such as background artefact scatter, due to the intermittent nature of water flow. Overall site patterning is identifiable using environmental factors, where sites on permanent water are more complex than those on temporary water lines.
- Most areas, even with no surface distributions, contain sub-surface deposits. Many sites contain high artefact densities with variability depending on the range of activity areas and site types present.
- Sites in alluvium possess the potential for stratification. Ploughing only affects the deposit up to 30 centimetres,

Additional modelling has suggested that settlement next to water may have been slightly at a distance from the immediate creek bank to stay away from mosquitoes, allow for animals to still approach the water resource, and give space so all members of a large population group had access to the resource (White & McDonald 2010).

Average artefact densities beside high order streams are 13.9 artefacts/m^2 in the Cumberland Plain region, which applies to up to 100 metres from the stream (White & McDonald 2010). While the link between water courses and archaeological potential is clear, other factors are less prominent. Research on the Cumberland Plain by White & McDonald (2010) shows that terraces have the highest artefact densities on the Cumberland Plain, followed by lower slopes, mid slopes, creek flats and upper slopes and ridge tops.

Most predictive models align closely with McDonald's predictability model. A model made by AHMS (2012) based on several excavations at Rouse Hill agreed with McDonald's conclusions, and additionally contributed the following:

- Creek junctions may provide foci for site activity; the size of the confluence could be expected to influence the size of the site;
- Ridgetop locations between drainage lines will usually contain limited archaeological evidence though isolated knapping floors or other forms of one-off occupation may be in evidence in such a location.
- Higher artefact densities occur on terraces and lower slopes, with sparse discontinuous lithic artefact scatter on upper slopes.
- Higher artefact densities occur on landforms facing north and northeast, on lower slopes associated with a larger stream.
- Distance to silcrete outcrops does not affect artefact distribution.

Limitations to site location predictability on the Cumberland Plain were mentioned in the same research, namely by McDonald in 1997. While open scatters and camp sites which represented 89% of all sites recorded were found in all landform units, they were most likely to be found in creek banks. Though this seemingly would align with water predictability models, this was theorized to be due to the higher surface visibility present along creek banks, rather than concrete patterning. None of the sites which had been excavated at this time could be characterized based on the surface alone (McDonald 1997).

Further work has supported the presence of sub surface deposits even when surface artefacts are absent (McDonald 2005, Comber 2006). Two surveys (Comber 2006, Comber 2008) followed by an excavation (Comber Consultants 2011) found few surface artefacts, but over 1,500 sub-surface artefacts in areas that were highly disturbed by agricultural activities including grazing, ploughing, planting, and the construction of a dam. A large site complex was found north of the present study area next to Eastern Creek, which runs south and eventually crosses the study area. Per McDonald (2005), “despite artefacts being rare or completely absent on the surface at each of the sites investigated, all six sites were found to contain intact archaeological deposit. Almost 500 square metres were excavated during this Project and almost 35,000 artefacts were retrieved.”.

Ultimately, past research in the Cumberland Plain concludes that regardless of landform type, stream order is of primary importance in determining the scale and complexity of the sites (McDonald 1997, AHMS 2012). Archaeological potential in the area relates to high order streams and the availability of raw material.

HERITAGE DATABASE SEARCH

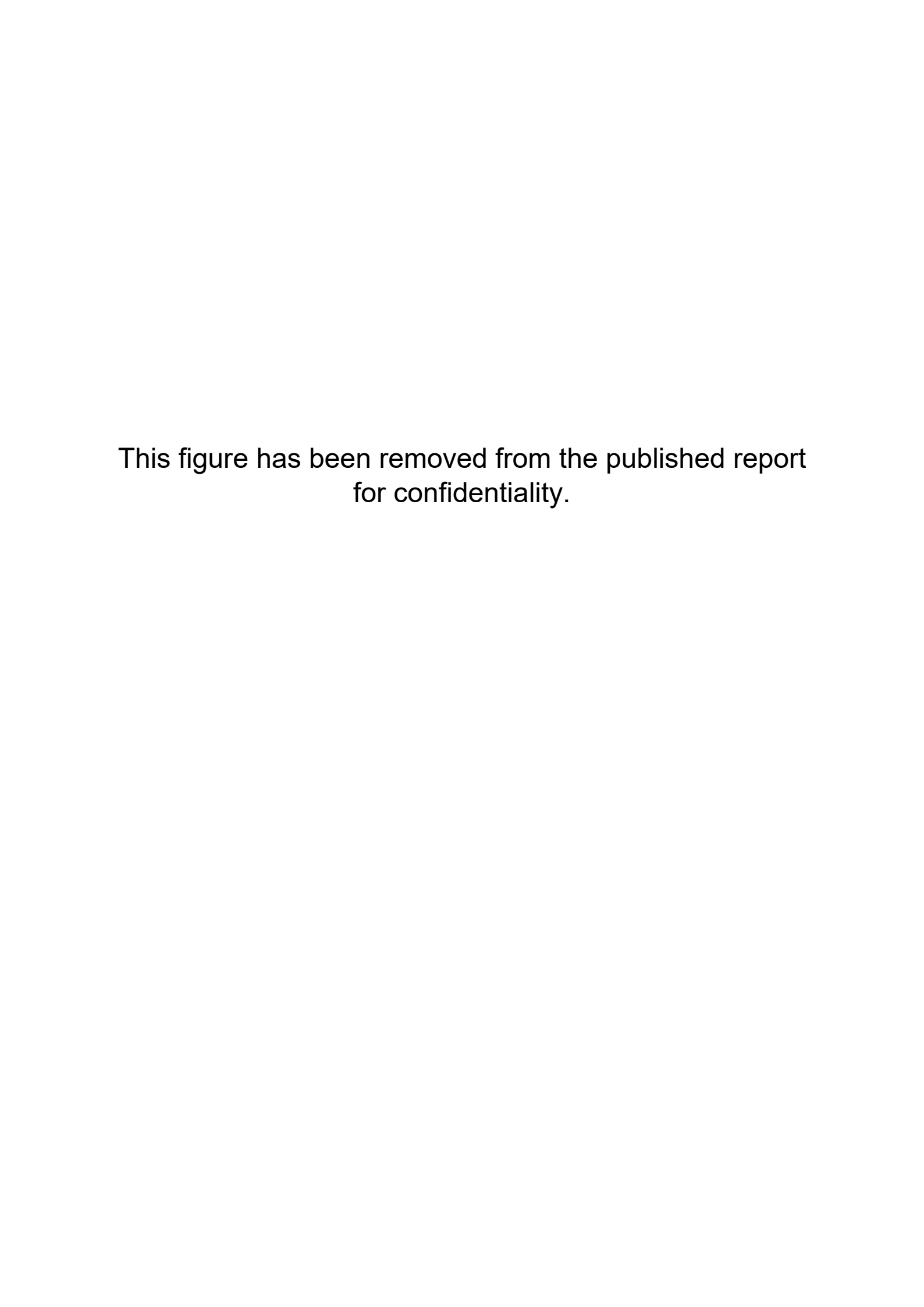
A search of the DPC AHIMS database was undertaken on 25 October 2021(Client Service ID 633155). The results from the AHIMS search identified 96 previously recorded sites within a three-kilometre radius of the study area. Identified sites within or adjacent to the study area are summarised in Table 4.1 and identified in Figure 4.2

Table 4.1 Summary of sites recorded within the study area and adjacent

Name	AHIMS No.	Type	Location Landform	Cadastral Boundary
South Street	45-5-4961	Artefact, PAD	Upper Slope	[redacted]
MPIP PAD 4	45-5-4621	PAD	Upper Slope	[redacted]
30 South Street, Marsden Park	45-5-4929	PAD	Ridgeline	[redacted]

Table 4.2 Summary of sites recorded within a 5-kilometre radius of the study area

Feature Type	Occurrence	Percentage
Artefact	91	95%
Artefact, Potential Archaeological Deposit (PAD)	3	3%
Potential Archaeological Deposit (PAD)	2	2%
Total	96	100%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for confidentiality.

4.4 LOCAL ARCHAEOLOGICAL CONTEXT

Archaeological investigations of the local region, and in particular the suburb of Marsden Park, have been conducted in response to the spread of urban and industrial development as well as within the framework of academic enquiries. The limited ethnographic accounts of early settlers and explorers were once considered the primary source for archaeological enquiry. However, with the recent spread of urban development within the Marsden Park environs, archaeological investigations have increased accordingly. A review of archaeological studies completed either within or in the vicinity of the study area is outlined in Table 4.3.

Table 4.3 Summary of reports within the vicinity of the study area

Reference	Study area location	Results
(Dallas 1982)	Riverstone Schofield and Quakers Hill	Survey undertaken as a part of a Local Environmental Study. The assessment area had varying degrees of exposure and disturbance and included residential and industrial development zones and residential areas such as small farms, dairies, and market gardens. Areas that had been previously cleared were chosen for higher density surveying, particularly along creeks lines and confluences due to their association with Aboriginal site locations. 7 sites and 4 isolated finds were located. All sites were surface scatters with the majority subjected to extensive damage. The sites found area fall into two groups, open campsites, and stone tool manufacturing zones in association with campsites with concentrations of sites being focused along Eastern Creek. Smaller camps occur between Eastern Creek and land further east nearby permanent water sources.
(McDonald & Rich 1993)	Rouse Hill Development Area	Part of a series of reports conducted on the Rouse Hill Development Area to provide advice on how to best formulate heritage management guidelines and regulations. Study area was 40 square kilometres and covered a range of environmental zones and site types. Within this portion of the project, a total of 19 sites, 15 PADs, and 7105 artefacts were located. One site RH/CD7 was assessed as highly significant and, subsequently, it was proposed no work should take place within its proximity. Approximately 20% of the assessment area was identified as being of archaeological potential, equating to roughly, 156 hectares. Half of the sites identified were established as having low potential, 30% were of moderate significance, and 9% were of high significance. 12% of sites were classed as being of mixed significance. The following findings were recorded within the report: • Site patterns tend to relate to environmental factors e.g. complex sites were located along with permanent water sources rather than temporary sources. While conclusions may be drawn regarding environmental factors, it should be noted that the relationship been sites and the environment is very complicated • Alluvial terraces hold the best potential for in-tact remains • Hillslopes held the lowest potential for remains. Where sites were present in hillslope zones, they tended to represent short term occupation by small groups
(Kelleher Nightingale Consulting Pty Ltd 2009)	Marsden Park Industrial Precinct	The Aboriginal heritage assessment covered an area bounded by the south of South Street to the west of Richmond Road. 63 Aboriginal sites recorded within the boundaries of the assessment area, with 42 identified during the field assessment conducted by KNC and 21 were previously identified. Additionally, four PADs of moderate to high potential were identified . They were identified due to their elevation, soil profiles, proximity to water, and moderate slope along with their proximity to other archaeological deposits.
(Ecological Australia Pty Ltd 2016)	Between TransGrid's Vineyard Bulk Supply Point and the Marsden Park Zone Substation	ACHA and ATR to obtain an2 isolated artefacts were located during field survey and registered on AHIMS, one broken mudstone flake and one red silcrete core. Aboriginal representatives on the survey were noted that the assessment area contained the potential for significant places to be present due to its proximity to Eastern Creek. Other representatives also noted the significance of paperbarks in the area as a potential resource to past populations as well as the silcrete outcrops which may have been used as a source for stone tool manufacturing.

Reference	Study area location	Results
(Dominic Steele Consulting Archaeology 2017)	Richmond Road, Marsden Park	Due diligence assessment to accompany a development application for a proposal to subdivide 12 parcels of land into residential lots. A survey was conducted across the assessment area which revealed no evidence of Aboriginal sites, objects or areas of potential archaeological sensitivity.
(Kelleher Nightingale Consulting Pty Ltd 2012)	Marsden Park Precinct, Northwest Growth Centre	Assessment area covers approximately 1800 hectares of land intended for the development of 10,000 new homes and a town centre of just over 30,000 square metres. 67 Aboriginal archaeological sites were recorded within the assessment area which was consistent with predictions for the study area. These sites included open artefact scatters, isolated artefacts and two scarred trees. The significance of these finds ranges between low to moderate within both the scientific/archaeological category. Sites that were of higher research potential tended to correspond with well-drained raised landforms as they had retained their archaeological integrity. Aboriginal stakeholders that were involved in this project identified Marsden Park to be an area of significance and cultural value.
(OzArk Environmental and Heritage Management P/L 2018)	Lots 37 and 38 of South Street Marsden Park	Desktop assessment and field survey to assess the impacts of the proposed industrial subdivision of the South Street assessment area. It was found that 5 Aboriginal sites had been recorded within the assessment area, with 3 of them having to be re-recorded. The sites include an artefact scatter, a PAD, an isolated find, an open camp site, and an open camp site and PAD. The PAD, MPIP 20, was only partially within the study area and the previously recorded artefact was not relocated at the recorded coordinates. It is likely the AHIMS site card was filled in erroneously, but this could not be confirmed due to the artefact not being located.
(Coast History and Heritage 2019)	Lot 44 DP1175138, 6 Townson Road, Marsden Park	This Due Diligence was conducted to assist in a DA for the commercial redevelopment of the western end of 6 Townson Road, Marsden Park. The assessment area consisted of 8.0 Ha of the total 2.1 Ha property. The site survey indicated there were no previously recorded Aboriginal sites within the study area and has been extensively disturbed through activities such as levelling earthworks and scouring of the surface. Coast History and Heritage conclude that due to the extensive disturbance of the site, there is no possibility of locating intact or surviving traces of Aboriginal archaeological evidence.

4.4.1 PREDICTIVE STATEMENTS

In general, an archaeological predictive statement for any study area draws on surrounding environmental data, previous archaeological research and predictive models for Aboriginal occupation. Another essential aspect to predicting the archaeological integrity of a site and something that must be considered is previous land uses of the study area and degree of disturbance.

In summary, the main trends broadly seen across eastern NSW are that:

- Archaeological sites occur on most landforms.
- Site frequency and density are dependent on their location in the landscape.
- There is a dominance of low-density surface open artefact scatters and isolated finds.
- There is a noted paucity of scarred trees due to land clearance.
- Artefact scatters are commonly located near permanent water sources along creek banks, alluvial flats and low slopes, largely concentrated within the first 100 metres of a creek line. More complex sites are usually located close to water sources with major confluences being key locations for occupation sites.
- Archaeological material is also present beyond the immediate creek surrounds in decreasing artefact densities.
- There may be concentrations of sites occurring on ridge tops and crests that are associated with pathways through the landscape.
- Subsurface archaeological deposits are often recovered in areas where no visible surface archaeological remains are evident.
- The dominant raw material used in artefact manufacture is silcrete and fine-grained siliceous material with smaller quantities of chert, quartz and volcanic stone seen.
- Artefact assemblages usually comprise a small proportion of formal tool types with most assemblages dominated by flakes and debitage.
- While surface artefact scatters may indicate the presence of subsurface archaeological deposits, surface artefact distribution and density may not accurately reflect those of subsurface archaeological deposits.
- Aboriginal scarred trees may be present in areas where remnant old-growth vegetation exists.

While these statements provide an adaptable framework for applying a predictive model to the study area, based on the previous models it is possible to further expound on the generalisations made above. The general studies of the Blacktown region, the specific investigations surrounding the study area and the search of the AHIMS database have helped to predict what certain site types can be expected within the study area. These are:

- Due to the locating of a PAD site (MPIP PAD 04) adjacent to the study area by Kelleher Nightingale Consulting in 2008, it is deemed likely that residual artefacts from the site will be present within the study area
- The distance from local water sources indicates that there is a low likelihood of evidence of permanent sites or sites used for extended periods
- As the site is situated on a flat landform any artefacts found in lower substrates are likely to be in their original context
- Disturbance that has occurred throughout the study area is likely to have led to the destruction of a large proportion of the upper strata's archaeological context

5 ARCHAEOLOGICAL RESULTS

An archaeological survey of the study area was completed on 16 December 2021. The survey undertaken for this study was not intended to be a comprehensive survey of the study area, given the level of previous assessment undertaken. Rather, the survey aimed to target previously identified areas of archaeological potential within the study area to refine the method of archaeological test excavation to be undertaken. The survey targeted the proximity of MPIP PAD 4 (AHIMS #45-5-4621), located immediately to the west of the study area, with the aim of determining the likelihood of the PAD extending into the study area.

No Aboriginal objects were identified during the ground survey. One area of PAD was identified on the western boundary of the study area, in proximity to AHIMS #45-5-4621. Based on the low levels of ground disturbance in this area, and the categorisation of an area of PAD on the western side of the property boundary, it was determined that this area contained some potential for subsurface archaeological features.

Figure 5.1 and Figure 5.2 contain representative images indicating the landscape context and cultural material identified within MPIP PAD 4 (AHIMS # 45-5-4621).

Figure 5.1 Southeast view of MPIP PAD 4 (AHIMS # 45-5-4621)

Figure 5.2 Southwest view of MPIP PAD 4 (AHIMS # 45-5-4621)

Archaeological test excavation of this the area east of MPIP PAD 4 (AHIMS #45-5-4621) was undertaken between 1 February 2022 and 3 February 2022. Test excavation occurred in three distinct areas, with a total of 18 test pits were excavated. The test pits were positioned across two landforms: gentle slope and upper slope. Test pits were generally between 250 to 300 millimetres in depth, and consistent soil profiles were encountered across the study area.

No artefacts were recovered from the testing program, indicating that MPIP PAD 4 (AHIMS #45-5-4621) does not extend into the study area.

Further details of the archaeological excavation program can be found in the ATR (Appendix B).

6 CULTURAL HERITAGE VALUES

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

6.1 BASIS FOR THE ASSESSMENT

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

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

The Burra Charter significance values are outlined in Table 6.1; these are frequently adopted by cultural heritage managers and government agencies as a framework for a more holistic assessment of significance.

Table 6.1 Definitions of Burra Charter significance values (Australia ICOMOS 2013b)

Value	Definition
Aesthetic	Refers to the sensory and perceptual experience of a place. That is how a person responds to visual and non-visual aspects such as sounds, smells and other factors having a strong impact on human thoughts, feelings and attitudes. Aesthetic qualities may include the concept of beauty and formal aesthetic ideals. Expressions of aesthetics are culturally influenced.
Historic	Refers to all aspects of history. For example, the history of aesthetics, art and architecture, science, spirituality and society. It therefore often underlies other values. A place may have historic value because it has influenced, or has been influenced by, a historic event, phase, movement or activity, person or group of people. It may be the site of an important event. For any place, the significance will be greater where the evidence of the association or event survives at the place, or where the setting is substantially intact than where it has been changed or evidence does not survive. However, some events or associations may be so important that the place retains significance regardless of such change or absence of evidence.
Scientific	Refers to the information content of a place and its ability to reveal more about an aspect of the past through examination or investigation of the place, including the use of archaeological techniques. The relative scientific value of a place is likely to depend on the importance of the information or data involved, on its rarity, quality or representativeness, and its potential to contribute further important information about the place itself or a type or class of place or to address important research questions.
Social	Refers to the associations that a place has for a particular community or cultural group and the social or cultural meanings that it holds for them.

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

In addition to the Burra Charter significance values, other criteria and guidelines have been formulated by other government agencies and bodies in NSW to assess the significance of heritage places in NSW. Of particular relevance to this assessment are the guidelines prepared by the Australian Heritage Council and the Department of the Environment, Water, Heritage and the Arts (DEWHA), and Heritage NSW (Australian Heritage Council & DEWHA 2009, DECCW 2010d, OEH 2011, NSW Heritage Office 2001).

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

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

OEH (2011, p.10) states that when considering the Burra Charter criteria, a grading system must be employed. Austral will use the following grading system to assess the cultural values of the study area and its constituent features. These are outlined in Table 6.2.

Table 6.2 Gradings used to assess the cultural values of the study area

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

6.2 ASSESSMENT OF SIGNIFICANCE

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

6.2.1 AESTHETIC SIGNIFICANCE VALUES

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

The study area contained a lower slope which extended from the southern extent of the study area and was considered to have archaeological potential. Test excavation concluded that no archaeological material was contained within the landform. Include a summary of landscape features that are prominent in the study area. The remainder of the study area is positioned on a flat

Based on this assessment, the study area is considered to have **no** aesthetic significance values.

6.2.2 HISTORIC SIGNIFICANCE VALUES

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

The land was initially used by Aboriginal Darug communities for hunting faunal resources, harvesting native floral species, manufacturing tools, and occupation. After the arrival of European settlers in the area, the land was cleared and used for farming and agricultural practices.

A portion of land in Marsden Park was granted to two Darug men, Nurrangingy and Colebee. They were the first two Aboriginal people to receive a land grant since the arrival of Europeans in Australia. Later the Blacktown Native Institution was established on this land and evidence relating to the institution has been uncovered in the past. This portion of land is located approximately 3 kilometres from the study area and therefore evidence relating to its use is unlikely to be located during test excavations.

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

6.2.3 SCIENTIFIC SIGNIFICANCE VALUES

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

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

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

No sites or artefacts were located within the study area. Therefore the study area is not considered to be associated with any scientific significance values.

6.2.4 SOCIAL AND SPIRITUAL SIGNIFICANCE VALUES

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

No Aboriginal sites were located within the study area and no feedback was provided by RAPs regarding social and spiritual significance values relating to the study area.

Based on this assessment, the study area is considered to have **no** social and spiritual significance values.

6.3 STATEMENT OF SIGNIFICANCE

Statements of significance for identified Aboriginal sites within the study area are presented in 6.2. The statements of significance have been formulated using the Burra Charter significance values and relevant NSW guidelines (DECCW 2010d, OEH 2011, Australia ICOMOS 2013a).

The study area does not contain any Aboriginal sites. As it is within 100 metres of previously identified artefacts and PADs, the study area can be considered to have low to moderate significance.

Heritage NSW specifies the importance of considering cultural landscapes when determining and assessing Aboriginal cultural values. The principle behind this is that '*For Aboriginal people, the significance of individual features is derived from their inter-relatedness within the cultural landscape. This means features cannot be assessed in isolation and any assessment must consider the feature and its associations in a holistic manner"* (DECCW 2010e).

Overall, the study area is of low significance due to its lack of association with any archaeological values. Furthermore, no significant landscapes were located within the study area and no comments were made regarding the significance of the study area by Aboriginal representatives who assisted with this project. The study area may have previously been used for hunting and manufacturing of stone tools but no evidence relating to these activities could be located. The study area is therefore considered to be of low archaeological significance.

7 PROPOSED ACTIVITY

This section outlines, according to Heritage NSW guidelines, the potential harm that the proposed activity may have on identified Aboriginal objects and places within the study area (OEH 2011, DECCW 2010d).

7.1 LAND-USE HISTORY

After European's arrival in Australia, land grants were given to the people of the colony. The study area falls within land originally granted to Richard Fitzgerald in 1819 (1350 acres [546.3 ha]). Fitzgerald was a large landowner, owning over 14,000 acres in 1828, it is likely that the property was used for grazing and logging of iron bark and box trees (GML Heritage 2009). The location of the original land grants in the parish of Rooty Hill can be seen in Figure 7.1.

The first available aerial imagery of the study area is from 1947, which shows the study area uncleared with livestock tracks running through the property (Figure 7.2). It appears that the area is relatively undisturbed by this point in time.

By 1978 some minor clearing has occurred, for two separate high voltage power lines, all trees on the path of the powerlines have been cleared which has resulted in many of the trees within the study area being cleared. This is likely to have displaced some Aboriginal artefacts within the study area should they have existed.

In 1986, the entire study area has been cleared and a house and dairying shed have been erected, with additional buildings around the dairy under construction at the time of the photograph. Three dams have also been excavated (Figure 7.3). These constructions would have greatly disturbed or destroyed any Aboriginal cultural material in their footprint. As such, these areas are unlikely to contain Aboriginal artefacts.

By 2005, the construction at the dairy has been completed and a second house has been constructed. There appears to have been no significant changes to the study area from 2005 to the present.

Table 7.1 Summary of past land uses within the study area, and the potential impacts on archaeological resources

Past land uses	Potential impacts on archaeological resources
Cattle Grazing	Grazing impacts the soil layers via compaction under the weight of cattle and uprooting of plant life which disturbs the original context of deposits.
Timber logging and land clearing	Land clearing may have involved the uprooting of plant life in the area which results in the destruction of context and disturbance of original soil profiles. Timber logging leads to the destruction of cultural scarring which may have been left by local Aboriginal people both prior to and post European arrival
Construction activities (residential, farming, industrial)	Construction activities of any category lead to the disruption of the subsurface as it entails the levelling of landforms, clearing of plant life, and penetration into the subsurface. Furthermore, the presence of buildings such as those associated with the dairy restricts access to archaeological deposits and therefore interferes with gaining an understanding of how the landscape was used in the past.

This long-lasting disturbance has impacted the study area in various ways as seen within the results of this recent testing investigation. However, these disturbances remained in the higher horizons of the soil profile, and only minor impacts were seen in lower deposits.

Figure 7.1 Location of land grants in the parish of Rooty Hill

21134 - 311 South Street, Marsden Park

Source: NSW HLRV *Drawn by: WA Date: 2022-03-04*

AUSTRAL ARCHAEOLOGY

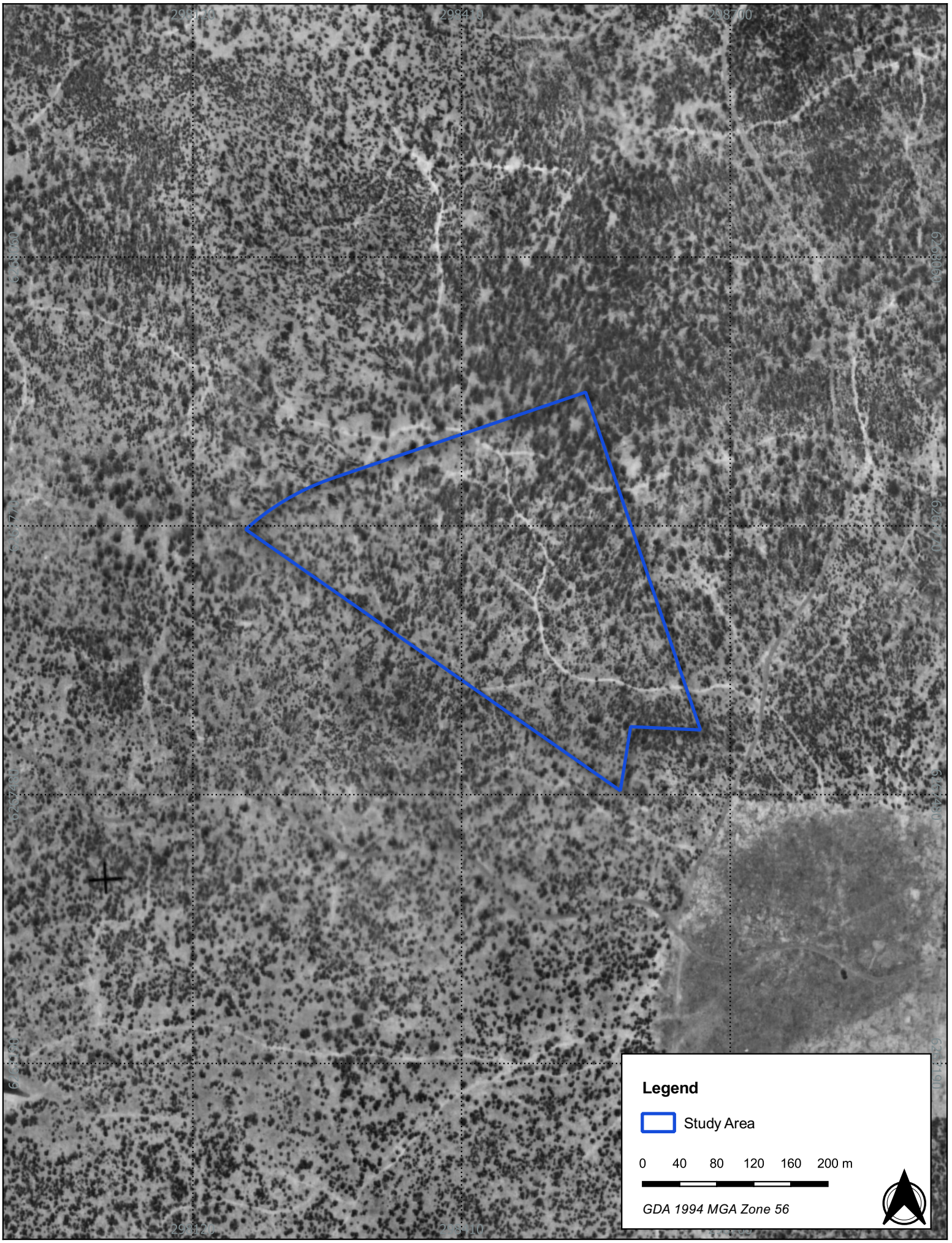

Figure 7.2 - 1947 aerial image of the study area

21134 - 311 South Street, Marsden Park

Source: NSW Spatial Collaboration Portal

Drawn by: WA Date: 2022-03-04

AUSTRAL ARCHAEOLOGY

Figure 7.3 - 1986 Aerial image of the study area

21134 - 311 South Street, Marsden Park

Source: NSW Spatial Collaboration Portal

Drawn by: WA Date: 2022-03-04

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8 PROPOSED ACTIVITY

The proposed activity at this stage consists of the construction of a single level industrial warehouse distribution facility on 10.25 hectares of land. According to Dexus, the works will involve bulk earthworks, provision of services, building construction, and stormwater management, road construction and existing road upgrades.

8.1 ASSESSING HARM

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

8.1.1 ECOLOGICALLY SUSTAINABLE DEVELOPMENT

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

INTERGENERATIONAL EQUITY

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

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

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

PRECAUTIONARY PRINCIPLE

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

The application of the precautionary principle should be guided through:

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

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

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

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

8.1.2 TYPES OF HARM

When considering the nature of harm to Aboriginal objects and/or places, it is necessary to quantify direct and indirect harm. The types of harm, as defined in the Guide (OEH 2011, p.12), and are summarised in Table 8.1. These definitions will be used to quantify the nature of harm to identified Aboriginal objects and/or places that have been identified as part of this assessment. The Code states that the degree of harm can be either total or partial (DECCW 2010b, p.21).

Table 8.1 Definition of types of harm

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

8.2 IMPACT ASSESSMENT

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

As sites relating to Aboriginal occupation or land use were identified, there will be no impacts to Aboriginal cultural heritage values by the works proposed for the study area.

9 AVOIDING AND MINIMISING HARM

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

9.1 DEVELOPMENT OF PRACTICAL MEASURES TO AVOID HARM

Test excavation was conducted by Austral to determine whether any Aboriginal artefacts or sites that may be subject to harm. No Aboriginal objects were identified within the study area, therefore, no measures to avoid harm are required.

9.2 APPLICATION OF PRINCIPLES OF ESD AND CUMULATIVE IMPACTS

Given no Aboriginal objects were located within the study area, there will be no impacts to Aboriginal cultural heritage. . As such, the principals of ESD and cumulative impact do not apply.

9.3 STRATEGIES TO MINIMISE HARM

As no objects or sites of Aboriginal value were located in the study area, no strategies were required to minimise harm.

10 RECOMMENDATIONS

It is recommended that:

1. No further assessment or works are required to be undertaken for the study area.
2. In the event that unexpected finds occur during any activity within the study area, all works must in the vicinity must cease immediately. The find must be left in place and protected from any further harm. Depending on the nature of the find, the following processes must be followed:
    1. If, while undertaking the activity, an Aboriginal object is identified, it is a legal requirement under Section 89A of the NPW Act to notify Heritage NSW, as soon as possible. Further investigation may be required prior to certain activities recommencing.
    2. If, human skeletal remains are encountered, all work must cease immediately and NSW Police must be contacted, they will then notify the Coroner's Office. Following this, Heritage NSW should be contacted to liaise with NSW Police, in the instance that the remains are determined to be of historical Aboriginal origin. Upon this determination, Aboriginal stakeholders should be notified.
3. It is recommended that Dexus Wholesale Management Limited continues to inform the Aboriginal stakeholders about the management of Aboriginal cultural heritage within the study area throughout the completion of the project. The consultation outlined as part of this ACHA is valid for six months and must be maintained by the proponent for it to remain continuous.
4. A copy of this report should be forwarded to all Aboriginal stakeholder groups who have registered an interest in the project.

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12 APPENDICES

APPENDIX A – CONSULTATION

This section has been removed from the published report for confidentiality.

APPENDIX B - ARCHAEOLOGICAL REPORT

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ARCHAEOLOGICAL TECHNICAL REPORT

FINAL REPORT

DEXUS WHOLESALE MANAGEMENT LIMITED

26 April 2022

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Client:	Dexus Wholesale Management Limited
Prepared by:	William Andrews & Dominique Bezzina
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1	1	01.02.2022	Archile Projects
2	1	17.03.2022	Archile Projects
3	1	22.03.2022	Archile Projects, Dexus Wholesale Management Limited, Registered Aboriginal Parties
4	1	26.04.2022	Archile Projects, Dexus Wholesale Management Limited, Registered Aboriginal Parties

EXECUTIVE SUMMARY

This report has been prepared for Archile Projects and is an Archaeological Technical Report detailing test excavation undertaken on land situated at 311 South Street, New South Wales (NSW) [the study area], within the Blacktown Local Government Areas (LGAs), and the parish of Rooty Hill in the county of Cumberland.

The study area is defined by the boundary of South Street to the northwest, cleared farmland to the northeast, sparsely vegetated undeveloped land to the southwest, and an industrial development zone to the southeast. The study area is in the suburb of Marsden Park, located 10 kilometres from Blacktown Central Business District.

This Aboriginal Cultural Heritage Assessment (ACHA) was undertaken to assess the archaeological potential for Aboriginal material as part of a State Significant Development (SSD) being prepared under Part 5 of the *Environmental Planning and Assessment Act 1979*, before the proposed industrial development of the study area. The ACHA has been undertaken in accordance with the *Code of Practice for Archaeological Investigation of Aboriginal Objects in NSW* (Department of Environment Climate Change and Water NSW 2010), the *Guide to investigating, assessing and reporting on Aboriginal Cultural Heritage in NSW* (Office of Environment and Heritage 2011) and the *Aboriginal Cultural Heritage Consultation Requirements for Proponents* (Department of Environment Climate Change and Water NSW 2010) [Consultation Requirements].

Background research indicates the site was potentially used for hunting and stone tool manufacturing. It was determined unlikely to be a long-term camp location due to its distance from permanent water sources. Three Potential Archaeological Deposit (PAD) sites were located within 100 metres of the boundaries of the study area, though none were recorded as extending into the boundaries of 311 South Street.

When surveying the study area it was noted that the landform one of these PADs, MPIP PAD 4, was situated on the boundaries of the study area and consequently it was investigated by test excavation. Low levels of ground disturbance were observed throughout the study area. No surface artefacts were located either within the landform or anywhere in the study area.

Test excavation occurred from 1-3 February 2022. A total of 27 pits were excavataed across three locations. The first (4 test pits) was located at the north-western corner of the study area on a flat landform unit. The second (12 test pits) was at the southwest boundary, focused on the lower slope identified to be related to MPIP PAD 4. The third area (10 test pits) was positioned in the south-eastern portion of the study area, also recognised as a PAD.

No Aboriginal artefacts were found during survey or test excavation.

ABORIGINAL COMMUNITY CONSULTATION

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

Stage	Component	Commenced	Completed
Stage 1	Letters to agencies	1/10/2021	N/A
	Registration of stakeholders	13/10/2021	27/10/2021
Stage 2	Project information	9/11/2021	N/A
Stage 3	Review of project methodology	11/11/2021	8/12/2021
Stage 4	Review of ACHA by Aboriginal stakeholders	22/03/2022	26/04/2022

Further information on the consultation completed for the project can be found in Section 3 and Appendix A of this Aboriginal Cultural Heritage Report.

RECOMMENDATIONS

It is recommended that:

1. No further assessment or works are required to be undertaken for the study area.
2. In the event that unexpected finds occur during any activity within the study area, all works must in the vicinity must cease immediately. The find must be left in place and protected from any further harm. Depending on the nature of the find, the following processes must be followed:
    1. If, while undertaking the activity, an Aboriginal object is identified, it is a legal requirement under Section 89A of the NPW Act to notify Heritage NSW, as soon as possible. Further investigation may be required prior to certain activities recommencing.
    2. If, human skeletal remains are encountered, all work must cease immediately and NSW Police must be contacted, they will then notify the Coroner's Office. Following this, Heritage NSW should be contacted to liaise with NSW Police, in the instance that the remains are determined to be of historical Aboriginal origin. Upon this determination, Aboriginal stakehodlers should be notified.
3. It is recommended that Dexus Wholesale Management Limited continues to inform the Aboriginal stakeholders about the management of Aboriginal cultural heritage within the study area throughout the completion of the project. The consultation outlined as part of this ACHA is valid for six months and must be maintained by the proponent for it to remain continuous
4. A copy of this report should be forwarded to all Aboriginal stakeholder groups who have registered an interest in the project.

CONTENTS

FIGURES

TABLES

1 INTRODUCTION

1.1 DEVELOPMENT PROPOSAL

The project involves the construction of two large warehouses, two detention basins, new accessways, car parking facilities, landscaping, gardens, underground services, and associated infrastructure. As such, the project will involve bulk earthworks and trenching across the majority of the site. This has the potential to disturb or harm any Aboriginal artefacts that may exist within the study area, as such an archaeological assessment is required to obtain the nature and extent of any Aboriginal deposits, should they exist. The location fo the study area is depicted in Figure 1.1, Figure 1.2, and Figure 1.3 and the proposed development is depicted in Figure 1.4

1.2 PURPOSE OF THE ARCHAEOLOGICAL TECHNICAL REPORT

The ACHA was undertaken to assess the potential harm that may occur to Aboriginal cultural heritage values as part of a State Significant Development (SSD) under Part 5 of the *Environmental Planning and Assessment Act 1979* (EP&A Act), for the redevelopment of the study area as an industrial subdivision.

This Archaeological Technical Report (ATR) documents the results of archaeological survey and test excavations undertaken as part of the ACHA. The ATR presents detailed records of the archaeological investigation and should be read in conjunction with the ACHA.

1.3 ASSESSMENT OBJECTIVES

The scope of this ACHA report is based on the legal requirements, guidelines and policies of the Heritage NSW, formerly the Office of Environment and Heritage (OEH), formerly, the Department of Environment, Climate Change and Water (DECCW), Department of Environment and Climate Change (DECC) and Department of Environment and Climate (DEC).

The guiding document for this assessment is the *Code of Practice for the Investigation of Aboriginal objects in NSW* (DECCW 2010b) [Code of Practice].

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

- The results of archaeological test excavation and surveys.
- An assessment of archaeological significance and management recommendations.
- A literary review of available data, including previous studies/investigations from within and adjacent to the study area.
- An assessment of harm posed to Aboriginal objects, places or values as part of the project.
- A description of practical measures that have been used to protect, conserve, avoid or mitigate harm to Aboriginal objects, places and values.

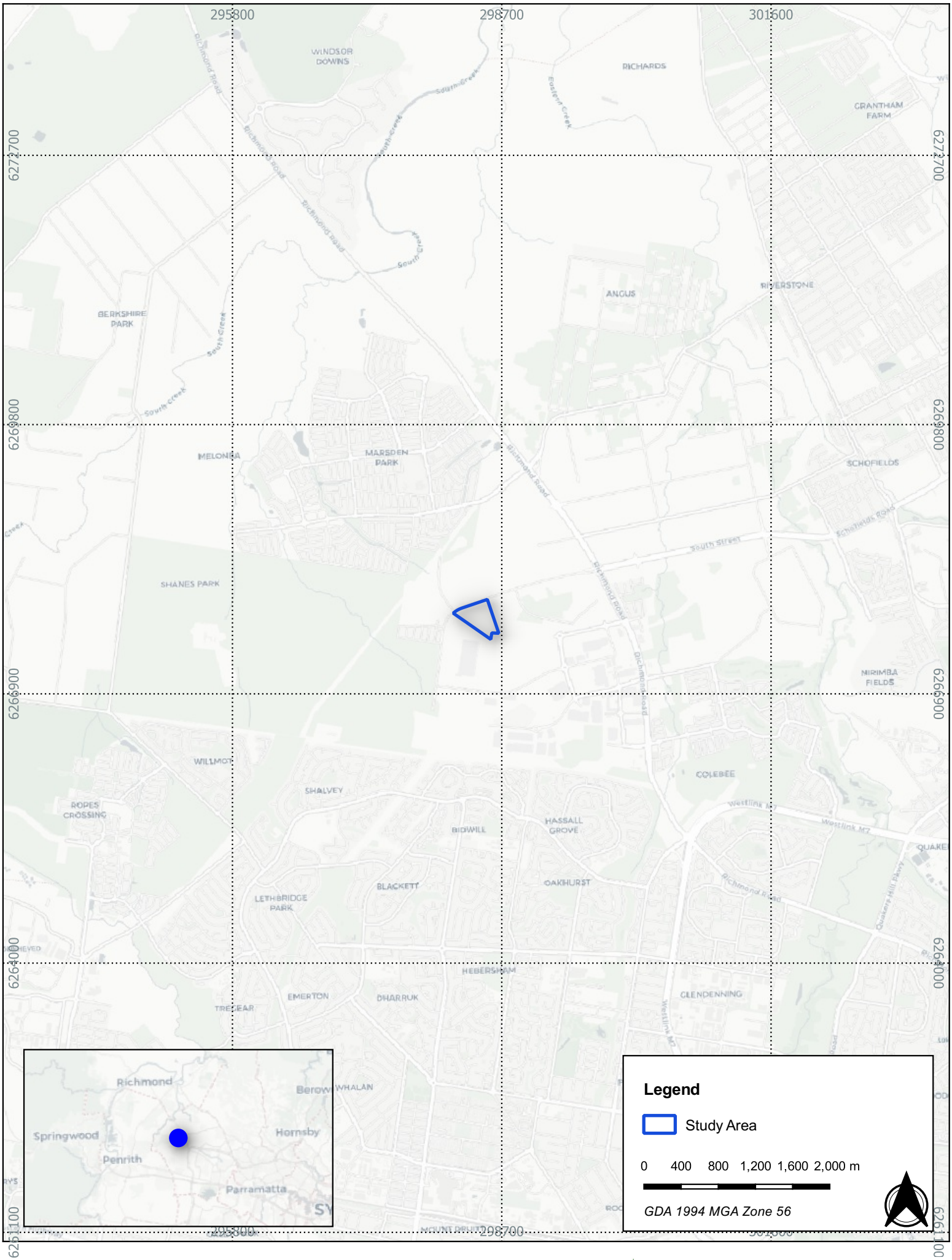


Figure 1.1 - Location of the study area

21134 - 311 South Street, Marsden Park

Source: CartoDB

Drawn by: WA Date: 2022-01-25

AUSTRAL ARCHAEOLOGY

Figure 1.2 - Detailed aerial of the study area

21134 - 311 South Street, Marsden Park

Source: Nearmap

Drawn by: WA Date: 2022-01-25

AUSTRAL ARCHAEOLOGY

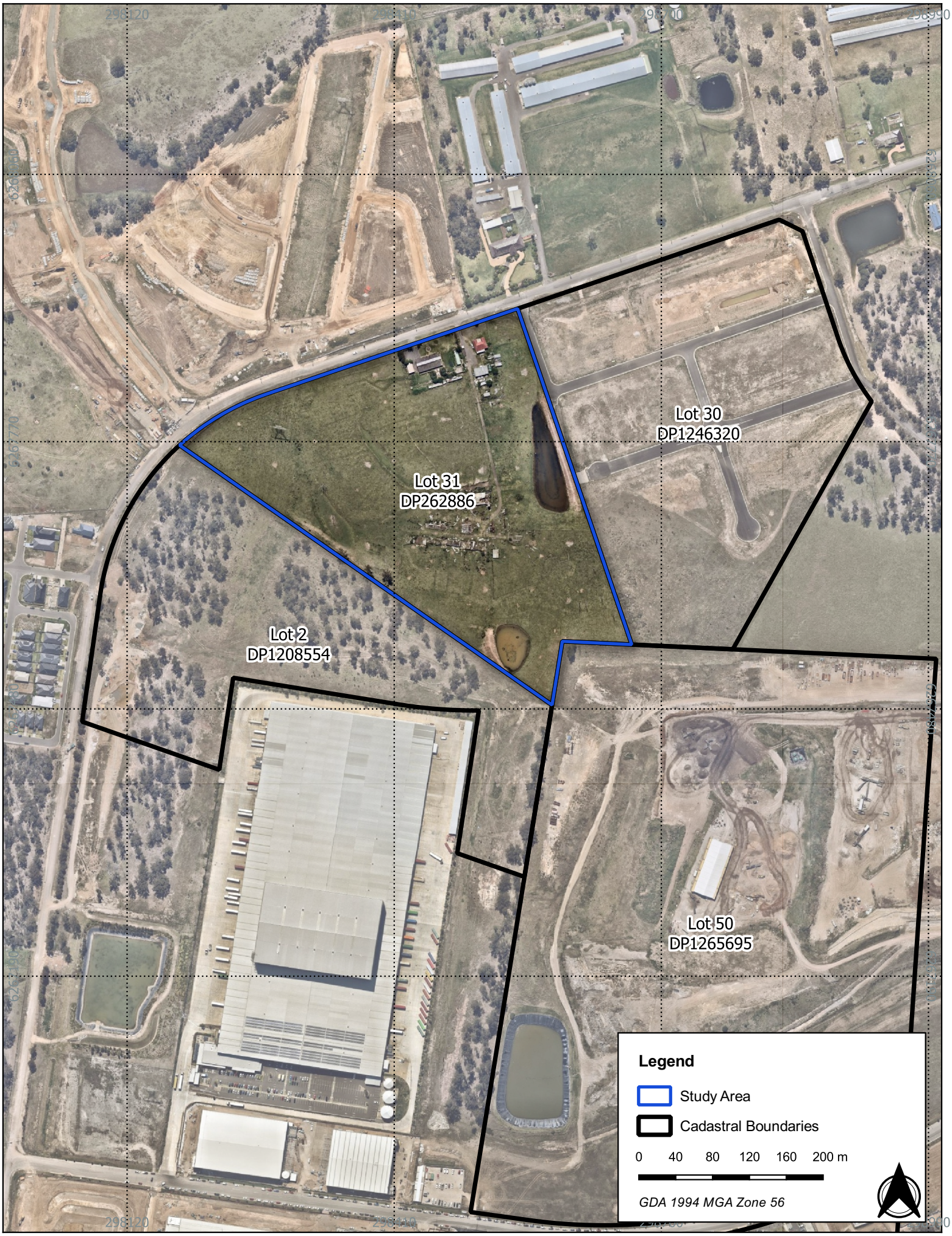


Figure 1.3 - Cadastral boundaries related to the study area

21134 - 311 South Street, Marsden Park

Source: Nearmap

Drawn by: WA Date: 2022-01-25

AUSTRAL ARCHAEOLOGY

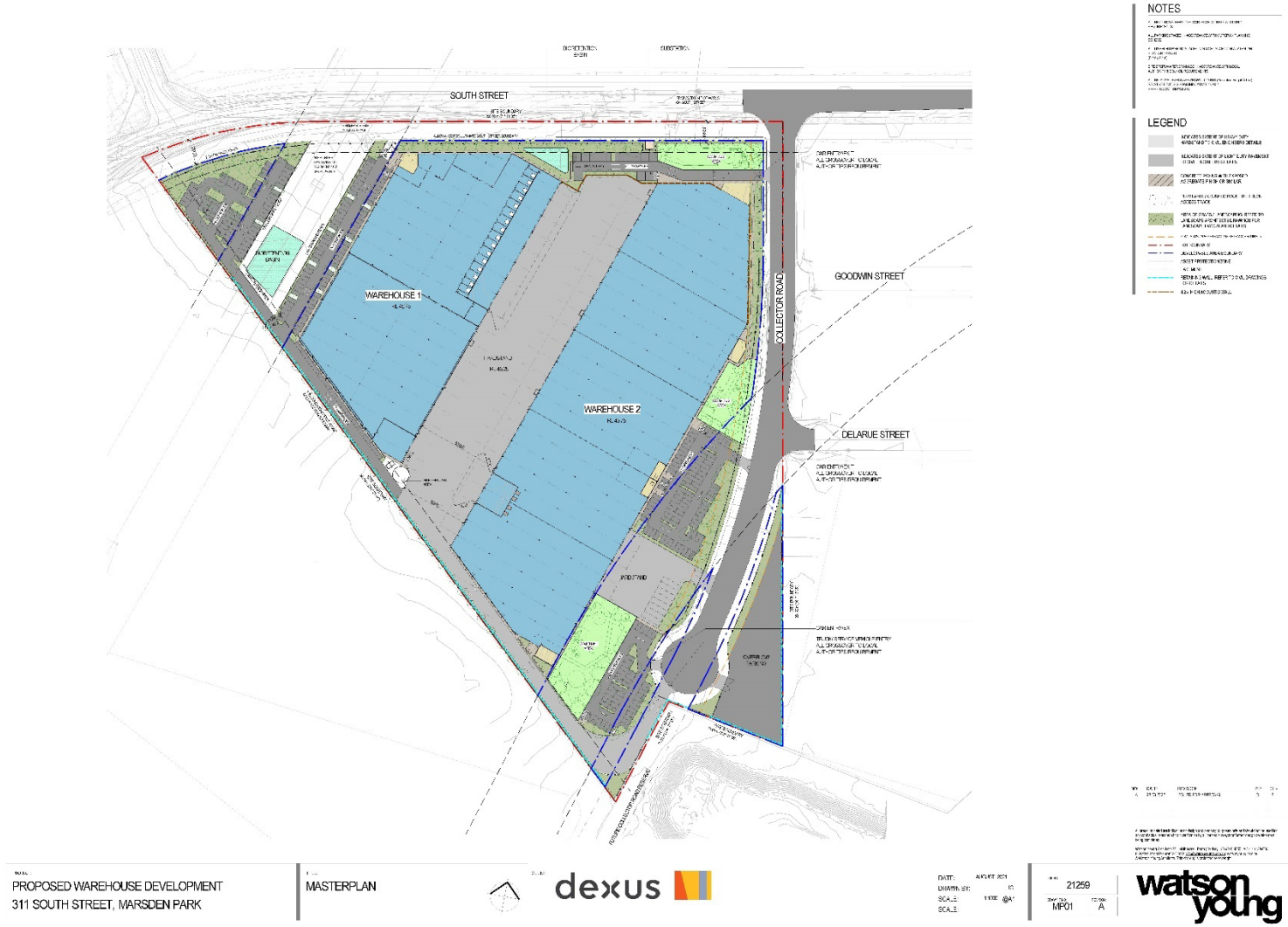


Figure 1.4 Proposed warehouse development provided by Dexus

1.4 SUMMARY OF LEGISLATIVE PROCESS

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

This section outlines the Australian acts and guidelines that are applicable or have the potential to be triggered with regards to the proposed development are detailed in Table 1.1 to Table 1.5.

Table 1.1 Federal acts

Federal Acts:	Applicability and implications
Environment Protection and Biodiversity Conservation Act 1999	This act has not been triggered and so does not apply, as: • No sites listed on the National Heritage List (NHL) are present or in close proximity to the study area. • No sites listed on the Commonwealth Heritage List (CHL) are present or in close proximity to the study area.
Aboriginal and Torres Strait Islander Heritage Protection Amendment Act 1987	Applies, due to: • This Act provides blanket protection for Aboriginal heritage in circumstances where such protection is not available at the state level. This Act may also override state and territory provisions.

Table 1.2 State acts

State Acts:	Applicability and implications
National Parks and Wildlife Act 1974 (NPW Act 1974)	Applies, due to: • Section 86 – Prohibits both knowingly and unknowingly, causing harm or desecration to any Aboriginal object or place without either an AHIP or other suitable defence from the Act. • Section 89A – Requires that Heritage NSW must be notified of any Aboriginal objects discovered, within a reasonable time.
NPW Regulation 2009	Applies, due to: • Section 80A – States minimum standards of due diligence to have been carried out
The Environmental Planning and Assessment Act 1979 (EP&A Act 1979)	Applies, due to: • This project is being assessed under Part 5 of the EP&A Act 1979. • Sections 86, 87, 89A and 90 of the NP&W Act 1974 will apply.
NSW Heritage Act 1977	There are no sites listed on the State Heritage Register associated with the study area, and therefore Section 57 of this act does not apply.

Table 1.3 State and local planning instruments

Planning Instruments	Applicability and implications
Local Environmental Plans (LEP)	The following LEP is applicable: • Blacktown LEP 2015
Development Control Plans (DCP)	The following DCP is applicable: • Blacktown DCP 2015

Table 1.4 Aboriginal community consultation guidelines

Guidelines	Applicability and implications
Consultation Requirements	• The development is to be conducted in accordance with Part 5 of the EP&A Act. • Aboriginal community consultation is required under the SEARs

Table 1.5 SEARs requirements

Guidelines	Applicability and implications
SEARs	Section 18 of the SEARs gives the following requirement in response to Aboriginal Cultural Heritage: • Provide an Aboriginal Cultural Heritage Assessment Report prepared in accordance with relevant guidelines, identifying, describing and assessing any impacts for any Aboriginal cultural heritage values on the site.

1.5 PROJECT TEAM AND QUALIFICATIONS

The personnel involved in the preparation of this report are detailed in Table 1.6

Table 1.6 Personnel involved in the preparation of this ATR

Name	Title	Experience	Qualifications	Role
Alexander Beben	Director	14 years'	B. Arts (Hons) Archaeology Univ. of Manchester M. Arts Archaeology & Ancient History Univ. of Leicester	Director, quality assurance
Doug Williams	Principal Archaeologist	30 years		Technical Review
Stephanie Moore	Senior Archaeologist	6 years'	B. Arts (Hons) Arch/Palaeo, University of New England M. Herit. Cons., University of Sydney	Technical lead
William Andrews	Archaeologist	3 years'	B. Arts Arch/Ancient History Univ. of Sydney B. Eng (Hons) Surveying UNSW	Project manager, field team lead, reporting, mapping
Dominique Bezzina	Archaeologist	1 years'	B. Arts Archaeology Macquarie Univ.	Reporting, fieldwork

1.6 ABBREVIATIONS

ACHA	Aboriginal Cultural Heritage Assessment
AHIP	Aboriginal Heritage Impact Permit
ATR	Archaeological Technical Report
Austral	Austral Archaeology Pty Ltd
BOM	Bureau of Meteorology
BP	Berkshire Park Soil Landscape
Burra Charter	Burra Charter: Australia ICOMOS Charter for Places of Cultural Significance 2013
CBD	Central Business District
CHL	Commonwealth Heritage List
DEC	NSW Department of Environment and Climate (former)
DECC	NSW Department of Environment and Climate Change (former)
DECCW	NSW Department of Environment, Climate Change and Water (former)
DCP	Development Control Plan
DLALC	Deerubbin Local Aboriginal Land Council
EP&A Act	Environmental Planning and Assessment Act 1979
EPBC Act	Environmental Protection and Biodiversity Act 1999
EPI	Environmental Planning Instrument
GSV	Ground Surface Visibility
Heritage Act	NSW Heritage Act 1977
ICOMOS	International Council on Monuments and Sites
IHO	Interim Heritage Order
LALC	Local Aboriginal Land Council
LEP	Local Environmental Plan
LGA	Local Government Area
NHL	National Heritage List
NPW Act	National Parks and Wildlife Act 1974
NPWS	National Parks and Wildlife Service
NSW	New South Wales
OEH	NSW Office of Enviroment and Heritage (former)
PAD	Potential Archaeological Deposit
The Proponent	Dexus Wholesale Management Limited
RNE	Register of the National Estate
SEARs	Secretary's Environmental Assessment Requirements
study area	311 South Street, Marsden Park (Lot 31, DP262886)
SSD	State Significant Development
Blacktown DCP	Blacktown Development Control Plan 2015
Blacktown LEP	Blacktown Local Environmental Plan 2015

Refer also to the document Heritage Terms and Abbreviations, published by the Heritage Office and available on the website: http://www.environment.nsw.gov.au/heritage/index.htm.

2 ENVIRONMENTAL CONTEXT

The following section discusses the study area about its landscape, environmental and Aboriginal landscape resources. This environmental context has been prepared following Requirement 2 of The Code (DECCW 2010c, pp.8–9).

The study area is broadly located within the Sydney Basin bioregion. This large bioregion is temperate with warm summers and no dry season. The topography is made up of mostly flat areas, with deep gorges created by coastal streams, with plateaus in between. Areas by the coast contain cliffs, beaches and estuaries (NSW Department of Planning, Industry and Environment 2021).

More specifically the study area falls within the Cumberland sub-bioregion, which takes up most of the western regions of Sydney at the bottom of the Blue Mountains. The bioregion sits on shales and sandstones from the Wianamatta group, with areas around rivers containing quaternary alluvium. The topography of the Cumberland area is made up of low hills and wide valleys, with red and yellow soils on slopes, which degrade in quality as one moves down slopes into valleys, red and brown clays on volcanic bases, poor stony soils on gravels and good loam in floodplains. (NSW Department of Planning, Industry and Environment 2021).

2.1 TOPOGRAPHY AND HYDROLOGY

The landscape surrounding the study area is one of low hills and ridges interspersed with drainage channels that drain into an unnamed tributary of South Creek. The study area itself is located on one of the fingers of a ridgeline which makes up the majority of the southern portion of Marsden Park. On a more macro scale, the study area is relatively free of large elevation changes, with only 3 metres of elevation difference across the area. As such, the topography is very basic, with some flat areas and the majority being slope. There is one area of clear evidence of earthworks around the old shed in the centre of the property, along with the three dams that have been constructed within the boundaries of the study area.

The study area is distant from any documented water sources, with the minimum distance from the study area being 750 metres. These water sources are 1st order drainage channels and thus were unlikely to provide a range of resources to the people in the area. However, the presence of dams suggests that there are smaller drainage channels within the study area, but nothing substantial.

The largest nearby water source is the second-order Bells Creek, 1.7 kilometres to the east of the study area. This would likely have been the major water source in the surrounding area with the wide range of AHIMS sites to the east of the study area associated with this watercourse. The study area appears to be in the watershed of the unnamed 2nd order tributary of South Creek, 2.3 kilometres to the west of the study area

A large number of AHIMS sites in proximity to the study area mostly appear to be associated with 1st order streams. However, the sites to the east of the study area do not appear to be associated with a water system, which is in opposition to the commonly held assumption that sites tend to occur within 250 metres of a watercourse in the Cumberland Plain. As such, it is possible that some other factor was influencing Aboriginal people's choice of settlement location in this area, or the ground has been significantly altered by man-made processes. The latter appears to be the case as evidence of quarrying is present directly to the southeast of the study area. This is likely to have removed any previous drainage channels, to which the AHIMS sites were previously associated.

The hydrological systems identified within and in the locality of the study area are identified in Figure 2.1.

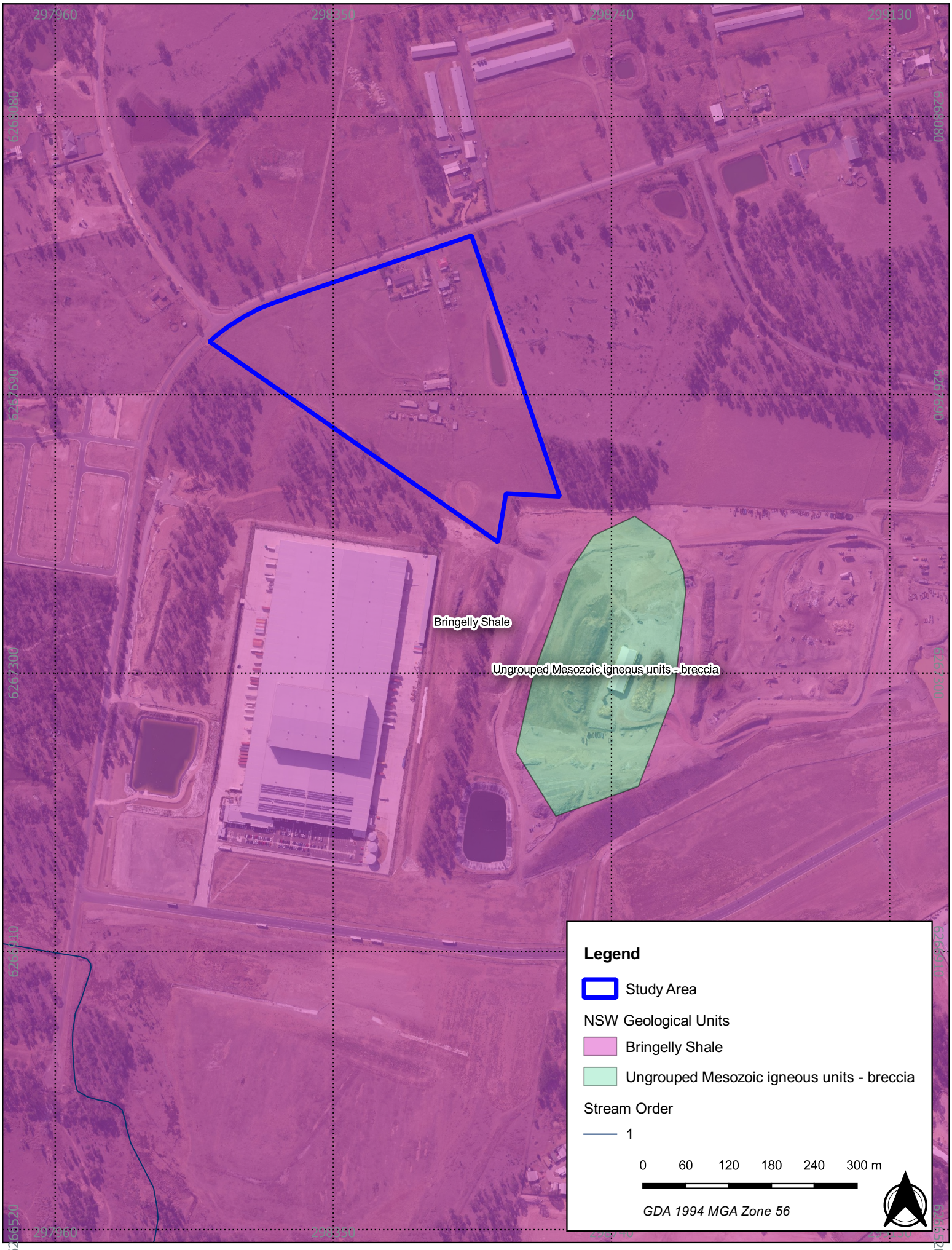


Figure 2.1 Geology and Hydrology of the study area

21134 - 311 South street Marsden Park - ACHA

Source: NSW LPI Aerial, NSW Geological Units *Drawn by: ARH Date: 2021-10-21*

AUSTRAL ARCHAEOLOGY

2.2 GEOLOGY AND SOILS

The study area falls completely within the Bringelly Shale geological unit, this is the major source of fill and brick clay throughout the Sydney region, hence the quarrying neighbouring the study area. The geological unit is described as:

> *"a coastal alluvial plain sequence which grades up from a lagoonal-coastal marsh sequence at the base to increasingly more terrestrial, alluvial plain sediments towards the top of the formation. It is also classified as a formation of a Mid-Triassic age with lithologies that comprise claystone, siltstone, laminite, sandstone, and tuff" (Willliam 2005).*

Nearly all of the AHIMS sites analysed fell within the Bringelly Shale unit, this is mostly due to it being a very prolific geological type in the area. As such, most sites are statistically likely to fall within this unit.

The landscape is one of rolling hills without outcrops, and as such does not contain the necessary geologic requirements for rock shelters, grinding grooves or material collection sites. As tuff is located within the unit, it is possible that the majority of the material has been collected from nearby and are artefacts are likely to be tuff. However, silcrete artefacts are commonly found in the Cumberland Plain. Silcrete is also likely to be found based on the high numbers of the material found in nearby excavations also located on Bringelly Shale (Austral Archaeology 2021).

The geological units identified within the study area are identified in Figure 2.1.

The study area falls entirely within the Berkshire Park soil landscape, which is mostly made up of orange heavy clays and clayey sands. Ironstone is often present with large silcrete boulders (up to 20cm) often found in areas of mixed sand and clay. As silcrete is common in nearby sites, a large proportion of the artefacts found will be made of silcrete.

Berkshire Park soils tend to be around 50 cm deep before reaching clay, and contain many stones. They are not easily eroded or waterlogged and have low fertility (Bannerman & Hazelton 2011). As such, any artefacts are likely to be accompanied by other stones and excavations may be fast through the sandy portion and slow through the clay. Due to the lack of erosion, many artefacts are likely to be present roughly in situ.

The soil landscapes identified within the study area are identified in Table 2.1 and Figure 2.2.

Table 2.1 Soil landscapes identified as being within the study area

Soil landscape	Description
BP1	Brown to brownish-black fine sandy loam to silt loam topsoil. Roots are rare and stones, charcoal and other inclusions do not occur.
BP2	Reddish-brown to yellowish-brown sandy to fine sandy loam occurs as topsoil. There are minimal roots and no significant charcoal, stones or other inclusions.
BP3	Brown sandy clay with up to 20% ironstone nodules (2 – 6mm) are common, with few roots and no charcoal.
BP4	High chroma (bright coloured) clay subsoil with up to 90% stones, colour varies from reddish-brown to bight yellowish-brown. Can contain up to 90% of stones ranging from small gravel to boulders. Roots and charcoal fragments do not occur.

In most areas, 50cm of BP3 overlies greater than 50cm of BP4. On flats and small drainage lines up to 50 cm of BP2 overlies less than 50cm of BP3 and up to 90cm of BP4 (Bannerman & Hazelton 2011).

As such, the presence of charcoal is likely to indicate the presence of a bushfire or possibly a past Aboriginal campsite, especially when found with artefacts. Soils are likely to be relatively deep and contain a wide variety of stones.

2.3 CLIMATE AND VEGETATION

The Sydney Basin Bioregion is dominated by a temperate climate characterised by warm summers with no dry season. Temperatures in the Marsden Park area vary from lows of 6.1°C on average in winter to average highs of 28.6°C in summer (BOM Weather, Richmond RAAF Base). As such the area would have provided a reasonable location to live in the autumn and spring, but would likely be too hot in summer and too cold in winter for prolonged occupation without sufficient clothing and resources to cool down.

Rainfall in the area occurs on average 71.5 days a year, with roughly 834.6mm of rain throughout the year. Rainfall is the heaviest in January, February and March, slowing down to a low point in August, then building back up to high levels at the end of the year (Bureau of Meteorology 1989). As such, the area receives sufficient rain to ensure that all water sources are flowing, and even in drought, there is likely to be water around.

The vast majority of the vegetation in the surrounding area has been cleared, however, small sections of remnant forest are likely to contain *Eucalyptus fibrosa* (broad-leaved ironbark), *Angophora bakeri* (narrow-leaved apple) and *E. sclerophylla* (scribbly gum). A shrub understory is dominated by members of the families *Fabaceae*, *Papilionaceae, Sapindaceae, Proteaceae* and *Myrtaceae* (Bannerman & Hazelton 2011).

2.4 LANDSCAPE RESOURCES

Seeds and plant material provided varied food sources, including Acacia seeds and Eucalypt flowers (Comber 2008). Additionally, native fauna would have been supported by these species. Animals such as kangaroos, wallabies, possums, gliders, bandicoots, wombats, quolls, fruit bats, echidnas, native rats and mice, emus, ducks, tortoises, snakes and goannas (Attenbrow 2003), played a major role in the subsistence of hinterland groups.

The historical and archaeological record provides evidence of species of freshwater fish and shellfish consumed by the Darug of the study area. In 1791, ethnographic accounts reported people of the Hawkesbury-Nepean River catching large mullet in the river (Hunter 1793). David Collins recorded that fish, eels, shellfish and platypus were caught in freshwater waterways and lagoons. Eels were an important food source and relied on, especially during the autumn and winter seasons. Consumption of the cobra, a large worm-like shellfish that lives in water-saturated wood, was also noted by early explorers (Attenbrow 2003, Collins 1798, Hunter 1793).

Two main types of spears were used by the Darug for fishing: large, four-pronged spears, and smaller *mooting* spears. The prongs were made of shell, fish tooth, or animal/fish bone, and were adhered to the wood via plant gum (Attenbrow 2003). Canoes were integral to fishing techniques, the construction of which consisted of a large piece of bark tied at each end by plant material (Collins 1798). Fire was often carried in canoes via a pad of clay, transported to use for cooking and warmth elsewhere (Attenbrow 2003). Fire was an integral part of life and was used as a hunting strategy to burn large portions of bushland and draw out animals (Collins 1798).

Ethnographic sources report that hunting was primarily carried out by males of a clan, while women and children collected plants and vegetables, usually amounting to over 70% of the Aboriginal diet. Hunting equipment included spears, spearthrowers, axes or hatchets (Attenbrow 2003). Variations in these tools existed, with ethnographic evidence suggesting that the spear of the wood tribes (the Darug) were differently constructed than the spear of the Aboriginal people who lived along the coast (Collins 1798).

Further accounts record the use of ground-edge axes throughout the Sydney region, from the coast well into the hinterland. These ground-edge axes had varying uses, from notching trees to assist in climbing, widening holes in trees to catch possums, and procuring bark from trees to manufacture other equipment. Around the time of contact, axes and hatchets were being made of hard stone, which would be sharpened at one edge and hafted to a handle of about 60cm long through the use of plant gum (Attenbrow 2003).

Traps were also used for hunting among the hinterland groups to catch both mammals and birds. They were constructed of plant material and would measure forty to fifty feet in length. It was hypothesized that animals were driven into the trap, and then speared when pushed toward the narrow end. Collins recorded quail feathers in an observed trap in Richmond Hill, to the north of

the study area (Collins 1798). Additional traps were used for catching possums and birds by setting fire to surrounding brush (Attenbrow 2003).

Animals were also used for adornment and clothing purposes, with ethnographic accounts recalling the use of opossum skin and 'flying squirrel' hide (Bradley 1969). Cloaks were also recorded as made from the bark of brown gum trees (Hunter 1793).

This original flora would have provided ample resources for food, raw materials, and medicine, and though ethnographic accounts are somewhat limited purely to the time of contact, it is evident that flora and fauna throughout the Cumberland Plain allowed for various resource-abundant lifestyles among the local Aboriginal population.

2.5 PAST LAND USE PRACTICES

After Europeans arrived in Australia, they began giving out land grants to people within the colony. The study area falls within the land (1350 acres [546.3 ha]) originally granted to Richard Fitzgerald in 1819. Fitzgerald was a large landowner, owning over 14,000 acres in 1828, it is likely that the property was used for grazing and timber (GML Heritage 2009). The location of the original land grants in the parish of Rooty Hill can be seen in Figure 2.3.

The first aerial imagery we have of the study area is in 1947, which shows the study area uncleared with only a few livestock tracks running through the property (Figure 2.4). It appears that the area is relatively undisturbed by this point in time.

By 1978 some minor clearing has occurred, for two separate high voltage power lines, all trees on the path of the powerlines have been cleared which has resulted in the majority of the trees within the study area being cleared. This is likely to have displaced some Aboriginal artefacts within the study area should they have existed.

In 1986, the entire study area has been cleared and a house and dairying shed have been erected, with additional buildings around the dairy under construction at the time of the photograph. Three dams have also been excavated (Figure 2.5). These constructions would have greatly disturbed or destroyed any Aboriginal cultural material in their footprint. As such, these areas are unlikely to contain Aboriginal artefacts.

By 2005, the construction at the dairy has been completed and a second house has been constructed. There appears to have been no significant changes to the study area from 2005 to the present.

Figure 2.3 Location of land grants in the parish of Rooty Hill

21134 - 311 South Street, Marsden Park

Source: NSW HLRV

Drawn by: WA Date: 2022-03-04

AUSTRAL ARCHAEOLOGY

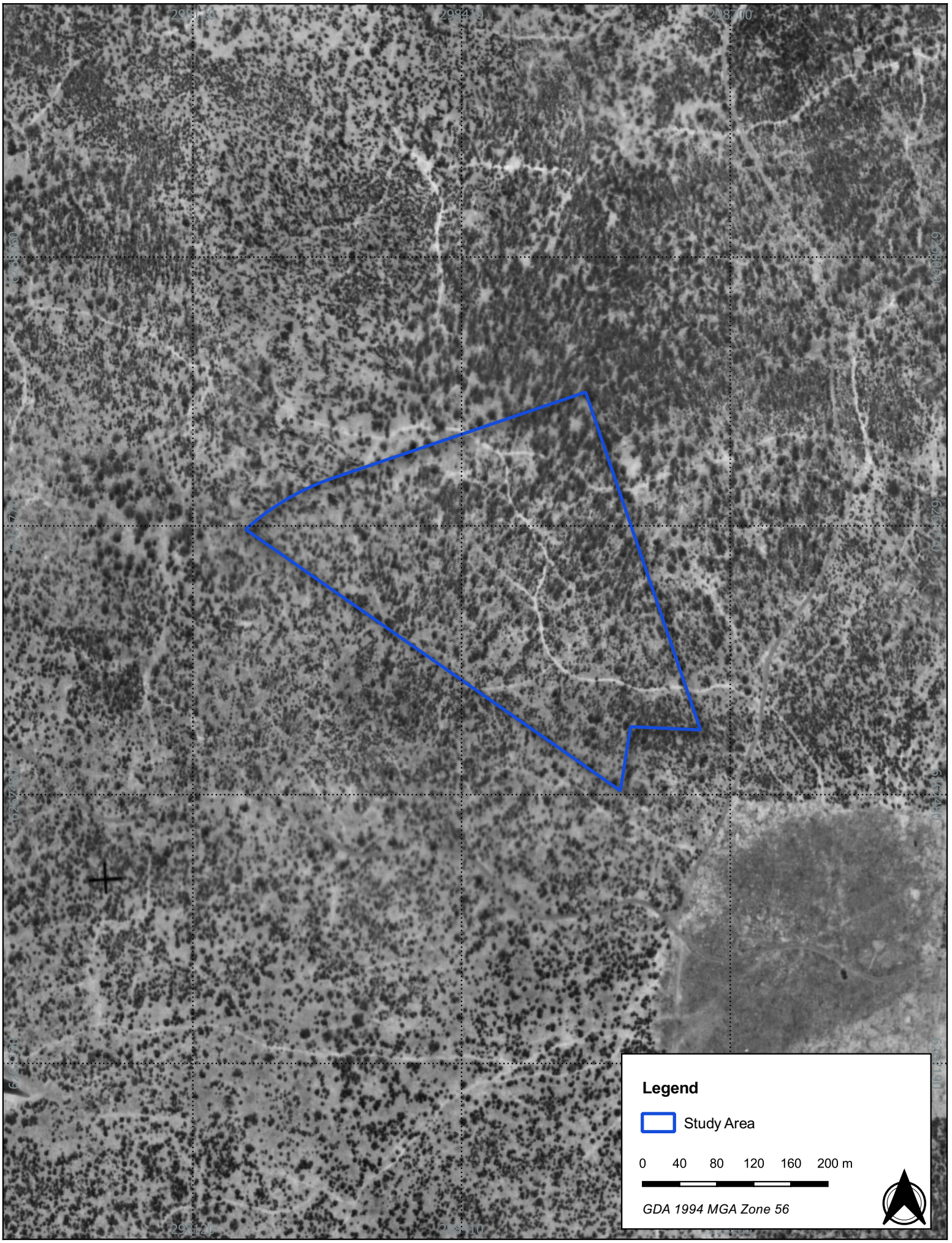


Figure 2.4 - 1947 aerial image of the study area

21134 - 311 South Street, Marsden Park

Source: NSW Spatial Collaboration Portal

Drawn by: WA Date: 2022-03-04

AUSTRAL ARCHAEOLOGY

Figure 2.5 - 1986 Aerial image of the study area

21134 - 311 South Street, Marsden Park

Source: NSW Spatial Collaboration Portal

Drawn by: WA Date: 2022-03-04

AUSTRAL ARCHAEOLOGY

3 ARCHAEOLOGICAL CONTEXT

3.1 POPULATION AND CONTACT HISTORY

The original Aboriginal group present around the study area were tribes of the Darug (Daruk) language group (Tindale 1974). The Darug language group extended from Botany Bay, north to the Hawkesbury River, spanning from the coastal fringes of the Eastern Suburbs to the Nepean River in the west. As we now know, many classifications oversimplify complex tribal relationships, and the Darug likely contained a number of clan or family groups over this vast area, with anthropological records suggesting the Darug were at one point subdivided into fifteen different cultural groups. These recorded suggest that the likely occupants of the study area were the Bedia or Buruberong people (Brook & Kohen 1991). Other archaeological and historical records indicate three culturally separate groups of Darug rather than many sub-groups; mountain, coastal, and hinterland, the latter of which would have occupied the study area (Attenbrow 2010). The sub-classification and division of the Darug people vary widely based on individual study and scholar. Nonetheless, linguistic and cultural evidence points to, at the minimum, a cultural division between the coastal and hinterland Darug (Attenbrow 2010, Wilkins & Nash 2008).

The hinterland Darug was a hunter-gatherer based society, utilising freshwater and terrestrial animals and plants (Kohen 1986, sec.3.3). Historical accounts report the fishing of large mullet, eels, shellfish and platypus, as well as ‘cobra’, a large worm-like shellfish, from freshwater waterways (Collins 1798, Attenbrow 2010). Dingos, koalas, and wombats are noted as being additional food sources for local groups (Attenbrow 2010). The Buruberong and Bedia utilised stone, wood, bark, resin, ochre and clay in the surrounding landscape for everyday activities, and traded with groups in the surrounding areas for items not available in the immediate area (Comber Consultants 2018). Stone tools in use included ground-edge axes along with typical flake technology.

When British settlers first arrived in the Sydney region, the initial settlement was in Sydney Cove. Following the establishment of a town around the current day Circular Quay, the need for additional agricultural land was identified, as the cove was unsuitable for farming. In 1791, an expedition was sent west in search of arable land. Rose Hill, now known as Parramatta, was settled at this time, and exploration of the wider region continued into the Hawkesbury, Nepean, and Georges River areas.

Change in the Aboriginal population of the Sydney region before European contact is highly difficult to estimate, as is the population at the time of European arrival. Settlers west of Parramatta initially assessed the Aboriginal population as having lower population density than the coast, the latter of which was predicted as a minimum population density of 0.75 persons per square kilometre (Attenbrow 2010).

The lower population density in the west is likely to have been due to the spread of smallpox, named ‘gal-galla’ by the Darug, which devastated communities and killed many inhabitants before the first European expeditions to the Hawkesbury-Nepean River. An estimate of the Western Cumberland Plain population proposed numbers of between 500 to 1,000 people within 600 square kilometres at the time of contact (Attenbrow 2010).

The decline in the Aboriginal population due to the spread of introduced diseases is undeniable and widely documented, though the lack of numbers makes the impact difficult to assess. Estimates predict that over half of the original inhabitants died as a result of these diseases, and many groups did not survive as socially and culturally distinct groups (Kohen 1986)2.

3.2 REGIONAL ARCHAEOLOGICAL CONTEXT

Archaeological investigations of the Cumberland Plains have been conducted in direct response to the spread of urban development. The limited ethnographic accounts of early settlers and explorers were once considered the primary source for archaeological enquiry. However, with the recent spread of urban development within the Campbelltown environs, archaeological investigations have undergone a corresponding increase.

The major studies which have contributed to our understanding of the Cumberland Plains, and those with direct relevance to the study area through their proximity, are outlined below. Reference is made to the main trends garnered from these investigations which serve to provide a broad framework on which to base the current study.

The material culture of the Aboriginal people of the Sydney region at the time of European contact was diverse, and utilized materials from a large variety of plants, birds, mammals, shells, and stones. Spears were often crafted of a grass tree spike with a hardwood point. Stone, bone, shell, and wood were all commonly used barbs (Turbet 2001). Fishing spears were tipped with bone points and caught using shell or bird talon hooks (Attenbrow 2010). Stone is the most common material found in the Sydney region and was used for axe heads, spear barbs, woodworking tools, and various other tool types.

Stone artefacts are typically the only physical indication left of Aboriginal use of an area. Knapping of stone artefacts is attributed to either the knapping of stone to create tools or the discard of these tools once they have been used. Large knapping events tend to occur close to permanent water, as the availability of resources made areas with proximity to water ideal camping locales (Jo McDonald Cultural Heritage Management Pty Ltd 2000).

Changes in the types of stone tool used in the Sydney region allows for a sequence that chronologically arranges tool manufacture and style. McCarthy developed a guide for the sequence in changes in stone tool type in eastern NSW, which include the three main phases for the last 15,000 years in Sydney: '*Capertian'*, '*Bondaian'*, and '*Eloueran'* (McCarthy 1976). This sequence was debated, with an alternative theory proposing four phases – '*Capertian*', '*Early Bondaian'*, '*Middle Bondaian'*, and '*Late Bondaian'*, the latter being the equivalent of McCarthy's *Elouer*an phase (Stockton & Holland 1974). The secondary sequence is used in Sydney today, where the commonly referred to 'Bondi points' occur in the *Early Bondaian* phase. *Capertian a*ssemblages generally contain larger tools, and small tool use, such as that of thumbnail scrapers and small blades, is attributed to the later phases.

From around 1,600BP Bondi points were used less in the coastal Sydney region and quartz use, as well as bipolar flaking technique, became more prevalent. In the Cumberland Plain, dated archaeological sites suggest that backed artefact types and Bondi points were used until 600BP (Corkill 1999, Attenbrow 2010).

Forager, or hunter-gatherer, settlement patterns have been subject to modelling and debate. Foley (1981) developed a site distribution model for forager settlement. His model splits hunter-gatherer sites into two categories; residential base camps and activities areas. Populations would reside in the former, near water and shelter, and travel to the latter to gather resources. The majority of artefacts would be deposited in the base camp, and some artefacts would be clustered throughout. This model is more stationary than the actuality, as it does not account for changes in base camp or changing resource availability.

A recent model expanded on Foley's hypothesis. Neville Baker (2000) has developed another predictive model, based on the distance from environmental focal points. This model focuses on three zones of archaeological complexity and can be described as the "complex zone" which includes overlapping knapping floors with a high density of artefact concentrations, which are due to the repeated occupation and use of areas with the easiest and closest access to resources; The "dispersed zone" which includes spatially discrete knapping floors and/or activity areas, due to less intense or frequent occupation of these areas which have more restricted access to resources, or require separation from the main camp; and The "sparse zone" which comprises low-density artefact scatters which are likely to relate to discard due to loss or use rather than manufacture. Further to the sparse zone, there is potential for archaeological evidence to be present, "but in such low density that the sampling intensity used in this project would fail to pick it up reliably" (Baker 2000:54).

The earliest Cumberland-Plain site-specific model was created by Kohen in 1986, where he proposed a model wherein Aboriginal occupation of the Cumberland Plain occurred mainly during the mid to late Holocene, or 4,500BP. This occupation was defined materially by a stone tool technology he referred to as the 'small tool tradition'. He also argued that before this period, Aboriginal occupation was concentrated on large sources of water, namely the coast and the Nepean River (Kohen 1986).

McDonald (2005) agrees with Kohen's 1984 model and predicts that Aboriginal occupation was initially focused along the Nepean River and other larger creek lines including Shaws Creek, Jamison Creek and Springwood Creek. Over time, the populations began to move away from the major river systems and to occupy areas further away. Rising sea levels around 6,000BP led to a move of the coastal peoples further inland, which increased the Aboriginal population of the inland areas and increased the pressure on resources. At this time, new areas were occupied for the first time and heat treatment of stone began to be more common. Often materials for stone tools were partially worked at the source and then transported to areas of habitation for further modification. More complex artefact types such as backed artefacts became more common in the recent period, which McDonald suggests is due to "more restricted social movement and contact via exchange networks" (McDonald 2005a).

An amalgamation of research undertaken to date in the Cumberland Plains was commissioned by the National Park and Wildlife Service (NPWS) in 1989 (Smith 1989). The study found that site densities and location were influenced by the availability of water and raw materials.

Other site predictability models relied on the distance to resources. Dallas & Witter (OzArk Environment & Heritage 2004) proposed the 'distance decay model', which theorizes that artefacts have less cortex and are smaller with increasing distance from quarries and sources of raw material. Smith (1989) suggested artefacts with more cortex are more likely to be found near raw material sources, while those with less cortex were found further from sources of raw material. This study also found that the size of a site did not correlate with distance from the raw material source, suggesting that large sites on the Cumberland Plain are not necessarily associated with raw material extraction (Smith 1989). However, it has been suggested that due to the abundance of sources of Silcrete throughout the Cumberland Plain, these models are difficult to test, and do not explain raw material preference (OzArk Environment & Heritage 2004).

Since this research, more development in the last three decades has occurred supporting the connectedness of high site density to the availability of water. Stream order can be used to predict Aboriginal land use patterns. A 'first order' stream is the smallest, which flows into and feeds larger streams, but does not normally have any water flowing into it. The joining of two first-order streams creates a second-order stream. The joining of a two-second order stream creates a third-order stream. Studies have confirmed the likelihood of archaeological sites near high order creeks and rivers, as well as at the confluences of streams (Kohen 1986, Comber 2006).

McDonald has developed a predictive model for the Cumberland Plain area. A series of excavations in Rouse Hill provided the basis for a predictive model of archaeology in the area (McDonald 1997). These studies found that despite agricultural development, high archaeological potential still exists for sub-surface deposits and that these deposits tend to be more complex and dense as distance to permanent water decreases (McDonald 1997).

An additional later analysis of all sites in the Cumberland Plain in 1997 found 666 sites, with the most common type being open artefact scatter (89%), then scarred trees (2.1%), and the remainder of the sites were isolated finds and combination/other site types (3.5%) (McDonald 1997).

Major conclusions of McDonald's model of site predictability in the region were as follows:

- Fourth and fifth-order creeks (or rivers) will have archaeological evidence that is more complex and possibly stratified, reflecting more permanent and repeated occupation on major creeks; Third-order creeks will have evidence of more frequent occupation such as knapping floors or higher artefact densities in the lower reaches of tributary creeks; Second-order creeks will have sparse archaeological evidence which indicates occasional use and/or occupation; First order creeks will have only very sparse evidence in the headwaters of upper tributaries such as background artefact scatter, due to the intermittent nature of water flow. Overall site patterning is identifiable using environmental factors, where sites on permanent water are more complex than those on temporary water lines.

- Most areas, even with no surface distributions, contain sub-surface deposits. Many sites contain high artefact densities with variability depending on the range of activity areas and site types present.
- Sites in alluvium possess the potential for stratification. Ploughing only affects the deposit up to 30 centimetres,

Additional modelling has suggested that settlement next to water may have been slightly at a distance from the immediate creek bank to stay away from mosquitoes, allow for animals to still approach the water resource, and give space so all members of a large population group had access to the resource (White & McDonald 2010).

Average artefact densities beside high order streams are 13.9 artefacts per square metre in the Cumberland Plain region, which applies up to 100 metres from the stream (White & McDonald 2010). While the link between water courses and archaeological potential is clear, other factors are less prominent. Research on the Cumberland Plain by White & McDonald (2010) shows that terraces have the highest artefact densities on the Cumberland Plain, followed by lower slopes, mid slopes, creek flats and upper slopes and ridge tops.

Most predictive models align closely with McDonald's predictability model. A model made by AHMS (2012a) based on several excavations at Rouse Hill agreed with McDonald's conclusions, and additionally contributed the following:

- Creek junctions may provide foci for site activity; the size of the confluence could be expected to influence the size of the site;
- Ridgetop locations between drainage lines will usually contain limited archaeological evidence though isolated knapping floors or other forms of one-off occupation may be in evidence in such a location.
- Higher artefact densities occur on terraces and lower slopes, with sparse discontinuous lithic artefact scatter on upper slopes.
- Higher artefact densities occur on landforms facing north and northeast, on lower slopes associated with a larger stream.
- Distance to silcrete outcrops does not affect artefact distribution.

Limitations to site location predictability on the Cumberland Plain were mentioned in the same research, namely by McDonald in 1997. While open scatters and camp sites which represented 89% of all sites recorded were found in all landform units, they were most likely to be found in creek banks. Though this seemingly would align with water predictability models, this was theorized to be due to the higher surface visibility present along creek banks, rather than concrete patterning. None of the sites which had been excavated at this time could be characterized based on surface alone (McDonald 1997).

Further work has supported the presence of sub surface deposits even when surface artefacts are absent (McDonald 2005a, Comber 2006). Two surveys (Comber 2006, Comber 2008) followed by an excavation (Comber Consultants 2011) found few surface artefacts, but over 1,500 sub-surface artefacts in areas that were highly disturbed by agricultural activities including grazing, ploughing, planting, and the construction of a dam. A large site complex was found north of the present study area next to Eastern Creek, which runs south and eventually crosses the study area. Per McDonald (2005b), "despite artefacts being rare or completely absent on the surface at each of the sites investigated, all six sites were found to contain intact archaeological deposit. Almost 500 square metres were excavated during this Project and almost 35,000 artefacts were retrieved."

Ultimately, past research in the Cumberland Plain concludes that regardless of landform type, stream order is of primary importance in determining the scale and complexity of the sites (McDonald 1997, AHMS 2012b). Archaeological potential in the area relates to high order streams and the availability of raw material.

3.3 HERITAGE DATABASE SEARCH

A search of the Heritage NSW AHIMS database was undertaken on 25 October 2021 (Client Service ID 633155). The results from the AHIMS search identified 96 previously recorded sites within a 1.5-kilometre radius of the study area. The search indicates that Artefacts are the predominant site type with over 94.79% of known sites belonging to this category (Table 3.1 and Table 3.2). A review of the AHIMS sites shows that there are no duplicate sites (Table 3.1 and Figure 3.2).

A basic statistical analysis of the AHIMS data was performed in QGIS. The vast majority of sites are located closest to 1st order streams, with all PAD sites and 93.62% (n=88) of sites containing artefacts closest to a first-order stream. The remaining 6.38% (n=6) artefacts sites are associated with 2nd order streams. None of the nearby AHIMS sites is associated with larger order streams. The distance to the closest stream is also quite large, with most sites being located further than 250 metres from a water source. With over half of the artefact scatter sites (54.26% [n=51]) and all the PAD sites lying further than 500 metres from an ephemeral watercourse. This large distance suggests that there may be other factors more important in this region that is driving site selection rather than distance to water.

The highest proportion of artefact sites are located on slopes (31.91% [n=30]), followed by nearly equal numbers of sites on spurs (14.89% [n=14]), shoulders (12.77% [n=12]), valleys (12.77% [n=12]) and hollows (10.64% [n=10]). PAD sites are located on shoulders, spurs, hollows and foot slopes. As such, it appears that sites occur across most landforms, with a slight increase in sites on gentle slopes and the associated foot slopes or shoulders. As such, sites need not occur on flat ground. However, it appears that the majority of sites are located on raised areas if they are not associated with drainage channels. The sites associated with the drainage channels may have once been on the top of the ridge with natural processes, such as heavy rain moving the artefacts down the slopes.

The majority of artefact sites (68.09% [n=64]) and PADs (60% [n=3]) are located within the Berkshire Park soil landscape. The remaining 31.91% (n=30) of artefact sites and 40% (n=2) of PADs are located within the Blacktown soil landscape. The Berkshire Park soil-landscape makes up roughly 60% of the study area, with the rest made up of Blacktown soils. It would thus appear that the proportion of sites roughly reflect the proportion of the search area the soils take up.

All PADs sites and the majority of artefact sites (89.36% [n=84]) fall within the Bringelly Shale geological unit. The remaining 10.64% (n=10) artefact sites fall within Rickaby's Creek Gravel geological unit. This is somewhat coloured as roughly 75% of the search areas is made up of Bringelly Shale. However, even with the overabundance of area, it would appear that sites are slightly more likely to occur in this geological unit.

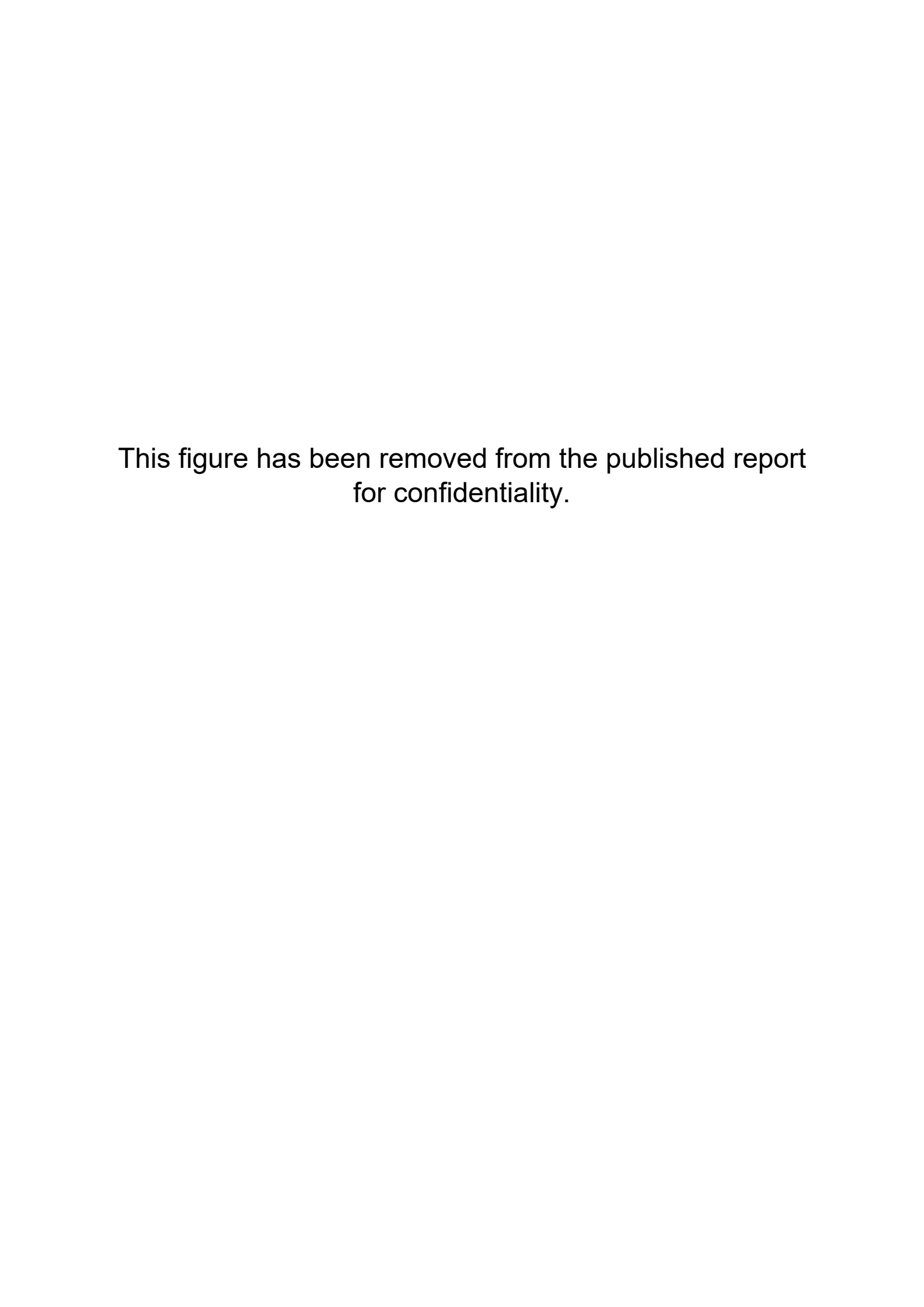
For Table 3.1 and Figure 3.2, it is assumed that the correct coordinate system has been registered for each site.

Table 3.1 Summary of sites recorded adjacent to the study area

Name	AHIMS No.	Type	Location Landform	Cadastral Boundary
South Street	45-5-4961	Artefact, PAD	Upper Slope	[redacted]
MPIP PAD 4	45-5-4621	PAD	Upper Slope	[redacted]
30 South Street, Marsden Park	45-5-4929	PAD	Ridgeline	[redacted]

Table 3.2 Summary of sites recorded within a 1.5 kilometres radius of the study area

Feature Type	Total	%
Artefact	91	94.79
Artefact, Potential Archaeological Deposit	3	3.13
Potential Archaeological Deposit	2	2.08
TOTAL	**96**	**100**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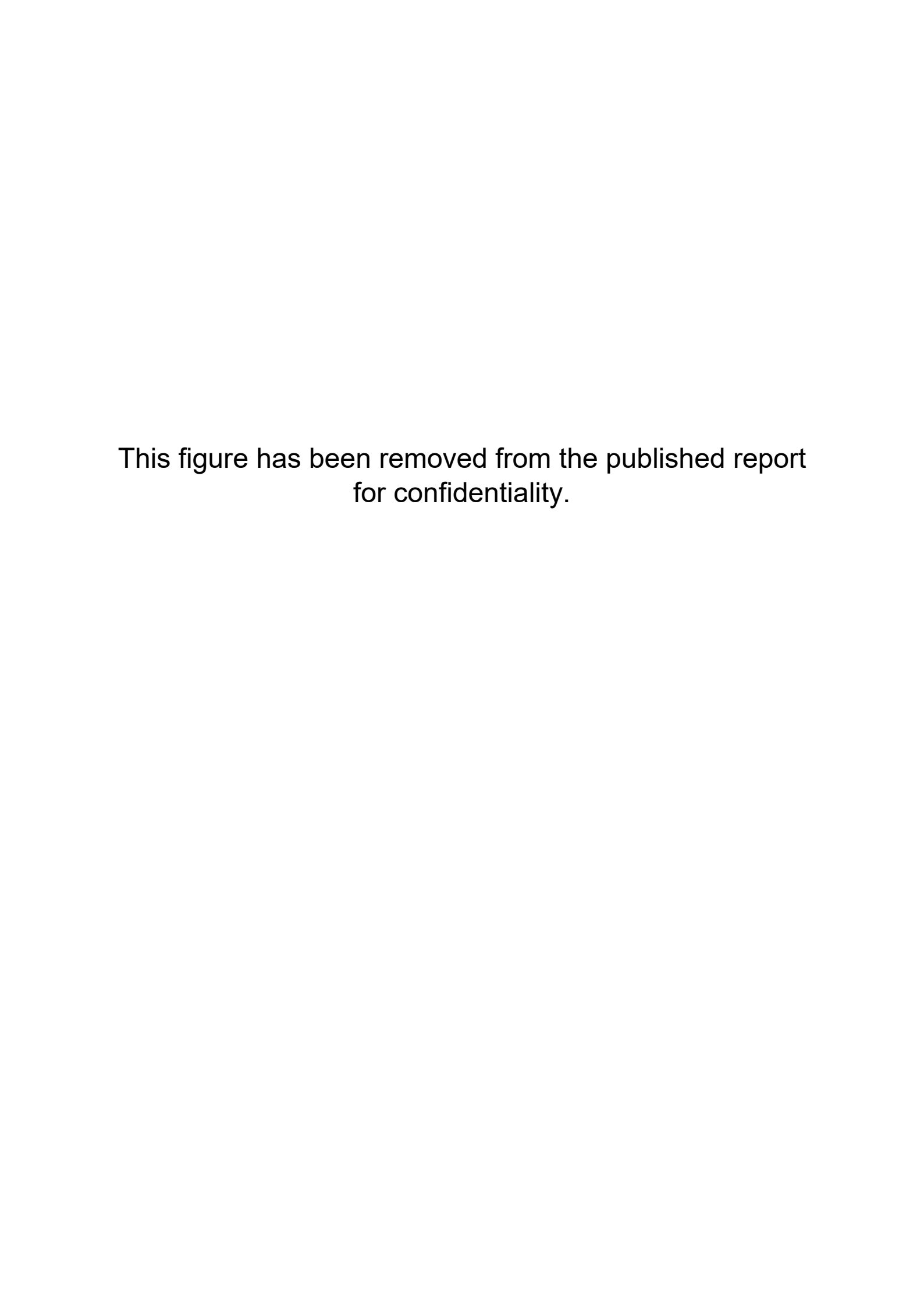
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3.4 LOCAL ARCHAEOLOGICAL CONTEXT

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

The major studies which have contributed to our understanding of the Blacktown area, and those with direct relevance to the study area, are outlined in Table 3.3. Reference is made to the main trends garnered from these investigations which serve to provide a broad framework on which to base the current study.

Table 3.3 Summary of past reports within the vicinity of the study area

Reference	Study area location	Results
(Dallas 1982)	Riverstone Schofield and Quakers Hill	Survey undertakenas a part of a Local Environmental Study. The assessment area had varying degrees of exposure and disturbance and included residential and industrial development zones and residential areas such as small farms, dairies, and market gardens. Areas that had been previously cleared were chosen for higher density surveying, particularly along creeks lines and confluences due to their association with Aboriginal site locations. 7 sites and 4 isolated finds were located. All sites were surface scatters with the majority subjected to extensive damage. The sites found area fall into two groups, open campsites, and stone tool manufacturing zones in association with campsites with concentrations of sites being focused along Eastern Creek. Smaller camps occur between Eastern Creek and land further east nearby permanent water sources.
(McDonald & Rich 1993)	Rouse Hill Development Area	Part of a series of reports conducted on the Rouse Hill Development Area to provide advice on how to best formulate heritage management guidelines and regulations. Study area was 40 square kilometres and covered a range of environmental zones and site types. Within this portion of the project, a total of 19 sites, 15 PADs, and 7105 artefacts were located. One site RH/CD7 was assessed as highly significant and, subsequently, it was proposed no work should take place within its proximity. Approximately 20% of the assessment area was identified as being of archaeological potential, equating to roughly, 156 hectares. Half of the sites identified were established as having low potential, 30% were of moderate significance, and 9% were of high significance. 12% of sites were classed as being of mixed significance. The following findings were recorded within the report: • Site patterns tend to relate to environmental factors e.g. complex sites were located along with permanent water sources rather than temporary sources. While conclusions may be drawn regarding environmental factors, it should be noted that the relationship been sites and the environment is very complicated • Alluvial terraces hold the best potential for in-tact remains • Hillslopes held the lowest potential for remains. Where sites were present in hillslope zones, they tended to represent short term occupation by small groups
(Kelleher Nightingale Consulting Pty Ltd 2009)	Marsden Park Industrial Precinct	The Aboriginal heritage assessment covered an area bounded by the south of South Street to the west of Richmond Road. 63 Aboriginal sites recorded within the boundaries of the assessment area, with 42 identified during the field assessment conducted by KNC and 21 were previously identified. Additionally, four PADs of moderate to high potential were identified . They were identified due to their elevation, soil profiles, proximity to water, and moderate slope along with their proximity to other archaeological deposits.
(Ecological Australia Pty Ltd 2016)	Between TransGrid's Vineyard Bulk Supply Point and the Marsden Park Zone Substation	ACHA and ATR to obtain an2 isolated artefacts were located during field survey and registered on AHIMS, one broken mudstone flake and one red silcrete core. Aboriginal representatives on the survey were noted that the assessment area contained the potential for significant places to be present due to its proximity to Eastern Creek. Other representatives also noted the significance of paperbarks in the area as a potential resource to past populations as well as the silcrete outcrops which may have been used as a source for stone tool manufacturing.

Reference	Study area location	Results
(Dominic Steele Consulting Archaeology 2017)	Richmond Road, Marsden Park	Due diligence assessment to accompany a development application for a proposal to subdivide 12 parcels of land into residential lots. A survey was conducted across the assessment area which revealed no evidence of Aboriginal sites, objects or areas of potential archaeological sensitivity.
(Kelleher Nightingale Consulting Pty Ltd 2012)	Marsden Park Precinct, Northwest Growth Centre	Assessment area covers approximately 1800 hectares of land intended for the development of 10,000 new homes and a town centre of just over 30,000 square metres. 67 Aboriginal archaeological sites were recorded within the assessment area which was consistent with predictions for the study area. These sites included open artefact scatters, isolated artefacts and two scarred trees. The significance of these finds ranges between low to moderate within both the scientific/archaeological category. Sites that were of higher research potential tended to correspond with well-drained raised landforms as they had retained their archaeological integrity. Aboriginal stakeholders that were involved in this project identified Marsden Park to be an area of significance and cultural value.
(OzArk Environmental and Heritage Management P/L 2018)	Lots 37 and 38 of South Street Marsden Park	Desktop assessment and field survey to assess the impacts of the proposed industrial subdivision of the South Street assessment area. It was found that 5 Aboriginal sites had been recorded within the assessment area, with 3 of them having to be re-recorded. The sites include an artefact scatter, a PAD, an isolated find, an open camp site, and an open camp site and PAD. The PAD, MPIP 20, was only partially within the study area and the previously recorded artefact was not relocated at the recorded coordinates. It is likely the AHIMS site card was filled in erroneously, but this could not be confirmed due to the artefact not being located.
(Coast History and Heritage 2019)	Lot 44 DP1175138, 6 Townson Road, Marsden Park	This Due Diligence was conducted to assist in a DA for the commercial redevelopment of the western end of 6 Townson Road, Marsden Park. The assessment area consisted of 8.0 Ha of the total 2.1 Ha property. The site survey indicated there were no previously recorded Aboriginal sites within the study area and has been extensively disturbed through activities such as levelling earthworks and scouring of the surface. Coast History and Heritage conclude that due to the extensive disturbance of the site, there is no possibility of locating intact or surviving traces of Aboriginal archaeological evidence.

4 PREDICTIVE STATEMENTS

In general, an archaeological predictive statement for any study area draws on surrounding environmental data, previous archaeological research and predictive models for Aboriginal occupation. Another essential aspect to predicting the archaeological integrity of a site and something that must be considered is previous land uses of the study area and degree of disturbance.

In summary, the main trends broadly seen across eastern NSW are that:

- Archaeological sites occur on most landforms.
- Site frequency and density are dependent on their location in the landscape.
- There is a dominance of low-density surface open artefact scatters and isolated finds.
- There is a noted paucity of scarred trees due to land clearance.
- Artefact scatters are commonly located near permanent water sources along creek banks, alluvial flats and low slopes, largely concentrated within the first 100 metres of a creek line. More complex sites are usually located close to water sources with major confluences being key locations for occupation sites.
- Archaeological material is also present beyond the immediate creek surrounds in decreasing artefact densities.
- There may be concentrations of sites occurring on ridge tops and crests that are associated with pathways through the landscape.
- Subsurface archaeological deposits are often recovered in areas where no visible surface archaeological remains are evident.
- The dominant raw material used in artefact manufacture is silcrete and fine-grained silicious material with smaller quantities of chert, quartz and volcanic stone seen.
- Artefact assemblages usually comprise a small proportion of formal tool types with the majority of assemblages dominated by flakes and debitage.
- While surface artefact scatters may indicate the presence of subsurface archaeological deposits, surface artefact distribution and density may not accurately reflect those of subsurface archaeological deposits.
- Aboriginal scarred trees may be present in areas where remnant old-growth vegetation exists.

While these statements provide an adaptable framework for applying a predictive model to the study area, based on the previous models it is possible to further expound on the generalisations made above. The general studies of the Marsden Park region, the specific investigations surrounding the study area and the search of the AHIMS database have helped to predict what certain site types can be expected within the study area. These are:

- The study area contains landforms suitable for the identification of Aboriginal sites
- The most likely site types within the study area are stone artefacts and/or PADs
- Scarred trees are unlikely to be identified within the study area, as significant vegetation clearance has removed old-growth vegetation
- Subsurface archaeological deposits may be identified where there are no surface objects located

5 FIELD METHODS

A site-specific investigation methodology has been developed for the project that complies with the Requirements of the Code of Practice (DECCW 2010c).

5.1 SURVEY METHODOLOGY

The survey was conducted on Thursday 16 December 2022 by Stephanie Moore (Senior Archaeologist, Austral) with assistance from Steven Randall (Sites Officer, Deerubbin Local Aboriginal Land Council [DLALC]).

5.1.1 SURVEY OBJECTIVES

The objectives of the survey were to:

- Complete a systematic survey that targets areas that have been identified as having the potential to contain Aboriginal heritage values.
- Identify and record Aboriginal archaeological sites visible on the ground surface and areas of PAD.
- Re-identify previously recorded Aboriginal archaeological sites (AHIMS #45-5-4621 and #45-5-4929) identified adjacent to the study area.

5.1.2 SAMPLING STRATEGY

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

- Gentle slopes

The specific survey methodology developed for this assessment was guided by the survey requirements as set out in Requirement 5 to 10 of the Code of Practice (DECCW 2010c) and based upon consideration of the overall landform pattern within the study area, known landform elements (after Speight 2009) and the location of the previously identified sites. The survey targeted portions of the study area subject to minimal land disturbance, and in proximity to the previously identified sites AHIMS #45-5-4621 and #45-5-4929 located on the western and eastern boundaries of the study area, respectively. The previously recorded AHIMS sites were investigated to determine if associated areas of archaeological potential were likely to extend into the study area.

5.1.3 SURVEY METHODS

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

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

5.2 TEST EXCAVATION METHODOLOGY

The test excavation was conducted from 1-3 February 2022 by William Andrews (Archaeologist, Austral) with assistance from Dominique Bezzina (Graduate Archaeologist, Austral) and TBC (Sites Officers, DLALC).

5.2.1 TEST EXCAVATION OBJECTIVES

The objectives of the test excavation were to characterise the nature, extent and archaeological significance of Aboriginal objects associated with areas of high and moderate potential within the study area.

5.2.2 TEST EXCAVATION METHODOLOGY

The test excavation programme was undertaken according to the prescribed methodology of Requirement 14 to 20 and 23 to 26 of the Code of Practice (DECCW 2010c). Specifically, Requirement 15b of the Code of Practice, stipulates that a sampling strategy must be developed for all test excavations which take place before work commencing (DECCW 2010c, p.25). In summary, test pits must be placed on a systematic grid designed to target both areas likely to contain PADs and the location of proposed impacts. Test pits must be located a minimum of 5 metres apart.

Each test pit was excavated following Requirement 16a of the Code of Practice using mattocks, shovels and trowels (DECCW 2010c, p.26). Sample units measured 500 millimetres^2, with the first test pit excavated in 50-millimetre spits to act as a geomorphologic example and the remaining test pits were excavated in 100-millimetre spits. The excavation was undertaken until the B-horizon was reached and then continued for another 100 millimetres to confirm that the following spit was culturally sterile. In general, the decision to stop excavating was made, when the top of the C horizon; when a higher percentage of clay was evident, or coffee rock was encountered.

5.2.3 SIEVING

On-site processing of excavated soils and artefact retrieval was undertaken via a combination of dry sieving through both a 5-millimetre and 3-millimetre nested sieve or solely through a 3-millimetre sieve, dependent on the nature of the material. Artefacts were collected from the sieves and placed in bags according to test pit provenance. Buckets containing material from the same spit were kept together and separate from other spits. All test pits were backfilled with the available material retrieved from the sieving location upon completion of the recording.

5.2.4 RECORDING

Detailed recording of all pits was undertaken, requiring the completion of an excavation recording form for each spit excavated. The form necessitated detailed descriptions of the soil profile, any evidence of disturbance and/or features, as well as depth of excavation and the number of artefacts and inclusions present. For each artefact a separate plastic bag was annotated with the project name, transect number, test pits number, spit number, date and recorder's initials.

Photographic recording occurred after each pit or when an archaeological feature was uncovered. A photographic record was taken off at least one wall section in each test pit. Together with a section drawing and stratigraphic photogrammetry from each pit, the photographs allowed for a detailed record of the strata present at the site.

Figure 5.1 Location of test pits within the study area

6 ARCHAEOLOGICAL RESULTS

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

6.1 ARCHAEOLOGICAL SURVEY RESULTS

The survey undertaken for this study was not intended to be a comprehensive survey of the study area, given the level of previous assessment undertaken. Rather, the survey aimed to target previously identified areas of archaeological potential within the study area to refine the method of archaeological test excavation to be undertaken.

Ground Surface Visibility (GSV) is recorded as a percentage estimate of the ground surface that is visible and allows for the detection of (usually stone) artefacts that may be present on the ground surface (DECCW 2010c). GSV within the study area was generally low, with dense grass covering the majority of the ground surface throughout the study area. Areas of visibility were generally confined to ground exposures, associated with access tracks and movement of livestock through the property.

The most significant disturbance in the study area is the construction of two dwellings and ancillary structures, and the installation of dams. The structures are predominantly within the northern portion of the property, although there is a milking shed constructed in the centre of the property.

Sloped landforms are present within the study area, these consist of…

A description of these results, as they relate to the survey units and observed landforms within the study area can be seen in Table 6.1 and Table 6.2.

Table 6.1 Survey coverage

Survey unit	Landform	Survey unit area (m²)	Visibility (%)	Exposure (%)	Effective coverage area (m²)	Effective coverage (%)
1	Gentle slope	50,207	10	10	502.07	1
2	Upper slope	17,938	10	20	358.76	2
3	Gentle slope	29,786	10	10	297.86	1
4	Upper slope	18,951	10	10	189.51	1

Table 6.2 Landform summary

Landform	Landform area (m²)	Area effectively surveyed (m²)	% of landform effectively surveyed	No. sites	No. artefacts / features
Gentle slope	54,584	545.84	10	1	0
Upper slope	43804	438.04	10	0	0

No Aboriginal objects were identified during the ground survey. One area of PAD was identified on the western boundary of the study area, in proximity to AHIMS #45-5-4621. Based on the low levels of ground disturbance in this area, and the categorisation of an area of PAD on the western side of the property boundary, it was determined that this area contained some potential for subsurface archaeological features.

6.2 TEST EXCAVATION RESULTS

Based upon the results of the archaeological survey, Austral completed archaeological test excavations within the study area within the areas of moderate archaeological potential. This consisted of three archaeological testing locations. The results from these areas are summarised within this section.

6.2.1 TESTING AREA 1

Testing within testing area 1 consisted of 4 test pits distributed 20 metres apart on 1 transects. Figure 6.4 shows the distribution of these test pits.

LANDFORM

Testing area 1 was located on a flat in the northwestern corner of the study area. The location of test pits in relation to landforms in the study area can be viewed in Figure 6.4.

SOILS, DISTURBANCE AND FEATURES

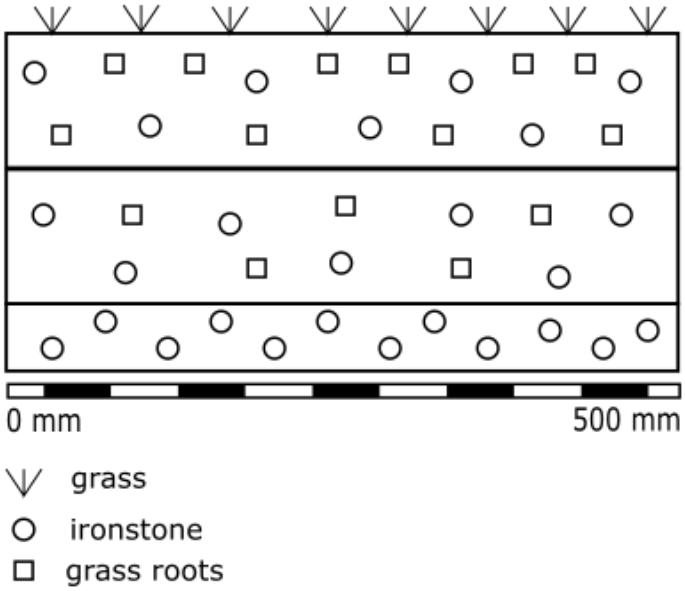
Soils across testing area 1 were generally comprised of a grey-brown compact clay loam layer, transitioning into an orange-brown compact clay loam layer with iron-stone components that overlayed an orange-brown compact layer with iron-stone components.

A summary of soil characteristics across testing area 1 is provided in Table 6.3 and Figure 6.1.

Table 6.3 Summary of soil characters within Testing Area 1

Soil Horizon	Soil Characteristics
A1 Horizon	**Depth:** 0-100 mm **Colour:** Grey-brown **Description:** Approximately 50 millimetres of topsoil transitioning to grey-brown clay-loam containing approximately 10% ironstone and grassroots. Transition to the A2 horizon is mostly clear but gradual in some cases.
A2 Horizon	**Depth:** 100-200 mm **Colour:** orange-brown **Description:** white-brown compact clay loam later containing approximately 20-30% ironstone, and some grassroots. Transition to B horizon is diffuse
B Horizon	**Depth:** approximately 200-250 **Colour:** orange-brown **Description:** Compact orange blown clay with major ironstone components (<50%)

Figure 6.1 North section of test pit A3 from Testing Area 1 showing typical soil profile



ARTEFACT ASSEMBLAGE

No artefacts were identified within Testing Area 1.

6.2.2 TESTING AREA 2

Testing within Testing Area 3 consisted of 10 test pits distributed 20 metres apart on 2 transects. Figure 6.4 shows the distribution of these test pits.

LANDFORM

Testing Area 2 was located about a shoulder in the southwestern corner of the study area. The location of test pits in relation to landforms in the study area can be viewed in Figure 6.1.

SOILS, DISTURBANCE AND FEATURES

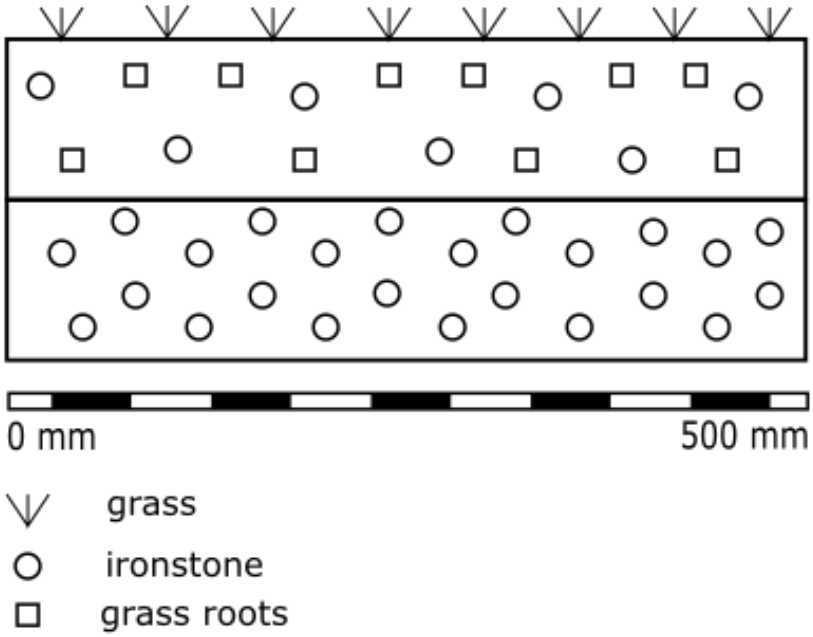
Soils across Testing Area 2 were generally comprised of a grey-brown silty-clay layer, transitioning into an orange-brown compact layer with ironstone components. An occasional layer was noted to be present between the A horizon and B horizon layers that consisted of an orange-brown silty clay.

A summary of soil characteristics across testing area 1 is provided in Table 6.4 Summary of soil characters within Testing Area and Figure 6.2.

Table 6.4 Summary of soil characters within Testing Area 2

Soil Horizon	Soil Characteristics
A1 Horizon	**Depth:** 0-100 mm **Colour:** Grey-brown **Description:** Approximately 50 millimetres of topsoil transitioning to grey-brown silty clay-loam containing approximately 10% ironstone and grassroots. Transition to the A2 horizon is mostly clear but gradual in some cases.
B Horizon	**Depth:** approximately 200-250 **Colour:** orange-brown **Description:** Compact, orange-blown clay with major ironstone components (<50%)

Figure 6.2 North section of test pit C1 from Testing Area 2 showing typical soil profile



ARTEFACT ASSEMBLAGE

No artefacts were identified within Testing Area 2.

6.2.3 TESTING AREA 3

Testing within Testing Area 3 consisted of 4 test pits distributed 20 metres apart on 2 transects. Figure 6.4 shows the distribution of these test pits.

LANDFORM

Testing area 3 was located on a foot slope in the southeastern corner of the study area. The location of test pits in relation to landforms in the study area can be viewed in Figure 6.1.

SOILS, DISTURBANCE AND FEATURES

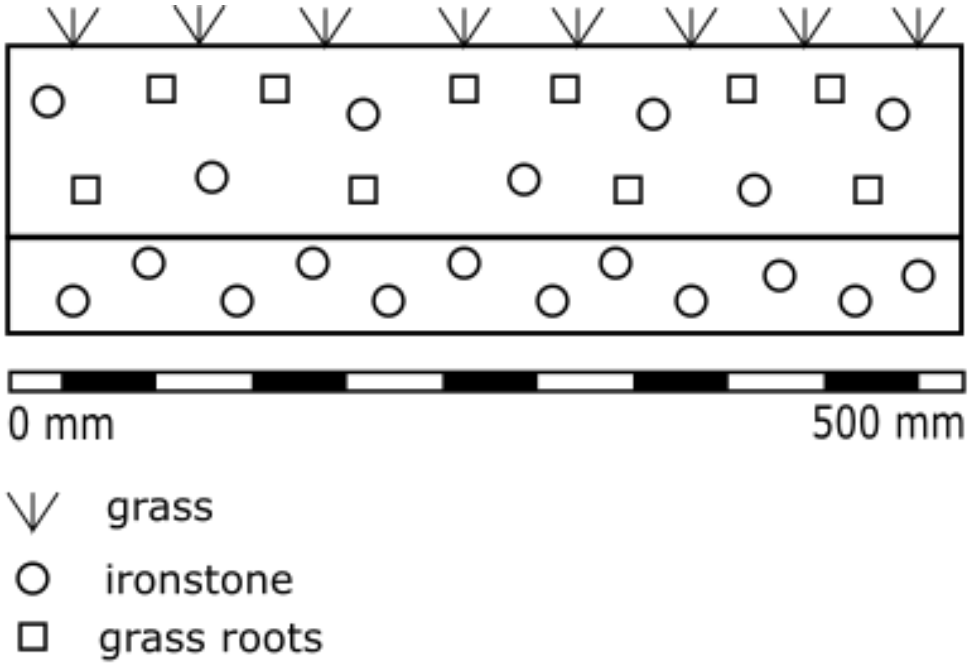
Soils across Testing Area 3 were generally comprised of a grey-brown friable silty clay layer transitioning to an orange-brown clay layer containing major a large portion of ironstone.

A summary of soil characteristics across testing area 1 is provided in Table 6.5 and Figure 6.3.

Table 6.5 Summary of soil characters within Testing Area 3

Soil Horizon	Soil Characteristics
A Horizon	**Depth:** 0-100 mm **Colour:** Grey-brown **Description:** 70 millimetres of dark brown topsoil transitioning into grey-brown friable silty clay containing approximately 10% ironstone and grassroots. Transition to B horizon is largely gradual.
B Horizon	**Depth:** 100-200 **Colour:** orange-brown **Description:** Compact orange-brown clay with major ironstone components (<50%)

Figure 6.3 **North section of test pit D4 from Testing Area 3 showing typical soil profile**



ARTEFACT ASSEMBLAGE

No artefacts were identified within Testing Area 3.

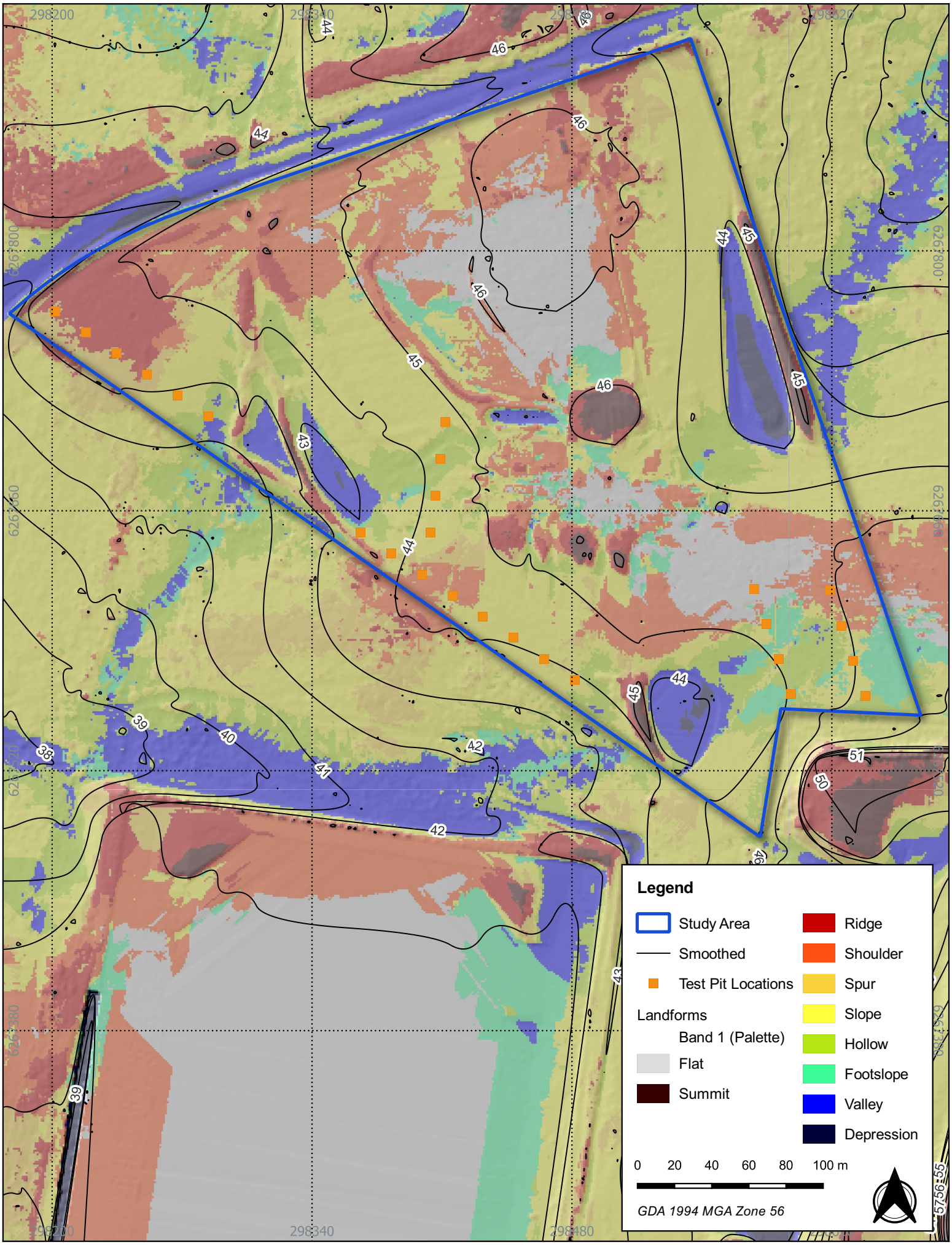


Figure 6.4 - Location of test pits in relation to landforms

21134 - 311 South Street, Marsden Park

Source: Geoscience Australia

Drawn by: WA Date: 2022-03-04

AUSTRAL ARCHAEOLOGY

7 ANALYSIS AND DISCUSSION

The following section presents an analysis and discussion of the results of the archaeological investigation, with an emphasis on the archaeological testing program.

7.1 SITE INTEGRITY AND EXTENT

The site is not predicted to have been used intensively by past Aboriginal populations indicated by the lack of cultural heritage objects found within it. Some disturbance to soil profiles was noted in specific test pits across the study area. Examples include test pit D4 which was abandoned due to potential livestock burial and test pit B2 which was noted to be adjacent to an artificial beam. While this may have destroyed some Aboriginal sites, it is unlikely due to the limited presence of this disturbance across the study areas extent. This has led to the determination that no Aboriginal sites would be located throughout the entirety of the proposed construction location.

7.2 ARCHAEOLOGICAL ANALYSIS

Given the number of sites located throughout the 3-kilometre AHIMS search of the wider Marsden Park locality, it is surprising that no artefacts or PADs were located during test excavations. These results indicate that the surrounds of the study area were used at least in some capacity by Aboriginal populations.

When observing the AHIMS data, it can be noted that uncleared areas tend to correlate with higher site frequency, which is to be expected. Given the study area is entirely cleared and has a history of use for agricultural purposes, it can be hypothesized that artefacts that were once on the site have since been destroyed.

Another explanation for the lack of sites found in the large distance the study area is from the study area. The Nepean River, the closest major water source, is located 15 kilometres to the west which, while walkable in a day would require the expenditure of an unnecessary number of resources should a permanent settlement have been established within the study area. In addition to this, no permanent minor streams are in proximity to the study area. As such, evidence of long-standing camp locations would not present itself here.

The level of water sitting within the soil could have been an aspect that turned the local Aboriginal groups away from using the area as well, as in times of heavy rains the study area likely becomes very waterlogged and not usable as a thoroughfare or location of a temporary camp. This has been determined through observation of the low relief of the study area. The area may have instead been used for occasional resource collection and hunting.

7.3 DISCUSSION

Given the overall intactness of the study area and the soil profiles investigated in each testing area, it can be concluded that Aboriginal land use was not common throughout the study area.

Based on the results of the test excavation, the following statements can be made about the areas of archaeological sensitivity identified during the archaeological survey:

- There are no areas of archaeological sensitivity throughout the entirety of the study area.

8 SIGNIFICANCE ASSESSMENT

This ATR will discuss the assessment of scientific significance on the tangible Aboriginal archaeological values that have been identified. A more comprehensive assessment of the cultural values of the study area will be undertaken as part of the ACHA report.

8.1 ASSESSING SCIENTIFIC SIGNIFICANCE

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

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

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

8.2 STATEMENT OF SIGNIFICANCE

Heritage NSW specifies the importance of considering cultural landscapes when determining and assessing Aboriginal cultural values. The principle behind this is that '*For Aboriginal people, the significance of individual features is derived from their inter-relatedness within the cultural landscape. This means features cannot be assessed in isolation and any assessment must consider the feature and its associations in a holistic manner"* (DECCW 2010d).

As no sites or artefacts were recovered within the study area, the area is assessed as having **low significance.**

9 IMPACT ASSESSMENT

The following presents an assessment of the impact resulting from the proposed works on known Aboriginal cultural heritage values.

9.1 ASSESSING IMPACTS

When considering the nature of harm to Aboriginal objects and/or places, it is necessary to quantify direct and indirect harm. The types of harm, as defined in the Guide (OEH 2011, p.12), are summarised in Table 9.1. These definitions will be used to quantify the nature of harm to identified Aboriginal objects and/or places that have been identified as part of this assessment. The Code states that the degree of harm can be either total or partial (DECCW 2010b, p.21).

Table 9.1 Definition of types of harm

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

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

As no sites have been identified, it is assessed that the proposed works will result in **no impacts** to Aboriginal cultural heritage within the study area.

10 RECOMMENDATIONS

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

It is recommended that:

1. No further assessment or works are required to be undertaken for the study area.
2. If unexpected finds occur during any activity within the study area, all works must in the vicinity must cease immediately. The find must be left in place and protected from any further harm. Depending on the nature of the find, the following processes must be followed:
    1. If, while undertaking the activity, an Aboriginal object is identified, it is a legal requirement under Section 89A of the NPW Act to notify Heritage NSW, as soon as possible. Further investigations may be required prior to certain activities recommencing.
    2. If, human skeletal remains are encountered, all work must cease immediately and NSW Police must be contacted, they will then notify the Coroner's Office. Following this, Heritage NSW should be contacted to liaise with NSW Police, in the instance that the remains are determined to be of historical Aboriginal origin. Upon this determination, Aboriginal stakehodlers should be notified.
3. It is recommended that Dexus Wholesale Management Limited continues to inform the Aboriginal stakeholders about the management of Aboriginal cultural heritage within the study area throughout the completion of the project. The consultation outlined as part of this ACHA is valid for six months and must be maintained by the proponent for it to remain continuous.
4. A copy of this report should be forwarded to all Aboriginal stakeholder groups who have registered an interest in the project.

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